

ADDENDUM NO. 1

TO

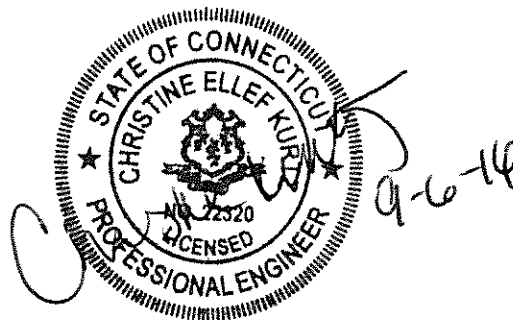
**CITY OF TORRINGTON
CONNECTICUT**

**BIDDING AND CONTRACT REQUIREMENTS
AND SPECIFICATIONS**

FOR

**WATER POLLUTION CONTROL FACILITY
ULTRAVIOLET DISINFECTION SYSTEM
PRESELECTION BID NO. UVS-033-092216**

September 6, 2016



Prepared By:

**Wright-Pierce
169 Main Street, 700 Plaza
Middletown, Connecticut**

Phone: 860-343-8297

Fax: 860-343-9504

ADDENDUM NO. 1

CITY OF TORRINGTON, CONNECTICUT

WATER POLLUTION CONTROL FACILITY ULTRAVIOLET DISINFECTION SYSTEM PRESELECTION BID NO. UVS-033-092216

As a point of clarification, it should be understood that the Contract Documents govern all aspects of the project. Informal discussions held via email or over the telephone are informational only. All official changes to the Contract Documents are made only by addenda. The following changes are hereby made a part of the Contract Documents.

GENERAL

1. The deadline for submitting questions about the meaning or intent of the Bidding Documents shall be 5pm on September 15, 2016. Question received after that time may not be answered. Questions should be submitted to:

Prashanth Emmanuel
Wright Pierce
169 Main Street, 700 Plaza Middlesex
Middletown, CT 06457
Email: prashanth.emmanuel@wright-pierce.com
Telephone: (860) 852 -1907

DRAWINGS

Not used.

SPECIFICATIONS

1. On the Table of Contents page insert “Division 13- Special Construction” after “Division 11 – Equipment” and before “Appendices”.
2. On Page 1 of the Bid Form –Section 00310-UV under “THIS BID IS SUBMITTED TO:” delete text “Engineering Department” and replace it with “Purchasing Department”
3. Include Specification Section 13442-UV: Ultraviolet I&C System (Total 5 pages). This specification will outline the Instrumentation and Control requirements to be provided by the manufacturer for the Ultraviolet System that will be installed as part of the Torrington, CT WPCF Upgrade.

QUESTIONS AND ANSWERS

Q1: The following sections are referenced in the UV section of the Torrington specification but are not provided:

1. Division 13 System Integrator with the Manufacturer and
2. Section 13442-UV (this should be the electrical with PLC, OIT etc.)

A1: Manufacturers are requested to refer to Specification 13442-UV, included as part of this addendum for information on Instrumentation & Control requirements for the Ultraviolet System that will be supplied as part of the Torrington, CT WPCF Upgrade.

ATTACHMENTS

1. Division 13442-UV: Ultraviolet I & C System

This Addendum consists of 4 pages, 4 pages in this document and 5 pages of attachments.

END OF ADDENDUM No.1

SECTION 13442-UVUV I&C SYSTEMPART 1- GENERAL1.1 DESCRIPTION

- A. Work Included: Furnish, install, program and test the programmable logic controllers (PLCs) and operator interface terminals (OIT) as specified herein. Operator interface terminals (OITs) will be provided to monitor and control operating parameters within the PLCs.
- B. Related Work Specified Elsewhere.
 - 1. Electrical Contract Documents.
 - 2. Instrumentation and Control Contract Documents.
 - 3. UV Manufacturer provided equipment is specified under Division 11.
- C. The UV I&C system shall consist of two (2) independent units. They shall provide complete automatic OV outputs control plus have manual back-up controls at the UV lamps power panels.

1.2 QUALITY ASSURANCE

- A. The PLC's and operator terminals form an integral part of the overall control system for the facility and shall be capable of integration into a plant wide SCADA system
- B. The manufacturer or its authorized representative shall provide complete technical support for all of their products.

1.3 SUBMITTALS

- A. Submit shop drawings in accordance with the General Conditions, Section 01340 and Section 11234.
- B. Ladder logic will be fully documented and a copy shall be submitted as a separate shop drawing prior to the control panel leaving the panel shop. The ladder logic will be fully annotated with a functional description of each control rung. Logic requiring several rungs will be continuous in the programming. A final copy of each ladder logic program will be provided with the O&M manuals. The program shall be provided in hardcopy and Adobe™ pdf.
- C. Provide color copies of the operator terminal screens as a shop drawing submittal prior to the control panel leaving the panel shop.
- D. Provide final copies of the PLC program and operator terminal files on CDROM to be included in the O&M manual.

1.4 DELIVERY, STORAGE AND HANDLING

- A. In accordance with Section 11234.

PART 2 - PRODUCTS

2.1 GENERAL

- A. The PLC's shall consist of rugged components designed specifically for industrial environments. The PLC shall consist of a power supply and one or more racks containing a central processing unit (CPU) module, I/O modules and PLC network interface module(s). All components shall be housed in structurally secure enclosures.
- B. The central processing unit CPU shall be modular and fully enclosed within a durable plastic shroud. When mounted on the system base, the modular CPU shall not occupy more than one available slot.
- C. The I/O system shall be modular. Each module shall be fully enclosed within a durable plastic shroud. When mounted on the system base, each I/O module shall not occupy more than one available slot.
- D. All components within the controller family shall be manufactured with a high degree of durability. All switches and other operator-controlled devices shall be of the size and durability for their intended use as is normally offered for industrial applications. All signal cables furnished by the manufacturer shall be constructed so as to withstand, without damage, all normal use and handling.
- E. In order to minimize spare parts stocking requirements, the controller family shall have a high degree of interchange ability. The system shall incorporate a modular design using plug-in assemblies with pin and socket connectors. Wherever possible, all assemblies and sub-assemblies performing similar functions shall be interchangeable. The system design shall accommodate the replacement of assemblies without having to disconnect field wiring. Wherever possible, removable connectors shall be used to connect field wiring to the individual circuit board assemblies. All major assemblies and sub-assemblies, circuit boards, and devices shall be identified using permanent labels or markings each of which indicates the manufacturer's catalog number and a product manufacturing date code.
- F. If a protocol converter is required for communication with other PLCs or the SCADA System, it shall be furnished and installed by the Division 13 System Integrator (SI). The SI shall configure and program the converter and provide the Div 11 manufacturer network addresses for the networked equipment (PLC, OIT, Managed Switch). The Div 11 manufacturer shall provide power termination and spare space clearly marked for a din-rail mounted protocol converter.
- G. The Contractor shall be responsible to provide coordination between the Division 13 System Integrator with the UV Manufacturer in the data communication of signals with SCADA, start-up and testing, as well as training of the overall system.

2.2 PROGRAMMABLE LOGIC CONTROLLER (PLC)

- A. Programmable Logic Controller shall be capable of performing the functions described herein with the following minimum specifications:
 - 1. Min. Memory: 750 kB of available user memory with CompactFlash card
 - 4. I/O Module Expansion Capacity: Minimum of 16
 - 5. Power: 120 VAC from an uninterruptable power supply (UPS).

6. Required agency approvals:
 - UL Listed (UL 508)
 - CSA Certified (CSA 142)
7. External communications. PLC shall contain both an Ethernet port and an RS-232 Port.
8. Programming and diagnostic software shall be Windows based via Relay Ladder Logic (RLL) custom programming tools for the PLCs. Provide all necessary programming time required to configure each PLC to provide complete control and monitoring functions as described in Sections 13440 and 13441 and as finalized in the instrumentation meetings described below. All software shall be provided on CD ROM
11. An additional one (1) day of programmer time, including any travel expenses, shall be provided during the first year of operation to modify operational programming of the PLCs or operator terminals at no cost to the Owner.
12. PLC and Expansion I/O Requirements:
 - a. Discrete Inputs: 16-points per module, 120 VAC and 24 VDC as required
 - b. Discrete Outputs: 16-points per module, relay outputs
 - c. Analog Inputs: 8-points per module, 4 to 20 mA DC, minimum 12-bit resolution
 - d. Analog Outputs: 8-points per module, 4 to 20 mA DC, minimum 12-bit resolution
 - e. All discrete I/O shall be fused in logical groups of eight.
 - f. All discrete outputs shall be provided with interposing relays.
 - g. All analog I/O shall be provided with loops fusing.
13. Future Connections: Provide a minimum of the following for future connections:
 - a. 20% additional discrete inputs per PLC (rounded up) wired to terminal blocks
 - b. 20% additional discrete outputs per PLC (rounded up) wired to interposing relays and terminal blocks
 - c. two (2) additional analog input per PLC wired to terminal blocks
 - d. two (2) additional analog outputs per PLC wired to terminal blocks
14. Spare Parts: Provide a minimum of the following spare parts:
 - a. one (1) PLC CPU
 - b. one (1) PLC Power Supply
 - c. one (1) Analog Input Module
 - d. one (1) Analog Output Module
 - e. one (1) Digital Input Module
 - f. one (1) Digital Output Module
15. Acceptable Programmable Logic Controller (PLC):
 - a. Allen Bradley CompactLogix 1769-L3x series
 - b. GE PAC RX3i
 - c. Or approved equal

2.3 OPERATOR INTERFACE TERMINALS

A. Operators Terminal: OIT

1. General: Provide an operator terminal at each control panel to continuously indicate status of equipment, change operational parameters and indicate alarm status. The operator terminal shall be fully compatible with the PLCs provided.
2. Screen Size: 10.4 inch color active matrix screen with a minimum resolution of 640 X 480 pixels with field replaceable backlight.
3. Interface: Touchscreen rated at 1 million cycles (minimum).
4. Memory: 64 MB minimum application and graphic memory. The operator terminal shall also include a compact flash port.
5. Clock: Provide integral real time clock with battery backup.
6. Communication: RS-232, Ethernet and USB ports.
7. Power: 120V AC or 24V DC
8. Operating Temperature: 32-130°F
9. Enclosure: NEMA 12 or NEMA 4X to match control panel rating
10. Provide programming time required to configure operator terminal interface as described in herein.
11. Provide all cables required to connect the operator terminal to the network or PLC.
12. Acceptable Operator Interface Terminal (OIT):
 - a. Allen Bradley PanelView Compact 1000
 - b. GE QuickPanel Plus
 - c. Or approved equal

2.4 UNINTERRUPTIBLE POWER SUPPLIES (UPS)

A. UPS Power Supply Backup System:

1. Provide an uninterruptible 120-volt backup power supply to maintain continuous operation of PLC, Ethernet switches, operator interface terminals and panel powered instrumentation during a power outage.
2. The UPS shall be provided with surge arresting capabilities to prevent sudden surges to the attached electrical systems.
3. The UPS will be either rack mounted inside the control panel, located in the bottom section of floor stand type control panels or provided an independent wall mounted enclosure.
4. Provide appropriate electrical disconnect or provision to easily remove and bypass the UPS.
5. The UPS shall come equipped with a means to signal a UPS failure alarm using a dry contact input to the UV System PLC.
6. The UPS shall come equipped with a means to signal a "Replace Battery" or "Battery Failure" alarm using a dry contact input to the UV System PLC.
7. The UPS shall be type rated for industrial use and capable of supplying standby power to all connected control panel equipment and circuits for a minimum of fifteen (15) minutes at full load. UPS minimum rating shall be 750 VA.

8. Acceptable Manufacturers:
 - a. APC Smart-UPS with Relay I/O SmartSlot Card
 - b. Triplite
 - c. Or approved equal

2.5 CONTROL PANEL COMPONENTS

1. Data/Power Port:
 - a. Provide a Data/Power port with Ethernet RJ45 jack and 120 VAC GFI outlet to meet Arcflash 70E requirements. Data power port will be NEMA 4X rated with lockable hinged cover with panel mounted hardware.
 - b. The Data and Power port shall be
 - 1) Grace Engineered Products P-R2-K3RF0
 - 2) Hubble "Panel-Safe" Power and Data Access Ports model P155EB.
 - 3) Or equal

2.6 ETHERNET COMMUNICATIONS NETWORK

- A. Ethernet Patch Cables:
 1. Provide CAT6 patch cables to connect control panel devices (e.g., PLC, OIT, data port) to the control panel Ethernet switch.
- B. Industrial Ethernet Switches:
 1. Provide an industrial managed Ethernet switch DIN rail mounted in the control panel.
 2. Power: 24 VDC power supply. Power supply shall be rated for minimum 1.3 amperes at 24V DC with an input power supply of 120 VAC at 60 Hz. Power supply shall be powered by the UPS. Power supply will be equal to Phoenix Contact or Sola SDP series.
 3. Compliance: Ethernet IEEE 802.3 and compatible with the communication protocol of the PLC to be provided.
 4. Ethernet Switch Communication Ports:
 - a. Provide a minimum of four (4) auto sensing 10/100/1000 Base-T (half/full duplex) RJ-45 ports.
 - b. Provide two (2) multimode fiber optic ports with ST connectors.
 6. Equivalent to:
 - a. Cisco
 - b. Moxa
 - c. Or equal

PART 3 - EXECUTION In accordance with Section 11234.

END OF SECTION