SCOPE OF SUPPLY FOR WARRENSBURG EAST SIDE REPLACEMENT UV SYSTEM

ULTRAVIOLET DISINFECTION EQUIPMENT – TROJAN SYSTEM UV3000Plus™

Prepared for:	All bidding General Contractors
Project Name:	Warrensburg East Side Replacement UV System
Submitted by:	Michael Shortt, Regional Manager
Addendum:	1,2,3
Trojan Quote:	216527 (April 6, 2020)

Design Criteria:	Current Peak Design Flow:	12.40 MGD
	UV Transmission:	60**%** minimum
	Total Suspended Solids:	30 mg/L (maximum))
	Discharge Limit:	206 E.coli/100mL (based on a 30 day Geo Mean)
		1030 E.coli/ 100mL (based on a 7 day Geo Mean)

We are pleased to submit the following scope of equipment based on the above criteria.

The purchaser is responsible for reading all information contained in this Supply Contract. Trojan will not be held accountable for the supply of equipment not specifically detailed in this document. Supplemental Terms and Conditions are attached to this document. Detailed installation instructions are provided with the shop drawings and are available earlier upon request. Changes to this Scope of Supply that affect selling price will be handled through a change order.

Please refer all inquiries to Trojan Manufacturer's Representative:

Representative:	Trent Ropp
	Ray Lindsey Company
Phone:	816-388-7440
Fax:	816-388-7434

This proposal has been respectfully submitted by,
Trojan Technologies

Michael Shortt
Regional Manager
Trojan Technologies

Unless otherwise indicated in this proposal all conduit, conductors, local disconnects and transformers (if required) are the responsibility of the CONTRACTOR and are not included in this Scope of Supply.

ULTRAVIOLET MODULES

Trojan's Responsibility:
Each module supplied shall be completely assembled containing lamps, quartz sleeves and be electrically wired to each electronic ballast. Modules are shipped in a support rack and crated.

Model and Make:	Standard System UV3000Plus™
Quantity:	Sixteen (16) UV modules each containing eight (8) Lamps
Material of Construction:	316 stainless steel frame
Approximate Weight:	112 lbs

SYSTEM CONTROL CENTER

Trojan's Responsibility:
One (1) System Control Center (SCC) shall be supplied to monitor and control the UV System. Trojan will provide a PLC I/O and soft address map to aid the Contractor with integration of the UV PLC and WWTP SCADA system. The UV SCC shall consist of the following:

Quantity Supplied	One (1) SCC
Location:	Pedestal mounted
Controller Type:	CompactLogix
Operator Interface:	AB Panelview Plus 7 (7") Indoor Rated
Panel UPS:	15 Min on 24VDC (PLC)
Material of Construction:	304 Stainless Steel
Enclosure Rating:	Type 4X (IP66)
Approximate Weight:	200 lbs

Installation Contractor's Responsibility:
The Installation Contractor to be responsible for mounting the SCC as indicated on the drawings. The Installation Contractor to be responsible for the supply, installation and connection of the following at the SCC:

1. One (1) 120V, single phase, 2 wire + ground, 60Hz, 1.8 kVA minimum power supply
2. One (1) 4 – 20 mA DC analog signal from plant flow meter
3. One (1) Ground Link, 14 gauge minimum type TWH stranded, daisy chained to HSC and PDCs.
4. One (1) serial communication link consisting of one (1) shielded twisted pair, 18 gauge maximum from the HSC and PDCs (daisy chained).
5. Discrete signals from Plant SCADA for remote monitoring

POWER DISTRIBUTION CENTERS

Trojan's Responsibility:
The Power Distribution Center (PDC) distributes power to the UV Modules and shall consist of the following:

Quantity Supplied:	Four (4) PDCs
Material of Construction:	304 Stainless Steel
Enclosure Rating:	Type 4X (IP66)
Approximate Weight:	220 lbs each

Installation Contractor's Responsibility:
The Installation Contractor to be responsible for setting in place and bolting the Power Distribution Centers (PDCs) to the top of channel. The Installation Contractor to be responsible for the supply, installation and connection of the following at each PDC:

1. One (1) 480/277V, 3 phase, 4 wire + ground, 60Hz, 12.3 kVA power feed with local disconnect
2. One (1) Ground Link,14 gauge minimum, TWH stranded single wire from the HSC.

3. One (1) communication link consisting of one (1) shielded twisted pair from the SCC and daisy chained to other PDCs.
4. One (1) pair of 12Volt DC, 18 gauge minimum discrete signal to the Water Level Sensor from PDC closest to the sensor.
5. One (1) pair of 24Volt DC, 18 gauge remote I/O to the HSC.
6. Connection of communication, power cables and hydraulic lines from the UV Modules

HYDRAULIC SYSTEM CENTER

Trojan's Responsibility:
The Hydraulic System Center (HSC) houses the ancillary equipment required to operate the quartz sleeve cleaning system.

Quantity Supplied: One (1) HSC
Materials of Construction : 304 Stainless Steel
Enclosure Rating: Type 4X (IP66)
Approximate Weight: 300 lbs

Installation Contractor's Responsibility:
The Installation Contractor to be responsible for setting in place and bolting the HSC and manifold as shown on the contract drawings. The HSC should be located within 50 feet (15 meters) from the farthest PDC. The Installation Contractor shall be responsible for the supply, connection and installation of the following at the HSC:

1. One (1) 480V, 3 phase, 3 wire + ground, 60 Hz, 2.5 kVA power feed with local disconnect
2. One (1) ground link of,14 gauge minimum, TWH stranded from the PDC(s).
3. Connection of the hydraulic hoses from PDC(s). Hoses and connections will be supplied by Trojan.
4. One (1) serial communication link of one (1) twisted, shielded pairs, 18 gauge maximum cable from the SCC and daisy chained to the PDC's.
5. One (1) pair, 18 gauge minimum, 24Volt DC remote I/O from the closest PDC.

SUPPORT RACKS

Trojan's Responsibility:
Support racks are provided to support UV modules in the effluent channel.

Quantity Supplied: Four (4) racks
Material of Construction: 304 Stainless Steel
Approximate Weight: <100 lbs each

Installation Contractor's Responsibility:
The Installation Contractor to be responsible for setting in place and bolting the support racks to the channel walls. The Contractor will be required to supply eight (8) 1/2" Diameter x 5 1/2"Long expansion anchor bolts per rack. Install approved (engineered) anchor points for personnel to use as part of their fall restraint system around the open channels. The anchor points must be positioned so that the preferred retractable lifeline of 8 feet is of sufficient length to access the work at the channel. Refer to local safety regulation.

WATER LEVEL SENSOR KIT

Trojan's Responsibility:
The water level sensor is located downstream of the UV System and provides a digital signal to shut down and protect the UV System if the water level is too low.

Quantity Supplied: Two (2) electrode type water level sensors
Enclosure Rating: Type 4X
Approximate Weight: 10 lbs (panel)

Installation Contractor's Responsibility:
The Installation Contractor to be responsible for setting in place and bolting the water level sensor panel to the effluent channel wall. The Installation Contractor shall also be responsible for the supply of mounting hardware,

watertight conduit and supply and connection of one discrete signal (pair of 12V DC, 14 gauge) from the water level sensor probe to each PDC.

INDIVIDUAL UV MODULE LIFTING SLING WITH FRAME

Trojan's Responsibility:
In order to remove individual modules, by mechanical means, a 2 rope sling with frame shall be supplied to interface with the existing overhead crane.

Quantity:	One (1) Sling Kit
Materials of Construction:	304 SST
Approximate Weight:	5 lbs

SPARE PARTS , SAFETY EQUIPMENT and ADDITIONAL ITEMS

Trojan's Responsibility:
The following spare parts and safety equipment will be supplied with the UV system:

Thirteen (13)	UV lamps
Sixteen (16)	Quartz sleeves
Seven (7)	Ballasts
Thirteen (13)	Wiper seal kits
One (1)	UV intensity sensor
One (1)	CCB board kit
One (1)	Operators Kit (including face shield, gloves and cleaning solution)
One (1)	A set of corrosion inhibitors

NOTES AND CLARIFICATIONS TO SPECIFICATION

Trojan appreciates the opportunity to submit this proposal. Our proposal is submitted subject to and based on Trojan's standard terms and conditions, which we have attached as part of our proposal. We believe these terms and conditions are customary in the trade and respectfully reserve the opportunity to negotiate, fair and reasonable contract terms acceptable to both parties, if Trojan is selected for this project. Furthermore, flow-downs from the construction contract shall be minimized to the extent they are applicable to UV Supplier's scope of work, and subject to negotiation.

- Trojan will reuse existing channel reduction baffles
- No Transformers are supplied as site power is 480/277V 4 wire + ground
- **Section 46 66 10--2.6.C.1.c** - Trojan will not provide PLC and HMI software licenses
- **Section 46 66 10, article 1.1 A.2 and 1.2 C** – Installation contractor is responsible for changes to the existing facilities as well as design and installation of all items not included in Trojan Scope of Supply.
- **Section 46 66 10, article 2.5.B** – Interconnect cabling shall be specified, sized, provided, and installed by the installation contractor.
- **Section 46 66 10, article 3.2.B.3** – Sample collection and analysis costs shall be by others.
- **Section 46 67 00, article 2.2.D.12** – Trojan provides 600V rated wires for power and control, and 300V rated wires for signal and communication.
- **Section 40 97 00, article 2.2.B.3 d** – Trojan to use ABB 22mm selector switches
- **Section 46 66 10, paragraph 1**.2 Quality Assurance Sub Par B 2. - Provide a written performance guarantee that the disinfection equipment supplied shall meet or exceed the design criteria and performance requirements specified herein for the life of the UV system regardless of inlet coliform concentration.

DOCUMENTATION (SHOP DRAWINGS AND O & M MANUALS)

Trojan's Responsibility:

The following documentation will be supplied to the contractor by Trojan per the following schedule:

- Submittal shop drawings 4-6 weeks after receipt of written purchase order.
- O&M manuals at time of equipment delivery.

DELIVERY, START-UP AND TRAINING

Equipment shipped 8-10 weeks after approval of Shop Drawings.

Installation Contractor's Responsibility:

The Contractor is responsible for:

- Unloading of the components supplied by Trojan, storage of all components, in a clean dry environment
- Installing the equipment outlined in the scope of Supply in accordance with contract drawings, Trojan's shop drawings, instructions and installation checklist.
- Supplying all conduits and conductors and components per the sites state regulations and components indicated as supplied by others,
- Completing the Checklist and returned at least two (2) weeks prior to date requested for commissioning.

The following start-up services will be provided by Trojan-certified technicians:

- Supervising the unloading of the equiopment
- Installation assistance as required by phone or fax. Technical Assistance Center 1-866-388-0488 or tac@trojanuv.com
- Start-up and testing of the installed UV equipment.
    - If the Trojan's Certified Service Technician determines the Contractor work is not complete and the start-up cannot be completed in the allotted time a return visit will be scheduled at the Contractors expense.
- Classroom and/or jobsite training for operations staff
    - If trainees are not available a return visit will be scheduled at the Contractors expense.

WARRANTY

Trojan's Responsibility:

Trojan Technologies will warrant the equipment and parts for 12 months after start-up or 18 months after shipment, whichever comes first. Refer to attached Terms and Conditions for additional details.

- UV lamps shall be warranted for 12000 hours, prorated at 9000 hours.
- Ballasts shall be warranted for 5 years, prorated after 1 year.

SELLING PRICE

$ 349,951 USD (Provided Purchase Order received by June 30, 2020)

- If UV System Start-up is required within 30 days of shipment, Trojan requires 95% payment unless agreed upon in writing before authorizing system Start-up.
- Freight included for all North American projects.
- Selling price does not include any applicable duties or taxes.

PAYMENT TERMS

10% after approved submittal
85% upon delivery of equipment to site
5% upon equipment acceptance or 60 days after delivery (whichever occurs first)

- Net 30 Days