



EXETER PUBLIC WORKS DEPARTMENT

13 NEWFIELDS ROAD EXETER, NH 03833-3792 (603) 773-6157 FAX 772-1355

www.exeternh.gov

Sewer Pump Station Design Guidelines

The purpose of this document is to provide design guidelines that are specific to Exeter for proposed sewer pump stations. These guidelines are not meant to supersede current NHDES or EPA rules or applicable building codes and do not include design requirements that are considered standard for pump station design. The designer is responsible for ensuring that the most current design guidelines and regulations are referenced for designs. Designs must be stamped and signed by an NH Licensed Professional Engineer.

Design Guidelines

The principal items of equipment shall include two horizontal, self-priming, centrifugal sewage pumps, v-belt drives, motors, piping, valves, motor control panel, automatic liquid level controls, integral wiring, and appurtenances.

Equipment Requirements

- A. Pumps: Pumps shall be Gorman-Rupp T-series pumps. Additional parts for the pumps shall be provided, including but not limited to: impellers, impeller washers, impeller capscrews, seal assembly, seal gasket, wear plate, bearing housing o-ring, back cover plate o-ring, set of drive belts, spare float form.
- B. Controls and Telemetry
 - a. The pump station controls shall be integrated with the Town of Exeter SCADA system (VTSCADA).
 - b. A radio frequency path study is required for the radio communications for transmitting SCADA data
 - c. Security and fire alarms shall be required and should be coordinated with the Exeter Police and Fire Departments.
 - d. An emergency notification light shall be installed outside the building in the event that the SCADA system is not functioning properly.
 - e. Provide remote control start and stop capabilities for both pumps.
 - f. The pump controls shall send the following signals to the SCADA system
 - i. Pump 1 running
 - ii. Pump 2 running
 - iii. Level Indicator
 - iv. Pump power failure alarm
 - v. High-level wet well alarm
 - vi. Low-level wet well alarm
 - vii. Pump 1 high-temperature shutdown alarm
 - viii. Pump 2 high-temperature shutdown alarm
 - ix. Pump 1 motor overload alarm
 - x. Pump 2 motor overload alarm
 - xi. No signal from level transducer
 - xii. Redundant high-level alarm (from independent float switch)
 - xiii. Pump 1 in remote

- xiv. Pump 2 in remote
- xv. Speed control (VFD)
- g. Liquid level control: The wet well liquid level shall be continuously monitored by an electronic pressure switch. The switch shall control start and stop of the pump motors as defined by the established level parameters.
- h. Electrical Controls shall consist of:
 - i. Allan Bradley PLC
 - ii. IFM pressure sensors
 - iii. KPSI Pressure transducer wet-well level
- i. Additional parts shall be provided and include, but are not limited to, relays (2 of each style), fuses (minimum of 10% of total used, minimum of 2 per size installed), and power supply.

Building Requirements

- A. Visual, noise, and odor impacts to abutters shall be minimized.
- B. The inside layout of the equipment and piping shall be such that direct access is provided to all elements of the pump station.
- C. A floor drain connected to the wet-well shall be provided.
- D. The building may be constructed of concrete blocks or wood frame.
- E. A potable water service is required.
- F. Outdoor lighting shall be required as needed for building access.
- G. The building elevations shall be set based on current guidance relative to climate change resiliency (100-year floodplain, sea level rise)
- H. Pump stations shall be equipped with standby power to be fueled by natural gas (preferred), propane, or diesel gas. Propane or diesel systems are required to provide fuels storage capacity for a minimum 24 hours of operation. Outdoor generators may require a sound enclosure.

Site Layout

- A. A hatch shall be provided to access to the wet-well and located such that it can be accessed by a vehicle for maintenance. The hatch shall include fall protection but shall not include stairs.
- B. A fence may be required as deemed necessary by the DPW.
- C. A paved driveway that is adequately sized for vehicle access and winter maintenance is required.
- D. Bollards shall be provided to protect the building and outdoor equipment as needed.

Final Acceptance

- A. Prior to final acceptance of the pump station by the Town, the following maintenance is required:
 - a. Change all bearing and seal oils.
 - b. Install new belts on all units.
 - c. Check valves shall be cleaned.
 - d. Pump clearances shall be reestablished.
- B. A final inspection by DPW is required prior to final acceptance of the pump station. This may result in additional maintenance requirements.