

ORDINANCE NO. 219

AN ORDINANCE OF THE TOWN OF ANNETTA, TEXAS, AMENDING SECTION 4.08 OF THE ENGINEERING DESIGN MANUAL BY AMENDING REQUIREMENTS FOR SCADA SYSTEMS; PROVIDING THAT THIS ORDINANCE SHALL BE CUMULATIVE OF ALL ORDINANCES; PROVIDING A SAVINGS CLAUSE; PROVIDING A SEVERABILITY CLAUSE; PROVIDING A PENALTY CLAUSE; PROVIDING FOR PUBLICATION IN THE OFFICIAL NEWSPAPER; AND PROVIDING AN EFFECTIVE DATE.

WHEREAS, the Town of Annetta, Texas is a Type A general law municipality located in Parker County, created in accordance with the provisions of Chapter 6 of the Local Government Code and operating pursuant to the enabling legislation of the State of Texas; and

WHEREAS, the Town has previously adopted the Engineering Design Manual providing guidelines for designing streets and arterials, drainage facilities, water lines, wastewater lines, other public improvements and for preparing construction plans for such facilities which are to be owned, operated and/or maintained by the Town; and

WHEREAS, the Town Council wishes to amend the Engineering Design Manual; and

WHEREAS, the Town Council does hereby deem it advisable and in the public interest to amend the Engineering Design Manual as described herein.

NOW, THEREFORE, BE IT ORDAINED BY THE TOWN COUNCIL OF THE TOWN OF ANNETTA TEXAS, THAT:

SECTION 1.

Section 4.08 of Engineering Design Manual is hereby amended and replaced with the Section 4.08 shown on Exhibit A, attached hereto and incorporated herein.

SECTION 2.

This ordinance shall be cumulative of all provisions of ordinances of the Town of Annetta, Texas, as amended, except where the provisions of this ordinance are in direct conflict with the provisions of such ordinances, in which event the conflicting provisions of such ordinances are hereby repealed.

SECTION 3.

All rights and remedies of the Town of Annetta, Texas, are expressly saved as to any and all violations of the provisions of any other ordinances of the Town of Annetta which have accrued at the time of the effective date of this ordinance; and, as to such accrued violations and all pending

litigation, both civil and criminal, whether pending in court or not, under such ordinances, same shall not be affected by this ordinance but may be prosecuted until final disposition by the courts.

SECTION 4.

It is hereby declared to be the intention of the Town Council that the phrases, clauses, sentences, paragraphs and sections of this ordinance are severable, and if any phrase, clause, sentence, paragraph or section of this ordinance shall be declared invalid or unconstitutional by the valid judgment or decree of any court of competent jurisdiction, such invalidity or unconstitutionality shall not affect any of the remaining phrases, clauses, sentences, paragraphs and sections of this ordinance, since the same would have been enacted by the Town Council without the incorporation in this ordinance of any such invalid or unconstitutional phrase, clause, sentence, paragraph or section.

SECTION 5.

Any person who commits an offense under this ordinance shall be guilty of a misdemeanor and shall be fined not more than Five Hundred Dollars (\$500.00) for each offense. Each day any such violation shall be allowed to continue shall constitute a separate offense.

SECTION 6.

The Town Secretary of the Town of Annetta is hereby directed to publish in the official newspaper of the Town of Annetta, the caption, penalty clause, and effective date clause once as authorized by Chapter 52 of the Local Government Code.


SECTION 7.

This ordinance shall be in full force and effect from and after its passage and publication as required by state law and it is so ordained.

PASSED AND APPROVED on this 19th day of May, 2022.

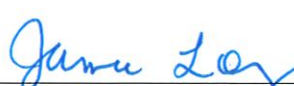


TOWN OF ANNETTA



Sandy Roberts, Mayor

ATTEST:



Jamee Long, Town Secretary

EXHIBIT A

4.08 SCADA

Each water or wastewater facility, including any storage, production, or treatment facilities and lift stations, shall be equipped with a Supervisory Control and Data Acquisition system (SCADA). The Town requires the SCADA system to include all related power supplies (including a minimum 15 minutes of uninterruptable backup power), lightning and surge protection, terminals, fuses, wire, etc. for the remote telemetry unit(s), as well as radio, cellular modem, and antenna towers as required for communication to the Town's remote monitoring SCADA system.

The location of new water or wastewater treatment facilities will determine if the facilities require radio telemetry or cellular network service, or both as needed to integrate the new facility with the existing Town SCADA infrastructure. All radio communications shall operate on one of the primary frequency bands designated as unlicensed bands by the US Federal Communications Commission (FCC). The Town Engineer must approve the cellular service provider(s) for any cellular modems.

The water and wastewater facility control systems shall provide primary Programmable Logic Control (PLC) integrated with the Town's current SCADA platform, including continuous level and pressure measurement, remote set-point adjustment, alarming, and alarm notification. The Town currently utilizes Principal Technology, Inc. (PTI) for full SCADA support. Alternate suppliers shall require a compatibility review for the Town's current SCADA system.

An initial ten-year software license term (or payment in lieu of) with the required data inputs for integration into the Town of Annetta's current Cloud-hosted SCADA monitoring system is required.

a. Water Plant SCADA Controls

In addition to primary PLC-based automated control herein defined, the Town requires all Water Plant facilities, including water wells, ground storage tanks, hydropneumatic tanks, and water supply pumps, to incorporate secondary or backup operation utilizing relay-based "on-off" control using locally adjustable or fixed set-point level and pressure switches. The primary and secondary operating mode selection shall be made via a two-position selection switch located in the SCADA control system enclosure.

1. SCADA-Auto (Primary Control):

SCADA-Auto is the intended normal operating mode for all facilities. This mode of operation shall provide unattended remote control of the facility, including the following:

(a) Ground Storage Tank (GST) and Well Pump(s) Control

- (1) The Well Pump(s) operation shall be triggered from the continuous level transmitter on the Ground Storage Tank(s).
- (2) The following set-points shall be adjustable by the Water Plant operator

using the SCADA interface portal.

- i. Low Low Level Alarm
- ii. Low Level Pump On Set-Point
- iii. High Level Pump Off Set-Point
- iv. High High Level Alarm

The Well Pump(s) supplying the GST shall be operated from a full voltage non-reversing starter or combination starter and shall include a local Hand / Off / Remote (Auto) control switch and power and run indication pilot lights installed in the starter enclosure. The motor starter shall be capable of receiving a potential free/dry-contact Remote Run command signal from the facility Control Panel. Additionally, the motor starter shall provide a potential free/dry-contact Pump Running feedback signal to the SCADA Panel. The Pump Running Feedback signal shall function in all modes of operation, including Hand, Auto, Primary SCADA-Auto Control, and Secondary Local-Auto Relay Control.

(b) Water Supply Pumps and Hydrostatic Pressure Tank Control

- (1) The Water Supply Pump(s) operation shall be triggered from the continuous pressure transmitter on the Pressure Tank.
- (2) The following set-points shall be adjustable by the Water Plant operator SCADA interface portal.
 - i. Low Low Pressure Alarm
 - ii. Low Pressure 2 Pump #2 On Set-Point
 - iii. Low Pressure 1 Pump #1 On Set-Point
 - iv. High Pressure Pump Off Set-Point
 - v. High High Pressure Alarm

Pumps #1 and #2 shall be cycled in Lead and Lag mode to provide a balanced cumulative run time for each pump. (Additional logic will apply for three pump systems based on water demand.)

The Water Supply Pumps shall be operated from a full voltage non reversing starter or combination starter and shall include a local Hand / Off / Remote (Auto) control switch and power and run indication pilot lights installed in the starter enclosure for each pump. The motor starter shall be capable of receiving a potential free/dry-contact Remote Run command signal from the facility Control Panel. Additionally, the motor starter shall provide a potential free/dry-contact Pump Running feedback signal to the SCADA Control Panel. The Pump Running Feedback signal shall function in all modes of operation, including Hand, Auto, Primary SCADA-Auto Control, and Secondary Local-Auto Relay Control.

2. Local-Auto (Secondary / Back-up Control):

The Local-Auto operating mode is required to provide a minimum level of emergency backup operation for the Water Plant in the event the SCADA System PLC malfunctions (e.g., processor fault, program loss, or unspecified loss of control).

While in Local-Auto, the system shall provide a basic level of pressure and level switch control through relay-based controls wired in independently and in parallel with the SCADA Control System PLC.

(a) Ground Storage Tank and Well Pump Control

- (1) The Well Pump(s) operation shall be triggered from the fixed level switches in the Ground Storage Tanks. The level switch shall have the following four individual trip-points
 - i. Low Low Level Alarm
 - ii. Low Level Pump On Trip-Point
 - iii. High Level Pump Off Trip-Point
 - iv. High High Level Alarm

(b) Water Supply Pumps and Hydrostatic Pressure Tank Control

- (1) The Water Supply Pump operation shall be triggered from the fixed pressure switches installed on the Pressure Tank. Two pressure switches are required, one for each supply pump. The pressure switches shall have the following trip points.
 - i. Low Pressure Pump On Trip-Point
 - ii. High Pressure Pump Off Trip-Point

The On Trip-Point for each pressure switch shall be staggered such that one pump comes on first to meet the water demand. If the first pump is incapable of keeping up with demand and the supply pressure continues to fall, the second pump will turn on to provide additional capacity. Additional pressure switches will be required for Water Plants with more than two pumps.

Because of the simplified operating requirements of the Secondary / Backup Control mode, well pump run limit timers and pump Lead-Lag selection are not required in the Local-Auto operating mode.

3. Hydrostatic Pressure Tank / Air Compressor Control

The Air-Compressor operation shall be triggered from a local contactor (power relay) containing a three-position *Hand / Off / Auto* switch. This switch and contactor/power relay may be installed in the SCADA Control System panel or in a separate contactor panel located near the Air-Compressor.

- (a) Hand Position – The Air-Compressor shall run continuously until the switch is moved to the Off or Remote (Auto) position.
- (b) Off Position – The Air-Compressor shall not operate.
- (c) Auto – The Air-Compressor shall operate based on a High-Low Level Switch installed in the Hydrostatic Pressure Tank. The compressor shall turn On when the water level reaches the High Limit Switch, and the compressor should turn Off once the water level falls below the Low Level Switch trip point.

The control logic for the Air-Compressor control may be accomplished in either the PLC or via local interposing relays in the Air-Compressor contactor panel. With either option, a “running” feedback signal from the Air-Compressor contactor is required to provide a remote run status indication via SCADA.

A pressure reducing regulator with internal relief is required between the Air-Compressor discharge and the Hydrostatic Pressure Tank. This regulator is in addition to the primary regulator included on the Air-Compressor equipment package. Each regulator shall be set above the Water Supply Pump maximum discharge pressure and below the maximum permitted water supply pressure to prevent excessive air-compressor cycling and run time. The system and/or tank pressure relief valve(s) shall be sized to accommodate the full Air-Compressor discharge flow rate.

4. Chlorination System Control

The Chlorination system control is wholly separate from the SCADA System; refer to section 4.05.

5. Water Plant SCADA Control System Hardware Requirements

The SCADA System must include the following hardware components and instrumentation. Substitutions or alternate designs require a design review by the Town Engineer.

(a) Electrical Motor Starters and Contactor Panels for all Water Well and Water Supply Pump Motors shall include:

- (1) Combination Power Disconnect with Fuse or Breaker Circuit Protection
- (2) Full Voltage Non-Reversing 3-Phase Contactor
- (3) Hand-Off-Auto Selector Switch
- (4) Power and Running Pilot Lights
- (5) 120 VAC Control Power Transformer
- (6) Remote Run Command Input from SCADA Control Panel (Dry-Contact)
- (7) Aux (Dry) Contacts Providing Run Status
- (8) Stainless Steel Enclosure with a Minimum Environmental Rating of NEMA 12 for Indoor Installations or NEMA 4 for Outdoor Installations

(b) Air-Compressor Contactor Panel shall include:

- (1) Power Disconnect and Circuit Protection (May be installed in a separate enclosure.)
- (2) Hand-Off-Remote Selector Switch
- (3) Full Voltage Contactor or Power Relay Suitable for Compressor Load
- (4) Auxiliary Contact or Spare Electrically Isolated Normally Open (NO) Contact Block for Run Status Feedback

(c) Ground Storage Tank Instruments

- (1) Hydrostatic Level Transmitter (Minimum One Required)
 - i. Loop-Powered, 4-20 mA Output
 - ii. Fixed Scale of No Less than 120% and No More than 250% Tank Wall Height

- iii. Alternate Programmable “Smart” Transmitters are acceptable but must be compatible with the HART communication protocol.
 - iv. NSF/ANSI 61 Certified
 - (2) Float Level Switch (Minimum One Required)
 - i. Minimum Four (4) Actuation Points with Isolated Contacts
 - ii. Dry-Contact, a Minimum Rating of 0.5 Amp @ 120 VAC and 0.1 Amp at 30 VDC
 - iii. Alternate Contact Ratings, if Required, May be Provided via Interposing Relays
 - iv. NSF/ANSI 61 Certified
- (d) Hydrostatic Pressure Tank Instruments
 - (1) Float Level Switch (Minimum One Required)
 - i. Minimum Four (4) Actuation Points with Isolated Contacts
 - ii. Dry-Contact, a Minimum Rating of 0.5 Amp at 120 VAC and 0.1 Amp at 30 VDC
 - iii. Alternate Contact Ratings, if Required, May be Provided via Interposing Relays
 - iv. NSF/ANSI 61 Certified or Documented Compliance
(*e.g., Approved Material Test Reports for Wetted Components*)
- (e) Supply Piping System Instruments (Minimum One Required)
 - (1) Pressure Transmitter
 - i. Loop-Powered, 4-20 mA Output
 - ii. Fixed Scale of No Less than 100 PSIG and No More than 150 PSIG
 - iii. Alternate Programmable “Smart” Transmitters are acceptable but must be compatible with the HART communication protocol.
 - iv. NSF/ANSI 61 Certified
 - (2) Pressure Switch (One Required per Pump)
 - i. Minimum One (1) Actuation Point with Isolated Contacts
 - ii. Adjustable Actuation Point with Adjustable Deadband.
 - iii. Minimum Deadband Adjustment Shall be 20 PSIG or Smaller
 - iv. Dry-Contact, a Minimum Rating of 0.5 Amp at 120 VAC and 0.1 Amp at 30 VDC
 - v. Alternate Contact Ratings, if Required, May be Provided via Interposing Relays
 - vi. NSF/ANSI 61 Certified
- (f) SCADA Control Panel
 - (1) General Construction
 - i. Enclosure construction shall be stainless steel with a minimum of NEMA 12 or NEMA 4 Environmental Rating.
 - ii. Power Supply 120 VAC, Single Phase, with Whole Panel Surge Protection

- iii. Uninterruptable backup power supply sufficient to detect and provide alarm notification for loss of power.
 - iv. Door Mounted Selector Switches
 - Two-Position SCADA-Auto / Local-Auto
 - Three-Position Air-Compressor Hand/Off/Auto
(Not Required on Systems with Separate Compressor Contactor Panel with an integral HOA selector switch)
- (2) PLC Hardware with Operator Interface Terminal
- i. Allen Bradley, CompactLogix Processor Family with No Less Than 750 KB of On-Board Memory
 - ii. Allen Bradley, PanelView (current series) 7” Color Touch Screen. Suitable pushbuttons and pilot lights indicating critical control functions may be provided in lieu of the Color Touch Screen with Town Engineer approval.
 - iii. Analog Input Module, 4-20 mA, 8-Channel
 - iv. Digital Input Module, 120 VAC, 16 Channel
 - v. Digital Output Module, Relay Output, 8 Channel (Minimum)
 - vi. Digital Output Isolation Relays, Qty 8 (Minimum)

b. Waste Water Treatment Plant SCADA Controls

The SCADA and control interface for all Waste Water Treatment (WWTP) facilities require an engineering design review by the Town Engineer. WWTP control functions shall be provided to meet the Original Equipment Manufacturers design requirements and shall be suitable for unattended operation.

The SCADA panel located within the WWTP facility shall include:

1. SCADA Control Panel

(a) General Construction

- (1) Enclosure construction shall be stainless steel with a minimum of NEMA 4x Environmental Rating.
- (2) Power Supply 120 VAC, Single Phase, with Whole Panel Surge Protection
- (3) Uninterruptable backup power supply sufficient to detect and provide alarm notification for loss of power.

(b) PLC Hardware with Operator Interface Terminal

- (1) Allen Bradley, CompactLogix Processor Family with No Less Than 750 KB of On-Board Memory
- (2) Allen Bradley, PanelView (current series) 7” Color Touch Screen. Suitable pushbuttons and pilot lights indicating critical control functions may be provided in lieu of the Color Touch Screen with the Town Engineer’s approval.
- (3) Analog Input Module, 4-20 mA, 8-Channel
- (4) Digital Input Module, 120 VAC, 16 Channel
- (5) Digital Output Module, Relay Output, 8 Channel (Minimum)

(6) Digital Output Isolation Relays, Qty 8 (Minimum)

2. Minimum required WWTP SCADA Alarms

- (a) Critical condition alarms indicating shutdown or loss of control shall be hardwired to the SCADA PLC
- (b) Secondary or non-critical condition alarms, pump and blower run status, and other available performance status conditions may be communicated to the SCADA panel via any convenient means, including hardwired signal inputs or approved serial or Ethernet network communications.

c. Lift Station SCADA Controls

The SCADA monitoring and control interface for all Lift Stations shall include

1. Electrical Motor Starters and Contactor Panels for all Water Well and Water Supply Pump Motors shall include:

- (a) Combination Power Disconnect with Fuse or Breaker Circuit Protection
- (b) Full Voltage Non-Reversing 3-Phase Contactor
- (c) Hand-Off-Auto Selector Switch
- (d) Power and Running Pilot Lights
- (e) 120 VAC Control Power Transformer
- (f) Aux (Dry) Contacts Providing Run Status
- (g) Stainless Steel Enclosure with a Minimum Environmental Rating of NEMA 4x

2. SCADA Control Panel

(a) General Construction

- (1) Enclosure construction shall be stainless steel with a minimum of NEMA 4x Environmental Rating.
- (2) Power Supply 120 VAC, Single Phase, with Whole Panel Surge Protection
- (3) Uninterruptable backup power supply sufficient to detect and provide alarm notification for loss of power.

(b) Logic Control Hardware and Status Indication

With the approval of the Town Engineer, Lift Stations are not required to have programable logic controllers provided reliable, unattended operation is accomplished using common relays, level switches, or level transmitters. Minimum status indication pilot lights shall include:

- (1) Power On Status
- (2) Pump Run Status
- (3) Alarm / Fault Condition

3. Minimum required Lift Station SCADA Alarms shall include hardwired critical condition alarms indicating shutdown or loss of control and shall include the following:

- (1) Loss of Power
- (2) Run Status (All Pumps)
- (3) Pump Hand / Auto Mode Selection (All Pumps)
- (4) Wet Well Level

d. Common SCADA Display and Alarm Requirements

The SCADA Control System must include the following common alarm conditions where applicable. Additional, facility-specific display and alarm conditions shall be included where required for the safe and reliable operation of the system.

- (a) Local Control Panel Indication via panel enclosure mounted pilot lights
 - (1) System Power On
 - (2) Run Status (All motors, blowers, pumps, air-compressors)
 - (3) Critical Alarm Condition active if not included on Operator Interface Terminal
- (b) Local Control Panel Operator Interface Terminal and SCADA Control Screens
 - (1) Storage Tank Level(s)
 - (2) Water Supply Pressure
 - (3) Pump(s) and Blower(s) Cumulative Run Time
 - (4) Control Set-Points (e.g., "On/Off" Pressure settings, lead, lag, and shutoff pressures)
 - (5) On-Screen HOA Switches for All Pumps Controllable via SCADA.
- (c) The system will provide the following alarm indications on the local Operator Terminal and via the SCADA portal:
 - (1) Failure To Start (All Pumps, Blowers, and Motors)
 - (2) Low Level Alarm (All Tanks)
 - (3) High Level Alarm (All Tanks)
 - (4) Low Pressure Alarm
 - (5) High Pressure Alarm
 - (6) Loss Of Power

Additional display and alarm conditions shall be included where required by good engineering practice for similar systems.

e. Unauthorized Access and Intrusion Detection

All building access doors located at Water and Waste Water Facilities shall include a potential free/dry-contact door closure switch wired to the SCADA panel. Any motor or SCADA control enclosures not located inside a building with monitored access doors shall include a lockable enclosure door and be provided with a potential free/dry-contact enclosure door switch wired to the SCADA panel.