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## SECTION 23 22 23.13\_PUMPS FOR HYDRONICS SYSTEMS

### PART 1 GENERAL

#### 1.1 SUMMARY

- A. This standard includes hydronic pump standards for both chilled water and heating hot water at buildings either served by district heating or standalone.
- B. The intent of these standards is to provide input to the design team on the University's preference of manufacturers, design, equipment options and quality assurance to maintain the longevity of its assets.

#### 1.2 REFERENCES

- A. Common Work for HVAC Systems 23 05 00
- B. Common Requirements for HVAC Systems 23 05 01
- C. Identification of HVAC Piping & Equipment 23 05 53
- D. HVAC Insulation 23 07 00
- E. Hydronic Piping Systems Above Grade 23 22 23
- F. Hydronic Piping Systems Below Grade 23 22 23.2

#### 1.3 DESIGN REQUIREMENTS

- A. Vertical pumps and piping need to be laid out to minimize footprint in the mechanical room as much as possible
- B. Each pump, motor and pump/motor combination shall have lifting beams for rigging.
- C. Select OEM minimum standard pump working pressure for casing and pressure retaining parts.

#### 1.4 SUBMITTALS

- A. Product Data: Submit for manufactured products and assemblies used in this Project.
  - 1. Manufacturer's data [and list] indicating use, operating range, total range, accuracy, and location for manufactured components.
  - 2. Submit product description, model, dimensions, component sizes, rough-in

- requirements, service sizes, and finishes.
  - 3. Submit schedule indicating manufacturer, model number, size, location, rated capacity, load served, and features for each piping specialty.
  - 4. Submit electrical characteristics and connection requirements.
- B. Product Data: Submit certified pump curves showing performance characteristics with pump and system operating point plotted. Include NPSH curve when applicable. Include electrical characteristics and connection requirements. Submit also, manufacturer model number, dimensions, service sizes, and finishes.

#### 1.5 CLOSE-OUT SUBMITTALS

- A. Completed Pump Data Sheet
- B. As Built operating characteristics that are revised to include all changes to hydronic system made during construction.
- C. Operation and Maintenance Data: Submit instructions for calibrating instruments, installation instructions, assembly views, servicing requirements, lubrication instruction, and replacement parts list.

#### 1.6 QUALITY ASSURANCE

#### 1.7 DELIVERY, STORAGE AND HANDLING

### PART 2 PRODUCTS

- 2.1 Vertical In-Line Split Coupled Pumps, w/ pull-out rotor design, Armstrong Series 4300 or B&G Series 80-SC.
- 2.2 Fit pumps w/ seal flush water filtration option, 50 micron replaceable media filter, slight flow indicator, OEM supplied.
- 2.3 Fit pumps w/ OEM mechanical seals: dynamic, pusher seal type carbon to tungsten-carbide face materials, rated for a pH range of 7 to 11.
- 2.4 Motors: In accordance with Section 21 05 13. 1750 rpm unless specified otherwise.
- 2.5 Wiring Terminations: Furnish terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. Enclose terminal lugs in terminal box sized to NFPA 70.
- 2.6 Supply pumps with suction diffusers. Suction diffusers shall be of the same manufacturer as the pumps.
- 2.7 If required flexible connections for pumps shall be stainless steel braided type as manufactured by Mason Industries or equivalent.

### PART 3 EXECUTION

### Division 23: HVAC

- 3.1 Provide pumps to operate at specified system fluid temperatures without vapor binding and cavitation, are non-overloading in parallel or individual operation, and operate within 25 percent of midpoint of published maximum efficiency curve.
- 3.2 Install long radius reducing elbows or reducers between pump and piping. Support piping adjacent to pump so no weight is carried on pump casings. For close coupled or base mounted pumps, install supports under elbows on pump suction and discharge line sizes 4 inches and over.
- 3.3 Install flexible connectors at or near pumps where piping configuration does not absorb vibration.
- 3.4 Provide line sized shut-off valve, strainer and pump suction fitting on pump suction, and line sized soft seat check valve, shut off valve and balancing valve on pump discharge. Combination or triple duty valves are not allowed in University of Delaware hydronic piping systems.
- 3.5 Decrease from line size with long radius reducing elbows or reducers. Support piping adjacent to pump so no weight is carried on pump casings. Provide supports under elbows on pump suction and discharge line sizes 4 inches and larger.
- 3.6 Provide air cock and drain connection on horizontal pump casings.
- 3.7 Provide drains for bases and seals.
- 3.8 Lubricate pumps before start-up.
- 3.9 When building pumps are used during start-up activities, seal flush water media filters are to be maintained by construction.

PART 4 END OF SECTION