Amend **Section 621 - Traffic Control Signs** to read as follows:

"SECTION 621 - TRAFFIC CONTROL SIGNS

621.01 Description. This work includes furnishing and installing sign posts and foundations, reflector markers, object markers, signs, sign panels, overhead sign supports, sign structures, route markers, construction signs, milepost markers, removing sign supports; removing, storing, and installing sign panels, and sign supports; and incidental work necessary to complete the work.

The contract will allow alternate designs for overhead expressway sign supports of either steel or aluminum subject to the acceptance of the Engineer and the following conditions:

(1) Designs shall be similar in appearance and construction detail to those shown in the contract.

(2) Designs shall conform to AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals". The Contractor shall base the design on a wind speed, 50 year mean recurrence interval of 80 miles per hour. The wind pressure shall not be less than 30 pounds per square foot.

(3) Do not change the foundations or other anchorages including anchor bolt details, unless accepted by the Engineer.

(4) Designs shall have load carrying capacities at least equal to those shown in the contract.

Submit the shop drawings, specifications, and structural calculations for alternate designs of overhead sign supports to the Engineer for acceptance before 60 calendar days after the notice to proceed. Complete and detail the drawings and identify the materials that the Contractor will use by ASTM Designation, alloy and temper. When using stock or standard items, the Contractor may submit catalogue cuts instead of shop drawings.

621.02 Materials. Concrete for sign structures shall be of the class specified in the contract and shall conform to Section 601 - Structural Concrete. Other materials shall conform to the following:

Zinc Paints	708.02
Dark Green Enamel Paint	708.03
Paint Thinner	708.04

Signs	712.20
Reflector Marker	712.21
Flexible Delineator Post	712.51
Sign Posts	713.11
Fasteners for Signs	713.12
Ground Mounted Destination and Expressway Sign Supports	713.13
Overhead Expressway Sign Supports	713.14

The contract will require Certification and Mill Test Reports for overhead sign support materials. The Contractor shall submit the following information:

(1) A list of component parts showing:

(a) the description of each part,

(b) the source of fabrication of the material (including ASTM numbers where applicable) and

(c) a statement certifying compliance to the material specification.

(2) A complete and detailed engineering computations shall accompany the shop drawings that justify the selection of dimensions and materials. A Hawaii Licensed Professional Engineer (Structural) shall certify the computations.

(3) A copy of the Mill Test Report for structural members (posts and beams) including the physical and chemical descriptions of material incorporated.

Retroreflective sheeting type shall conform to ASTM Designation D 4956-89 or as amended according to Subsection 712.20.

621.03 Construction Requirements.

(A) Destination and Expressway Sign Supports. Submit shop drawings for acceptance before assembling according to Section 501 - Steel Structures.

Welding shall be continuous and shall conform to Section 501 - Steel Structures.

The weld metal at transverse joints shall extend to the sleeve, making the sleeve an integral part of the joint. Make the longitudinal welds by the submerged arc process. Ground flush the welds except fillet welds with the base material.

Hot-dip zinc-coat the exposed surfaces including the inner portion of the tubular posts and arms after fabrication. Hot-dip zinc-coat the upper 10 inches of anchor bolts. Zinc-coating shall be according to Section 501 - Steel Structures.

Paint the ground mounted destination and expressway sign supports and overhead expressway sign posts, crossarms and panel frames at the work site after proper preparation of the zinc-coated surfaces according to Section 501 - Steel Structures. The exception is that painting shall include one prime coat of zinc-dust zinc-oxide primer followed by two coats of dark green enamel paint as specified.

The aluminum sign supports shall conform to Section 713.14(B) - Aluminum Supports.

(B) Exit Number Panel Mounting. Submit shop drawings and specifications for the design of panel mountings and supports to attach exit number panels to expressway signs to the Engineer for acceptance before 20 calendar days after the notice to proceed date.

The shop drawings shall be complete and shall specify and identify materials used according to ASTM standards. When using stock or standard items, the Contractor may submit catalogue cuts instead of shop drawings.

(C) Sign Supports. Install permanent signs on posts as specified in the contract. Set the posts plumb at the required locations.

(1) Sign Posts. Use flange channel posts or 12 or 14 gauge square tube posts of the size specified in the plans for:

(a) Regulatory, warning, and construction signs,

(b) Bikeway signs,

(c) School area signs,

(d) Route marker assemblies,

(e) Civil Defense signs, or

(f) Conventional motorist services signs.

(2) Reflector Marker, Milepost Marker, And Type II Object Marker Posts. Reflector marker, milepost marker, and Type II object marker posts shall be either metal posts or flexible delineator posts as specified in the contract. Zinc-coat the metal posts. The metal post shall be 1.12 pounds per foot flanged channel posts or 1-1/2 inch, 12 or 14 gauge square tube posts.

(3) Destination Sign Posts. Destination sign posts shall be zinc-coated steel posts, flanged channel posts, or 12 or 14 gauge square tube posts of the size specified in the contract.

(D) Destination And Expressway Signs. The Contractor shall be responsible for submitting shop drawings pertinent to the fabrication of destination and expressway signs.

Assemble and check the panels in the shop for straightness, alignment, and dimensions. Correct the variations according to the contract.

Install the sign panels carefully and securely according to the contract. Replace chipped or bent signs at no cost to the State.

(E) Reflector Marker. Make the reflector marker according to the dimensions and notes shown in the contract:

(1) Reflector markers RM-1, RM-2, and RM-3 shall be either:

(a) Type III or IV retroreflective sheeting markers,

(b) Glass sphere reflector markers with 4 inch by 5 inch reflector units, or

(c) Plastic prismatic reflector markers with 3 inch diameter reflector units.

(2) Reflector marker RM-4 shall be a Type III or IV retroreflective sheeting marker.

(3) Reflector marker RM-9 shall be either:

(a) Nine 3 inch round amber plastic prismatic reflectors fastened with blind rivets to a yellow Type III or IV retroreflective sheeting marker, or

(b) A yellow Type III or IV retroreflective sheeting marker of the dimensions shown in the contract.

(F) Type II Object Marker. Make Type II object markers according to the dimensions and notes shown in the contract. Reflective sheeting material shall conform to Subsection 712.20(C)(4) - Type III or IV Retroreflective Sheeting.

(G) Splicing of Sheet Reflecting Material. When using reflecting material as a background or signs with sheet aluminum backing, the Engineer will not allow splicing on legends. The reflecting material shall be of one piece whenever the sign dimensions are 4 feet by 6 feet or less.

(H) Electrical Installations. Electrical installations shall conform to Section 622 - Roadway Lighting System.

(I) Removal of Existing Signs. Remove, clean, and store the existing regulatory, warning, expressway, destination and directional signs and markers that the Contractor will not incorporate in the completed project at a location as ordered by the Engineer. The Engineer will decide which items are for disposal or storage.

(J) Shop Drawings for Refurbishing Each Sign Panel. Submit shop drawings for refurbishing each sign panel indicated on the plans for acceptance at least 10 working days before doing the work.

Complete each sign panel and in place within one working day. Exception to this requirement will be contingent upon safety considerations, equipment, and provisions for the protection of the public and with the acceptance of the Engineer.

(K) Labeling of Signs. Label the back of each new sign installed with the following information:

(1) Route Number,

(2) Mile Post (same as the existing sign), and

(3) Date (date the Contractor installs the sign).

The labeling shall be 1 inch high numbers using a black permanent felt-tipped marker.

(L) Construction Signs. Erect construction signs at the beginning of project and at the end of project at the location indicated by the Engineer. These signs shall remain for the duration of the highway project. Maintain these signs. Place these signs besides the required traffic control signs called for in Section 645 - Traffic Control.

The construction signs shall be new and become the property of the Contractor.

(M) Overlay Panels. Refurbish specific signs designated on the plans with overlay panels. The messages, shields, arrows, and borders shall conform to requirements set in the latest edition and amendments of the 'Manual on the Uniform Traffic Control Devices' (MUTCD), and as specified herein.

The overlay panels shall consist of aluminum sheets reflectorized according to Subsection 712.20. Reflectorize the messages, arrows, and border with Type III or IV retroreflective sheeting or acrylic plastic reflex reflectors. Reflectorize the shield symbol with Type III or IV retroreflective sheeting. The aluminum sheet shall conform to ASTM B 209, alloy 6061-T6 flat sheet, and shall be a minimum 0.100-inch thick.

Verify the sizes of sign panels affected and the sizes, shape and format of letters, numerals, symbols and borders before fabrication. Inform the Engineer immediately of discrepancies. Correct the discrepancies. Submit for acceptance the final design of the sign before fabrication.

Fabricate and install the overlay panels according to the manufacturer's instructions and as specified by the Engineer. Submit for acceptance splices before fabrication.

Remove existing letters, numerals, symbols and borders. Clean the existing sign panel before installation of the overlay. Clean and prepare the sign panel for overlaying as recommended by the panel manufacturer and as specified by the Engineer.

Installation of prefabricated overlay panels may be done with the existing sign panel remaining in place, subject to Engineer's acceptance of its methods. Engineer's acceptance will contingent upon safety, its traffic control provisions, provisions for the protection of the public and equipment. The Contractor shall be responsible for damages to public property including vehicles, as specified in Subsection 107.16 - Protection and Restoration of Property and Landscape, including all vehicles.

(N) Relocation of Existing Signs. Remove, clean, and fasten existing regulatory or warning signs to be relocated to new posts or supports according to the Standard Plans. Materials such as posts, nuts, bolts, washers, base support, brackets, and necessary hardware to install the existing sign shall be new. Submit the relocated sign location for acceptance.

621.04 Method of Measurement. The Engineer will measure for the following per each:

(1) signs, reflectorized delineator, and markers per each.

(2) relocating existing regulatory and warning signs.

(3) destination ('D' designation) or expressway ('E' designation) sign posts .

(4) overhead mounted expressway sign ('E' destination) post and arm of post.

(5) footings for destination and ground mounted expressway signs ("E" designation) .

The Engineer will measure for the following per square foot of sign face:

(1) destination, expressway, directional, and exit number sign panels per .

(2) replacement of existing sign panel with new destination sign panel.

(3) overlay panels.

(4) replacement of existing sign panel with new expressway sign panel.

(5) replacement of existing sign panel with new destination sign panel.

The Engineer will measure for the following per linear foot:

(1) destination and ground mounted expressway sign ("E" Designation) posts.

Measurement of contract items for construction of footings for overhead mounted expressway signs will be as follows:

(1) The Engineer will measure excavation according to Section 206 - Excavation and Backfill for Conduits and Structures.

(2) The Engineer will measure concrete according to Section 503 - Concrete Structures.

(3) The Engineer will measure reinforcing steel according to Section 602 - Reinforcing Steel.

The Engineer will not measure for the following when contracted on a lump sum basis:

(1) overhead mounted destination sign ('D' destination) post and arm of posts and foundations,

(2) removing, storing, and installing existing signs onto overhead sign structures.

The Engineer will not measure for the following for payment:

(1) removing, cleaning, stacking, and delivering of existing signs, markers, and posts that will not be incorporated in the completed highway

(2) removing and reusing existing ground mounted destination sign posts.

(3) relocating existing exit number sign panels to the right or left edge of expressway or destination signs.

621.05 Basis of Payment. The Engineer will pay for the accepted regulatory and warning signs and markers at the contract unit price per each complete in place. The price includes full compensation for excavating and backfilling, furnishing and installing materials, labeling, and furnishing equipment, tools, labor and incidentals necessary to complete the work.

The Engineer will pay for the accepted construction signs at the contract unit price per each complete in place. The price includes full compensation for sign panels, posts, nuts, bolts, washers, base support, brackets and necessary hardware, labor, tools, equipment and incidentals necessary for the installation, maintenance, removal, cleaning, delivering, and storing of the signs with posts.

The Engineer will pay for the accepted destination or expressway ground mounted sign posts designated on the plans at the contract unit price per each complete in place. The price shall be full compensation for furnishing and installing materials and furnishing equipment, tools, labors and incidentals necessary to complete the work.

The Engineer will pay for the accepted destination sign posts ('D' designation) at the contract unit price per each complete in place.

The Engineer will pay for the accepted overhead mounted expressway sign ("E" designation) post and arm at the contract unit price per each type as specified complete in place. The price includes full compensation for furnishing equipment, tools, materials, labor and incidentals necessary to complete the work.

The Engineer will pay for the accepted footings for destination and ground mounted expressway signs ("E" designation) at the contract unit price per each, complete in place. The price includes full compensation for materials, labor, tools, equipment and incidentals necessary for the construction of the footings.

The Engineer will pay for the accepted relocating of the existing regulatory and warning signs at the contract unit price per each complete in place. The price includes full compensation for cleaning the existing sign, providing new posts, nuts, bolts, washers, base support, brackets, necessary hardware, and furnishing labor, tools, equipment, and incidentals necessary to complete the work.

The Engineer will pay for the accepted installation of the Street Name Sign on Traffic Signal Mast Arm at the contract unit price per each complete in place. The price includes full compensation for furnishing and installing the street name sign including accessories such as the street name sign mounting assembly, nuts, bolts, washers, and furnishing labor, tools, equipment, materials, and incidentals necessary to complete the work.

The Engineer will pay for the accepted destination, expressway, directional, exit number sign panels and replacement of existing sign panels with new destination sign panels at the contract unit price per square foot complete in place. The price includes full compensation for furnishing and installing a complete sign panel, including enameling, cut-outs, post fasteners, sign framing, stiffeners, clamp assemblies, mountings and supports for attachment of exit number panels to expressway sign panels, labeling, and necessary hardware, and furnishing equipment, tools, labor, materials and other incidentals necessary to complete the work.

The Engineer will pay for the accepted replacement of existing sign panel with new expressway sign panel at the contract unit price per square foot. The price includes full compensation for labeling, and furnishing labor, materials, tools, equipment, necessary hardware, and incidentals necessary to complete the work

The Engineer will pay for the overlay panels per square foot of sign face.

The Engineer will pay for replacing the existing sign panel with new expressway sign panel per square foot of sign face.

The Engineer will pay for removing, storing, and installing existing signs onto overhead sign structure on a lump sum basis complete in place. The price includes full compensation for furnishing materials, labor, tools, equipment, and incidentals necessary to complete the work.

The Engineer will pay for the accepted overhead mounted destination sign posts ('D' designation), arm of posts, and foundations on a contract lump sum basis complete in place. The price includes full compensation for furnishing and installing materials including anchor bases, brackets and necessary hardware, and furnishing labor, tools, equipment and incidentals necessary to complete the work.

The Engineer will make payment under:

Pay Item	**Pay Unit**
Regulatory and Warning Sign _____	Each
Construction Sign _____	Each
Reflector Marker _____	Each
2-1/2" x 2-1/2" Square Tube Post for Destination Sign	Each
Relocation of Existing _____	Each
Panel for _____	Square Foot

The Engineer will not make payment other than those specified herein for the construction of footings for overhead mounted expressway signs. The Engineer will pay for the work, materials, tools, equipment and incidentals required in the construction of the footings for overhead mounted expressway signs under the following contract items:

(1) Footing Excavation. The Engineer will make payment for footing excavation according to Section 206 - Excavation and Backfill for Conduits and Structures.

(2) Concrete. The Engineer will make payment for concrete in footings according to Section 503 - Concrete Structures.

(3) Reinforcing Steel. The Engineer will make payment for reinforcing steel according to Section 602 - Reinforcing Steel.

The Engineer will not pay for removing, cleaning, stacking, and delivering the existing signs, markers, and posts that are not incorporated in the completed project separately. The Engineer will consider them incidental to the various contract items.

When the Engineer accepts an alternate design, the total amount paid includes full compensation for furnishing and installing materials and furnishing equipment, tools, labor, and incidentals necessary to complete the work. The Engineer will not make payment for additional materials, equipment, tools, labor and other incidentals that might become necessary to complete the installation due to the alternate design.

END OF SECTION