USask Master Specification Directions: The master specifications are intended to be incorporated into the Consultant's final, project specific specification package. The project specific specifications are expected to include any and all sections or portions of sections (Part 1, Part 2, Part 3) that are required to create a fully executable project specification. USask Master Specs only provide information that USask **requires** be a part of the final specification package. Components or sections not included in the Master USask Specifications may still be required for a complete, well-designed project. **It is the consultant's responsibility to ensure all specifications match USask requirements. Any deviations or revisions to any section included in the master specifications requires written consent from the USask Engineering department. The consultant is liable for any omissions, errors, or incorrect equipment or components supplied to site.**
The Master Specifications shall be used in conjunction with USask's Design Guidelines. Any conflicts shall be brought to the attention of USask Engineering staff for clarification.

Part 1 General

1.1 QUALITY ASSURANCE

.1 Qualifications:

.1 Installer: company or person specializing in fire protection installations and approved by manufacturer, with at least one documented project of similar scope and complexity.

Part 2 Products

2.1 DESIGN REQUIREMENTS

.1 The location of the heads must be shown on the Architectural reflected ceiling plan drawings. In a 600mm x 600mm tile, the sprinkler heads shall be located in the center of a tile quadrant. In a 600mm x 1200mm tile the sprinkler heads shall be centered on the long dimension in one half of the tile (e.g. centered in the upper one half of the long dimension).

.2 Water Supply:

.1 Base hydraulic calculations on static pressure as measured by Contractor. Cost of pressure test shall be included in base tender price.

2.2 ABOVE GROUND PIPING SYSTEMS

.1 Provide fittings for changes in direction of piping and for connections.

.1 Make changes in piping sizes through tapered reducing pipe fittings, bushings will not be permitted.

.2 Perform welding in shop; field welding will not be permitted.

.3 Conceal piping in areas with suspended ceiling, unless noted otherwise.

.4 Provide UL listed guards where required by project. Unlisted guards will not be accepted.

2.3 PIPE, FITTINGS AND VALVES

.1 Pipe:

.1 Ferrous: to NFPA 13, minimum schedule 40. Seamless or ERW to ASTM A-53 Grade B.

.2 Copper tube: not acceptable.

.3 Plastic Piping: not acceptable.

.2 Fittings and joints to NFPA 13:

.1 Ferrous: screwed, welded, flanged or roll grooved.

.1 Grooved joints designed with two ductile iron housing segments, pressure responsive gasket, and zinc-electroplated steel bolts and nuts. Cast with offsetting angle-pattern bolt pads for rigidity and visual pad-to-pad offset contact.

.2 Copper tube: not acceptable.

.3 Plastic piping: not acceptable.

.4 Provide threaded fittings into which sprinkler heads, sprinkler head riser nipples, or drop nipples are threaded.

.5 Plain-end fittings with mechanical couplings and fittings which use steel gripping devices to bite into pipe when pressure is applied will not be permitted.

.6 Fittings: ULC approved for use in wet pipe sprinkler systems.

.7 Ensure fittings, mechanical couplings, and rubber gaskets are supplied by same manufacturer.

.8 Sprinkler pipe and fittings: metal.

.9 Approved Manufacturer: Victaulic.

.3 Valves:

.1 ULC listed for fire protection service.

.2 Gate valves: open by counter clockwise rotation.

.3 Provide OS&Y valve beneath each alarm valve in each riser when more than one alarm valve is supplied from same water supply pipe.

.4 Check valves: flanged clear opening swing or spring actuated check type with flanged inspection and access cover plate for sizes 10 cm and larger.

.5 Provide gate valve in piping protecting machinery spaces, elevator hoistways, and machine rooms.

.4 Pipe hangers:

.1 ULC listed for fire protection services in accordance with NFPA.

2.4 FLOOR CONTROL VALVES AND FLOW SWITCHES

.1 Drain lines shall be hard piped from test valves to suitable drain such as floor drains, janitor sinks, etc. Drains requiring hoses are not acceptable.

2.5 FIRE DEPARTMENT CONNECTION

.1 Provide connections approximately 1.5 m above finish grade, location as indicated.

.2 To NFPA 13 and ULC S543 listed, Siamese type.

.3 Polished chrome plated, equal to Wilson & Cousins 1E28, two-way type with 2.5 inch National Standard female hose threads with plug, chain, and identifying fire department connection escutcheon plate. Plate shall be imprinted with “SPRINKLER”.

2.6 PIPE SLEEVES

.1 Provide pipe sleeves where piping passes through floors or walls.

.2 Secure sleeves in position and location during construction.

.3 Provide sleeves of sufficient length to pass through entire thickness of penetration.

.4 Provide 2.5 cm minimum clearance between exterior of piping and interior of sleeve or core-drilled hole.

.1 Firmly pack space with mineral wool insulation.

.2 Seal space at both ends of sleeve or core-drilled hole with mechanically adjustable segmented elastomeric seal.

.3 In fire walls and fire floors, seal both ends of pipe sleeves or core-drilled holes with ULC listed fill, void, or cavity material.

.5 Sleeves in Masonry and Concrete Walls, Floors, and Roofs:

.1 Provide hot-dip galvanized steel.

.2 Core drilling of masonry and concrete may be provided in lieu of pipe sleeves when cavities in core-drilled hole are completely grouted smooth.

.6 Sleeves in Other Than Masonry and Concrete Walls, Floors, and Roofs:

.1 Provide 0.61 mm thick galvanized steel sheet.

2.7 ESCUTCHEON PLATES

.1 Provide one piece type metal plates for piping passing through floors, ceilings, or walls in exposed spaces.

.2 Provide polished chromium-plated finish on copper alloy plates in finished spaces.

.3 Provide paint finish on metal plates in unfinished spaces.

2.8 INSPECTOR'S TEST CONNECTION

.1 Locate inspector's test connection at hydraulically most remote part of each system, provide test connections approximately 3 m above floor for each sprinkler system or portion of each sprinkler system equipped with alarm device.

.2 Provide test connection piping to location where discharge will be readily visible and where water may be discharged without property damage.

.3 Provide discharge orifice of same size as corresponding sprinkler orifice.

.4 Drain lines shall be hard piped from test valves to suitable drain such as floor drains, janitor sinks, etc. Drains requiring hoses are not acceptable.

2.9 SIGNS

.1 Attach properly lettered and approved metal signs to each valve and alarm device to NFPA 13.

.2 Permanently fix hydraulic design data nameplates to riser of each system.

2.10 SPARE PARTS CABINET

.1 Provide metal cabinet with extra sprinkler heads and sprinkler head wrench adjacent to each alarm valve. Number and types of extra sprinkler heads as specified in NFPA 13.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheet.

3.2 INSTALLATION

.1 Install, inspect and test to acceptance in accordance with NFPA 13 and NFPA 25.

3.3 PIPE INSTALLATION

.1 Install piping straight and true to bear evenly on hangers and supports. Do not hang piping from plaster ceilings.

.2 Keep interior and ends of new piping and existing piping thoroughly cleaned of water and foreign matter.

.3 Keep piping systems clean during installation by means of plugs or other approved methods. When work is not in progress, securely close open ends of piping to prevent entry of water and foreign matter.

.4 Inspect piping before placing into position.

.5 Piping shall be installed in such a manner that all pipe and fittings may be thoroughly drained. Where practicable, all piping should be arranged to drain to the main drain valve. Where this is not feasible, hard piped drain lines shall be provided to floor drains or janitor’s sinks. Drains requiring hoses are not acceptable.

.6 Feed and cross mains shall be braced to prevent excessive oscillation.

3.4 ELECTRICAL CONNECTIONS

.1 Provide electrical work associated with this section under Electrical Specifications.

.2 Provide fire alarm system as described in Electrical Specifications.

.3 Provide control and fire alarm wiring, including connections to fire alarm systems, in accordance with National Electrical Code.

.4 Provide wiring in rigid metal conduit or intermediate metal conduit.

3.5 CONNECTIONS TO EXISTING WATER SUPPLY SYSTEMS

.1 Notify project manager in writing at least 15 days prior to connection date.

.2 Connections shall not be made under pressure. Permanent fittings only.

.3 All connections shall be complete with double check back flow prevention device.

.1 Acceptable product: Watts Series 757 DCVA for horizontal, vertical or N pattern installations. Device body to be 304 stainless steel complete with grooved, gear operated butterfly valves with tamper switches. Device to be UL listed and FM approved for use with fire sprinkler systems.

3.6 FIELD PAINTING

.1 Where required, clean, pretreat, prime, and paint new systems including valves, piping, conduit, hangers, supports, miscellaneous metalwork, and accessories.

.1 Apply coatings to clean, dry surfaces, using clean brushes.

.2 Clean surfaces to remove dust, dirt, rust, and loose mill scale.

.3 Immediately after cleaning, provide metal surfaces with 1 coat of pretreatment primer applied to minimum dry film thickness of 0.3 ml, and one coat of zinc chromate primer applied to minimum dry film thickness of 1.0 ml.

.2 Shield sprinkler heads with protective covering while painting is in progress.

.3 Upon completion of painting, remove protective covering from sprinkler heads.

.4 Remove sprinkler heads which have been painted and replace with new sprinkler heads.

.5 Provide primed surfaces with following:

.1 Piping in Finished Areas:

.1 Provide primed surfaces with 2 coats of paint to match adjacent surfaces.

.2 Provide valves and operating accessories with 1 coat of red alkyd gloss enamel applied to minimum dry film thickness of 1.0 mil.

.2 Piping in Unfinished Areas:

.1 Provide primed surfaces with one coat of red alkyd gloss enamel applied to minimum dry film thickness of 1.0 mil.

.3 Coordinate painting requirements with architectural painting specifications.

END OF SECTION