SECTION 21 05 00

BASIC MECHANICAL MATERIALS AND METHODS FOR FIRE PROTECTION

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\*\* NOTE TO SPECIFIER \*\* Zurn Industries LLC; Engineered Water Solutions.
This section is based on the products of Zurn Industries LLC, which is located at:
511 W. Freshwater Way
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Email: [request info (zurn-info@zurn.com)](https://admin.arcat.com/users.pl?action=UserEmail&company=Zurn+Industries+LLC&coid=50102&rep=&fax=&message=RE:%20Spec%20Question%20(13910zur):%20%20&mf=)
Web: <http://www.zurn.com>

 [ [Click Here](https://www.arcat.com/arcatcos/cos50/arc50102.html) ] for additional information.

Zurn Engineered Water Solutions' is a recognized leader in commercial, municipal, and industrial markets. Zurn manufactures the largest breadth of engineered water solutions in the industry, including a wide spectrum of sustainable plumbing products.
Zurn delivers total building solutions for new construction and retrofit applications that enhance any building's environment.
Knowledge - Technically competent factory field team and rep network.
Reliability - innovative, value-add designs are focused on the end user and installer to provide ease of installation and low life-cycle costs.
Serviceability - with over 50 distribution centers across the U.S. and in all major markets, you can count on getting product when you need it!
Accountability and Service - One company to provide a total building solution for drainage and point-of-use water control products.
Plumbing fixtures listed in this specification may fall under jurisdiction of the Federal Reduction of Lead in Drinking Water Act (42 USC 300G). Effective January 4, 2014: Wetted surfaces of valves, fittings or fixtures contacting potable water must have a weighted-average lead content of no more than 0.25 percent. The specifier should be aware of requirements by authorities having jurisdiction and specify lead free products when necessary. For additional information online: [www.zurn.com/leadfree](http://www.zurn.com/leadfree).

1. GENERAL
	1. SECTION INCLUDES:

\*\* NOTE TO SPECIFIER \*\* Delete items below not required for project.

* + 1. Iron butterfly valves with indicators.
		2. Check valves.
		3. Bronze OS&Y gate valves.
		4. Iron OS&Y gate valves.
		5. NRS gate valves.
	1. RELATED SECTIONS

\*\* NOTE TO SPECIFIER \*\* Delete any sections below not relevant to this project; add others as required.

* + 1. Section 22 14 13 - Facility Storm Drainage Piping.
	1. REFERENCES

\*\* NOTE TO SPECIFIER \*\* Delete references from the list below that are not actually required by the text of the edited section.

* + 1. American Society of Mechanical Engineers (ASME):
			1. ASME B1.20.1 for threads for threaded-end valves.
			2. ASME B16.1 for flanges on iron valves.
		2. American Water Works Association (AWWA):
			1. AWWA C509 - Resilient-Seated Gate Valves for Water Supply Service.
			2. AWWA C550 - Protective Interior Coating for Valves and Hydrants.
			3. AWWA C606 - Grooved and Shouldered Joints.
			4. AWWA C700 - Cold-Water Meters--Displacement Type, Bronze Main Case.
		3. ASTM International (ASTM):
			1. ASTM A276 - Standard Specification for Stainless Steel Bars and Shapes.
			2. ASTM A536 - Standard Specification for Ductile Iron Castings.
			3. ASTM B16 - Standard Specification for Free-Cutting Brass Rod, Bar and Shapes for Use in Screw Machines.
			4. ASTM B150 - Standard Specification for Aluminum Bronze Rod, Bar, and Shapes.
			5. ASTM B584 - Standard Specification for Copper Alloy Sand Castings for General Applications.
		4. FM Global:
			1. Class Number 1045 Approval Standard for Waterflow Detector Check Valves.
			2. Class Number 1112 Indicating Valves (Butterfly or Ball Type).
			3. Class Number 1120 and 1130 Fire Service Water Control Valves (OS&Y and NRS Type Gate Valves).
		5. NFPA: National Fire Protection Association:
			1. NFPA 24 - Standard for the Installation of Private Fire Service Mains and Their Appurtenances; for valves.
		6. National Science Foundation:
			1. NSF/ANSI 372 - Drinking Water System Components - Lead Content.
		7. UL Listed:
			1. UL 262 - Gate Valves for Fire-Protection Service.
			2. UL 312 - Check Valves for Fire-Protection Service.
			3. UL 1091 - Butterfly Valves for Fire-Protection Service.
	1. DEFINITIONS
		1. CFM: Cubic feet per minute.
		2. GPM: Gallons per minute.
		3. NRS: Nonrising stem.
		4. OS&Y: Outside screw and yoke.
		5. SBR: Styrene-butadiene rubber.
	2. SUBMITTALS
		1. Submit under provisions of Section 01 30 00 - Administrative Requirements.
		2. Product Data: Each valve type.
	3. QUALITY ASSURANCE
		1. Manufacturer Qualifications:
			1. ISO 9001 registered.
			2. Minimum 5 years manufacturing similar products.
		2. Installer: Minimum 2 years installing similar products.
		3. Source Limitations: Obtain valves for each valve type from single manufacturer.
	4. DELIVERY, STORAGE, AND HANDLING
		1. Deliver and store products in manufacturer's unopened packaging bearing the brand name and manufacturer's identification until ready for installation.
			1. Protect internal parts, valve ends, and specialties against corrosion, dirt, and damage.
			2. Store valves set in open position.
			3. Storage:
				1. Indoors: Higher than ambient dew point temperature.
				2. Outdoors: Watertight enclosures off ground.
		2. Handling: Comply with manufacturer's recommendations. Avoid damaging components.
			1. Large Valves: Operating handles or stems are not rigging points for slings.
1. PRODUCTS
	1. MANUFACTURERS
		1. Acceptable Manufacturer: Zurn Industries LLC, which is located at: 511 W. Freshwater Way; Milwaukee, WI 53204; Toll Free Tel: 855-663-9876; Email: [request info (zurn-info@zurn.com)](https://admin.arcat.com/users.pl?action=UserEmail&company=Zurn+Industries+LLC&coid=50102&rep=&fax=&message=RE:%20Spec%20Question%20(13910zur):%20%20&mf=); Web: <http://www.zurn.com>

\*\* NOTE TO SPECIFIER \*\* Delete one of the following two paragraphs; coordinate with requirements of Division 1 section on product options and substitutions.

* + 1. Substitutions: Not permitted.
		2. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.
	1. GENERAL REQUIREMENTS

\*\* NOTE TO SPECIFIER \*\* Depending on authorities having jurisdiction, "UL List" or "FM Global Approved" or both for valves specified in this section may be required. Delete or retain the following two paragraphs accordingly.
\*\* NOTE TO SPECIFIER \*\* The minimum pressure rating for Fire-Protection valves is 175 psi (1030 kPa), or 150 psi (1200 kPa) for valves NPS 12 (DN 300) or larger. Revise pressure ratings if higher ratings are required. Coordinate pressure ratings with Drawings and system requirements.

* + 1. Pressure Ratings: Not lower than minimum pressure rating for valves or system pressures.
		2. Sizes: Equal to upstream piping unless indicated otherwise.
		3. Actuators:
			1. Quarter-Turn Valves: Worm-gear and handwheel combination.
			2. Non-Quarter-Turn Valves: Handwheel.
			3. Quarter-Turn Trim and Drain Valves (through NPS 2 (DN 50): Handlever.
	1. IRON BUTTERFLY VALVES WITH INDICATORS
		1. Basis-of-Design Product: Zurn Industries, LLC; Wilkins; Model 49 (Lead Free), NPS 2-1/2 (DN 65) through NPS 10 (DN 250).
			1. Standards:
				1. ASME B16.1.
				2. ASTM A536.
				3. ASTM B584.
				4. AWWA C550.
				5. AWWA C606.
				6. FM Global standard for indicating valves, (butterfly or ball type), Class Number 1112.
				7. NSF/ANSI 372.
				8. UL 1091 - Butterfly Valves for Fire-Protection Service.
			2. Maximum Pressure Rating: 175 psi (1200 kPa).
			3. Body Material: Ductile Iron ASTM A536.
			4. Body Coating: AWWA Fusion bond epoxy.
			5. Seat Material: EPDM.
			6. Stem: Bronze ASTM B584.
			7. Stem Bearings: Teflon impregnated fiberglass with stainless steel backing.
			8. Disc: Ductile Iron ASTM A536.
			9. Disc Coating:
				1. EPDM encapsulation.
			10. Actuator: Weatherproof for indoor or outdoor use.
				1. Worm gear, handwheel combination.
				2. Traveling nut, 416 Stainless Steel.

\*\* NOTE TO SPECIFIER \*\* Delete subparagraph below if switch is specified elsewhere.

* + - 1. Supervisory Switches: One single pole and one double throw, pre-wired.
				1. Rating:

11 Amps at 125/250 VAC 60 Hz.

0.25 Amps at 250 VDC, 0.50A @ 125VDC.

* + - 1. End Connections:
				1. Grooved-ends; AWWA C606 (NPS / DN): \_\_\_\_\_\_.
				2. Flanged: ASME B16.1 Class 125 (NPS / DN): \_\_\_\_\_\_.
	1. CENTER-GUIDED, SPRING-LOADED DETECTOR CHECK VALVES
		1. Basis-of-Design Product: Zurn Industries, LLC; Wilkins; Model 310, NPS 4 (DN 100), NPS 6 (DN 150), and NPS 8 (DN 200).
			1. Standards:
				1. ASME B16.1.
				2. ASTM A536.
				3. AWWA C550.
				4. AWWA C606.
				5. AWWA C700.
				6. NSF/ANSI 372.
				7. FM Global standard for check valves, Class Number 1045.
				8. UL 312 - Check Valves for Fire-Protection Service.
			2. Type: Center guided detector check valve.
			3. Maximum Pressure Rating: 175 psi (1200 kPa).
			4. Body Material: Ductile Iron ASTM A536 Grade 4.
				1. Coating: FDA approved fusion epoxy resin.
			5. Internal Components: NSF Listed.
				1. Stainless steel 300 series.
				2. NORYL.
			6. Access Covers: Ductile Iron ASTM A536 Grade 4.
			7. Elastomers: EPDM or Buna Nitrile; FDA approved.
			8. Hinge Spring: Stainless steel 300 series.

\*\* NOTE TO SPECIFIER \*\* Standard By-Pass flow assembly is Model 910XL

* + - 1. By-Pass BackFlow Assembly: Include threaded bypass taps in inlet and outlet for bypass meter connection.

\*\* NOTE TO SPECIFIER \*\* Valve may be purchased without a meter. If a meter is required choose one of the two meters listed below.

* + - * 1. GPM Meter.
				2. CFM Meter.

\*\* NOTE TO SPECIFIER \*\* Check valve can be purchased with our without gate valves.

* + - 1. Gate Valves:
				1. NRS.
				2. OS&Y.
			2. End Connections:
				1. Flanged, ASME B16.1 Class 125 (NPS / DN): \_\_\_\_\_\_.
				2. Grooved ends, AWWA C606 (NPS / DN): \_\_\_\_\_\_.

\*\* NOTE TO SPECIFIER \*\* Delete water meter below if not necessary.

* + - 1. Water Meter: AWWA C700, disc type, at least one-fourth size of detector check valve. Include meter, bypass piping, gate valves, check valve, and connections to detector check valve.
	1. BRONZE OS&Y GATE VALVES
		1. Basis-of-Design Product: Zurn Industries, LLC; Wilkins; Model 48OSYBR, NPS 3/4 through NPS 2 (DN 20 through DN 50).
			1. Standard:
				1. ASME B1.20.1.
				2. ASTM B16.
				3. ASTM B584.
				4. FM Global Standard Class 1120 and 1130 for fire-service water control valves (OS&Y- and NRS-type gate valves).
				5. UL 262 - Gate Valves for Fire-Protection Service.
			2. Maximum Pressure Rating: 200 psi (1379 kPa).
			3. Body and Bonnet: Cast Bronze, ASTM B584.
			4. Wedge: Cast Bronze, ASTM B584.
			5. Stem: Brass, ASTM B16.
			6. Packing: Non-asbestos graphite.
			7. Handwheel: Iron.

\*\* NOTE TO SPECIFIER \*\* Delete subparagraph below if switch is specified elsewhere.

* + - 1. Tamper Switch: External.
			2. End Connections: Threaded, ASME B1.20.1 (NPS / DN): \_\_\_\_\_\_.
	1. IRON OS&Y GATE VALVES
		1. Basis-of-Design Product: Zurn Industries, LLC; Wilkins; Model 48OSY (Lead Free), NPS 2-1/2 through NPS 12 (DN 65 through DN 300).
			1. Standards:
				1. ASME B16.1.
				2. ASTM A276.
				3. ASTM A536.
				4. ASTM B150.
				5. ASTM B584.
				6. AWWA C509
				7. AWWA C550.
				8. AWWA C606.
				9. FM Global Standard Class 1120 and 1130 for fire-service water control valves (OS&Y- and NRS-type gate valves).
				10. NSF/ANSI 372.
				11. UL 262 - Gate Valves for Fire-Protection Service.
			2. Maximum Working Pressure: 250 psi (1725 kPa).
			3. Body and Bonnet: Ductile iron, ASTM A536.
				1. Coating: Fusion bond epoxy resin, AWWA C550.
			4. Wedge: Ductile iron, ASTM A536.
				1. Coating: FDA approved elastomeric.
			5. Internal Components: NSF Listed.
				1. Stainless steel ASTM A276.
				2. Brass ASTM B584.
			6. Stem:
				1. Bronze, ASTM B150.
				2. Stainless steel ASTM A276.
			7. Elastomers: EPDM, FDA Approved.
			8. Handwheel: Ductile iron, ASTM A536.

\*\* NOTE TO SPECIFIER \*\* Delete subparagraph below if switch is specified elsewhere.

* + - 1. Tamper Switch: External.
			2. End Connections:

\*\* NOTE TO SPECIFIER \*\* Flange connections are standard for this model.

* + - * 1. Flanged, ASME B16.1 Class 125 (NPS / DN): \_\_\_\_\_\_.
				2. Grooved, AWWA C606 (NPS / DN): \_\_\_\_\_\_.
				3. Flanged, ASME B16.1 Class 125 and grooved, AWWA C606 (NPS / DN): \_\_\_\_\_\_.
	1. NRS IRON GATE VALVES
		1. Basis-of-Design Product: Zurn Industries, LLC; Wilkins; Model 48 (Lead Free) NPS 2-1/2 through NPS 12 (DN 65 through DN 300).
			1. Standard:
				1. ASME B16.1.
				2. ASTM A276.
				3. ASTM A536.
				4. ASTM B150.
				5. ASTM B584.
				6. AWWA C509
				7. AWWA C550.
				8. AWWA C606.
				9. FM Global Standard Class 1120 and 1130 for fire-service water control valves (OS&Y- and NRS-type gate valves).
				10. NSF/ANSI 372.
				11. UL 262 - Gate Valves for Fire-Protection Service.
			2. Maximum Working Pressure: 250 psi (1725 kPa).
			3. Body and Bonnet: Ductile iron, ASTM A536.
				1. Coating: Fusion bond epoxy resin, AWWA C550.
			4. Wedge: Ductile iron, ASTM A536.
				1. Coating: FDA approved elastomeric.
			5. Internal Components: NSF Listed.
				1. Stainless steel ASTM A276.
				2. Brass ASTM B584.
			6. Stem:
				1. Bronze, ASTM B150.
				2. Stainless steel ASTM A276.
			7. Elastomers: EPDM, FDA Approved.
			8. Handwheel: Ductile iron, ASTM A536.
			9. End Connections:

\*\* NOTE TO SPECIFIER \*\* Flange connections are standard for this model.

* + - * 1. Flanged, ASME B16.1 Class 125 (NPS / DN): \_\_\_\_\_\_.
				2. Grooved, AWWA C606 (NPS / DN): \_\_\_\_\_\_.
				3. Flanged, ASME B16.1 Class 125 and grooved, AWWA C606.
1. EXECUTION
	1. EXAMINATION
		1. Verification of Conditions: Examine areas and conditions under which Work is to be performed and identify conditions that may be detrimental to proper or timely completion.
		2. Valve interiors: Clean and free of foreign matter, and corrosion. Remove packing used to prevent disc movement.
			1. Operate valves from fully open to fully closed positions.
			2. Verify guides and seats are clean and free of foreign matter, and corrosion.
		3. Valve Threads: Inspect valve and mating pipe for form and cleanliness.
		4. Mating valve flange faces: inspect for conditions that may cause leaking.
			1. Bolting: Proper size, length, and material.
			2. Gaskets: Proper size and material composition suitable for application; defect and damage free.
		5. Replace defective valves with new valves.
		6. Do not proceed until unsatisfactory conditions have been corrected.
	2. INSTALLATION
		1. Comply with requirements in the following Sections for specific valve installation requirements and applications:
			1. Section 22 14 13 - Facility Storm Drainage Piping "Water-Based Fire-Suppression Systems" for application of valves in fire-suppression water-service piping outside the building.
		2. Install products in accordance with manufacturer's instructions, approved submittals, and in proper relationship with adjacent construction.
			1. Valves in horizontal piping to have stems at or above pipe center.
			2. Valves to be positioned allowing full stem movement.
			3. Listed fire-protection shutoff valves supervised-open, located to control sources of water supply except from fire-department connections.
			4. Check valve in each water-supply connection.
				1. Set valve to allow minimal water flow through bypass meter when major water flow is required.
				2. Install backflow preventers instead of check valves in potable-water-supply sources.
			5. Valves with threaded connections to have unions at each piece of equipment.
				1. Arrange to allow easy access, service, maintenance, and equipment removal without system shutdown. Provide separate support where necessary.
			6. Valve tags and signage:
				1. Comply with Section - "Identification for Fire-Suppression Piping and Equipment" for valve tags, schedules and signs on surfaces concealing valves.
				2. Comply with NFPA 24 as it applies to the piping system in which valves are installed.
				3. Install permanent identification signs indicating the portion of system controlled by each valve.
	3. CLEANING
		1. Repair or replace items damaged prior to Substantial Completion.

END OF SECTION