Make the following section a part of the Standard Specifications:

"SECTION 621 – WEIGH IN MOTION SYSTEM POLE ASSEMBLIES

621.01 Description. This work includes furnishing labor, materials, tools, machinery, and equipment necessary to install two new Pole and Foundation Assemblies complete in place at Weigh In Motion station H13P according to the Contract. The Contractor shall make improvements as shown in the Contract, including the following:

(A) Install Pole and Foundation Assemblies at two locations, by the Northbound and Southbound controller cabinets for Traffic Monitoring Station H13P, as shown on Contract documents and as directed by the State of Hawaii Department of Transportation (HDOT) District Engineer.

(B) Provide underground conduits including trenching and structural excavation. Provide backfilling and restoration work required to install the Pole and Foundation Assemblies and restore other improvements at the site.

(C) Coordinate work with and arrange for inspection of work by the Engineer and a representative from the HDOT Traffic Monitoring Station Maintenance Contractor.

(D) Turn over to the Engineer two Pole and Foundation Assemblies according to the Contract.

Furnish and install incidental parts necessary to complete the Pole and Foundation Assemblies as though such parts were in the Contract.

621.02 Materials. Electrical equipment shall conform to the NEMA Standards and this Contract. Materials and workmanship shall conform to the National Electric Code (NEC), General Order Nos. 6 and 10 of the Hawaii Public Utilities Commission, ASTM standards, the ANSI, and applicable revisions for all the above codes, standards, and local ordinances that may apply.

(A) Conduits. All new direct-burial conduits shall be Schedule 80 PVC. Trenched conduits shall conform to Standard Plan TE-36, or as directed by the Engineer.

(1) PVC Conduits. PVC conduits shall meet the conditions of Section 712.27 (B) of the Standard Specifications.

(2) Conduit Sealing Compound. Conduit sealing compound meet the conditions of Section 712.27 (E) of the Standard Specifications.

(B) Other Materials. Other materials shall meet the requirements specified in the following sections of the Standard Specifications:

Structural Concrete	Section 601
Reinforcing Steel	Section 602
Trench Backfill Material	Subsection 703.21
Aluminum	Section 715

621.03 Construction Requirements.

(A) Equipment List and Drawings. Submit within 7 days following Contract award, two copies of materials and equipment purchase requisition, including copies of the equipment list, manufacturer's brochures, catalog cuts, and shop drawings to the Engineer for acceptance.

Order materials and equipment immediately upon acceptance by the Engineer. If the Contract award is rescinded by the Department after ordering of materials and equipment, the Department will purchase ordered materials and equipment at cost based on invoices. Purchase price will include transportation cost and applicable State excise taxes. Purchase price will not include profit.

Upon completion and acceptance of work, submit an 'As Built' or corrected plan showing in detail any construction changes per Section 648 – Field Posted Drawings.

(B) Excavation and Backfill. Excavate and backfill in accordance with Section 204 – Excavation and Backfill for Miscellaneous Facilities. Place the material from the excavation to prevent damage and obstruction to vehicular and pedestrian traffic and interference with surface drainage.

(C) Installation. The Contractor shall notify the State and schedule a meeting at least 14 days prior to any construction activity. The HDOT Traffic Monitoring Station Maintenance Contractor shall provide and install the video traffic monitoring equipment on the two poles and make the connections to the electronics in the cabinets.

(1) Foundations.

(a) Construct foundations as indicated in the Contract documents. Foundations within the clear zone, as defined by the AASHTO *Roadside Design Guide*, including anchor bolts, shall not extend more than 4 inches above the surrounding ground.

(b) Set forms true to correct line and grade. Use rigid forms, securely braced in place. Place conduit ends and anchor bolts in proper position and height and hold in place with rigid top template. In addition to rigid top template, hold anchor bolts in place by means of rigid bottom template made of steel. Bottom template shall provide proper spacing and alignment of anchor bolts near their bottom embedded end. Install bottom template before placing footing concrete. Anchor bolts installed more than 1:40 from vertical will be rejected. Hold conduit ends and anchor bolts in place by template until concrete sets. Cure concrete not less than 72 hours.

(c) Mix, place and cure concrete for foundations in accordance with Section 601 – Structural Concrete and Section 503 – Concrete Structures.

(2) Poles.

(a) Furnish and install two seamless, round, non-tapered extruded aluminum poles on foundations at locations as indicated on Contract documents, subject to field conditions. Each Pole Assembly shall be constructed to handle winds up to 108 mph gusts without damage or permanent deformation.

(b) Pole Assemblies shall be as specified in Construction plans.

(c) Exact locations shall be as directed by the Engineer, to not interfere with or block visibility of signs.

(3) Conduits.

(a) Install one new underground 1-inch Sch 80 PVC conduit between each pole foundation and each cabinet, per TE-36. Metallic Excavation Warning Tape shall be placed above each conduit per TE-36.

(b) Make directional changes in the conduits, such as bends and changes to clear obstructions, with curved segments using accepted deflection couplings or with short lengths of straight conduit and couplings. The deflection angle between two adjacent lengths of conduit shall not exceed 6 degrees. The bends shall not have a radius of less than 12 times the nominal size of the conduit. The Contractor may use factory-made ells.

(c) Cut the rigid PVC conduits with a hacksaw. Square and trim the ends after cutting to remove rough edges. The connections shall be of the solvent weld type. Make the solvent weld joints according to the conduit manufacturer's recommendations and as accepted.

(d) Seal the ends of the conduit with plugs at the end of each day of work, whenever problems interrupt the conduit installation work, and whenever conduits are subject to submergence in water.

(e) Keep the conduits clean during construction. Conduit ends where they emerge from underground next to the cabinets shall be temporarily sealed to keep conduits clean and dry until installation of cables from the poles to the cabinets.

(f) The completed conduits shall be subject to a field test. Pass a bullet-shaped test mandrel about 14 inches long with a diameter 0.5 inch less than the inside diameter of the conduits through the entire length of each conduit run. The Engineer will consider scouring found on the mandrel deeper than 1/32 inch an indication of burrs and/or obstructions in the conduit run. Normal abrasion between the conduit line and bottom of mandrel is not an indication of burrs and/or obstructions in the conduit run. Remove such burrs and/or obstructions. Pass the test mandrel through again. Repeat the process until the Contractor gets a satisfactory result.

(g) Provide each conduit run with a No.10 gauge flexible, zinc-coated pull wire (or 1/8” polyester or polyolefin pull wire) extending through its entire length. Double an additional 5 feet back into the conduit at each end of the run.

(D) Bonding and Grounding.

(1) Ground Pole Assemblies in accordance with the NEC and as specified herein. Provide No. 8 AWG copper wire or equivalent copper strap of same cross-sectional area for bonding and grounding jumpers.

(2) Ground conduits and neutral wires at service points as required in accordance with the NEC, using No. 6 AWG or equal for grounding conductors.

(3) Install copper-clad steel or pure copper ground rod, 3/4-inch diameter by 10 feet long, adjacent to pole foundations.

(4) Connect grounding rods with No. 6 AWG wire to No. 8 AWG ground wire loop and power system neutral.

(F) Inspection and Testing.

(1) Before Installation. The equipment shall be given requisite factory tests and inspected by the contractor upon receipt to determine that the workmanship and materials are free from defects.

(2) Acceptance of Pole Assemblies. The Pole Assemblies shall not be accepted, and payment shall not be made, until they have successfully passed inspection by the State.

(G) Restoring Ground Surfaces and Grassed Areas. Restore to their original condition the existing ground surfaces and grassed areas disturbed by excavation. Use replacement material equal to or better in quality than existing materials.

(H) Warranty. Provide new material and equipment for permanent construction. Furnish copies of manufacturer's warranty or warranties guaranteeing equipment free from defects in materials, design, and manufacturing, for not less than 12 months from the date of acceptance. Adjust or repair material and equipment under warranty within 24 hours from time of notification. Temporarily replace under-warranty material and equipment requiring factory corrections within 24 hours from time of notification. Install factory-corrected or new material and equipment no later than 30 days from time of notification.

621.04 Method of Measurement. The Pole Assemblies will be paid for on a lump sum basis. Measurement for payment will not apply.

621.05 Basis of Payment. The Engineer will pay for the accepted Pole Assemblies on a 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 item when included in the proposal schedule:

Pay Item	**Pay Unit**
Two Pole Assemblies	Lump Sum

END OF SECTION 621"