SECTION 15181 - HYDRONIC SPECIALTIES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Multi-Purpose Tank buffer tank, air separator, and hydraulic decoupler
- B. Expansion tanks
- C. Pump accessories

1.2 RELATED SECTIONS

- A. Section Plumbing Piping Specialties:
- B. Section Hydronic Piping.

1.3 REFERENCES

A. ASME (BPV VIII, 1) - Boiler and Pressure Vessel Code, Section VIII, Division 1 - Rules for Construction of Pressure Vessels; The American Society of Mechanical Engineers; 2010 Edition, 2011 Addenda.

1.4 SUBMITTALS

- A. See Section 01300 Administrative Requirements, for submittal procedures.
- B. Product Data: Provide product data for manufactured products and assemblies required for this project. Include component sizes, rough-in requirements, service sizes, and finishes. Include product description, model and dimensions.
- C. All pressure vessels shall have U1 data reports signed by an inspector commissioned by the National Board of Boiler Inspectors. All pressure vessels shall be registered with the National Board. Certificates: Inspection certificates for pressure vessels from authority having jurisdiction.
- D. Manufacturer's Installation Instructions: Indicate hanging and support methods, joining procedures.
- E. Project Record Documents: Record actual locations of flow controls.
- F. Maintenance Data: Include installation instructions, assembly views, lubrication instructions, and replacement parts list.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum five years of documented experience.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Accept valves on site in shipping containers with labeling in place. Inspect for damage.
- B. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation
- C. Protect piping components from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

1.7 MAINTENANCE SERVICE

A. Contractor to furnish service and maintenance for one year from date of substantial completion.

1.8 EXTRA MATERIALS

A. See Section 01400 - Quality Requirements, for additional provisions.

PART 2 - PRODUCTS

2.1 ASME Full Bladder Type EXPANSION TANKS

A	Manufacturers:

- 1. Taco, Inc; Model CA _____: www.taco-hvac.com
- 2. ITT Bell & Gossett
- 3. Amtrol Inc
- 4. Substitutions: See Section 01600 Product Requirements.
- B. Construction: Welded steel, designed, tested and stamped in accordance with ASME (BPV code sec VIII, div 1); supplied with National Board Form U-1, rated for working pressure of 150 psi, with flexible heavy duty butyl rubber bladder. Bladder shall be able to accept the full volume of the expansion tank and shall be removable and replaceable. Bladder shall be NSF 61 rated for potable water service and shall be manufactured with FDA approved materials.
- C. Accessories: Pressure gage (field installed by others) and air-charging fitting; precharge to psi.
- D. Automatic Cold Water Fill Assembly (field installed by others): Pressure reducing valve, reduced pressure double check back flow preventer, test cocks, strainer, vacuum breaker, and valved by-pass.

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	E.	Size	e:		
		1.	Capacity:HW	CHW (acceptance volume to equal tar	ık
		2.		e equal to or greater than specified units. N	10
	F.	Hot	t Water Heating System:		
		1. 2.	Select expansion tank pressure relief va Set pressure reducing valve at psi		
	G.	Chi	illed Water System:		
		1. 2.	Select expansion tank pressure relief va Set pressure reducing valve at ps		
2.2		Multi-Purpose Tank - Air Separator, Buffer Tank, Hydraulic Decoupler			
	A.	Ma	nufacturers:		
		1. 2. 3.	Taco, Inc; MPT Series (size and capacit Spirotherm. Flamco	y as called for on plans)	
		4.	Substitutions: See Section 01600 - Prod	uct Requirements.	
	B.			ted of steel. It shall be designed, fabricated ar with a maximum working pressure of 125 psi	

- 270°F. Manufacturer shall be holder of ASME U stamp. Manufacturer to have optional 250 psi and 150 psi ASME units available. The volume of the vessel and the system connections sizes shall be as called out on the schedule.
- C. The pressure vessel shall consist of four system connections that are arranged on the tank in a manner that hydraulically decouples the central plant from the secondary distribution system.
- D. All units with 2" and larger connections sizes shall be provided with flanged connections as standard. Both inlet and outlet to be in the same horizontal and vertical planes. With the four 3/4" system connections sensing ports installed to allow for pressure and temperature monitoring of the central chilled/hot water plant. [option]
- E. The air removal device shall be equipped with a brass conical shaped air venting chamber designed to minimize system fluid from fouling the venting assembly. The air vent shall be able to be closed to allow flushing and purging of dirt via side port without dirt passing through vent on initial system fill.
- F. A brass flushing cock shall be located on the side of each separator to facilitate system fast-fill and removal of the floating impurities from the air system interface within the separator.

G. A full port blow down valve shall be provided by the unit manufacturer on the bottom of each unit to allow blow down and cleaning. On all units the blow down valve shall be 2".

2.3 PUMP ACCESSORIES

- A. Pump discharge multi-purpose valves: All pumps shall be fitted with a discharge multi-purpose balancing valve or other means of providing system balance, isolation, and check feature for reverse flow. The valve shall be straight or angle pattern and shall be field convertible between the two. The valve shall be ductile iron and rated for 250 psi working pressure for all jobs. The valve flanges shall be matched to suit the working pressure of the piping components on the job; either 125 psi or 250 psi. The valve shall include the following components; non-slam check valve with spring-loaded bronze disc and seat, stainless steel stem, and calibrated adjustment permitting flow regulation. Valve shall be serviceable under full system pressure. The valve shall be a Taco model MPV Plus Two multi-purpose valve or equivalent.
- B. Pump inlet guide fitting: All pump suctions to be fitted with a multifunction inlet guide fitting equal to that as manufactured by Taco, Inc. The suction guide body and cover plate shall be ductile iron and be rated for 250 psi for all jobs. The guide flanges shall be matched to suit the working pressure of the piping components on the job; either 125 psi or 250 psi. The suction guide shall include the following components; full length S.S. straightening vanes, permanent S.S. strainer, disposable 16 mesh bronze start up strainer, blow down ports, and metering ports. For those pumps where an inlet guide fitting is not installed, there should be five pipe diameters of straight undisturbed flow going into the pump suction. The fitting shall be a Taco model SD inlet suction elbow or equivalent.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install specialties in accordance with manufacturer's instructions.
- B. Where large air quantities can accumulate, provide enlarged air collection standpipes.
- C. Provide manual air vents at system high points and as indicated.
- D. For automatic air vents in ceiling spaces or other concealed locations, provide vent tubing to nearest drain.
- E. Air separator and expansion tank to be installed on the suction side of the system pumps. Expansion tank to be tied into system piping in close proximity to air separator and system fill line.
- F. Provide valved drain and hose connection on strainer blow down connection.
- G. Provide pump suction fitting on suction side of base mounted centrifugal pumps where indicated. Remove temporary strainers after cleaning systems.

- H. Provide combination pump discharge valve on discharge side of base mounted centrifugal pumps where indicated.
- I. Support pump fittings with floor mounted pipe and flange supports.
- J. Provide radiator valves on water inlet to terminal heating units such as radiation, unit heaters, and fan coil units.
- K. Provide radiator balancing valves on water outlet from terminal heating units such as radiation, unit heaters, and fan coil units.
- L. Provide relief valves on pressure tanks, low pressure side of reducing valves, heat exchangers, and expansion tanks.
- M. Select system relief valve capacity so that it is greater than make-up pressure reducing valve capacity. Select equipment relief valve capacity to exceed rating of connected equipment.
- N. Pipe relief valve outlet to nearest floor drain.
- O. Where one line vents several relief valves, make cross sectional area equal to sum of individual vent areas.
- P. Clean and flush glycol system before adding glycol solution. Refer to Section 15185.
- Q. Feed glycol solution to system through make-up line with pressure regulator, venting system high points. Set to fill at ___ psi .
- R. Perform tests determining strength of glycol and water solution and submit written test results.

END OF SECTION 15181