

221400 FACILITY STORM DRAINAGE

Part 1 - GENERAL

1.1 Description

A. This section details the guidelines and expectations for the design and installation of storm drainage systems and equipment. Project conditions and requirements vary, thus precluding the absolute adherence to the items identified herein in all cases. However, unless there is adequate written justification and approval from the JHFRE Engineering and Energy Department, it is expected that these guidelines will govern the design and specifications.

1.2 Submittals

A. The design for a complete drainage system shall be provided for all storm (rainwater) drainage for, but not limited to, foundation, sub-soil, ground water, roofs, plazas, balconies, decks, canopies, area wells, parking structures/garages and similar applications.

1.3 Quality Assurance

A. Equipment testing shall be witnessed by JHFRE representative unless directed otherwise. Testing procedures shall be repeated until the JHFRE is satisfied with the results.

1.4 Delivery and storage

A. Material deliveries and storage areas to be approved by Owner.

B. Material storage to comply with manufacturer's recommendations.

Part 2 – PRODUCTS

2.1 Sump Pumps

A. Automatic sump pumps shall be located inside the building limits and only be used where gravity drainage cannot be achieved. Only storm (rainwater) and clear water drainage from the lowest floors of the building shall be connected to an automatic sump pump. Storm (rainwater) and clear water drainage systems from upper floors shall flow by gravity to the public storm sewer system.

B. Provide duplex pumps, submersible, with lead-lag capability. Each discharge pipe shall not be less than 4" in diameter. Motors shall be hermetically sealed, capacitor start, with built-in overload protection, electrical characteristics as scheduled.

C. Basin shall be fiberglass construction of indicated dimensions with inlet connections of size and location indicated. Maintain minimum of 3' depth below lowest inlet invert. Provide steel base plate with mounted galvanized guide poles and stationary discharge with support for each pump. Provide removable discharge connection on pump for positive locking and sealing to stationary discharge.

D. Piping and valves shall be standard weight schedule 80 CPVC discharge piping with matching fittings. Vent piping shall be no-hub cast iron. Vent piping shall run directly to the roof. Valves shall be suitable for the material in which they are installed.

E. Cover shall be circular steel cover with gas tight gasket, hinged access door with wire rope for pump removal, openings for pump discharge pipes, vent connection, power control and alarm wiring.

F. Control equipment shall be wall-mounted in an UL-listed NEMA-3 rated enclosure. Equipment shall be located clear of pump access and not require disconnecting to remove pumps. Controls shall include two fused motor switches, two automatic starters providing overload & low voltage protection, four enclosed mercury float switches and automatic alternator. Provide automatic pump controls with level regulators or pressure sensors. Controls shall start lead pump, start standby pump, and stop pump. Alternator shall automatically transfer the operation from one pump to the other and also start the second pump in the event the first pump does not handle the load.

G. Sump pumps shall be connected to the emergency generator power system.

2.2 Elevator Sump Pumps

A. An elevator sump pump shall be provided for all elevator pits.

B. Pump and control system shall be capable of pumping water while containing oil. The system shall function automatically and shall provide for an alarm and separate LED lights in the event of (a) the presence of oil in the sump, (b) high liquid in the sump, (c) high amps or a locked rotor condition. In addition to the audible local alarm, alarm conditions shall send an alert to the BAS.

C. Elevator sump pump shall be simplex pump, submersible type and approved to UL 778 standards. Sump pump shall be furnished with thermal and overload protection, oil sensing probe and be capable of operating continuously or intermittently. The motor housing shall be constructed of #304 stainless steel and mechanical seals shall be housed in a separate oil-filled compartment.

D. The elevator sump pump controller shall be approved to UL 508 standards and housed in a NEMA 4X enclosure with a see-through window for observation of operating functions. The controller shall be equipped with an 8-pin twist lock receptacle, dual solid-state Oil-Minder relays with variable sensitivity settings, an over current relay, self-cleaning stainless steel sensor probe, high decibel warning horn with silent switch, dual floats, clearly marked terminal board with remote monitoring contact. The controller unit, junction box, pump, floats and sensor shall be factory assembled as a complete, ready-to-use system and shall be tested and approved as a complete system by a nationally recognized testing laboratory. The system shall allow for the main controller to be located outside of the elevator hoist way to be monitored for all functions without entering the elevator shaft. Alarm shall remotely annunciate to the BAS.

E. Elevator sump pump discharge piping shall be type-K hard copper tube.

Part 3 – EXECUTION

N/A