



Sewer Lift Station Standards

April 2007

PUMPS

1. Flygt
2. ABS
3. Gorman Rupp

Note: Shall be submersible unless otherwise specified. Each pump shall be equipped with a seal failure early warning system. One pump in lift station shall be equipped with a mix and flush valve. Type 304 stainless steel chains shall be attached to each pump and run full length to top of wet well. Chain shall be sized according to recommended manufacturer specifications.

CHECK VALVES

1. Mueller Swing Type with lever and weight, FL x FL ends. (A-2600-6-01)
2. Kennedy Iron Swing Check with lever and weight, FL x FL ends. (Fig. 126)
3. Waterous Swing Check with lever and weight, FL x FL ends. (Series 6800)
4. Approved Equal

GATE VALVES

1. Mueller Resilient Seat, non-rising stem, FL x FL ends, square operating nut, open left. (A-2360-6)
2. Kennedy/Clow/M&H Resilient Seat Ken Seal II, non-rising stem, FL x FL ends, square operating nut, open left. (4561 N)
3. Waterous Resilient Wedge, non-rising stem, FL x FL ends, square operating nut, open left. (Series 500)
4. Approved Equal

CONTROL PANEL/ELECTRICAL

1. Control panel shall be Type 304 stainless steel with hinged door and lockable latch installed minimum 3-foot (3') above ground. A Type 304 stainless steel sub-panel with hinged door and lockable latch shall be installed outside of wet well for motor lead connections. Sub-panel to be minimum twelve inch (12") tall by twelve inch (12") wide by eight inch (8") deep and shall be minimum twelve (12") inches above ground elevation. Both shall be watertight and Type 4X.
2. The following electrical components shall be standard equipment in control panel:

- Main Circuit Breaker
- Control Circuit Breaker
- Motor Breaker
- Duplex Receptacle Breaker
- Motor Starter
- Alternator
- Phase Monitor
- Lightning Arrestor
- Relays 1-6
- Dialer Receptacle
- Duplex Receptacle (GFCI Protected) mounted to side of panel.
- Control Power Transformer
- Control Circuit Transformer
- Terminal Strips
- Isolated Neutral Block and Ground Buss
- Time Delay Relay (1 per pump)
- Auto Dialer
- Auto Dialer Surge Suppressor
- H O A Switch
- High Level Alarm Light (red), audible alarms not required
- Flasher
- Pilot Lights (pump run-green, pump off-red)
- Fuse Blocks
- Hour meter (1 per pump)
- Warning lights (high pump temperature and seal failure)
- FMC 200 Controller w/ Modem & Software

Note: All breakers and motor starters shall be Square D brand, all relays shall be pin and socket, control power shall be 120 volts, phase and primary voltage to be determined.

AUTOMATIC CONTROLS

1. LS 100 Transducer w/ Float Backup
2. Weighted Floats (2): On and Off

CONDUIT

1. Schedule 80 PVC electrical conduit shall be used for all wiring. Underground conduit shall be buried minimum 18”.
2. Conduit shall be minimum three-inch (3”) I.D.
3. All conduit ends shall be sealed to prevent gases from entering.

WET WELL

1. Guide rails and all hardware shall be Type 304 stainless steel. Mounting hardware shall include lock nuts or lock washers.
2. Float hanger, all hardware, bolts, nuts, etc. shall be stainless steel.
3. Cover shall be made of aluminum, full opening and capable of being locked. Must open to provide direct access from gate (should open away from gate).
4. Wet well shall be vented with minimum four-inch (4") ductile iron pipe. Ell on end of vent shall be screened with stainless steel #8 mesh.
5. Control floats must be hung away from incoming flow.

DRY WELL

1. A gate valve, check valve and flange coupling adapters are required for each pump. Gate and check valves shall be readily accessible for repair or maintenance.
2. Dry well shall have drain line discharging to wet well. Line shall be minimum four-inch (4") schedule 40 PVC with a flap valve on end where it enters wet well.
3. Dry well shall be vented with minimum four-inch (4") ductile iron pipe. Ell on end of pipe shall be screened with stainless #8 mesh.
4. Cover shall be made of aluminum, full opening and capable of being locked.
5. All hardware, bolts, nuts, etc. shall be stainless steel.

PAINTING SYSTEM

1. Coatings for all piping shall conform to City of Mansfield coating specifications.

Products: The following special coating products are manufactured by Themec Company, Inc. Manufacturers of products of equal substance, function and performance subject to the review and approval of the Engineer will be considered.

Coating Schedule: Exterior Exposed Steel: (Piping in dry well, by-pass piping and vents)

1. System Type: Epoxy/urethane
2. Surface Preparation: SSPC-SP 6
3. Primer: Series N69-Color Hi-Build Epoxoline II. DFT 3.0 to 5.0 mils.
4. Intermediate Coat: Series N69-Color Hi-Build Epoxoline II. DFT 4.0 to 6.0 mils.
5. Finish Coat: Series 74-Color Endura-Shield. DFT 3.0 to 5.0 mils.
6. Total DFT: 10.0 to 16.0 mils.
7. Color: Themec Bare Beige-RD

SITE

1. Fenced area shall be minimum 25' x 25', area shall be accessible from a street or access easement with paved drive.

2. Fence shall be chain link six-foot (6') in height. Fabric shall be 9 gauge, two-inch (2'') hot dipped galvanized mesh. Three strands of 12½-gauge barbed wire shall be installed on top and run entire length of fence.
3. Gate shall be chain link and consist of two six-foot (6') sections. It shall be six-foot (6') in height with three strands of 12½-gauge barbed wire on top. Fabric shall be the same as fence.
4. The area within the fence shall consist of minimum six-inch (6'') compacted flex base with a two-inch (2'') crushed stone topping. Stone shall be one-inch (1'') nominal in size. Geotextile fabric shall be put down before any stone is put in place.
5. The access road shall be minimum twelve-feet (12') wide consisting of six-inch (6'') HMAc or five-inch (5'') reinforced concrete and shall have a concrete drive approach at street connection. (To be constructed per COM Standard Construction Details.)
6. Culverts and or trench drains shall be installed as needed for drainage.
7. All gate valve boxes and by-pass riser shall have a concrete pad per City of Mansfield Standard Construction Details.

ADDITIONAL SPECIFICATIONS

1. A six-inch (6'') by-pass shall be installed on discharge piping outside of dry well, consisting of a vertical tee with riser and blind flange extending twelve inches (12'') above ground.
2. A gate valve shall be installed outside dry well on force main downstream of by-pass. The transition from ductile iron pipe to PVC shall take place downstream of gate valve.
3. All piping in wet well, dry well and to gate valve on force main shall be flanged ductile iron pipe, no MJ fittings allowed. Piping shall be rigidly supported to prevent movement.

FORCE MAIN PIPING

1. Force main piping to be white or green in color. Pipe type shall be DR-18 AWWA C-900.
2. Force main shall be hydrostatically tested to 100 p.s.i. for a minimum of two (2) hours.

ACCEPTANCE TESTING

1. Both pumps shall be pulled and reinstalled to check for proper alignment of guide rails and access cover.
2. Both pumps shall be run to check for proper rotation and operation and to make sure both are properly seated after reinstallation.
3. All electrical components shall be tested for proper operation.
4. Pump supplier shall issue a Certificate of Operation verifying all components have been tested and passed along with performance curves. Two (2) copies of O&M manuals shall be submitted to the City of Mansfield.