

# CONTRACT ADDENDUM NO. 1

## CITY OF PORT ORCHARD

### Melcher Pump Station Rehabilitation

#### Project No. PW2023-017

Date Advertised: March 22, 2024  
Date of Addendum Issue: April 2, 2024  
Date of Opening: April 18, 2024

#### Notice to all Plan Holders:

This Addendum No. 1, containing the following revisions, additions, deletions, and/ or clarifications is hereby made a part of the Plans and Contract Provisions (Contract Documents) for the above named project. It shall be attached to the Contract Provisions and shall be taken into consideration by the Bidders in submitting their bids.

Bidders shall acknowledge receipt of the Addendum No. 1 in the space provided on the Proposal/ Construction Contract form. Failure to do so may subject the Bidder to disqualification of the bidders submittal.

### CONTRACT PROVISIONS

#### 1. ADDITIONS

1. Specification section **406113-Process Instrumentation and Controls General Requirements** is added by this Amendment. (See attached).
2. Drawing sheets PC-011, PC-012, and PC-013 were inadvertently left out of the drawing set and are added by this Amendment. (See attached).

#### 2. CHANGES

1. See updated specification Table of Contents provided by the Amendment (attached.)

### QUESTIONS & RESPONSES

#### 1. QUESTION:

There are no VFD wiring diagrams. Can we get these added?

#### RESPONSE:

VFD wiring diagrams are included in the drawing set. See sheets PC-023 and PC024.

#### 2. QUESTION:

There is no specification for the Instrumentation and Controls. TSI did the design for the

PLC/Control Panel.

RESPONSE:

Specification section **406113-Process Instrumentation and Controls General Requirements** is provided in this Amendment.

3. QUESTION:

Who is responsible for programming the PLC and HMI?

RESPONSE:

See specification section **406113-Process Instrumentation and Controls General Requirements** provided in this Amendment.

4. QUESTION:

With the current lead times, 100 working days does not appear to be enough time for construction.

RESPONSE:

See Project Manual front end section **INFORMATION AND CHECKLIST FOR BIDDERS**, item 8, **SUSPENSION OF WORK**. The 100 working days does not include the suspension period to allow for acquisition of long lead equipment.

ALL OTHER REQUIREMENTS OF THE CONTRACT DOCUMENTS REMAIN IN EFFECT



Kenneth C. Hammer, PE, PMP  
City Engineer

Date: 4.2.2024

221123 Domestic Water Pumps

**DIVISION 23 – HEATING, VENTILATION AND AIR-CONDITIONING (HVAC)**

238200 CONVECTION HEATING AND COOLING

**DIVISION 26 – ELECTRICAL**

260519 Low-Voltage Electrical Power Conductors and Cables

260526 Grounding and Bonding for Electrical Systems

260533.13 Conduit for Electrical Systems

262416 Panelboards

262923 Variable-Frequency Motor Controllers

263213 Engine Generators

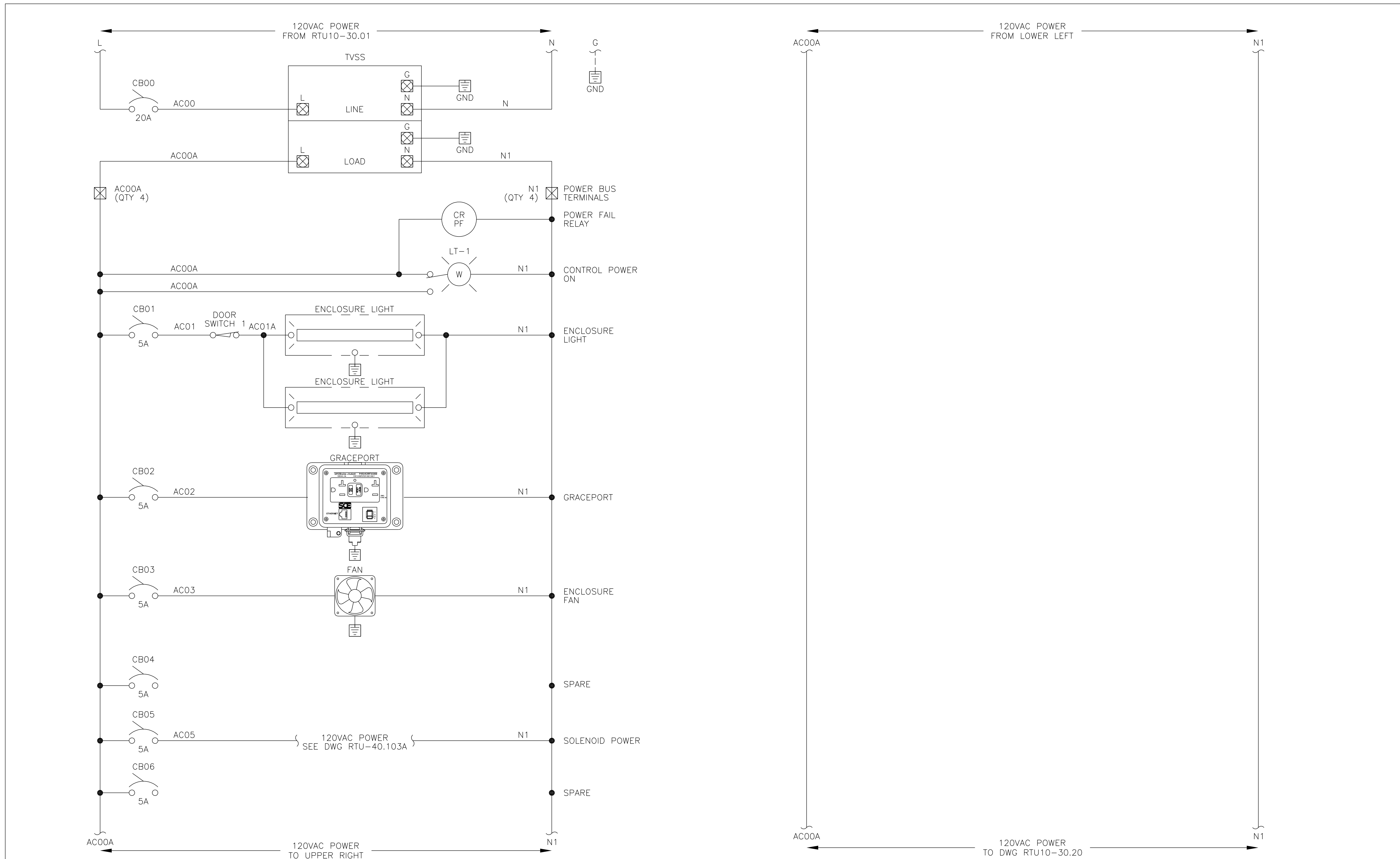
265100 Interior Lighting

**DIVISION 33 – UTILITIES**

330110.58 Disinfection of Water Utility Piping Systems

**DIVISION 40 – PROCESS INTERCONNECTIONS**

406113 Process Instrumentation and Controls General Requirements



REV	DESCRIPTION/INIT	DATE
1.0	SUBMITTAL/JW	06/06/23
1.1	RESUBMITTAL/JW	07/06/23

LISTING
<input type="checkbox"/> UL508 S/N _____
<input type="checkbox"/> UL698A S/N _____
<input type="checkbox"/> OTHER _____

**TSI Technical Systems Inc.**  
 2303 196TH ST. S.W.  
 LYNNWOOD, WA. 98036  
 (425) 775-5696

CUSTOMER: ART ANDERSON & ASSOCIATES

EN / PM / CHK: KD/AP/AP  
 DRAWN: RJC

CITY OF PORT ORCHARD, WA

MELCHER BOOSTER PUMP STATION UPGRADE  
 MELCHER PUMP STATION RTU NO. 10  
 120VAC POWER DISTRIBUTION DIAGRAM

DATE CREATED	REV.
12/01/2022	1.1
JOB NO.	8113
DWG. NO.	RTU10-30.10

ART ANDERSON  
 830 PACIFIC AVE. BREMERTON, WA 98337  
 (360) 479-5600

Technical Systems Inc.  
**TSI**

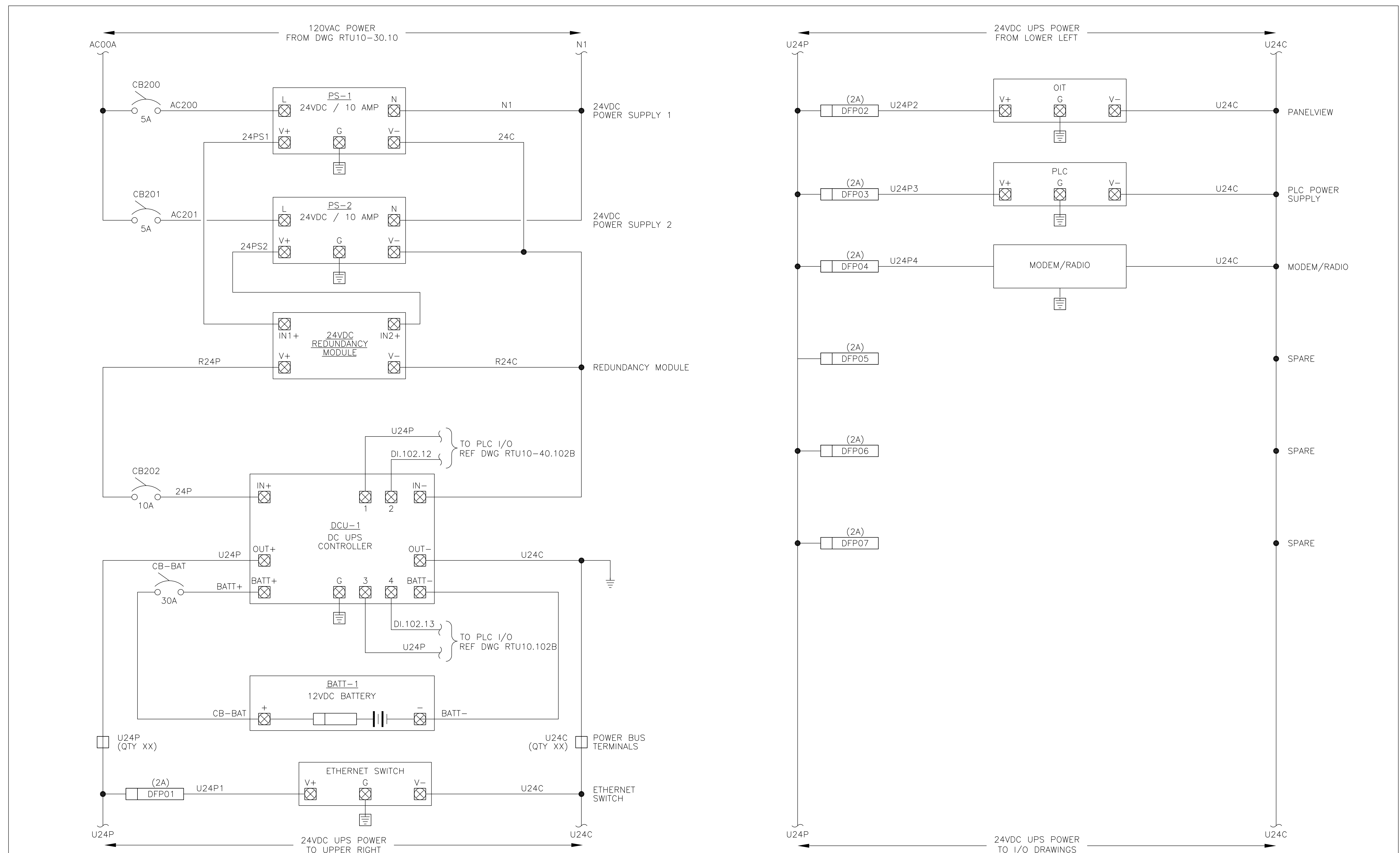
MELCHER STREET PUMP STATION RENOVATION  
 SIDNEY AVENUE AT MELCHER STREET  
 PORT ORCHARD, WASHINGTON 98366

DRAWN:	---
DESIGNED:	---
CHECKED:	---
ISSUE DATE	11/17/2023
REVISIONS	

JOB NO.	FACP0017
SHT TITLE	TSI PUMP CONTROL DWG RTU-10-30.10, 120V POWER DIST DIA
SHT NO	25 OF 39

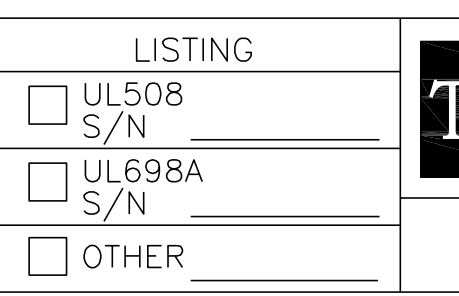
**BID SET**  
 16-FEB-2024

**PC-011**



REV	DESCRIPTION/INIT	DATE
1.0	SUBMITTAL/JW	06/06/23
1.1	RESUBMITTAL/JW	07/06/23

LISTING
<input type="checkbox"/> UL508 S/N _____
<input type="checkbox"/> UL698A S/N _____
<input type="checkbox"/> OTHER _____



**Technical Systems Inc.**  
 2303 196TH ST. S.W.  
 LYNNWOOD, WA. 98036  
 (425) 775-5696

CUSTOMER  
 ART ANDERSON &  
 ASSOCIATES

EN / PM / CHK  
 KD/AP/AP  
 DRAWN  
 RJC

CITY OF PORT ORCHARD, WA

MELCHER BOOSTER PUMP STATION UPGRADE  
 MELCHER PUMP STATION RTU NO. 10

24VDC UPS POWER DISTRIBUTION DIAGRAM

DATE CREATED	REV.
12/01/2022	1.1
JOB NO.	8113
DWG. NO.	RTU10-30.20

**ART ANDERSON**  
 830 PACIFIC AVE. BREMERTON, WA 98337  
 (360) 479-5600

Technical Systems Inc.  
**TSI**

MELCHER STREET PUMP STATION RENOVATION  
 SIDNEY AVENUE AT MELCHER STREET  
 PORT ORCHARD, WASHINGTON 98366

DRAWN: ---  
 DESIGNED: ---  
 CHECKED: ---

ISSUE DATE  
 11/17/2023

REVISIONS

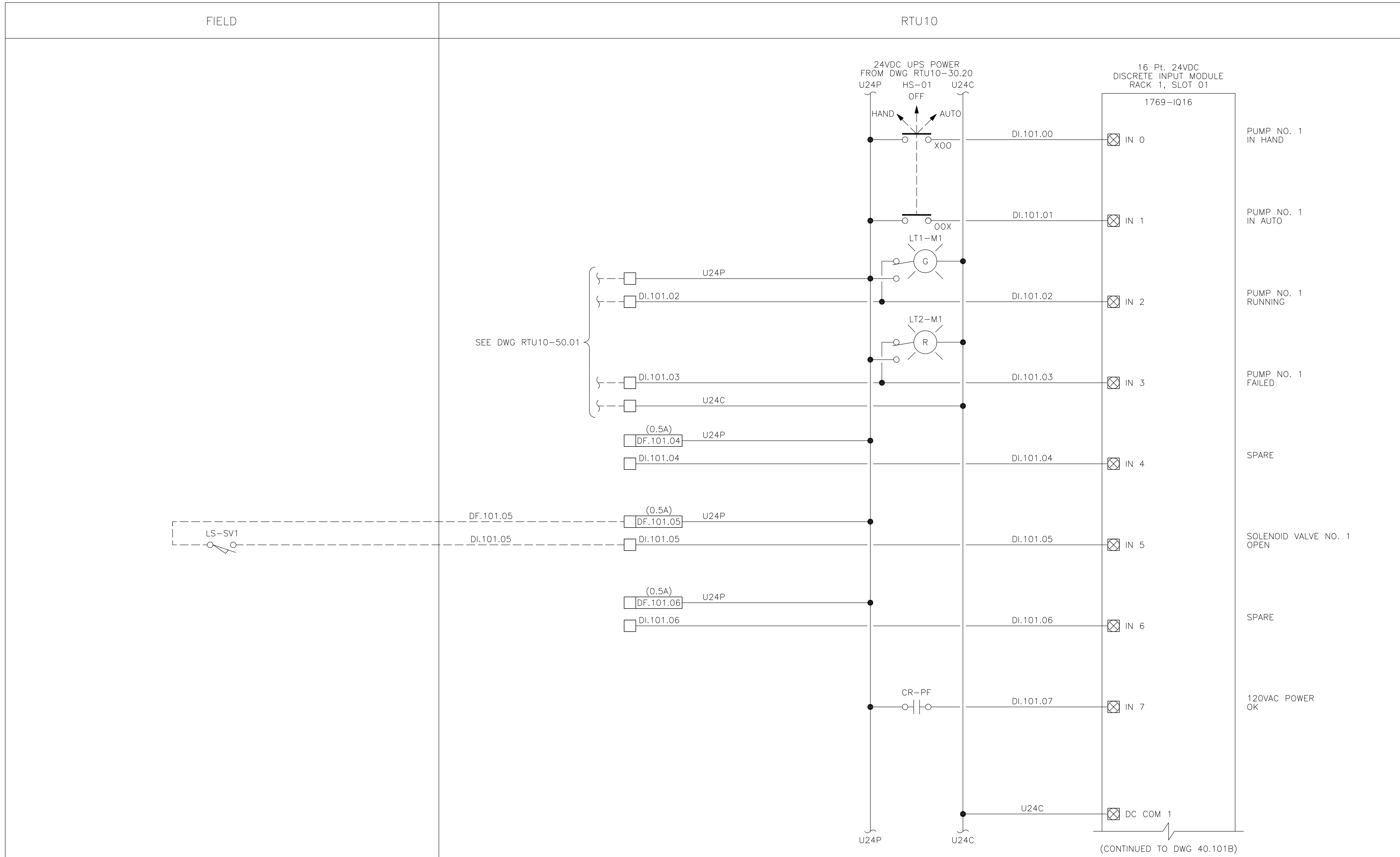
JOB NO  
 FACP0017

SHT TITLE  
 TSI PUMP CONTROL  
 DWG RTU-10-30.20,  
 480V P24VDC UPS PWR  
 DIST DIA

SHT NO 26 OF 39

**BID SET**  
 16-FEB-2024

**PC-012**



REV	DESCRIPTION/INIT	DATE
1.0	SUBMITTAL/JW	06/06/23
1.1	RESUBMITTAL/JW	07/06/23

LISTING
<input type="checkbox"/> UL508 S/N _____
<input type="checkbox"/> UL698A S/N _____
<input type="checkbox"/> OTHER _____

**TSI** Technical Systems Inc.  
 2303 196TH ST. S.W.  
 LYNNWOOD, WA. 98036  
 (425) 775-5696

CUSTOMER  
 ART ANDERSON &  
 ASSOCIATES

EN / PM / CHK  
 KD/AP/AP  
 DRAWN  
 RJC

CITY OF PORT ORCHARD, WA

MELCHER BOOSTER PUMP STATION UPGRADE  
 RTU10 (RTU10)  
 DISCRETE INPUT MODULE  
 RACK 1, SLOT 01 - WIRING DIAGRAM

DATE CREATED	REV.
12/01/2022	1.1
JOB NO.	8113
DWG. NO.	RTU10-40.101A

**ART ANDERSON**  
 830 PACIFIC AVE. BREMERTON, WA 98337  
 (360) 479-5600

Technical Systems Inc.  
**TSI**

MELCHER STREET PUMP STATION RENOVATION  
 SIDNEY AVENUE AT MELCHER STREET  
 PORT ORCHARD, WASHINGTON 98366

DRAWN: ---  
 DESIGNED: ---  
 CHECKED: ---

ISSUE DATE  
 11/17/2023

REVISIONS

JOB NO  
 FACP0017

SHT TITLE  
 TSI PUMP CONTROL  
 DWG RTU-10-40.101A,  
 RACK 1, SLOT  
 01-WIRING DIA

SHT NO 27 OF 39

**BID SET**  
 16-FEB-2024

**PC-013**

**SECTION 406113  
PROCESS CONTROL AND INSTRUMENTATION SYSTEMS GENERAL REQUIREMENTS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Basic requirements for complete instrumentation and control system.
- B. The Process Control and Instrumentation System (PCIS) consists of all primary elements, transmitters, switches, controllers, computers, communication devices, recorders, indicators, panels signal converters, signal boosters, amplifiers, special power supplies, special or shielded cable, special grounding or isolation, auxiliaries, software, wiring, other devices, and programming required to provide complete control of the plant as specified in the Contract Documents.

**1.02 REQUIREMENTS**

- A. The contractor will furnish, install and connect all Process Control and Instrumentation Systems, complete and operable, in accordance with the Contract Documents.
- B. Responsibilities:
  - 1. The Contractor, through the use of a System Integrator (see paragraph 1.06.B) and qualified electrical and mechanical installers, will be responsible to the Owner for the implementation of the PCIS and integration of the PCIS with other required instrumentation and control devices.
  - 2. The System Integrator shall be responsible for the provision of an integrated control system/PCIS fully functioning in accordance with the requirements of the Contract Documents.
  - 3. The PCIS will interface with the existing City of Port Orchard SCADA system through a communication link as indicated in the Contract Documents.
  - 4. System Integrator shall provide all necessary coordination with other work to ensure that necessary wiring, conduits, contacts, relays, converters, and incidentals are provided in order to transmit, receive, and control necessary signals to other control elements, to control panels, and to receiving stations.

**1.03 REFERENCE STANDARDS**

- A. ISA S5.1 - Instrumentation Symbols and Identification.
- B. ISA S5.3 - Graphic Symbols for Distributed Control/Shared Display Instrumentation, Logic and Computer Systems.
- C. ISA S20 - Standard Specification Forms for Process Measurement and Control Instruments, Primary Elements and Control Valves.
- D. NEMA 250 – Enclosures for Electrical Equipment (1000) Volts Maximum.
- E. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

**1.04 SUBMITTALS**

- A. Product technical data including:
  - 1. Equipment catalog cut sheets.
  - 2. Instrument data sheets:
    - a. ISA S20 or approved equal.
    - b. Separate data sheet for each instrument type.
  - 3. Materials of construction.
  - 4. Minimum and maximum flow ranges.
  - 5. Pressure loss curves.
  - 6. Physical limits of components including temperature and pressure limits.

7. Size and weight.
  8. Electrical power requirements and wiring diagrams.
  9. NEMA rating of housings.
  10. Submittals shall be marked with arrows to show exact features to be provided.
- B. Comprehensive asset inventory of all networked components:
1. Provide in Excel spreadsheet format.
  2. Coordinate with the Owner or Engineer to determine the preferred method of delivery to assure security of information contained in asset inventory.
  3. Include:
    - a. Device ID.
    - b. Manufacturer.
    - c. Model Number.
    - d. Serial Number.
    - e. MAC Address.
    - f. IP Address.
    - g. Device Use description.
    - h. Firmware.
- C. Network Diagrams:
1. Provide in both AUTO CAD and PDF formats.
  2. Coordinate with the Owner or Engineer to determine the preferred method of delivery to assure security of information contained in Network Diagrams.
  3. Logical Network Diagrams showing information flow.
  4. Physical Network Diagrams showing network components, ports, protocols, connections and cables.
- D. Shop Drawings
- E. Wiring Diagrams
- F. Panel Fabrication Drawings
- G. PLC Equipment Drawings
- H. Nameplate Layout Drawings
- I. Drawings shall be provided in both hardcopy and softcopy. Furnish electronic files in Owner's designated media. Furnish drawings in AutoCAD format.
- J. Provide a parameter setting summary sheet for each field configurable device.
- K. Certifications:
1. Documentation verifying that calibration equipment is certified with NIST traceability.
  2. Approvals from independent testing laboratories or approval agencies, such as UL, FM or CSA.
    - a. Certification documentation is required for all equipment for which the specifications require independent agency approval.
- L. Testing reports: Source quality control reports.
- M. Contract Closeout Information:
1. Operation and Maintenance Data.
  2. All Shop Drawings shall be modified with as-built information/corrections.
  3. Instrumentation and Control Equipment Operation and Maintenance Manual Content:
    - a. Provide a printed copy of the following sheets following the Equipment Record sheets ISA Data Sheets.
      - 1) Loop Check-out Sheet.
      - 2) Instrument (calibration) Certification Sheet.
      - 3) Final Control Element (i.e. control valve) Certification Sheet.
  4. Provide the following detailed information:



- a. Use equipment tag numbers from the Contract Documents to identify equipment and system components.
  - b. As-constructed fabrication or layout drawings and wiring diagrams.
  - c. Spreadsheet containing all network devices and their associated MAC and IP addresses and username/password list.
5. Warranties: Provide copies of warranties and list of factory authorized service agents.

### 1.05 DEFINITIONS

- A. Calibrate: To standardize a device so that it provides a specified response to known inputs.
- B. System Integrator: A Contractor/Subcontractor who combines instrumentation, control devices, hardware, software, programming, and networking products from multiple vendors to provide a fully functioning control system.

### 1.06 QUALITY ASSURANCE

- A. Comply with requirements of the reference standards.
- B. Qualifications:
  - 1. System Integrator:
    - a. The Control System Integrator will be solely and completely responsible for the fabrication, installation, programming and commissioning of the PCIS.
    - b. Technical System Incorporated (TSI) is the approved Systems Integrator for the City of Port Orchard. Contact at TSI is Andrew Palmberg.
      - 1) Phone: (425) 678-4104
      - 2) Email: [andrewp@tsicontrols.com](mailto:andrewp@tsicontrols.com)
    - c. Contractor may submit the qualifications as required below to seek approval of an "or equal" System Integrator. "Or equal" Systems Integrator will be considered for acceptability based on the qualifications noted below:
      - 1) The System Integrator will be an instrument and control system manufacturing company.
      - 2) The company will be located within a 50-mile drive from downtown Port Orchard, Washinton.
      - 3) The company will have capabilities which specialize in the design, assembly, testing, installation, programming, and service of municipal water system control systems in the Pacific Northwest for at least five years.
      - 4) The company will employ technicians and engineers with documented experience in the design, assembly, testing, installation, operation, calibration, troubleshooting, service, and repair of control systems for municipal waterworks and sewerage facilities.
      - 5) The company will have completed the design, assembly, testing, and installation of control systems that include the instruments and devices cited in the Contract Documents by specific manufacturer's name.
    - d. The System Integrator selected by the Contractor will be subject to the approval of the Owner. Prior to placement of purchase orders for services and equipment, the Contractor will provide the following information about the selected System Integrator for review by the Owner:
      - 1) Description of ownership and organization of the company.
      - 2) Resumes of principals and/or key employees.
      - 3) Description of expertise in design, assembly, testing, and installation of control systems for municipal waterworks and sewerage facilities.
      - 4) Description of municipal controls systems designed, assembled, and installed in the last five (5) years. Description will include:
        - (a) Names of employees involved in each system.
        - (b) Detailed description and drawings of each system.
        - (c) Cost of each system.

- (d) Names and telephone number of persons involved in operation and maintenance of each system.
- 5) Description of the service capabilities normally provided by the company including resumes of employees assigned to field service and listing of service equipment.
- 6) Description of spare parts normally stocked and of restocking procedures.
- 7) Additional information that may assist the Owner in ascertaining the company's general ability to perform the work.
- e. Acceptability of the company will be determined solely by the Owner.
- f. The Contractor and the selected System Integrator will anticipate that the Owner may withhold approval of the selected System Integrator if, in the opinion of the Owner, the System Integrator does not have the experience and capability or from lack of performance and execution of similar projects in the past.
- g. The Contractor and any System Integrator not approved by the Owner will not be entitled to an extension of time or to any claim for damages because of extra and unanticipated costs, hindrances, delays, or complications caused by or resulting from failure by the Owner to approve any System Integrator for whatever reason.

### **1.07 DELIVERY, STORAGE, AND PROTECTION**

- A. Keep products in original manufacturer's packaging and protect from damage until ready for installation.
- B. Do not remove shipping blocks, plugs, caps, and desiccant dryers installed to protect the instrumentation during shipment until the instruments are installed and permanent connections are made.

### **1.08 FIELD CONDITIONS**

- A. Maintain field conditions within manufacturer's required service conditions during and after installation.

### **1.09 EXTENDED PERIOD FOR CORRECTION OF DEFECTS**

- A. The System Integrator will correct all defects in the PCIS upon notification from the Owner for period of one (1) year from the date of Substantial Completion. Corrections will be completed within 5 business days after notification.

## **PART 2 PRODUCTS**

### **2.01 NEMA TYPE REQUIREMENTS**

- A. Provide enclosures/housing for control system components in accordance with the Drawings.

### **2.02 PERFORMANCE AND DESIGN REQUIREMENTS**

- A. Unless stated otherwise, system operating criteria are as follows:
  1. Stability: After controls have taken corrective action, as result of a change in the controlled variable or a change in setpoint, oscillation of final control element shall not exceed two cycles per minute or a magnitude of movement of 0.5 PCT full travel.
  2. Response: Any change in setpoint or change in controlled variable shall produce a corresponding corrective change in position of final control element and become stabilized within 30 seconds.
  3. Agreement: Setpoint indication of controlled variable and measured indication of controlled variable shall agree within 3 PCT of full scale over a 6:1 operating range.
  4. Repeatability: For any repeated magnitude of control signal, from either an increasing or decreasing direction, the final control element shall take a repeated position within 0.5 PCT of full travel regardless of force required to position final element.
  5. Sensitivity: Controls shall respond to setpoint deviations and measured variable deviations within 1.0 PCT of full scale.
  6. Performance: All instruments and control devices shall perform in accordance with manufacturer's specifications.

## 2.03 ACCESSORIES

- A. Provide identification devices for instrumentation system components.
- B. Provide corrosion resistant spacers to maintain 1/4 IN separation between equipment and mounting surface in wet areas and on below grade walls.

## PART 3 EXECUTION

### 3.01 INSTALLATION

- A. Wherever feasible, use bottom entry for all conduit entry to instruments and junction boxes.
- B. Install electrical components per the requirements of the Electrical design.
- C. Test and verify communication with the new PLC control panel.
- D. Panel-Mounted Instruments:
  - 1. Mount and wire so removal or replacement may be accomplished without interruption of service to adjacent devices.
  - 2. Locate all devices mounted inside enclosures so terminals and adjustment devices are readily accessible without use of special tools and with terminal markings clearly visible.
- E. Programming Workshops
  - 1. The Contractor's Systems Integrator shall obtain necessary existing documentation (manual and drawings) of the existing City of Port Orchard SCADA system in order to facilitate a Programming Workshop. The Programming Workshop is to be led by the System Integrator in conjunction with the Owner's Representative. The System Integrator will provide functional descriptions (control narratives) of the proposed programming to the Pump Station PLC and proposed coordination and testing requirements to connect to the City's SCADA. The City will be responsible for all of the SCADA related programming and testing.

### 3.02 FIELD QUALITY CONTROL

- A. Maintain accurate daily log of all startup activities, calibration functions, and final setpoint adjustments.
- B. Instrumentation Calibration:
  - 1. Verify and document that all instruments and control devices are calibrated to provide the performance required by the Contract Documents.
  - 2. Factory furnished calibration certifications are acceptable for the following:
    - a. Flow meters.
    - b. Pressure sensors utilized with annular sleeve.
    - c. Temperature sensors.
  - 3. On-site calibration verification is required for all other instruments, including "smart" transmitters that have been factory calibrated.
    - a. Provide calibration checks at 0 PCT, 25 PCT, 50 PCT, 75 PCT and 100 PCT of span for pressure transmitters and gages.
      - 1) Check for both increasing and decreasing input signals to detect hysteresis.
    - b. In addition to factory calibration certification, temperature sensors and gages shall be checked at a single point for conformance to required accuracy.
    - c. Level transducers/transmitters shall be checked at two points in addition to zero.
    - d. Check operation of all switches to verify actuation occurs in accordance with manufacturer's specified accuracy.
    - e. Replace any instrument which cannot be properly adjusted.
  - 4. Calibration equipment shall be certified by an independent agency with traceability to NIST.
    - a. Certification shall be up-to-date.
    - b. Use of equipment with expired certifications shall not be permitted.
  - 5. Calibration equipment shall be at least three times more accurate as the device being calibrated.

- C. Loop check-out requirements are as follows:
1. Check control signal generation, transmission, reception and response for all control loops under simulated operating conditions by imposing a signal on the loop at the instrument connections.
    - a. Use actual signals where available.
    - b. Closely observe controllers, indicators, transmitters, HMI displays, recorders, alarm and trip units, remote setpoints, ratio systems, and other control components.
      - 1) Verify that readings at all loop components are in agreement.
      - 2) Make corrections as required.
        - (a) Following any corrections, retest the loop as before.
  2. Stroke all control valves, cylinders, drives and connecting linkages from the local control station and from the control room operator interface.
  3. Check all interlocks to the maximum extent possible.
  4. Utilize a System Integrator provided Loop Check-Out Sheet to document on-site calibration checks.
  5. In addition to any other as-recorded documents, record all setpoint and calibration changes on all affected Contract Documents and turn over to the Owner.

**END OF SECTION**