SECTION 23 22 23
STEAM CONDENSATE AND VACUUM CONDENSATE PUMPS

PART 1 - GENERAL

1.01 REFERENCE STANDARDS

A. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.02 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.03 SUMMARY

A. Section includes steam condensate pumps.

1.04 ACTION SUBMITTALS

A. Product Data: For each type of product. Include certified performance curves and rated capacities, operating characteristics, furnished specialties, and accessories for each type of product indicated. Indicate pump's operating point on curves. Include receiver capacity and material.

B. Shop Drawings: For each pump.
   1. Show pump layout and connections.
   2. Include setting drawings with templates for installing foundation and anchor bolts and other anchorages.
   3. Include diagrams for power, signal, and control wiring.

1.05 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For pumps to include in emergency, operation, and maintenance manuals.

1.06 QUALITY ASSURANCE

A. Commissioning of a system or systems specified in this section is part of the construction process. Documentation and testing of these systems, as well as training of the Owner’s operation and maintenance personnel, is required in cooperation with NYCHA and the Commissioning Agent (CxA). Project Closeout is dependent on successful completion of all commissioning procedures, documentation, and issue closure. Refer to Section 017700 Closeout Procedures, for closeout details. Refer to Section 019113 Project Commissioning Requirements, for detailed commissioning requirements.

PART 2 - PRODUCTS

2.01 DUPLEX CENTRIFUGAL PUMPS WITH FLOOR-MOUNTED RECEIVER

A. Subject to compliance with requirements, provide a comparable product by one of the following:
   1. ShipCo.
   2. Armstrong Fluid Handling
   3. ITT Corporation
   4. Spirax-Sarco
   5. Or approved equal

B. Description: Factory-fabricated, packaged, electric-driven pumps; with receiver, pumps, controls, and accessories suitable for operation with steam condensate.
   1. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
   2. ASME Compliance: Fabricate and label steam condensate receivers to comply with ASME Boiler and Pressure Vessel Code: Section VIII, Division 1.

C. Configuration: Simplex floor-mounted pump with receiver and float switches; rated to pump 200 degrees Fahrenheit steam condensate.

D. Receiver:
   1. Floor mounted.
   2. Welded steel.
   3. Externally adjustable float switches.
   4. Flanges for pump mounting.
   5. Water-level gage and dial thermometer.
   6. Pressure gage at pump discharge.
   7. Bronze fitting isolation valve between pump and receiver.
   8. Lifting eyebolts.
   9. Inlet vent and an overflow.
   10. Cast-iron inlet strainer with vertical self-cleaning bronze screen and large dirt pocket.

E. Pumps:
   1. Centrifugal, close coupled, vertical design.
   2. Permanently aligned.
   3. Bronze fitted.
   4. Replaceable bronze case ring.
   5. Mechanical seals rated at 250 degrees Fahrenheit.
   6. Mounted on receiver flange.

F. Motors:
   1. Comply with NEMA designation, temperature rating, service factor, and efficiency requirements for motors specified in Section 230513 "Common Motor Requirements for HVAC Equipment."
   2. Enclosure Materials: Cast Aluminum.
   3. Motor Bearings: Permanently lubricated ball bearings.

G. Control Panel:
   1. Factory wired between pumps and float switches, for single external electrical connection.
   2. Provide fused, control-power transformer if voltage exceeds 230 V ac.
   3. Motor controller for each pump.
   4. Electrical pump alternator to operate pumps in lead-lag sequence and allow both pumps to operate on receiver high level.
   5. Manual lead-lag control to override electrical pump alternator and manually select the lead pump.
   6. Momentary-contact "TEST" push button on cover for each pump.
   7. Numbered terminal strip.
   8. Single Pt. Power Connection w/ Disconnect switch.

H. Capacities and Characteristics: See construction documents.

2.02 DUPLEX VACUUM/CONDENSATE PUMP SET WITH FLOOR-MOUNTED RECEIVER

A. Subject to compliance with requirements, provide a comparable product by one of the following:
   1. ShipCo.
   2. Armstrong Fluid Handling
   3. ITT Corporation

4. Spirax-Sarco
5. Or approved equal

B. Description: Factory-fabricated, packaged, electric-driven water pumps; with receiver, vacuum pumps, controls, and accessories suitable for operation with steam condensate.
   1. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
   2. ASME Compliance: Fabricate and label steam condensate receivers to comply with ASME Boiler and Pressure Vessel Code: Section VIII, Division 1.

C. Configuration: Simplex floor-mounted pump with receiver and float switches; rated to pump 200 degrees Fahrenheit steam condensate.

D. Receiver:
   1. Floor mounted.
   2. Welded steel.
   3. Externally adjustable float switches.
   4. Flanges for pump mounting.
   5. Water-level gage and dial thermometer.
   6. Pressure gage at pump discharge.
   7. Bronze fitting isolation valve between pump and receiver.
   8. Lifting eyebolts.
   9. Inlet vent and an overflow.
   10. Cast-iron inlet strainer with vertical self-cleaning bronze screen and large dirt pocket.
   11. CW connection
      a. E. Pumps:
   12. 1. Centrifugal, close coupled, vertical design.
   13. 2. Permanently aligned.
   14. 3. Bronze fitted.
   15. 4. Replaceable bronze case ring.
   16. 5. Mechanical seals rated at 250 degrees Fahrenheit.
   17. 6. Mounted on receiver flange.

E. Vacuum Pumps:
   1. Centrifugal, close coupled..
   2. Permanently aligned.
   3. Bronze fitted.
   4. Replaceable bronze case ring.
   5. Mechanical seals rated at 250 degrees Fahrenheit.
   6. Mounted on Vacuum tank w/flange.

F. Motors:
   1. Comply with NEMA designation, temperature rating, service factor, and efficiency requirements for motors specified in Section 230513 "Common Motor Requirements for HVAC Equipment."
   2. Enclosure Materials: Cast Aluminum.
   3. Motor Bearings: Permanently lubricated ball bearings.

G. Control Panel:
   1. Factory wired between pumps and float switches, for single external electrical connection.
   2. Provide fused, control-power transformer if voltage exceeds 230 V ac.
   3. Motor controller for each pump/vacuum pump.
   4. Electrical pump alternator to operate pumps in lead-lag sequence and allow both pumps to operate on receiver high level.
   5. Manual lead-lag control to override electrical pump alternator and manually select the lead pump.
   6. Momentary-contact "TEST" push button on cover for each pump.

7. Numbered terminal strip.
8. Single Pt. Power Connection w/ Disconnect switch.

H. Capacities and Characteristics: See construction documents.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine equipment foundations and anchor-bolt locations for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Examine roughing-in for piping systems to verify actual locations of piping connections before pump installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Install pumps according to HI 1.1-1.2, HI 1.3, and HI 1.4.

B. Install pumps to provide access for periodic maintenance including removing motors, impellers, couplings, and accessories.

C. Support pumps and piping separately so piping is not supported by pumps.

D. Install thermometers and pressure gages.

E. Equipment Mounting:
1. Install pumps on cast-in-place concrete equipment base(s).
2.

3.03 CONNECTIONS

A. Comply with requirements for piping specified in Section 232213 "Steam and Condensate Heating Piping" and Section 232216 "Steam and Condensate Heating Piping Specialties."

B. Where installing piping adjacent to machine, allow space for service and maintenance.

C. Install a globe and check valve and pressure gage before inlet of each pump and a gate and check valve at pump outlet.

D. Pipe drain to nearest floor drain for overflow and drain piping connections.

E. Install full-size vent piping to outdoors, terminating in 180-degree elbow at point above highest steam system connection or as indicated.

F. Ground equipment according to Section 260526 "Grounding and Bonding for Electrical Systems."

G. Connect wiring according to Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

3.04 STARTUP SERVICE

A. Perform startup service.
1. Complete installation and startup checks according to manufacturer's written instructions.
2. Clean strainers.
3. Set steam condensate pump controls.
4. Set pump controls for automatic start, stop, and alarm operation.
5. Perform the following preventive maintenance operations and checks before starting:
   a. Set float switches to operate at proper levels.
   b. Set throttling valves on pump discharge for specified flow.
   c. Check motors for proper rotation.
   d. Test pump controls and demonstrate compliance with requirements.

e. Replace damaged or malfunctioning pump controls and equipment.
f. Verify that pump controls are correct for required application.

6. Start steam condensate pumps according to manufacturer's written startup instructions.

3.05 DEMONSTRATION

A. Train Owner's maintenance personnel to adjust, operate, and maintain steam condensate pumps.

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