



ADDENDUM NO. 1

DATE: April 29, 2026
PROJECT: City of Bryant, AR
South Pressure Plane Project
1.5MG Composite Elevated Water Storage Tank

BID DATE: May 5, 2026, 2:00 PM

This Addendum is part of the Contract Documents and modifies the original documents provided to Bidders, as noted below. Acknowledge receipt of this Addendum in the space provided in the BID FORM. Failure to do so may result in disqualification.

Item No. 1. **Advertisement for Bids**

Replace the first paragraph with the following:

Sealed Bids for 1.5 MG Composite Elevated Storage Tank will be received by the City of Bryant, Arkansas, at its office, ~~1017 SW 2nd Street~~, **210 SW 3rd Street**, Bryant, Arkansas, 72022, until 2:00 PM Central Standard Time, May 5, 2026, at which time the Bids received will be publicly opened and read. The Project generally consists of the construction of a 1,500,000-gallon composite elevated water storage tank.

Item No. 2. **Document 002113 – INSTRUCTIONS TO BIDDERS**

Part 2.5 is hereby deleted.

Item No. 3 **Document 002113 – INSTRUCTIONS TO BIDDERS**

The first sentence in Part 3.01.B. is hereby revised as follows:

Bidder's state or other contractor license number in accordance with Arkansas Code Ann. §17-25-401-409 (1995) in accordance with the procedures established by the Contractors Licensing Board (~~Reference RLF Supplemental General Conditions~~).

Item No. 4 **Document 002113 – INSTRUCTIONS TO BIDDERS**

Part 5.01.D. is hereby revised as follows:

carefully studied and agrees to comply with the ~~RLF Supplemental General Conditions~~, City of Bryant Codes/ Ordinances, ~~Union Pacific Railroad Company~~, or other provided documents provided in the appendices or referenced herein.

Item No. 5 **Document 002113 – INSTRUCTIONS TO BIDDERS**

Part 5.01.M. is hereby revised as follows:

agree that the submission of a Bid to supply the names and addresses of major material Suppliers and Subcontractors ~~in accordance with the RLF Supplemental General Conditions~~ when required to do so by the Owner.

Item No. 6. **Document 002113 – INSTRUCTIONS TO BIDDERS**

Part 13.10 is hereby deleted.

Item No. 7. **Document 002113 – INSTRUCTIONS TO BIDDERS**

Part 13.13 is hereby deleted.

Item No. 8. **Specifications – Section 221210 – Pressure Control Valves**

Section 221210, Pressure Control Valves, is hereby deleted.

Item No. 9 **Specifications – Section 331619 – Valves**

Section 331216, Pressure Control Valves, is hereby replaced with the attached revised specification.

Item No. 10. **Specifications – Section 331619 – Composite Elevated Storage Tank**

Revise sub-section 1.5.B.1 to the following:

Elevated tank design, concrete foundation, concrete support structure construction, and steel tank construction shall not be subcontracted. These items shall be self-performed by the contractor.

Item No. 11. **Drawings – Sheet E3 – Electrical Tank Plan**

Replace Sheet E3 with the attached revised Sheet E3.

Item No. 12. **Drawings – Sheet E6 – Electrical Schedules I**

Replace Sheet E6 with the attached revised Sheet E6.

END OF ITEMS

All other provisions of the Contract Documents remain unchanged. Acknowledge receipt of this addendum on the Bid Form.


Matthew D. Dunn, PE (Crist Engineers, Inc.)

4/29/26
Date

SECTION 331216

VALVES

PART 1 - GENERAL

1.1 GENERAL

- A. Valves shall be sized, furnished, and installed as detailed on the Drawings and specified herein complete in place all in accordance with these Specifications.
- B. All valve controllers shall be pre-programmed at the factory with control logic to ensure proper operation of the valve(s) before arriving to the jobsite.

1.2 REFERENCES

- A. All references below shall conform to the latest revision/edition of each individual referenced specification.
- B. American Water Works Association, 6666 West Quincy Avenue, Denver, Colorado 80235.
 - 1. AWWA C500 - Gate Valves for Water and Sewerage Systems.
 - 2. AWWA C509 - Resilient-Seated Gate Valves for Water and Sewerage Systems.
- C. American National Standards Institute (ANSI), 1899 L Street, North West, 11 Floor, Washington, DC 20036.
 - 1. ANSI B16 - Standards for Pip Flanges and Flanged Fittings Package.
- D. American Society for Testing and Materials (ASTM), 100 Barr Harbor Drive, West Conshohocken, Pennsylvania 19428.
 - 1. ASTM A536 - Standard Specification for Ductile Iron Castings.
 - 2. ASTM B16 - Standard Specification for Free-Cutting Brass Rod, Bar and Shapes for Use in Screw Machines.
- E. National Sanitation Foundation (NSF), 789 North Dixboro Road, Ann Arbor, Michigan 48105.
 - 1. NSF/ANSI 61 - Drinking Water System Components - Health Effects.

1.3 SUBMITTALS

- A. In accordance with Specifications Section 013300 - Submittal Procedures.
 - 1. Technical Product Data
 - 2. Installation, Operation and Maintenance manual (IOM)
 - 3. Specific information on all optional features
 - 4. Cavitation analysis report showing flow rate, differential pressure, and % of valve opening. Cv factor, system velocity, and if there will be cavitation damage.
- B. Certificate of Compliance: Submit Certificates of Compliance attesting that materials

provided are in compliance with referenced standards.

1.4 MANUFACTURERS

- A. All valves and accessories furnished under this specification shall be by the same manufacturer.
- B. Acceptable manufacturers for control valves:
 - 1. CLA-VAL Company, Newport Beach, CA 92659-0325
 - 2. Approved equal

PART 2 - PRODUCTS

2.1 GENERAL

- A. Valves to be complete and arrive at job site assembled with all necessary operators, valve boxes, extension stems, floor stands, worm and gear operators, operating nuts, etc., required for proper completion of work.
- B. Units shall have name of manufacturer and size of valve cast on the body or bonnet or shown on a permanently attached plate in raised letters.

2.2 GATE VALVES

- A. Gate valves shall be iron bodied, bronze mounted, non-rising stem, resilient seated gate valves complying with AWWA C509 and AWWA C515.
- B. Gate valves shall be designed for working pressures not less than 150 psi.
- C. Gate valves shall have O-ring seals.
- D. Valves shall open counterclockwise (left).
- E. 10 mil fusion epoxy coating on interior and exterior surfaces.
- F. All buried gate valves shall have mechanical joint (MJ) ends unless otherwise noted on the Drawings and shall be furnished with full joint accessories. Buried gate valves shall be non-rising stem with standard 2-inch operating nut.
- G. 24-inch gate valves shall be furnished with a bevel geared actuator.
- H. Gate valves shall be resilient seated as manufactured by Mueller or approved equal.

2.3 EXTENSION STEMS FOR VALVE OPERATORS

- A. Where the depth of the valve is such that its centerline is more than 4 feet below grade, provide operating extension stems to bring the operating nut to a point 6 inches below the surface of the ground and/or box cover.
- B. Valve extensions shall be constructed of steel and shall be complete with 2-inch square operating nut.
- C. Valve extension shall be bolted to valve stem to prevent separation.

2.4 VALVE BOXES

- A. All buried gate valves shall be provided with cast iron valve boxes with cast iron lids.
- B. Valve boxes shall be the screw type suitable for the depth of bury as required.

- C. Valve boxes shall have 5-1/4-inch shaft.
- D. Valve boxes for valves on the water line shall have the word AWATER@ cast into the top of the lid.
- E. Extension pieces, if required, shall be the manufacturer's standard type.
- F. Round precast concrete collars shall be provided for all valve boxes as detailed on the Drawings.
- G. Support valve boxes with concrete blocks so that no weight exerted on the valve box will be transmitted to the valve.
- H. Boxes shall be as by Tyler, Mueller, or approved equal.
- I. Valve boxes for 2 inch and smaller valves shall be large flanged base type.

2.5 CONTROL VALVE SCHEUDLE

Description (Cla-Val Model No.)	Qty	Size	Location
Inlet Valve – Altitude Level Control with Delayed Opening, Solenoid Override, & Metering Control Valve (210-GV-BYCSDHNPCKCKOX)	1	20"	Tank Inlet Piping - Ground Floor
Outlet Valve - Check and Metering Control Valve (81-02BYCSDHNPCKCKOX)	1	20"	Tank Outlet Piping - Ground Floor

2.6 INLET CONTROL VALVE

- A. Inlet Control Valve shall be manufactured by Cla-Val Co. or approved equal.
- B. The valve shall control the high-water level in reservoirs without the need for floats or other devices, will prevent reversal of flow, and shall have a solenoid to override the hydraulic controls and close the main valve. It shall be a non-throttling type valve (either fully open or fully closed). The valve remains fully open; allowing normal flow to fill the reservoir until the maximum level shut-off point is reached and then closes drip tight at the set point. The valve automatically opens to refill the reservoir once the level drops a fixed distance below the high-water level. This valve is designed for one-way flow only. The accessories specified herein shall provide pressure and flow monitoring signals to the SCADA system. In addition to hydraulic control above, a solenoid shall be provided to electrically control the valve with Setpoint Level Control functionality in the nearby control panel.
- C. Main Valve:
 - 1. The valve shall be hydraulically operated, single diaphragm-actuated and globe pattern valve.
 - 2. The valve shall consist of three major components; the body with seat installed, the cover with bearing installed and the diaphragm assembly.
 - 3. The main valve shall consist of two distinct operating chambers that are detachable and completely independent of the flow through the main valve body. No separate chamber(s) below the diaphragm shall be allowed between the main valve cover and body.
- D. Main Valve Body:

1. No fabrication or welding shall be used in the manufacturing process.
2. The diaphragm assembly shall be the only moving part and shall form a seal between the two operating chambers. Diaphragm assembly shall contain a non-magnetic 303 stainless steel stem, fully guided at both ends by a bearing in the main valve cover and integral bearing the valve seat.
3. The stainless-steel anti-cavitation trim shall be included with interlocking disc guide and seat containing radial slots.
4. Packing glands and/or stuffing boxes are not permitted.
5. Y-Pattern valves are not permitted.
6. There shall be no pistons operating the main valve or pilot controls. The valve shall contain a resilient, synthetic rubber disc, with a rectangular cross-section contained on three and one-half sides by a disc retainer and forming a tight seal against a single removable seat insert.
7. No O-ring type disc (circular, square, or quad type) shall be permitted as the seating surface.
8. The disc guide shall be of the contoured type to permit smooth transition of flow and shall hold the disc firmly in place.
9. No hourglass-shaped disc retainers shall be permitted and no V-type type disc guides shall be used.
10. The flexible, non-wicking, FDA-approved diaphragm shall consist of nylon fabric bonded with synthetic rubber compatible with the operating fluid.
11. The lower bearing of the valve stem shall be contained concentrically within the one-piece seat. The valve seat shall have a minimum 5-degree taper on seating surface.
12. The Diaphragms center hole for the main valve stem must be sealed from operating pressure. Diaphragm must withstand a Mullins Burst Test of a minimum of 600 X per layer of nylon fabric and shall be cycled tested 100,000 times to ensure longevity.
13. The diaphragm shall not be used as the seating surface.
14. Diaphragm shall be fully supported in the valve body and cover by machine surfaces supporting no less than one-half of the total surface area of the diaphragm in either the fully opened or fully closed position.
15. Cover bearing, disc retainer, and seat shall be made of the same material.
16. All necessary repairs and/or modifications other than replacement of the main valve body shall be possible without removing the valve from the pipeline.
17. Valve shall meet NSF-61/ANSI standards for drinking water.
18. Valve body and cover shall be cast and manufactured in North America.
19. Main valve body material specification:
 - a. Main Valve Body and Cover: Ductile Iron ASTM A536
 - b. Main Valve Trim: 303 Stainless Steel
 - c. Disc Retainer: Cast Iron
 - d. Diaphragm Washer: Cast Iron
 - e. Seat: Stainless Steel
 - f. Stem, Nut, and Spring: Stainless Steel
 - g. End Detail: 20-inch, ANSI B16.42 class 150 flange, flat faced.
 - h. Pressure Rating: 250 psi maximum working pressure
 - i. Temperature Range: -40 to +180 Degrees F
 - j. Seal Disc: Buna N
 - k. Diaphragm: Nylon Reinforced Buna-N Rubber
 - l. Internal Trim Parts: Stainless Steel
 - m. Any other wetted metallic parts: SS, Bronze, Brass
 - n. Coating: FDA approved heat fusion bonded epoxy coating (5-7 mils thick) to internal and external surfaces of valve body including disc retainer and diaphragm washer. In accordance with AWWA C116-03 coating specifications.

- o. Stainless steel liquid filled pressure gauges installed on the inlet and outlet side of the valve.
- p. Valve Setting Adjustment Range: 110-160 feet

20. Accessories

- a. UP-22D Control Panel, X141-PT Pressure Transmitters, X117D Valve Position Transmitter, Differential Pressure Transmitter, Pilot System Ball Valves, SS Pressure Gauges, & 120VAC Override Solenoid with Manual Actuator.

E. Pilot Control System:

1. The pilot control shall be of a diaphragm-actuated, three-way type that operates on the differential force between the height of the water in the reservoir and an adjustable spring- load. The spring-load shall be an arrangement of smaller springs on a plate within the control. When actuated, the pilot control shall vent the cover of the main valve to atmosphere through the internal working of the pilot control to open the valve wide. When the desired level in the reservoir is reached, the static height of the tank shall head through a customer supplied sensing line connected directly to the reservoir. When the control shifts at high water level supply pressure shall be directed into the valve cover through the internal workings of the pilot control to close the valve. The pilot control senses the reservoir head by means of a sensing line connected between the pilot control and the reservoir. The pilot control shall be bracket mounted to the main valve.
2. A valve position indicator shall be installed on the main valve cover and shall consist of a brass indicator rod fastened to the main valve stem which moves up and down inside a clear Pyrex tube contained in a bar brass housing open on two sides to permit clear vision of the brass indicator rod.
3. The pilot control system shall include a strainer, closing speed needle valve and all required control accessories, equipment, control tubing and fittings. The pilot system shall include isolation ball valves on sizes 4" and larger as standard equipment. Five different adjustment spring settings shall be available, in ranges of 5 to 200 feet. Pilot to be manufactured by control valve manufacturer.
4. Pilot control system material specification:
 - a. Body & Cover: Cast Bronze ASTM B62
 - b. Pilot Trim: Brass & Stainless Steel 303
 - c. Rubber: Buna-N
 - d. Connections: FNPT
 - e. Pressure Rating: 400 psi Max.
 - f. Temperature Range: Water to 180° F Max
 - g. Pilot Control: Bronze pilot with stainless steel trim.
 - h. Tubing and Fittings: Brass and Copper.

F. Valve Position Transmitter Assembly:

1. Function: The Valve Position Transmitter Assembly provides analog electrical indication of the position of automatic control valve. The transmitter is mechanically actuated by the opening or closing of a control valve on which it is mounted.

2. Description: A stainless-steel actuating stem with a swivel adapter fastened directly to the main valve stem moves through an adapter and gland with two O-Ring seals allowing the valve to actuate the braided wire rope position-sensing element of the transmitter mounted on the exterior of the adapter attached to the cover of the main valve.
3. The transmitter responds to valve position and uses internal circuitry to provide a continuous 4 to 20 mA analog output signal corresponding to 0 % to 100 % of valve travel. It shall have easily adjusted Zero and Span potentiometers supplied for adjusting the corresponding point of the valve's travel simply by using a small flat blade screwdriver while valve is in one of the two positions. Seal-screws shall be provided for sealing access to potentiometers.
4. The electronic transmitter shall be in a weatherproof and Submersible enclosure (NEMA 6P rated). The braided stainless-steel wire shall be wound on a spring-loaded capstan enclosed in an anodized aluminum housing sealed from the electronics. Standard materials in contact with operating fluid are brass, stainless steel, Monel and Buna-N.
5. The valve position transmitter and pressure transmitters shall be assimilated into the VC-22D valve controller to provide read only flow rate metering.
6. Valve position transmitter shall be Cla-Val Company Model No. X117D or equal.

2.7 OUTLET CONTROL VALVE

- A. Outlet Control Valve shall be manufactured by Cla-Val Co. or approved equal.
- B. Function: This valve shall open to permit flow when the inlet pressure is greater than the discharge pressure. When the discharge pressure is greater, the valve shall close drip tight to prevent return flow. The valve accessories specified herein shall provide metering and pressure monitoring signals to the SCADA system.
- C. Main Valve:
 1. The valve shall be hydraulically operated, single diaphragm actuated and globe pattern valve. Valve body and cover shall be of cast material.
 2. The valve shall consist of three major components; the body with seat installed, the cover with bearing installed and the diaphragm assembly.
 3. The main valve shall consist of two distinct operating chambers that are detachable and completely independent of the flow through the main valve body. No separate chamber(s) below the diaphragm shall be allowed between the main valve cover and body.
- D. Main Valve Body:
 1. No fabrication or welding shall be used in the manufacturing process.
 2. The diaphragm assembly shall be the only moving part and shall form a seal between the two operating chambers. Diaphragm assembly shall contain a non-magnetic 303 stainless steel stem, fully guided at both ends by a bearing in the main valve cover and integral bearing the valve seat.
 3. Stem shall be drilled and tapped in the cover end.
 4. Diaphragm shall not be used as the seating surface.
 5. The seat shall be a solid, one-piece design and shall have a minimum 5-degree taper on the seating surface.
 6. Packing glands and/or stuffing boxes are not permitted.
 7. The valve shall contain a resilient, synthetic rubber disc, with a rectangular cross-section contained on three and one-half sides by a disc retainer and forming a tight seal against a single removable seat insert.
 8. No O-ring type disc (circular, square, or quad type) shall be permitted as the

seating surface.

9. The flexible, non-wicking, FDA-approved diaphragm shall consist of nylon fabric bonded with synthetic rubber compatible with the operating fluid.
10. Cover bearing, disc retainer, and seat shall be made of the same material.
11. The main valve seat and stem bearing in the valve cover shall be removable.
12. All necessary repairs and/or modifications other than replacement of the main valve body shall be possible without removing the valve from the pipeline.
13. Valve shall meet NSF-61/ANSI standards for drinking water.
14. Valve body and cover shall be cast and manufactured in North America.
15. Main valve body material specification:

- a. Main Valve Body and Cover: Ductile Iron ASTM A536
- b. Main Valve Trim: 303 Stainless Steel
- c. End Detail: 24-inch, ANSI B16.42 class 150 flange, flat faced.
- d. Pressure Rating: 250 psi
- e. Temperature Range: -40 to +180 Degrees F
- f. Rubber Material: Buna N
- g. Coating: FDA approved heat fusion bonded epoxy coating (5-7 mils thick) to internal and external surfaces of valve body including disc retainer and diaphragm washer.
- h. Stainless steel liquid filled pressure gauges installed on the inlet and outlet side of the valve.

16. Accessories:

- a. XP2F Data Acquisition Package, X141-PT Pressure Transmitters, Valve Position Indicator, X117D Valve Position Transmitter, Differential Pressure Transmitters, Pilot System Ball Valves, SS Pressure Gauges, and Check valve feature

E. Pilot Control System:

1. The hydraulic control valve pilot system shall consist of two check valves which alternately apply or relieve pressure to the diaphragm chamber to position the main valve. Valve shall come equipped with opening/closing speed controls, shut-off cocks, and strainers for the pilot system.
2. Pilot control system material specification:
 - a. Body and Cover: Cast Bronze ASTM B62
 - b. Pressure Rating: 300 psi
 - c. Trim: 303 stainless steel
 - d. Rubber Material: Buna "N"
 - e. Tubing and Fittings: Bronze and Copper.
 - f. Operating Fluids: Water.
 - g. Voltage: 120/60-volt AC
 - h. Enclosure Type: Nema IV Watertight

F. Valve Position Transmitter Assembly:

1. Function: The Valve Position Transmitter Assembly provides analog electrical indication of the position of automatic control valve. The transmitter is mechanically actuated by the opening or closing of a control valve on which it is mounted.
2. Description: A stainless-steel actuating stem with a swivel adapter fastened directly to the main valve stem moves through an adapter and gland with two O-Ring seals allowing the valve to actuate the braided wire rope position-

- sensing element of the transmitter mounted on the exterior of the adapter attached to the cover of the main valve.
3. The transmitter responds to valve position and uses internal circuitry to provide a continuous 4 to 20 mA analog output signal corresponding to 0 % to 100 % of valve travel. It shall have easily adjusted Zero and Span potentiometers supplied for adjusting the corresponding point of the valve's travel simply by using a small flat blade screwdriver while valve is in one of the two positions. Seal-screws shall be provided for sealing access to potentiometers.
 4. The electronic transmitter shall be in a weatherproof and Submersible enclosure (NEMA 6P rated). The braided stainless-steel wire shall be wound on a spring-loaded capstan enclosed in an anodized aluminum housing sealed from the electronics. Standard materials in contact with operating fluid are brass, stainless steel, Monel and Buna-N.
 5. The valve position transmitter and pressure transmitters shall be assimilated into the XP2F Data Acquisition Module to provide read only flow rate metering.
 6. Valve position transmitter shall be Cla-Val Company Model No. X117D or equal.

2.8 ASSEMBLY

- A. Each control valve shall be factory assembled.
- B. For all control valves, the factory assembly shall include the complete main valve, pilot valve(s), and all associated accessories and control equipment.
- C. During factory assembly the control valve manufacture shall make all necessary adjustments and correct any defects.

2.9 NAMEPLATES

- A. Each control valve and associated pilot(s) shall be provided with identify nameplate.
- B. Nameplates shall be brass and a minimum of 3/32" thick, 3/4" high, and 2-3/4" long.
- C. Pertinent control valve data shall be etched or stamped into the nameplate. Data shall include control valve Catalog number, function, size, material, pressure rating, end-connection details, type of pilot controls used and control adjustment range.

2.10 FACTORY TESTING

- A. Each control valve shall be factory tested.
- B. Tests shall conform to approved test procedures.
- C. The standard factory tests shall include a valve body and cover leakage test, seat leakage test and a stroke test. Control valves and pilot valves, in the partially open position, with both ends closed off with blind flanges (valves) and pipe plugs (pilots), shall be subject to an air test. The applied air pressure shall be 90 psi minimum. All air pressure tests shall be applied for a minimum of 15 minutes. No visible leakage is permitted through the valve seat, the pressure boundary walls of the valve body, valve cover, pilot body, pilot cover or the body-cover joint.

2.11 DATA ACQUISITION PACKAGE

1. FUNCTION

- a. The data acquisition and flow metering package shall provide 4-20mA analog

- outputs giving the ability to retransmit the calculated flow, and measured valve position to a nearby PLC/SCADA system.
- b. The data acquisition and flow metering package shall be retrofittable on existing automatic control valves made by the data acquisition/metering manufacturer. The package shall offer the ability to meter flow on a full port, reduced port, globe, and angled control valves with either standard or anti-cavitation trim.
- c. The data acquisition and flow metering package shall additionally offer the ability to meter reverse flow on control valves. The package shall offer the ability to adjust the flow curve output by applying a single gain factor to the entire metered flow curve or the ability to adjust the gain factors in 5% of valve open increments for the entire metered flow curve

2. COMPONENTS

- a. Valve data module assembly
- b. Valve-mounted position transmitter
- c. Valve-mounted inlet and outlet pressure transmitter assemblies

3. DATA MODULE

- a. The data module shall accept signals from the valve-mounted pressure transmitters and the position transmitter. The data module shall use a proprietary algorithm program to calculate a flow measurement.
- b. The flow and transmitter measurements can be retransmitted via 4-20mA signals to PLC or SCADA systems. The data module can also accept additional field instrumentation signals to retransmit via a 4- 20mA signal. Real-time data can be logged to an onboard SD card.

2.12 ELECTRONIC VALVE CONTROL PANEL

- A. Control Valve Manufacture shall provide control panel with inlet and outlet valve. Control panel shall be designed, manufactured, and tested by control valve manufacture. Electronic valve control panel shall be Cla-Val Model No. UP-22D.
- B. Function: The electronic valve control panel shall provide an enclosure which houses the electronic valve controller and necessary supporting equipment. Designed to allow a wide range of control valves and SCADA systems to be connected to the electronic valve controller without the need for panel fabrication by a third party. Wired so that external cables from SCADA or the control valve can be landed on a single terminal block without the need to modify internal wiring. Provides a housing that shields internal components from outdoor environmental factors. Includes a quarter turn handle with padlock capability for security if desired. Allows easy access to electronic valve controller display and navigation buttons. Comes with adequate circuit protect for direct connection to a facility branch power circuit. Has a UL 508 rating to ensure industry standard panel requirements are met.
- C. Solenoid Control: The panel includes solid state relays for solenoid control to extend the relay lifetime and reduce the change of relay failure. Pre-built with terminals to connect either DC or AC solenoids. Can support four solenoids on a single control valve.
- D. Enclosure Materials:
 - 1. Enclosure Material: 304 Stainless steel
 - 2. Environmental: Nema 4X
 - 3. Enclosure Dimensions: 20" (508 mm) W x 24" (607 mm) H x 10" (254 mm) D

4. Enclosure Weight: 55 lbs. (24.9 kg)
 5. Handle: Quarter turn with optional padlock for access security
- E. Power Requirements:
1. Voltage Input: 120-240 VAC
 2. Power Protection: 5 Amp circuit breaker, 5 Amp Fuse
- F. Inputs:
1. Analog: (6) Inputs (4-20mA / 0.5 V / 0-10 V)
 2. Digital: (6) digital inputs (Dry contact)
- G. Outputs:
1. Analog: (4) Outputs (4-20mA)
 2. Solenoid:
 - a. (2) Solid State Relay, Zero Switching Voltage for DC Solenoids.
 - b. (2) Solid State Relay, Zero Switching Voltage for AC Solenoids.
 3. Relay: (2) Mechanical Relay for digital outputs.
- H. Approvals:
1. Conformity Marking: UL 508A
- I. Valve Controller (See part 2.09 of this specification)

2.13 ELECTRONIC VALVE CONTROLLER

- A. Electronic valve controller shall be Cla-Val Model No. VC-22D.
- B. Function: The electronic valve controller shall provide the interface between a remote computer system and the hydraulic control valve with the ability to tie into SCADA Systems. Preinstalled with standard valve application templates allowing the Electronic Valve Controller to easily be configured to perform a wide range of control valve individual or multiple functions to match the single or multiple application(s) desired of the valve in the piping system. Designed to provide fully programmable monitoring and hydraulic valve control for rate of flow, pressure reducing, pressure sustaining, level control (altitude and modulating), valve position, blending, pressure management or select combinations of any of these applications. Custom valve applications can be programmed upon request.
- C. Electronic Two Solenoid Control: Solenoid pilot controls equipped onto the control valve are actuated by electrical signals received from the Electronic Valve Controller which enables remote computer control over the diaphragm valve operations. The solenoid pilots either add or relieve line pressure from the cover chamber of the valve, causing it to open or close as directed by the electronic valve controller. The electric solenoid pilot controls can also be combined with hydraulic or electronic motorized pilot controls to create dual function, or fail-safe capability. The electronic valve controller shall accept an analog 4-20mA feedback signal. Upon receiving the remote setpoint command from the computer system or local command from the operator, the electronic valve controller shall provide proper signals to modulate and maintain the valve at the desired setpoint value. When the feedback signal deviates from the setpoint, using a proprietary Cla-Val PID algorithm, the appropriate opening or closing solenoid on the valve will pulse. As the feedback signal approaches the setpoint, this on/off pulse time will gradually decrease to smoothly modulate the valve to setpoint. Each solenoid is controlled by a solid-state relay with zero

switching voltage. The total cycle time between each pulse shall be programmable. When the feedback signal is within a programmable dead band, the opening and closing solenoids will lock the cover and the valve will maintain position.

- D. Controller Technical Information: The electronic valve controller shall have remote communication capabilities. The controller shall include six (6) configurable 4-20mA analog inputs; six (6) dry contact digital inputs; four (4) 4-20mA analog outputs; two (2) solid-state relays and two (2) mechanical relays. All inputs and outputs shall have a configuration menu which programs signal name, scaling, engineering units, precision, & filtering. When a setpoint or feedback signal has been lost, the controller shall be configured to maintain some known value. When local mode is selected, the controller shall have the ability to output a signal & screen warning noting a local condition.
- E. Controller shall include a maximum of four (4) PID loops for multi-function control, with local or remote set point inputs. Each loop shall have the ability to be broken into (4) different control zones with customizable PID parameters in each. The controller shall have a programmable set point ramping feature which linearly changes a set point over time until the desired value is achieved. The electronic valve controller shall have real time dynamic charting capability to compare set point vs feedback signals. Each PID loop shall have an independent output limiting feature which limits the duration a solenoid can remain energized, providing ultimate system protection. In the event of a signal loss, the PID shall have the ability to lock valve in last position, close valve, or open valve.
- F. The electronic controller shall have relay outputs capable of Alarm indication to SCADA and shall be capable of generating and sending signal loss warnings and other configurable control actions. Actions (alarm) can include valve failures, other valves to open/close
- G. The electronic valve controller shall come equipped with Control Curves valuable in making relationships against other signals, internal variables, or time. Using a graphical function, coordinates can be added, removed or moved making relationship adjustments convenient.
- H. The electronic valve controller shall have the ability to retransmit any input signal, variable, or calculation to a SCADA system.
- I. The electronic valve controller shall have a high-speed logging feature which captures all I/O at a maximum sample rate of 1Hz. Captured data shall be downloadable in .csv file format to a portable memory device such as a USB drive or FTP server.
- J. The controller shall have a color TFT screen to graphically display the valve application with real-time system information. The controller display shall have the ability to show all I/O signal readings, PID settings, I/O configuration settings, along with customizable graphics for various warnings. . Each signal displayed on the "home" screen is color coded representing normal or lost signal. "Home" screen graphics shall have the ability to be customized.
- K. An easy to use five press-button operator interface keypad provides simple navigation through software menus. Security key codes shall be provided to protect against unauthorized changes. An IP-68 rated enclosure shall be provided to house the controller for environmental protection.
- L. Each controller enclosure and supporting AC/DC power supply conversion box enclosure, shall be provided standard with an anodized aluminum universal mounting bracket(s), allowing for versatile installation to system piping (horizontally or vertically), wall mounting, panel / cabinet enclosures, unistrut, valves, & other configurations. Sufficient clearance around controller enclosure should be made for adequate access/wiring. Considerations should be made to comply with all the various local codes, standards, and bestpractices.

M. Multi-Function Control:

The electronic valve controller shall have the ability to perform multiple functions (PID loops) at once. Ultimately there is only one PID loop in control at a given time, with the remaining loops computing in the background. Advanced Cla-Val algorithms provide seamless crossover between loops, simulating multiple hydraulic pilots. Additionally, using digital inputs or internal variables, PID loops can manually be selected to shift between various types of control.

N. Communications:

The electronic valve controller shall come standard with Modbus protocol. This protocol defines a message structure that PLC's will recognize and use, regardless of the type of networks over which they communicate. The valve controller can be configured to communicate on standard Modbus networks using either of two transmission modes: TCP/IP or RTU. Users shall have the ability to select the desired mode, along with communication parameters (IP address, subnet mask, baud rate, etc.). The electronic valve controller shall have a built in VNC server. A viewer/client uses TCP port 5900 to connect to a server (or 5800 for browser access), but can also be set to use any other port.

O. Materials:

<u>Component</u>	<u>Material</u>
<u>Display</u>	
Display Type	4.3" Color TFT-LCD, 480 x 272 pixels with Polycarbonate screen, scratch resistant
Display Update Rate	500ms
Programming Method	Mechanical Push Button VNC
Password	5 digit
<u>Mass Data Storage</u>	
Type	4GB SD Card
Language	English
Temperature	14°F to 158°F (-10°C to 70° C)
Humidity	90% RH, non-condensing
Memory Protection	10 year life lithium battery
<u>Inputs</u>	
Analog	(6) Inputs (4-20mA / 0-5 V / 0-10 V)
Resolution	10 bit
Digital	(6) digital inputs (Dry contact)
Units	Configurable
Decimal Point	0 / 0.0 / 0.00
Signal Filter	Configurable 0 to 99 %
Totalizer	Configurable Input and Units
Totalizer Reset	Yes
I/O Connection	Screw Terminals
<u>Outputs</u>	
Analog	(4) Outputs (4-20mA)
Resolution	10 bit
Solenoid	(2) Solid State Relay, Zero Switching Voltage
Relay	(2) Mechanical Relay, Rated Voltage 250VAC, Rated Current 6A

Logging

Configurable	Yes
Logging Speed	1 Second or Greater
Event Memory	128 Mbytes rolling memory up to 80,000,000 values capacity (extended to 4GB by SD card)
Output	CSV format suitable for exporting to MS Excel
<u>Control Parameters</u>	
Control Input	4-20mA full scale / digital (dry contact)
Proportional Band	0-100% (50% default) adjustable in 1% increments
Dead band	Independently for opening and closing
Cycle Time	Adjustable 0 to full scale of setpoint signal
Integral Band	0 to 60 seconds in 1 sec. increments
Derivative Band	Adjustable 0 to 60 seconds
Loop Zoning	Adjustable 0 to 60 seconds
PID Loops	Adjustable up to (4) zones
Control Curves	4 Configurable
Retransmission	4
Actions (Alarms)	4 Analog (4-20mA signal)
	4 (1 or 2 triggering conditions)
<u>Communication</u>	
Local	Mechanical Push Button
Remote	VNC Server
Interfaces	GPRS Modem Quad Band / Ethernet / RJ-45 / RS-232 / RS-485
Protocols	ModbusTCP / ModbusRTU / VNC

P. Manufacturer:

1. Each Electronic Valve Controller shall be factory assembled by the control valve manufacturer.
2. Each Electronic Valve Controls shall be provided with an identifying nameplate.
3. Each Electronic Valve Controller shall undergo full factory functional and operational testing.

Q. Warranty:

1. The Electronic Valve Controller manufacturer shall warrant the controller to be free of defects in material and workmanship for a period of one year from date of shipment

PART 3 - EXECUTION

3.1 INSTALLATION OF VALVES

- A. Buried valves shall be set with operating stems in true vertical or horizontal positions as may be required unless otherwise detailed on the Drawings.
- B. Valve boxes shall be furnished and installed with all buried valves.
- C. Buried valves shall have bolts protected by wrapping in polyethylene material.
- D. Support valve boxes with concrete blocks so that no weight exerted on the valve box will be transmitted to the valve.

- E. All gate valves shall be provided with valve boxes properly adjusted so that the covers conform to the adjacent finished grade.
- F. Round precast concrete collars shall be provided for all valve boxes as detailed on the Drawings.
- G. Use teflon tape on all threaded connections.

3.2 INSTALLATION OF CONTROL VALVES

- A. Install valves and fittings in accordance with manufacturer's instructions.
- B. Bolt holes of flanged valves shall straddle the vertical centerline of the pipe run.
- C. Prior to installing flanged valves, the flange faces shall be thoroughly cleaned.
- D. After cleaning, insert gasket and bolts, and tighten the nuts progressively and uniformly.
- E. Joints shall be watertight at test pressures before acceptance.

3.3 MANUFACTURER'S SERVICES

- A. Manufacturer will provide the Contractor with instructions for installation of new equipment.
- B. Contractor shall provide the services of a factory trained technician to train Owner's operators and to oversee and certify the installation of the control valves. Service shall include a minimum of two (2) man day exclusive of travel time.
- C. Manufacturer's factory trained technician will support startup services and perform all necessary calibrations on valves, controllers, and all other accessories provided by control valve manufacture.

3.4 WARRANTY

- A. The valve manufacturer shall warranty the valve to be free of defects in material and workmanship for a period of three (3) years from date of shipment. Electrical components shall have a one-year warranty.

END OF SECTION

P:\PRODUCTION\PROJECTS\CRIST ENGINEERS (CRI)\CRI-050 BRYANT ELEVATED TANK\DWG\E03_TANK_PLANDWG
4/29/2026 10:21 AM

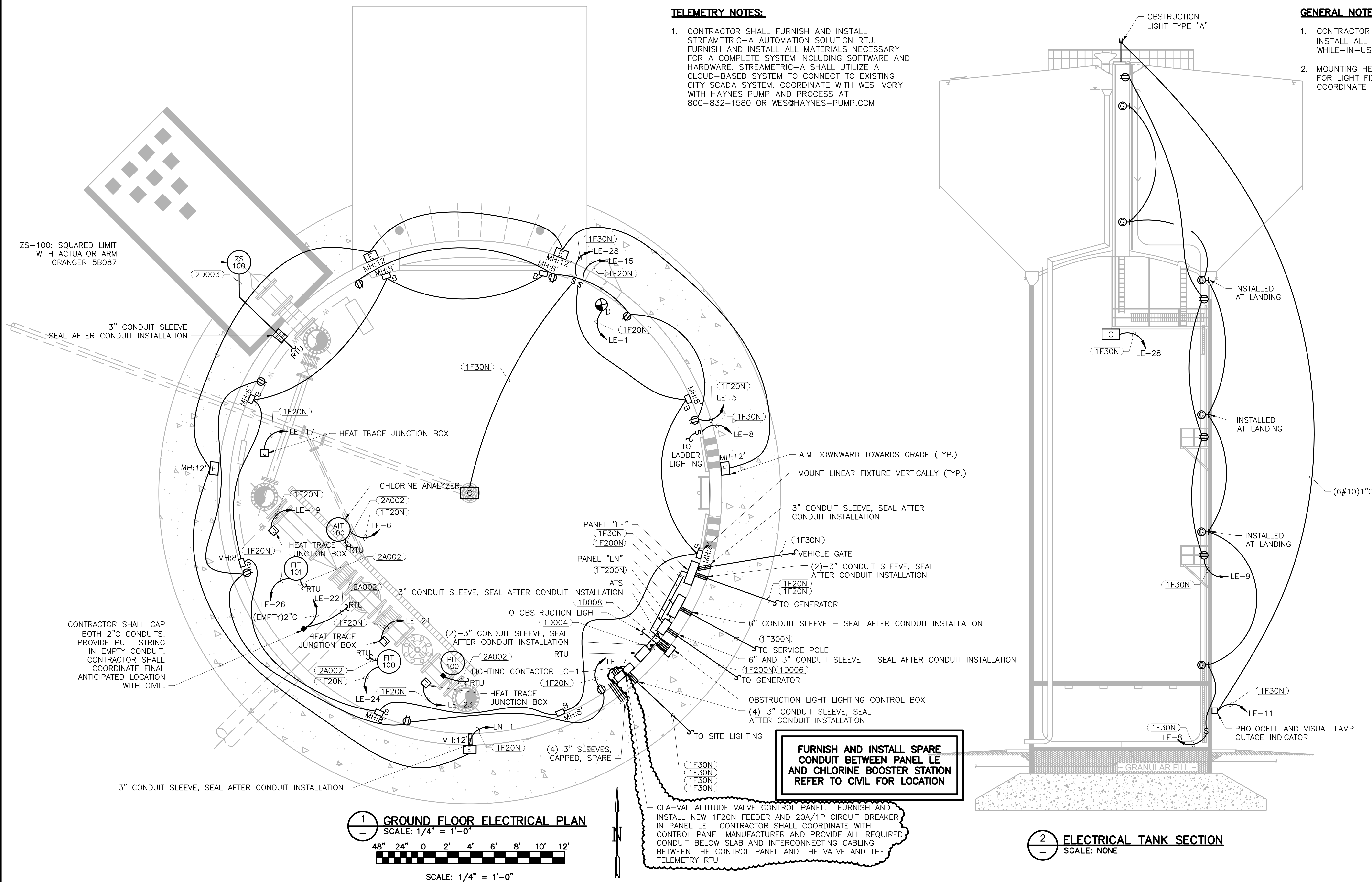
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TELEMETRY NOTES:

1. CONTRACTOR SHALL FURNISH AND INSTALL STREAMETRIC-A AUTOMATION SOLUTION RTU. FURNISH AND INSTALL ALL MATERIALS NECESSARY FOR A COMPLETE SYSTEM INCLUDING SOFTWARE AND HARDWARE. STREAMETRIC-A SHALL UTILIZE A CLOUD-BASED SYSTEM TO CONNECT TO EXISTING CITY SCADA SYSTEM. COORDINATE WITH WES IVORY WITH HAYNES PUMP AND PROCESS AT 800-832-1580 OR WES@HAYNES-PUMP.COM

GENERAL NOTES:

1. CONTRACTOR SHALL FURNISH AND INSTALL ALL RECEPTACLES AS GFI/WP WHILE-IN-USE RECEPTACLE TYPE.
2. MOUNTING HEIGHT (MH) ABOVE FLOOR FOR LIGHT FIXTURES AS SHOWN. COORDINATE WITH SITE CONDITIONS.



REV. NO.	DATE	DRWN	CHKD	REMARKS

STATE OF ARKANSAS
Austin P. Espino
LICENSED PROFESSIONAL ENGINEER
No. 23690
AUSTIN P. ESPINO

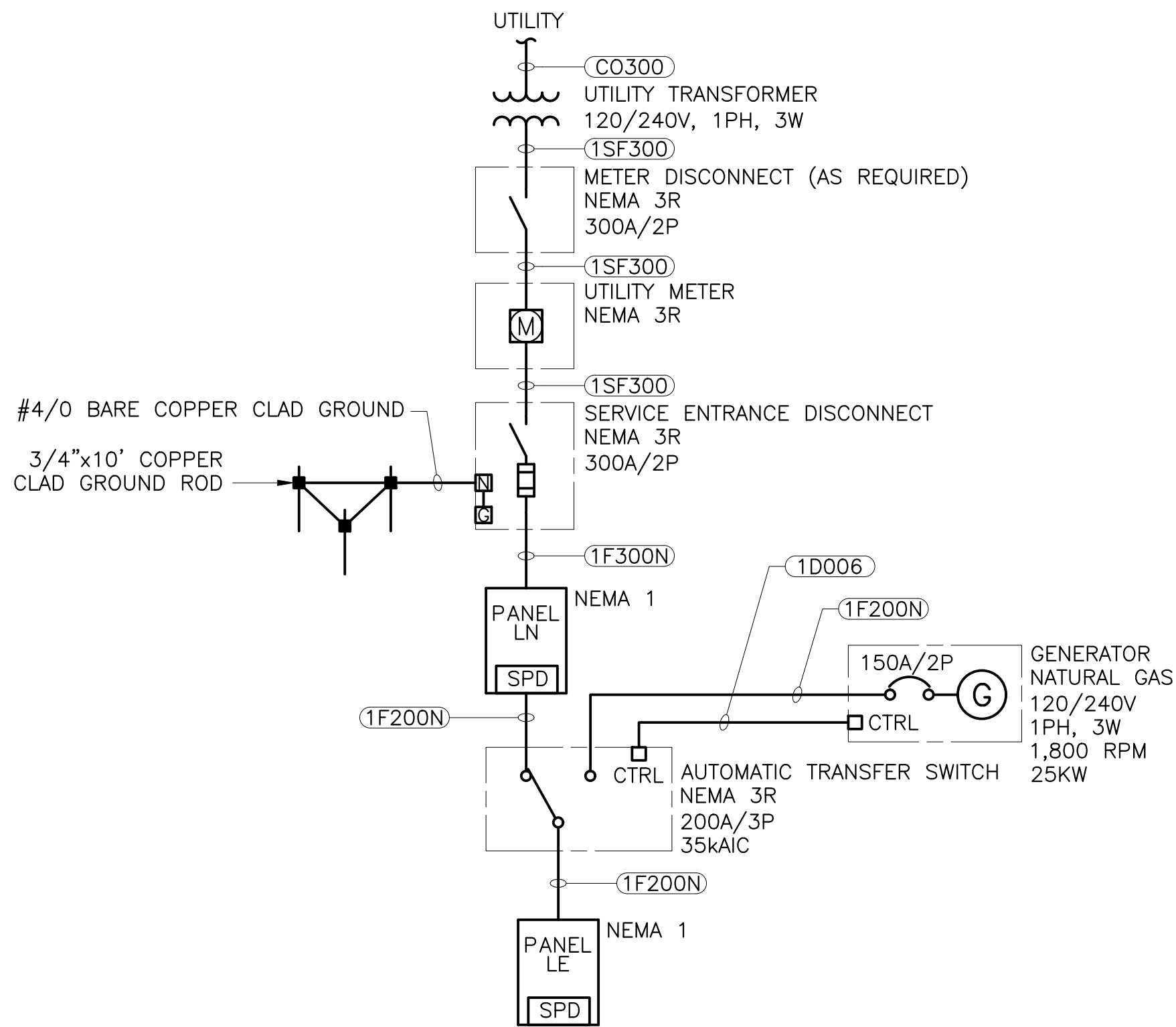
DESIGNED: AE
DRAFTED: CD
CHECKED: BB
DATE: MARCH 2026

CRIST ENGINEERS, INC.
CONSULTING ENGINEERS
1 EXECUTIVE CENTER COURT
LITTLE ROCK, ARKANSAS 72211
TELEPHONE: (501) 664-1552
FAX: (501) 664-8579
WWW.CRISTENGINEERS.COM

CITY OF BRYANT, ARKANSAS
CITY OF BRYANT, ARKANSAS
1.5MG ELEVATED WATER STORAGE TANK
ELECTRICAL
TANK PLAN

JOB NO.
CRI-050
SHEET NO.
E3

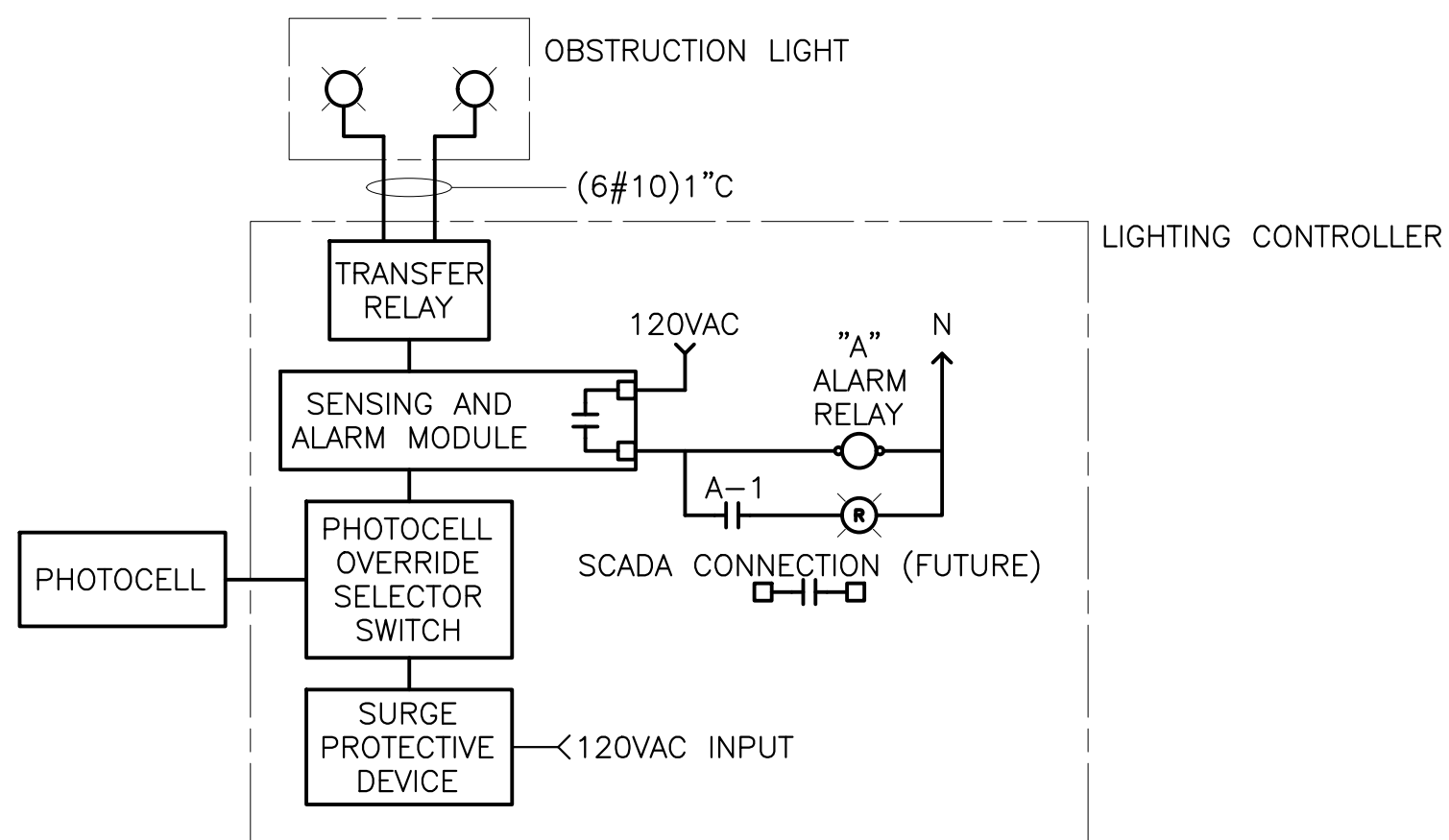
BE
BROWN
ENGINEERS
17200 Chenal Pkwy.
Suite 300 PMB 324
Little Rock, AR 72223
Phone 501-448-0100
www.browngineers.net



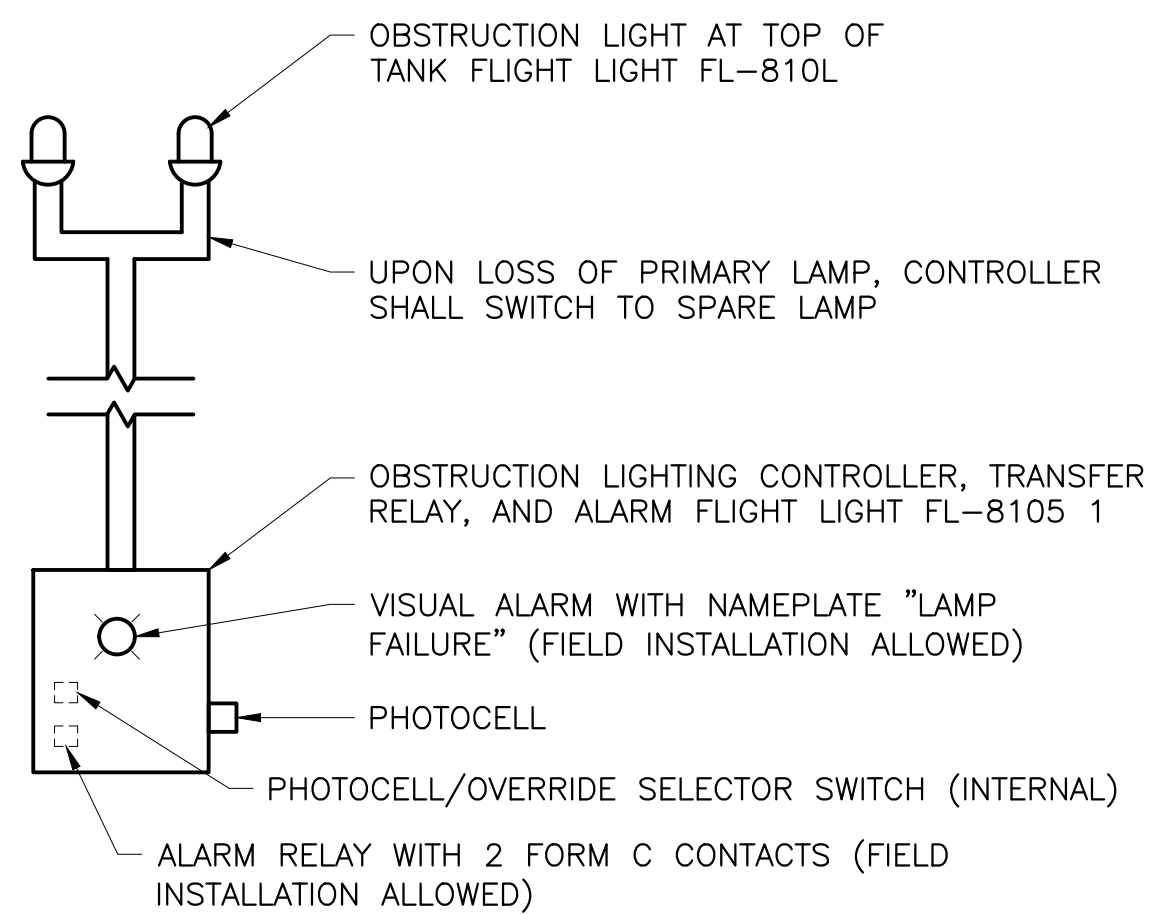
1 ONE-LINE DIAGRAM
— SCALE: NONE

GENERAL NOTES:

1. GENERATOR NOT SIZED TO POWER BOWL LIGHTS AND EXTERIOR WALL PACKS.



2 OBSTRUCTION LIGHTING WIRING DIAGRAM
— SCALE: NONE



3 OBSTRUCTION LIGHTING RISER DIAGRAM
— SCALE: NONE

LIGHT FIXTURE SCHEDULE							
ID	TYPE	MANUFACTURER	MODEL	LAMP TYPE	VOLTAGE	WATTS	NOTE
A	OBSTRUCTION LIGHT	FLIGHT LIGHT	FL-810L-R-AC-D-X-X	(2) LED	120V		WITH FLIGHT LIGHT OBSTRUCTION LIGHTING CONTROLLER, TRANSFER RELAY, AND (OR EQUAL) FL-810S1 SET AT 27W
B	LINEAR (4')	LEVITON	LSVB48-LED83550KSUN3-X	LED	120V	27W	
C	HIGH BAY	LEVITON	CRVB24-LED850K120LUNV-P05-X	LED	120V	81.8W	
D	EXIT SIGN	ISOLITE	RWL-EM-R-1-WH-MTEBP-SD-X	LED	120V	3.4W	
E	WALL PACK	NLS	NV-2-T4-16L-40-50K-UNV-X	LED	120V	21W	
FE	FLOOD LIGHTS	NLS	NV-F5-15'-256L-8-50K7-UNV-KM-FSV-FINISH-X	LED	240V	613W	BRACKET: NLS-ICAR-QD-30-238R-FINISH-X POLE: NLS-RTSP-30-11G-12BC-T2R-FINISH-136-X
FW	FLOOD LIGHTS	NLS	NV-F5-15'-256L-8-50K7-UNV-KM-FSV-FINISH-X	LED	240V	613W	BRACKET: NLS-ICAR-QD-30-238R-FINISH-X POLE: NLS-RTSP-39-11G-12BC-T2R-FINISH-136-X
G	VAPOR TIGHT JELLY JAR	JADEMAR	DS-30W-50K-D-BMW0-WG-X	LED	120V	30W	

NOTE: COORDINATE FINISH WITH CIVIL.

REV. NO.	DATE	DRWN	CHKD	REMARKS



THIS LINE MEASURES 1"
WHEN PLOTTED FULL SIZE

DESIGNED:	AE
DRAFTED:	CD
CHECKED:	BB
DATE:	MARCH 2026



CRIST ENGINEERS, INC.
CONSULTING ENGINEERS

1 EXECUTIVE CENTER COURT
LITTLE ROCK, ARKANSAS 72211
TELEPHONE: (501) 664-1552
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WWW.CRISTENGINEERS.COM

CITY OF BRYANT, ARKANSAS
CITY OF BRYANT, ARKANSAS
1.5MG ELEVATED WATER STORAGE TANK

ELECTRICAL
SCHEDULES I

NEMA 1

PANELBOARD SCHEDULE

PANEL: "LE"		VOLTS: 240/120 1PH, 3W			MAIN: 200A MCB			35,000 A/C	
DESCRIPTION	BKR	NO.	A	B	A	B	NO.	BKR	DESCRIPTION
EMERGENCY EXIT	20A/1P	1	0.003		0.000		2	60A/2P	SURGE PROTECTIVE DEVICE
CONTROL PANEL "RTU"	20A/1P	3		0.500		0.000	4	—	SURGE PROTECTIVE DEVICE
RECEPTACLE	20A/1P	5	0.720		0.250		6	20A/1P	CHLORINE ANALYZER AIT-100
RECEPTACLE	20A/1P	7		0.720		0.180	8	20A/1P	TOWER LIGHTS
TOWER RECEPTACLE	20A/1P	9	0.720		0.000		10	20A/1P	SPARE
OBSTRUCTION LIGHT	20A/1P	11		0.200		1.000	12	20A/2P	BLOCK HEATER
SPARE	20A/1P	13	0.000		1.000		14	—	BLOCK HEATER
INTERIOR LIGHTS	20A/1P	15		0.216		0.500	16	20A/1P	BATTERY CHARGER
HEAT TRACE 1	20A/1P	17	1.500		1.000		18	20A/2P	GATE OPERATOR
HEAT TRACE 2	20A/1P	19		1.500		1.000	20	—	GATE OPERATOR
HEAT TRACE 3	20A/1P	21	1.500		0.000		22	20A/1P	SPARE (FUTURE CHLORINE PUMP)
HEAT TRACE 4	20A/1P	23		1.500		0.500	24	20A/1P	INFLUENT FLOW FIT-100
SPARE	20A/2P	25	0.000		0.500		26	20A/1P	EFFLUENT FLOW FIT-101
SPARE	—	27		0.000		0.0818	28	20A/1P	HIGHT BAY LIGHT
SPARE	20A/2P	29	0.000		0.000		30	20A/2P	SPARE
SPARE	—	31		0.000		0.000	32	—	SPARE
SPARE	20A/2P	33	0.000		0.000		34	20A/2P	SPARE
SPARE	—	35		0.000		0.000	36	—	SPARE
SPARE	20A/1P	37	0.000		0.000		38	30A/1P	SPARE
SPARE	20A/2P	39		0.000		0.000	40	20A/1P	SPARE
SPARE	—	41	0.000		1.000		42	20A/1P	ALTITUDE VALVE CONTROL PANEL
			4.443	4.636	3.750	3.262			
			8.193	7.898	TOTAL CONNECTED KVA				
			16.091						
			25.142		DESIGN KVA				
			105		DESIGN AMPS				

NEMA 1

PANELBOARD SCHEDULE

PANEL: "LN"		VOLTS: 240/120 1PH, 3W			MAIN: 300A MCB			35,000 AIC		
DESCRIPTION	BKR	NO.	A	B	A	B	NO.	BKR	DESCRIPTION	
EXTERIOR LIGHTS	20A/1P	1	0.105		2.452		2	20A/2P	BOWL LIGHTS	
BOWL LIGHTS	20A/2P	3		2.452		2.452	4	—	BOWL LIGHTS	
BOWL LIGHTS	—	5	2.452		2.452		6	20A/2P	BOWL LIGHTS	
BOWL LIGHTS	20A/2P	7		2.452		2.452	8	—	BOWL LIGHTS	
BOWL LIGHTS	—	9	2.452		0.000		10	20A/1P	SPARE	
PANEL LE	200A/2P	11		7.545		0.000	12	20A/1P	SPARE	
PANEL LE	—	13	7.545		0.000		14	20A/1P	SPARE	
SPARE	30A/2P	15		0.000		0.000	16	30A/1P	SPARE	
SPARE	—	17	0.000		0.000		18	30A/1P	SPARE	
SPARE	30A/2P	19		0.000		0.000	20	30A/1P	SPARE	
SPARE	—	21	0.000		0.000		22	20A/2P	SPARE	
SPARE	30A/2P	23		0.000		0.000	24	—	SPARE	
SPARE	—	25	0.000		0.000		26	30A/2P	SPARE	
SURGE PROTECTIVE DEVICE	60A/2P	27		0.000		0.0000	28	—	SPARE	
SURGE PROTECTIVE DEVICE	—	29	0.000		0.000		30			
		31		0.000		0.000	32			
		33	0.000		0.000		34			
		35		0.000		0.000	36			
		37	0.000		0.000		38			
		39		0.000		0.000	40			
		41	0.000		0.000		42			
			12.554	12.449	4.904	4.904				
			17.458	17.353	TOTAL CONNECTED KVA					
			34.811							
			54.392		DESIGN KVA					
			227		DESIGN AMPS					



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JOB NO.
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SHEET NO.

E6