This Section shall be made a part of the Standard Specifications:

"**SECTION 680 - ELECTRIC AND COMMUNICATION SYSTEMS**

680.01 Description. This work shall consist of furnishing all labor, materials and equipment to install in place and in operating condition underground structures required for the facilities of Hawaiian Electric Company, herein referred to as HECO, the facilities of Hawaiian Telcom herein referred to as HTCO, and the facilities of Oceanic Time Warner Cable herein referred to as OTWC. Such works shall be performed and tested at the indicated locations in accordance with the requirements herein specified and the indicated details, or as ordered by the Engineer, and includes but is not limited to the following.

(A) Complete HECO handhole demolition and replacement with a new HECO manhole including excavation, backfilling, and concrete work. Work shall also include securing the approval of the HECO Inspector.

(B) Coordinate work and arrange for periodic inspections by HECO and Engineer.

(C) Immediately report and pay for damages to existing equipment.

(D) Obtain and pay for electrical permits, arrange for periodic inspection by local authorities and deliver certificate of final inspection to Engineer.

(E) Contractor shall check and test the installation for completeness and functional operation as described by the drawings and specified herein. Final test shall be in the presence of Engineer and representatives of utility companies. Contractor shall arrange and pay for all testing costs.

(1) Incidental parts which are not shown on the plans or specified herein and which are necessary to complete the underground electric, telephone, and cable television duct systems shall be furnished and installed by the Contractor as though such parts were shown on the plans, or specified herein or in the special provisions.

(2) All electrical equipment shall conform to the NEMA Standards, and all electrical work shall conform to ordinances of City and County of Honolulu; latest edition of National Electrical Code; General Order No. 10, Public Utilities Commission, State of Hawaii; and Regulations and Standard Practices of HECO, HTCO, and OTWC.

(F) Applicable rules, standards and specifications of following associations shall apply to materials and workmanship:

(1) American National Standards Institute (ANSI)

(2) Edison Electric Institute (EEI)

(3) Illumination Engineer Society (IES)

(4) National Board of Fire Underwriters (NBFU)

(5) National Electrical Manufacturer's Association (NEMA)

(6) National Fire Protection Association (NFPA)

(7) Underwriters' Laboratories, Inc. (UL)

680.02 Materials.

(A) Materials shall meet the requirements specified in the following subsections of Division 700 - Materials.

Pullboxes	712.06(B)
Conduits	712.27

(B) Ducts and Conduits shall conform to the requirements of Section 712.27 - Conduits. Ducts and conduits required shall be new and provided by the Contractor in accordance with the construction drawings and specifications.

(1) Polyvinyl Chloride (PVC) Schedule 40 type ducts shall be provided for the HECO, HTCO, and OTWC duct systems. The fittings shall be of the same material as the conduit and duct.

(C) Concrete shall conform to the requirements of Section 601 - Structural Concrete, except that for concrete jackets and concrete caps, the maximum size of coarse aggregate shall be 3/4 inch in lieu of the one-inch to No. 4 specified and the slump shall be 6-inch minimum and 7-inch maximum. Concrete for manholes, handholes, and pullboxes shall be Class A. Concrete for jacketing conduits and ducts shall be Class B except that the cement content shall be 5.6 sacks per cubic yard.

(D) Concrete Bricks shall conform to Subsection 704.02 - Concrete Brick. The use of broken bricks will not be permitted.

(E) Cement Mortar for Setting Bricks shall conform to the requirements of Section 601 - Structural Concrete. Cement mortar shall be a one-to-three volumetric mix of portland cement and a combined fine aggregate. Combined fine aggregate shall conform to Section 703 - Aggregates.

(F) Concrete Covers, Steel Frames and Miscellaneous Metals and Appurtenances for Handholes and Manholes. Steel shapes shall conform to the applicable provisions of Section 713 - Structural Steel and Related Materials. Fabrication of steel frames shall conform to the applicable provisions of Section 501 - Steel Structures. Steel frames shall be hot-dipped galvanized after fabrication. Concrete for covers shall be Class A and shall conform to Section 601 - Structural Concrete. Cast iron frame and cover shall conform to Subsection 712.07 (A) - Frame and Covers.

(G) Reinforcing Steel. Reinforcing Steel for manholes, handholes and pullboxes, and concrete jackets shall conform to the requirements of Section 602 - Reinforcing Steel.

(H) Materials will be subject to inspection at any time. Failure of the Engineer to note faulty material or workmanship during construction will not relieve the Contractor of his responsibility for removing or replacing such materials and dredging the work at his expense.

(I) Conductors. Conductors shall be copper, No. 12 AWG minimum; No. 10 AWG and smaller, solid and round; No. 8 AWG and larger, 7 or 19 strands concentric. All conductors No. 6 and smaller shall be types THW for interior use or RHW for exterior use. All conductors No. 4 AWG and larger shall be type THWN-2 for interior use; or RHW-2 or USE-2 for exterior use. Conductors used for fire alarm, sound system, and control wiring may be sized according to the system manufacturer based on their load and voltage drop calculations and code requirements. Conductors used to serve critical operations power systems (power systems for facilities or parts of facilities that require continuous operations for reasons of public safety, emergency management, national security, or business continuity) including but not limited to emergency power, HVAC, fire alarm, security, telecommunications, and signaling shall be a listed 2-hour electrical circuit protective system. Conductors installed on roof tops and exposed to sunlight shall be derated per NEC Table 310.15(B)(2)(b) or shall be type XHHW-2. Conduit sizes shall be increased as necessary to accommodate derated and type XHHW-2 conductors. Reduce conductor sizes at equipment terminations as required to accommodate maximum allowable conductor size accepted at equipment terminals per manufacturer's recommendations. Provide UL listed in-line reducer splice kit or UL listed cable reducing adapter plugs as required to reduce conductor sizes.

680.03 Construction.

(A) General.

(1) The Contractor shall in performing required excavation and backfill, exercise due care to avoid disturbing existing facilities. He shall remove and dispose of all demolished or excess material from the job site.

(2) Upon completion of the work, the Contractor shall submit an 'As Built' or corrected plan showing in detail thereon all construction changes.

(3) Before bidding, the Contractor shall visit project site, carefully review each section of the Specification and all Drawings of this Contract, and obtain and review the standards, specifications and drawings of the local utility companies.

(a) The Contractor shall report any error, conflicts or omissions to the Engineer at least one week before submission of bids for interpretation or clarification. If errors or omissions are not reported, the Contractor shall provide necessary work at no cost to the State of Hawaii to properly complete intent of Specification and Plans.

(4) The Contractor shall make detailed arrangements for work by utility companies pertaining to this contract. Payment to utility companies for their work shall be by the State.

(5) Electric and telephone utility cables and equipment shall be by respective utility companies. Cable television cables and equipment shall be by the cable television vendor for the area.

(B) Existing Utilities. Existing utilities are shown on the drawings in approximate locations for the convenience of the Contractor. It is not the intention of plans to imply that all existing utilities are drawn and located, and the fact that any utility is not shown on the drawings shall not relieve the Contractor of his responsibility under this Section. It shall be the Contractor's responsibility to ascertain the location of all existing utilities which may be subject to damages by construction under this Contract. The Contractor shall:

(1) Support and protect all HECO, HTCO, and OTWC utilities during construction,

(2) Notify HECO, HTCO, and OTWC immediately of any damage to its system caused by construction under this Contract, and

(3) Reconstruct, at his expense, damaged portions of the utility system in accordance with the requirements and specifications of HECO, HTCO, and OTWC.

(4) The Contractor shall be responsible for and shall pay for all damages to existing utilities of all types.

(C) HECO Facilities. The Contractor shall provide HECO with 24-hour access to all existing HECO facilities that are to remain, or, for facilities that are to be removed, until they are removed and to all new HECO facilities after they are

installed. The Contractor shall be responsible for any delays in utility company work due to his failure to provide access to utility company facilities. All existing HECO facilities shall remain in place until proposed permanent facilities are completed and energized. Any cost for temporary relocations arising during construction shall be borne by the Contractor.

(1) Electrical equipment or conductors, whether electrically energized or not, shall remain in place at all time during construction. Handling and moving of electrical equipment or conductors, when required by the Engineer, shall be done by HECO. Work by the Contractor in areas with energized electrical equipment or conductors shall be performed with extreme caution to prevent accidents and to avoid disturbing or damaging this equipment or conductors or any temporary supports or protective guards that are constructed. Unless otherwise permitted by HECO, all work by the Contractor in areas with energized equipment of conductors shall be performed in the presence of a HECO inspector and/or standby man. The Contractor shall have the sole responsibility for maintaining safe and efficient working conditions and procedures in these areas.

(2) Any existing or new HECO facilities including equipment or conductors damaged by the Contractor during construction shall be replaced by HECO at the Contractor's expense.

(3) The Contractor shall give HECO two weeks advance notice for any work to be done by HECO on its facilities. Unless otherwise indicated on the drawings or otherwise directed by the Engineer, HECO will:

(a) Remove the concrete envelope from existing underground HECO ducts containing electrical cables.

(b) Construct temporary supports and protective barriers for bare duct and electrical cables immediately after removal of the concrete envelope is completed. Material for such supports and barriers shall be furnished by the Contractor as an incidental cost.

(c) Remove temporary supports and protective barriers constructed under item (2) above.

(D) Excavation and Backfill. All excavation and backfill for electric, telephone and cable television underground structures and trenches shall conform to the requirements of Section 206 - Excavation and Backfill for Conduits and Structures, modified as follows:

(1) Excavation.

(a) The width of trenches for concrete encased ducts shall be not less than the width of the encasement nor more than that required to

properly and safely execute the work.

(b) Ducts encased in concrete jackets which are bedded in disturbed (fill) ground shall be installed in the following manner: Embankments shall be built up and thoroughly compacted to the elevation which is three feet above the top-of-jacket elevation, or to the required elevation shown on the plans, whichever is less than five times the width of the jacket. This work shall conform to the requirements of Section 203 - Excavation and Embankment. The trench to accommodate the jacket shall then be excavated through the constructed embankment.

(c) The Contractor shall not excavate for manholes, handholes and duct lines until he has the locations for these structures staked out and verified to be correct, and approved by the respective utility company inspectors.

(d) Trenches shall be excavated at least 50 feet ahead of duct placement so that any obstruction to the duct line can be avoided through gradual alignment. The profile grade may be adjusted by the Engineer to increase or decrease the excavation depth (up to 3 feet) as a result of unforeseen obstruction at no additional cost.

(e) Excavation for each handhole and manhole, plus 50 feet of trenching for all ducts connected to those structures shall be completed, and the locations and depths of the handholes and manholes shall be verified and approved by the respective utility company inspectors prior to construction or installation of the structures. All cuts in excess of depths required shall be filled with concrete, beach sand, or Type A backfill. The lateral limit for handholes and manholes shall be the vertical surfaces two feet outside the neat lines of the structures.

(f) The bottom of the trench excavation shall be flat and smooth. All trenches shall be approved by the Engineer and the utility company inspectors before any ducts or conduits are placed or any structures and foundations are constructed.

(g) The trenches shall be widened at handholes and manholes to permit proper entry of the ducts and conduits.

(h) The Contractor shall provide all sheathing and bracing to support the sides of the excavated trench. Provision and removal of these items are incidental to the trenching work.

(2) Backfill.

(a) No backfilling shall be done until the duct and conduit installations and the handhole and manhole placements have been verified to be correct and approved by the respective utility company inspectors.

(b) Material for use as trench backfill for direct buried cable above select backfill shall be non-expansive and shall conform to Subsection 680.03 (D) (2) (c) below. Backfilling and compaction shall be as specified in Section 206. Backfill material shall be beach sand, earth or earth and gravel mixture. If earth and gravel, mixture must pass 1/2 inch mesh screen and contain not more than 20 percent of rock particles by volume.

(c) Material for use as select backfill for direct buried cables shall be non-expansive and shall conform to the requirements of Subsection 703.04 (B) - Filler.

(d) Backfilling shall be to finished grades indicated on accompanying drawings, and/or matching existing conditions. Backfill material shall be placed in maximum of 8" layers in loose thickness before compacting. Backfill shall be thoroughly compacted with hand or mechanical tampers to 95% of the ASTM D1557 maximum dry density. In no case shall tamping be accomplished by using the wheels or tracks of a vehicle.

(E) Installation of Conduits, Conductors and Duct Banks. All joints shall be water tight and all ducts shall be installed to drain towards pull points unless otherwise shown on the plans.

(1) Plastic Duct Joints.

(a) Field cutting of plastic ducts shall be performed by the Contractor and only with the use of a miter box. Burrs shall be removed by filing before the joint is made. All foreign matter shall be wiped off the sockets of the fittings and the edges of the duct with a clean cloth.

(b) Cement for plastic duct joints shall be obtained from the duct manufacturer. Thinning of the cement will not be permitted. A liberal and uniform coat of cement shall be applied with a natural bristle brush to the inside of the coupling and to the outside of the duct end. Immediately thereafter, the duct shall be slipped into the socket of the fitting with a half-twist, and the excess cement shall be wiped off.

(c) Allow the joined members to cure for at least five minutes before disturbing or applying stress to the joint. After this initial cure,

care must be exercised in handling to prevent twisting or pulling the joint. In damp weather, this interval shall be increased to allow for slower evaporation of the solvent.

(d) Another fitting or section of conduit may be added to the opposite end within 2 or 3 minutes if care is exercised in handling so that strain is not placed on the previous assembly.

(e) Any joint included in a section of conduit to be bent in the trench shall be assembled above ground and allowed to lie undisturbed for at least two hours before installation. In cases where a plastic connection is made with the union under stress due to misalignment or other factors, the union shall be staked out to relieve stress on the joint until the conduit is backfilled or encased.

(2) Plastic Duct Installation.

(a) The Contractor shall provide spacers to maintain proper separation between ducts. The bottom duct spacers shall be placed on the prepared trench bottom, the first tier of ducts placed in the grooves of the spacers, and couplings attached to the duct ends. Spacers shall be 15 inches or more away from any coupling or joint. Successive lengths of ducts shall then be placed and connected to the preceding lengths as specified above. The second tier of duct spacers shall then be placed over the ducts previously placed and followed by installation of couplings. The operation shall be repeated for each successive tier until the top tier is set in place after which the top spacers are placed.

(b) When conduit is assembled above the ground, the spacer shall be supported in a vertical position by use of a No. 4 rebar and smooth black steel wire, No. 14 gage.

(c) Duct alignment shall be as straight as feasible. Such directional changes as are required shall be made by using field made bends or with segments using angle couplings or deflection couplings, except where otherwise indicated. The deflection angle between two adjacent lengths of duct shall not exceed five degrees, unless otherwise indicated.

(d) Horizontal bends for HTCO, and OTWC conduits/ducts shall be constructed with 25-foot minimum radius curves unless indicated otherwise or approved by the respective utility company inspector. Vertical bends for HTCO, and OTWC conduits/ducts shall be constructed with 20-foot minimum radius curves unless indicated otherwise or approved by the respective utility company inspector.

(e) Spacers shall not be located at the centers of a long radius bend. On pre-fabricated bends, the spacer shall be located in the tangent, free of the coupling. On trench formed bend, the spacer shall be located midway between the tangent and center of the bend.

(f) Precaution shall be taken to prevent damage in plastic duct lines from thermal expansion and contraction. All ducts shall be cool when placed in trenches and when the concrete jacket is being poured.

(g) Ducts ending in manholes shall be terminated with junior end bells. End bells, terminators or ducts shall be flush to inside wall surfaces; duct extension into boxes is not acceptable.

(h) The terminated ends of the conduit in an underground structure shall be free of support for a distance of at least 10 feet from the structure. The conduit shall be aligned and supported inside the structure with proper spacing and shall be cut to length after the concrete envelope has cured.

(i) The ends of the conduit shall be sealed with a plastic cap, plug, or approved substitute at the end of each day's work, when work on duct installation has to be interrupted, where ducts may be submerged in water, and in stub outs.

(3) Plastic marking tape. Provide plastic marking tape that is acid and alkali resistant polyethylene film 6 inches wide with minimum thickness of 0.004 inch. Provide tape with minimum strength of 1,750 PSI lengthwise and 1,500 PSI crosswise. Manufacture tape with integral wires, foil backing or other means to enable detection by a metal detector when tape is buried up to 3 feet deep. Manufacture tape specifically for marking and locating underground utilities. Provide the metallic core of the tape encased in a protective jacket or provided with other means to protect it from corrosion. Conform to the following tape color and bear a continuous printed inscription describing the specific utility.

Red: Electric
Orange: Telephone

(4) Conductors.

(a) Mechanical means for pulling shall be torque-limiting type and not used for #2 AWG and smaller wires.

(b) Pulling tension shall not exceed wire manufacturer's recommendations.

(c) Where necessary, powdered soapstone may be used as a lubricant for drawing wires through conduit. No other means of

lubricating will be allowed.

(d) Form neatly in enclosures for minimum of crossovers. Tag all feeders and label all branch circuits in all enclosures and devices. Identify panel name and branch circuit number.

(e) Color code feeder, branch circuit, and grounding conductors. Color for grounding conductors shall be green. Color for neutral conductors shall be white except for where neutrals of more than one branch circuit grouping are installed in the same raceway or enclosure, the other neutral shall be white with a colored stripe (other than green). The color coding for three-phase and single-phase circuits shall be as follows:

208Y/120V, 3-phase, 4-wire:	Black (Phase-A) Red (Phase-B) Blue (Phase-C)
480Y/277V, 3-phase, 4-wire:	Brown (Phase-A) Orange (Phase-B) Yellow (Phase-C)

(5) The Contractor shall apply a thin coat of sealing compound on ducts and conduits at couplings and bells.

(6) Conduits stubbed for future connections shall be plugged and marked.

(7) The Contractor shall securely anchor duct banks prior to pouring concrete encasement to prevent ducts from floating.

(F) Installation of Split Ducts Encased in Concrete Jacket. Split ducts with concrete jacket shall be installed around existing cables to remain in service, where shown on the plans.

(1) Field cutting of plastic ducts longitudinally into two equal halves shall be performed by the Contractor with the use of accepted tools and equipment.

(2) The two equal halves of plastic ducts shall be placed carefully around existing cables and sturdily bound together with wire or tape in order not to dislodge during pouring of concrete. The Contractor shall take necessary precautions not to damage the cables and shall work in an expeditious manner in order to keep uncovered cable exposed for as short a period of time as possible.

(3) Subsequent to binding of the plastic ducts, concrete shall be poured

to fully encase the ducts. The dimensions of the concrete encasement shall be similar to standard duct formation encasement dimensions.

(G) The Contractor shall test the completed ducts by passing a test mandrel through the length of each duct of each duct run. For HECO, and OTWC conduits, the mandrel shall be a bullet shaped, blunt tipped type, unless indicated otherwise, about 14 inches long with a diameter 1/2 inch less than the inside diameter of the ducts through the length of each duct run. Mandrel for HTCO ducts shall be bullet shaped, blunt tipped type about 12 inches long with a diameter 1/4 inch less than the inside diameter of the ducts through the length of each duct run. Scars in the mandrel deeper than 1/32 inch, other than that caused by normal abrasion between the duct line and bottom of mandrel shall be considered an indication of the presence of burrs and/or obstructions in the duct run. The Contractor shall remove such burrs and/or obstructions, after which the test mandrel will be passed through again. All tests shall be conducted in the presence of the Engineer and respective utility company inspectors, and shall be repeated until the results obtained are satisfactory to the Engineer and to the utility company inspectors.

(H) Unless indicated otherwise, the Contractor shall furnish and install a 1/8 inch Polyolefin pull line between pull points in all ducts after testing.

(1) For HTCO ducts, provide duct measuring/cable pulling tape (NEPTCO WP1800P Muletape or approved equal) in each new duct. Using the duct measuring/cable pulling tape, Contractor shall measure the actual lengths for duct runs and for at least one duct of each common duct run. The distances shall be marked on the record prints and submitted to the Owner at the final inspection. A copy of the record prints shall also be submitted to the HTCO inspector for record keeping.

(2) For HECO ducts, provide duct measuring/cable pulling tape (NEPTCO WP1800P Muletape or approved equal) in each new duct.

(I) Concrete. The Contractor shall notify the utility companies inspector a minimum of 72 hours prior to placement of any concrete.

(1) Securely anchor duct banks prior to pouring concrete encasement to prevent ducts from floating.

(2) When pouring concrete, prevent heavy masses of concrete from falling directly on ducts. If unavoidable, protect ducts with plank.

(3) Direct flow of concrete down sides of duct bank to bottom, allowing concrete to rise between ducts, filling all open spaces uniformly.

(4) To insure against voids in concrete, work a long, flat splicing bar or spatula liberally and carefully up and down the vertical rows of ducts. Mechanical vibrators shall be used for stacked duct banks of three ducts or

higher.

(5) Cure concrete for a minimum of 72 hours before permitting traffic and/or backfilling.

(6) Convey concrete from mixer to forms rapidly to prevent segregation. Free drop shall be limited to five feet, unless authorized by inspector.

(7) Placing.

(a) Clean and remove all debris from inside forms and trenches before placing concrete.

(b) Place concrete only on clean damp surfaces, free from water.

(c) Place concrete in forms, in horizontal layers not exceeding 18" thickness.

(d) Place concrete to avoid segregation of materials and displacement of ducts, inserts and reinforcing.

(e) Vibrate structural concrete thoroughly during and immediately after placing to insure dense watertight concrete.

(8) Forming.

(a) Forms shall be of good sound lumber with sufficient strength and conforming to shapes and dimensions indicated on drawings.

(b) Forms shall be treated with non-staining form oil immediately before each use.

(9) Patching: Patch all voids, pour joints and holes before concrete is thoroughly dry. Use mortar of same proportions as original concrete.

(10) Curing: Curing of concrete shall be accomplished by impervious membrane method with liquid membrane compound. Apply two or more coats to obtain a total of one gallon for each 150 square feet of concrete surface.

(J) Reinforcing Steel.

(1) Clean reinforcing of mill or rust scale and form to dimensions indicated.

(2) Install reinforcing in proper locations and secure in place to prevent movement during concrete placing or vibrating.

(K) Concrete Brick.

(1) Concrete brick shall be laid in full bed of mortar, both horizontally and vertically.

(2) Mortar shall be one part cement and three parts sand, thoroughly mixed and used when fresh. Re-tampering will not be allowed.

(3) Setting bed shall be of depth required to bring top of blocks flush with finish line.

(L) Restoration of Existing Streets and Other Improvements. Street, sidewalks, curbs, gutters, traffic detection loops, and other improvements of the State, private owners, or those of the City and County which are maintained by the State, which are damaged by rearrangements to the electric, cable television or telephone system, shall be restored by the Contractor to their original condition. Materials and workmanship shall conform to the applicable sections in these specifications. Payment for all materials and labor required shall be considered as incidental to the various contract items.

(1) Repairing of City streets and other improvements not maintained by the State and where such work is called for on the plans shall conform to the requirements of the City and County of Honolulu.

(2) All disturbed unpaved surfaces shall be backfilled and graded to match the surrounding areas, and sodded areas shall be replanted with the same type of grass. Fences and other improvements shall be restored to their original condition. This work shall be incidental to and included in the appropriate contract item under which the rearranged facility is provided.

680.04 Measurement. The Engineer will measure the meter pedestals, coordination with HECO to extend the overhead service to the existing street light, HECO 17-inch x 30-inch pullbox, HECO 2-feet x 4-feet handhole, and placement of bollards per each in accordance with Hawaiian Electric Company (HECO) standards and contract documents.

The Engineer will measure the secondary electrical ductline up to stub-outs, trenching for HECO secondary electrical ductline, HECO riser conduit per HECO standards, HECO secondary conductors, electrical system trenching for ductline, and concrete encasement for electrical ductlines per linear foot in accordance to contract documents.

680.05 Payment. The engineer will pay for the extension of the overhead service to the existing street light. The work includes coordination with HECO and furnishing equipment, tools, labor, materials, and other incidentals necessary to complete the work.

The Engineer will pay for the HECO pullbox and handhole at the contract unit price per each complete in place. The price includes full compensation for submitting the equipment list and drawings; furnishing and installing the pullbox and handhole at the designated location; saw cutting; excavating and backfilling; restoration of concrete sidewalks, asphalt concrete pavement and landscaping; furnishing equipment, tools, labor, materials, HECO standards and other incidentals necessary to complete the work.

The Engineer will pay for the meter pedestal at the contract unit price per each complete in place. The price includes full compensation for submitting the equipment list and drawings; assembling the meter pedestal; furnishing and installation of meter pedestal; saw cutting; excavating and backfilling; concrete base foundation; restoration and furnishing equipment, tools, labor, materials, HECo standards and other incidentals necessary to complete the work.

The engineer will pay for the stationary bollards at the contract unit price per each complete in place. The price includes full compensation for submitting the equipment list and drawings; installation of the bollards; saw cutting; excavating and backfilling; concrete base foundation; restoration of concrete sidewalk, asphalt concrete pavement and landscaping; painting the poles and furnishing equipment, tools, labor, materials and other incidentals necessary to complete the work.

The Engineer will pay for the conduits and conductors at the contract unit price linear foot complete in place. The price includes full compensation for submitting the equipment list and drawings; trenching and backfilling; installation of conduits and concrete jacket; and furnishing equipment, tools, labor, materials and other incidentals necessary to complete the work.

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

Pay Item	**Pay Unit**
Coordinate with HECO To Extend The Overhead Service To The Existing Street Light, Complete	Each
Provide New HECO 17-Inch x 30-Inch Pullbox, Complete	Each
Provide New Meter Pedestals, Complete	Each
Provide Stationary Bollards Per HECO Standards, Complete	Each
Provide New HECO 2-Feet x 4-Feet Handhole, Complete	Each

Provide Conduit, Conductors, Trench Excavation, Trench Backfill, and Concrete Encasement, Complete — Linear Foot

The Engineer will pay for the accepted hauling and stockpiling of salvaged materials and equipment off the right-of-way, as ordered by the Engineer in accordance with Subsection 104.02 – Changes."

END OF SECTION 680