

SUFFOLK COUNTY DEPARTMENT OF PUBLIC WORKS
DIVISION OF SANITATION
PUMP STATION REVIEW LIST

SITE:

- Need a Control Bldg (min size 10' x 8')
- Contains Control Panel
- Contains Odor Control (Potassium Permanganate [KMNO4] Feed System) w/min 30 gal drum or tank. Installation not required until odors occur.
- Lighting
- Eyewash
- Heater
- Wall Vent (Exhaust Fan optional)
- Need Hose Bib or yard hydrant (for wash down)
- Lighting (Exterior) (400 W min), meeting local lighting and dark sky regulations
- Fencing w/No. 6 Gauge Mesh (6' High)
- Entire site to be asphalt paved – 2” top course w/6” base.
- Evergreen trees surrounding fence
- Access road w/gate
- Install a PVC conduit from control building to wet well (buried) for future KMNO4 feed system.

WET WELL:

- Min size 8'Ø w/coved bottom
- Wall thickness (D + 1") (i.e. 9" for 8'Ø)
- Top Slab 12" thick - traffic bearing (H-20 Loading)
- Access Hatch for Pumps (min 36" x 48")
 - Aluminum w/S.S. Hardware (H-20 Loading)
- Access Hatch for Ladder (min 30" x 36")
 - Aluminum w/S.S. Hardware (H-20 Loading)
- S.S. Ladder or Fiberglass w/S.S. Hardware. Safety Post and Safety Rail (S.S)
- Pump Hoist (All S.S.) - must be permanent
- Pump Lifting Cable (S.S.)
- Pump Guide Rail (SCH 40 S.S. 2"Ø)
- Explosion Proof Light (Incandescent) 200w min
- Explosion Proof Supply Fan (30 air changes/hour)
- Limit Switch with secondary bypass switch on Hatch for Fan & Light
- Exhaust Duct (min 6" Ø) (Min SDR 35 PVC) extended down to 12" above H.W.L. - Gooseneck at Slab
- Maximum depth 25' (ground elevation to bottom slab elevation)

PUMPS: (Flygt, ABS or Equal)

- Sized as per 10 State Stds.
- Explosion Proof, Tungsten Carbide Seals
- Grinder if < 3" Ø Discharge (3" Ø or less allowed if 2 ft/Sec cannot be maintained in 4" Ø Pipe)
- Duplex w/alternate lead/lag
- Each Pump sized for peak flow
- DIP Discharge Pipe - if < 3"Ø, Stainless steel SCH 80 w/stainless steel supports and hardware.
- Quick Disconnects
- Mix Flush Valve on one pump allowed

FLOATS:

- Multitrode w/backup high water level and low water level STD mercury floats
- Detention time not to exceed 30 min between pump starts
- High water level alarm a minimum of 3" below invert of the influent gravity inlet pipe.
- Sequence of Floats:
 - H.W.L. Alarm (and lag pump on for backup float)
 - Lag Pump on
 - Lead Pump on
 - Lag Pump off
 - Lead Pump Off
 - L.W.L. Alarm (alarm only for backup float)

VALVE CHAMBER:

- Dezurik Valves or Equal
- Check Valves (air cushion)
- Traffic Bearing Slab (H-20 loading)
- Access Hatch, min 30"x 36" (AL w/S.S. Hardware)(H-20 Loading)
- Manhole Steps (Stainless steel or steel reinforced copolymer polypropylene)
- Light (Explosion Proof Incandescent min 100w)
- Bottom drain w/gravel
- Provide a 4" quick disconnect after the plug valves for bypass purposes

3

FLOW METER PIT:

- Magnetic Flow Meter
- Must be 20 Pipe Ø from all fixtures (or as Manufacturer's specification allows)
- Access Hatch, min 30"x 30"(AL w/S.S. Hardware) (H-20 Loading)
- Traffic Bearing Slab (H-20 loading)
- Chart Recorder (mounted in Ctrl Bldg)

STRUCTURAL:

- Wet Well Top Slab
12" thick w/top and bottom steel
#4 bars @ 8" O.C.E.W
- Side Walls: .24in²/LF Mesh min
- Bottom Slab 8" thick w/T & B Steel
#4 Bars @8" O.C.E.W. w/dowels (#4 bars 12" radially)
- Bottom Slab & Walls to be monolithic to 3" above inlet pipe
- Two-part epoxy coat interior to 6" above inlet pipe.

FORCE MAIN:

- 4" Ø min (less if 2 ft/sec min velocity cannot be achieved)
- DR 18 PVC or Ductile Iron
- Tested to 200 psi
- Clean out Manhole every 400' or at every bend 45° or greater (see standard detail plans)
- Thrust block at every bend (see standard detail plans)
- Min 4' of cover
- Air release MH at every high point (see standard detail plans)
- Drain MH at every low point
- Receiving MH to be two-part epoxy coated
- Kor-N-Seal or link seal or equal all pipe penetrations into MH's, wet well, valve chamber, Flow meter vault, etc.

GENERATOR:

- Sized to run both pumps, lighting and KMNO₄ feed pump & heater
- Fuel supply should be natural gas, if not, then propane, then fuel oil. Must have 3-day fuel storage capacity.
- If possible, put in Ctrl bldg.
- Sound enclosure required

ELECTRICAL:

- All outdoor mounting hardware must be Stainless Steel.
- Conduit through concrete slabs or walls must be PVC-coated galvanized. All other conduit buried or exposed is to be PVC SCH 80.
- Service cable to be USE-2 THWN-2 or other LIPA approved 90°C (wet) wiring.
- See DPW standard detail for submersible cables leaving wet well.
- Add TVSS to electrical service.
- Isolated pits are Class I / Div 2.
- Genset – 130° C temperature rise.
- Genset starting KVA roughly 3 to 4 times nominal run KW.
- Engine KW output shall exceed nominal Genset KW rating.
- Design for single pump start at not more than 20 per cent voltage dip or two-pump start at no more than 35 per cent

ELECTRICAL – cont'd

- with lights and heat as pre-loads, whichever requirement is more restrictive.
- Pumps to have time delays to stagger starting by 10 seconds (adjustable) after restoration of power.
- Generator controller and transfer switch should have run relay and auxiliary contacts or equivalent for owner's use to allow status signaling.
- Generator set alternator should use permanent magnet generator excitation.
- Generator submittal during shop drawing process should include a loads report summary showing voltage dips.
- Panelboards should use copper bus with bolt-on breakers.
- Safety switches should be used at pumps if the wet well cannot be viewed from the pump panel. Note that 2002 NEC has tightened up language on this issue relative to 1999 Code.
- Pipe sleeve or conduit for permanganate solution tube must be sealed so that gases from wet well do not enter building. A sump that permits grouting of one end of the conduit is an example of this.
- Use a control transformer to protect expensive components such as Multirodes, PLC's etc. even if voltage is 120/208.
- Use a control transformer for all 120-volt control circuits if the service is 120/240, three-phase hot leg delta. If a GFCI must be run off the transformer secondary, size the transformer appropriately and fuse the circuit (plus CB) so that it cannot draw more than 80% of the transformer's rated current.
- For 120/208-volt applications, do not put GFCI receptacles on a control transformer secondary. Tap off the primary side with appropriate overcurrent protection and conductor sizing.

Rev 03-03-03 Pump Station Review List
Rev 11-05-03
Rev 02-02-04
Rev 02-18-05
Rev 01-10-13