

PART 1 - GENERAL

1.1 REFERENCES

- .1 American National Standards Institute (ANSI)/American Society of Mechanical Engineers (ASME)
  - .1 ASME B16, Fittings and Valves Package.
  - .2 ASME B16.5-2009, Pipe Flanges and Flanged Fittings: NPS ½ through NPS 24 Metric/Inch Standard.
  - .3 ANSI/ASME B16.10-2009, Face-to-Face and End-to-End Dimensions Valves.
  - .4 ANSI/ASME B16.25-2007, Buttwelding Ends.
  - .5 ANSI/ASME B16.34-2009, Valves Flanged, Threaded and Welding End. Includes Supplement (2010).
- .2 American Petroleum Institute (API)
  - .1 API STD 598-2009, Valve Inspection and Testing.
- .3 Canada Green Building Council (CaGBC)
  - .1 LEED Canada 2009 for Design and Construction-2010, LEED Canada 2009 for Design and Construction Leadership in Energy and Environmental Design Green Building Rating System Reference Guide.
- .4 Green Seal Environmental Standards (GS)
  - .1 GS-11-11, Standard for Paints and Coatings.
  - .2 GS-36-11, Standard for Commercial Adhesives.
- .5 Manufacturers Standardization Society of the Valve and Fittings Industry (MSS)
  - .1 MSS SP-25-2008, Standard Marking System for Valves, Fittings, Flanges and Unions.
  - .2 MSS SP-61-2009, Pressure Testing of Valves.

1.2 ACTION AND  
INFORMATIONAL  
SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

1.2 ACTION AND  
INFORMATIONAL  
SUBMITTALS  
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- .2 Product Data:
  - .1 Submit manufacturer's instructions, printed product literature and data sheets for each valve and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Shop Drawings:
  - .1 Submit drawings stamped and signed by professional engineer registered or licensed in the Province of Newfoundland and Labrador, Canada.
- .4 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
- .5 Sustainable Design Submittals:
  - .1 LEED Canada submittals: in accordance with Section 01 35 21 - LEED Requirements.
  - .2 Building Energy and Water Consumption: submit Measurement and Verification Plan following IPMVP for monitoring end-uses including but not limited to:
    - .1 Air heat recovery cycle.
    - .2 Building-related process energy systems and equipment.
    - .3 Indoor water systems.
  - .3 Construction Waste Management:
    - .1 Submit project Waste Management Plan highlighting recycling and salvage requirements.
    - .2 Submit calculations on end-of-project recycling rates, salvage rates, and landfill rates demonstrating that 75% of construction wastes were recycled or salvaged.
  - .4 Regional Materials: submit evidence that project incorporates 30% of regional materials and products, showing their cost, distance from project to furthest site of extraction or manufacture, and total cost of materials for project.

1.3 CLOSEOUT  
SUBMITTALS

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: submit operation and maintenance data for valves for incorporation into manual.

1.4 DELIVERY,  
STORAGE AND  
HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
  - .1 Store materials indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Store and protect valves from nicks, scratches, and blemishes.
  - .3 Replace defective or damaged materials with new.
- .4 Develop Construction Waste Management Plan related to Work of this Section and in accordance with Section 01 35 21 - LEED Requirements.
- .5 Packaging Waste Management: remove for reuse or return of pallets, crates, padding, banding, and packaging materials as specified in Construction Waste Management Plan in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal and Section 01 35 21 - LEED Requirements.

1.5 MAINTENANCE  
MATERIAL SUBMITTALS

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Extra Stock Materials:

1.5 MAINTENANCE  
MATERIAL SUBMITTALS  
(Cont'd)

- .3 Furnish following spare parts:
- .1 Valve seats: one for every 10 valves each size, minimum 1.
  - .2 Discs: one for every 10 valves, each size, minimum 1.
  - .3 Stem packing: one for every 10 valves, each size. Minimum 1.
  - .4 Valve handles: 2 of each size.
  - .5 Gaskets for flanges: one for every 10 flanged joints.

PART 2 - PRODUCTS

2.1 MATERIAL

- .1 Valves:
- .1 To be of single manufacturer.
  - .2 Test valves individually.
- .2 Requirements common to valves, unless specified otherwise:
- .1 Pressure-temperature ratings: to ANSI B16.34.
  - .2 Inspections and tests: to API 598.
  - .3 Pressure testing: to MSS SP-61.
  - .4 Flanged valves:
    - .1 Face-to-face dimensions: to ANSI B16.10.
    - .2 Flange dimensions: to ANSI B16.5 with 1.6 mm raised face.
  - .5 Butt-weld valves:
    - .1 End-to-end dimensions: to ANSI B16.10.
    - .2 End dimensions: to ANSI B16.25 bored for standard pipe schedule.
  - .6 Handwheel: non-heating type with raised rim of die-cast aluminum alloy to ASTM B 85 or malleable iron to ASTM A 49.
  - .7 Markings: to MSS SP-25.
  - .8 Identification:
    - .1 Plate showing catalogue number, size, material of body disc, stem seat, fluid, pressure-temperature rating.
    - .2 Body markings: manufacturer, size, primary service rating, material symbol.
  - .9 CRN registration number required for all products.

- 2.2 GATE VALVES .1 NPS 2 1/2 - 12, rising stem, OS&Y, solid flexible wedge disc, flanged butt-weld ends, Class 150 300:
- .1 Body and multiple-bolted integral yoke and bonnet: cast steel to ASTM A 216/A 216M WCB, with full length disc guides designed to ensure correct re-assembly.
  - .2 Body/bonnet joint: flat face with corrugated metallic gasket.
  - .3 Bonnet studs: to ASTM A 193/A 193M Type B7.
  - .4 Bonnet nuts: to ASTM A 194/A 194M Type 2H.
  - .5 Stuffing box: including non-galling two-piece ball jointed packing gland, with swing-type eye bolts and nuts.
  - .6 Gland packing: containing corrosion inhibitor to prevent stem pitting.
  - .7 Yoke sleeve: Ni-Resist, minimum melting point above 954 degrees C.
  - .8 Hydraulic grease fitting: for lubrication of yoke sleeve bearing surfaces.
  - .9 Disc: with disc stem ring to connect to stem, guided throughout its travel.
    - .1 NPS 2 1/2 - 6: solid corrosion and heat resistant 13% chromium steel with minimum hardness of 350 HB.
  - .10 Seat ring: seamless carbon steel with hard-faced cobalt-chromium-tungsten alloy seating surface, slipped in, seal welded, ground to match disc.
  - .11 Stem: heat treated corrosion and heat resistant 13% chromium steel with accurately-cut precision-machined Acme or 60 degrees V threads, top screwed for handwheel nut, T-head disc-stem connection.
  - .12 Operator: see elsewhere in this Section.

- 2.3 VALVE OPERATORS .1 Handwheel: on all valves.
- .2 Handwheel with chain operators: on valves installed more than 2400 mm above floor in boiler rooms and mechanical equipment rooms.

- 2.4 CHECK VALVES .1 NPS 2 1/2 and over, butt-weld ends, Class 150: swing check.
- .1 Body and multiple-bolted cap: cast steel to ASTM A 216/A 216M WCB.
  - .2 Cap studs: to ASTM A 193/A 193M Type B7.
  - .3 Cap nuts: to ASTM A 194/A 194M Type 2H.
  - .4 Body/cap joint: male-female face with corrugated metallic gasket.
  - .5 Disc: heat treated corrosion and heat resistant 13% chromium steel.
  - .6 Seat rings: heat treated corrosion and heat resistant 13% chromium steel, slipped in, seal welded, ground to match disc.
  - .7 Hinge: ASTM A 182/A 182M.
  - .8 Hinge pin: ASTM A 182/A 182M.
  - .9 Hinge pin plugs: ASTM A 182/A 182M.

- 2.5 SILENT CHECK VALVES .1 Construction:
- .1 Body: cast steel to with integral seat.
  - .2 Pressure rating: Class 125.
  - .3 Connections: flanged ends.
  - .4 Double bronze disc with SS seat and stem. Renewable disc, seat, stem and spring. Spring rating must match system design for silent operation and installation.
  - .5 Stainless steel spring, heavy duty.
  - .6 Seat: regrindable.

### PART 3 - EXECUTION

- 3.1 EXAMINATION .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for installation in accordance with manufacturer's written instructions.
- .1 Visually inspect substrate in presence of Departmental Representative.
  - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
  - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

- 3.2 INSTALLATION .1 Install in accordance with manufacturer's recommendations in upright position with stem above horizontal.
- 3.3 COMMISSIONING .1 As part of commissioning activities, develop schedule of valves and record thereon identifier, location, service, purchase order number and date, manufacturer, identification data specified above.
- 3.4 CLEANING .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.  
.1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
- .3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal and Section 01 35 21 - LEED Requirements.  
.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.
- 3.5 PROTECTION .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by cast steel valve installation.