15A NCAC 18E .1103 CONTROL PANELS

(a) A control panel shall be provided for all systems that use a pump. The control panel enclosure shall be rated NEMA 4X at a minimum. A third-party electrical testing and listing agency shall list the control panel. The control panel shall include for each pump:

(1) an independent overload protection, if not integral with the pump motor;
(2) circuit breaker(s);
(3) a motor contactor that disconnects all current to the pump or a solid-state relay that controls current to the pump;
(4) a hand-off-automatic (H-O-A) switch or alternate method to enable manual or automatic pump operation and for the pump to be deactivated manually;
(5) a pump run light;
(6) an elapsed time meter; and
(7) an event counter.

(b) An automatic pump sequencer shall be included in systems requiring multiple pumps in accordance with Rule .1101(b) of this Section and shall remain operable whenever any pump is inoperable.

(c) When telemetry is required in accordance with Sections .0800, .1500, .1600, and .1700 of this Subchapter, the control panel shall be connected to an active phone line, wireless internet router, dedicated cellular line, or another form of telemetry that allows the Management Entity to be notified and respond to alarm conditions. The telemetry shall remain active for the life of the wastewater system. The authorized designer, AOWE, or PE shall specify the minimum notification frequency based on site-specific conditions.

(d) The control panel bottom shall be mounted a minimum of 24 inches above finished grade, within 50 feet of and in the line of sight of the pump tank. The Management Entity and LHD shall be able to access the control panel and operate the pumps when the owner is not present.

(e) A NEMA 4X junction box shall be installed above grade or adjacent to the pump tank riser when the control panel is located more than 10 feet from the pump tank access riser and one or more electrical splices are used. Electrical splices shall not be used within the conduit piping.

(f) Wiring shall be conveyed to the control panel or outside junction box through waterproof, gasproof, and corrosion-resistant conduits, with no splices or junction boxes inside the tank. Wire and wire conduit openings inside the pump tank and disconnect enclosure shall be sealed.

(g) Dual and multiple fields shall be dosed by separate pumps that shall automatically alternate or sequence. The supply lines shall be "H" connected to permit manual alternation between fields dosed by each pump. "H" connection valving shall be accessible from the ground surface, either from the pump tank access manhole or in a separate valve chamber outside the pump tank. The Department shall approve other methods of dosing dual or multiple fields when the authorized designer or PE provides documentation of equivalent performance to this Paragraph.

(h) Liquid level detection devices, such as floats, shall be provided in the pump tank to control pump cycles and trigger notification of alarm conditions. The liquid level detection device configuration shall meet the following requirements:

(1) a minimum of 12 inches of effluent shall be maintained in the bottom of the pump tank;
(2) pump-off level shall be set to keep the pump submerged or in accordance with the manufacturer's written specifications;
(3) a separate control float shall be provided to activate the high-water alarm;
(4) the high-water alarm float shall be set to activate within six inches of the pump-on level or higher, if applicable, if providing design equalization capacity in a timed dosing system;
(5) the lag pump float switch, where provided, shall be located at or above the high-water alarm activation level; and
(6) floats shall be supported utilizing durable, corrosion resistant material, and designed to be adjustable, removable, and replaceable from the ground surface without requiring dewatering, entrance into the tank, or pump removal.

(i) The pump tank shall have a high-water alarm that shall:

(1) be audible and visible to the system users and the Management Entity;
(2) have a silencer button or silencer device that is located on the outside of the panel enclosure;
(3) provide for manual testing;
(4) automatically reset after testing and when an alarm condition has cleared;
(5) remain operable whenever the pump is inoperable;

(6) have an enclosure that is watertight, corrosion resistant, and shall be rated NEMA 4X at a minimum; and

(7) be mounted outside the facility and accessible.

(j) For systems designed, inspected, and certified by a PE, alternative panel construction and location criteria may be used if the alternative panel construction and location criteria meet the panel performance criteria, comply with local electrical codes, and are approved by the local electrical inspector.

History Note: *Authority G.S. 130A-335(e), (f), and (f1);*
Eff. January 1, 2024.