

## **MEDICAL CENTER SPECIAL REQUIREMENTS FOR DIVISION 22 – PLUMBING**

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*The Special Requirements indicated in this appendix shall be incorporated in all Design Documents for Medical Center Projects. These Special Requirements consist of exceptions, revisions or additions to the base Building Design Standards.*

### **22 00 00. PLUMBING**

#### **22 00 03. GENERAL PROVISIONS**

.3 CODES: All materials and installation shall also be compliant with the current AIA Guidelines for Design and Construction of Health Care Facilities.

#### **22 00 07. TESTING**

.8 Medical gas systems: Test as recommended by current editions of National Cylinder Gas Codes and NFPA 55, 99C. Systems shall be certified by a third party certifier with ASSE 6001 certification. Certifier shall be hired by the Associate.

### **22 05 05. PLUMBING MATERIALS AND METHODS**

#### **22 05 20. METERS, GAUGES AND THERMOMETERS**

.2.1 Gauges shall have ball valve shut-off.

.3.2 Additionally, thermometers are required at the inlet and outlet of all pressure reducing stations, domestic hot water pumps and master mixing valves.

#### **22 05 25. VALVES**

.1.2 Valve tags shall be tagged with OSU Medical Center nomenclature as: service-building ID (2 letter designation)-floor-valve number. For example, a domestic cold water valve on the 2<sup>nd</sup> floor of Rhodes would be tagged DCW-RH-2-34.

.1.3 Concealed valve locations shall be indicated by color coded tags adhered to the ceiling T-bars. Colors shall match pipe labeling color specification.

.1.4 Design requirements:

.1.4.1 Shut-off valves shall be provided on all branches off main water lines and ahead of dielectric unions. Branches shall be provided with drain valves to facilitate drainage of branches. Shut-off valves shall be located as necessary to allow maintenance/repair of system components with no disruption to building services. Required locations for shut-off valves include, but not limited to, the inlet and outlet of all pieces of equipment, at each floor branch from the riser, at each branch off the main floor distribution piping.

.1.4.3 Unions and Fittings: A union or bolted flange fitting shall be provided downstream of, and within approximately 12 in. or at least 3 pipe diameters, and adjacent to both inlet and outlet of pumps and other equipment. Unions should be independent devices. Combination valves/unions are not acceptable.

- .1.4.4 Flush Valves: Expose for easier maintenance except in high security areas where enclosure would be required (prisoner holding or psychiatric population as examples).
- .2 GATE VALVES: prohibited for 2-1/2 inches and smaller.
- .5 GLOBE AND ANGLE VALVES: prohibited.
- .8 BUTTERFLY VALVES: 2 inch and larger, ductile iron body, bronze disc, extended neck, geometric drive, molded-in seat liner, stainless steel stem, EPDM rubber liner, 125 pounds. Lug or wafer style.
- .10 BALANCE VALVES: Install balance valves in domestic hot water return systems as necessary. Provide separate shut-off valves and balance valves.
- 22 05 50. VIBRATION AND SEISMIC CONTROLS
- .3 Provide vibration isolators and inertia pads under air compressors.
- 22 07 00. PLUMBING INSULATION**
- 22 07 16. PLUMBING EQUIPMENT INSULATION
- .1.1 Domestic hot water storage tanks are prohibited.
- .1.2 Domestic cold water tanks are prohibited, unless approved by OSUMC Facilities.
- 22 10 00. PLUMBING PIPING AND PUMPS**
- 22 10 05. PIPE AND PIPE FITTINGS
- .4.2 5 inch and larger, hard drawn type L copper pipe with cast bronze or wrought copper class 150 lb. brazed fittings.
- .6.1 Appropriate for reverse osmosis water systems and deionized water systems also.
- .6.2 Compressed air piping: galvanized steel piping is prohibited.
- .6.3 This section shall not applicable for medical oxygen.
- .8 Type M copper tubing is prohibited.
- .10 PUMPS
- .10.1 Deionized water pumps
- .10.2 Domestic water pumps: iron housing with brass impeller. Domestic water pumps shall be on emergency power.
- 22 14 00. FACILITY STORM DRAINAGE**
- .1.2 Roof overflow drains shall not empty onto public access areas.

## **22 20 00. PLUMBING SYSTEMS**

### **22 20 06. DOMESTIC HOT WATER**

- .1 Design Concept: Domestic hot water systems utilize steam reduced down from 70#, 400 degF steam stations. The domestic hot water is to be generated at 140 degF, with the capability of providing thermal shock up to 160degF. Domestic hot water is circulated throughout the complex to deliver 125-135 degF at the outlets. Monitoring of the domestic hot water supply and domestic hot water return shall be through the building automation system at the domestic hot water heaters and on the branch risers of each floor served. Consult with OSUMC Facilities for other special monitoring requirements. Provide a master mixing valve with isolation valves and bypass for maintenance in lieu of individual mixing valves at each faucet. The domestic hot water system shall be on emergency power.
- .1.1 The domestic hot water system shall be designed with recirculating lines and pumps, regardless of system size. Branches greater than 20 feet from the main shall include a domestic hot water return line.
- .1.5 Storage tanks are prohibited. Steam fired semi-instantaneous water heaters shall be provided. Water heaters shall be designed with 100% redundancy such that if the largest water heater fails the building will continue to be fully served with domestic hot water.

### **22 20 07. SOIL AND WASTE SYSTEMS**

- .2.14 Sewage ejector pumps: Where required, shall have a minimum of two (2) equally sized pumps so that a pump is available in the event of one pump failure. Pumps shall be automatically alternated on a monthly basis. Pumps shall have dual mechanical seals with a seal failure alarming to the BAS. The pump shall be designed to operate for a minimum of three minutes per cycle to prevent short cycling and premature pump failure. Sump capacity shall be designed to not exceed 12 hours of discharge load. Pumps shall be on emergency power in the event of normal power failure to prevent sewage backup.

## **22 40 00. PLUMBING FIXTURES**

- .3.1 Bariatric water closets, where needed, shall be floor mounted, back outlet.
- .3.4 Shower mixing valves shall be of the pressure balancing type.
- .3.8 All sinks shall have aerators removed.

### **22 60 00 MEDICAL GAS SYSTEMS**

- .1 INSTALLATIONS: All medical gas piping systems shall be installed by ASSE 6010 certified installers. Documentation of certification shall be provided prior to installation and maintained on the jobsite. The installation shall be certified by a third party hired by the Associate. All installations shall conform to the latest edition of NFPA 99.
- .2 MASTER ALARM PANELS are currently located in Doan 009 and in Rhodes S126. Any new master alarms shall be tied into these existing systems. If existing master alarm points are no longer available in these panels, provide a new master alarm panel

adjacent to these existing panels. Coordinate number of points for new panel with OSUMC Facilities Operations.

- .3 ZONE VALVE BOXES: Existing zone valve boxes shall be replaced when renovating an area served by an existing zone valve box that does not meet the requirements of the current code. Coordinate with OSUMC Facilities Operations. Zone valve boxes shall be labeled by the contractor with the rooms served, per NFPA 99. Zone valve boxes shall also be labeled with a unique identifier, corresponding to OSUMC nomenclature – VB-building-floor-number – such as VB-RHH-4-3 for a zone valve box in the Ross Heart Hospital on the 4<sup>th</sup> floor. Consideration shall be given for zone valve boxes with provisions for area alarm sensor connections.
- .4 MEDICAL GAS INLETS/OUTLETS: Shall be Chemetron adapter compatible. Coordinate replacement of existing medical gas inlets/outlets with OSUMC Facilities Operations.
- .5 LABELING: Ensure that all labeling required by the current NFPA 99 is specified and installed as part of the project.

#### 22 61 00 MEDICAL AIR SYSTEMS:

- .1 Piping: Medical air piping shall be brazed, ASTM B819 specification hard drawn Type L copper seamless medical gas tubing. Compression fittings, flared fittings and memory-metal couplings are prohibited.
- .2 Equipment: Medical air compressors shall be triplex units designed such that the full load of the building can be carried with the largest compressor out of service. Medical air compressors shall be single stage reciprocating type, oil free compressors, Liquid ring compressors are prohibited. Automatic alteration of compressors shall be provided to allow division of operating time. All medical air compressors shall be on emergency power. Air dryers shall be desiccant type.

#### 22 62 00 MEDICAL VACUUM SYSTEMS:

- .1 Piping: Medical vacuum piping shall be brazed, ASTM B819 specification hard drawn seamless medical gas tubing. Compression fittings, flared fittings and memory-metal couplings are prohibited. Main and branch piping shall not be less than  $\frac{3}{4}$ " in size. Any existing medical-surgical vacuum less than  $\frac{3}{4}$ " in the area of renovation shall be increased in size to meet this requirement.
- .2 Equipment: Medical vacuum pumps shall be triplex units designed such that the full load of the building can be carried with the largest pump out of service. Medical vacuum pumps shall be oil flooded rotary screw type. Liquid ring vacuum pumps are prohibited. Automatic alteration of pumps shall be provided to allow division of operating time. All medical vacuum pumps shall be on emergency power.
- .3 Waste anesthetic gas disposal (WAGD) shall be piped individually out of each room, where required, and then ties into the medical vacuum piping. A dedicated WAGD producer shall not be provided.

#### 22 63 00 MEDICAL GAS SYSTEMS:

- .1 Existing manifolds in Rhodes and Doan Hall exist for nitrous oxide, nitrogen and carbon dioxide that serve Rhodes, Doan, James and Ross Heart. Any tie-in to these existing manifolds shall include analysis into the size of the manifold, number of cylinders, frequency of change out, current code compliance, etc to ensure that the manifold can support the additional load being added.

- .2 Piping: Medical gas piping shall be brazed, ASTM B819 specification hard drawn Type L copper seamless medical gas tubing. Compression fittings, flared fittings and memory-metal couplings are prohibited.

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END OF DIVISION 22 - PLUMBING