

SECTION 21 31 13

FIRE PUMPS

PART 1 - GENERAL

1.01 RELATED

- A. "General Requirements", Division 1 and Mechanical and Plumbing Basic Materials and Methods Spec Sections 22 05 00 and 23 05 00 of the Project Manual, and Division 21 13 13 "Fire Protection" pertain to and are hereby made part of the work of the Spec Section.

1.02 DESCRIPTION OF WORK

- A. The work under this Section includes furnishing all fire protection fire pumps and all required auxiliary equipment, specialties and all labor necessary to make the installation of the Fire Protection Fire Pump System as indicated on the drawings and specified herein.

1.03 SYSTEM DESCRIPTION

- A. Provide a complete fire pump unit and required auxiliary equipment to provide the required pressure for the fire protection system as indicated on the drawings.

1.04 QUALITY ASSURANCE

- A. Code Compliance Products, General: Comply with local and state governing regulations which require the products used for fire protection fire pump systems to be selected from lists in certain published latest editions of standards or codes as indicated therein.
- B. Manufacturer: Except for products required to comply with recognized product listings, provide fire protection fire pump system products and accessories produced by a fire protection manufacturer with not less than 5 years experience in manufacturing similar products.
- C. Installer: A firm with at least 3 years of successful installation experience on project with fire protection piping work similar to that required for the project.
- D. NFPA Code: Comply with NFPA No. 13, entitled "Standard for the Installation of Sprinkler Systems".
- E. NFPA Compliance: Comply with NFPA No. 14 entitled, "Standard for the Installation of Standpipe and Hose Systems."
- F. Fire protection pumps shall comply with applicable section of NFPA No. 20, entitled, "Standard for the Installation of Centrifugal Fire Pumps." Comply with requirements of UL's Standard for Safety No. 1478, entitled, "Fire Pump Relief Valves", and No. 448, "Pumps for Fire Protection Service."
- G. FM Compliance: Comply with Factory Mutual "Approval Guide."
- H. FM Approval Marks: Provide units bearing FM approval marks.
- I. UL Labels: Provide units, which have been approved and listed by Underwriters Laboratories.
- J. Requirements: Entire fire protection system shall be designed, furnished, and installed in strict conformance to NFPA Chapter 13 and all related regulations and requirements.

1.05 SUBMITTALS

- A. Prior to submitting shop drawings to the Engineer for approval, shop drawings shall be submitted to the local building department and the local fire prevention bureau authorities for their review and approval of the fire pump size, capacity, pressure, and system interface. Only approved drawings shall be reviewed by the Engineer.
- B. Product Data: Submit manufacturer's data on all fire protection fire pump system piping material, accessories and products. Include all data on fire protection pumps including but not limited to pump characteristics, performance curves certified where indicated.
- C. Shop Drawings:
- D. Submit shop drawings for the fire protection fire pump systems showing the sizes, location, accessories, valves, gauges, equipment connections, wiring diagrams and typical details for unit installation.
- E. Certification of Installation; Fire Sprinkler Fire Pump: Submit certificate upon completion of fire pump installation which indicates that the work has been tested in accordance with NFPA 13, and also that system is operational, complete, and has no defects.
- F. Fire Pump test and procedures and certificate format are contained in NFPA No. 13.

PART 2 - PRODUCTS

2.01 APPROVED MANUFACTURERS

- A. Provide products produced by one of the following (for each type of accessories or system).
- B. Fire Pumps Equipment
 - 1. Allis-Chalmers Corp.
 - 2. Aurora Pump Div., General Signal Corp.
 - 3. Fairbanks Morse Pump Div., Colt Ind.
 - 4. Foster Pump Work, Inc.
 - 5. Marlow Div., ITT Corp.
 - 6. PACO-Pacific Pumping Co.
 - 7. Peabody Barnes Peabody International
 - 8. Peerless Pump Co.
 - 9. Seco

2.02 ELECTRIC DRIVEN FIRE PROTECTION PUMPS

- A. **FIRE PUMP:** The pumps shall be an Aurora model 6-481-15C horizontal split-case fire pumps. The pump shall be rated for the required flow and hydraulic head as calculated by the delegated-design fire protection contractor. The pump shall be listed by UL and be approved by FM. The pump shall deliver not less than 65% of rated pressure at 150% of rated flow. The shut off pressure shall not exceed 140% of rated pressure.

Electric Drivers: The motors shall be listed by Underwriters' Laboratories. It shall be open drip proof with a 1.15 service factor and shall comply with the provisions of NFPA 70, National Electric Code as described in NFPA 20. The motor shall be mounted on a bent steel frame.
- B. **Controller:** The motor controller shall be a METRON model MP430 listed by UL and approved by FM for fire pump service. It shall be compatible with the motor horsepower and voltage. It shall be of the ACROSS-THE-

LINE type with a withstand rating of 100Ka short circuit symmetrical amperes. The controller enclosure shall be of NEMA 2 type. The controller shall have pre-piped ½” brass pipe pressure sensing line run from the discharge piping to the pressure switch.

- C. Pressure Maintenance (Jockey or Make-Up) Pump: The jockey pump shall be an Aurora Pump model PVM2-60. The pump shall be rated for 2 GPM @ 117 PSI. The jockey pump will be close coupled to a 1.5 hp @ 3600 rpm ODP motor. The motor will operate on 3 phase, 60 hertz, and 208 volts.

Jockey Pump Controller: A METRON model MB15B jockey pump controller shall be supplied. The jockey pump controller shall come complete with a fusible disconnect, front mounted hand-off-auto selector switch, and overload relays. The controller enclosure shall be of NEMA 2 type. The controller shall have ½” brass pressure sensing line run from the discharge piping to the pressure switch. Provide jockey controller with disconnect, pressure switch and casing relief valve.

- D. All equipment shall be factory tested in accordance with the requirements of NFPA, UL, and FM. The entire package system shall be hydrostatically tested by the pump manufacturer at 100 psi.
- E. **Provide a Remote panel and no start switch.**

2.03 FIRE PROTECTION AUXILIARY EQUIPMENT

- A. Provide for the fire pump, a motor controller, which shall be listed by Underwriters Laboratories and/or approved by Factory Mutual for fire pump service. The controller shall be h the listed motor horsepower and voltage. The controller shall be across the line type. The controller shall be completely assembled and tested by the manufacturer. Unit installation shall conform to NFPA 20 and Division 16 of these specifications.
- B. The Jockey Pump controller shall be furnished with a fusible disconnect, pre-piped Mercoid pressure switch, front mounted HAND-OFF-AUTO selector switch, and overload relays, all mounted in a NEMA rated enclosure. Controls shall be compatible with jockey pump and main pump.
- C. Fire Protection Pump Fittings: Provide fire protection pump fittings, including UL listed, automatic release valve, suction and discharge gauges to be liquid filled (0 to 300 psig) 3-1/2" dial faces, isolating gate suction valve, an isolating butterfly discharge valve, a water check valve, and a main relief valve with and enclosed waste cone properly sized for rated flow. Provide concentric discharge increasers, hose valve caps, and eccentric suction reducers, as recommended by pump manufacturer for applications and working pressures, indicated.
- D. Provide a power distribution system to accept the incoming feeder and distribute power to the electric motor controller and the jockey pump in accordance with manufacturers' requirements.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Installer must examine the subs trades and conditions under which the fire protection fire pump system and accessories are to be installed, and notify the Contractor in writing of conditions, detrimental to the proper completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

3.02 PREPARATION

- A. The Contractor shall verify dimensions and conditions governing his work at the building. No extra compensation shall be claimed or allowed, due to failure to report unfavorable conditions affecting his work.

3.03 INSTALLATION OF FIRE PUMPS

- A. Install fire protection pumps where shown, in accordance with manufacturer's written instructions, complying with FM and NFPA No. 20, and with recognized industry practices, to ensure that fire protection pumps comply

with requirements and serve intended purposes. Comply with NEMA standards and installation requirements of NEC.

- B. Coordinate with other work, including plumbing, standpipe, and fire sprinkler piping as necessary to interface installation of fire protection pumps properly with other components of fire water protection system.
- C. Check alignment and where necessary (and possible), realign shafts of motors and pumps within tolerances recommended by Manufacturer.
- D. Install pumps and pump drives on vibration mounts as shown; comply with manufacturer's indicated installation method, if any, and with other Division 15 Sections. Provide motor controllers and coordinate requirements with Division 16 regarding connections and installation.
- E. Ensure that fire protection pump units are wired properly, with rotation in direction indicated and intended for proper pump performance.
- F. Provide pumps and motors with electrical equipment grounding.
- G. Upon completion of installation of fire protection pumps, perform field acceptance tests of pumps, complying with operating instructions and procedures of NFPA 20 to demonstrate compliance with requirements. Where possible, field correct malfunctioning units, then retest to demonstrate compliance. Replace units, which cannot be satisfactorily corrected.

3.04 ADJUST AND CLEAN

- A. Prior to energizing fire pump, assure that unit is clean and adjusted to the proper requirements. Provide final checkout in accordance with NFPA 20.

3.05 DEMONSTRATION

- A. Start-Up Services: Provide the services of a factory-authorized service representative to start-up fire pump units, in accordance with manufacturer's written start-up instructions. Test controls and demonstrate compliance with requirements. Replace damaged or malfunctioning controls and equipment.
- B. Operating and Maintenance Training: Provide services of manufacturer's service representative to instruct Owner's personnel in operation and maintenance of fire pump units. Review operating and maintenance data contained in the Operating and Maintenance Manuals specified in Division One.

END OF SECTION 23 31 13