Beth Israel Lahey Health
Beth Israel Deaconess Medical Center

Beth Israel Deaconess Medical Center
Plumbing/Fire Protection Design Guidelines

These guidelines are required as a part of the design basis for all Plumbing and Fire Protection systems designed for Beth Israel Deaconess Medical Center. Where applicable codes conflict with these guidelines, the code shall supersede these requirements. Any deviation from these requirements should be brought to the attention of the Facilities Engineering Dept. during review, with an explanation why it is required, or how it improves the system.

Released by:

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1. REVIEW DOCUMENTS

1.1 BIDMC REVIEW

1.1.1 PROVIDE DOCUMENTS FOR REVIEW AT SCHEMATIC, DESIGN DEVELOPMENT AND CONSTRUCTION DOCUMENTS PHASES. THIS INFORMATION WILL BE REVIEWED AND COMMENTS WILL BE PREPARED BY BIDMC PERSONNEL.

1.1.2. DESIGN DRAWINGS AND SPECIFICATIONS

1.1.2.1 PROVIDE DRAWINGS AND SPECIFICATIONS AT EACH STAGE OF DESIGN, AS APPROPRIATE.

1.1.2.2 SHOW SPECIFIC LOCATION OF CONNECTIONS TO EXISTING SYSTEMS AT EACH STAGE OF DESIGN.

1.1.3. UTILITY IMPACT ANALYSIS

1.1.3.1 PROVIDE ANALYSIS OF EXISTING SYSTEMS, SHOWING SUFFICIENT CAPACITY OF EXISTING UTILITIES.

2. PLUMBING

2.1 SYSTEMS

2.1.1. COLD AND HOT POTABLE WATER

2.1.2. COLD AND HOT NON-POTABLE WATER

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2.1.11. MEDICAL AIR

2.1.12. MEDICAL VACUUM

2.1.13. NITROUS OXIDE

2.1.14. CARBON DIOXIDE

2.2 MATCHING EQUIPMENT AND SYSTEMS

2.2.1. NEW CONSTRUCTION

2.2.1.1 EQUIPMENT AND SYSTEMS SHALL BE BASED ON THE APPROVED MANUFACTURER LIST (BELOW)

2.2.2. RENOVATIONS

2.2.2.1 MATERIALS SHALL MATCH EXISTING WHERE ALLOWED BY CODE AND THIS STANDARD.

2.2.2.2 IN RENOVATIONS OF EXISTING SYSTEMS, NEW WORK SHALL BE CONSISTENT WITH THE DESIGN OF THE ORIGINAL SYSTEM

2.2.2.3 ALL ABANDONED PIPING SHALL BE REMOVED FROM THE PROJECT AREA WHERE ACCESSIBLE.

2.2.3. SYSTEM SELECTION AND DESIGN

2.2.3.1 TYPE OF PIPING SYSTEM SHALL BE REVIEWED WITH FACILITIES ENGINEERING DURING THE CONCEPTUAL DESIGN PHASE.

2.2.3.2 ENERGY EFFICIENCY FEATURES, INCLUDING HEAT RECOVERY, SHOULD BE CONSIDERED IN THE DESIGN

AND INCLUDED WHERE THEY CAN BE SHOWN TO HAVE A REASONABLE FINANCIAL PAYBACK.

2.3 PIPING MATERIALS

2.3.1. GENERAL

2.3.1.1. SOLID BRASS CAP AT ALL DRAIN AND BLOW-OFF VALVES.

2.3.1.2. POTABLE AND NON-POTABLE WATER

2.3.2. 3" AND SMALLER: TYPE L COPPER TUBING, HARD TEMPER, ASTM B88-78. WROUGHT COPPER FITTINGS, ASTM B16.22. SOLDERED JOINTS WITH LEAD FREE SOLDER. PRO-PRESS SHALL NOT BE ALLOWED, EXCEPT BY EXCEPTION COORDINATED WITH BIDMC PLUMBING SHOP AND FACILITIES DEPT..

2.3.3. 4" – 14: SCH. 40 BLACK STEEL, WITH GROOVED, FLANGED OR WELDED JOINTS. PRO-PRESS FITTINGS SHALL NOT BE ALLOWED.

2.3.4. STEAM

2.3.4.1 2" AND SMALLER: SCH. 40 CARBON STEEL. ANSI B36.10 ASTM A120, THREADED, CLASS 150 MALLEABLE IRON FITTINGS

2.3.4.2. 2-1/2" THROUGH 10": SCH. 40 CARBON STEEL, WELDED.

2.3.5 CONDENSATE

2.3.5.1. 2" AND SMALLER: SCH. 80 CARBON STEEL. ANSI B36.10 ASTM A53 GRADE A, THREADED, CLASS 150 MALLEABLE IRON FITTINGS

2.3.5.2 2-1/2" THROUGH 4": SCH. 80 CARBON STEEL, A106 GRADE B SEAMLESS, BUTT WELDED FITTINGS

2.3.6 NATURAL GAS

2.3.6.1. SCH. 40 BLACK STEEL, WITH THREADED, FLANGED OR WELDED JOINTS

2.3.7 SANITARY DRAIN & VENT

2.3.7.1 2-1/2" AND SMALLER: TYPE DWV COPPER WITH SOLDERED FITTINGS

2.3.7.2 3" AND LARGER: TYPE DWV COPPER WITH SOLDERED FITTINGS, CAST IRON/NO-HUB, CAST-IRON, HUB FITTINGS

2.3.8 STORM DRAIN

2.3.8.1. 3" AND LARGER: CAST IRON/NO-HUB, CAST-IRON, HUB FITTINGS

2.3.9 LAB (INDUSTRIAL) DRAIN & VENT

2.3.9.1 ENFUSION POLYPROPYLENE FIRE RESISTANT PIPE

2.3.9.2 ORION RIONFUSE CF (DO NOT USE ABOVE ROOF LEVEL AS VENT)

2.3.10 MEDICAL GAS

2.3.10.1 PER NFPA 99, LATEST EDITION.

2.4 INSULATION AND LABELS

2.4.1 PROVIDE FIBERGLASS INSULATION WITH ALL-SERVICE JACKET IN CEILINGS AND WALLS.

2.4.2 PROVIDE FIBERGLASS INSULATION WITH 16-MIL ALUMINUM JACKET IN MECHANICAL ROOMS AND WHERE SUBJECT TO TRAFFIC

2.3.3 PROVIDE REMOVABLE, FITTED INSULATION JACKETS ON FITTINGS THAT REQUIRE SERVICE.

2.4.4 LABELS AND FLOW-DIRECTION ARROWS ON INSULATION SHALL BE COLOR CODED PER CODE, AND AS FOLLOWS, WHERE NOT DIRECTED BY CODE:

2.4.4.1	CHILLED WATER:	BLUE
2.4.4.2	POTABLE WATER:	GREEN
2.4.4.3	NON-POTABLE WATER:	YELLOW
2.4.4.4	VENT PIPING:	BLACK
2.4.4.5	NATURAL GAS:	YELLOW
2.4.4.6	FUEL OIL:	YELLOW
2.4.4.7	FIRE PROTECTION:	RED

2.4.5 PROVIDE PRE-FABRICATED SEMI-RIGID PLASTIC LABELS MECHANICALLY FASTENED DIRECTLY TO INSULATION COLOR CODED AS NOTED IN TABLE BELOW. LABELING SHALL OCCUR AT A MINIMUM OF EVERY 20 LINEAR FEET OF STRAIGHT RUN AND AT EVERY SECTION OF PIPING LESS THAN 20' IN LENGTH AND AT BOTH SIDES OF ALL PENETRATIONS THROUGH FLOORS OR WALLS. LABEL SHALL HAVE 2" HIGH LETTERING ON PIPING 4" AND LARGER AND ¾" HIGH LETTERING ON PIPING 3" AND SMALLER. PROVIDE SIMILAR SIZED FLOW ARROW LABELING STATING DIRECTION OF FLOW AT SAME OCCURRENCES. PAINT/STENCIL AT SIMILAR DISTANCES SHALL BE AN ACCEPTABLE MEANS OF IDENTIFICATION. VINYL STICKERS SHALL NOT BE ALLOWED.

2.5 MOTORS AND VARIABLE SPEED DRIVES

2.5.1 PROVIDE PREMIUM EFFICIENCY MOTORS FOR ALL APPLICATIONS.

2.5.2 WHERE VARIABLE SPEED DRIVES ARE USED, PROVIDE MOTORS WITH CERAMIC BEARINGS SPECIFICALLY DESIGNED FOR USE WITH VARIABLE SPEED DRIVES.

2.5.3 VARIABLE SPEED DRIVES SHALL BE CAPABLE OF DIRECT INTERFACE WITH DDC CONTROL SYSTEM

2.6 EYEWASHES

2.6.1 PROVIDE THERMOSTATIC MIXING VALVE

2.6.2 HOT AND COLD WATER PIPING SHALL BE MINIMUM ½" THROUGHOUT THE SYSTEM

2.6.3 DRAIN SHALL CONNECT TO INDIRECT WASTE OR TRAP WHERE POSSIBLE

2.6.4 NOTIFY BIDMC PLUMBING SHOP OF ALL NEW INSTALLATIONS

2.7 APPROVED MANUFACTURERS

2.7.1 BACKFLOW PREVENTERS: WATTS TYPE 909 OR APPROVED EQUAL

2.7.2 BALL VALVES: APOLLO (ONLY)

2.7.3 EYEWASHES: MUST HAVE ½" INLET

- 2.7.3.1 HAWS MODEL 7360B-7460B (BOWL W/ SINGLE EYE/FACE WASH HEAD)
- 2.7.3.2 SPEAKMAN SEF-1800-CA (FAUCET-MOUNTED)
- 2.7.3.3 SPEAKMAN SE-490 (BOWL W/ DUAL EYE/FACE WASH HEADS)
- 2.7.3.4 GUARDIAN G1814 (BOWL W/ DUAL EYE/FACE WASH HEADS)
- 2.7.3.5 GUARDIAN G1814BC (BOWL + COVER)
- 2.7.3.6 GUARDIAN G1805 (COUNTER-MOUNTED)
- 2.7.3.7 SPEAKMAN SE-575-DP (ADA COMPLIANT SWING ACTIVATED)
- 2.7.3.8 GUARDIAN GBF1735DP (ADA COMPLIANT SWING ACTIVATED)

2.7.4 MANUAL FAUCETS: CHICAGO FAUCET

2.7.5 AUTOMATIC FAUCETS: CHICAGO, TOTO, SLOAN, GEBERIT (NOT BATTERY POWERED)

2.7.6 MEDICAL AIR AND VACUUM: BEACON-MEDAES

2.7.7 STEAM

2.7.7.1. PRESSURE REDUCING VALVES: SPENCE

2.7.8 THERMOSTATIC MIXING VALVES

2.7.8.1 LEONARD MIXING VALVES WILL NOT BE ALLOWED.

2.7.9 TOILETS: AMERICAN STANDARD, TOTO

2.7.9.1 FLUSH VALVES: TOTO (AUTOMATIC OR MANUAL)

2.7.10 URINALS: AMERICAN STANDARD, TOTO

2.7.10.1 FLUSH VALVES: TOTO AUTOMATIC FLUSH

2.7.11 WATER HEATERS: PATTERSON KELLEY INSTANTANEOUS STEAM

2.7.12 VARIABLE SPEED DRIVES: YASKAWA

2.8 PENETRATIONS

2.8.1 SLEEVES SHALL BE PROVIDED FOR ALL FLOOR AND WALL PENETRATIONS

2.8.2 USE UL-RATED SEALING SYSTEM BY HILTI (SEE BIDMC STANDARD FOR THROUGH-PENETRATION STOP SYSTEMS)

2.8.3 CONCRETE SLABS SHALL BE SCANNED PRIOR TO CORING FLOORS OR WALLS, WHERE THERE IS A POSSIBILITY OF IN-SLAB CONDUIT

2.9 ACCESSIBILITY

2.9.1 DESIGN LAYOUT SHALL ALLOW FOR MAINTENANCE AND REPLACEMENT ACCESS TO NEW EQUIPMENT AND FREE ACCESS TO EXISTING SYSTEMS.

2.9.2 WHERE EQUIPMENT ACCESS IS REQUIRED, IT SHALL BE CLEARLY SHOWN ON PLAN FOR COORDINATION PURPOSES.

2.10 MOTORS

2.10.1 PROVIDE PREMIUM EFFICIENCY MOTORS FOR ALL APPLICATIONS.

2.10.2 WHERE VARIABLE SPEED DRIVES ARE USED, PROVIDE MOTORS WITH CERAMIC BEARINGS SPECIFICALLY DESIGNED FOR USE WITH VARIABLE SPEED DRIVES.

2.10.3 VARIABLE SPEED DRIVES SHALL BE CAPABLE OF DIRECT INTERFACE WITH DDC CONTROL SYSTEM

2.11 CONTROLS

2.11.1 INDUSTRIAL WASTE ALARMS

2.11.1.1 COMTRONICS

2.11.2 MEDICAL GAS FITTINGS, ALARMS AND MANIFOLDS

2.11.2.1 BEACON-MEDAES

2.11.3 OTHER ALARMS

2.11.3.1 SIEMENS APOGEE RENO SYSTEM

3. FIRE PROTECTION

3.1. PIPING AND JOINTS

3.1.1. 2” AND SMALLER PIPING: SCH. 40 BLACK STEEL, WITH THREADED JOINTS

3.1.2. 2-1/2” AND LARGER PIPING: SCH. 40 BLACK STEEL, WITH THREADED, GROOVED, FLANGED OR WELDED JOINTS

3.2. SPRINKLER HEADS

3.2.1. NEW SPRINKLERS SHALL BE QUICK-RESPONSE TYPE

3.3. DRY-PIPE SYSTEMS

3.3.1. PROVIDE VICTAULIC OR RELIABLE DRY-PIPE VALVES

3.4. PREACTION SYSTEMS

3.4.1. PROVIDE RELIABLE PREACTION VALVES.

3.5 FIRE PROTECTION DESIGN SHALL MEET FM GLOBAL STANDARDS