SECTION 623 – TRAFFIC SIGNAL SYSTEM

Make the following amendments to said Section:

(I) Amend **Subsection 623.02 Materials** by adding the following after line 131 to read as follows:

"Light Emitting Diode (LED) Pedestrian-Countdown Signal (PCS) Module, to be State-furnished. 771"

(II) Amend **Subsection 623.03(C)(2) Metal Traffic Signal Standards** by adding the following after line 224 to read as follows:

"Remove all existing Type I standards, and replace with new Type I standards on existing foundations. Perform paint repairs to all existing Type II standards to remain."

(III) Amend **Subsection 623.03(C)(3) Signal Heads** by adding the following after line 233 to read as follows:

"Remove existing, and install new back-plates for mast-arm mounted heads at one (1) intersection. This work shall be included within the scope of work of the traffic signal system contract item for that intersection."

(IV) Amend **Subsection 623.03(C)(5) Vehicle Detectors** from line 241 to line 247 to read as follows:

"**(5) Vehicle Detectors.** Existing loop vehicle detectors are to remain in service, unless otherwise directed by the Engineer. No later than 3 weeks following NTP date, submit video detection system product literature to the Engineer for review and acceptance. Detection system shall interface with the controller. Furnish and install video detection system at two (2) intersections as indicated on the plans, including operational checks and transfer of warranty to the State. This work shall be included within the scope of work of the traffic signal system contract item for these intersections."

(V) Amend **Subsection 623.03(C)(6) Pull Boxes** by adding the following after line 253 to read as follows:

"Backfilling, compacting, and constructing minimum 4" thick Class A concrete around new pull box to match the immediate surrounding area shall be considered incidental to the various traffic signal work items." "

(VI) Amend **Subsection 623.03(C)(7) Conduits** from line 255 to line 308 to read as follows:

"Existing conduits are to remain in place, with the exception of damaged or broken conduits discovered and brought to the attention of the Engineer."

(VII) Amend **Subsection 623.03(C)(8) Conductors and Cables** from line 358 to line 374 to read as follows:

"Signal light conductors and cables shall not be cut. Waterproof, soldered tap splice shall be the sole method of splicing used. At a minimum, waterproofing shall consist of 2 layers of the following: electrical tape, rubberized tape, and Scotchkote™ or equivalent. Waterproof labeling of specific traffic signal phase shall be affixed at all exposed conductors. Termination in the controller cabinet on the post shall be by pressure connector."

(VIII) Amend **Subsection 623.03(C) Installation** after line 451 to read as follows:

"(15) Light Emitting Diode (LED) Pedestrian-Countdown Signal (PCS), and Chirping Pedestrian Alarm. Install State-furnished PCS module into Contractor-furnished housing. Install State-furnished chirping alarms at one intersection as indicated on the plans. Arrange with the State representative to pick up PCS module and chirping alarm units at Highways Division Kauai District base yard. Remove existing, and install new pedestrian push buttons. This work shall be included within the scope of work of the traffic signal system contract items.

(16) Flashing Yellow Beacon. Remove existing, and install new beacons, Type I standards, and cables at one (1) intersection as shown on the plans. This work shall be included within the scope of work of the traffic signal system contract item for that intersection."

(IX) Amend **Subsection 623.03(D) Painting** after line 454 to read as follows:

"Repairs to damaged galvanized surfaces of new Type I standards shall be in accordance with Subsection 501.03(G)(2) -Repairing Damaged Zinc-Coated Surfaces. This work shall be considered incidental to the various traffic signal work items.

The following pertains exclusively to existing in-place Type II mast arm standards to remain, including fastening hardware. All surfaces shall be prepared and painted in their original field locations. Remove all traffic signal heads, signs, and associated mounting bands and brackets prior to preparing for painting over the existing galvanized surfaces of standard and mast arm.

All coatings of the specified system shall be manufactured by PPG/Sigma Protective Coatings or equivalent. All materials shall be mixed using a jiffy style power mixer. Primer shall be Amerlock 400 or Amerlock 400/2 (Fast Cure) or equivalent. Top Coat shall be PSX-700 or equivalent. The stripe coat, primer and top-coat shall be contrasting colors to facilitate application and inspection. Paint system technical data, surface preparation details, application, product characteristics, and system compatibility shall be submitted for review and acceptance by the Engineer no less than 2 weeks prior to NTP date. Before commencing work on the painting, 3" by 5" galvanized steel sample plates coated with the production materials to be used shall be submitted for review and acceptance.

Paint only thoroughly dry surfaces and only during periods of favorable weather. Painting will not be allowed when atmospheric temperature is below 40 degrees Fahrenheit, or when relative humidity is above 85 percent. Do not paint when the air adjacent to the surface contains a fog, mist, dust, or other particulate matter. Do not perform coating operations during winds in excess of 15 mph. Record ambient weather condition in 2 hour intervals. Remove and replace fresh paint damaged by bad weather and moisture.

Thinners or additives shall be those recommended by the coating manufacturer. Thinner shall be primarily used for cleaning equipment. Thinner may not be added in amounts exceeding the limits recommended in the manufacturer's product data sheets.

Inspect surfaces to verify suitability of the surfaces to receive paints prior to the commencement of surface preparation and paint application. Establish an initial average applied DFT of the galvanizing using equipment described in SSPC-PA-2. Submit a written report to the Engineer describing any condition that may affect proper application or overall performance.

If the Engineer orders precautionary or corrective measures to prevent dust, dirt, and other foreign matter from touching freshly painted surfaces, or to prepare surfaces for painting, provide these measures at no increase in contract price or contract time.

Protect pedestrian, vehicular, and other traffic from injuries or damage from spatters, splashes, or smirches of paint or paint materials.

Remove areas of light corrosion using 80-grit sandpaper, to the satisfaction of the Engineer. Mark and notify the Engineer of all locations. Wipe down all surfaces to be painted using Prep 88 biodegradable cleaner or equivalent, in accordance with SSPC-SP-1 (Solvent Cleaning) or SSPC-SP12 / NACE 5 LPWC (low pressure water cleaning). Water break test may be

performed to ensure removal of contaminants. Apply paint primer no more than 8 hours following solvent cleaning.

Coating Coverage and Continuity: a.) Stripe Coat: Apply a stripe coat by brush to edges, crevices, bolt heads, welds, and pits or other surface continuities prior to the application of the prime coat. Apply coatings to all surfaces with special attention to hard-to-reach areas such as underneath support brackets, back to back angles, skip welding or deep pits. All coats shall have a smooth surface and be free from dry-spray, overspray, and orange peel. Pinholes, bubbles, and misses are not acceptable. Brush out runs and sags while material is still wet.

Dry Film Thickness: Ferrous Metal Substrate: Apply each coat to the thickness specified in the accompanying table(s). Calibration of gauges and frequency shall be in accordance with SSPCPA-2. Disputes shall be resolved using a Tooke Gauge. Damage created by the Tooke Gauge shall be repaired at no increase in contract price or contract time. Keep written record of all DFT readings and provide copy to the Engineer upon request.

Apply additional coat(s) to all surfaces having less dry film thickness specified, at no increase in contract price or contract time. Maximum dry film thickness shall not exceed 20.0 mils for the exterior coating system. DFT of the prime coat shall be 6.0 to 8.0 mils. DFT of the top coat shall be 5.0 to 7.0 mils.

Repair all damaged or deficient coatings prior to project completion. Preparation of localized damage area: Power tool clean the damaged area in accordance with the appropriate power tool cleaning specification, SSPC-SP-3 "Power Tool Cleaning". Exercise special care to maintain the specified thickness of the system in the overlapped area onto the existing intact coat.

Notify the Engineer to ensure that all painted surfaces are thoroughly dry and acceptable, prior to re-installing mounting bands, brackets and fastening hardware."

(X) Amend **Subsection 623.03(G) Other Services** from lines 493 to 555 to read as follows:

G) Other Services.

(1) Perform the following:

(a) Make soldered taps in pull boxes and cabinet locations pertaining to signal heads, pedestrian buttons, vehicle detectors, preemption detectors, and interconnect circuits.

(b) Install and program controller timings and conflict monitor cards.

(c) Before leaving factory, conduct, or have supplier conduct documented factory testing in accordance with CALTRANS requirements for each controller and cabinet. Dry-store controller assemblies. Perform second documented diagnostic testing procedure. If factory testing is satisfactory, cycle controller assembly through eight vehicle phases and four pedestrian phases for 120 continuous hours before field installation.

Test and document validation of controller, cabinet output and input, C1/C2/C20 operations, load switches, detector cards, dc cards, modems, flash condition, time source, preemption system, and conflict monitor. Have necessary testing hardware and software to perform accurate and dependable test and validation of output signal displays, controller and cabinet functions, and conflict monitor certification.

(d) Install controller assembly including anchor bolts, seals, grout, rerouted cables, extended power cables, ground wires, signal cables, and other adjustments to base, conduits, and cabinet for fully operational system.

(e) Remove and properly dispose of existing cabinets, standards, signal heads, traffic signs, pushbutton assemblies, meter pedestals, pull boxes, back-plates, conductors and hardware that have been replaced with new, at no cost to the State.

(XI) Amend **Subsection 623.04 Measurement** to add the following after line 579:

"Paint repairs to Type II standard and mast arm will be measured on a contract lump sum basis. Measurement for payment will not apply."

(XII) Amend **Subsection 623.05 Payment** to read as follows:

"**623.05 Payment.** The Engineer will pay for the accepted traffic signal system, and paint repairs to Type II standard and mast arm, on a contract lump sum basis. Payment will be full compensation for the work prescribed in this section and the contract documents.

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

Pay Item	Pay Unit
Traffic Signal System	Lump Sum
Paint Repairs to Type II Standard and Mast Arm	Lump Sum"

END OF SECTION 623