STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ADDENDUM NO. 1

FOR

INTERSTATE ROUTE H-1, AIRPORT VIADUCT REPAIR
VICINITY OF VALKENBURGH STREET TO MIDDLE STREET

FEDERAL-AID PROJECT NO. IM-H1-1(268)

DISTRICT OF HONOLULU

ISLAND OF OAHU

2013

Amend the Bid Documents as follows:

A. SPECIAL PROVISIONS

1. Replace pages 645-1a thru 645-3a dated 01/04/13 with the attached pages 645-1a thru 645-3a dated r04/22/13.

2. Replace pages 676-1a thru 676-23a dated 09/19/12 with the attached pages 676-1a thru 676-23a dated r04/22/13.

3. Replace pages 677-1a thru 677-20a dated 03/08/13 with the attached pages 677-1a thru 677-20a dated r04/18/13.

4. Replace Federal Wage Rates dated 02/15/2013 with the attached Federal Wage Rates dated 04/19/2013.

B. PROPOSAL SCHEDULE

1. Replace page P-1 dated 03/21/13 with the attached page P-1 dated r04/25/13.

C. PLANS

1. Replace Plan Sheet Nos. 3, 6, 7, 12, and 29 with the attached Plan Sheet Nos. ADD.3, ADD.6, ADD.7, ADD.12, and ADD.29 respectively.

D. PRE-BID MEETING

a. Pre-bid Meeting Minutes and attendance sheet are attached for your information.

Please acknowledge receipt of this Addendum No. 1 by recording the date of its receipt in the space provided on page P-4 of the proposal.

GLENN M. OKIMOTO, Ph. D.
Director of Transportation

SECTION 645 - WORK ZONE TRAFFIC CONTROL

Make the following amendments to the said Section:

(I) Amend **Subsection 645.03 - Construction** by revising the sentence on lines 60 and 61 to read:

"Furnish, install, and maintain barricades, signs, cones, delineators, lights, flashing signals, six (6) advisory signs, two electronic message boards (126 inches wide and 76 inches high), advertisements, and other traffic control devices as required by the Engineer."

(III) Amend **Subsection 645.03(F) - Lane Closures** by revising lines 248 to 251 to read:

(F) Lane Closures.

"Lane closures will be allowed only in one direction on the Interstate Freeway H-1 (Eastbound and Westbound) and the same number of lanes can be closed on the Highway under the area of work during the following hours:

(1) Eastbound (Excluding Ramps).

a) Three Lanes Open:

Sunday	Midnight to Midnight
Monday	Midnight to 4:30 A.M.
Friday	9:00 P.M. to Midnight
Saturday	Midnight to Midnight

b) Two Lanes Open:

Sunday	Midnight to Midnight
Monday	Midnight to 4:30 A.M.
Friday	10:00 P.M. to Midnight
Saturday	Midnight to 9:00 A.M.
Saturday	6:00 P.M. to Midnight

(2) Westbound (Excluding Ramps).

a) Three Lanes Open:

Sunday	Midnight to Midnight
Friday	9:00 P.M. to Midnight
Saturday	Midnight to Midnight

b) Two Lanes Open:

Sunday	Midnight to Midnight
Friday	10:00 P.M. to Midnight
Saturday	Midnight to 9:00 A.M.
Saturday	6:00 P.M. to Midnight

(3) Ramps.

a) One Lane Open:

Sunday	Midnight to Midnight
Monday	Midnight to 4:30 A.M.
Friday	9:00 P.M. to Midnight
Saturday	Midnight to Midnight

The Contractor shall maintain a 10-feet minimum lane open for all the ramps at all times.

The Contractor shall temporarily close off area to vehicular and pedestrian traffic directly below the viaduct structure while deck demolition is in progress. The cost to install all necessary traffic control and pedestrian safety measures shall not be paid for separately and shall be considered incidental to the various contract items.

The Contractor shall coordinate with the Highways Division, Kaneohe Field Office No. 2 at telephone number 233-5430, 20 working days prior to any work affecting the Zipper Lane. The Zipper Lane deployment is approximately from 1:00 A.M. to 12:00 P.M.

The Zipper Lane Deployment Area (ZLDA) shall be free of debris during the project duration.

The Contractor shall be responsible for any costs associated with the Zipper Lane deployment beyond its normal operations.

A Night Work Noise Variance application for this project had been submitted to the Department of Health.

The Contractor shall coordinate lane closures with adjacent projects at no increase to the contract price or contract time. One project in the vicinity is the Interstate Route H-1 Freeway Rehabilitation, Middle Street to Vicinity of Ward Avenue, Project No. IM-H1-1(269).

Exceptions to the lane closure hours specified shall require a written request 10 working days for the Engineer's approval prior to any adjustments specified.

No time extension will be given for the above restrictions. The contract time for the project has accounted for any loss of time due to the above restrictions."

END OF SECTION 645

Make this Section a part of the Standard Specifications:

"SECTION 676 - CONCRETE DECK REPAIR

676.01 Description. This section includes qualifying for the work by providing documentation and meeting qualification specifications; conducting construction and public traffic control; locating and confirming the size of defective areas in the concrete roadway decking and proposing areas to repair and then obtaining the Engineer's acceptance of areas to repair; carrying out the repairs including such steps as; preparing the repair areas by removing material and roughening the surface, lowering reinforcing steel with inadequate concrete cover, replacing damaged reinforcing steel, abrasive blasting and cleaning the surfaces, replacing the removed concrete, finishing and curing the concrete, replacing joints and traffic loop detectors damaged by the repairs; replacing pavement markings; performing tests; and providing documentation of work and tests completed.

676.02 Materials. All materials used shall be compatible with the materials specified in Section 677 - Bridge Polyester Concrete Overlay.

Fine Aggregate for Concrete	703.01
Coarse Aggregate for Concrete	703.02
Admixtures	711.03
Water	712.01
Reinforcing Steel	602

(A) Replacement Concrete. Use replacement concrete that is a very early strength latex modified concrete (VESLMC) with fibers which provides a low color contrast with the surrounding deck surfaces. The nominal maximum size of coarse aggregate shall be 3/8 inch. The Engineer may accept an alternative replacement concrete that is equal or better in performance, when compared to the characteristics stated below.

(1) The VESLMC shall use cement which is finished calcium sulfoaluminate that contains no more than 2 percent C_3A and not greater than 0.03 percent shrinkage in accordance with ASTM C157. The amount of cement in the VESLMC shall not exceed 760 pounds per cubic yard.

(2) The VESLMC shall include a modified styrene butadiene copolymer latex that meets the requirements of FHWA Research Report RD-78-35.

(3) The VESLMC shall also include 1-1/2 inch length alkali-resistant (AR) glass fiber at 6 pounds per cubic yard.

(4) Corrosion inhibitor shall be water based amine carboxylate corrosion inhibitor. Use 1 ½ pints of corrosion inhibitor per cubic yard.

(5) The VESLMC concrete shall also meet the following requirements:

Characteristics	Requirement	Test Method
Minimum Compressive Strength At 3 hours At 28 days	 3000 psi 6000 psi	ASTM C39
Air Content	4 percent maximum	ASTM C231
Abrasion Resistance	Depth of wear not to exceed 0.035 inches in 60 minutes	ASTM C779
Modulus of Elasticity Minimum at 3 hrs Maximum at 56 days	 3,000,000 psi 4,000,000 psi	ASTM C469
Ring Test	No cracking at age less than 28 days	ASTM C1581
Flexural Fatigue Strength (based on a testing arrangement similar to ASTM C78)	550 psi at 3 million cycles	ASTM C78* As modified below.
Rapid Chloride Permeability Test	Charge passed less than 100 coulombs at 63 days	ASTM C1202
Flexural Strength (Modulus of Rupture at 28 days)	1100 psi	ASTM C78

Modified ASTM C78 Testing Procedure. To modify the testing procedure for determination of fatigue resistance, the following parameters were used.

a) Load application frequency of 5 Hz without rest periods

b) Sinusoidal pulse was used to vary the loading amplitude.

c) Load was initially applied 10-20% stress ratio to seat the sample and insure gauge functionality.

d) Servo-hydraulic universal test machine with feedback controlled close-loop configuration, maximum load capacity 20 kips.

e) Maximum/minimum ration 10%

f) Specimens covered with wet burlap and kept moist during testing.

g) Test preformed at 50% of static flexural strength.

h) Three concrete beam samples tested.

1) Provide a certification with certified test data from the concrete manufacturer and cement manufacturer that the replacement concrete complies with these requirements. Perform the material testing in the presence of the Engineer or as acceptable to the Engineer.

2) In addition to the aforementioned requirements, provide a strength-maturity relationship for the 2, 3, 4, 6, and 12 hour test ages from trial batches of the proposed replacement concrete. Allow the Engineer to monitor additional specimen(s) using the maturity meters provided in subsection 676.03 Construction Requirements.

(B) Concrete Sealer. The concrete sealer to be used after completing the deck repairs shall meet the following criteria:

(1) 100% Silane sealer containing corrosion inhibitor.

(2) No greater than 0.5 visual rating after 50 cycles according to ASTM C672, Standard Test Method for Scaling Resistance of Concrete Surfaces exposed to Deicing Chemicals with application of one coat at 125 square feet per gallon.

(3) No more than 0.75% increase in weight during ASTM C156, Standard Test Method for Water Retention by Liquid Membrane-Forming Curing Compounds for Concrete with application of one coat at 125 square feet per gallon.

(4) At least 78% reduction with application of one coat at 125 square feet per gallon according to ASTM C1218, Standard Test Method for Water Soluble Chloride in Mortar and Concrete.

676.03 Construction Requirements. Conform to the requirements of Section 503 and as required in these specifications.

The Contractor shall retain a Hawaii Licensed Structural Engineer to review the repair procedures and continually review the daily areas to be repaired by the Contractor and to provide assurance to the Engineer that the areas under repair do not endanger the public, State forces and Contractor forces; or structurally impair the structure, based on the anticipated loads.

(A) Submittal Requirements. At least four weeks prior to the start of this work, provide eight copies of the following submittals in one complete set for acceptance. Indicate clearly the name of the product and its manufacturer on pertinent submittals. No work that is related to these submittals shall be performed until written acceptance has been received.

(1) Certifications, test data and assurances required in Subsection 676.02 - Materials.

(2) Information on the replacement concrete including shelf life, working times, and placement rates,

(3) Detailed information on all equipment and materials that will be used for all aspects of the repair work including equipment for sounding the deck, determining surface profiles and compressive strengths, demolishing concrete, cleaning the repair areas, quality control/quality assurance (QC/QA) plan, placing (handling, mixing, consolidating, finishing, curing and texturing) of concrete, and post repair testing for delaminations. If equipment includes use of a continuous volumetric concrete mixer, provide the documentation required under Subsection 676.03(C) - Continuous Volumetric Concrete Mixers.

(4) Detailed step by step procedures for all aspects of the repair work including sounding the deck, determining surface profiles and compressive strengths, demolishing concrete, removing concrete, cleaning the repair areas, preparing any repair substrata, placement (handling, mixing, consolidating, finishing, curing and texturing) of concrete, and post repair testing for delaminations.

(5) Detailed plans and procedures to be in compliance with the requirements of Section 107 - Legal Relations and Responsibility to the Public including complying to noise variances, and controlling of work to appropriately minimize dust and air borne debris from concrete demolition, abrasive blasting, mixing and placing concrete, and cleaning operations, and to prevent water runoffs.

(6) Planned actions to maintain adherence to limitations and requirements of the following variables with regards to concrete repair work:

a) Ambient air temperature,

b) Wind speed,

c) Temperature of plastic concrete delivered.

d) Relative humidity

e) Evaporation rate of concrete bleed water or moisture.

f) Theoretical evaporation rate as determined from ACI 305 Hot Weather Concreting

g) Rain

h) Placement of repair concrete

i) Preparation of any concrete substrata

j) Equipment and traffic control near or on repair areas during placement and curing operations

(7) Planned emergency procedures for concrete repair areas that cannot be appropriately constructed within the allotted closure hours or if preparation of work area results in a complete depth penetration of the deck.

(8) Procedures for documentation of all aspects of repair work including the measurement and locations of repair areas.

(9) Test reports of compressive strengths and maturity readings of repaired areas during the progress of the work.

(B) Early Strength Monitoring. Provide a minimum of two wireless sacrificial sensor type maturity meters to determine concrete conformance to early strength requirements. The maturity meters shall have a secure and unalterable means of collecting data.

Verify the calibration of the maturity meters in the presence of the Engineer prior to use on the project by placing a temperature sensor in a controlled temperature water bath and recording whether the indicated temperature agrees with the known temperature of the water bath. Perform temperature comparison test at approximately 5 different temperatures, 75°F, 100°F, 125°F, 150°F and 175°F. The temperature recording device shall be accurate to within ± 2°F.

Develop strength-maturity relationship using only maturity meters, materials and conditions to be used or encountered on the project for all replacement concrete prior to placing any concrete on the project. Notify the Engineer when the development of the maturity curve will be done and conduct all tests in the presence of the Engineer in accordance with ASTM C1074 Estimating Concrete Strength by the Maturity Method at the concrete producer's laboratory or other approved laboratory facilities. For every concrete design, prepare a minimum size of each batch of concrete of at least one cubic yard and cast a minimum of 15 cylinders in accordance with AASHTO T23. Test three cylinders at ages of 2, 3, 4, 6, and 12 hours. Submit all results and curves to the Engineer for review and acceptance.

Any alterations in mix proportions or material source or type of material, in excess of those tolerable by batching variability, requires the development of a new strength-maturity relationship prior to use. This includes a change in material type, source, or proportion of cement, fly ash, coarse aggregate, fine aggregate, fibers or admixtures. The Engineer will require the development of a new strength-maturity relationship for any changes in the water to cement ratio of greater than 0.02.

Submit the following information of the strength-maturity relationship prior to placing any concrete on the project:

(1) Project number, concrete mix number and test date.

(2) Air content, slump and total free water of the batch of concrete.

(3) Type and amount of admixtures used in the batch of concrete.

(4) Strength of each specimen and average strength of specimens at each test age.

(5) Maturity index for each instrumented test specimen and the average maturity index for the instrumented specimens at each test age.

(6) Graphs of the average compressive strength verses the average value of the maturity index as described in the strength-maturity relationship of ASTM C1074.

Provide a minimum of two maturity meters at the project site for monitoring the early strength of concrete during each section of concrete placement. Assure that the batteries for the maturity meters are adequately charged prior to use. Use the same brand and type of maturity meters and thermocouple sensors as those used to develop and verify the strength-maturity relationship.

Install at least two maturity meter sensors per concrete placement with locations to be determined by the Engineer. Place sensors no closer than 4 inches from any formed surface or edge of slab being placed and at mid-depth of the repair section. Anchor sensors so that they remain in the middle of the repair section. Do not tie any sensor to reinforcing steel, any material that may corrode or any formwork. Modify means and methods subsequent to failures of sensors to prevent any reoccurrence.

Conduct a validation test for every 14th day or fraction thereof of concrete placement relationship by comparing an average compressive strength of three cylinders to the compressive strength as determined in the accepted strength-maturity relationship to verify that the in-place concrete compressive strengths are accurately represented. Submit the validation data with the same extent of information as the initial strength-maturity relationship submittal. The Engineer will consider the strength-maturity relationship valid for the predicted strengths within 5 percent of the actual compressive strength. Make a mathematical adjustment to the strength-maturity relationship when the actual average compressive strength for three validation tests are 5 to 10 percent above or below the predicted compressive strength as directed by the Engineer. Develop a new strength-maturity relationship when the actual average compressive strength for three validation tests exceeds 10 percent above or below the predicted compressive strengths.

The Contractor shall take surface temperature readings with a non-contact infrared thermometer after the concrete is poured. The readings shall be correlated to the actual times between the start and finish of placement operations. Areas with high or low temperature reading irregularities shall be further investigated using a rebound hammer in accordance with ASTM C805. These rebound hammer readings shall be compared to other readings taken where surface temperatures are satisfactory. A minimum 3000 psi compressive must be confirmed prior to the opening of the roadway. Repaired areas with temperature irregularities and which fail the rebound hammer testing prior to the roadway opening shall be removed and replaced at the Engineer's request. Areas which are identified with irregularities but which meet the 3000 psi minimum strength prior to roadway opening can be tested again after 24 hours to ensure that this area of concrete is maturing uniformly with the surrounding concrete placed at the same time. The Engineer will determine the need for replacement.

(C) Continuous Volumetric Concrete Mixers. The Engineer will allow the use of continuous volumetric concrete mixers. Use standard manufactured continuous volumetric concrete mixers that are capable of combining aggregate, cement, water, admixtures into a uniform mixture within the specified mixing time and comply with ASTM C 685. The volumetric continuous concrete mixers shall also conform to the following requirements:

(1) Proportion cement, aggregate, water and admixture by volume.

(2) Carry each ingredient in separate compartments and produce a minimum of 6 cubic yards of concrete.

(3) Measure the cement as it is introduced into the mixture with a recording meter.

(4) Control the flow of water and admixtures as they are introduced into the mixture with calibrated and adjustable flow control valves,

(5) Indicate the number of gallons used to the nearest 0.10 gallons with a water flow control meter.

(6) Proportion and blend all components of the concrete mixture on a continuous or intermittent basis via automatic calibration.

Calibrate and perform uniformity checks in accordance with ASTM C685 and manufacturer's recommendations to ensure proper proportioning and consistency of concrete. Provide the Engineer with the means to verify the calibration of the mixer and uniformity of the mix. Submit mixer calibration and uniformity reports and equipment specifications for review and approval. Do not use the continuous volumetric concrete mixer until the submittals are approved by the Engineer.

(D) Just-In-Time Training.

Just-in-Time Training (JITT) shall be mandatory, and consist of a formal joint training class on Very Early Strength Latex Modified Concrete (VESLMC) and paving techniques. Construction operations for rapid strength concrete shall not begin until the Contractor's and the Engineer's personnel have completed the mandatory JITT. The Contractor's personnel included in the list of participants for the Pre-Operation Conference along with the Engineer's representatives shall attend JITT;

The JITT session will be conducted for not less than 4 hours. The training class may be an extension of the Pre-Operation Conference and shall be conducted at the project field location convenient for both the Contractor's and the Engineer's project staff. Scheduling and completion of the JITT session shall be completed at least 15 days prior to the start of construction of VESLMC replacement concrete. The class shall be held during normal working hours.

The JITT instructor shall be experienced in the construction methods, materials, and test methods associated with VESLMC replacement concrete and paving techniques. The instructor shall not be an employee of the Contractor or a member of the Engineer's field staff. A copy of the syllabus, handouts, and presentation material shall be submitted to the Engineer at least 7 days before the day of the training and shall be furnished to each participant. Selection of the course instructor, the course content and training site shall be as mutually agreed to by the Contractor and the Engineer. The instructor shall issue a certificate of completion to the participants upon the completion of the class. The certificate shall include the course title, date and location of the class, the name of the participant, instructor's name, location and phone number.

The Contractor's or Engineer's personnel involved with VESLMC replacement concrete operations will not be required to attend JITT if they have completed similar training within the previous 12 months of the date of the JITT for this project. The Contractor shall provide a certificate of class completion as described above for each staff member to be excluded from the JITT session. The final determination for exclusion of any staff member's participation will be as determined by the Engineer. All attendees of the JITT shall complete, and submit to the Engineer, an evaluation of the training. The course evaluation form will be provided by the Contractor.

It is expressly understood that Just-In-Time Training shall not relieve the Contractor of any responsibility under the contract for the successful completion of the work in conformity with the requirements of the plans and specifications.

(E) Pre-Operational Conference. The Contractor and concrete manufacturer and cement manufacturer's representative involved in construction operation of the repairs shall meet with the Engineer, at a mutually agreed time, to discuss and verify the methods of accomplishing all phases of the repair operations, contingency planning, and standards of workmanship for the completed items of work. The Contractor's superintendents, foremen, subcontractors, concrete and cement manufacturers' technical representatives, and all key personnel involved with the repair shall attend the pre-operation conference. Placement of replacement concrete shall not begin before the Engineer accepts the pre-operational conference as completed.

(F) Pre-Operational Demonstration. The Contractor shall demonstrate the repair work on a trial test slab using the same step by step procedures, equipment and materials as proposed for the actual repair operation in the presence of the repair material manufacturers' representatives, and the Engineer. The demonstration shall be on a suspended slab 5 feet above the ground on a repair area approximately 6' wide x 10' long with support along the longitudinal edges. The State may allow a trial test slab on a planned repair area under the following conditions:

(1) Traffic control is in accordance with contract requirements and is incidental. Liquidated damages apply.

(2) Test slab location to be agreed to by the State in a location with minimal impact to traffic and on a non-travel lane in the event the pavement repair is incomplete or unsound. Direct access to the underside of the test slab shall be provided for State inspection.

(3) An emergency repair procedure accepted by the State shall be in place to restore and reopen the work area to traffic.

(4) Unacceptable repair shall be redone at no additional cost to the State.

The demonstration shall include the following:

(1) The Contractor's superintendents, foremen, subcontractors, manufacturer's technical representatives, and all key personnel involved with the repair shall be present.

(2) Unless allowed within the project area above, the trial test slab location shall be outside the project limits, acceptable to the Engineer and require no traffic control.

(3) The concrete test slab shall be steel reinforced, 6 ½ inches thick, and have a minimum concrete compressive strength of 3000 psi at the time of the test. The reinforced concrete slab shall include no. 5 reinforcing bars that are 6 inches on centers transversely and 12 inches on centers longitudinally for both top and bottom mats. The top mat transverse bars shall have concrete cover of 1 ½ inches. The cover of the bottom mat shall be 1 ¼ inches. The Contractor, prior to performing the repair demonstration, shall have the details of the trial test slab accepted by the Engineer.

(4) The area of the slab to be repaired shall be determined by the Engineer.

(5) Demonstrate splicing of reinforcing bars by lap welding.

(6) Qualification tests in accordance with Subsection 676.03(S)(1) - Qualification Testing shall be demonstrated on the 6' x 10' test area.

(7) The repair materials shall be mixed and used as recommended by the manufacturer.

(8) Strength Testing and Verification: Using a certified laboratory, perform qualification testing consisting of three sets of concrete compressive strength tests of cylinders at three hours and at 28 days. Include monitoring of samples using maturity meters and logging sensors to verify strength using the strength-maturity relationship data.

Placement of replacement concrete within the project limits shall not begin before the Engineer accepts the pre-operational demonstration as completed and acceptable.

(G) Authorization to Work. Proceed with the repair work within the project limits when the first six of the following items and either the seventh or eighth item has met the requirements and is accepted by the Engineer in writing.

(1) Subsection 676.03(A) - Submittal Requirements.

(2) Subsection 676.03(B) - Early Strength Monitoring.

(3) Subsection 676.03(C) - Continuous Volumetric Concrete Mixers.

(4) Subsection 676.03(D) - Just-In-Time-Training.

(5) Subsection 676.03(E) - Pre Operational Conference.

(6) Subsection 675.03(F) - Pre-Operational Demonstration and Qualification.

(7) Temporary Work Acceptance. The Engineer accepts a request in writing to do a specific work on a particular day.

(8) Qualified to Work. The Engineer accepts the most recent required qualification tests and all the following criteria are satisfied. Otherwise, request and use a temporary work acceptance from the Engineer to be authorized to work as an unqualified Contractor.

(a) No conditions exist that would require new qualification testing.

(b) No quality assurance tests have failed to meet specification requirements since the previous accepted tests.

(c) No concrete repairs have failed. This criterion is not applicable if the Engineer accepts the plans for remedial actions for the failed repairs and those failed repairs do not hold up further concrete repair work.

(H) Deck Condition Survey. The roadway plans are a guide to illustrate the general locations of areas to be visually examined and sounded, and not as a specification of specific repair areas. Damaged areas shall be determined by the Contractor in accordance with visual observation and ASTM D4580. Mark the locations and limits of deteriorations and delaminations as determined by the visual and sounding methods, then mark additional areas according to the plans with perimeters of the proposed repair areas being perpendicular and parallel to the traffic lanes. The Contractor shall provide drawings of the damaged locations including the outlines of the proposed repair areas. The total area of repairs shall be calculated and provided to the Engineer with the drawings. The Contractor shall not begin any repair until the Engineer verifies and accepts the location and size of the area to be repaired. The Engineer may direct the Contractor to do repairs outside of the areas determined in the deck condition survey. As part of the deck condition survey, In areas near joints, the Contractor will determine if the structural steel armor for the joints is in need of repair. Upon agreement by the Engineer, the Contractor will propose a method of repair as approved by a Hawaii licensed structural engineer for the Engineers approval.

(I) Preparation of Repair Areas. Use the procedures of ICRI (International Concrete Repair Institute) Guideline No. 03730 "Guide for Surface Preparation for the Repair of Deteriorated Concrete Resulting from Reinforcement Steel Corrosion", ICRI Guideline 03732 "Selecting and Specifying Concrete Surface, Surface Preparation for Sealers, Coatings and Polymer Overlays" sections of ACI 546.1R-80 (Reapproved 1997) "Guide for Repair of Concrete Bridge Superstructures". The Contractor shall be responsible for any falsework requirements, debris, noise and pollution control; on and below the viaduct repair area. Provide falsework calculations performed and stamped by a Hawaii licensed structural engineer. Prepare the repair areas as follows:

(1) Removing Material:

(a) Survey the concrete cover to avoid cutting the reinforcing steel.

(b) Saw cut the limits of the repair area ½ inch deep, or to the top of transverse top reinforcing steel if the depth of cover is less than ½ inch.

(c) Remove the concrete within the limits of repair. Use chipping or pneumatic tools weighing less than 15 pounds. Hydrodemolition with controlled pressure settings may be used to remove concrete. Special care shall be taken to ensure compliance with Section 676.03(A) and especially 676.03(A)(5).

(d) Concrete removal shall not damage the portion of the structure that is to remain. If the structure is damaged beyond the repair area limits required by the contract, Contractor shall repair the damaged portion according to the contract at no increase in contract time or contract price.

(e) Remove sound concrete beyond unsound areas to provide a good bond in accordance with the contract.

(f) Deck repairs shall be done to a depth where sound concrete is encountered. If reinforcing steel is encountered the depth shall be increased to allow proper bond between the VESLMC and reinforcing steel.

(g) No material is allowed to fall or flow into streams or drainage systems.

(h) The reinforcing steel at the edges *of* the repair areas shall be well bonded to the surrounding deck with no significant loose scaly rust or contaminants that would interfere with concrete bond.

I) Debris and waste material shall be disposed of at a disposal site in accordance with all applicable Federal State and County laws, rules and ordinances and as accepted by the Engineer.

2) Corroded Reinforcing Steel. Strengthen any reinforcing steel that is found to have lost 25% or more of the original cross sectional area by weld lap splicing new reinforcing steel according to Section 602 - Reinforcing Steel and as shown in the plans.

3) Preparation of the Repair Area. Sandblast the concrete substrate and any reinforcing steel in the repair area. Remove any contaminants, heavy rust or scale, dust, loose concrete and sand that may affect bonding of the repair concrete. Any thin rust or bits of hard mortar that are tightly adhered to the reinforcing steel need not be removed.

The reinforcing steel shall generally be shiny (some rust and hard mortar allowed) and welds with their heat affected area shall be shiny (bare metal only) after sand blasting. Hydroblast the exposed area with fresh water. Spare abrasive blasting equipment shall be provided and kept on the project site during working hours. Remove debris, wash water and waste material using vacuum machines and properly dispose outside the project limits at a disposal site accepted by the Engineer. Brooms shall not be used on the prepared surface for cleaning. The repair area shall be free of dust, dirt, oil, grease and other contaminants that may affect bonding of the concrete repair mortar. The Contractor shall protect the public from dust pollution and other damages resulting from the blast cleaning operation. The Contractor shall prevent abrasives and debris from entering drainage systems and streams.

4) Girder Stirrups. Stirrup hooks shall have 1 ½ inch concrete cover prior to placing replacement concrete. All reinforcement shall be cold bent or replaced as necessary to provide the 1 ½ inch concrete cover. This work shall be considered incidental to the Repair for Concrete Deck pay item.

(J) Traffic and Equipment Control on Bridge.

(1) Construction vehicles shall not exceed a 5-mph speed limit within 100 feet longitudinally and 12 feet transversely of the placement-area for both arrival and departure directions.

(2) Equipment and vehicles shall not contaminate or drive on the prepared deck surface.

(3) The Contractor shall not permit compressors or other equipment that produce vibrations on the precast girder span undergoing deck repair. Equipment shall not be located on precast girder spans undergoing deck repair unless approved by the Engineer.

(4) Vehicular traffic shall not exceed a 15-mph speed limit on the bridge span being repaired during concrete pour and cure.

(5) The replacement concrete shall have minimum compressive strength of 3000 psi as determined by Early Strength Monitoring prior to opening to traffic.

(6) Contractor shall not allow any equipment or vehicles within 4 feet laterally from any repair for the duration of traffic control. This is a structural integrity issue.

(7) The bridge deck shall not be used as a storage area for equipment or for stockpiling materials. Loads exceeding the legal limit shall not be used on the bridge unless an overload and/or oversize permit has been approved by the Engineer.

(K) Placement of Replacement Concrete.

(1) The concrete manufacturer's and cement manufacturer's technical representatives shall be present during initial repair work and as requested by the Engineer at no increase in contract time or contract price.

(2) A technical representative shall be capable and knowledgeable about the product he represents, e.g., know under what conditions the product should be placed for optimal results, know what causes defects or problems, and know how to troubleshoot the product.

(3) A technical representative shall provide aid and field supervision to assure that the work is properly installed and performed as recommended by the manufacturer and accepted by the Engineer at no increase in contract time or contract price.

(4) The Contractor shall adhere to recommendations made by the technical representative and accepted by the Engineer at no increase in contract time or contract price.

(5) Place the replacement concrete according to the replacement concrete manufacturer's and cement manufacturer's recommendations and instructions and as accepted by the Engineer. The Contractor shall inform the Engineer in writing of any work that is not in conformance with the manufacturer's recommendation.

(6) A bonding agent recommended by the replacement concrete manufacturer and cement manufacturer shall be used where replacement concrete is placed against existing concrete. Use bonding agent in accordance with the manufacturer's recommendations.

(7) Unless otherwise directed by the manufacturer, maintain the surfaces to be repaired wet for a minimum of 1 hour prior to placement and remove all excess surface moisture using oil free compressed air just prior to placing the replacement concrete.

(8) Any falsework and formwork required shall be considered incidental to this work.

(9) Replacement concrete shall be mixed as recommended in writing by the manufacturer,

(10) Runoff from the adjacent deck is not allowed on the repair area.

(L) Consolidation. Consolidate the replacement concrete as recommended by the manufacturer.

(M) Finishing. Finish while the replacement concrete is plastic and workable. Position float parallel to road centerline and finish in the transverse direction passing gradually from one side of the pavement to the other. Move ahead along pavement centerline advancing not more than one-half of float length. Finish the replacement concrete to meet the requirements of the Surface Testing subsection. Texture surface of the replacement concrete to match existing adjacent textures.

(N) Protection and Curing. Protect freshly placed replacement concrete from plastic shrinkage, premature drying, excessive hot temperatures and direct wind. See Section 676.03(A) for submittal requirements.

(O) Joints.

(1) Construction Joints. Use construction joints only with the acceptance of the Engineer and in accordance with the Contract.

(2) Steel Armor Angles and Expansion Joints. Armor angles and expansion joints shall not be altered or damaged and shall be restored to the original configuration. Non-concrete joint material damaged by the Contractor shall be restored to the original condition at no additional cost. For steel armor angles which are determined to be in need of repair and upon agreement by the Engineer, the Contractor will propose a method of repair as approved by a Hawaii licensed structural engineer for the Engineer's approval.

Repair of the steel armor angles and anchors will be paid for under "Repair of Joint Armor for overlay areas" by force account. Repair of the concrete behind the angles will be paid for under "Deck Repair".

(P) Over-cut Saw Kerf Groove Filling. If sawing of repair areas extends beyond the corners of the repair areas, then those over-cut grooves shall be filled with a material which is compatible with the replacement concrete and acceptable to the Engineer.

(Q) Surface Testing. The finished bridge deck shall conform to the following requirements when tested by the Contractor in the presence of the Engineer within 14 days following the placement of concrete:

(1) Surface Flatness. The surface of the replaced pavement shall not vary more than 1/8 inch under a 10-foot straightedge placed parallel to or perpendicular to the traffic lanes to within the limits of the repaired area after the repair has cured.

(2) Joint Smoothness. The surface smoothness at the repair edges or joints shall be such that neither side of the joint will vary from a true plane enough to permit a 1/16 inch thick shim 3 inches wide to pass under a one-yard straightedge adjacent to either side of the joint when the straightedge is laid on the pavement perpendicular to joint and its midpoint at the joint.

(3) Surface Elevation. The surface elevation of the repair shall be between 0 and 1/16 inch above the surface as determined by the top elevations of the existing deck slabs that are adjacent to all edges of the repaired deck surface.

(4) Surface Condition. The repaired area shall be sound, free from cracks greater than 0.01 inch in width.

Whenever existing conditions prevent compliance with the above, the Engineer may require testing with priority given in the order listed for the four above items and matching of the surrounding deck as the lowest priority.

(R) Quality Control/Quality Assurance (QC/QA)

(1) Plastic Concrete Sampling and Testing. Perform QC/QA concrete sampling and testing in accordance with the QC/QA and following requirements:

(a) QC/QA tests shall include air content, temperature, slump and preparing compressive strength cylinders for testing at later dates. Perform plastic concrete tests on the initial delivery for each concrete design mix each day. Ensure that QC/QA technicians and laboratory are qualified in accordance with the HDOT'S "Quality Assurance Manual for Materials" dated October 2001. Ensure one technician is present and performing tests throughout the placement operation at each placement site. In any QC/QA plastic properties fail, reject the remainder of the load, terminate the LOT and notify the Engineer. A LOT shall be one days production, once every maximum of 20 cubic yards of concrete or approximately once every 1,000 square feet of repaired area, whichever is least. Cast a set of cylinders representing the LOT of concrete from the same sample of concrete.

(b) Following the termination of a LOT, obtain samples from a new load and perform plastic properties test until such time as water to cementitious material ratio, air content, temperature is in compliance. Initiate a new LOT once the testing indicates compliance.

(c) Maintain a logbook with records of relevant details of all tests. Provide a copy of new entries at the end of each work day to the Engineer. Make available for inspection by the Engineer during the normal working hours of construction. At the end of the project deliver the original logbook to the Engineer. The original logbook will become the property of the Engineer.

(S) Verification and Independent Assurance. The Engineer may perform verification sampling and testing to validate Contractor sampling and testing as well as the quality of the materials produced. Furnish sufficient concrete of each design mix for verification and independent assurance sampling and testing as required by the Engineer. When the Engineer performs verification, the Contactor may perform the same test on the concrete at the same time. HDOT's Independent Assurance program will be conducted to evaluate all sampling and testing used in the acceptance material.

(T) Acceptance.

(1) Sampling and Testing. Sample and test concrete of each mix design for water to cementitious ratio, air content, temperature, slump and cast a set of three cylinders for compressive strength tests once per LOT. A LOT shall be one days production, once every maximum of 20 cubic yards of concrete or approximately once every 1,000 square feet of repaired area, whichever is least. When more than one production facility or continuous volumetric mixer is used for the same mix design, apply the sampling and testing frequency per production facility or per continuous volumetric mixer.

Take these acceptance samples randomly in accordance with ASTM D3665 or as determine by a random number table acceptable to the Engineer. Select and document the selection of random samples(s) prior to the work activity. Include the date and time of determination of the selection.

Provide curing facilities that have the capacity to store cylinder samples for QC and Verification simultaneously for initial curing. Deliver the QC samples to the final curing facility in accordance with AASHTO T 23. At the same time, the Engineer will deliver verification samples to their final curing facility. All cylinders will be clearly identified.

Test the QC laboratory cured samples for compressive strength at the ages of 3 hours, 7 days, and 28 days in a laboratory meeting and maintaining at all times the qualification requirements in the Highways Division's Quality Assurance Manual for Materials. Notify the Engineer of the Quality Control Laboratory compressive test results within 24 hours.

The Engineer will average the QC compressive strengths data, average the Verification compressive strength data and compare the results. Comparison of results can also be on the latest five Verification data and the QC data during the same period. Based on this comparison, the Engineer will determine if the Validation Criteria as shown in the following table has been met.

Strength	Difference
Less than 3500 psi	450 psi
3,501 - 4,500 psi	590 psi
4,501 - 6,500 psi	910 psi
6,501 - 8500 psi	1,275 psi
Greater than 8,500 psi	1,360 psi

When the difference between the QC and Verification are less than or equal to the Validation Criteria, the QC data is validated and the Engineer will use the Contractor's data as a part of the acceptance procedures. When the difference between QC and Verification data exceeds the Validation Criteria, the Engineer will initiate the dispute resolution process requirements of Section V of Highway's Quality Assurance Manual for Materials.

(2) Acceptance of Hardened Concrete. Hardened concrete will be accepted or rejected on the basis of strength tests and any of the requirements or characteristics in Subsection 676.02. Do not discard a cylinder strength test result based on a low strength (strength below the specified minimum strength). The Engineer will accept at full payment only at LOTS of concrete represented by strength test results equal or exceed the respective specified minimum strength. The compressive strength result of the LOT shall meet the specified minimum strengths of 3000 psi at 3 hours* and 6000 psi at 28 days. The Engineer may accept the average compressive strength of three individual test results in lieu of individual strength test result provided that no single test result is less than 90 percent of the average value.

* As determined by the maturity meter readings.

(U) Documentation of Repairs. Include in the preparation of posted drawing as required in Section 648, records of each repaired concrete area.

The documentation shall include the following:

(1) The replacement concrete pour date.

(2) The location of the center of each repair rectangle as indicated by:

(a) The baseline station number.

(b) The transverse offset from the baseline with offset direction information.

(3) The dimensions of the rectangle in the following directions:

(a) Longitudinally in the direction of traffic flow.

(b) Transversely perpendicular to the direction of traffic flow.

(4) Identification of the repair area represented by the maturity sensors and cylinder sample collected or that the test was performed on strength test results of cylinders and maturity meter readings shall be included for all repair areas.

(5) QC/QA and Acceptance test data.

(6) The Contractor shall also prepare a spread sheet tabulation of the above information.

(V) Concrete Sealer. After completing the deck repairs, the entire deck surface (parapet to parapet) of the Inbound and Outbound structures, excluding the Inbound overlay limits as shown in the contract documents, shall receive a 100% silane concrete sealer containing migrating corrosion inhibitors that are amine carboxylate based dipole corrosion inhibitors. The roadway surface texture and friction shall remain unchanged after application of the sealer. The installed sealer shall be compatible with a polyester concrete overlay which will be installed in a future project.

The polyester overlay will utilize a methacrylate resin prime coat and a polyester concrete consisting of a polyester resin binder and dry aggregate.

(W) Post-Construction Survey, Sealing Cracks and Repairing Delaminations. Perform a post-construction survey with the Engineer present three months after replacement concrete placement except survey for overlay areas shall be conducted prior to overlay operations. Contractor shall survey all concrete repairs in accordance with ASTM D4580 including visual inspections for cracks and other defects in the presence of the Engineer. Seal cracks that are greater than 0.01 inch in width with epoxy materials which are compatible with the repair concrete and acceptable to the Engineer. Replace unacceptable areas with replacement concrete as specified in this section at no increase in contract time or contract price. Repaired areas will be subject to re-inspection. Provide documents of the post construction surveys that are acceptable to the Engineer.

(X) Areas of Work. The areas of work for deck repair shall be on the Interstate Route Eastbound direction including all the Eastbound On and Off Ramps and the Westbound direction including all the Westbound On and Off Ramps.

The deck within the overlay area specified in Section 677 – Polyester Concrete Overlay, shall be repaired first.

The Concrete Sealer shall be applied to all deck surfaces within the project limits except within the overlay limits.

(Y) Permanent and Temporary Pavement Markings. Permanent and Temporary pavement markings that are damaged or missing within the daily area of work shall be installed or replaced prior to the close of day. Permanent pavement markings shall be installed within 30 days after completion of the deck repaired areas. This work shall conform to Section 629 - Pavement Markings, Subsections 629.01 thru 629.03.

676.04 Measurement.

(A) The Engineer will measure the Deck Repair per square foot in accordance with the contract documents.

(B) Concrete sealer will be paid for on a lump sum basis. Measurement for payment will not apply.

(C) Repair of Joint Armor will be paid for on a Force Account basis. Measurement for payment will not apply.

(D) The Engineer will not measure for Permanent and Temporary Pavement Markings for payment.

676.05 Payment. The Engineer will pay for accepted pay items listed below at the contract price per unit, as shown in the proposal schedule. Payment will be full compensation for the work prescribed in this section and the contract documents.

The Engineer will pay for the following items:

Pay Item	**Pay Unit**
Repair of Joint Armor for Overlay Areas	Force Account
Concrete Sealer, _____	Lump Sum
Deck Repair _____	Square Foot

(1) 60% of the contract bid price upon completion of the Subsections; 676.03(A) - Submittal Requirements, 676.03(F) - Pre-Operational Demonstration, 676.03(H) - Deck Condition Survey, 676.03(I) - Preparation of Repair Areas, 676.03(J) - Traffic and Equipment Control on Bridge, 676.03(K) - Placement of Replacement Concrete, 676.03(L) - Consolidation, 676.03(M) - Finishing, 676.03(N) - Protection and Curing, 676.03(0) - Joints, 676.03(P) - Over-cut Saw Kerf Groove Filling, 676.03(Y) - Permanent and Temporary Pavement Markings, and any other steps required to repair the deck, but not including testing and inspections paid for below.

(2) 30% of the contract bid price upon completion of Subsection 676.03(Q) - Surface Testing.

(3) 10% of the contract bid price upon completion of Subsection 676.03(W) - Post-Construction Survey, Sealing Cracks, Repairing Delaminations, and completion of all permanent pavement markings.

Subsections 676.03(B) - Early Strength Monitoring, 676.03(C) - Continuous Volumetric Concrete Mixers, 676.03 (D) - Just-in-Time Training, 676.03 (E) - Pre-Operational Conference, 676.03(R) - Quality Control/Quality Assurance (QC/QA) and 676.03(T) - Acceptance; will not be paid for separately and will be considered incidental to the various pay items in this Section. All documentation required in this Section, including that is required in Subsection 676.03(U) - Documentation of Repairs will be paid for under Contract Item No. 648.0100 - Field-Posted Drawings.

Documentation of test results regarding logbook and test records, which do not use the Field-Posted Drawings, will be paid for under item (3) 10% of the contract bid price upon completion of Post Construction Survey, Sealing Cracks, and Repairing Delaminations.

Subsection 676.03 (I) (2) - Corroded Reinforcing Steel will not be paid for separately since this work shall be included in the contract prices of the various contract pay items in this Section.

The Engineer will not pay for Permanent and Temporary Pavement Markings separately. The Engineer will consider the cost as included in the various contract pay items in this Section."

END OF SECTION 676

Make the following Section a part of the Standard Specifications:

"SECTION 677 - BRIDGE POLYESTER CONCRETE OVERLAY

677.01 Description. This work shall consist of furnishing and placing a polyester concrete overlay as described herein and as shown on the plans. This work shall include preparation of the receiving surfaces. Polyester concrete is also referred to herein as polyester-styrene polymer concrete or PPC.

677.02 Materials.

(A) Primer. The prepared surface shall receive a wax-free, low odor, high molecular weight methacrylate (HMWM) resin prime coat. HMWM resin shall conform to the following requirements:

METHACRYLATE RESIN PRIME COAT		
Property	**Requirement**	**Test Method**
Volatile Content*	30%, maximum	ASTM D 2369
Viscosity*	0.025 Pa-s, maximum (Brookfield RVT with UL adaptor, 50 RPM at 77°F)	ASTM D 2196
Specific Gravity*	0.90, minimum, at 77°F	ASTM D 1475
Flash Point*	180°F, minimum	ASTM D 3278
Vapor Pressure*	1.0 mm Hg, maximum at 77°F	ASTM D 323
Tack-Free Time	400 minutes maximum at 77°F	ASTM C 679
PCC Saturated Surface-Dry Bond Strength	0.5 ksi, minimum at 24 hours and 70°F +/- 2°F	California Test 551

*Test shall be performed prior to adding initiator.

The prime coat promoter/initiator system for the methacrylate resin shall consist of a metal drier and peroxide. If supplied separately from the resin, at no time shall the metal drier be mixed directly with the peroxide. The containers shall be stored in a manner that will not allow leakage or spillage from one material to contact the containers or material of the other.

NOTE: Mixing the metal drier directly with the peroxide will result in a violent exothermic reaction.

(B) Polyester Resin Binder. The polyester concrete shall consist of polyester resin binder and dry aggregate. The resin shall be an unsaturated isophthalic polyester-styrene co-polymer, and shall conform to the following requirements:

POLYESTER RESIN BINDER		
Property	**Requirement**	**Test Method**
Viscosity*	0.075 to 0.200 Pa-s (RVT No. 1 Spindle, 20 RPM at 77°F)	ASTM D 2196
Specific Gravity*	1.05 to 1.10 at 77°F	ASTM D 1475
Elongation	35%, minimum Type I at 0.45"/min. Thickness = 0.25" ± 0.04"	ASTM D 638
	Sample Conditioning: 18 hours/77°F/50% + 5 hours/158°F	ASTM D 618
Tensile Strength	2,500 psi, minimum Type I at 0.45"/min. Thickness = 0.25" ± 0.04"	ASTM D 638
	Sample Conditioning: 18 hours/77°F/50% + 5 hours/158°F	ASTM D 618
Styrene Content*	40% to 50% by weight	ASTM D2369
Silane Coupler	1.0%, minimum (by weight of polyester-styrene resin)	Gas Chromatograph analysis from an independent lab
PCC Saturated Surface-Dry Bond Strength	0.5 ksi, minimum at 24 hours and 70°F	California Test 551
Static Volatile Emission*	60 gram per square meter, loss, maximum	South Coast Air Quality Management District, Standard Method

*Test shall be performed prior to adding initiator.

The silane coupler shall be an organosilane ester, gamma-methacryloxypropyltrimethoxysilane. The promoter shall be compatible with suitable methyl ethyl ketone peroxide (MEKP) and cumene hydroperoxide (CHP) initiators.

(C) Aggregate. The aggregate for polyester concrete shall conform to Section 703, shall be provided by the polyester concrete resin supplier and conform to one of the following combined aggregate grading:

COMBINED AGGREGATE		
Sieve Size	Percent Passing	
	3/8" Maximum	No. 4 Maximum
½"	100	100
3/8 "	83 - 100	100
No. 4	65 - 82	62 - 85
No. 8	45 - 64	45 - 67
No. 16	27 - 48	29 - 50
No. 30	12 - 30	16 - 36
No. 50	6 - 17	5 - 20
No. 100	0 - 7	0 - 7
No. 200	0 - 3	0 - 3

Aggregate retained on the No. 8 sieve shall have a maximum of 45 percent crushed particles when tested in accordance with AASHTO Test Method T335. The minimum Mohs scale hardness shall be 7.0. Fine aggregate shall consist of natural sand only.

Combined aggregate absorption shall not exceed one percent as determined by AASHTO Test Methods T84 and T85.

At the time of mixing with the polyester resin binder, the moisture content of the aggregate, as determined by AASHTO Test Method T 255, shall not exceed one half of the aggregate absorption.

(D) PPC Composite. The following tests are required to verify PPC composite properties. Testing shall be performed by an independent testing laboratory.

Polyester Concrete Composite Properties		
Property	**Requirement**	**Test Method**
SSD Bond Strength	0.5 ksi, minimum at 24 hours and 70°F	California Test 551
Compressive Strength (4x8 or 6x12 cylinders are acceptable)	5.0 ksi at 7 days	AASHTO T22
Abrasion Resistance	<2g weight loss	California Test 550
Modulus of Elasticity	1,000 ksi - 2,000 ksi	ATM C469 (7 days at 77°F)
Flexural Strength	>1800 psi	ASTM C78 (7 days at 77°F) (3"x3"x12", 3 points)

For SSD bond strength, abrasion resistance and modulus of elasticity, one sample of the composite material to be used during overlay construction shall be tested. A representative sample shall be provided to the testing laboratory and results provided from the laboratory to the Engineer a minimum of 21 days prior to start of the project. This requirement may be waived by the Engineer if historical laboratory data shows consistency of testing results from the same mix design. For compressive strength and flexural strength, one sample for each test shall be tested for each 20 cubic yards of PPC placed during overlay construction. At least one sample shall be tested for each test per workday.

(E) Sand for Abrasive Finish. The sand for abrasive finish shall be commercial quality blast sand and conform to Section 703.01 and the following gradation:

Abrasive Finish Sand	
Sieve Size	**% passing by weight**
No. 8	95 - 100
No. 20	0 - 5

Sand for abrasive finish shall be commercial quality blast sand. Absorption shall not exceed one percent as determined by AASHTO Test Methods T84 and T85.

(F) Certification of Materials. The Contractor shall submit a Certificate of Compliance from an independent nationally recognized testing laboratory stating that the materials meet the requirements listed in paragraphs A, B, C, D and E above. Certificate of Compliance and all test reports from the independent testing lab shall be submitted at the time of the mix design review. The manufacturer of the polyester resin binder shall warrant that the HMWM resin is compatible with the polyester resin binder and shall provide this warrant in writing along with the Manufacturer's Certification of Compliance for both materials.

(G) Storing and Handling. All materials shall be delivered in their original containers bearing the manufacturer's label, specifying date of manufacturing, batch number, trade name brand, quantity, and mixing ratio. Each shipment of polyester resin binder and HMWM resin shall be accompanied by a Materials Safety Data Sheet (MSDS). If bulk resin is to be used the Contractor shall notify the Engineer in writing 10 working days prior to the delivery of bulk resin to the job site. Bulk resin is any resin stored in containers in excess of 55 gallons.

The material shall be stored to prevent damage by the elements and to ensure the preservation of their quality and fitness for the work. The storage space shall be kept clean and dry, and shall contain a high-low thermometer. The temperatures of the storage space shall not fall below nor rise above that recommended by the manufacturer. Every precaution shall be taken to avoid contact with flame.

Stored materials shall be inspected prior to their use, and shall meet the requirements of these Special Provisions at the time of use.

Any material which is rejected because of failure to meet the required tests or that has been damaged so as to cause rejections shall be immediately replaced at no additional expense to the State.

Sufficient material to perform the polyester concrete overlay application shall be in storage at the site prior to any field preparation, so that there shall be no delay in procuring the materials for each day's application.

All personnel working with the polyester concrete shall be issued suitable appropriate protection equipment. Appropriate impermeable protective garments shall be used by all workers who may contact the resin or initiators to prevent skin contact. If skin contact occurs, the resin or initiators shall be immediately washed off. Clothing that becomes saturated with resin shall be removed immediately.

677.03 Construction Requirements.

(A) Submittals. The Contractor shall submit the following items for approval in accordance with these Special Provisions:

(1) A written procedure describing the method by which the Contractor plans to prepare the concrete surface for the overlay including a list and description of the equipment including the type of shot blasting machine selected by the Contractor for use in this project The procedure shall include the method and materials used to contain, collect, and dispose of all concrete debris generated by the scarifying process, including provisions for protecting adjacent traffic from flying debris

(2) A written safety plan which shall include:

(a) Notice to the public stating overlay work locations, dates and times and what to expect. The notice and appropriate documents such as MSDS shall also be sent to the local fire and police officials at least 7 days before starting work. The notice shall be posted at the work site.

(b) An airborne emissions monitoring plan prepare and executed by a Certified Industrial Hygienist (CIH) certified in comprehensive practice by the American Board of Industrial Hygiene. The plan must have at least 4 monitoring points including the mixing point, application point, and point of nearest public contact. Monitor airborne emissions during overlay work and submit emissions monitoring results after completing the work.

(c) An action plan for protection of the public when airborne emissions levels exceed permissible levels.

(d) A copy of the CIH's certification.

(3) The polyester concrete mix design including special mix design at end transitions. The estimated curing time based on anticipated temperatures.

(4) Certificates of compliance and test reports for all materials used in the polyester concrete mix and for the HMWM.

(5) Manufacturer's written instructions for the installation of the overlay system and the storage of all overlay and primer materials.

(6) The name of the manufacturer of the polymer overlay materials including the name and phone number of the Manufacturer's Technical Representative.

(7) The name of the company doing the PPC overlay work. The location where the HMWM resin and polyester concrete components are to be stored and safeguards being used to keep the materials stored in accordance with manufacturer's recommendations.

(8) The qualifications of on-site supervisors, mobile mixer operators, and finishing machine operators.

(9) A written plan which explains the method and materials used to contain HMWM resin and polyester concrete within the deck area specified to receive the overlay, including isolation of expansion joints and the method by which excess materials, waste products, and containers are to be handled and disposed of by the Contractor.

(10) Description of equipment for:

(a) Applying HMWM resin.

(b) Measuring and mixing polyester concrete.

(c) Placing and finishing the polyester concrete.

(d) Applying the finishing sand.

The Contractor shall not begin scarifying operations until receiving approval of Items 1 and 2. The Contractor shall not begin placing polyester concrete overlay until receiving approval of Items 3 through 10.

(B) General. The polyester overlay manufacturer shall have a representative on the job site at all times who, upon consultation with the Engineer, may suspend any item of work that is suspect and does not meet the requirements of this specification. Resumption of work will occur only after the manufacturer's representative and the Engineer are satisfied that appropriate remedial action has been taken by the Contractor. No work shall proceed and materials will not be accepted if manufacturer's technical representative is not on site.

The Contractor shall arrange to have the suppliers of the polyester resin binder and HMWM resin furnish technical service relating to application of material and health and safety training for personnel who are to handle the polyester-styrene polymer concrete (PPC) and the HMWM resin prime coat and any State personnel the Engineer determines is needed for inspection of the work.

The company doing the PPC overlay work shall provide a project reference list of at least 2 separate PPC overlay projects of 50 CY minimum PPC quantity that have been successfully completed within the last 5 years and that use the same PPC overlay system and materials that will be used on this project. Provide the name and location of the project, quantity of overlay placed, and the Contracting Agency of the project, and the name and current phone number of the Contracting Agency's contact person for the referenced project.

On-site supervisors, and all personnel operating the mobile mixer and finishing machines, shall have successful previous experience in mixing and placing PPC overlay on at least two separate PPC overlay projects within the last three years. Documentation of project experience with PPC overlay shall include the name and location of the project, the Contracting Agency of the project, the area quantity of overlay placed, and the name and current phone number of the Contracting Agency's contact person for the referenced project.

The Engineer may suspend the overlay work if the Contractor substitutes unapproved personnel during construction. Additional costs resulting from suspension of work due to the changing of personnel is the Contractor's responsibility, and no adjustment in contract time will be allowed.

During surface preparation and overlay application, precaution shall be taken to assure that traffic is protected from rebound, dust and construction activities. Appropriate shielding shall be provided as required and as directed by the Engineer at no additional cost. The Contactor shall provide suitable protection as needed to protect all exposed areas not to be overlaid such as parapets, drains etc. All damage and defacement resulting form the application shall be cleaned and, or repaired to the Engineer's satisfaction at no additional cost.

(C) Equipment. All equipment to be used for surface preparation shall be approved by the polyester overlay manufacturer's representative and by the Engineer.

(1) Shot Blasting Machine. The Contractor shall use a shot blasting machine for scarifying concrete surfaces that will receive PPC overlay. The use of a rotary milling or hydro-demolition machines will not be allowed.

Shot blasting machine for scarifying concrete surfaces receiving the PPC overlay shall consist of a self-contained mobile unit using steel abrasive to remove sound concrete to achieve the specified surface profile and capable of scarifying a minimum width of two feet per pass. The shot blasting machine shall vacuum and store all material removed from the scarified concrete surface into a self-contained unit. Spent shot shall be removed from the deck after vacuuming by magnetic rollers.

(2) Mobile Mixer for Polyester-Styrene Polymer Concrete. Polyester concrete shall be mixed in mechanically operated mixers. The mixer size shall be limited to 10 cubic yard capacity, unless approved by the Engineer. The mixer shall be equipped to be calibrated to automatically proportion and blend all components of the specified mix on a continuous or intermittent basis as required by the finishing operation, and shall discharge mixed material directly into the finishing machine.

A continuous mixer employing an auger screw/chute device may be approved for use by the Engineer contingent on a demonstration that the continuous mixer can consistently produce a satisfactory product.

The continuous mixer shall be equipped with a metering device that automatically measures and records the aggregate volumes and the corresponding resin volumes. The metering device shall have a readout display gage visible at all times, and shall be capable of printing out the volumes being recorded for each material. All equipment shall be calibrated no more than 6 months prior to use on the project and at intervals not to exceed 6 months.

The aggregate and resin volumes shall be recorded at no greater than five minute intervals along with the date of each recording. A printout of the recordings shall be furnished at the end of each work shift.

The Contractor shall prevent any cleaning chemicals from reaching the polyester concrete mix during mixing operations.

(3) Finishing Machine. Furnish slip-form finishing equipment with an automatic grade control device to strike off the PPC mixture to the established grade and cross section. Fit the finishing equipment with vibrators or other means of consolidating the PPC. Texturing shall be performed using spring steel tines.

(D) Surface Preparation. The repair of potholes, delaminations and areas of poor concrete shall be in accordance with Section 676 - Concrete Deck Repair.

Before placing the overlay, the entire concrete deck shall be thoroughly cleaned by steel shot blasting to ensure proper bonding between the overlay and the concrete substrate. A final surface texture meeting the International Concrete Repair Institute's (ICRI) concrete surface profile numbers 5 through 7 shall be achieved as defined in ICRI Guideline No. 03732 and as shown by Surface Profile Samples available from ICRI, or ASTM E 965 Pavement Macrotextrue Depth of 0.04 to 0.08 inch. Shot blasting is meant to expose the coarse aggregate. The prepared surface shall be free of asphalt material, oil, dirt, rubber, curing compounds, paint carbonation, laitance, weak surface mortar, and other potentially detrimental material which may interfere with the bonding or curing of the overlay. Loosely bonded patches shall be removed and repaired. Moisture and oil free compressed air or high volume leaf blowers shall be used to remove all dust that adheres to the prepared surface. The surface shall then be blown again with moisture and oil free compressed air or high volume leaf blowers. Cleaned pavement surfaces shall not be exposed to vehicular, equipment, or pedestrian traffic other than that required by the overlay operation. If the pavement is contaminated before being overlaid it shall be cleaned again to the satisfaction of the Engineer at no additional cost.

Surface preparation for all bridge joint steel armor surfaces shall be in accordance with the overlay manufacturer's recommendations.

(E) Trial Overlay. The Contractor shall place a trial overlay of PPC using the equipment selected by the Contractor and the production mix and procedure as approved. The Contractor shall notify the Engineer of the time and location of the trial overlay at least seven calendar days prior to the scheduled trial overlay.

The trial overlay shall be placed on a previously cast and cured concrete pad at a location selected by the Contractor and as approved by the Engineer. The plan area of the concrete pad shall be 12 feet minimum in width and 15 feet minimum in length.

The Contractor shall clean the concrete pad surface, mix, place, finish, and cure the PPC overlay, and check the trial overlay for bond in accordance with these Special Provisions. The trial overlay shall be 12 feet wide, 15 feet long and the same thickness as the overlay to be constructed.

The overlay is to be placed using the same equipment as the production work and replicate the field conditions for the production work. The Contractor is to demonstrate to the Engineer the suitability of the proposed means and methods.

During the trial overlay the manufacturer's representative shall determine the initial polyester concrete set time.

The Contractor shall perform three pull-off tests on the trial overlay in accordance with American Concrete Institute 503R - Appendix A. The pull-off tests shall have a minimum tensile bond strength of 250 psi or a failure area, at a depth of 1/8" or more into the base concrete, of no greater than 50% of the test area. The Contractor shall record the pull-off test results and the amount of any failure into the base concrete, and shall provide written documentation of the test results. The Engineer will designate the location of the pull-off tests.

The Contractor shall not begin construction operations at the bridge site receiving the PPC overlay until receiving approval of the completed trial overlay.

After receiving approval of the completed trial overlay, the concrete pad and trail overlay shall become the Contractor's property and shall be removed and disposed of in accordance with all applicable local, state and federal; laws, rules and ordinances.

Monitor airborne emissions in accordance with the written safety plan in accordance with 677.03(A)(2). Results from airborne emissions monitoring of the trial overlay must be submitted to the Engineer and demonstrate to the Engineer's satisfaction the suitability of the airborne emissions monitoring plan before starting production work.

(F) Mixing Polyester-Styrene Polymer Concrete (PPC). Polyester-styrene polymer concrete shall be mixed in mobile mixers conforming to these Special Provisions, and in accordance with the approved mix design. The Contractor shall verify through calibration checks on the aggregate, resin, and initiator that the mix will produce ratios and be placed within the ranges established in the project mix design.

The polyester resin binder in the PPC shall be 12 percent ± 1 percent by weight of the dry aggregate.

One-half percent more resin may be required at working temperatures below 55°F. The Contractor shall determine the exact percentage as approved.

The amount of initiator used in polyester concrete shall be sufficient to produce an initial set time between 30 and 120 minutes during placement. The initial set time will be determined by using an initial-setting time Gillmore needle in accordance with the requirements of ASTM C 266. Accelerators or inhibitors may be required to achieve proper set times and shall be used as recommended by the polyester resin binder supplier and as approved.

The polyester resin binder shall be initiated and thoroughly blended just prior to mixing the aggregate and binder. The polyester concrete shall be thoroughly mixed prior to placing.

(G) Placement of Polyester-Styrene Polymer Concrete (PPC). Time for placement of the overlay over newly repaired deck concrete shall be in accordance with the recommendation of the overlay manufacturer. Application of the HMWM prime coat and the PPC overlay shall not begin if rain is expected. The area receiving the prime coat shall be dry and had no rain for at least 24 hours. Immediately prior to applying the prime coat, the surface receiving the prime coat shall be swept clean by compressed air to remove accumulated dust and any other loose material.

The concrete bridge deck surface temperature shall be between 50°F and 100°F, and the relative humidity less than 85 percent when the prime coat is applied.

The prepared concrete surface shall receive one coat of HMWM primer resin. The promoted/initiated HMWM resin primer shall be worked into the concrete in a manner to completely cover the area to receive the polyester concrete at a rate and method as approved by the manufacturer's representative, and as given in the manufacturer's written instructions.

If the primed surface becomes contaminated, the contaminated area shall be removed by abrasive blasting and reprimed at no additional expense to the State.

The prime coat shall cure for a minimum of 15 minutes before placing the polyester-styrene polymer overlay.

The HMWM prime coat shall be covered with the PPC overlay within two hours of placing the prime coat. PPC shall be placed prior to gelling and within 15 minutes following initiation, whichever occurs first. PPC that is not placed within this time shall be discarded.

If the polyester concrete is not placed over the prime coat within two hours, work shall be suspended and the Contractor shall propose remedial action.

Under no circumstances shall any primer resin or polyester mixture be allowed to run into drains and expansion joints, or otherwise escape the Contractor's collection and containment system.

Expansion joints, drains and grates shall be adequately isolated prior to placing the overlay as approved. Sawing cutting joints will not be allowed.

The surface temperature of the area receiving the polyester concrete and the relative humidity shall be the same as specified above for the HMWM prime coat.

The polyester concrete shall be consolidated to a relative compaction of not less than 97 percent in conformance with California Test 552. The Contractor shall contract with an certified independent testing lab to do the testing in accordance with California Test 552 and the results made available to the State. The cost of testing shall be considered incidental to the pay items of this section and not be paid for separately.

(H) Finishing Polyester-Styrene Polymer Concrete (PPC). Using the approved finishing machine, the polyester concrete shall be struck off to the established grade and cross section and consolidated to the required compaction. Forms shall be coated with suitable bond release agent to permit ready release of forms.

As the finishing machine progresses along the pour, the surface shall be given a final finish by texturing with a comb parallel to the centerline of the bridge. The texture shall be applied immediately behind the finishing machine. The comb shall consist of a single row of metal tines capable of producing 1/8 inch wide striations approximately 3/16 inch in depth at approximately 1 inch spacing. The combs may be operated manually or mechanically, either singly or in gangs (several combs placed end to end). This operation shall be done in a manner that will minimize the displacement of the aggregate particles. The texture shall not extend into areas within 2 feet of the curb line.

The PPC overlay shall receive an abrasive sand finish. The sand finish shall be applied immediately after overlay strike-off and before gelling occurs. Sand shall be broadcast onto the surface to affect a uniform coverage of a minimum of 0.8 pounds per square yard.

The surface texture of polyester concrete surface shall be uniform. The polyester concrete shall be impervious to moisture. To ensure adequate pavement friction the completed overlay surface shall be free of any smooth or glassy areas such as those resulting from insufficient quantities of surface aggregate. Any such surface defects shall be repaired in the manner as recommended by the manufacturer's technical representative and as approved by the Engineer.

Termination edges of the overlay may require application and finishing by hand trowel due to obstructions such as a curb. All hand troweling shall be followed by surface texturing and broadcasting the sand finish while the overlay is still wet.

The Engineer shall check the overlay surface smoothness by Idaho T-87 immediately after the overlay has hardened. The surface shall not vary more than ¼" in 10 ft from the lower edge of the straightedge and 90 percent of the readings shall not exceed 1/8" in10 ft. Overlay surface that does not meet surface smoothness requirements shall be ground until smoothness requirements are met.

The bridge deck areas specified to receive grinding shall be ground in the longitudinal direction. The grinding equipment shall use diamond tipped saw blades mounted on a power driven, self-propelled machine that is specifically designed to texture concrete surfaces. The grinding equipment shall have a blade spacing to provide grooves that are between 0.10 and 0.15 inches wide. The land area between the grooves shall as close as possible match the spacing provided by the texturing comb.

The grinding shall be done in a manner that will not damage the existing bridge deck. Rotary milling machines are not allowed. The Contractor shall demonstrate to the satisfaction of the Engineer that the method and equipment for grinding the PPC overlay are adequate for the intended purpose and will provide satisfactory results. The removal shall not commence until the Contractor receives approval of the grinding equipment.

The Contractor shall contain, collect, and dispose of all debris generated by the grinding operation.

The edges of the polyester concrete overlay shall be tapered when the overlay work is not completed within the allowable lane closure and the overlay. Tapered polyester concrete overlay areas shall be cleaned and prepared in accordance with the manufacturers written instructions.

The beginning and end limits of the overlay shall be provided with a minimum tapered transition of 5 feet between the overlay and the existing roadway grade. Modification of the overlay mix design shall be made within this transition area to allow the overlay to taper to a feathered edge.

Prior to opening the overlay area to vehicular traffic the finished overlay shall be power swept to remove excess loose aggregate and abrasive sand. The Contractor shall demonstrate to the satisfaction of the Engineer that the power broom equipment will not damage the finished overlay. Any damage to the finished overlay caused by the power broom shall be repaired at no additional expense to the State.

(l) Curing Polyester-Styrene Polymer Concrete (PPC). Traffic and equipment shall not be permitted on the PPC overlay after finishing and until the overlay has reached a minimum compressive strength of 3,000 psi as verified by the rebound number determined in accordance with ASTM C 805. Overlays shall be protected from moisture after finishing during the curing period. The maximum curing time for the overlay to attain a compressive strength of 3,000 psi shall be four hours.

Areas in the polyester concrete that do not totally cure, or that fail to attain the minimum compressive strength in six hours, shall be removed and replaced with new polyester concrete material by the Contractor, at no additional expense to the State.

(J) Checking Polyester-Styrene Polymer Concrete (PPC) for Bond. After the requirements for curing have been met, a chain drag or other appropriate tool or device shall be used by the Contractor in the presence of the Engineer to determine if any un-bonded areas exist between the new overlay and the mating concrete surface. PPC in unbonded areas shall be removed and replaced with PPC by the Contractor, at no additional expense to the State.

(K) Checking Polyester-Styrene Polymer Concrete (PPC) for Thickness. The State may perform random checks of PPC thickness. Areas found deficient shall be removed and replaced at no cost to the State.

(L) Temporary and Permanent Pavement Markings. Temporary pavement markings that are damaged or missing within the daily area of work shall be installed or replaced prior to the close of day. This work shall conform to Section 629 - Pavement Markings.

Permanent pavement markings shall be installed within 30 days after completion of the work.

550 **(M)**

STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY

DEPARTMENT OF TRANSPORTATION
ENGINEERING SERVICE CENTER
Transportation Laboratory
P. O. Box 19128
Sacramento, California 95819

METHOD OF TEST FOR RELATIVE COMPACTION OF POLYMER CONCRETE UTILIZING NUCLEAR GAGES

CAUTION: Prior to handling test materials, performing equipment setups, and/or conducting this method, testers are required to read "**SAFETY AND HEALTH**" in Part H of this method. It is the responsibility of the user of this method to consult and use departmental safety and health practices and determine the applicability of regulatory limitations before any testing is performed.

A. SCOPE

This method describes a simple procedure to determine the relative compaction of a polymer concrete overlay. It describes a procedure to obtain "standard density" and "in-place density" of compacted polymer concrete.

B. APPARATUS AND MATERIALS

1. A nuclear gage and standardizing blocks are required as described in California Test 231.

2. A rigid test frame shall provide a square test area, approximately 450 by 450 mm. It shall be constructed from angle iron or similar metal. The height of the test frame shall be the nominal thickness of the overlay.

3. A wooden strike-off block shall conform to the following dimensions: approximately 40 by 85 by 600 mm.

4. A trowel is required.

5. A metal shovel or large scoop is required to place the material in the rigid test frame.

6. Plastic containers (4 to 20 L) are used to transport materials and clean equipment.

7. A rubber-headed mallet shall weigh 0.60 ± 0.25 kg.

8. Square polyethylene sheets, approximately 450 by 450 mm with a thickness between 0.075 and 0.25 mm are required.

C. STANDARDIZATION OF THE NUCLEAR GAGE

Standardize the nuclear gage as described in California Test 231.

D. STANDARD DENSITY TEST

1. Secure the rigid test frame to the prepared surface to be overlaid (one method is to place a heavy mass on top of each side extension). See Figure 1. Immediately after final mixing of the polymer concrete, obtain a representative sample from the mixer and place it at the center of the rigid test frame. The sample must completely fill the 450 by 450-mm test area from the base to the top of the frame. Use dry, clean equipment (plastic containers and metal shovel or

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large scoop) to transport the polymer concrete from the mixer to the rigid test frame.

2. Use the wooden block to strike off the fresh polymer concrete. Place the block on top of the test area, with its 85-mm width touching the polymer concrete surface and its ends extending beyond the rigid frame. Strike the top of the block with the mallet at various locations. Move the block, and restrike as needed, to achieve uniform consolidation throughout the test area. The rigid frame must remain in full contact with the surface to be overlaid during the consolidation process. After consolidation, flushed resin should be evenly distributed throughout the surface of the polymer concrete.

3. Remove the wooden block from the test area and place a sheet of polyethylene on top of the polymer concrete. Gently place the nuclear gage on top of the plastic sheet at the center of the test area. Take a 1-min reading with the nuclear gage in the AC Backscatter Mode. Turn the nuclear gage 180 degrees and obtain an additional 1-min reading. Average the two readings. Calculate the count ratio by dividing the count value by the average of the two readings. Use the calibration chart for the nuclear gage to determine the in-place density. See California Test 231. This obtained value represents the standard compacted density for one day's use. If there is a significant change in the resin content, the depth of the overlay, the aggregate source or gradation, a new standard density must be determined.

4. For a valid test, the following items must be completed within a 7-min period: sampling the polymer concrete, filling the rigid frame with material, compacting the polymer concrete, and obtaining the nuclear gage readings.

NOTE 1:

Immediately after all nuclear gage readings are recorded, quickly clean the rigid test frame and all equipment with cleaning solvent before the polymer concrete gels. Properly dispose of all polymer concrete materials used in the compaction test.

E. IN-PLACE DENSITY TEST

1. The relatative compaction test must be taken immediately after the polymer concrete has been placed and finished, and before any surface sanding or texturing. Place a sheet of polyethylene on the polymer concrete surface and gently place the nuclear gage on the polyethylene sheet. Take a 1-min reading with the nuclear gage in the AC Backscatter Mode. Calculate the in-place density and the relative compaction of the material at the site. The formula to calculate percent relative compaction is:

$$\frac{\text{(In-Place Density)}}{\text{(Standard Density)}} \times 100 = \%\ \text{Relative Compaction}$$

2. The % relative compaction is rounded to the nearest whole number.

NOTE 2:

If a relative compaction value is less than specified by the contract, the Resident Engineer should be notified immediately. To date, some polymer concrete overlays have failed due to insufficient compaction of the material at the time of placement. Factors that cause inadequate compaction include:

- Insufficient resin in the polymer concrete mixture, insufficient quantities of catalysts and/or out-dated polymer materials.
- Insufficient or incomplete mixing (dry spots in the mix)
- Polymerization of the material prior to the compaction efforts
- The finishing machine moved too quickly to achieve adequate compaction
- Malfunctioning vibrators on the finishing machine

- Inadequate compaction effort attempted

F. REPORTING OF RESULTS

1. Record relative compaction values for each test area. (Do not average relative compaction values from two or more test areas).

2. Record the operator's name, the CHC number of the nuclear gage, date of test and time of test.

3. Sketch the location of each test area (record the km post or station and distance left or right of centerline).

G. PRECAUTIONS

When handling polymer concrete materials, use suitable protective clothing and eye protection. Respiratory equipment is required in poorly ventilated areas.

Polymer materials can be susceptible to burning prior to polymerization. Do not place these materials near an open flame or extreme heat.

Polymer resins and catalysts should always be mixed using guidelines and proportions recommended by the manufacturer.

H. SAFETY AND HEALTH

This method involves hazardous materials and extreme care must be used performing tests.

Prior to sampling, handling or testing, Caltrans personnel are required to read Sections 5.1, 5.2, 10.4, 12.1, 12.2 and 12.3 of the Laboratory Safety Manual. Requirements for general safety principles, standard operating procedures, protective apparel and how to handle spills, accidents and emergencies are discussed in the above-noted references.

Several types of polymer materials may be considered for overlay use. Testers are required to read the Materials Safety Data Sheets for the applicable polymer type specified. Prior to handling polymer materials in poorly ventilated areas, testers are required use appropriate respiratory equipment. Prior to the anticipated work, testers should be fitted for respiratory equipment according to the procedures outlined in Chapter 15 of Caltrans Safety Manual.

This method does not purport to address all the safety problems associated with its use. It is the responsibility of the user of this test method to consult and establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use. Users of this method do so at their own risk.

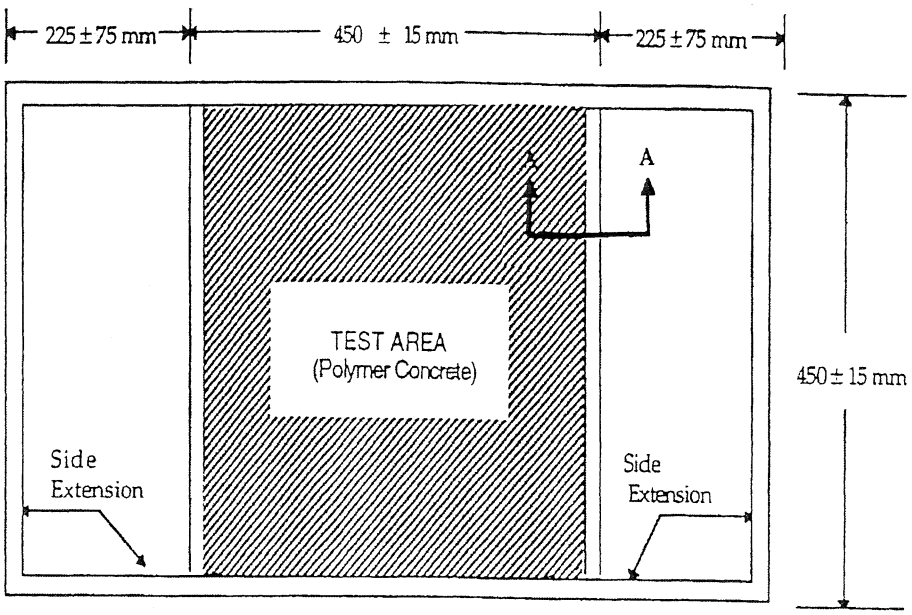
REFERENCE:

California Test 231

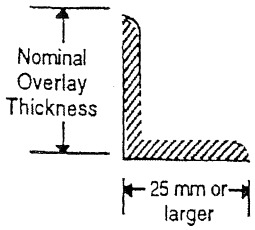
End of Text (California Test 552 contains 4 pages)

559 **(P)**

California Test 552
December 1995



PLAN VIEW
(Polymer Concrete Compaction Testing)



CROSS SECTION AT A-A

Note: More than one rigid test frame may be required for a project. A rigid test frame with a 50-mm height would be unacceptable for use on a project with a specified overlay thickness of 25 mm.

FIGURE 1 - RIGID TEST FRAME

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562 **(Q)**

Idaho Standard Practice for

Pavement Straightedge Procedures

Idaho IR-87-99

ITD Standard Specification Designation: Idaho T-87

1 Scope

1.1 This method establishes procedures for making straightedge measurements on the riding surfaces of pavements and is intended for use with the hand-held 10 ft. (3 m) straightedge.

2 Apparatus

2.1 The apparatus shall consist of a 10 ft. (3 m) straightedge. The straightedge shall be visually straight when checked periodically against a taut fine (about 1/64 in. or 0.5 mm diameter) wire.

3 Procedure

3.1 Surface irregularities shall be measured from the straightedge to various points on the pavement surface below the straightedge. The straightedge shall be firmly supported by the pavement.

3.2 Tests for surface irregularities shall be made parallel to centerline and normal (transverse) to centerline as required to verify conformance with specified limits.

3.3 All transverse construction joints shall be measured. Make these measurements with the straightedge centered on each joint.

3.4 Individual judgement shall be exercised when taking measurements on short, steep, super-elevated sections and crowned sections of short radii such as at intersections of city streets, etc.

3.5 On bridge decks where the specifications require 90 percent of the readings to be less than 1/8 in. (3 mm), measurements shall be taken in each wheel path in continuous lines as provided in paragraph 3.2 above for the full length of the structure. In addition, at locations determined by the Engineer, straightedge measurements are to be taken perpendicular to centerline. These transverse measurements may be made either in continuous lines or as individual 10 ft. (3 m) samples at selected locations. Measure the lengths of irregularities, which are less than 1\8 in. (3 mm) below the straightedge, to the nearest 1 in. (25 mm). Add up the lengths having less than 1/8 in. (3 mm) deviation within each 10 ft. (3 m) increment, divide by the straightedge length and multiply by 100 to obtain the percentage less than 1/8 in. (3 mm). Also measure any deviations greater than 1/4 in. (5 mm) when the specification requires. Measure joints separately as provided in Paragraph 3.3 above.

677.04 Measurement.

Polyester concrete overlay will be paid for on a lump sum basis. The Engineer will not measure polyester concrete overlay for payment.

The Engineer will not measure Temporary and Permanent Pavement Markings for payment.

677.05 Payment.

The Engineer will pay for accepted pay items listed below at the contract price per unit, as shown in the proposal schedule. Payment will be full compensation for the work prescribed in this section and the contract documents.

Pay Item	Pay Unit
Polyester Concrete Overlay, Eastbound Viaduct	Lump Sum

The Engineer will pay for 100 percent of the contract bid price upon completion of the polyester concrete overlay within the limits specified. No payment will be paid for unbonded areas as determined in Subsection 677.03(J) or areas which do not have required thickness as determined in Subsection 677.03(K)."

The Engineer will pay for the accepted Permanent Pavement Markings under Section 629 - Pavement Markings.

The Engineer will not pay for Temporary Pavement Markings separately. The Engineer will consider the cost as included in the contract pay items in this Section.

END OF SECTION 677

General Decision Number: HI130001 04/19/2013 HI1

Superseded General Decision Number: HI20120001

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

Modification Number	Publication Date
0	01/04/2013
1	01/11/2013
2	02/15/2013
3	03/15/2013
4	03/29/2013
5	04/05/2013
6	04/19/2013

ASBE0132-001 08/29/2010

	Rates	Fringes
Asbestos Workers/Insulator: Includes application of all insulating materials, protective coverings, coatings and finishes to all types of mechanical systems. Also the application of firestopping material for wall openings and penetrations in walls, floors, ceilings and curtain walls	$ 36.65	22.24

BOIL0627-005 01/01/2013

	Rates	Fringes
BOILERMAKER	$ 35.20	27.35

BRHI0001-001 09/03/2012

	Rates	Fringes
BRICKLAYER		
Bricklayers and Stonemasons	$ 35.35	22.92
Pointers, Caulkers and Weatherproofers	$ 35.60	22.92

BRHI0001-002 09/03/2012

	Rates	Fringes
Tile, Marble & Terrazzo Worker		
Terrazzo Base Grinders	$ 33.79	22.92
Terrazzo Floor Grinders and Tenders	$ 30.74	22.92
Tile, Marble and Terrazzo Workers	$ 35.60	22.92

CARP0745-001 09/03/2012

	Rates	Fringes
Carpenters: Carpenters; Hardwood Floor Layers; Patent Scaffold Erectors (14 ft. and over); Piledrivers;		

Pneumatic Nailers; Wood Shinglers and Transit and/or Layout Man	$ 39.25	19.92
Millwrights and Machine Erectors	$ 39.50	19.92
Power Saw Operators (2 h.p. and over)	$ 39.40	19.92

CARP0745-002 09/03/2012

	Rates	Fringes
Drywall and Acoustical Workers and Lathers	$ 39.50	19.92

ELEC1186-001 02/17/2013

	Rates	Fringes
Electricians:		
Cable Splicers	$ 45.27	26.40
Electricians	$ 41.15	25.14
Telecommunication worker	$ 23.20	17%+6.35

ELEC1186-002 02/17/2013

	Rates	Fringes
Line Construction:		
Cable Splicers	$ 45.27	26.40
Groundmen/Truck Drivers	$ 30.86	21.99
Heavy Equipment Operators	$ 37.04	23.88
Linemen	$ 41.15	25.14
Telecommunication worker	$ 23.20	17%+$6.35

ELEV0126-001 01/01/2013

	Rates	Fringes
ELEVATOR MECHANIC	$ 51.21	25.185+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 09/03/2012

	Rates	Fringes
Diver (Aqua Lung) (Scuba))		
Diver (Aqua Lung) (Scuba) (over a depth of 30 feet)	$ 60.00	26.76
Diver (Aqua Lung) (Scuba) (up to a depth of 30 feet)	$ 50.63	26.76
Stand-by Diver (Aqua Lung) (Scuba)	$ 41.25	26.76
Diver (Other than Aqua Lung)		
Diver (Other than Aqua Lung)	$ 60.00	26.76
Diver Tender (Other than Aqua Lung)	$ 38.22	26.76
Stand-by Diver (Other than Aqua Lung)	$ 41.25	26.76
Helicopter Work		
Airborne Hoist Operator for Helicopter	$ 39.80	26.76
Co-Pilot of Helicopter	$ 39.94	26.76
Pilot of Helicopter	$ 40.11	26.76
Power equipment operator - tunnel work		
GROUP 1	$ 36.24	26.76
GROUP 2	$ 36.35	26.76
GROUP 3	$ 36.52	26.76
GROUP 4	$ 36.79	26.76
GROUP 5	$ 37.10	26.76
GROUP 6	$ 37.75	26.76
GROUP 7	$ 38.07	26.76

GROUP 8	$ 38.18	26.76
GROUP 9	$ 38.29	26.76
GROUP 9A	$ 38.52	26.76
GROUP 10	$ 38.58	26.76
GROUP 10A	$ 38.73	26.76
GROUP 11	$ 38.88	26.76
GROUP 12	$ 39.24	26.76
GROUP 12A	$ 39.60	26.76
Power equipment operators:		
GROUP 1	$ 35.94	26.76
GROUP 2	$ 36.05	26.76
GROUP 3	$ 36.22	26.76
GROUP 4	$ 36.49	26.76
GROUP 5	$ 36.80	26.76
GROUP 6	$ 37.45	26.76
GROUP 7	$ 37.77	26.76
GROUP 8	$ 37.88	26.76
GROUP 9	$ 37.99	26.76
GROUP 9A	$ 38.22	26.76
GROUP 10	$ 38.28	26.76
GROUP 10A	$ 38.43	26.76
GROUP 11	$ 38.58	26.76
GROUP 12	$ 38.94	26.76
GROUP 12A	$ 39.30	26.76
GROUP 13	$ 36.22	26.76
GROUP 13A	$ 36.49	26.76
GROUP 13B	$ 36.80	26.76
GROUP 13C	$ 37.45	26.76
GROUP 13D	$ 37.77	26.76
GROUP 13E	$ 37.88	26.76

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1: Fork Lift (up to and including 10 tons); Partsman (heavy duty repair shop parts room when needed).

GROUP 2: Conveyor Operator (Handling building material); Hydraulic Monitor; Mixer Box Operator (Concrete Plant).

GROUP 3: Brakeman; Deckhand; Fireman; Oiler; Oiler/Gradechecker; Signalman; Switchman; Highline Cableway Signalman; Bargeman; Bunkerman; Concrete Curing Machine (self-propelled, automatically applied unit on streets, highways, airports and canals); Leveeman; Roller (5 tons and under); Tugger Hoist.

GROUP 4: Boom Truck or dual purpose "A" Frame Truck (5 tons or less); Concrete Placing Boom (Building Construction); Dinky Operator; Elevator Operator; Hoist and/or Winch (one drum); Straddle Truck (Ross Carrier, Hyster and similar).

GROUP 5: Asphalt Plant Fireman; Compressors, Pumps, Generators and Welding Machines ("Bank" of 9 or more, individually or collectively); Concrete Pumps or Pumpcrete Guns; Lubrication and Service Engineer (Grease Rack); Screedman.

GROUP 6: Boom Truck or Dual Purpose "A"Frame Truck (over 5 tons); Combination Loader/Backhoe (up to and including 3/4 cu. yd.); Concrete Batch Plants (wet or dry); Concrete Cutter, Groover and/or Grinder (self-propelled unit on streets, highways, airports, and canals); Conveyor or Concrete Pump (Truck or Equipment Mounted); Drilling Machinery (not to apply to waterliners, wagon drills or jack hammers); Fork Lift (over 10 tons); Loader (up to and including 3 and 1/2 cu. yds); Lull High Lift (under 40 feet); Lubrication and Service Engineer (Mobile); Maginnis Internal Full Slab Vibrator (on airports, highways, canals and warehouses); Man or Material Hoist; Mechanical Concrete Finisher (Large Clary, Johnson Bidwell, Bridge Deck and similar); Mobile Truck Crane Driver; Portable Shotblast Concrete Cleaning Machine; Portable Boring Machine (under streets, highways, etc.); Portable Crusher; Power Jumbo Operator (setting slip forms, etc., in tunnels); Rollers (over 5 tons); Self-propelled Compactor (single engine); Self-propelled Pavement Breaker; Skidsteer Loader with attachments; Slip Form Pumps (Power driven by hydraulic, electric, air, gas, etc., lifting device for concrete forms); Small Rubber Tired Tractors; Trencher (up to and including 6 feet); Underbridge Personnel Aerial Platform (50 feet of platform or less).

GROUP 7: Crusher Plant Engineer, Dozer (D-4, Case 450, John Deere 450, and similar); Dual Drum Mixer, Extend Lift; Hoist and/or Winch (2 drums); Loader (over 3 and 1/2 cu. yds. up to and including 6 yards.); Mechanical Finisher or Spreader Machine (asphalt), (Barber Greene and similar) (Screedman required); Mine or Shaft Hoist; Mobile Concrete Mixer (over 5 tons); Pipe Bending Machine (pipelines only); Pipe Cleaning Machine (tractor propelled and supported); Pipe Wrapping Machine (tractor propelled and supported); Roller Operator (Asphalt); Self-Propelled Elevating Grade Plane; Slusher Operator; Tractor (with boom) (D-6, or similar); Trencher (over 6 feet and less than 200 h.p.); Water Tanker (pulled by Euclids, T-Pulls, DW-10, 20 or 21, or similar); Winchman (Stern Winch on Dredge).

GROUP 8: Asphalt Plant Operator; Barge Mate (Seagoing); Cast-in-Place Pipe Laying Machine; Concrete Batch Plant (multiple units); Conveyor Operator (tunnel); Deckmate; Dozer (D-6 and similar); Finishing Machine Operator (airports and highways); Gradesetter; Kolman Loader (and similar); Mucking Machine (Crawler-type); Mucking Machine (Conveyor-type); No-Joint Pipe Laying Machine; Portable Crushing and Screening Plant; Power Blade Operator (under 12); Saurman Type Dragline (up to and including 5 yds.); Stationary Pipe Wrapping, Cleaning and Bending Machine; Surface Heater and Planer Operator, Tractor (D-6 and similar); Tri-Batch Paver; Tunnel Badger; Tunnel Mole and/or Boring Machine Operator Underbridge Personnel Aerial Platform (over 50 feet of platform).

GROUP 9: Combination Mixer and Compressor (gunite); Do-Mor Loaderand Adams Elegrader; Dozer (D-7 or equal); Wheel and/or Ladder Trencher (over 6 feet and 200 to 749 h.p.).

GROUP 9A: Dozer (D-8 and similar); Gradesetter (when required by the Contractor to work from drawings, plans or specifications without the direct supervision of a foreman or superintendent); Push Cat; Scrapers (up to and including 20 cu. yds); Self-propelled Compactor with Dozer; Self-Propelled, Rubber-Tired Earthmoving Equipment (up to and including 20 cu. yds) (621 Band and similar); Sheep's Foot; Tractor (D-8 and similar); Tractors with boom (larger than D-6, and similar).

GROUP 10: Chicago Boom; Cold Planers; Heavy Duty Repairman or Welder; Hoist and/or Winch (3 drums); Hydraulic Skooper (Koehring and similar); Loader (over 6 cu. yds. up to and including 12 cu. yds.); Saurman type Dragline (over 5 cu. yds.); Self-propelled, rubber-tired Earthmoving Equipment (over 20 cu. yds. up to and including 31 cu. yds.) (637D and similar); Soil Stabilizer (P & H or equal); Sub-Grader (Gurries or other automatic type); Tractors (D-9 or equivalent, all attachments); Tractor (Tandem Scraper); Watch Engineer.

GROUP 10A: Boat Operator; Cable-operated Crawler Crane (up to and including 25 tons); Cable-operated Power Shovel, Clamshell, Dragline and Backhoe (up to and including 1 cu. yd.); Dozer D9-L; Dozer (D-10, HD41 and similar) (all attachments); Gradall (up to and including 1 cu. yd.); Hydraulic Backhoe (over 3/4 cu. yds. up to and including 2 cu. yds.); Mobile Truck Crane Operator (up to and including 25 tons) (Mobile Truck Crane Driver Required); Self-propelled Boom Type Lifting Device (Center Mount) (up to and including 25 tons) (Grove, Drott, P&H, Pettibone and similar; Trencher (over 6 feet and 750 h.p. or more); Watch Engineer (steam or electric).

GROUP 11: Automatic Slip Form Paver (concrete or asphalt); Band Wagon (in conjunction with Wheel Excavator); Cable-operated Crawler Cranes (over 25 tons but less than 50 tons); Cable-operated Power Shovel, Clamshell, Dragline and Backhoe (over 1 cu. yd. up to 7 cu. yds.); Gradall (over 1 cu. yds. up to 7 cu. yds.); DW-10, 20, etc. (Tandem); Earthmoving Machines (multiple propulsion power units and 2 or more Scrapers) (up to and including 35 cu. yds.," struck" m.r.c.); Highline Cableway; Hydraulic Backhoe (over 2 cu. yds. up to and including 4 cu. yds.); Leverman; Lift Slab Machine; Loader (over 12 cu. yds); Master Boat Operator; Mobile Truck Crane Operator (over 25

tons but less than 50 tons); (Mobile Truck Crane Driver required); Pre-stress Wire Wrapping Machine; Self-propelled Boom-type Lifting Device (Center Mount) (over 25 tons m.r.c); Self-propelled Compactor (with multiple-propulsion power units); Single Engine Rubber Tired Earthmoving Machine (with Tandem Scraper); Tandem Cats; Trencher (pulling attached shield).

GROUP 12: Clamshell or Dipper Operator; Derricks; Drill Rigs; Multi-Propulsion Earthmoving Machines (2 or more Scrapers) (over 35 cu. yds "struck"m.r.c.); Operators (Derricks, Piledrivers and Cranes); Power Shovels and Draglines (7 cu. yds. m.r.c. and over); Self-propelled rubber-tired Earthmoving equipment (over 31 cu. yds.) (657B and similar); Wheel Excavator (up to and including 750 cu. yds. per hour); Wheel Excavator (over 750 cu. yds. per hour).

GROUP 12A: Dozer (D-11 or similar or larger); Hydraulic Excavators (over 4 cu. yds.); Lifting cranes (50 tons and over); Pioneering Dozer/Backhoe (initial clearing and excavation for the purpose of providing access for other equipment where the terrain worked involves 1-to-1 slopes that are 50 feet in height or depth, the scope of this work does not include normal clearing and grubbing on usual hilly terrain nor the excavation work once the access is provided); Power Blade Operator (Cat 12 or equivalent or over); Straddle Lifts (over 50 tons); Tower Crane, Mobile; Traveling Truss Cranes; Universal, Liebher, Linden, and similar types of Tower Cranes (in the erection, dismantling, and moving of equipment there shall be an additional Operating Engineer or Heavy Duty Repairman); Yo-Yo Cat or Dozer.

GROUP 13: Truck Driver (Utility, Flatbed, etc.)

GROUP 13A: Dump Truck, 8 cu.yds. and under (water level); Water Truck (up to and including 2,000 gallons).

GROUP 13B: Water Truck (over 2,000 gallons); Tandem Dump Truck, over 8 cu. yds. (water level).

GROUP 13C: Truck Driver (Semi-trailer. Rock Cans, Semi-Dump or Roll-Offs).

GROUP 13D: Truck Driver (Slip-In or Pup).

GROUP 13E: End Dumps, Unlicensed (Euclid, Mack, Caterpillar or similar); Tractor Trailer (Hauling Equipment); Tandem Trucks hooked up to Trailer (Hauling Equipment)

BOOMS AND/OR LEADS (HOURLY PREMIUMS):

The Operator of a crane (under 50 tons) with a boom of 80 feet or more (including jib), or of a crane (under 50 tons) with leads of 100 feet or more, shall receive a per hour premium for each hour worked on said crane (under 50 tons) in accordance with the following schedule:

Booms of 80 feet up to but not including 130 feet or Leads of 100 feet up to but not including 130 feet	0.50
Booms and/or Leads of 130 feet up to but not including 180 feet	0.75
Booms and/or Leads of 180 feet up to and including 250 feet	1.15
Booms and/or Leads over 250 feet	1.50

The Operator of a crane (50 tons and over) with a boom of 180 feet or more (including jib) shall receive a per hour premium for each hour worked on said crane (50 tons and over) in accordance with the following schedule:

Booms of 180 feet up to and including 250 feet	1.25
Booms over 250 feet	1.75

ENGI0003-004 09/03/2012

	Rates	Fringes

Dredging: (Boat Operators)		
Boat Deckhand	$ 36.22	26.76
Boat Operator	$ 38.43	26.76
Master Boat Operator	$ 38.58	26.76
Dredging: (Clamshell or Dipper Dredging)		
GROUP 1	$ 38.94	26.76
GROUP 2	$ 38.28	26.76
GROUP 3	$ 37.88	26.76
GROUP 4	$ 36.22	26.76
Dredging: (Derricks)		
GROUP 1	$ 38.94	26.76
GROUP 2	$ 38.28	26.76
GROUP 3	$ 37.88	26.76
GROUP 4	$ 36.22	26.76
Dredging: (Hydraulic Suction Dredges)		
GROUP 1	$ 38.58	26.76
GROUP 2	$ 38.43	26.76
GROUP 3	$ 38.28	26.76
GROUP 4	$ 38.22	26.76
Group 5	$ 36.63	23.94
GROUP 5	$ 37.88	26.76
Group 6	$ 36.52	23.94
GROUP 6	$ 37.77	26.76
Group 7	$ 34.97	23.94
GROUP 7	$ 36.22	26.76

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 09/03/2012

	Rates	Fringes
Power Equipment Operators (PAVING)		
(10) Cold Planer	$ 37.75	26.23
(10)Loader (2 1/2 cu. yds. and under)	$ 36.92	26.23
(10)Soil Stabilizer	$ 37.75	26.23
(11)Loader (over 2 1/2 cu. yds. to and including 5 cu. yds.)	$ 37.24	26.23
(3)Roller Operator (five tons and under)	$ 35.69	26.23
(5)Screed Person	$ 36.92	26.23
(6)Combination Loader/Backhoe (up to 3/4 cu.yd.)	$ 34.98	26.23
(6)Concrete Saws and/or Grinder (self-propelled unit on streets, highways, airports and canals)	$ 36.92	26.23
(6)Roller Operator (over five tons)	$ 37.12	26.23
(7)Combination		

Loader/Backhoe (over 3/4 cu.yd.)	$ 35.96	26.23
(8) Asphalt Plant Operator	$ 37.35	26.23
Asphalt Concrete Material Transfer	$ 36.92	26.23
Asphalt Raker	$ 35.96	26.23
Asphalt Spreader Operator	$ 37.44	26.23
Grader	$ 37.75	26.23
Laborer, Hand Roller	$ 33.19	26.23

IRON0625-001 09/01/2012

	Rates	Fringes
Ironworkers:	$ 34.75	28.41

a. Employees will be paid $.50 per hour more while working in tunnels and coffer dams; $1.00 per hour more when required to work under or are covered with water (submerged) and when they are required to work on the summit of Mauna Kea, Mauna Loa or Haleakala.

LABO0368-001 09/03/2012

	Rates	Fringes
Laborers:		
Driller	$ 32.30	15.96
Final Clean Up	$ 22.70	11.67
Gunite Operator & High Scaler	$ 31.80	15.96
Laborer I	$ 31.30	15.96
Laborer II	$ 28.70	15.96
Powderman	$ 32.30	15.96
Window Washer (bosun chair)	$ 30.80	15.96

LABORERS CLASSIFICATIONS

Laborer I: Asbestos Removal Worker (EPA certified workers); 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, Welding, Signalling, Choke Setting, and Rigging in connection with Laborers' work (except demolition); 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; 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; Falling, bucking, yarding, loading or burning of all trees or timber on construction site; Forklift (9 ft. and under); 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, or heat welding for sewer 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); Installation of lightweight backfill; Jackhammer Operator; Jacking of slip forms: All semi and unskilled work connected therewithin; Laying of all multi-cell conduit or multi-purpose pipe; Lead base paint abatement laborers (EPA certified workers); Magnesite and Mastic Workers (Wet or Dry)(including mixer operator); Mason Tender,Mortar Man; Mortar Mixer (Block, Brick, Masonry, and Plastering); Nozzleman (Sandblasting and/or Water Blasting): handling, placing and opertion 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, 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 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); 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; 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: Air Blasting; Appliance Handling (job site) (after delivery and unloading in storage area); Asphalt Plant Laborer; Backfilling, Grading and all other labor connected therewith; Boring Machine; Bridge Laborer; Burning of all debris (crates, boxes, packaging waste materials); Chainman, Rodmen, and Grade Markers; Cleaning and Clearing of all debris; 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; Cleanup of Grounds and Buildings (other than "Light Clean-Up") (Janitorial Laborer); Clean-up of right-of-way; Clearing and slashing of brush or trees by hand or mechanical cutting; 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); Cribbers, Shorer, Lagging, Sheeting, and Trench Jacking and Bracing, Hand-Guided Lagging Hammer Whaling Bracing; 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, burning or cutting, breaking away, cleaning and removal of all masonry, wood or metal fixtures for salvage or scrap, All hooking, unhooking, signaling of materials for salvage or scrap removed by crane or derrick; Digging under streets, roadways, aprons or other paved surfaces; Chuck Tender, Outside Nipper; Dry-packing of concrete (plugging and filling of she-bolt holes); Excavation, Preparation of street ways and bridges; Fence and/or Guardrail Erector: Dismantling and/or re-installation of all fence; Finegrader; Firewatcher; Flagman (Coning, preparing, stablishing and removing portable roadway barricade devices); Signal Men on all construction work defined herein, including Traffic Control Signal Men at construction site; Garbage and Debris Handlers and Cleaners; Gas, Pneumatic, and Electric Tools, not listed Group 1 (except Rototiller); General Clean-up: sweeeping, cleaning, washdown, wiping of construction facility, and equipment (other than "Light Clean-up" [Janitorial] Laborer); General Excavation and Grading (all 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; General Laborer; Ground and Soil Treatment Work (Pest Control); Junk Yard Laborers (same as Salvage Yard); Landscape Nursery Laborers; Laser Beam "Target Man" in connection with Laborers' work; Layout Person for Plastic (when work involves waterproofing for waterponds, artificial lakes and reservoirs); Limbers, Brush Loaders, and Pilers; Loading, Unloading, carrying, distributing and handling of all rods and material for use in reinforcing concrete construction (except when a derrick or outrigger operated by other than hand power is used); Loading, unloading, sorting, stockpiling, handling and distribution of water mains, gas mains and all pipes; Loading and unloading of all materials, fixtures, furnishings and appliances from point of delivery to stockkpile to point of installation; hooking and signalling 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 (including Hod Carrier); 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; Removal of surplus material; 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 (Pot Tender): Hoses and pots or markers; Scaffolds: Erection, planking and removal of all scaffolds used for support for lathers, plasters, brick layers, masons, and other construction trades crafts; Scaffolds: (Specially designed by carpenters) laborers shall tend said carpenter on erection and dismantling thereof, preparation for foundation or mudsills, maintenance; Scraping of floors; Screeds: Handling of all screeds to be reused; handling, dismantling and conveyance of screeds; Setting, leveling and securing or bracing of metal or other road forms and expansion joints; Sheeting Piling/trench shoring (handling and placing of skip sheet or wood plank trench shoring); Ship Scalers; Sign Erector (subdivision traffic, regulatory, and street-name signs); Sloper; Slurry Seal Crews (Mixer Operator, Applicator, Squeegee Man, Shuttle Man, Top Man); Snapping of wall ties and removal of tie rods; Soil Test operations of semi and unskilled labor such as filling sand bags; Striper (Asphalt, Concrete or other Paved Surfaces); Tagging and Signaling of all building materials into high-rise units; Tool Room Attendant (Job Site); Traffic Delineating Device Applicator; Underpinning, lagging, bracing, propping and shoring, loading, signaling, right-of-way clearance along the route of movement, The clearance of new site, excavation of foundation when moving a house or structure from old site to new site; Utilities employees; Water Man; Waterscape/Hardscape Laborers; Wire Mesh Pulling (all concrete pouring operations); Wrecking, stripping, dismantling and handling concrete forms an false work.

LABO0368-002 09/03/2012

	Rates	Fringes
Landscape & Irrigation		
Laborers		
GROUP 1	$ 22.15	8.99
GROUP 2	$ 22.65	8.99
GROUP 3	$ 18.65	8.99

LABORERS CLASSIFICATIONS

GROUP 1: Installation of non-potable permanent or temporary irrigation water systems performed for the purposes of Landscaping and Irrigation architectural horticultural work; the installation of drinking fountains and permanent or temporary irrigation systems using potable water for Landscaping and Irrigation architectural horticultural purposes only. This work includes (a) the installation of all heads, risers, valves, valve boxes, vacuum breakers (pressure and non-pressure), low voltage electrical lines and, provided such work involves electrical wiring that will carry 24 volts or less, the installation of sensors, master control panels, display boards, junction boxes, conductors, including all other components for controllers, (b) and metallic (copper, brass, galvanized, or similar) pipe, as well as PVC or other plastic pipe including all work incidental thereto, i.e., unloading, handling and distribution of all pipes fittings, tools, materials and equipment, (c) all soldering work in connection with the above whether done by torch, soldering iron, or other means; (d) tie-in to main lines, thrust blocks (both precast and poured in place), pipe hangers and supports incidental to installation of the entire irrigation system, (e) making of pressure tests, start-up testing, flushing, purging, water balancing, placing into operation all irrigation equipment, fixtures and appurtenances installed under this agreement, and (f) the fabrication, replacement, repair and servicing oflandscaping and irrigation systems. Operation of hand-held gas, air, electric, or self-powered tools and equipment used in the performance of Landscape and Irrigation work in connection with architectural horticulture; Choke-setting, signaling, and rigging for equipment operators on job-site in the performance of such Landscaping and Irrigation work; Concrete work (wet or dry) performed in connection with such Landscaping and Irrigation work. This work shall also include the setting of rock, stone, or riprap in connection with such Landscape, Waterscape, Rockscape, and Irrigation work;

Grubbing, pick and shovel excavation, and hand rolling or tamping in connection with the performance of such Landscaping and Irrigation work; Sprigging, handseeding, and planting of trees, shrubs, ground covers, and other plantings and the performance of all types of gardening and horticultural work relating to said planting; Operation of flat bed trucks (up to and including 2 1/2 tons).:

GROUP 2. Layout of irrigation and other non-potable irrigation water systems and the layout of drinking fountains and other potable irrigation water systems in connection with such Landscaping and Irrigation work. This includes the layout of all heads, risers, valves, valve boxes, vacuum breakers, low voltage electrical lines, hydraulic and electrical controllers, and metallic (coppers, brass, galvanized, or similar) pipe, as well as PVC or other plastic pipe. This work also includes the reading and interpretation of plans and specifications in connection with the layout of Landscaping, Rockscape, Waterscape, and Irrigation work; Operation of Hydro-Mulching machines (sprayman and driver), Drillers, Trenchers (riding type, Davis T-66, and similar) and fork lifts used in connection with the performance of such Landscaping and Irrigation work; Tree climbers and chain saw tree trimmers, Sporadic operation (when used in connection with Landscaping, Rockscape, Waterscape, and Irrigation work) of Skid-Steer Loaders (Bobcat and similar), Cranes (Bantam, Grove, and similar), Hoptos, Backhoes, Loaders, Rollers, and Dozers (Case, John Deere, and similar), Water Trucks, Trucks requiring a State of Hawaii Public Utilities Commission Type 5 and/or type 7 license, sit-down type and "gang" mowers, and other self-propelled, sit-down operated machines not listed under Landscape & Irrigation Maintenance Laborer; Chemical spraying using self-propelled power spraying equipment (200 gallon capacity or more).

GROUP 3: Maintenance of trees, shrubs, ground covers, lawns and other planted areas, including the replanting of trees, shrubs, ground covers, and other plantings that did not "take" or which are damaged; provided, however, that re-planting that requires the use of equipment, machinery, or power tools shall be paid for at the rate of pay specified under Landscape and Irrigation Laborer, Group 1; Raking, mowing, trimming, and runing, including the use of "weed eaters", hedge trimmers, vacuums, blowers, and other hand-held gas, air, electric, or self-powered tools, and the operation of lawn mowers (Note: The operation of sit-down type and "gang" mowers shall be paid for at the rate of pay specified under Landscape & Irrigation Laborer, Group 2); Guywiring, staking, propping, and supporting trees; Fertilizing, Chemical spraying using spray equipment with less than 200 gallon capacity, Maintaining irrigation and sprinkler systems, including the staking, clamping, and adjustment of risers, and the adjustment and/or replacement of sprinkler heads, (Note: the cleaning and gluing of pipe and fittings shall be paid for at the rate of pay specified under Landscape & Irrigation Laborer(Group 1); Watering by hand or sprinkler system and the peformance of other types of gardening, yardman, and horticultural-related work.

LABO0368-003 09/03/2012

	Rates	Fringes
Underground Laborer		
GROUP 1	$ 31.90	15.96
GROUP 2	$ 33.40	15.96
GROUP 3	$ 33.90	15.96
GROUP 4	$ 34.90	15.96
GROUP 5	$ 35.25	15.96
GROUP 6	$ 35.50	15.96
GROUP 7	$ 35.95	15.96

GROUP 1: Watchmen; Change House Attendant.

GROUP 2: Swamper; Brakeman; Bull Gang-Muckers, Trackmen; Dumpmen (any method); Concrete Crew (includes rodding and spreading); Grout Crew; Reboundmen

GROUP 3: Chucktenders and Cabletenders; Powderman (Prime

House); Vibratorman, Pavement Breakers

GROUP 4: Miners - Tunnel (including top and bottom man on shaft and raise work); Timberman, Retimberman (wood or steel or substitute materials thereof); Blasters, Drillers, Powderman (in heading); Microtunnel Laborer; Headman; Cherry Pickerman (where car is lifted); Nipper; Grout Gunmen; Grout Pumpman & Potman; Gunite, Shotcrete Gunmen & Potmen; Concrete Finisher (in tunnel); Concrete Screed Man; Bit Grinder; Steel Form Raisers & Setters; High Pressure Nozzleman; Nozzleman (on slick line); Sandblaster-Potman (combination work assignment interchangeable); Tugger

GROUP 5: Shaft Work & Raise (below actual or excavated ground level); Diamond Driller; Gunite or Shotcrete Nozzleman; Rodman; Groundman

GROUP 6: Shifter

GROUP 7: Shifter (Shaft Work & Raiser)

PAIN1791-001 07/01/2012

	Rates	Fringes
Painters:		
Brush	$ 34.10	25.35
Sandblaster; Spray	$ 34.10	25.35

PAIN1889-001 07/01/2012

	Rates	Fringes
Glaziers	$ 32.65	25.27

PAIN1926-001 02/26/2012

	Rates	Fringes
Soft Floor Layers	$ 28.89	21.46

PAIN1944-001 01/01/2013

	Rates	Fringes
Taper	$ 40.00	18.65

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* PLAS0630-001 09/03/2012

	Rates	Fringes
PLASTERER	$ 36.14	22.92

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* PLAS0630-002 09/03/2012

	Rates	Fringes
Cement Masons:		
Cement Masons	$ 35.30	22.72
Trowel Machine Operators	$ 35.45	22.72

PLUM0675-001 01/06/2013

	Rates	Fringes
Plumber, Pipefitter, Steamfitter & Sprinkler Fitter	$ 37.60	23.26

ROOF0221-001 11/04/2012

	Rates	Fringes
Roofers (Including Built Up, Composition and Single Ply)	$ 36.10	16.75

SHEE0293-001 09/02/2012

	Rates	Fringes
Sheet metal worker	$ 36.10	22.21

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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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 union or non-union.

Union Identifiers

An identifier enclosed in dotted lines beginning with characters other than "SU" denotes that the union classification and rate have found to be prevailing for that classification. Example: PLUM0198-005 07/01/2011. The first four letters , PLUM, indicate the international union and the four-digit number, 0198, that follows 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. The date, 07/01/2011, following these characters is the effective date of the most current negotiated rate/collective bargaining agreement which would be July 1, 2011 in the above example.

Union prevailing wage rates will be updated to reflect any changes in the collective bargaining agreements governing the rates.

0000/9999: weighted union wage rates will be published annually each January.

Non-Union Identifiers

Classifications listed under an "SU" identifier were derived from survey data by computing average rates and are not union rates; however, the data used in computing these rates may include both union and non-union data. Example: SULA2004-007 5/13/2010. SU indicates the rates are not union majority rates, LA indicates the State of Louisiana; 2004 is the year of the survey; and 007 is an internal number used in producing the wage determination. A 1993 or later date, 5/13/2010, indicates the classifications and rates under that identifier were issued as a General Wage Determination on that date.

Survey wage rates will remain in effect and will not change until a new survey is conducted.

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

PROPOSAL TO THE

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

PROJECT: Interstate Route H-1, Airport Viaduct Repair
Vicinity of Valkenburgh Street to Middle Street
District of Honolulu
Island of Oahu

PROJECT NO.: IM-H1-1(268)

COMPLETION TIME: 500 Calendar days from the date indicated in the Notice to Proceed from the Department.

UDBE PROJECT GOAL: 1%

DESIGN PROJECT MANAGER:

NAME	Christine Yamasaki
ADDRESS	601 Kamokila Boulevard, Room 609, Kapolei, Hawaii 96707
PHONE NO.	(808) 692-7572
E-MAIL ADDRESS:	christine.yamasaki@hawaii.gov
FAX NO.	(808) 692-7590

DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
DESIGN BRANCH
HIGHWAY DESIGN SECTION
601 KAMOKILA BOULEVARD, ROOM 609
KAPOLEI, HAWAII 96707-2023

PRE-BID CONFERENCE MINUTES

601 KAMOKILA BOULEVARD, CONFERENCE ROOM 611
KAPOLEI, HAWAII 96707
APRIL 16, 2013 - 9:00 AM

PROJECT: INTERSTATE ROUTE H-1, AIRPORT VIADUCT REPAIR
VICINITY OF VALKENBURGH STREET TO MIDDLE STREET
ISLAND OF OAHU

PROJECT NUMBER: IM-H1-1(268)

The meeting began at 9:02 A.M. with reminders for the contractors.

1.) Anything said at this meeting is for clarification only, the bid documents shall govern over anything said today and discrepancies shall be made by addendum.

2.) Confirmation of DBE forms are due at the time of bid opening. See page 2 of the DBE requirements in the Special Provisions.

3.) Distribution of the meeting minutes and sign-in sheet will be in the addendum.

4.) Questions will be taken up to the day of the bid opening. If there is not enough time for an addendum to be issued, contractors will be told to bid accordingly.

Introduction of all in attendance were made.

1. Question: Is there a contact or email address for submitting questions regarding the specifications?

   Response: Yes, contact information is on P-1 of the Special Provisions.

2. Question: When is the expected start date?

   Response: About 6 months after the bid opening.

3. Question: Section 676.22a of the Special Provisions and Plan Sheet No. 12 mentioned about options, are there options associated with the project?

   Response: There are no options associated with the project. Section 676 of the Special Provisions and the Plans will be amended.

4. Question: Is the overlay thickness ¾" minimum or nominal?

   Response: With no elevations available, the overlay thickness shall be ¾" minimum instead of nominal mentioned in the meeting.

5. Question: Since the overlay is paid in lump sum, how do you determine the quantity?

   Response: The quantity shall be determined by the given area multiplied by a reasonable thickness based on the minimum required thickness, the normal expected unevenness of the deck surface based on the Standard Specifications, and taking into consideration that the existing deck surface has been tined.

6. Question: Can overlay be laid over the joint armor?

   Response: Yes. Surface preparation shall be in accordance with the manufacturer's recommendations. See amended Section 677 of the Special Provisions.

7. Question: At the beginning and end of the overlay, can it be feathered or cold planed to maintain the thickness?

   Response: Prefer feathering and a separate mix design shall be submitted based upon the manufacturer's recommendations. See amended Section 677 of the Special Provisions.

8. Question: Since most areas have T-Beams underneath, repair should not be a through deck. It was suggested that partial and through deck repair could be separated. In regards to the structural integrity of the deck, will a maximum area to be removed be provided?

   Response: The intent of the plans and specifications are for partial deck repairs. Areas and depths to be repaired shall be by the Contractor's means, methods, and as recommended by the Contractor's structural engineer. See amended Section 676 of the Special Provisions.

9. Question: Is a minimum size of repair going to be specified?

   Response: No minimum size will be specified. Plan Sheet No. 7 is revised showing the typical repair area.

10. Question: The Special Provision noted that the polyester concrete overlay has a minimum curing time of four hours. What if the concrete cures in less than four hours?

    Response: See amended Section 677 of the Special Provisions.

11. Question: Section 677-10a noted that the polyester concrete overlay shall be mixed a minimum of two minutes prior to placing, is this provision required since automated machines are not compatible with this type of provision?

    Response: See amended Section 677 of the Special Provisions.

12. Question: Section 677 noted that all materials are to be on hand before the overlay, this is quite an amount of money in storage, will there be any advance payment for these materials?

    Response: No advance payment shall be made. All materials shall be available onsite for that particular work day. See amended Section 677 of the Special Provisions.

13. Question: In the post construction survey, are we supposed to wait three months before installing the overlay?

    Response: See amended Section 676 of the Special Provisions.

14. Question: Is there a noise variance available for this project?

    Response: We applied for the variance and are waiting approval from the Department of Health.

Pre-Bid Conference concluded at 9:40 AM.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
DESIGN BRANCH
HIGHWAY DESIGN SECTION
601 KAMOKILA BOULEVARD, ROOM 609
KAPOLEI, HAWAII 96707-2023

PRE-BID CONFERENCE

601 KAMOKILA BOULEVARD, CONFERENCE ROOM 611

KAPOLEI, HAWAII 96707-2023

9:00 AM, APRIL 16, 2013

PROJECT: **INTERSTATE ROUTE H1, AIRPORT VIADUCT REPAIR**
VICINITY OF VALKENBURGH STREET TO MIDDLE STREET

PROJECT NUMBER: **IM-H1-1(268)**

PRINT NAME	TITLE / OFFICE	TELEPHONE NUMBER
1. CHRISTINE YAMASAKI	PROJECT MANAGER / HWY-DD	692-7572
2. MANNY QUODALA	ENGINEER / HWY-DD	692-7573
3. AL KLAK	MANAGING MEMBER KWIK BOND	541-852-4381
4. Tom Heinrich	Global Specialty Contr. Inc	843 8881
5. ABEGAILE MANUEL	ABHE & SVOBODA, INC.	692-4833
6. BRETT GORDON	Superintendent Triton Marine	954-5030
7. CONNAN PINKSTON	GOOD FELLOW BROS. INC	294-2644
8. CLIFF BARBER	VP ACC WEST COAST	707-310-0225
9. JEFF FOERSTE	ACC-WC	707-333-0840
10. RANDY SLEZAK	Kwik Bond Polymers, LLC	760-518-6064
11. Steven Yuhl	PM Triton Marine Const.	808 478-8195
12. Paul Santo	HWY-DB	692-7611
13.		
14.		