PART 1 - GENERAL

1.1 REFERENCES

.1 American Society of Mechanical Engineers (ASME)
.1 ASME B16.1-05, Cast Iron Pipe Flanges and Flanged Fittings.

.2 ASTM International Inc.
.1 ASTM A 49-01(2006), Standard Specification for Heat-Treated Carbon Steel Joint Bars.
.2 ASTM A 126-04, Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings.
.3 ASTM A 536-84(2004)e1, Standard Specification for Ductile Iron Castings.
.4 ASTM B 61-08, Standard Specification for Steam or Valve Bronze Castings.
.5 ASTM B 62-02, Standard Specification for Composition Bronze or Ounce Metal Castings.
.6 ASTM B 85/B 85M-08, Standard Specification for Aluminum-Alloy Die Castings.
.7 ASTM B 209-07, Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

.3 Canada Green Building Council (CaGBC)
.1 LEED Canada-NC Version -2009, LEED (Leadership in Energy and Environmental Design): Green Building Rating System Reference Package For New Construction and Major Renovations.

.4 Manufacturers Standardization Society of the Valve and Fittings Industry, Inc. (MSS)
.1 MSS SP-61-03, Pressure Testing of Steel Valves.
.2 MSS SP-70-06, Grey Iron Gate Valves, Flanged and Threaded Ends.
.3 MSS SP-71-05, Grey Iron Swing Check Valves, Flanged and Threaded Ends.
.4 MSS SP-82-1992, Valve Pressure Testing Methods.
.5 MSS SP-85-2002, Cast Iron Globe and Angle Valves, Flanged and Threaded Ends.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:
.1 Provide manufacturer's printed product literature, specifications and datasheets for valves and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Shop Drawings:
.1 Provide drawings stamped and signed by professional engineer registered or licensed in Province of Newfoundland and Labrador, Canada.

.4 Sustainable Design Submittals:
.1 LEED Submittals: in accordance with Section 01 35 21 - LEED Requirements.

1.3 CLOSEOUT SUBMITTALS

.1 Submit maintenance data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

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:
.1 Deliver materials to site in original factory packaging, labelled with manufacturer's name, address.

.3 Packaging Waste Management: remove for reuse or return of pallets crates padding and packaging materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

1.5 MAINTENANCE MATERIAL SUBMITTALS

.1 Extra Materials/Spare Parts:

.2 Furnish following spare parts:
.1 Valve seats: one for every 10 valves each size, minimum 1.
.2 Discs: one for every 10valves, 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.

.3 Tools:
.1 Furnish special tools for maintenance of systems and equipment.
.2 Include following:
.1 Lubricant gun for expansion joints.

PART 2 - PRODUCTS

2.1 MATERIAL

.1 Sustainable Requirements:
.1 Use least toxic sealants, adhesives, sealers and finishes necessary to comply with the requirements of the project.

.2 Valves:
.1 Except for specialty valves, to be of single manufacturer.

.3 Standard specifications:
.1 Gate valves: MSS SP-70.
.2 Globe valves: MSS SP-85.
.3 Check valves: MSS SP-71.

.4 Requirements common to valves, unless specified otherwise:
.1 Body, bonnet: cast iron to ASTM B 209 Class B ductile iron to ASTM A 536 Grade 65-45-12.
.2 Connections: flanged ends with 2 mm raised face with serrated finish to ANSI B16.1.
.3 Inspection and pressure testing: to MSS SP-82.
.4 Bonnet gasket: non-asbestos.

2.1 MATERIAL (Cont'd)

.4 (Cont'd)

.5 Stem: to have precision-machined Acme or 60 degrees V threads, top screwed for handwheel nut.

.6 Stuffing box: non-galling two-piece ball-jointed packing gland, gland bolts and nuts.

.7 Gland packing: non-asbestos.

.8 Handwheel: die-cast aluminum alloy to ASTM B 85/B 85M or malleable iron to ASTM A 49. Nut of bronze to ASTM B 62.

.9 Identification tag: with catalogue number, size, other pertinent data.

.5 All products to have CRN registration numbers.

2.2 GATE VALVES

.1 NPS 2 1/2 - 8, non rising stem, inside screw, bronze trim, solid wedge disc:

.1 Body and multiple-bolted bonnet: with bosses in body and bonnet for taps and drains, full length disc guides designed to ensure correct re-assembly, Class 125.

.2 Disc: solid offset taper wedge, bronze to ASTM B 62.

.3 Seat rings: renewable bronze to ASTM B 62, screwed into body.

.4 Stem: bronze to ASTM B 62.

2.3 UNDERWRITERS APPROVED GATE VALVE

.1 NPS 2 1/2 - 14, OS&Y:

.1 Approvals: UL and FM approved for fire service.

.2 UL and FM Label: on valve yoke.

.3 Body, Bonnet: cast iron to ASTM A 126 Class B. Wall thicknesses to ANSI B16.1 and ULC C-262 (B) ductile iron to ASTM A 536 Grade 65-45-12.

.4 Bonnet bushing, yoke sleeve: bronze, to FM requirements.

.5 Packing gland: bronze.

.6 Stem: manganese bronze. Diameter to ULC C-262 (B). Brass, ASTM B 16.

.7 Stuffing box dimensions, gland bolt diameter: to ULC C-262 (B).

.8 Bosses for bypass valve, drain: on NPS 4 and over.

2.3 UNDERWRITERS APPROVED GATE VALVE (Cont'd)

.1 (Cont'd)
.9 Disc: solid taper wedge. Up to NPS 3: bronze. NPS 4 and over: EPDM coated cast iron with bronze disc rings.
.10 Disc seat ring: self-aligning, Milwood undercut on NPS 3 - 12.
.11 Pressure rating:
.1 NPS 2-1/2 - 12: 1.7 Mpa CWP.
.12 Operator: handwheel.
.13 Bypass: complete with union and NPS gate valve as Section 23 05 23.01 - Valves - Bronze.

2.4 VALVE OPERATORS

.1 Install valve operators as follows:
.1 Handwheel: on valves except as specified.
.2 Handwheel with chain operators: on valves installed more than 2400 mm above floor in boiler rooms and mechanical equipment rooms.

2.5 CHECK VALVES

.1 Swing check valves, Class 125:
.1 Body and bolted cover: with tapped and plugged opening on each side for hinge pin. Grooved or flanged ends: plain faced with smooth finish.
.1 Up to NPS 16: cast iron to ASTM A 126 Class B.
.2 NPS 18 and over: cast iron to ASTM A 126 Class C.
.2 Ratings:
.1 NPS 2 1/2 - 12: 860 kPa steam; 1.4 MPa CWP.
.3 Disc: rotating for extended life.
.1 Up to NPS 6: bronze to ASTM B 62 stainless steel type 316.
.4 Seat rings: renewable bronze to ASTM B 62 screwed into body.
.5 Hinge pin, bushings: renewable bronze to ASTM B 62 stainless steel.

.2 Swing check valves, NPS 2 1/2 - 8 Class 250:
.1 Body and bolted cover: cast iron to ASTM A 126 Class B with tapped and plugged opening on each side for hinge pin.

2.5 CHECK VALVES (Cont'd)

.2 (Cont'd)
.2 Flanged ends: 2 mm raised face with serrated finish.
.3 Rating: 250 psi steam; 500 psi CWP.
.4 Disc: rotating for extended life.
.1 Up to NPS 3: bronze to ASTM B 61.
.2 NPS 4 - 8: iron faced with ASTM B 61 bronze.
.5 Seat rings: renewable bronze to ASTM B 61, screwed into body.
.6 Hinge pin, bushings: renewable, bronze to ASTM B 61.
.7 Hinge: galvanized malleable iron.
.8 Identification tag: fastened to cover.

2.6 SILENT CHECK VALVES

.1 Construction:
.1 Body: malleable or ductile iron with integral seat.
.2 Pressure rating: Class 125, WP = 860 kPa.
.3 Connections: grooved ends.
.4 Disc: bronze or stainless steel renewable rotating disc.
.5 Seat: renewable, EPDM.
.6 Stainless steel spring, heavy duty.

PART 3 - EXECUTION

3.1 INSTALLATION

.1 Install rising stem valves in upright position with stem above horizontal.

3.2 CLEANING

.1 Clean in accordance with Section 01 74 11 - Cleaning.

.2 Clean installed products in accordance to manufacturer's recommendation.

.3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal 01 35 21 - LEED Requirements.

END