	Title: YALE OFFICE OF FACILITIES PROCEDURE MANUAL Chapter: 01 - Yale Design Standard Division: Plumbing Standards	Section: 22 05 10 Plumbing General Requirements.
		Date: 08/05/2017
		Author: Office of Facilities
CC: Project Folder		

Date	Description of Change	Pages / Sections Modified	ID
8/5/17	Entire document	-	mgl

PART 1 - INTRODUCTION

1.1 This equipment standard refers to Plumbing General Requirements.

PART 2 - GENERAL DESIGN REQUIREMENTS

2.1 POTABLE PIPING, EQUIPMENT AND SYSTEMS


- A. All potable water system components shall be in compliance with the “Reduction in Lead in Drinking Water Act”.
- B. Potable water system components shall be in compliance with applicable NSF/ANSI requirements. Installation of systems shall be per manufacturer requirements.
- C. The designer shall specify appropriate cleaning and disinfection procedures for domestic water piping compliant with AWWA, and OWWA.

2.2 PROCESS PIPING, EQUIPMENT AND SYSTEMS (END-USER TOOLS)

- A. Shall be decoupled from the house chilled water system.
- B. Process piping shall be non-ferrous
- C. Equipment such as but not limited to pumps, specialties, and valves shall be non-ferrous.
 - 1. EOR shall verify system water quality requirements during the PD BOD phase.
- D. Ferrous material may be specified for the system served, if approved by the manufacturer of equipment served, end-user, and Yale Facility Engineering.

2.3 PROCESS PIPING, EQUIPMENT AND SYSTEMS (HOUSE SYSTEM)

- A. Shall be decoupled for the house chilled water system.
- B. The pump system shall be sized to overcome a minimal terminal device pressure loss of 40 Ft.
- C. The pump system shall be designed as not to require additional booster pumps at terminal devices.
- D. Pipe material ferrous versus non-ferrous shall be discussed shall be approved by Yale Facility Engineering, prior to design.

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2.4 DOMESTIC COLD WATER


- A. Domestic cold water service shall be provided from a connection to the existing city water system.
- B. Triplex pressure booster pumps (if required) shall be provided with each pump sized at 40% of the estimated requirements.
- C. Piping shall be sized to maintain a minimum flow of 25 GPM and a minimum pressure of 35 psig at the farthest flush valve and 30 psig at the hydraulically most remote safety shower. Water velocity in the distribution piping system will not exceed 6 feet per second and provisions shall be made to reduce any water hammer with water hammer arrestors.
- D. Domestic water system piping, tempered and non-tempered, shall be insulated including both potable and non-potable.
- E. Non-potable water shall be isolated with appropriate backflow preventer and isolation valves.

2.5 DOMESTIC HOT WATER SYSTEMS

- A. The maximum hot-water temperature produced shall be 140 degrees F. Service to laboratory sinks, lavatories, showers, wash-down stations, general purpose sinks, service sinks, and other specific equipment mixed to 120 degrees F as required from a central location..
- B. For kitchen equipment, dishwashers, cage, rack and glassware washers and hose station requirements, 140 degree F water shall be provided at point of use..
- C. Domestic hot water shall be produced by duplex domestic hot water generators systems. Where steam is available provide semi or instantaneous water heaters. Additionally, where steam is available, the steam condensate should be used to preheat the incoming cold water to the hot water generators (option shall be reviewed during the design). The generators shall be sized to satisfy the domestic fixture and equipment demands. Duplex hot water generators shall be designed with each generator capable of satisfying a minimum of 100% of system demand upon the failure of any single hot water generator.

2.6 SANITARY AND STORM WATER SYSTEMS

- A. Sanitary and storm systems shall not be shared in the building, and be totally independent of each other.
- B. Sanitary shall discharge to the approved municipality service.
- C. Storm shall discharge to the approved municipality service.
- D. If required, sanitary, laboratory/process or storm drainage from lower building levels shall be lifted to the main sanitary line which shall drain by gravity to the site sewer system. A duplex sewage ejector pumping system shall be used for this purpose. Each pump shall be sized for a 100 percent capacity of the load.

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2.7 SANITARY DRAINAGE SYSTEMS

- A. Waste and vent system shall be provided including waste and vent systems from all toilets, lavatories, service sinks, non-process floor drainage, etc. Sanitary drainage will be connected directly into the municipal sanitary sewer system.
- B. Provide backwater valve in the interior of the building and at the point of exit.
- C. The designer shall avoid the use of sanitary lift stations. Where required provide per applicable Standard.

2.8 STORM WATER DRAINAGE SYSTEM

- A. Storm water drainage system shall be provided for all roof and area drains and be connected into the site storm system.
 - 1. Prior to contacting the New Haven Water Pollution Control Authority (WPCA), Coordinate and involve Yale Engineering.
- B. Parking area drains shall connect into the storm drainage system. Oil and sand interceptors shall be provided for the storm drainage system, prior to discharging to an approved municipal service.
- C. Sump pumps shall be provided at the bottom of elevator shafts where floor drains cannot be installed. Sump pumps will be supplied with an oil shut-off switch or an oil interceptor shall be installed in the pump discharge pipe if the elevator is hydraulic. Discharge shall connect to the approved municipal service.

PART 3 - MINIMUM PRODUCT REQUIREMENTS

3.1 VALVES

- A. Products shall comply with the Valve Service Matrix Section 23 05 23 01

3.2 PIPING

- A. Piping material shall comply with the Valve Service Matrix Section 23 05 23 01

3.3 PLUMBING STANDARDS

- A. Refer to Plumbing Standards for additional requirements.