

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

Part 2 Products

2.1 PIPE

- .1 Steel pipe: to ASTM A53/A53M, Grade B, as follows:
 - .1 Steam:
 - .1 To NPS 12: Schedule 40.
 - .2 NPS 12 and over: Standard schedule with wall thickness of 9.75mm. Mill test reports must be available for all steel pipe used in this project.
 - .2 Piping at Pressure Reducing Stations:
 - .1 Schedule 80.
 - .3 Low Pressure Condensate:
 - .1 To NPS 2: Type L copper or schedule 80 steel piping.
 - .2 Over NPS 2: Schedule 80.
 - .4 Pumped Condensate:
 - .1 NPS 1.5 and under: Type L copper or schedule 80 steel piping.
 - .2 NPS 2 and over: Schedule 80.

2.2 PIPE JOINTS

- .1 NPS 2 and under: screwed fittings with PTFE tape.
- .2 NPS 2-1/2 and over: welding fittings and flanges to CSA W48.
- .3 Flanges: plain or raised face. Gaskets for use on steam and condensate service to be Flexitalic model number CG-316LSS-FG, stainless steel windings with flexible graphite filler. Green and yellow color coding.
- .4 Bolts and nuts: carbon steel, to ANSI/ASME B18.2.2.
- .5 Buttwelding ends: as indicated.

2.3 FITTINGS

- .1 Pipe flanges: cast-iron to ASME B16.1, minimum Class 150 or to suit equipment connections.
- .2 Screwed fittings: malleable iron to ASME B16.3.
- .3 Steel pipe gaskets, flanges and flanged fittings: to ANSI/ASME B16.5.
- .4 Buttwelding fittings: steel to ANSI/ASME B16.9.
- .5 Unions: malleable iron, to ASME B16.3.

2.4 VALVES

- .1 Connections:
 - .1 NPS 2 and smaller: screwed ends.
 - .2 NPS 2 1/2 and larger:
 - .1 Equipment: Flanged ends.
 - .3 All valves as specified in 23 05 23 – Valves Sections.

Part 3 Execution

3.1 PIPING

- .1 Install pipework in accordance with Section 23 05 05- Installation of Pipework, supplemented as specified below.
- .2 Connect branch lines into top of mains.
- .3 Install piping in direction of flow with slopes as follows, unless indicated:
 - .1 Steam: 1:240.
 - .2 Condensate return: 1:70.
- .4 Make provision for thermal expansion as indicated.
- .5 Drip pocket: line size.

3.2 TESTING

- .1 Test system in accordance with Section 21 05 01- Common Work Results for HVAC.
- .2 Test pressure: 1-1/2 times maximum system operating pressure or 860 kPa whichever is greater.

3.3 SYSTEM START-UP

- .1 In accordance with Section 23 08 02- Cleaning and Start-up of Mechanical Piping Systems.

3.4 PERFORMANCE VERIFICATION (PV)

- .1 General:

- .1 Verify performance in accordance with Section 23 08 01- Performance Verification Mechanical Piping Systems supplemented as specified herein.
- .2 Timing, only after:
 - .1 Pressure tests successfully completed.
 - .2 Flushing as specified has been completed.
 - .3 Water treatment system has been commissioned.
- .3 PV Procedures:
 - .1 Verify complete drainage of condensate from steam coils.
 - .2 Verify proper operation of system components, including, but not limited to:
 - .1 Steam traps - verify no blow-by.
 - .2 Flash tanks.
 - .3 Thermostatic vents.
 - .3 Monitor operation of provisions for controlled pipe movement including expansion joints, loops, guides, anchors.
 - .1 If bellows type expansion joints flex incorrectly, shut down system, re-align, repeat start-up procedures.
- .4 Humidifiers: for commissioning procedures, refer to Section 23 84 13- Humidifiers.
- .5 Condensate pumping units: for commissioning procedures, refer to Division 01 – General Requirements.

END OF SECTION