SECTION 17301

control system hardware

# GENERAL

## REQUIREMENTS

### The Process Instrumentation and Control Supplier (PICI) shall furnish all labor, materials, equipment, services and incidentals required to install and place into operation the TCP and computer-based plant control and monitoring system provided by the PCIS supplier, configured as shown on the Contract Drawings, and as described in the specifications.

### All digital system hardware equipment, materials, and appurtenances shall be supplied in accordance with the requirements in this specification.

### The PICI shall be responsible for providing accessory devices including furnishing and installation of interposing relays, control switches and signal converters necessary to perform the intent as shown on the drawings and described in the control strategies, and services necessary to achieve a fully integrated and operational system as shown on the Contract Drawings and Specifications not included in PCIS Supplier Requirements.

### The PICI shall furnish and install all cabling and cable accessories, including tools necessary for connecting all field equipment to the TCP.

## SCADA SYSTEM GENERAL REQUIREMENTS

### Programming of the SCADA system will be by the PICI Supplier.

## RELATED WORK

### The PICI shall furnish all materials, labor and services specified in the following Specification sections as required ensuring a single, coordinated system is supplied:

#### Section 17000 - General Requirement for I&C Systems

#### Section 17200 – Field Mounted Water Instruments

#### Section 17300 – Remote Terminal Unit

#### Section 13422 – Magnetic Flow Meters

### The PICI shall coordinate his work with the work under the following:

#### Division 00 - Bidding and Contract Requirements.

#### Division 01 - General Requirements.

#### Division 16 - Electrical.

## SUBMITTAL REQUIREMENTS

### Refer to Section 17000 – General Requirements for I&C System.

## DIGITAL HARDWARE CONFIGURATION

### All discrete and analog data acquisition, pre-processing, storage, and process control functions shall be performed by the hardware and software provided by the PCIS Supplier. Operator workstations and touch screen HMIs, if any, shall be fully integrated devices within the TCP.

## SPARE PARTS

### The following expendable products shall be provided:

#### Items with limited shelf-life shall be provided over the year as needed.

#### One-year supply of items recommended by the Manufacturer of the equipment for each component.

# NOT USED

# EXECUTION

## GENERAL

### The PICI shall furnish all labor, materials, equipment, and incidentals required to install the system in accordance with Section 17000 – General Requirements for I&C Systems and as specified herein.

### The PICI shall be responsible for ensuring that all field wiring for power and signal circuits is correct and wired in accordance with best industry practice. Also, the PICI shall be responsible for providing all necessary system grounding to insure a satisfactory functioning installation.

### The shield on each process instrumentation cable shall be continuous from source to destination and be grounded as directed by the Manufacturer of the instrumentation equipment but in no case shall more than one ground point be employed for each shield.

### Analog, discrete, and power wiring shall be physically separated to the maximum extent possible. In no case shall any wire bundle contain signals of mixed types.

### All Ethernet interconnect which are installed in conduits shall be terminated onto ethernet patch panels within each major device (MCC, TCP, Packaged systems). No field solid wire ethernet cables shall be directly terminated onto any end device. All solid wire ethernet cable shall be terminated using an approved patch panel with stranded ethernet jumper cables (no longer than 6 feet in length) to interconnect between patch panel and the end device.

### One(1) full day meeting with the PCIS Supplier, PICI, and Owner shall be arranged to discuss the overall system design, implementation.

## TESTS AND ACCEPTANCE

### System testing and acceptance shall be performed in accordance with the requirements defined in Section 17000 -General Requirements for IC Systems and as specified herein.

### A complete set of preventive maintenance procedures shall be performed on all equipment no more than thirty days prior to final factory tests on the full integrated system. This shall include such items as calibration of A/D converters, adjustment of power supplies, adjustment of all CRTs for convergence and color, etc.

## WARRANTY/PREVENTIVE MAINTENANCE

### Warranty and Preventive Maintenance shall be included in the Contract Price and provided as defined in 17000 -General Requirements for IC Systems.

END OF SECTION