STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ADDENDUM NO. 2

FOR

INTERSTATE ROUTE H-1 SEISMIC RETROFIT
PALI INTERCHANGE AND NUUANU SEPARATION

FEDERAL-AID INTERSTATE PROJECT NO. BR-H1-1(249)

The following amendments shall be made to the Bid Documents:

A. TABLE OF CONTENTS

1. Replace page 1 dated 12/07/10 with the attached page 1 dated r1/20/11.

B. SPECIAL PROVISIONS

1. Replace Section 513 – Micropiling pages 513-1a to 513-13a dated r08/10/09 with the attached revised Section 513 – Micropiling pages 513-1a to 513-14a dated r01/20/11.

2. The attached Section 602 – Reinforcing Steel, page 602-1a dated r01/20/11 shall be incorporated and made a part of the Special Provisions.

C. PROPOSAL SCHEDULE

1. Replace entire Proposal Schedule, pages P-8 to P-12 dated 12/07/10 with the attached revised Proposal Schedule dated r01/20/11.

D. PLANS

1. Replace Plan Sheet Nos. 31, 35, and 47 with attached Plan Sheet Nos. ADD. 31, ADD. 35 and ADD. 47.

2. Replace Plan Sheet No. 52 with the attached Plan Sheet No. ADD. 52.

E. APPROVED SUBSTITUTIONS

1. The Universal TAU-II Crash Cushion System (7-Bay system, NCHRP 350 TL 3 W/90" backstop width) has been approved for use as an alternative to the Terminal Impact Attenuator System.

2. The anchored Vulcan Barrier has been approved for use as an alternative to the Portable Concrete Barriers.

F. PRE-BID MEETING MINUTES

1. Meeting minutes are attached for information and shall include a list of attendees.

Please acknowledge receipt of this Addendum No. 2 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

TABLE OF CONTENTS

Make the following Section a part of the Standard Specifications:

"SECTION 513 – MICROPILING

513.01 Description. This section shall govern constructing micropiles to the required locations, capacity, and dimensions, in place complete, as indicated on the Plans and as specified herein.

(A) Definition. Micropiles shall be defined as small diameter, high capacity drilled and grouted micropiles. Each micropile shall consist of permanent steel casing (unbonded zone), cement grout-to-ground contact area (bonded zone), inner steel reinforcement (central reinforcing bar), centralizers, and cement grout that is tremmied into the drilled holes as the steel casing is withdrawn and/or injected during post grouting. The micropiles shall be of Type B, C, or D classification as defined in FHWA-SA-97-070 (June 2000).

513.02 Design Requirements.

(A) General. Micropiles shall have an ultimate axial capacity (single micropile) of at least 250 kips per micropile at the Abutment 1 location, 250 kips at the new pier location, and 180 kips at the Abutment 2 location.

(B) Permanent steel casings shall be installed in the unbonded zone and shall have a minimum length of 20 feet.

(C) The Micropile Subcontractor shall select the drilling, installation, and grouting methods needed to satisfy or exceed the ultimate axial capacity of the micropile and with a total pile settlement at the present existing ground surface of 1.0 inch or less at the end of the holding period at the maximum test load [see 513.07(H)] of this section).

513.03 Qualifications of Micropile Subcontractor.

A) Micropile Experience. Because of the expertise required to successfully complete the micropile according to contract, a qualified Micropile Contractor shall install the micropiles. The Micropile Contractor shall have installed cased permanent micropiles, mini-piles, or pin piles for at least three (3) years and has successfully completed at least five (5) projects (each project shall have at least 20 cased micropiles per project) in the last five (5) years. For a project to count as experience, all of the micropiles

must have had casing that was removed during the tremied concrete placement.

513.04 Preconstruction Requirements.

(A) Protection of Existing Structures. Verify locations of existing underground utilities and structures prior to micropile work. If obstructions are encountered in the drilling work, the Contractor shall stop operations in such areas and immediately notify the Engineer. Preventive measures shall include, but are not limited to, selecting construction methods and procedures that will reduce the amount of cave-ins, over-cuts, and excessive grout losses, and monitoring and controlling the vibrations from construction activities such as drilling or the driving of casing.

(B) Experience Information. The Micropile Subcontractor shall submit the following to the Engineer within 30 days after award of contract:

(1) List containing at least five (5) projects on which they have installed micropiles, mini-piles, or pin piles (each project shall involve a minimum of 20 micropiles). A description of each project including a reference shall be included in the list. The references shall include the individual's name, company name, and current phone number.

(2) Detailed narrative with his proposal describing the construction means and methods to be used and all aspects of this work.

(3) List identifying the drill operators and on-site supervisors who will be assigned to this project. The list shall contain a summary of each individual's experience in sufficient detail such that the Engineer could determine if the individual has satisfied at least three (3) years of experience in installing micropiles, mini-piles, or pin piles and direct experience on at least two (2) micropiling projects similar to the scope of work as this project (which includes the removal of the casing during the concrete placement).

The use of consultants and/or manufacturer's representatives does not satisfy the above qualification requirements. Micropile work shall not start or materials shall not be ordered until the Engineer has approved the Micropile Subcontractor's qualifications.

The Engineer may suspend the micropile construction if the Micropile Subcontractor substitutes unqualified personnel for approved personnel during construction. If work is suspended due to substitution of unqualified personnel, the Contractor shall be fully liable for additional costs resulting from the suspension of work and no adjustment in contract time resulting for the suspension of work will be allowed.

513.05 Working Drawings

The Contractor shall submit complete project specific working drawings for the micropiling system to the Engineer. Working drawings for micropiling shall be 11" x 17". For initial review, 10 sets of drawings shall be submitted. After review, between 6 and 12 sets, as requested by the Engineer, shall be submitted to the Engineer for final approval and use during construction. Within 3 weeks after final approval of the submittal, the Contractor shall furnish to the Engineer one set of final working drawings on 11" x 17" sized 20-pound (minimum) bond paper.

Working drawings for micropiling shall show the State assigned designations for the contract number, bridge number, full name of the structure as shown on the contract plans. The micropile vendor company name, address, and phone number shall be shown on the working drawings. Each sheet shall be numbered in the lower right corner and shall contain a blank space in the upper right corner for future contract sheet numbers.

Working drawings for micropiles shall contain all information required for the construction and quality control of the piling, including the following:

(A) Information on headroom and space requirements for installation equipment to verify that the proposed equipment can perform at the site. All excavation and shoring work to provide access to the micropile locations shall be designed and stamped by a licensed Structural Engineer in the State of Hawaii in conjunction with a licensed Civil Engineer experienced in geotechnical engineering in the State of Hawaii. All excavation and shoring work sequence, plans, and calculations shall be submitted for the Engineer's review and acceptance. The Engineer shall have a minimum of 20 working days to review and accept the excavation and shoring plans.

(B) Step-by-step procedure describing all aspects of pile installation including drilling, reinforcement installation, grout placement, and casing withdrawal. In addition, they shall also describe personnel, testing, and equipment to assure quality control. This step-by-step procedure shall be shown on the working drawings in sufficient

detail so that the Engineer can monitor the construction and quality of the micropiles.

(C) Mill test reports of the piling steel components (reinforcement, bearing plates, etc).

(D) Certificate of test reports of the piling steel components (casing).

(E) Details of centralizers.

(F) Grout mix designs.

(G) Details and procedures involved in testing components, including grout.

(H) Pipe and reinforcement splice type and locations.

(I) Details of equipment and operation for grouting. Details shall be included for monitoring grout quality, volume installed, and pressure during installation.

(J) Information on the minimum cure time and strength requirements of the pile system for test piles.

(K) Proposed load test frame and associated equipment including calibration data for each test jack, pressure gauge, and load cell to be used. The calibration tests shall be performed on the jack and pressure gauge as a unit by an independent testing laboratory. Calibration tests of the load cell and jack/pressure gauge unit shall be performed within 180 calendar days of the static load testing.

(L) Proof test equipment including instrumentation and calibration data for hydraulic jack, pump pressure gauge, and load cell to be used for the proof testing. The calibration tests shall be performed on the jack and pressure gauge as a unit by an independent testing laboratory. Perform and submit calibration of jack and pressure gauge, and load cell within 180 calendar days of the proof testing.

A supplement to the working drawings shall include construction details, structural details, and load test results from at least three (3) previous successful installations by the proposed micropile vendor. The installations shall be from 3 separate test sites. The installations shall be similar to those proposed for this contract.

The working drawings and supplement shall be stamped and signed by an Engineer who is licensed as a Civil Engineer in the State of Hawaii. The Engineer will notify the Contractor in writing when the submitted working drawings and supplement have been determined to be complete. The Contractor shall allow the Engineer 20 days to review the working drawing submittal after a complete set has been received.

No micropiles shall be installed until the Engineer has approved, in writing, the working drawing submittal for micropiling.

513.06 Materials. Materials shall conform to the following

(A) Portland cement shall conform to ASTM C150, Type I or II.

(B) Grout shall consist of neat cement (Portland cement and water) or a sand-cement grout with a fluid consistency, water cement ratio of 0.45 to 0.50, and a minimum unconfined compressive strength (from cubes) of 4,000 psi at 28 days in accordance with ASTM C109. The grout shall contain suitable admixtures to control bleeding, improve flowability, and reduce the potential for washout.

(C) Water shall be clean, fresh, potable, and free from injurious amounts of mineral and organic substances.

(D) Central reinforcing steel shall be high strength threadbar conforming to ASTM A722, Type II, Grade 150, and shall be fusion bonded epoxy coated in accordance with ASTM A934.

(E) Centralizers shall be fabricated from plastic or material that is non-detrimental to the reinforcing steel. Wood shall not be used. The centralizer shall be able to support the reinforcing so a minimum of 1.5 inches of grout cover is provided and shall permit grout to freely flow up the drill hole.

(F) Steel casing for micropiles shall be at least the diameter and wall thickness of the piles shown on the plans. The outside diameter shall not be less than 9.625 inches.

(G) The micropile anchorage shall consist of studs, welded bar stock, and bearing plate with nut. The bearing plate and bar stock shall conform to the provisions in Section 713, "Structural Steel and Related Materials" of the Standard Specifications, except that galvanizing will not be required.

(H) Stud connectors shall conform to the provisions in Section 713, "Structural Steel and Related Materials" of the Standard Specifications and these special provisions. Stud connectors shall be Type B as defined in AWS D1.5, Section 7.

513.07 Construction

(A) Construction Requirement.

(1) **General.** The Contractor shall perform the micropile installations through whatever materials are encountered, to the locations, capacity, static load test and proof test requirements, and dimensions as shown in the plans or otherwise required by the specifications and SPECIAL PROVISIONS. The Contractor's methods and equipment shall be suitable for the intended purpose and material encountered.

During micropile installations, the Engineer will maintain the following information during micropile installation:

(a) Detailed drilling records and logs of the date of drilling, equipment used, driller's name, actual hole sizes and depths, subsurface materials encountered, drilling rates and any unusual conditions.

(b) Grouting records indicating the grouting dates, cement type, quantity injected, and grout pressures at the point of injection, including any post grouting performed.

(c) As-built drawings showing the micropile locations, elevations of top and bottom of steel casing and reinforcing steel, total pile length and bond length, and casing size.

Immediately report to the Engineer any unusual conditions encountered during the micropile construction.

(2) **Drilling equipment.** The drilling equipment for the micropiles may consist of rotary drilling, core drilling, percussion drilling, hollow stem auger drilling, or driven casing and shall be capable of drilling through hard cobbles, hard boulders, hard basaltic rock, loose submerged sand and gravel, stiff silts and clays, and other subsurface

conditions as indicated on the boring logs. It shall have suitable drilling bits and other appropriate equipment to drill into the various subsurface materials anticipated at this site. The use of bentonite or drilling mud will not be allowed.

(3) **Grouting equipment.** Cement grout shall be produced with high-speed, high shear mixers. The grouting equipment shall be equipped with a pressure gauge to monitor grout pressures and a flow meter to monitor the pumped volume. An additional in-line pressure gauge shall be installed at the point of injection. Both pressure gauges shall be capable of measuring pressures of at least twice the actual grout pressures anticipated by the Contractor. The grouting equipment shall be capable of thoroughly mixing and producing a grout free of lumps and undispersed cement and shall be able to pump the grout in a continuous operation.

(B) **Soil Cuttings and Fluids.** Suitable equipment and approved methods shall be used to contain and treat the soil cuttings and fluids from the drilling and grouting to prevent environmental impacts to existing structures. The soil cuttings and fluids from the drilling shall be disposed of by the Contractor.

(C) **Permanent Steel Casings.** Casings shall have a minimum outside diameter of 9.625 inches, minimum wall thickness of 0.47 inches, and machined flush jointed threads.

(D) **Central Reinforcing Steel Placement.** The central reinforcing steel consists of a single longitudinal bar within each micropile. Non-corrosive centralizers shall be used for the reinforcing bars. The centralizer shall be placed at spacings not exceeding 10 feet. In addition, the centralizer directly above the bond zone shall be located within 5 feet of the top of the bond zone, and the lower centralizer shall be located not more than one (1) foot above the bottom of the reinforcing bar.

Reinforcing steel shall only be spliced with mechanical couplers specifically manufactured for splicing epoxy coated bars and capable of achieving the full ultimate strength of the bar. The coupler shall also be corrosion resistant. Contractor shall submit the mechanical coupler data to the Engineer for approval.

(E) **Grouting.** The grout in each micropile shall be placed by starting from the deepest point in the drill hole and working upward. It shall

be pumped through grout tubes, pipes, or drill rods. The grout pressures and grout takes shall be controlled to reduce the amount of ground heave and excessive grout takes. Additional post grouting shall be performed, as determined by the Contractor, to obtain the required micropile capacity. After completing the grouting, the grout tube or pipe may remain in the hole, but it shall be filled with grout of equal or greater strength than the grout used in the installations.

(F) **Grout Quality Control.** One set of grout specimens shall be taken for every two micropiles installed. Each set shall consist of 6 cubes. Grout specimens shall be cured under laboratory conditions. Cubes shall be tested in accordance with ASTM C109. Strength tests shall be made for 3 cubes at 7 days and for 3 cubes at 28 days. If the strength tests of one or more cubes of a set from a pile are at 10 percent or more below the required compressive strength required at 28 days, the pile shall be abandoned and replaced by a pile placed adjacent to the abandoned pile as directed by the Engineer at the Contractor's expense. All tests shall be made by an independent testing laboratory approved by the Engineer and paid for by the Contractor. The Engineer will take independent grout samples for quality assurance and acceptance purposes. The Engineer will not use the results of the grout specimens taken by the Contractor for acceptance of the work.

(G) **Construction Tolerance.** The following construction tolerances apply to micropiles:

(1) The micropile shall be within two (2) inches of plan position in the horizontal plane at the plan elevation for the top of the pile.

(2) The vertical alignment of the micropile shall not deviate from plumb by more than one-quarter (¼) of an inch per foot of depth. The alignment of a battered micropile shall not vary by more than one-half (½) of an inch per foot of depth from the prescribed batter.

(3) After grouting, the top of the central reinforcing steel bar shall be no more than six (6) inches above and no more than three (3) inches below plan position.

(4) The top elevation of the micropile shall have a tolerance of ± one-half (½) inch from the plan top of pile elevation.

(5) The dimensions of casings are subject to American Pipe Institute tolerances applicable to regular steel pipe.

(6) Micropiles not constructed within the required tolerances are unacceptable. Submit correction plan of replacement micropiles to the Engineer. Corrections may be made to an unacceptable micropile by any approved combination of the following methods:

The approval of correction procedures is dependent on analysis of the effect of the degree of misalignment, improper positioning, and/or mis-location of the unacceptable micropile. Correction methods may be approved as design analyses indicate. Redesign drawings and computations shall be signed by a Structural Engineer licensed in the State of Hawaii. Materials and work necessary, including engineering analysis and redesign and construction, to effect corrections for unacceptable micropiles shall be furnished at no cost to the State.

(H) **Pre-Production Micropiles and Performance Tests.** Before installation of the production micropiles, three (3) sacrificial vertical pre-production piles shall be installed at the locations as indicated on the plans using the equipment and methods proposed by the Micropile Subcontractor. The Micropile Subcontractor shall load test two pre-production piles in tension and one pre-production pile in compression to the ultimate axial capacity in accordance with ASTM D 3689 and ASTM D 1143, respectively. The Contractor shall install additional reaction piles or anchors for the load tests, and shall provide all necessary load test equipment, hydraulic jack, pump, load cell, and instrumentation in accordance with ASTM D 3689 and ASTM D 1143 Quick Load Test Method For Individual Piles. Design the loading frame apparatus to ease the maximum load plus and adequate safety factor. The Engineer will observe the load test and take readings of the instruments and gauges during the load tests. Each load increment will be held until a stable reading is achieved, but not less than 4 minutes, before proceeding to the next load increment.

The maximum test load (ultimate axial capacity for single micropile) in this test shall be maintained for at least 8 hours or until the settlement is less than or equal to 0.01 inches per hour, but not less than 4 hours. Deflection readings on the pile top shall be referenced to a constant elevation benchmark sufficiently far away from the test. Allow 7 working days after completing the last load test before the Engineer provides estimated bond lengths for the

production micropiles. Notify the Engineer within 10 calendar days of contract award of the load test schedule. Do not perform the load test until the grout has attained a minimum unconfined compressive strength of 4,000 psi.

(J) Perform the performance tests by incrementally loading the micropile to be tested in accordance with the following loading schedule:

Proof Test Schedule (Tension and Compression Tests)

0.050P
0.125P
0.250P
0.375P
0.500P
0.625P
0.750P
0.875P
1.000P (hold for up to 8 hours)
0.750P (unloading in four equal decrements)
0.500P
0.250P
0.000P

where P = ultimate axial capacity (single micropile)

After completing the test, cut off the pre-production micropile and reaction piles at an elevation a minimum of two feet below the finished ground surface. The portion of the micropiles cut off and removed shall remain the property of the Contractor.

(K) **Revised Installation Procedure.** Should the pre-production load test micropiles fail to produce acceptable test results, the Contractor shall modify his installation procedures and install a replacement micropile or micropiles and perform additional load tests at his/her expense until acceptable results are obtained.

Contractor shall submit a revised installation procedure to the Engineer for review and approval. Installation of the micropiles will not be permitted to continue until the revised procedure is accepted by the Engineer.

(L) **Proof test of production micropiles.** The Contractor shall conduct proof tests after all the micropiles have been installed in a

given footing. Twenty (20) percent of the micropiles in a given footing and not less than 2 per footing will be proof tested. The micropiles to be tested will be selected by the Engineer. The Engineer will observe the proof tests (tension) and take records of the instruments and gauges during the proof tests. All instruments and jacks shall be provided by the Contractor. Perform the proof testing by incrementally loading the micropile to be tested in accordance with the following loading schedule:

Proof Test Schedule

0.050P
0.125P
0.250P
0.375P
0.500P
0.625P
0.750P
0.875P
1.000P
0.750P (unloading in four equal decrements)
0.500P
0.250P
0.000P

where P = maximum axial micropile capacity

Except at the maximum proof test load, increase the loads from one increment to the next immediately soon recording the micropile movement (but not earlier than 1 minute). Measure and record the micropile movement at the top of the pile for each load increment to the nearest 0.001 inches with respect to a constant elevation bench mark located sufficiently far away from the micropile being tested so as not to be affected by the test. Monitor the load with a load cell. At each load increment, hold the load just long enough to measure the micropile movement, but not less than one minute.

At the maximum proof test load, a creep test shall be conducted in a manner as described herein. The creep test shall start as soon as the maximum test load is applied. Hold the maximum test load for ten (10) minutes. Periodically pump the jack as necessary to maintain a constant load. Start the load-holding period as soon as the maximum test load has been applied and record the micropile movements at 1, 2, 3, 4, 5, 6, 8, and 10 minutes.

If the micropile movements between the one minute and ten (10) minute readings exceeds 0.04 inches, hold the maximum test load for an additional 50 minutes and record micropile movements at 15, 20, 25, 30, 40, 50 and 60 minutes.

Proof testing of micropiles with ten (10) minute load-holding periods is acceptable if the total movement measured between 1 minute and 10 minutes is less than 0.04 inches, and the total movement at the maximum test load exceeds 80 percent of the theoretical elongation of the unbonded length of the pile being tested.

Proof testing of micropiles with sixty (60) minute load-holding periods is acceptable if the creep rate does not exceed 0.08 inches per log cycle of time and the total movement at the maximum test load exceeds 80 percent of the theoretical elastic elongation of the unbonded length of the pile being tested.

(F) If a micropile fails the proof testing, the Contractor shall modify his installation procedures to provide micropiles with acceptable results. Any modifications to the micropile design and construction will be at the Contractor's expense.

513.08 Method of Measurement.

The Engineer will not measure furnishing micropile installation (drilling and grouting) equipment for payment.

The Engineer will not measure furnishing instrumentation, installing the load test micropile (including reaction micropiles), and collecting data during the load test for payment.

The Engineer will measure the following lengths per linear foot complete in place:

(1) Bonded Length. The Engineer will measure the difference between the plan bottom of casing and the plan bottom of the micropile.

(2) Unbonded Length. The Engineer will measure the difference between bottom of the concrete pile cap (Elevation A on the Structural Drawing Sheet S-18) and the plan bottom of steel casing. The micropile extension into the concrete pile cap will not be measured nor paid for separately and will be considered incidental to the respective items of work.

513.09 Basis of Payment.

The Engineer will pay for furnishing micropile drilling and grouting equipment on a lump sum basis. The price includes full compensation for furnishing and moving the drilling equipment to the project; setting up at the locations; removing the equipment to the project; setting the equipment up at the locations; removing the equipment from the project; and furnishing labors, materials, tools, and incidentals necessary to complete the work. The Engineer will pay for 60% of the amount bid for this item when the micropile installation equipment is on the job site, assembled, and ready to install micropiles. The Engineer will pay for the remaining 40% of the amount bid when the Contractor has installed the last micropile and proof-tested all the required micropiles.

The Engineer will pay for the accepted load tests (all pre-production load tests specified herein) on a lump sum basis, complete in place. The price includes full compensation for installing the load test micropile and reaction micropiles (as needed), costs related to the performance of the load test, furnishing labor, materials, tools, equipment, and incidentals necessary to complete the work.

The Engineer will pay for the accepted bonded length of the micropile at the contract unit price per linear foot for the diameter specified. The price includes full compensation for micropile excavation, furnishing and installing reinforcement bar and grout within the bonded length, performing grout tests and proof tests, and furnishing labor, materials, equipment, tools, and incidentals necessary to complete the work.

The Engineer will pay for the accepted unbonded length of the micropile at the contract unit price per linear foot for the diameter specified. The price includes full compensation for furnishing, and installing the steel casing, reinforcement bar, and grout within the unbonded length, performing grout tests and proof tests, and furnishing labor, materials, tools, equipment, and incidentals necessary to complete the work.

No payment will be made for micropiles that are damaged either during installation or after the micropiles are complete in place. No payment will be made for additional excavation, backfill, concrete, reinforcement, nor other costs incurred from footing enlargement resulting from replacing rejected micropiles.

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

Pay Item	Pay Unit
Furnishing Micropile Drilling Equipment	Lump Sum

Preproduction Micropiles		Lump Sum
Production Micropiles - _____		Lineal Foot"

END OF SECTION 513

SECTION 602 - REINFORCING STEEL

Make the following amendments to said Section:

(l) Amend **602.04 Measurement** and **602.05 Payment** to read as follows:

"602.04 Measurement. The Engineer will not measure reinforcing steel for payment.

602.05 Payment. The Engineer will not pay for the accepted reinforcing steel separately. The Engineer shall consider the cost for the accepted reinforcing steel as included in the contract price of the various contract items. The cost is for the work prescribed in this section and the contract documents."

END OF SECTION 602

PROPOSAL SCHEDULE					
ITEM NO.	ITEM	APPROX. QUANTITY	UNIT	UNIT PRICE	AMOUNT
201.1000	Clearing and Grubbing	L.S.	L.S.	L.S.	$_____
202.0440	Removal of Existing Concrete Bridge	L.S.	L.S.	L.S.	$_____
205.6101	Structure Excavation	L.S.	L.S.	L.S.	$_____
205.7201	Structure Backfill	L.S.	L.S.	L.S.	$_____
209.0100	Installation, Maintenance, Monitoring and Removal of BMP	L.S.	L.S.	L.S.	$_____
209.0200	Additional Water Pollution, Dust, and Erosion Control	F.A.	F.A.	F.A.	$ 25,000.00
503.1090	Concrete for Bridge Structure	L.S.	L.S.	L.S.	$_____
503.1091	Concrete for Bridge Footing	L.S.	L.S.	L.S.	$_____
513.0100	Furnishing Micropile Drilling Equipment	L.S.	L.S.	L.S.	$_____
513.0200	Preproduction Micropiles	L.S.	L.S.	L.S.	$_____
513.0300	Production Micropiles – Embedded into Concrete Pile Cap	160	L.F.	$_____	$_____
513.0301	Production Micropiles – Unbonded Length	1,280	L.F.	$_____	$_____
513.0400	Production Micropiles – Bonded Length (3,300 plus 5.5%)	3,480	L.F.	$_____	$_____

PROPOSAL SCHEDULE					
ITEM NO.	ITEM	APPROX. QUANTITY	UNIT	UNIT PRICE	AMOUNT
606.0100	Guardrail Type 3 – Strong Post W-Beam	L.S.	L.S.	L.S.	$_____
606.0200	End Anchorage – Type "G" Flare	L.S.	L.S.	L.S.	$_____
606.0300	Transition Section – Thrie Beam	L.S.	L.S.	L.S.	$_____
622.2100	Type "B" Pullbox	1	EACH	$_____	$_____
622.4100	Cast Junction Box, Highway Lighting, 24" Square x 12" Deep	1	EACH	$_____	$_____
622.4200	Cast Junction Box, Highway Lighting, 18" Square x 8" Deep	2	EACH	$_____	$_____
622.5101	One 2-Inch PVC Schedule 40 Ductline Encased in Concrete for Highway Lighting System	L.S.	L.S.	L.S.	$_____
622.5102	Two 2-Inch PVC Schedule 40 Ductline Encased in Concrete for Highway Lighting System	L.S.	L.S.	L.S.	$_____
622.5201	One 2-Inch PVC Coated Galvanized Rigid Steel Conduit for Highway Lighting System	L.S.	L.S.	L.S.	$_____
622.5202	Two 2-Inch PVC Coated Galvanized Rigid Steel Conduit for Highway Lighting System	L.S.	L.S.	L.S.	$_____
622.5301	#1/0 AWG Conductors for Highway Lighting System	L.S.	L.S.	L.S.	$_____
622.5302	#4 AWG Conductors for Highway Lighting System	L.S.	L.S.	L.S.	$_____

PROPOSAL SCHEDULE					
ITEM NO.	ITEM	APPROX. QUANTITY	UNIT	UNIT PRICE	AMOUNT
622.5303	#6 AWG Grounding Conductors for Highway Lighting System	L.S.	L.S.	L.S.	$_____
622.8100	Removal and Reinstallation of Column-Mounted Luminaires	L.S.	L.S.	L.S.	$_____
622.9100	Removal and Reinstallation of Conduit and Associated Conductors at the Pali Highway High Level Ramp, Abutment 1	F.A.	F.A.	F.A.	$ 50,000.00
629.0100	4-Inch White Guide Lines – Tape, Type II or Thermoplastic Extrusion	L.S.	L.S.	L.S.	$_____
629.0110	4-Inch White Pavement Striping – Tape, Type II or Thermoplastic Extrusion	L.S.	L.S.	L.S.	$_____
629.0120	8-Inch White Pavement Striping – Tape, Type II or Thermoplastic Extrusion	L.S.	L.S.	L.S.	$_____
629.0200	Type A Pavement Marker	L.S.	L.S.	L.S.	$_____
629.0210	Type C Pavement Marker	L.S.	L.S.	L.S.	$_____
643.0100	Maintenance of Existing Landscape Areas	F.A.	F.A.	F.A.	$ 20,000.00
645.0100	Traffic Control	L.S.	L.S.	L.S.	$_____
645.0200	Additional Police Officers and/or Additional Traffic Control Devices	F.A.	F.A.	F.A.	$ 150,000.00

PROPOSAL SCHEDULE					
ITEM NO.	ITEM	APPROX. QUANTITY	UNIT	UNIT PRICE	AMOUNT
648.0100	Field-Posted Drawings	L.S.	L.S.	L.S.	$_____
651.1000	Soffit Access Opening	L.S.	L.S.	L.S.	$_____
652.1000	Furnish, Transport, Install, Maintain, Relocate, and Remove Portable Concrete Barrier	24	EACH	$_____	$_____
652.2000	Portable Concrete Barrier End Treatment (NCHRP 350 Compliant)	1	EACH	$_____	$_____
656.1000	Drilling Holes and Installing Dowel Reinforcing Bars	L.S.	L.S.	L.S.	$_____
657.1000	Epoxy Inject Crack	60	FT.	$_____	$_____
658.1000	HECo Ductline – One 3-Inch PVC Schedule 40 Ductline Encased in Concrete	L.S.	L.S.	$_____	$_____
658.2000	HT Ductline – One 2-Inch GT 42 Ductline Encased in Concrete	L.S.	L.S.	$_____	$_____
660.1000	Composite Epoxy Resin-Fiber System	L.S.	L.S.	L.S.	$_____
693.0100	Terminal Impact Attenuator	L.S.	L.S.	L.S.	$_____
696.0100	Field Office (Not to Exceed $32,000)	L.S.	L.S.	L.S.	$_____
699.1000	Mobilization (Not to exceed 10% of the sum of all items excluding the bid price of this item, field office and project site laboratories, furnishing drilled shaft drilling equipment and force account items)	L.S.	L.S.	L.S.	$_____

PROPOSAL SCHEDULE

ITEM NO.	ITEM	APPROX. QUANTITY	UNIT	UNIT PRICE	AMOUNT

A. Sum of all Items..... $_____

B. Either Furnish Foreign Steel Not to Exceed Minimal Amount (Fill in'0' or
Furnish Foreign Steel in Excess of Minimal Amount (Fill in 25% x a)..... $_____

C. Amount for Comparison of Bids (a + b)..... $_____
All bidders must fill in b and complete c.

NOTE: Bidders must complete all unit prices and amounts. Failure to do so may be grounds for rejection of bid.

INTERSTATE ROUTE H-1 SEISMIC RETROFIT

PALI INTERCHANGE AND NUUANU SEPARATION

FED-AID PROJECT NO. BR-H1-1(249)

PRE-BID MEETING MINUTES
JANUARY 3, 2011

The following are minutes for the Hawaii Department of Transportation (HDOT) pre-bid meeting with prospective bidders for the INTERSTATE ROUTE H-1 SEISMIC RETROFIT, PALI INTERCHANGE AND NUUANU SEPARATION, FED-AID PROJECT NO. BR-H1-1(249).

The meeting was held at the State Office Building in Kapolei at 9:00 am. Kevin McMorrow conducted the meeting.

A sign-in sheet with the names of the attendees is attached.

Questions:

1. There were no questions.

The meeting ended at 9:20 am.

Email Questions:

1. Please provide traffic control plans for the resin-fiber work at the Nuuanu and Pali columns. Plan sheets 13-23 cover work for the Abutments and retrofit pier, but not for work on the Nuuanu and Pali Hwy Overpass columns.

A. We show traffic control plans for closures that are either very site specific or require closure for more than one days work. The Nuuanu and Pali overpass work are typical traffic control conditions and will be broken down at the end of each work day because the freeway must be fully opened during rush hours. For these cases you just use the typical traffic control plans as shown in spec section 645.

2. Is there a splice detail for the micropiles?

A. Splicing of casing pipe and center bar is depending on contractor's construction method and material supplier. Each material supplier has their own coupling parts. The contractor shall submit details to the State for approval.

3. At the hinge retrofit shown sheet S15, 6 core holes are optional for concrete placement. For the diaphragm bolster shown on the sheet S14, this option is not shown. Will 6" core holes similar to hinge retrofit on sheet S15 be allowed for the diaphragm bilster?

A. 6" cored holes will be allowed.

4. Regarding Bid Item 206.2020 – Excavation & Backfill for Drainage Facility; there does not appear to be any drainage facility work required in the project plans. What is the intent for this bid item?

A. Delete Bid Item 206.2020.

5. Regarding Bid Item 696.0100 – Field Office; please verify that the "Not To Exceed" amount is $32,000.00 as per Hawaii Standard Specifications for Road & Bridge Construction, 2005.

A. Yes, not to exceed amount is $32,000.00.

6. On Sheet S4, under Rehabilitation Legend, Item No. 2 - Remove Vegetation from Bridge Expansion Joint: Please clarify the intent/scope of work expected.

A. The intension is removing vegetation from Bridge Expansion Joints. Don't have to remove and replace all of the expansion joint filler in the joint, however, some patching of the joint filler may be necessary.

7. On Sheet S2, Note 4. Materials, Items No. (2) calls for the use of Premixed Mortar for all Superstructure Concrete. There is a significant quantity of concrete required in these areas (60 plus cy). Will locally produced ready-mix with the required strength be acceptable?

A. Only Premixed Mortar shall be used.

8. 6000 psi Premix is required for member Thickness 6"-24". The thickness in the infill is Six Feet (6') & ht cells are close to Five Feet (5'). Please clarify this discrepancy.

A. Thickness 6"- 24" to be revised to 6"- 36". The thickness of infill and other concrete members are less than 36" thick. Therefore all the concrete at bridge

deck shall be 6,000 psi. Premixed Concrete except the concrete members needs to be 7,000 psi.

9. Due to the confined space & limited access, use of a self-consolidating concrete mix seems appropriate. Would this change in mix design be permitted?

A. Rapid cure concrete is required and self-consolidating concrete is not applicable.

10. Detail A/S15 calls for 9" Diameter Core Hole but he 8" XX-Strong Pipe has an Outside Diameter of 9.874". Please clarify.

A. According to AISC, 8" XX-strong Pipe has an outside diameter of 8.63".

11. Will 24" Diameter Round Soffit Openings be acceptable in lieu of the 24" x 24" Square Openings?

A. Opening shall remain as 24"x 24" Square.

12. Will it be allowed to have night closures for the Punchbowl Street on-ramp to H-1 to facilitate work on the Retro-Fit Pier?

A. No, the Punchbowl Street on-ramp shall remain open at all times.

13. There are two large trees adjacent to the Retrofit that will likely be removed to construct the Pier & Concrete Slope Pavement. Will there be a requirement to relocate or replace these trees? Please advise.

A. No, trees removed due to the construction of pier shall be properly disposed of. Relocation or replacement is not required.

14. There is a sidewalk on the west side of Abutment 2 that will be blocked by the Abutment Wall Extension. Will this sidewalk be permanently closed or rerouted? Please provide direction.

A. Existing sidewalk shall be reconstructed and rerouted around the new Abutment 2 wall extension. The new sidewalk shall match the existing sidewalk in width and pavement section.

15. In the Special Provisions, Section 645 – Work Zone Traffic Control (2) High Level Ramp: "(c) Lane (closure): Monday thru Thursday: 9:00 p.m. to 3:00 a.m. for final concrete curing only." Will lane closure be permitted for bridge deck coring/saw cutting/removal & concrete placement? Please clarify.

A. No, lane closures will not be permitted for any work other than placement/curing of concrete. All other work shall require keeping the lane open at all times.

16. As per the attached page 513-7a of the Project Specification for subject project, the casing wall thickness is stipulated at 0.45 inches. On sheet 47-S18 of the Project Drawings, Note 1 stipulates a Wall Thickness of 0.47". Please clarify which stipulated dimension shall apply.

A. Wall thickness of casing shown in specification will be revised to 0.47". Wall thickness shall be 0.47" as shown on sheet S-18.

17. Note 2 on Sheet 47-S-18 of the Project Drawings stipulates a Minimum Tensile Strength of 70 ksi for the welded studs. Please clarify what testing will be performed, or other Quality Assurance method will be implemented, to verify this value.

A. (1) Welding Strength shall be 70 ksi.

(2) As far as testing of stud welding goes, follow all the requirements of AWS D1.5 published by AWS as required by Hawaii Standard Specifications for Road and Bridge Construction, Section 713-1-Structural Steel and Related Materials, Page 713-1, Line47.

18. Will it be possible to obtain the electronic copies of the as-built drawings for the affected structures (High-Level Ramp, Pali Hwy Overpass & Nuuanu Overpass)?

A. Electronic copies are not available, however, the State can provide hard copy with fee as per Contractor's request.

19. Are the structural calculations available?

A. No

20. Due to the limited access beneath the High-Level Ramp, can the Retrofit Pier be built in two pours? Because of the lack of headroom to set form panels full height, constructing the pier in two pours would make the forming and pouring of the pier more feasible.

A. No. Horizontal construction joint is not allowed.

21. For the structural concrete called out for in Specification Section 601, instead of using premixed Rapid Set Mortar Mix or Rapid Set Concrete Mix, can the 7000 and 6000 psi concrete be based on a performance requirement instead of a premixed product? By being able to produce concrete with locally

available aggregates instead of in a pre-mix package will allow for the concrete to be supplied using a volumetric truck which is designed to have cement powder and aggregates in separate bins. By being able to fully load the truck with powder in one bin and aggregates separately in other bins, we will be able to supply the required amount of concrete within the short pot time allowed by Rapid Set. Because of the fine nature of cement or Rapid Set powder only the cement bin can meter the powder without creating problems to volumetric truck.

A. All the concrete for superstructure shall be Bagged Rapid Set Mortar in order to open the bridge lane to traffic as soon as possible after the concrete pour.

22. Please provide the shoring load for the bearing pad installation at Abutments 1 & 2.

A. Shoring is not necessary. Refer to Notes on Detail 3/S10.

23. Please provide the spacing of the existing #11 dowels to be removed (referenced in abutment Detail 1-S9/S10).

A. Existing #11 dowel space is at 12" o.c.

24. Regarding the work at Abutments 1 & 2: What is the construction sequence for installation of the concrete infill, removal of existing dowels, removal of concrete ledge & installation of bearing pads?

A. Refer to Notes on Detail 3/S10. The contractor shall submit sequencing plan to Engineer for review and approval.

25. In the Special Provisions Table of Contents there is reference to American Recovery & Reinvestment Act (ARRA) Special Provisions. Is this an ARRA funded project? Will the Federal government be participating fully in the VECP process?

A. This is not an ARRA project. Reference was deleted from the Table of Contents. VECP will be the same as a normal Federal Aid Project.

26. Spec Section 712 references Epoxy-Resin Adhesive for binding new concrete to old concrete. Is this epoxy-resin adhesive for use with the Drill & Dowel work or for all concrete pours against existing concrete? If this is for all new concrete poured against old concrete then it will pose a constructability problem trying to apply this just before a pour after everything is formed up and rebar installed within the short work window. Please clarify where this epoxy-resin adhesive will be required.

A. Since there are 2" concrete cover, epoxy-resin can be applied by 1" diameter roller (for example, contractor to decide) except bottom of beam or wall member.

27. On sheet S6 of 22, the foundation plan is provided along with the location of the borings performed as part of the geotechnical investigation. Two of the three borings are located close to the proposed new pier, while the third is in the vicinity of (80 feet away) Abutment #2. No borings are located near Abutment #1. The question is what subsurface interpretation are the micropile contractors expected to use to estimate the drilling conditions at Abutment #1? B-1 is the closest boring and it is approximately 160 feet away. The question is the same for Abutment #2.

A. As indicated in the geotechnical engineering report dated October 20, 2009, the retrofit design scheme changed following the completion of the field exploration program. Design at Abutment 1 was based on extrapolation of the subsurface information from Boring No.1, which is somewhat consistent with subsurface information shown on the original bridge design drawings. Refer to attached two sheets of drawings with boring logs from old construction of Nuuanu Highway grade separation for SCHOOL STREET and High LEVEL RAMP OVER SCHOOL STREET.

28. On sheet S6 of 22, bottom of footing elevations are provided for each of the structures requiring micropiles. This elevation is different than the bottom of footing elevation shown in the Table on Sheet S18 of 22. My question is which bottom of footing elevation should be used for the project?

A. The elevations of bottom of footing shown on sheet S6 of 22 are correct. The elevation shown on S18 will be revised to match to the elevation indicated in the S6 of 22.

29. In Section 513.07.J and K of the Specifications, it states "Should the pre-production load test micropiles fail to produce acceptable test results, the Contractor shall modify his installation procedures and install a replacement micropile and perform additional load tests at his/her expense until acceptable results are obtained." If the Contractor has installed the micropile correctly to the plans and specs shown in the bid documents and the micropile does not produce acceptable test results, is the cost of revising the installation procedure and subsequent testing to be paid for as an extra by the State? The State has designed and specified a bond length and pile diameter for each pile. Installing the piles to those dimensions should be acceptable.

A. The Engineer will be the sole judge as to whether the pre-production load test micropile was installed properly and whether the micropile load test was conducted properly with reasonable results. If the Engineer deems the micropile installation and test setup to be acceptable and additional micropile

load tests with a greater length are ordered by the Engineer, theses additional micropile load tests would be subject to compensation.

30. Where will reinforcing steel for this project be paid or will an item be created?

A. "Section 602" was added to the Special Provisions as part of this addendum. The section stipulates that reinforcing steel not be paid separately but considered as incidental to various contract items.

31. Concrete Paving Slope: Are there any base/backfill requirements under the paving or will the use of the existing soils be acceptable?

A. If referring to roadway pavement reconstruction backfill detail is provided on sheet S-8.

32. Under what item(s) does the pavement reconstruction (i.e., AC pavement Mix IV, Glasphalt & Agg Subbase) get paid:

A. All pavement reconstruction shall not be paid separately but considered as incidental to the various contract items.

33. Does the concrete infill between the abutments and diaphragms get paid for under item 503.1090 Concrete for Bridge Structure?

A. Yes, item 503.1090 applies.

34. Under what item does the new bridge bearing pads get paid?

A. These are minor items considering the entire scope of work and it should be incidental to bridge deck concrete work.

35. Does the concrete end post for the new guardrail thrie beam section get paid under item 606.0300?

A. Yes, it should be of item 606.0300.

36. Under what Item(s) does the diaphragm bolsters, hinge retrofit work and/or 8"/10" steel pipes get paid?

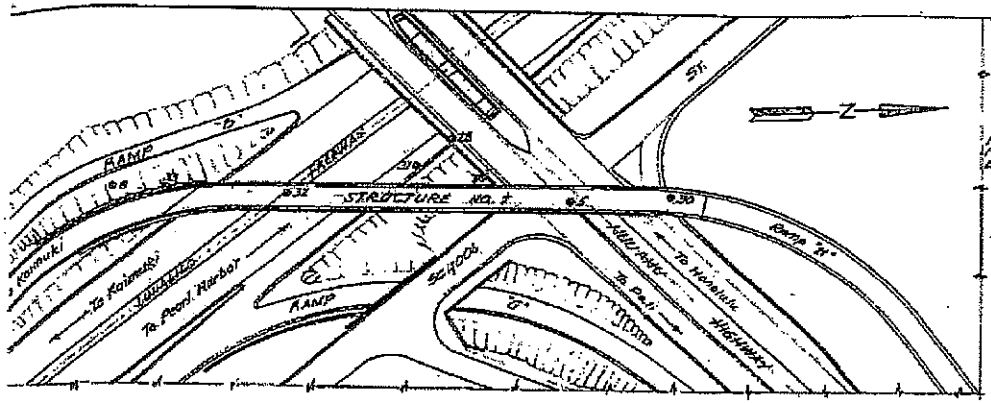
A. It should be incidental to bridge deck concrete work.

37. What work is involved with item 206.2020 Excavation and Backfill for Drainage Facility?

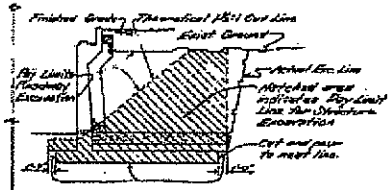
A. This proposal line item has been deleted as part of this addendum.

38. In regards to the Portable Concrete Barriers, doesn't the State have any available for use on this project?

A. State doesn't have any extra Concrete Barrier for this project.



LOCATION PLAN
Scale: 1" = 50'



TYP. DETAIL - LIMITS OF STRUCTURE EXCAVATION AT ABUTMENT
No Scale

GENERAL NOTES

MATERIALS

All concrete class A-1 unless otherwise noted on plans

All steel reinforcement shall be intermediate grade.

CONSTRUCTION METHODS

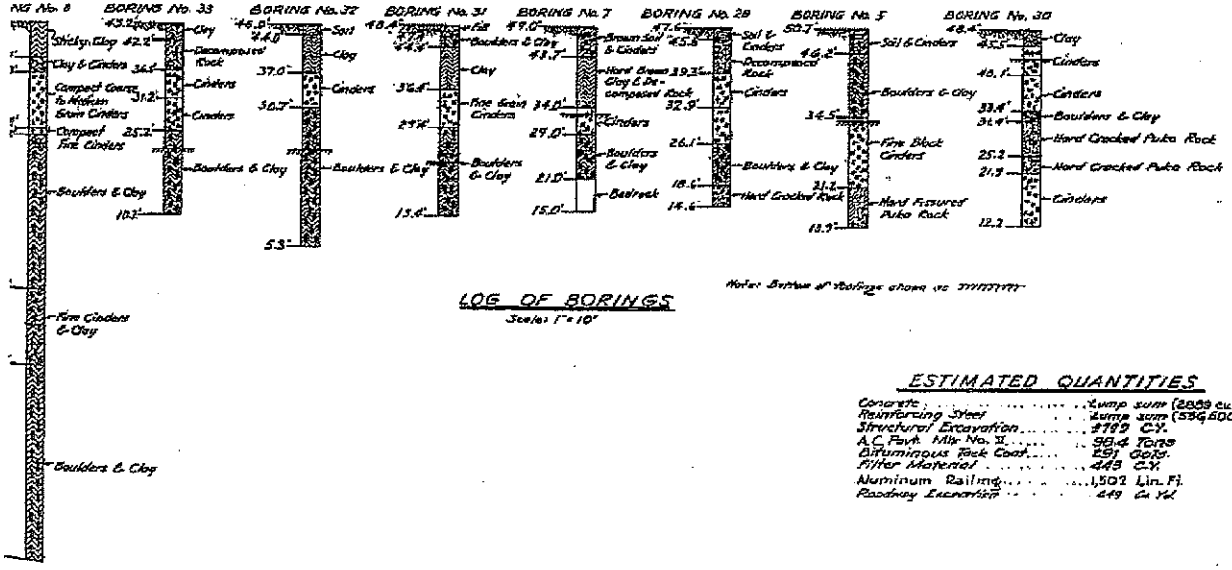
Curb on bridge shall not be poured until after release of reinforcement.

Backfill behind abutments shall be complete in place prior to superstructure pour.

For Concrete Finish - see Standard Specifications.

Footings shall be poured to neat lines as shown. In case of over excavation, space between footing and ground shall be filled with concrete at the Contractor's expense. This fill concrete shall have a minimum quality of Class B-1.

Falsework and forms for the support of bar girders shall be designed to support the load that would be superimposed were the entire superstructure poured at one time. Falsework and forms supporting the bottom slab of bar girders shall not be removed until 14 days after the final top slab pour. All interior forms except those permitted to remain in place shall be removed completely and the inside shored of all loose material and support chairs. Forms for bottom slab of bar girder shall be 5 ply panel board.



LOG OF BORINGS
Scale: 1" = 10'

Note: Bottom of footings shown as ////////

REFERENCE NOTE

For typical detail of Box Girder see Standard Box Girder Detail Sheet # 279

ESTIMATED QUANTITIES

Concrete	Lump sum (2869 cu. yds.)
Reinforcing Steel	Lump sum (536,600 lbs.)
Structural Excavation	2799 C.Y.
A.C. Pavt. Mix No. II	96.4 Tons
Bituminous Tack Coat	691 Gals.
Filter Material	443 C.Y.
Aluminum Railing	1,502 Lin. Ft.
Roadway Excavation	449 Cu. Yd.

JAMES R. WILSON
REGISTERED ENGINEER
No. 279
TERRITORY OF HAWAII

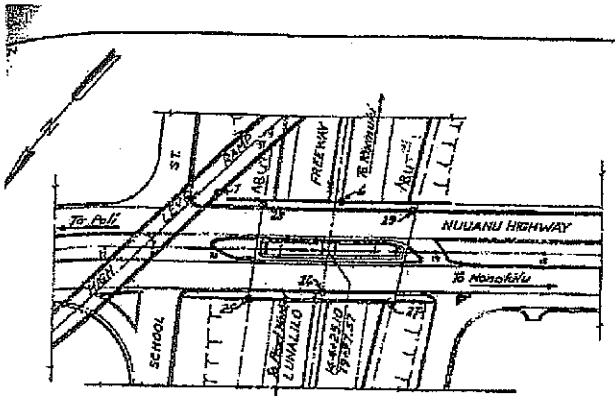
LAW & WILSON + TUDOR + BOWILL
ARCHITECTS + ENGINEERS + LAND SURVEYORS

STRUCTURE NO. 2

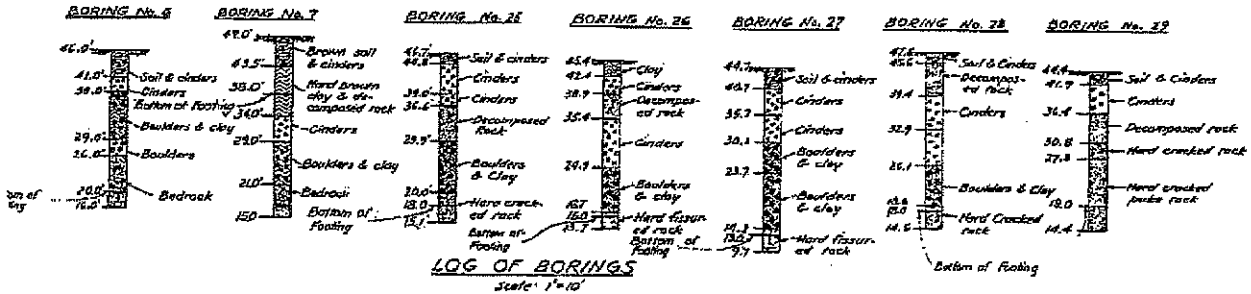
TERRITORIAL HIGHWAY DEPARTMENT
TERRITORY OF HAWAII

NUUANU HIGHWAY
PROJECT No. BU-021-1(6), UNIT 4
GRADE SEPARATION FOR
HIGH LEVEL RAMP OVER SCHOOL ST.
LOCATION PLAN & BORINGS

SHEET No. 1 OF 17 SHEETS



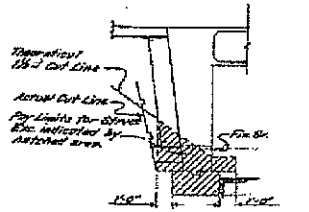
LOCATION PLAN
Scale: 1"=50ft



LOG OF BORINGS
Scale: 1"=10'

ESTIMATED QUANTITIES

Concrete	Lump sum (1900 cu.yds.)
Reinforcing Steel	Lump sum (228,900 lbs.)
Structural Excavation	1695 cu.yds.
A.C. Pvmt. Mix No. 2	867 tons
Bituminous Tack Coat	185 gals.
Filler Material	3.94 cu.yds.
Aluminum Railing	704 Lin. Ft.



TYP. DET. - PAY LIMIT LINE FOR STRUCTURAL EXC. AT ABUT.
No Scale

GENERAL NOTES

MATERIALS

All concrete class A-1 unless otherwise noted on plans.

All steel reinforcement shall be intermediate grade.

CONSTRUCTION METHODS

Curb and sidewalk on bridge shall not be poured until after release of falsework.

Placing of backfill at bridge shall not be started until after the concrete in the superstructure has reached a strength of 3,000 lbs. per sq.inch. The fill must be brought up evenly and simultaneously at both ends of the structure so as to avoid one sided earth pressure.

For concrete finish - See Standard Specifications.

Footings shall be poured to neat lines as shown. In case of over excavation, space between footing and ground shall be filled with concrete at the contractor's expense. This fill concrete shall have a minimum quality of Class D-1.

Falsework and forms for the support of box girders shall be designed to support the load that would be superimposed were the entire superstructure poured at one time. False work and forms supporting the bottom slab of box girders shall not be removed until 14 days after the final top slab pour. All interior forms except those permitted to remain in place shall be removed completely and the inside cleared of all loose material and swept clean. Forms for bottom slab of box girder shall be 5 ply panel board.

See attachment on sheet 245 Nuuanu Hwy. for additional reinforcing bars @ retaining connection to abutment.

LAW & WALDRON - TUDOR & TOWILL
CONSULTANTS - ENGINEERS - SURVEYORS
Honolulu, T.H.
DATE Apr. 3, 1957

STRUCTURE NO. 1
TERRITORIAL HIGHWAY DEPARTMENT
TERRITORY OF HAWAII
NUUANU HIGHWAY
PROJECT NO. SU-061-(16), UNIT 4
GRADE SEPARATION NEAR
SCHOOL STREET
LOCATION PLAN & BORINGS

SHEET No. 1 OF 11 SHEETS

Pre-Bid Meeting
1/3/11
Interstate Route H-1 Seismic Retrofit, Pali Interchange and Nuuanu Separation
Project No. BR-H1-1(249)

Name	Company	email	Phone
Jeff Kauppi	Kiewit	jeff.kauppi@kiewit.com	808-674-1088
Rod Ueunten	Kiewit	rod.ueunten@kiewit.com	674-1088
Richard Halle	Hawaiian Dredging	rhalle@hdec.com	808-735-3295
Peter Kwan	"	PKwan@hdec.com	808-754-6509
JONG NAMGUNG	Mitsunaga & Assoc. Inc.	Jongn@mitsdesign.com	808-945-7882 (x123)
Paul Santo	HDOT	Paul.Santo@hawaii.gov	692-7611
DAVE SHIMABUKU	MITSUNAGA & ASSOC.	daves@mitsdesign.com	945-7882 X153
Rick Pu	Geolabs	rick@geolabs.net	808-841-5064
MIKE LOVELIN	STARCOM BUILDERS	MBLOVELIN@STARCOMBUILDERS.COM	808-673-9509
Jordan Monius 330	American Marine Corp	JORDAN@AMARINECORP.COM	330-7256
WES NAKAMURA	OKADA TRUCKING CO. LTD	wnakamura@okadatruckng.com	PH 841-0138 FAX 847-4953
DOM JOAVANNI CUEVA	KAIKOR CONST CO., INC	dom@kaikor.com	841-3110
DOUG SARTE	TOKUNAGA MASONRY, INC	TMI@TOKUNAGAMASONRY.COM	591-7060