STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ADDENDUM NO. 1

FOR

NIMITZ HIGHWAY IMPROVEMENTS
KEEHI INTERCHANGE TO PACIFIC STREET
PROJECT NO. 92A-01-03

The following amendments shall be made to the Bid Documents:

A. **TABLE OF CONTENTS**

1. Replace page 3 dated 3/3/03 with the attached page 3 dated 3/28/03.

B. **NOTICE TO BIDDERS**

1. On page NB-1, ADD the following sentence to paragraph two:

"This project also includes the operation of the contraflow lane by the Contractor during a four month evaluation period with a possible extension of operation responsibilities up to an additional eight months."

C. **SPECIAL PROVISIONS**

1. **Section 604 – Manholes, Inlets and Catch Basins.**

a. On page 604-5a, Subsection 604.05 Basis of Payment:

Replace references to "shallow" manhole with "Highway Lighting" manhole.

2. **Section 606 – Guardrail.**

a. On page 606-6a, Subsection 606.04 Method of Measurement: ADD new paragraph to read as follows:

"The Engineer will not measure concrete barrier transitions."

b. On page 606-7a, Subsection 606.05 Basis of Payment: ADD new paragraph to read as follows:

"The Engineer will pay for the accepted concrete barrier transition at the contract lump sum price complete in place. The price includes full compensation for furnishing labor, materials, equipment and incidentals necessary to finish the work."

c. On page 606-7a, Subsection 606.05 Basis of Payment: ADD the following Pay Item to read as follows:

"Concrete Barrier Transition - Lump Sum"

3. **Section 622 – Roadway Lighting System.**

Add pages 622-1a to 622-7a dated 3/28/03.

4. **Section 623 – Traffic Signal System.**

a. On page 623-3a, Subsection 623.02 Materials, ADD new paragraph to read as follows:

"The State furnished materials under pay items 623.2021, 623.2022, 623.2023, 623.2024, 623.3061, and 623.3071 will not be available until early August 2003. The Contractor will schedule his work to incorporate the State furnished materials as soon as it is available."

b. Replace pages 623-15a to 623-17a dated 2/25/03 with the attached pages 623-15a to 623-17a dated 3/28/03.

5. **Section 629 – Pavement Markings.**

a. On page 629-11a, Subsection 629.05 Basis of Payment: **REVISE** fourth paragraph to read as follows:

"The Engineer will pay for the accepted pavement arrow, pavement word, "LOOK" Legend, and pavement symbol at the contract unit price per each. The price includes full compensation for establishing control points; laying out; cleaning the existing surface; furnishing and applying the pavement arrow, pavement word, LOOK Legend and pavement symbol; and furnishing labor, materials, equipment, tools, and incidentals necessary to complete the work.

b. On page 629-12a, Subsection 629.05 Basis of Payment ADD the following Pay Item to read as follows:

""LOOK" Legend (Paint, Tape, Type _____ or Thermoplastic Extrusion) Each"

6. **Section 646 – Contraflow Traffic Control.**

a. Add pages 646-1a to 646-3a dated 3/20/03.

7. **Section 652 – Cold Planing of Existing Pavement.**

On page 652-2a, Subsection 652.05 Basis of Payment: **REVISE** first paragraph to read as follows:

"The Engineer will consider the cost for cold planing as included in the contract price of the various contract items in Section 401-Asphalt Concrete Pavement."

8. **Section 693 – Quadguard System or TAU-II Terminal Impact Attenuator.**

Replace pages 693-1a to 693-2a dated 9/10/98 with the attached pages 693-1a to 693-3a dated 3/24/03.

B. **PROPOSAL SCHEDULE**

1. Replace pages P-11 to P-17 dated r3/3/03 with pages P-11 to P-17 dated r3/28/03.

C. **PLANS**

1. Replace Plan Sheet Nos. 55, 62 and 63 with the attached Plan Sheet Nos. ADD 55, ADD 62 and ADD 63.

2. **Plan Sheet No. 23. REVISE** Manhole callout at Station 90+82.73, 10.4 Lt. and Station 90+61.70, 1.5 Lt. from Shallow Manhole to "Highway Lighting Manhole."

3. **Plan Sheet No. 30. REVISE** last sentence of Note 1 to read as follows:

   "All equipment and material except traffic signal poles, mast arms and signal heads removed shall become the property of the Contractor. Traffic signal poles, mast arms and signal heads not reused on the project shall become the property of the State. Items will be delivered to HDOT Oahu District Office, 727 Kakoi Street, Honolulu. Contact Victor Chan at 831-6886 for delivery arrangements."

4. **Plan Sheet No. 44.** Add note to read as follows:

   " For crossover I roadway excavation limits see sheet C1."

5. **Plan Sheet No. 46.** Add note to read as follows:

   "For crossover II and crossover III roadway excavation limits see sheets C3 and C4 respectively."

6. **Plan Sheet No. 49.** Add note to read as follows:

   "For crossover IV roadway excavation limits see sheet C5."

7. **Plan Sheet No. 53.** Add note to read as follows:

   a. "Install Sleeve for Drop-in Sign, Type J/J, Sta. 5+00, 11' Lt., See Detail on Sht. P3"

   b. "Install Sleeve for Drop-in Sign, Type J/J, Sta. 10+00, 11' Lt., See Detail on Sht. P3"

8. **Plan Sheet No. 54.** Add note to read as follows:

"Install Sleeve for Drop-in Sign, Type J/J, Sta. 15+00, 11' Lt., See Detail on Sht. P3"

9. **Plan Sheet No. 56.** Add note to read as follows:

a. "Install Sleeve for Drop-in Sign, Type K/G, Sta. 30+00, 11' Lt., See Detail on Sht. P3"

a. "Install Sleeve for Drop-in Sign, Type J/J, Sta. 33+20, 11' Lt., See Detail on Sht. P3"

b. "Install Sleeve for Drop-in Sign, Type K & G, Sta. 37+68, 11' Lt., See Detail on Sht. P3"

c. "Install Sleeve for Drop-in Sign, Type J/J, Sta. 39+20, 11' Lt., See Detail on Sht. P3"

d. Revise callout from "Install Sleeve for Drop-in Sign, Type F & G, Sta. 26+32, Lt; Sta. 36+52, Lt." to read "Install Sleeve for Drop-in Sign, Type F & G, Sta. 35+52, Lt.; Sta. 36+52, Lt."

10. **Plan Sheet No. 57.** Add note to read as follows:

a. "Install Sleeve for Drop-in Sign, Type J/J, Sta. 41+00, 11' Lt., See Detail on Sht. P3"

b. "Install Sleeve for Drop-in Sign, Type K & G, Sta. 45+22, 11' Lt., See Detail on Sht. P3"

c. "Install Sleeve for Drop-in Sign, Type J/J, Sta. 46+70, 11' Lt., See Detail on Sht. P3"

d. Revise callout from "Install Sleeve for Drop-in Sign, Type F & G, Sta. 44+02, Lt; Sta. 44+22, Lt." to read "Install Sleeve for Drop-in Sign, Type F & G, Sta. 43+19, Lt.; Sta. 44+22, Lt."

11. **Plan Sheet No. 58.** Add note to read as follows:

    a. "Install Sleeve for Drop-in Sign, Type J/J, Sta. 51+70, 11' Lt., See Detail on Sht. P3"

    b. "Install Sleeve for Drop-in Sign, Type K & G, Sta. 58+87, 11' Lt., See Detail on Sht. P3"

    c. "Install Sleeve for Drop-in Sign, Type J/J, Sta. 60+00, 11' Lt., See Detail on Sht. P3"

    d. Revise callout from "Install Sleeve for Drop-in Sign, Type F & G, Sta. 57+59, Lt; Sta. 57+79, Lt." to read "Install Sleeve for Drop-in Sign, Type F & G, Sta. 56+79, Lt.; Sta. 57+79, Lt."

12. **Plan Sheet No. 59.** Add note to read as follows:

    a. "Install Sleeve for Drop-in Sign, Type J/J, Sta. 65+00, 11' Lt., See Detail on Sht. P3"

    b. Revise callout from "Install Sleeve for Drop-in Sign, Type F & G, Sta. 69+72, Lt; Sta. 69+92, Lt." to read "Install Sleeve for Drop-in Sign, Type F & G, Sta. 68+92, Lt.; Sta. 69+92, Lt."

13. **Plan Sheet No. 60.** Add note to read as follows:

    a. "Install Sleeve for Drop-in Sign, Type K & G, Sta. 71+46, 11' Lt., See Detail on Sht. P3"

    b. "Install Sleeve for Drop-in Sign, Type J/J, Sta. 72+95, 11' Lt., See Detail on Sht. P3"

    c. "Install Sleeve for Drop-in Sign, Type J/J, Sta. 75+75, 11' Lt., See Detail on Sht. P3"

    d. Sign callout at Station 73+20 +/- shall be changed to read "R3-4 on Post, Type I Sign, See Detail on Sht. P3"

    e. Revise callout from "Install Sleeve for Drop-in Sign, Type F & G, Sta. 79+35, Lt; Sta. 79+55, Lt." to read "Install Sleeve for Drop-in Sign, Type F & G, Sta. 78+55, Lt.; Sta. 79+55, Lt."

14. **Plan Sheet No. 61.** Add note to read as follows:

a. "Install Sleeve for Drop-in Sign, Type K & G, Sta. 81+15, 11' Lt., See Detail on Sht. P3"

b. "Install Sleeve for Drop-in Sign, Type J/J, Sta. 82+65, 11' Lt., See Detail on Sht. P3"

c. "Install Sleeve for Drop-in Sign, Type K & G, Sta. 88+10, 11' Lt., See Detail on Sht. P3"

d. Sign callout at Station 83+20 +/- shall be changed to read "R3-4 on Post, Type I Sign, See Detail on Sht. P3" Sign callout at Station 86+97 +/- shall be changed to read "R3-4 on Post, Type I Sign, See Detail on Sht. P3, Type D Sign, See Detail on Sht. P3"

e. Revise callout from "Install Sleeve for Drop-in Sign, Type F & G, Sta. 86+65, Lt; Sta. 86+85, Lt." to read "Install Sleeve for Drop-in Sign, Type F & G, Sta. 85+85, Lt.; Sta. 86+85, Lt."

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

for RODNEY K. HARAGA
Director of Transportation

DIVISION 600 - INCIDENTAL CONSTRUCTION		
Section	**Description**	**Pages**
601	Structural Concrete	601-1a - 601-14a
604	Manholes, Inlets And Catch Basins	604-1a - 604-5a
606	Guardrail	606-1a - 606-7a
609	Curb and/or Gutter	609-1a - 609-8a
616	Sprinkler System	616-1a - 616-12a
618	Grassed Surfaces	618-1a - 618-4a
621	Traffic Control Signs	621-1a - 621-12a
622	Roadway Lighting System	622-1a - 622-7a
623	Traffic Signal System	623-1a - 623-17a
629	Pavement Markings	629-1a - 629-12a
645	Traffic Control Devices	645-1a - 645-13a
646	Contraflow Traffic Control	646-1a – 646-3a
648	Permeable Separator	648-1a – 648-2a
652	Cold Planing of Existing Pavement	652-1a – 652-2a
693	Quadguard System Or TAU II Terminal Impact Attenuator	693-1a – 693-3a
699	Mobilization	699-1a – 699-2a

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

"SECTION 622 – ROADWAY LIGHTING SYSTEM

622.01 Description. This work includes relocating a highway lighting and overhead sign lighting system according to the contract.

This work includes furnishing and installing electrical conductors and conduits, fittings, pullboxes and manholes, concrete jacket, and other materials necessary for operating and controlling the highway lighting and overhead sign lighting systems.

Furnish and install the incidental parts necessary to complete the highway lighting and overhead sign lighting system as though the contract showed such parts.

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

622.02 Materials. Materials shall conform to the following:

Welded Wire Fabric Reinforcement	709.01(C)
Pullboxes	712.06(B)
Conduits	712.27
Light Sources	712.32
Cables, Conductors and Wires	712.34
Disconnect and Protective Devices	712.35

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

Anchor bolts and steel plate covers shall be structural steel conforming to ASTM A 325 and A 36 respectively. Zinc-coat the anchor bolts if exposed.

Crossarms, hardware, and anchoring materials shall be of a type normally stocked and used for similar purpose by local public utility companies.

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

622.03 Construction Requirements.

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

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

(B) Excavation and Backfill. Excavation and backfill shall conform to Section 206 - Excavation and Backfill for Conduits and Structures.

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

(C) Installation.

(1) Circuits. Encase the cables installed underground or in concrete rigid barrier type guardrail in conduits or other accepted encasement.

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

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

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

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

Trim the conductor insulation to a conical shape. Roughen the conductor insulation before applying splice insulation. Splice insulation includes layers of thermoplastic electrical insulating tape not over 0.007 inches thick conforming to Federal Specification MIL-7798. Apply the splice insulation a thickness equal to and well lapped over the original insulation. For high voltage and multiple lighting conductor splices, apply two layers of synthetic oil resistant rubber tape conforming to ASTM D 119 over each conductor before placing the thermoplastic tape. Then cover the splice well with at least two layers of asphaltic impregnated open mesh fabric tape and a coating of high grade insulating paint or similar material. Leave at least 2 feet of slack for each conductor at each splice.

Coil at least five feet of slack neatly near each lamp post foundation at both ends of each cable run.

(2) Secondary Connections. Make the connections from the secondary power supply line to fuse boxes with aluminum or copper cable to match the existing secondary cable material. Sizes shall be as specified in the contract.

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

(4) Pullboxes and Manholes. Install pullboxes and manholes at the locations shown in the contract.

Install pullboxes and manholes so that the covers are level with the pavement finish grade, the curb or sidewalk grade or 1 inch above the existing ground.

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

(5) Conduits. Lay the zinc-coated rigid steel and polyvinyl chloride (PVC) conduits carefully in trenches prepared to receive the conduits. Conduits under roadway areas and driveways shall be PVC, Schedule 80 or shown in the contract.

Lay the conduit that will be placed in concrete structure or encased in concrete to the required lines and grades. Support the conduit rigidly in place by masonry material, manufactured conduit spacers, or other accepted means. Wire the conduit so that the Contractor will not dislodge the conduit during the placing and tamping of the concrete. The thickness of the concrete around the conduits shall be shown in the contract. Use only hand shovels in compacting the concrete. Cure the concrete jackets for at least 72 hours before permitting vehicular traffic.

Install the rigid steel conduit according to Article 346 of the Code. Use white and tinted ready-mixed paint on the threads of joints. Repair zinc-coated surface according to Subsection 501.03(G)(2) - Repairing of Damaged Zinc-Coated Surfaces.

Install rigid PVC conduit according to Article 347 of the Code PVC conduit connections shall be of the solvent-weld type. Make solvent-weld joints according to the conduit manufacturer's recommendations and as accepted by the Engineer. The Engineer will permit pre-assembled sections of conduit.

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

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

Cap or plug and mark the ends of conduits shown or specified. Provide each conduit run with a No 10 gage flexible zinc-coated pull wire or 1/8 inch polyolefin line extending uninterrupted through handholes for the entire length of run Double an additional 2 feet of wire or polyolefin line back into the conduit at both ends of the run

Ends of conduit runs shall extend at least 24 inches past the face of curb or edge of pavement, unless the ends end in pullboxes and manholes. Locate the ends accurately by special markers, markings on curbs or as specified by the Engineer.

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

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

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

(1) Test for continuity of each circuit.

(2) Test for grounds in each circuit.

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

TABLE 622-I -- INSULATION RESISTANCE	
Cable or Circuit	**Minimum Resistance (ohms)**
No.14 - No.12 wire	1,000,000
25 to 50 amperes	250,000
51 to 100 amperes	100,000
101 to 200 amperes	50,000
201 to 400 amperes	25,000
401 to 800 amperes	12,000
over 800 amperes	5,000

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

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

(F) Salvaging Electrical Equipment. The contract directs the Contractor to Section 202 - Removal of Structures and Obstructions, regarding existing highway facilities. When shown in the contract or specified by the Engineer, remove and salvage the existing electrical equipment including luminaires, standards, mast arms, ballasts, transformers, service equipment, and pullboxes, otherwise the existing electrical equipment shall become the property of the Contractor and the Contractor shall remove and dispose of the existing electrical equipment at no cost to the State.

Underground conduits, conductors and foundations not reused in the work shall become the property of the Contractor. Remove them from the highway right-of-way at no cost to the State.

When abandoning a foundation in-place on outside the roadbed area, remove the top of the foundation, anchor bolts and conduits to a depth of 6 inches below the surface of the ground. Backfill the resulting hole with material equivalent to the surrounding material.

Salvage and stockpile the existing equipment removed and not reused in the work at the work site.

622.04 Method of Measurement. The Engineer will not measure the relocation of highway lighting and overhead sign lighting system for payment.

622.05 Basis of Payment. The Engineer will pay for the accepted relocation of highway lighting and overhead sign lighting system on a contract lump sum basis.

The price includes full compensation for furnishing and installing, modifying or removing the existing lighting system; excavating and backfilling; trench restoration including permeable base, permeable separator, saw cutting, trench backfill, and asphalt concrete; restoring sidewalks, pavements and appurtenances damaged or destroyed during construction; furnishing and installing concrete jacket, conduit, and installing metal detectable yellow plastic warning tape; salvaging existing materials; making required tests, furnishing labor, materials, equipments, tools, and incidentals necessary to complete the work.

The Engineer will consider additional materials and labor, needed to complete the installation of the system and not shown in the contract included in the bid price of the various contract items.

The Engineer will pay for hauling and stockpiling of salvaged materials and equipment off the right-of-way as specified by the Engineer as extra work according to Subsection 104.03 - Extra Work.

The Engineer will make payment under:

Pay Item	**Pay Unit**
Relocation of Highway Lighting and Overhead Sign Lighting	Lump Sum"

END OF SECTION

(l) **Warranty.** Materials and equipment installed for permanent construction shall be new. The contract contemplates the use of first-class material and equipment throughout the performance of the contract.

Secure from the manufacturer(s), a warranty or warranties guaranteeing equipments from defects in materials, design and workmanship for not less than 12 months from the date of acceptance.

When requiring adjustments or repairs during the warranty period, adjust or repair the existing unit within 24 hours from the time of notification.

When requiring repairs that need factory corrections during the warranty period, replace the existing unit with an accepted temporary operational replacement unit within 24 hours from the time of notification until the Contractor can install the new unit. Install the new, identical non-defective unit within 30 days from the time of notification.

623.05 Method of Measurement. The Engineer will measure the traffic signal standard, foundation for traffic signal standard, traffic signal assembly, pullbox, loop detector sensing unit, opticom receiver, and reconnect traffic camera, each complete in place.

The Engineer will measure reinforced concrete jacket per linear foot complete in place.

The Engineer will not measure traffic signal ductline and cable for payment.

623.06 Basis of Payment. The Engineer will measure reinforced concrete jacket per linear foot complete in place. The price includes concrete, reinforcing, conduit, connecting to existing conduits, furnishing materials, labor, tools, equipment, and incidentals necessary to complete the work.

The Engineer will pay for the accepted traffic signal standard at the contract unit price per each complete in place. The price includes full compensation for submitting the equipment list and drawing; installing the traffic signal standard; wiring; bonding and grounding; testing; providing turn-on service; submitting warranty; removing traffic signal mast arms and standards as needed, and furnishing equipments, tools, labor, materials and other incidentals necessary to complete the work.

The Engineer will pay for the accepted foundation for traffic signal standard at the contract unit price per each complete in place. The price includes full compensation for excavating and backfilling; forming; furnishing and placing the reinforcing steel; mixing, placing, and curing the concrete; furnishing

and setting the anchor bolts; restoring the pavement; removing existing foundations as needed, and furnishing equipments, tools, labor, materials and other incidentals necessary to complete the work.

The Engineer will pay for the accepted traffic signal assembly at the contract unit price per each complete in place. The price includes full compensation for submitting the equipment list and drawing; assembling the signal heads; wiring; bonding and grounding; painting the signal head mounting; testing; providing turn-on service; submitting warranty; removing or adjusting existing traffic signal assemblies as needed, and furnishing equipments, tools, labor, materials and other incidentals necessary to complete the work.

The Engineer will pay for the accepted pullbox at the contract unit price per each complete in place. The price includes full compensation for submitting the equipment list and drawing; furnishing and installing the pullbox at the designated locations; coating the fames and covers; and furnishing equipments, tools, labor, materials and other incidentals necessary to complete the work.

The Engineer will pay for the accepted loop detector sensing unit at the contract unit price per each complete in place. The price includes full compensation for saw cutting; cleaning and blowing the saw cut area; furnishing and inserting the loop cable; splicing in the pullbox; filling the saw cut groove with epoxy sealer or hot applied rubberized sealant; and furnishing equipments, tools, labor, materials and other incidentals necessary to complete the work.

The Engineer will pay for the accepted preemption detector cable at the contract unit price per each complete in place. The price includes full compensation for furnishing and installing the preemption detector cable from the detector to the cabinet; and furnishing equipments, tools, labor, materials and other incidentals necessary to complete the work.

The Engineer will pay for the accepted reconnect traffic camera at the contract unit price per each complete in place. The price includes full compensation for submitting the equipment list and drawing; removing, cleaning and re-installing the traffic camera; furnishing and installing all wiring required for reconnection; bonding and grounding; testing; and furnishing equipment, tools, labor, materials and other incidentals necessary to complete the work.

The Engineer will pay for the accepted traffic signal conduit and relocated ductlines on a contract lump sum basis complete in place. The price includes full compensation for saw cutting; excavating and backfilling; furnishing and placing concrete encasing; connecting to existing; furnishing, installing, bonding, and grounding the conduits; trench restoration including CLSM, permeable base, permeable separator, cold planing, asphalt base course, trench backfill material, and asphalt concrete; restoring curbs, gutters and sidewalks; furnishing and

installing metal detectable yellow plastic warning tape; and furnishing equipment, tools, labor, materials, and other incidentals necessary to complete the work.

The Engineer will pay for the accepted traffic signal cables on a contract lump sum basis complete in place. The price includes full compensation for furnishing, installing, splicing, and taping the cable; making the connections; providing turn-on service; and furnishing equipment, tools, labor, materials and other incidentals necessary to complete the work.

The Engineer will consider full compensation for additional materials and labor not specifically shown or called for that are necessary to complete the work incidental to the various contract items in the proposal.

The Engineer will make payment under:

Pay Item	**Pay Unit**
_____Type _____ Traffic Signal Standard _____	Each
Foundation for _____	Each
_____ Signal Assembly _____	Each
Type _____ Pullbox	Each
Loop Detector Sensing Unit (6 Ft. x 6 Ft.) _____ Loops	Each
Opticom Receiver	Each
No. _____, _____ Conductor _____	Lump Sum
Reconnect Traffic Camera	Each
_____ Conduit(s), _____	Lump Sum
Reinforced Concrete Jacket _____	Linear Foot"

END OF SECTION

Make this Section a part of the Standard Specifications:

"SECTION 646 – CONTRAFLOW TRAFFIC CONTROL

646.01 Description. This work includes furnishing and placement of necessary equipment, signs, barricades, other traffic control devices and labor to operate the Nimitz contraflow lane as indicated in contract documents.

646.02 Materials. The materials shall meet the requirements of the MUTCD, Hawaii Standard Specification for Road and Bridge Construction, and the Standard Plans.

The Contractor shall furnish the traffic cones, signs and barricades. These shall be maintained in good condition at all times at no cost to the State. They shall become the State's property at the end of the contract. The Contractor shall furnish and maintain its own 28-inch traffic cones (reflectorized with 6-inch wide white band placed 3-inch from the top supplemented with an additional 4-inch band), barricades and other devices necessary. The Contractor shall maintain its own storage facilities between the hours of operation and all necessary equipment and labor to perform the work.

The Contractor shall deliver all traffic cones and drop –in signs to the Oahu District Office base yard, 727 Kakoi Street, Honolulu at the end of the operational period indicated in the contract documents.

646.03 Construction Requirements.

(A) Scope of Work. The contraflow traffic control shall be in accordance with all of the 'Rules and Regulations Governing the Use of Traffic Control Devices at Work Sites on or Adjacent to Public Streets and Highways', 'The Rules and Regulations Governing the Design, Construction and Maintenance of Public Streets and Highways', and the 'Manual on Uniform Traffic Control Devices for Streets and Highways', published by the FHWA in 1978 and any amendments or revisions thereof as may be made from time to time.

The Contractor shall place and remove traffic cones, barricades, install portable traffic signs for the morning peak traffic period.

The Contractor shall maintain the traffic control devices during hours of contraflow operation and replace any traffic control devices dislodged from their proper positions.

The traffic control devices will be in place and removed promptly as indicated in Section 646.03(C) – Hours of Operation.

The Contractor shall develop an operations plan/procedure for the contra-flow utilizing the information in the contract documents and submit to the State. Include sequence of actions with timeline for deploying and removing the traffic control devices.

(B) Area of Coverage. The contraflow traffic control will be performed on Nimitz Highway between Nimitz Contraflow Baseline Station 0+00 and Station 95+00, approximately 1.8 miles. The plans show the details of the work.

(C) Hours of Operation. The services shall be provided during weekdays, except for State holidays. The devices shall be installed, remain in place, and removed as indicated below:

Installation will start at:	Installed by:	Removal will start at:	Removed by:
5:00 A.M.	5:30 A.M.	8:30 A.M.	9:00 A.M.

If the hours of operation are changed, an adjustment in the unit price may be made accordingly. An hourly rate shall be established by dividing the monthly rate by 22 workdays divided by 4 hours per day.

The Contractor shall have all traffic control devices in place and removed during the hours specified. Failure to place and remove all traffic control devices on a timely basis shall result in liquidated damages of $250.00 for every one to fifteen-minute increment per lane.

Delay in placing or removal of the devices on time, caused by a problem beyond the Contractor's control, may be considered for not charging liquidated damages. Equipment breakdown is not a cause to waive liquidated damages. If the equipment breaks down more than three times in the first two months, liquidated damages will be doubled for the remainder of the contract.

(D) Operation Period and Option to Extend. The period of the operation shall be for four months from the date established by the Department to begin coning operations. The Department reserves the right to extend the contract by mutual agreement for an additional eight months at the unit price in the proposal schedule with no adjustment.

(E) Safety and Convenience. The Contractor shall at all times conduct its work to assure the least possible obstruction to public traffic. The Contractor shall provide for the safety and convenience of the public and the protection of persons and property.

(F) Location Plans and Details. Operation of the contraflow lane will be as indicated on the contract plans. The Department may direct operational changes after Notice to Proceed has been issued. The Contractor shall coordinate with the Department to insure the latest direction for operational control of the contraflow lane as been obtained before scheduling equipment and labor to perform the work.

(G) Truck Requirements. Vehicles must be equipped with headlights, tail lights, red reflectors, stop lights, revolving amber light(s) on cab roof, warning lights, etc., as required by Hawaii State laws, plus one utility light (white, portable or adjustable); and may be equipped with any other lighting as the Contractor may desire and which are not prohibited by law. An arrow board will be installed on the truck to warn traffic.

The vehicles must be equipped so as to allow safe and convenient laying down and picking up of traffic cones, barricades and placement of drop-in signs with minimum of effort.

646.04 Method of Measurement – The Engineer will measure contraflow traffic control per month. First month begins on the date established by the Department to begin coning operations. Subsequent months begin on the same numeric day of the following months.

646.05 Basis of Payment – The Engineer will pay for the accepted contraflow traffic control at the contract unit price per month.

Payment will be full compensation for the work prescribed in this Section and Subsection 109.02 – Scope of Payment.

The Engineer will make payment under:

Pay Item	**Pay Unit**
Contraflow Traffic Control	Month

Payment will be adjusted to reflect liquidated damages assessed during the period."

Make the following Section a part of the Standard Specifications:

"SECTION 693 - QUADGUARD SYSTEM OR TAU-II TERMINAL IMPACT ATTENUATOR

693.01 Description. This section is for furnishing and installing Quadguard System or TAU-II terminal impact attenuators at the prepared sites according to the contract.

693.02 Materials. Materials shall conform to the following:

Concrete Structures	503.02
Reinforcing Steel	602.02

The Quadguard System terminal impact attenuator shall consist of crushable cartridge assemblies surrounded by a framework of steel Quad-beam guardrail which can telescope rearward during head-on impacts. The Quadguard System shall have a center monorail which resists lateral movement during side angle impacts. The nose shall consist of a formed plastic nose wrap.

The TAU-II terminal impact attenuator shall consist of independent collapsible energy absorbing cartridges guided and supported by high strength galvanized steel cables. The TAU-II cable system shall resist lateral movement during side angle impacts. The nose shall consist of a formed plastic nose wrap.

Concrete shall conform to Section 601 - Structural Concrete. Compressive strength shall be 4000 psi at 28 days.

693.03 Construction Requirements.

(A) Equipment List and Drawings. Within 10 working days following the Award of Contract, submit to the Engineer for acceptance 6 copies of a list of materials and equipment to be incorporated in the work. The list shall include the name of the manufacturer, dimensions and catalog number of the unit, detailed scale drawings of special equipment, shop drawings for fabrication and proposed deviations.

(B) Site Preparation. Before installing the Quadguard System or TAU-II terminal impact attenuator, prepare the site as shown in the contract or specified by the Engineer. Excavate and backfill according to the Section 206 - Excavation and Backfill for Conduits and Structures. Exercise extreme care so as not to damage underground facilities. Repair damages by the Contractor immediately at no cost to the State.

The placing and curing of the concrete shall conform to Section 503 - Concrete Structures.

The placing of reinforcing steel shall conform to Section 602 - Reinforcing Steel and the manufacturer's recommendations.

(C) Quadguard System or TAU-II Terminal Impact Attenuator. Install Quadguard System or TAU-II terminal impact attenuator according to the recommendations of the manufacturer. Provide training for the installation of the system in the field for a period not to exceed three hours. Also provide a minimum of 8 hours of training at the District Office for the installation and maintenance of the system. Furnish five copies of specially prepared manual on the installation and maintenance of the system.

(D) Replacement Cartridge Cells. Furnish and deliver one set of replacement cartridge cells for each installation to locations designated by the Engineer and stored as specified.

(E) Replacement Nose Section Cover and Cartridge Cells. Furnish and deliver one set of replacement nose section cover and cartridge cell for each installation to locations designated by the Engineer and stored as ordered.

693.04 Method of Measurement. The Engineer will measure Quadguard System or TAU-II terminal impact attenuator per each.

The Engineer will measure unassembled replacement cartridge cells and nose section cover and cartridge cell per set as specified in the proposal.

693.05 Basis of Payment. The Engineer will pay for the accepted Quadguard or TAU-II terminal impact attenuator at the contract unit price per each. The price includes full compensation for doing work necessary for installing the Quadguard system or TAU-II terminal impact attenuator complete in place including site preparation, excavation, backfill, reinforced concrete foundation, and services for training and furnishing labor, materials, tools, and equipment, and incidentals necessary to complete the work.

The Engineer will pay for the accepted unassembled replacement cells and replacement nose section cover and cartridge cells at the contract unit price per set. The price includes full compensation for furnishing and delivering the unassembled replacement cells and furnishing labor, materials, tools, and equipment, and incidentals necessary to complete the work.

The Engineer will make payment under:

Pay Item	Pay Unit
_____ Terminal Impact Attenuator _____	Each
_____ Replacement Cartridge Cells and Replacement Nose Section Cover and Replacement Cartridge Cell (Unassembled)	Set"

END OF SECTION

PROPOSAL SCHEDULE

ITEM NO.	ITEM	APPROX. QUANTITY	UNIT	UNIT PRICE	AMOUNT
202.0101	Removal of Median Obstructions at Crossovers	L.S.	L.S.	L.S.	$_____
203.0100	Roadway Excavation	1180	C.Y.	$ _____	$_____
209.0100	Water Pollution and Erosion Control	F.A.	F.A.	F.A.	$ 50,000.00
305.1110	Aggregate Subbase	220	C.Y.	$ _____	$_____
306.0100	Untreated Permeable Base Course	220	C.Y.	$ _____	$_____
312.0100	Plant Mix Glassphalt Concrete Base Course	920	Ton	$ _____	$_____
401.0400	Asphalt Concrete Pavement, Mix No. IV	385	Ton	$ _____	$_____
604.4301	Adjusting Sewer Manhole Frame and Cover	1	Each	$ _____	$_____
604.5001	Highway Lighting Manhole	3	Each	$ _____	$_____
606.3201	Guardrail Type 3, W-Beam with Rubrail	177	L.F.	$ _____	$_____
606.3202	Guardrail Type 3, Thrie Beam	44	L.F.	$ _____	$_____
606.3203	Concrete Barrier Transition	L.S.	L.S.	L.S.	$_____
609.2020	Curb, Type 2D	67	L.F.	$ _____	$_____

PROPOSAL SCHEDULE					
ITEM NO.	ITEM	APPROX. QUANTITY	UNIT	UNIT PRICE	AMOUNT
609.6000	Bituminous Curb, Type 6	315	L.F.	$ _____	$_____
616.0201	Relocation of Existing Irrigation Lines	L.S.	L.S.	L.S.	$_____
621.1400	Sign Post Sleeve for Drop-In Sign	34	Each	$ _____	$_____
621.5000	Regulatory and Warning Sign (10 Square Feet or Less)	99	Each	$ _____	$_____
621.5100	Regulatory and Warning Sign (10 Square Feet or Less) with Post	42	Each	$ _____	$_____
621.5205	Construction Sign with Two Posts	6	Each	$ _____	$_____
621.5300	Regulatory and Warning Sign (Greater Than 10 Square Feet) with Post(s)	18	Each	$ _____	$_____
621.5620	Relocation of Existing Sign on New Post	3	Each	$ _____	$_____
621.5621	Relocation of Existing Sign	1	Each	$ _____	$_____
621.8011	Relocation of Existing Street Name Sign to New Traffic Signal Mast Arm	1	Each	$ _____	$_____
622.0101	Relocation of Highway Lighting and Overhead Sign Lighting	L.S.	L.S.	L.S.	$_____
623.2021	Install State Furnished Type II Traffic Signal Standard with 20' Mast Arm	4	Each	$ _____	$_____

PROPOSAL SCHEDULE					
ITEM NO.	ITEM	APPROX. QUANTITY	UNIT	UNIT PRICE	AMOUNT
623.2022	Install State Furnished Type II Traffic Signal Standard with 25' Mast Arm	2	Each	$ _____	$_____
623.2023	Install State Furnished Type II Traffic Signal Standard with 30' Mast Arm	1	Each	$ _____	$_____
623.2024	Install State Furnished Type II Traffic Signal Standard with 35' Mast Arm	1	Each	$ _____	$_____
623.2041	Foundation for Type II Signal Standard	8	Each	$ _____	$_____
623.3061	Install State Furnished Traffic Signal Assembly (1-Way, 12-Inch, 1 Vertical with Mast Arm Mounting)	8	Each	$ _____	$_____
623.3071	Install State Furnished Traffic Signal Assembly (1-Way, 12-Inch, 1 Vertical with Mast Arm Mounting) with Programmed Visibility	13	Each	$ _____	$_____
623.4100	Opticom Receiver	1	Each	$ _____	$_____
623.5195	Reinforced Concrete Jacket on Relocated Existing Traffic Signal Interconnect Ductline	380	L.F.	$ _____	$_____
623.5196	Reinforced Concrete Jacket on Relocated Existing Traffic Signal Interconnect Ductline and Loop Detector Ductline	15	L.F.	$ _____	$_____
623.5315	2-2" Conduits, Schedule 80 PVC, Direct Buried	L.S.	L.S.	L.S.	$_____
623.5320	2-2" Conduits, Schedule 40 PVC, Concrete Encased	L.S.	L.S.	L.S.	$_____

PROPOSAL SCHEDULE					
ITEM NO.	ITEM	APPROX. QUANTITY	UNIT	UNIT PRICE	AMOUNT
623.6011	Type B Pullbox	4	Each	$ _____	$_____
623.7010	Reconnect Traffic Camera	1	Each	$ _____	$_____
623.7110	No. 14, 26-Conductor Traffic Control Cable	L.S.	L.S.	L.S.	$_____
623.7120	No. 14, 2-Conductor Cable	L.S.	L.S.	L.S.	$_____
623.7140	No. 20, 3-Conductor Shielded Cable for Opticom	L.S.	L.S.	L.S.	$_____
623.7221	Loop Detector Sensing Unit (6 Ft. x 6 Ft.) 4 Loops	1	Each	$ _____	$_____
629.1011	4-Inch Pavement Striping (Tape, Type I or Thermoplastic Extrusion)	L.S.	L.S.	L.S.	$_____
629.1012	4-Inch Double Pavement Striping (Tape, Type I or Thermoplastic Extrusion)	L.S.	L.S.	L.S.	$_____
629.1013	8-Inch Pavement Striping (Tape, Type I or Thermoplastic Extrusion)	L.S.	L.S.	L.S.	$_____
629.1014	4-Inch Pavement Striping (Tape, Type II or Thermoplastic Extrusion)	L.S.	L.S.	L.S.	$_____
629.1015	4-Inch Double Pavement Striping (Tape, Type II or Thermoplastic Extrusion)	L.S.	L.S.	L.S.	$_____

PROPOSAL SCHEDULE					
ITEM NO.	ITEM	APPROX. QUANTITY	UNIT	UNIT PRICE	AMOUNT
629.1016	8-Inch Pavement Striping (Tape, Type II or Thermoplastic Extrusion)	L.S.	L.S.	L.S.	$_____
629.1017	1/2-Inch Pavement Striping (Tape, Type I or Thermoplastic Extrusion)	L.S.	L.S.	L.S.	$_____
629.1018	12-Inch Pavement Striping (Tape, Type II or Thermoplastic Extrusion)	L.S.	L.S.	L.S.	$_____
629.1019	12-Inch Pavement Striping (Tape, Type III or Thermoplastic Extrusion)	L.S.	L.S.	L.S.	$_____
629.1030	Pavement Arrow (Paint, Tape, Type III or Thermoplastic Extrusion)	20	Each	$_____	$_____
629.1040	Pavement Word (Paint, Tape Type III or Thermoplastic Extrusion)	2	Each	$_____	$_____
629.1050	Pavement Symbol (Paint, Tape, Type III or Thermoplastic Extrusion)	9	Each	$_____	$_____
629.1060	"LOOK" Legend (Paint, Tape, Type III or Thermoplastic Extrusion)	9	Each	$_____	$_____
629.2010	Type A Pavement Markers	L.S.	L.S.	L.S.	$_____
629.2030	Type C Pavement Markers	L.S.	L.S.	L.S.	$_____
629.2040	Type D Pavement Markers	L.S.	L.S.	L.S.	$_____

PROPOSAL SCHEDULE					
ITEM NO.	ITEM	APPROX. QUANTITY	UNIT	UNIT PRICE	AMOUNT
629.2070	Type H Pavement Markers	L.S.	L.S.	L.S.	$_____
629.3010	Tubular Delineator	L.S.	L.S.	L.S.	$_____
645.2000	Additional Police Officers And/or Additional Traffic Control Devices	F.A.	F.A.	F.A.	$ 100,000.00
646.1000	Contraflow Traffic Control	4	Month	$ _____	$_____
648.1000	Permeable Separator	1822	S.Y.	$ _____	$_____
693.0001	Quadguard System Terminal Impact Attenuator (Model No. QS6906Y) with 2 Quad-Beam to W-Beam Transition Panels	1	Each	$ _____	$_____
693.0002	Quadguard System Terminal Impact Attenuator (Model No. QS9006Y) with 1 Quad-Beam to W-Beam Transition Panel, 1 Quad-Beam to Thrie-Beam Transition Panel	1	Each	$ _____	$_____
693.0003	Quadguard System Terminal Impact Attenuator (Model No. QS3006Y) or TAU-II Terminal Impact Attenuator	1	Each	$ _____	$_____
693.0010	Quadguard System (Model No. QS6906Y) Replacement Cartridge Cells and Replacement Nose Section Cover and Replacement Cartridge Cell (Unassembled)	1	Set	$ _____	$_____
693.0011	Quadguard System (Model No. QS9006Y) Replacement Cartridge Cells and Replacement Nose Section Cover and Replacement Cartridge Cell (Unassembled)	1	Set	$ _____	$_____

PROPOSAL SCHEDULE

ITEM NO.	ITEM	APPROX. QUANTITY	UNIT	UNIT PRICE	AMOUNT
693.0012	Quadguard System (Model No. QS3006Y) or TAU-II Replacement Cartridge Cells and Replacement Nose Section Cover and Replacement Cartridge Cell (Unassembled)	1	Set	$ _____	$_____
699.1000	Mobilization (Not to Exceed 10% of the Sum of All Items Excluding the Bid Price of this Item and Force Account Items)	L.S.	L.S.	L.S.	$_____

Sum of All Items ..... $ _____

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