

NORTHWESTERN UNIVERSITY  
PROJECT NAME \_\_\_\_\_  
JOB # \_\_\_\_\_

FOR: \_\_\_\_\_  
ISSUED: 03/29/2017

## SECTION 23 2113 - HYDRONIC PIPING

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. This Section includes pipe and fitting materials, joining methods, special-duty valves, and certain specialties for the following:
  - 1. Chilled water piping in CUP.
  - 2. Underground chilled water piping.
  - 3. Chilled water piping in tunnels.
  - 4. Chilled water piping above the floor in buildings where used.
  - 5. Pressurized waste water piping.



NORTHWESTERN UNIVERSITY

PROJECT NAME \_\_\_\_\_

JOB # \_\_\_\_\_

FOR: \_\_\_\_\_

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- C. Piping materials shall bear label, stamp, or other markings of specified testing agency, and shall conform to ASTM standards.
- D. Comply with FM Global requirements for pressure vessels and piping and for pressure relief devices.

1.5





NORTHWESTERN UNIVERSITY  
PROJECT NAME \_\_\_\_\_  
JOB # \_\_\_\_\_

FOR: \_\_\_\_\_  
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- H. Shaft bearings shall be contained in the integral hubs of the valve body and shall be self-lubricated sleeve type and shall be sealed in place with "V" / "cup" PTF style self-adjusting packing.
- I. Prior to shipment, valves to be hydrostatically and leak tested at the factory in accordance with AWWA C-504. Factory hydrostatic test shall be performed at 200 psig for all valves.
  - 1. NU and Architect / Engineer shall have option to be present to witness factory testing for the first valves that are 20" and smaller and the first valves that are 24" and larger. Valve manufacturer shall be responsible for providing transportation and accommodations for two (2) NU representatives and one (1) representative of the Architect / Engineer.
- J. Valves to be complete with grease packed buried service gear operator, shaft extensions with centering disk located on shaft, to within one foot of finished grade and soil pipe.
- K. Refer to drawings for length of shaft extensions and soil pipes.
- L. Valves shall be Pratt Groundhog or approved equal.

2.12 BALL VALVES IN TUNNELS

- A. 2" and Smaller: bronze body, threaded, stainless steel ball and stem, full port, teflon seat rings, blowout-proof stem, th(pa)4(c)BT(wout)BDC3/282 Tm[( )]TJ[





NORTHWESTERN UNIVERSITY

PROJECT NAME \_\_\_\_\_

JOB # \_\_\_\_\_

FOR: \_\_\_\_\_

ISSUED: 03/29/2017

3.2 VALVE APPLICATIONS AND INSTALLATION

- A. Install shutoff-duty valves at each branch connection to supply mains, at supply connections to each piece of equipment, and at other locations in systems for convenient system isolation.
- B. Install calibrated-orifice, balancing valves in the return pipe of each heating or cooling terminal.
- C.

- I. Install fittings for changes in direction and branch connections.
- J. Install piping to allow application of insulation.
- K. Select system components with pressure rating equal to or greater than system operating pressure.
- L. Install groups of pipes parallel to each other, spaced to permit applying insulation and servicing of valves.
- M. Install drains, consisting of a tee fitting, NPS 3/4 ball valve, and short NPS 3/4 threaded hose end with brass cap, at low points in piping system mains and elsewhere as required for complete system drainage. Locate as shown on drawings, and as required based on actual installed conditions.
- N. Install piping at a uniform grade of 0.2 percent upward in direction of flow for supply and 0.2 percent downward in direction of flow for return.
- O. Install branch connections to mains using tee fittings in main pipe, with the branch connected to the side or 45 degrees from the bottom of the main pipe.
- P. ***Install valves according to Division 23 Section "General-Duty Valves for HVAC Piping."***
- Q. Install unions in piping, NPS 2 and smaller at final connections of equipment, and elsewhere as indicated.
- R. Install flanges in piping, NPS 2-1/2 and larger, at final connections of equipment and elsewhere as indicated.

NORTHWESTERN UNIVERSITY

PROJECT NAME \_\_\_\_\_

JOB # \_\_\_\_\_

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- B. Tracer wires shall terminate in each tunnel and manhole where new utilities penetrate. Tracer wires shall be provided with labels noting what pipe the wire is affixed to (ie. Chilled Water Supply, Pumped Condensate Return, etc).
- C. Tracer wires shall be installed with a separate access point from and next to vault.

### 3.5 HANGERS AND SUPPORTS

- A. Hanger, support, and anchor devices are specified in Division 23 Section "Mechanical Supporting Devices." Comply with the following requirements for maximum spacing of supports and minimum rod diameters.
- B. Install the following pipe attachments:

NORTHWESTERN UNIVERSITY  
PROJECT NAME \_\_\_\_\_  
JOB # \_\_\_\_\_

FOR: \_\_\_\_\_  
ISSUED: 03/29/2017

D. Soldered Joints: Apply ASTM B 813, water-

NORTHWESTERN UNIVERSITY

PROJECT NAME \_\_\_\_\_

JOB # \_\_\_\_\_

FOR: \_\_\_\_\_

ISSUED: 03/29/2017

5. Install safety valve, set at a pressure no more than one-third higher than test pressure, to protect against damage by expanding liquid or other source of overpressure during test.
- B. Perform the following tests on hydronic piping:
1. Use ambient temperature water as a testing medium unless there is risk of damage due to freezing. Another liquid that is safe for workers and compat