

## SECTION 02713 – WATER SYSTEM

### PART 1 - GENERAL

#### 1.01 SECTION INCLUDES:

- A. Work shall consist of installation of water line including trenching, backfilling, and compaction.
- B. Make minor field adjustments required due to existing site conditions, obstructions, and other revisions that are a result of project construction and not noted in the plans.
- C. Provide all labor, equipment, materials, and transportation necessary to complete new waterline system as indicated on the drawings and herein specified.
- D. In addition, the following construction standards, with certain modifications as hereinafter specified, are hereby incorporated into and made part of these specifications by reference and apply to all work performed under this section. Paragraphs concerning Measurement and Payments in the standards are not applicable to this project. The Contractor shall keep a copy of these standards at the jobsite.
  - 1. Specific Sections of the HAWAII STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND PUBLIC WORKS CONSTRUCTION, 2005 and its amendments. Hereinafter referred to as the HAWAII STANDARD SPECIFICATIONS.
  - 2. "WATER SYSTEM STANDARDS", dated 2002 and its amendments. Hereinafter referred to as the WATER SYSTEM STANDARDS.

#### 1.02 SUBMITTALS:

- A. As-Built drawings: Prepare and submit as-built drawings of the installation as specified in the General Conditions.
- B. Certificates: Before installation, submit to the engineer affidavits from the manufacturers or suppliers of pipe, fittings, valves and special castings proposed to be furnished and installed under this section certifying that such materials delivered to the project conform to the requirements of these specifications.

#### 1.03 GUARANTEE:

- A. The Contractor shall warrant the installation free from defects of workmanship and/or material installation. Upon notification of any defects, the Contractor shall promptly make good any such defects developed within the warranty period without expense to the owner.

## PART 2 - PRODUCTS

### 2.01 MATERIALS:

- A. Asbestos Prohibition: No asbestos contain materials shall be used under this section. The Contractor shall insure that all materials incorporated in the project are asbestos-free.
- B. Prohibition: Solder and solder flux shall not contain lead. Flux shall be non corrosive type. Self cleaning flux shall not be used. The Contractor shall submit five (5) copies of certificates stating that the solder and fluxes used are lead free. Acceptable soldering fluxes are:
  - 1. S-19 Dutch Manufacturing
  - 2. By-chemish Fabrick, IPS Corp.
  - 3. Kerster #720, Kerster Solder
- C. Materials for water system shall be in accordance with the below-listed sections of the HAWAII STANDARD and the WATER SYSTEM STANDARDS revised, except as stated in the plans and/or specifications herewith. Paragraphs concerning Measurements and Payments are not applicable to this project.
  - 1. HAWAII STANDARD SPECIFICATIONS:
    - Aggregate for Untreated Base.....Section 703.06
    - Structure Backfill Material.....Section 703.20
    - Trench Backfill Material.....Section 703.21
  - 2. WATER SYSTEM STANDARDS
    - Ductile Iron Pipe, Fittings and Appurtenances.....Section 202
    - Warning and Identification Tapes.....Section 212
    - Cast Iron Pipe, Fittings and.....Section 207  
Special Castings for Water System
    - Copper Service Pipe and Appurtenances.....Section 208
    - Valves and Appurtenances.....Section 205
    - Fire Hydrant and Appurtenances.....Section 206

- D. Detection Wire: Detection wire shall be insulated one-piece (single strand) copper wire, No. 10 ga. (0.1019): diameter minimum (American or Brown and Sharpe Gage).

### PART 3 - EXECUTION

#### 3.01 INSTALLATION:

A. Location of Utility Lines

1. The Contractor shall be responsible for precisely laying out the various water lines shown on the drawing.
2. Prior to the actual work of constructing the water system, the Contractor shall excavate and expose all utility facilities which will be crossed by the new water lines and verify their elevations with respect to the new water grades. The contractor shall tone all areas to be excavated to locate existing utility lines. Elevations of inverts of new water lines to be connected to existing water lines shall be verified at their points of connection under this requirement.
3. Should the elevation of any existing utility show a possible discrepancy which may affect the alignment and grade of the new water line, the Contractor shall immediately notify the Engineer of his findings and shall not proceed with the water line construction until authorized to do so by the Engineer.
4. In performing all work, the contractor shall exercise caution as necessary to avoid damage to, and impairment in the use of any existing utility line. Any damage to existing lines resulting from the Contractor's operations shall be immediately repaired and restored as approved by the Engineer at the Contractor's expense.

- B. Installation: Installation of water lines shall be governed by the following sections of the HAWAII STANDARD SPECIFICATIONS and the "STANDARD DETAILS FOR PUBLIC WORKS" dated September 1984 as revised, except as stated in the plans and/or specifications herewith. (Paragraph concerning Measurements and Payments in the sections are not applicable to this project).

1. Water Systems.....Section 624

- C. Detection Wire: Detection wire shall be provided for all non-metallic underground water lines. The conducting cable shall be buried directly above the center-line of the pipe at a distance of approximately 6" above the top of the pipe. The wire shall extend continuously along the entire length of pipe, from valve box to valve box. The ends of the wire shall terminate inside of each valve box at the end of each pipe, with a minimum of 3' of wire, coiled and remaining accessible in each valve box. The wire shall be insulated along its entire length. The coil of wire shall be tied to the gate valve within the valve box. Where wires must be jointed, the ends shall be tied in a knot and a splice made which provides electrical continuity across the wires.
- D. Warning and Identification Tape: Warning and identification tape shall be buried directly above the center line of the water line, approximately 12" below finished grade. When the water line is under pavement and slabs, the tape shall be buried approximately 6" below the top of the subgrade.

3.02 FINAL INSPECTION:

- A. At the time of final inspection of the work performed under this contract, the utilities covered by this section shall be complete in every respect and operating as designed. All surplus materials of every character resulting from the work of this section shall have been removed. Water lines, manholes, cleanouts, and distribution boxes shall be free from sand, silt or other obstructions. Any defects discovered in the utilities subsequent to this inspection shall be corrected prior to the final inspection.

END OF SECTION