

PART 1 - GENERAL

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| <u>1.1 REFERENCES</u> | <ul style="list-style-type: none">.1 Canadian General Standards Board (CGSB)<ul style="list-style-type: none">.1 CAN/CGSB-1.181-99, Ready-Mixed Organic Zinc-Rich Coating..2 Green Seal Environmental Standards (GSES)<ul style="list-style-type: none">.1 Standard GS-11-2008, 2nd Edition, Environmental Standard for Paints and Coatings..3 National Fire Code of Canada (NFCC 2010).4 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards<ul style="list-style-type: none">.1 SCAQMD Rule 1113-A2007, Architectural Coatings..2 SCAQMD Rule 1168-A2005, Adhesive and Sealant Applications. |
| <u>1.2 ACTION AND INFORMATIONAL SUBMITTALS</u> | <ul style="list-style-type: none">.1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures..2 Product Data:<ul style="list-style-type: none">.1 Provide manufacturer's printed product literature, specifications and datasheets for piping and equipment and include product characteristics, performance criteria, physical size, finish and limitations. |
| <u>1.3 QUALITY ASSURANCE</u> | <ul style="list-style-type: none">.1 Sustainability Standards Certification:<ul style="list-style-type: none">.1 Low-Emitting Materials: provide listing of sealants coatings used in building, comply with VOC and chemical component limits or restriction requirements. |
| <u>1.4 DELIVERY, STORAGE AND HANDLING</u> | <ul style="list-style-type: none">.1 Deliver, store and handle materials in accordance with Section 01 10 10 - General Instructions and with manufacturer's written instructions..2 Delivery and Acceptance Requirements:<ul style="list-style-type: none">.1 Deliver materials to site in original factory packaging, labelled with manufacturer's name, address. |

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- 1.4 DELIVERY, STORAGE AND HANDLING
(Cont'd)
- .3 Packaging Waste Management: remove for reuse crates padding and packaging materials in accordance with Section 01 10 10 - General Instructions.

PART 2 - PRODUCTS

- 2.1 MATERIAL
- .1 Paint: zinc-rich to CAN/CGSB-1.181.
.1 Primers and Paints: in accordance with manufacturer's recommendations for surface conditions.
.2 Primer: maximum VOC limit 250 g/L to SCAQMD Rule 1113.
.3 Paints: maximum VOC limit 150 g/L to SCAQMD Rule 1113.
- .2 Sealants: in accordance with Section 07 92 00 - Joint Sealants.
.1 Sealants: maximum VOC limit to SCAQMD Rule 1168.
- .3 Sealants: maximum VOC limit to SCAQMD Rule 1168.
- .4 Adhesives: maximum VOC limit to SCAQMD Rule 1168.
- .5 Fire Stopping: in accordance with Section 07 84 00 - Fire Stopping.

PART 3 - EXECUTION

- 3.1 APPLICATION
- .1 Manufacturer's Instructions: comply with manufacturer's written recommendations, including product technical bulletins, handling, storage and installation instructions, and datasheets.
- 3.2 CONNECTIONS TO EQUIPMENT
- .1 In accordance with manufacturer's instructions unless otherwise indicated.
- .2 Use valves and either unions or flanges for isolation and ease of maintenance and assembly.
- .3 Use double swing joints when equipment mounted on vibration isolation and when piping subject to movement.

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- 3.3 CLEARANCES
- .1 Provide clearance around systems, equipment and components for observation of operation, inspection, servicing, maintenance and as recommended by manufacturer.
 - .2 Provide space for disassembly, removal of equipment and components as recommended by manufacturer without interrupting operation of other system, equipment, components.
- 3.4 DIELECTRIC COUPLINGS
- .1 General: compatible with system, to suit pressure rating of system.
 - .2 Locations: where dissimilar metals are joined.
 - .3 NPS 2 and under: isolating unions or bronze valves.
- 3.5 PIPEWORK INSTALLATION
- .1 Screwed fittings jointed with Teflon tape.
 - .2 Protect openings against entry of foreign material.
 - .3 Install to isolate equipment and allow removal without interrupting operation of other equipment or systems.
 - .4 Assemble piping using fittings manufactured to ANSI standards.
 - .5 Saddle type branch fittings may be used on mains if branch line is no larger than half size of main.
 - .1 Hole saw (or drill) and ream main to maintain full inside diameter of branch line prior to installing saddle.
 - .6 Install exposed piping, equipment, rectangular cleanouts and similar items parallel or perpendicular to building lines.
 - .7 Install concealed pipework to minimize furring space, maximize headroom, conserve space.
 - .8 Slope piping, except where indicated, in direction of flow for positive drainage and venting.
 - .9 Install, except where indicated, to permit separate thermal insulation of each pipe.
 - .10 Group piping wherever possible and as indicated.
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3.5 PIPEWORK
INSTALLATION
(Cont'd)

- .11 Ream pipes, remove scale and other foreign material before assembly.
- .12 Use eccentric reducers at pipe size changes to ensure positive drainage and venting.
- .13 Valves:
 - .1 Install in accessible locations.
 - .2 Remove interior parts before soldering.
 - .3 Install with stems above horizontal position unless indicated.
 - .4 Valves accessible for maintenance without removing adjacent piping.
 - .5 Use ball valves at branch take-offs for isolating purposes except where specified.

3.6 SLEEVES

- .1 General: install where pipes pass through masonry, concrete structures, fire rated assemblies, and as indicated.
- .2 Material: schedule 40 black steel pipe.
- .3 Construction: use annular fins continuously welded at mid-point at foundation walls and where sleeves extend above finished floors.
- .4 Sizes: 6 mm minimum clearance between sleeve and uninsulated pipe or between sleeve and insulation.
- .5 Installation:
 - .1 Concrete, masonry walls, concrete floors on grade: terminate flush with finished surface.
 - .2 Other floors: terminate 25 mm above finished floor.
 - .3 Before installation, paint exposed exterior surfaces with heavy application of zinc-rich paint to CAN/CGSB-1.181.
- .6 Sealing:
 - .1 Foundation walls and below grade floors: fire retardant, waterproof non-hardening mastic.
 - .2 Elsewhere:
 - .1 Provide space for firestopping.
 - .2 Maintain fire rating integrity.
 - .3 Sleeves installed for future use: fill with lime plaster or other easily removable filler.
 - .4 Ensure no contact between copper pipe or tube and sleeve.

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- 3.7 ESCUTCHEONS .1 Install on pipes passing through walls, partitions, floors, and ceilings in finished areas.
- .2 Construction: one piece type with set screws.
.1 Chrome or nickel plated brass or type 302 stainless steel..
- .3 Sizes: outside diameter to cover opening or sleeve.
.1 Inside diameter to fit around pipe or outside of insulation if so provided.
- 3.8 PREPARATION FOR FIRE STOPPING .1 Install firestopping within annular space between pipes, ducts, insulation and adjacent fire separation in accordance with Section 07 84 00 - Fire Stopping.
- .2 Uninsulated unheated pipes not subject to movement: no special preparation.
- .3 Uninsulated heated pipes subject to movement: wrap with non-combustible smooth material to permit pipe movement without damaging fires topping material or installation.
- .4 Insulated pipes and ducts: ensure integrity of insulation and vapour barriers.
- 3.9 FLUSHING OUT OF PIPING SYSTEMS .1 Before start-up, clean interior of piping systems in accordance with requirements of Section 01 10 10 - General Instructions supplemented as specified in relevant mechanical sections.
- .2 Preparatory to acceptance, clean and refurbish equipment and leave in operating condition, including replacement of filters in piping systems.
- 3.10 PRESSURE TESTING OF EQUIPMENT AND PIPEWORK .1 Advise Departmental Representative 48 hours minimum prior to performance of pressure tests.
- .2 Maintain specified test pressure without loss for 4 hours minimum unless specified for longer period of time in relevant mechanical sections.
- .3 Prior to tests, isolate equipment and other parts which are not designed to withstand test pressure or media.
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| <u>3.10 PRESSURE
TESTING OF
EQUIPMENT AND
PIPEWORK
(Cont'd)</u> | .4 | Conduct tests in presence of Departmental Representative. |
| | .5 | Pay costs for repairs or replacement, retesting, and making good. Departmental Representative to determine whether repair or replacement is appropriate. |
| | .6 | Insulate or conceal work only after approval and certification of tests by Departmental Representative. |
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| <u>3.11 EXISTING
SYSTEMS</u> | .1 | Connect into existing piping systems at times approved by Departmental Representative. |
| | .2 | Request written approval by Departmental Representative 5 days minimum, prior to commencement of work. |
| | .3 | Be responsible for damage to existing plant by this work. |
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| <u>3.12 CLEANING</u> | .1 | Clean in accordance with Section 01 10 10 - General Instructions.
.1 Remove surplus materials, excess materials, rubbish, tools and equipment. |
| | .2 | Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 10 10 - General Instructions. |