SECTION 232123

HYDRONIC PUMPS

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**NOTE TO SPECIFIER**

*Use this Specification Section for Mail Processing Facilities.*

***This is a Type 1 Specification with completely editable text; therefore, any portion of the text can be modified by the A/E preparing the Solicitation Package to suit the project.***

*For Design/Build projects, do not delete the Notes to Specifier in this Section so that they may be available to Design/Build entity when preparing the Construction Documents.*

*For the Design/Build entity, this specification is intended as a guide for the Architect/Engineer preparing the Construction Documents.*

*The MPF specifications may also be used for Design/Bid/Build projects. In either case, it is the responsibility of the design professional to edit the Specifications Sections as appropriate for the project.*

*Text shown in brackets must be modified as needed for project specific requirements.* *See the “Using the USPS Guide Specifications” document in Folder C for more information.*

*The last date that USPS revised this standard specification section occurs in two places, at the end of this section and in the Table of Contents. If the date in this section matches the date in the Table of Contents, then you are using the latest version. Do not delete or revise the “last revised” date at the end of the section during the development of the Project Manual.*

*The footer in this section should be edited to replace the text, “USPS MPF SPECIFICATION” with the project name, and the blank date in the center should be replaced with the submission date, for interim design reviews, or the issue date of the completed Project Manual.*

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1. GENERAL
	1. SUMMARY
		1. This Section includes the following:

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**NOTE TO SPECIFIER**

Adjust list below to suit Project.

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* + - 1. Close-coupled, in-line centrifugal pumps.
			2. Close-coupled, end-suction centrifugal pumps.
			3. Separately coupled, horizontal, in-line centrifugal pumps.
			4. Separately coupled, vertical, in-line centrifugal pumps.
			5. Separately coupled, base-mounted, end-suction centrifugal pumps.
	1. SUBMITTALS
		1. Product Data: Include certified performance curves and rated capacities, operating characteristics, furnished specialties, final impeller dimensions, and accessories for each type of product indicated. Indicate pump's operating point on curves.
		2. Operation and maintenance data.
	2. QUALITY ASSURANCE
		1. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
		2. UL Compliance: Comply with UL 778 for motor-operated water pumps.
	3. WARRANTY
		1. Manufacturer's standard form in which manufacturer agrees to repair or replace components that fail in materials or workmanship within a minimum of 5 years.
1. PRODUCTS

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**NOTE TO SPECIFIER**

Verify manufacturer information, Product numbers, and availability at time of Project Manual preparation for Project.

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* 1. MANUFACTURERS
		1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.
	2. CENTRIFUGAL PUMPS
		1. Manufacturers:
			1. Armstrong Pumps Inc.
			2. Aurora Pump; Division of Pentair Pump Group.
			3. Bell & Gossett; Div. of ITT Industries.
			4. PACO Pumps.
			5. Taco, Inc.
			6. Weinman; Div. of Crane Pumps & Systems.
		2. Description: Factory-assembled and -tested, centrifugal, pump as defined in HI 1.1-1.2 and HI 1.3; designed for base mounting, with pump and motor shafts horizontal. Rate pump for [125-psig] [175-psig] [250-psig] minimum working pressure and a continuous water temperature of [200 deg F] [225 deg F] [250 deg F].
		3. Pump Construction:
			1. Casing:
			2. Impeller: ASTM B 584, cast bronze; statically and dynamically balanced, keyed to shaft, and secured with a locking cap screw. Trim impeller to match specified performance.
			3. Pump Shaft: Steel, with copper-alloy shaft sleeve.
			4. Mechanical Seal: Carbon rotating ring against a ceramic seat held by a stainless-steel spring, and Buna-N or EPT bellows and gasket.
			5. Select subparagraph above or first subparagraph below. Packing seal is rated for 200 deg F.
			6. Packing Seal: Stuffing box, with a minimum of four rings of graphite-impregnated braided yarn with bronze lantern ring between center two graphite rings, and bronze packing gland.
			7. Pump Bearings: Grease-lubricated ball bearings contained in cast-iron housing with grease fittings.
		4. Shaft Coupling: Molded rubber insert and interlocking spider capable of absorbing vibration. EPDM coupling sleeve for variable-speed applications.
		5. Coupling Guard: Dual rated; ANSI B15.1, Section 8; OSHA 1910.219 approved; steel; removable; attached to mounting frame.
		6. Mounting Frame: Welded-steel frame and cross members, factory fabricated from ASTM A 36/A 36M channels and angles. Fabricate to mount pump casing, coupling guard, and motor.
		7. Permanently lubricated ball bearings are available up through 5 hp. Larger motors have grease-lubricated ball bearings.
		8. Motor: Premium efficiency single speed.
	3. PUMP SPECIALTY FITTINGS
		1. Suction Diffuser: Angle pattern, [175-psig] [300-psig] pressure rating, cast-iron body and end cap, pump-inlet fitting; with bronze startup and bronze or stainless-steel permanent strainers; bronze or stainless-steel straightening vanes; drain plug; and factory-fabricated support.
		2. Triple-Duty Valve: Angle or straight pattern, [175-psig] [300-psig] pressure rating, cast-iron body, pump-discharge fitting; with drain plug and bronze-fitted shutoff, balancing, and check valve features. Brass gage ports with integral check valve, and orifice for flow measurement.
1. EXECUTION
	1. PUMP INSTALLATION
		1. Comply with HI 1.4.
		2. Install pumps with access for periodic maintenance including removal of motors, impellers, couplings, and accessories.
		3. Independently support pumps and piping so weight of piping is not supported by pumps and weight of pumps is not supported by piping.
		4. Install continuous-thread hanger rods and spring hangers with vertical-limit stop of sufficient size to support pump weight. Vibration isolation devices are specified in Division 23 Section "Mechanical Vibration and Seismic Controls." Fabricate brackets or supports as required. Hanger and support materials are specified in Division 23 Section "Hangers and Supports."
		5. Suspend vertically mounted, in-line centrifugal pumps independent of piping. Install pumps with motor and pump shafts vertical. Use continuous-thread hanger rods and spring hangers with vertical-limit stop of sufficient size to support pump weight. Vibration isolation devices are specified in Division 23 Section "Mechanical Vibration and Seismic Controls." Hanger and support materials are specified in Division 23 Section "Hangers and Supports."
		6. Set base-mounted pumps on concrete foundation. Disconnect coupling before setting. Do not reconnect couplings until alignment procedure is complete.
			1. Support pump baseplate on rectangular metal blocks and shims, or on metal wedges with small taper, at points near foundation bolts to provide a gap of 3/4 to 1-1/2 inches between pump base and foundation for grouting.
			2. Adjust metal supports or wedges until pump and driver shafts are level. Check coupling faces and suction and discharge flanges of pump to verify that they are level and plumb.
	2. ALIGNMENT
		1. Align pump and motor shafts and piping connections after setting on foundation, grout has been set and foundation bolts have been tightened, and piping connections have been made.
		2. Comply with pump and coupling manufacturers' written instructions.
		3. Adjust pump and motor shafts for angular and offset alignment by methods specified in HI 1.1-1.5, "Centrifugal Pumps for Nomenclature, Definitions, Application and Operation."
		4. After alignment is correct, tighten foundation bolts evenly but not too firmly. Completely fill baseplate with nonshrink, nonmetallic grout while metal blocks and shims or wedges are in place. After grout has cured, fully tighten foundation bolts.
	3. CONNECTIONS
		1. Piping installation requirements are specified in other Division 22 and 23 Sections. Drawings indicate general arrangement of piping, fittings, and specialties.
		2. Install piping adjacent to machine to allow service and maintenance.
		3. Connect piping to pumps. Install valves that are same size as piping connected to pumps.
		4. Install suction and discharge pipe sizes equal to or greater than diameter of pump nozzles.
		5. Install check valve and throttling or triple-duty valve on discharge side of pumps.
		6. Install Y-type strainer or suction diffuser and shutoff valve on suction side of pumps.
		7. Install flexible connectors on suction and discharge sides of base-mounted pumps between pump casing and valves.
		8. Install pressure gages on pump suction and discharge, at integral pressure-gage tapping, or install single gage with multiple input selector valve.
		9. Ground equipment according to Division 26 Section "Grounding and Bonding."
		10. Connect wiring according to Division 26 Section "Conductors and Cables."

END OF SECTION

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