

SECTION 15A - PLUMBING

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PART 1 - GENERAL

SECTION 15A-PLUMBING

15A.00 GENERAL REQUIREMENTS

- A. Include General Conditions, Supplementary General Conditions, and applicable parts of the Special Conditions, and Division 1 as part of this section.
- B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.
- C. Coordinate work with that of all other trades affecting, or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

15A.01 WORK INCLUDED

- A. The work under this Section shall include the furnishing of all material, labor, equipment and supplies and the performance of all operations to provide a complete working system as required by the Drawings and details and as specified herein, in general, to include the following items:
 - 1. A complete domestic cold water system throughout the entire building connecting to each and every fixture and piece of equipment requiring domestic cold water. This system shall extend 10'-0" outside the building.
 - 2. A complete domestic hot water system throughout the entire building connecting to each and every fixture and piece of equipment requiring domestic hot water. This system shall include a new storage water heater.
 - 3. A complete sanitary waste and vent system throughout the entire building connecting to each and every fixture and piece of equipment requiring sanitary drainage. This system shall extend 10'-0" outside the building and combine with the storm.
 - 4. A complete storm water drainage system throughout the entire building connecting to each and every roof drain requiring storm drainage. This system shall extend 10'-0" outside the building and combine with the sanitary sewer and connect to the existing manhole in Glacial Avenue.
 - 5. A complete gas system throughout the building connecting to each and every outlet and appliance requiring gas. This system shall extend and connect to the house side of the meter provided by the

Utility Company. This Contractor shall carry in his bid all charges by the Gas Company for the gas main from the street main up to and including the gas meter.

15A.02 RELATED WORK IN OTHER SECTIONS

A. The following work is not included as work in this Section and is to be performed under other Sections:

1. All Cutting and Patching
2. Temporary Water, Heat and Fire Protection.
3. Temporary Light and Power.
4. Excavation and Backfilling.
5. Foundations and Trenching.
6. Concrete Bases for Equipment.
7. Flashing and Caulking.
8. Painting.
9. Heating, Ventilating and Air Conditioning.
10. Fire Protection.
11. Electrical.

15A.03 INTERPRETATION OF DRAWINGS

- A. All work shown on the Drawings is intended to be approximately correct to scale, but figured dimensions and detailed Drawings are to be followed in every case. The Drawings shall be taken in a sense as diagrammatic. Size of pipes or conduits and methods of running them are shown but it is not intended to show every offset and fitting, nor every structural difficulty that may be encountered.
- B. To carry out the true intent and purpose of the Drawings, all necessary parts to make complete, approved working systems ready for use shall be furnished without extra charge.
- C. Locations shown on the Drawings are approximate and it is intended that all equipment shall be located in accordance with the general and detail Drawings of the construction proper. All measurements shall be taken at the building before fabrication commences.

15A.04 OBTAINING INFORMATION

- A. Obtain from the manufacturer the proper method of installation and connection of the equipment that is to be furnished and installed. Obtain all information that is necessary to facilitate the work and to complete the project.

15A.05 COOPERATION AND COORDINATION WITH OTHER TRADES

- A. The work shall be so performed that the progress of the entire building construction, including all other trades, shall not be delayed and not

interfered with. Materials and apparatus shall be installed as fast as conditions of the building will permit and must be installed promptly when and as directed.

- B. Keep fully informed as to the shape, size and position of all openings required for all apparatus and give information in advance to build openings into the work. Furnish and set in place all sleeves, pockets, supports and incidentals.
- C. All distribution systems which require pitch or slope such as plumbing drains, steam and condensate piping shall have the right of way over those which do not. Confer with other trades as to the location of pipes, ducts, lights and apparatus and install work to avoid interferences.

15A.06 RECORD DRAWINGS

- A. Purchase and maintain at the job site a complete and separate black line set of prints of the approved Working Drawings on which accurately indicate daily progress by coloring materials and apparatus as installed. Schedules shall be modified to reflect data consistent with that of the installed equipment. Clearly show all changes to the work as a result of change orders, instructions issued by the Architect or conditions encountered in the field. Accurately indicate the location, size, type and elevation of new utilities and their relationship to existing utilities.
- B. The marked up and colored in prints will be used as a guide for determining the progress of the work installed. They shall be inspected weekly and shall be corrected immediately if found inaccurate or incomplete. Requisitions for payment will not be approved until the Drawings are accurate and up-to-date.
- C. At the completion of the work submit one (1) set of the marked up prints for review and approval. After approval these marked up prints shall be used in the preparation of the Record Drawings.
- D. Obtain and pay for one (1) set of reproducible prints applicable to this Section. These reproducible prints shall be made on 4 mil polyester base "Estar" or approved equal. Make all modifications to these reproducibles as shown on the marked up prints. Remove all superceded data to show the completed installation.
- E. The reproducibles may be made from the originals of the Contract Drawings. Arrange with the Architect to have these reproducibles made from the originals.
- F. Deliver the completed reproducible Record Drawings properly titled and dated to the Architect. These Record Drawings shall become the property of the Owner.

15A.07 PERMITS, FEES, RULES AND REGULATIONS

- A. Give the proper Authorities all requisite notices or information relating to the work under this Section. Obtain and pay for all fees, licenses, permits and certificates. Comply with the rules and regulations of all Local, State and Federal Authorities having jurisdiction, the rules and regulations of the National Board of Fire Underwriters and the Public Utilities Companies serving the building.

15A.08 PROTECTION OF WORK AND PROPERTY

- A. Be responsible for the care and protection of all work included under this Section until it has been tested and accepted.
- B. Protect all equipment and materials from damage from all causes including theft. All materials and equipment damaged or stolen shall be repaired or replaced with equal material or equipment.
- C. Protect all equipment, outlets and openings with temporary plugs, caps and covers. Protect work and materials of other trades from damage that might be caused by work or workmen and make good damage thus caused.

15A.09 SUBMITTAL REQUIREMENTS

- A. Refer to General Conditions and Supplementary Conditions for requirements all of which shall be included as part of this Specification.
- B. Submit for approval, within thirty (30) days after signing the Contract and prior to the submission of any shop drawings, an itemized list of manufacturers of material and equipment and of Subcontractors proposed to be used under this Section.
- C. After approval of the list, submit for review a minimum of eight (8) sets of detailed shop drawings. All shop drawings for equipment submitted for review shall include complete Specifications, including type of materials, operating pressures and temperatures, capacities, performance and power requirements to determine compliance with Contract Documents. All data submitted shall be complete for all equipment and shall apply only to this specific project.
- D. Regardless of any information included in the shop drawing submitted for review, the requirements of the Drawings and Specifications shall not be superseded in any way by the shop drawing review.
- E. Each submittal shall be reviewed, stamped and certified prior to submission to the Architect. Such certification shall be made by the Owner, or Corporate Officer of the Contractor, or by a person duly

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authorized by the Owner to sign binding agreements for the Contractor. The certification shall state that the data and details contained on each shop drawing, layout drawing, catalog data and brochure has been reviewed by the Contractor and that it complies with the Contract Documents in all respects. Shop drawings, layout drawings, catalog data and brochures will not be reviewed and will be returned to the Contractor unchecked unless they are certified.

- F. It is intended that the Contractor submit complete and accurate data at the first submission. If the shop drawing is returned marked "Resubmit", or "Not Accepted", only one (1) additional submission will be permitted.
- G. Equipment shall be of proper size for its allotted space. Equipment shall be disassembled as required, without invalidating the manufacturers' warranty, so that it can be installed through regular window, door, and/or louver openings.
- H. The shop drawings and manufacturer's data shall be submitted in a timely manner sufficiently in advance to give ample time for checking, correcting, resubmitting and rechecking if necessary. No claim for delay will be granted for failure to comply with this requirement.
- I. A minimum period of two weeks, exclusive of transmittal time, will be required in the Engineer's office each time shop drawings, layout drawings, and catalog data and brochures are submitted or resubmitted for review. This time period shall be considered by the Contractor when scheduling his work.

15A.10 MATERIAL AND EQUIPMENT STANDARDS

- A. Refer to General Conditions and Supplementary General Conditions regarding substitution of materials as it relates to this project.
- B. Where materials or equipment are specified by patent proprietary name, or name of the manufacturer, such specification shall be deemed to be used for the purpose of establishing a standard for that particular item. Substitutions may be offered for review provided the material, equipment or process offered for consideration is equal in every respect to that indicated or specified and only if the term "approved equal" appears.

15A.11 GUARANTEE

- A. Refer to General Conditions and Supplementary Conditions for requirements all of which shall be included as part of this Specification.
- B. Manufacturers shall provide their standard warranties for material and equipment furnished under this Section. Such warranties shall be in

addition to and not in lieu of all liabilities which the manufacturer and Contractor may have by law or by provisions of the Contract Documents.

- C. All materials, equipment and work furnished under this Section shall be guaranteed against all defects in materials and workmanship for a period of one (1) year commencing with the date of Substantial Completion. Any failure due to defective material, equipment or workmanship which may develop, shall be corrected at no expense to the Owner including all damage to areas, materials and other systems resulting from such failures.
- D. Upon receipt of notice from the Owner of failure of any part of the systems during the guarantee period, the affected parts shall be replaced. Any equipment requiring excessive service shall be considered defective and shall be replaced.

15A.12 CONTINUITY OF SERVICE AND SCHEDULING OF WORK

- A. Continuity of all services shall be maintained in all areas which will be occupied during the construction period. If an interruption of service becomes necessary, such shall be made only upon consent of the Owner and at a time outside normal working hours as he shall designate.
- B. Refer to the overall scheduling of the work of the project. Schedule work to conform to this schedule and install work to not delay nor interfere with the progress of the project.

15A.13 CERTIFICATES OF APPROVAL

- A. Upon completion of all work, furnish, in duplicate, certificates of inspections from the manufacturers stating that authorized factory engineers have inspected and tested the operation of their respective equipment and found same to be in satisfactory operating condition.

15A.14 OPERATING INSTRUCTIONS AND MAINTENANCE MANUALS

- A. Give detailed instructions, prior to the completion of the work, to the responsible personnel designated by the Architect in the operation and maintenance of all work installed under this Section. A letter with two (2) copies containing the name of the person or persons to whom the instructions were given and the dates of the instruction period shall be submitted to the Architect at the completion of the project.
- B. In addition, prepare three (3) sets of manufacturer's catalogs, other similar data including the necessary photographic equipment cuts, wiring diagrams covering all mechanical equipment and devices furnished and installed under this Section. These manuals shall provide complete instructions for the proper operation and use of the equipment together with instructions for lubrication and periodic maintenance and for

trouble shooting. Operating instructions shall be specific for each system and shall include copies of posted specific instructions. This manual shall contain only that information which specifically applies to this project and all unrelated material shall be deleted. During the instruction period this manual shall be used and explained. The material shall be bound in note book form and indexed.

- C. Provide name, address and telephone number of the manufacturer's representative and service company for each piece of equipment so that the source of replacement parts and service for each item of equipment can be readily obtained.

15A.15 VALVE TAGS AND LISTS

- A. This Subcontractor shall provide on each gate valve, on each globe valve, and on all automatic control valves installed under this Section, a 2 inch diameter brass tag with stamped numerals and letters painted white. The tags shall be attached to the valve handle or stem with brass chains and properly secured. All numbers shall be prefixed by letters corresponding to those listed for piping identification.
- B. These numbers shall correspond with numbers indicated for valves and controls on the Record Drawings and on a minimum of two (2) printed valve lists. These printed lists shall state the number and locations of each valve and the section, fixture or equipment which it controls, and other necessary information, such as requiring the opening or closing of another valve where one (1) valve is to be opened or closed.
- C. Printed lists shall be prepared in a form to meet the approval of the Architect, framed under glass and displayed in rooms designated by the Architect.

PART 2 - PRODUCTS

15A.16 PIPE AND FITTINGS

- A. Type "A": Cement lined ductile iron, Class 52, mechanical joint fittings conforming to AWWA Class D. Pipe and fittings shall be cement lined on the inside and bituminous coated on the outside. Changes in direction shall have tie rods anchored to concrete thrust blocks.
- B. Type "B": Type L hard drawn copper tubing with cast bronze or copper sweat fittings joined with approved 95/5 tin antimony solder.
- C. Type "C": Service weight hubless cast iron soil pipe and fittings joined with approved stainless steel mechanical couplings with neoprene gaskets.
- D. Type "D": Service weight bell and spigot cast iron soil pipe and

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fittings joined with oil free oakum and lead.

- E. Type "E": Type DWV hard drawn seamless copper tubing with wrought copper drainage fittings joined with 50/50 solder.
- F. Type "F": Schedule 40 black steel pipe with standard weight cast iron fittings joined with threaded connections.
- G. Type "G": Schedule 40 galvanized steel pipe with galvanized cast iron drainage fittings joined with threaded connections.
- H. Type "H": Schedule 40 black steel pipe with beveled ends with standard weight carbon steel beveled end fittings joined by welding.
- I. Type "I": Extra strength wedge lock vitrified clay pipe and matched fittings; physical properties shall be in accordance with ASTM Designation C-200.
- J. Pipe and fittings shall be in accordance with the following:
- | | |
|--|-----------------|
| 1. Exterior Water Service | Type "A" |
| 2. Cold Water | Type "B" |
| 3. Hot Water and Return | Type "B" |
| 4. Sanitary Waste and Vent (Inside Buried) | Type "D" |
| 5. Sanitary Waste and Vent | Type "C" |
| 6. Sanitary Waste and Vent (Smaller than 2 Inches) | Type "E" or "G" |
| 7. Storm Drainage (Inside Buried) | Type "D" |
| 8. Storm Drainage | Type "C" |
| 9. Gas (2-1/2" and Larger) | Type "H" |
| 10. Gas (Smaller than 2 Inches) | Type "F" |
| 11. Combined Sewer (Storm & Sanitary) | Type "I" |

15A.17 INSULATION

- A. Fiberglass 25AJ/SSL pipe insulation composed of fiberglass heavy density sectional pipe insulation jacketed with an embossed vapor barrier laminate. The jacket shall have a pressure sealing lap adhesive to eliminate the use of staples, adhesives or bands. Installation shall be in accordance with manufacturer's recommendations.
- B. Valves and fittings shall be insulated with Zeston Hi-Lo Temp insulation of thickness equal to adjacent piping and covered with Zeston one (1) piece PVC insulated fitting covers and bound with Zeston Z-tape of a width recommended by manufacturer.
- C. Insulation shall be in accordance with the following schedule:

<u>Service</u>	<u>Insulation Thickness</u>
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Cold Water	1/2"
Hot Water	1"
Horizontal Conductor Piping Including Drain Body and Bend to Vertical	1/2"

15A.18 PIPE SLEEVES, HANGERS AND SUPPORTS

- A. Unless noted otherwise, all hangers and support figure numbers referred to are Carpenter Patterson, Incorporated. All hangers must be Underwriters' Laboratories, Incorporated, U.S.A. approved design.
- B. Hangers and supports for drainage, venting and gas pipe shall be of the following types:
1. Steel clevis hangers, Figure No. 100, attached to steel rod with two (2) nuts for piping 3 inch and larger.
 2. For piping 2-1/2 inch and smaller, steel clevis hanger, Figure No. 100, or steel band adjustable swivel ring hanger, Figure No. 800.
 3. Riser clamps shall be Figure No. 126 or Figure No. 89; riser clamps shall be installed at all risers through floors at each floor.
- C. Hangers and supports for water piping shall be of the following types:
1. Steel band adjustable swivel ring hanger Figure No. 800 with Figure No. 265P shield.
 2. Riser clamps shall be Figure No. 126CT. Riser clamps shall be installed at all risers through floors, at each floor.
 3. In lieu of individual hangers, Figure No. 342 gang hangers, clips and shields may be used.
- D. Each hanger shall be equipped with an insulation shield to support the insulation and prevent the hanger from deforming the insulation.
- E. Each hanger shall be oversized so that the hanger will allow the insulation to pass through undisturbed and uncut.
- F. Fixture Supports:
1. All fixtures and equipment shall be supported and fastened in a satisfactory manner. Where wall hung fixtures are secured to masonry or tile walls or partitions, they shall be fastened with 1/4 inch through bolts provided with nuts and washers or lates at back, except where chair carriers are used. Bolt heads and nuts shall be hexagon and exposed bolts, nuts, washers and screws shall

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be chromium plated brass. Where secured to concrete or brick walls, they shall be fastened with brass bolts or machine screws in lead sleeve type expansion shields and shall extend at least 2 inches into solid concrete or brick.

- G. Where chair carriers are required, they shall be completely concealed in the building construction and shall rigidly support the fixture from the floor. Chair carriers shall be adjustable both vertically and horizontally and shall support fixtures in such a manner that no part of the fixtures shall be supported by the wall or partition. All wall hung water closets shall be supported on combination wall hung drainage fittings and chair carriers furnished complete with foot. These fittings shall be cast iron, vertical type, except as otherwise indicated on the Drawings, fitted with face plate of the proper style to accommodate the water closet specified, furnished complete with the necessary bolts, nuts and washers as well as connecting nipples of the proper length with gaskets for the closet connection.

15A.19 CLEANOUTS

- A. Cleanouts shall be as manufactured by Josam Manufacturing Company, J.R. Smith Manufacturing Company, Zurn Industries, Incorporated or approved equal. The following series numbers are intended to establish a level of quality and comparison.

1. Type "A": Josam Series 56010-2-22 coated cast iron floor cleanout.
2. Type "B": Josam Series 58890-21 round stainless steel wall access cover, center screw and recessed bronze tapped plug.
3. Type "C": Josam Series 58540-21 recessed bronze NPT threaded plug for use in conjunction with standard pipe fittings.
4. Type "D": Josam Series 58900-21 coated cast iron cleanout ferrule no-hub connection and bronze countersunk plug.

- B. Cleanouts shall be in accordance with the following:

- | | |
|---|----------|
| 1. Sanitary, Waste and Storm Systems Buried | Type "A" |
| 2. Sanitary, Waste and Storm Systems in Walls | Type "B" |
| 3. Sanitary, Waste and Storm Systems at Base of Stacks | Type "C" |
| 4. Sanitary, Waste and Storm Systems at Changes
in Direction | Type "D" |

15A.20 VALVES

- A. All gate valves for domestic cold and hot water piping within the building shall be Apollo 70 Series.

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- B. All drain valves for domestic cold and hot water piping within the building shall be screwed end, bronze, solid wedge, inside screw, non-rising stem, similar to Jenkins Brothers, Figure No. 372N with Fig No. 658 cap an chair or equal.

15A.21 FLOOR DRAINS

- A. Floor drain Type A shall be similar to Josam Series 30000-55-2-Z cast iron body and "P" trap, flashing collar, satin nikaloy adjustable square strainer.
- B. Floor drain Type B shall be similar to Josam Series 30000-6S-F9 cast iron body, double drainage flange, collar, weepholes, inside caulk and "P" trap.
- C. Floor drain Type C Same as Type A, except. Type C shall be Caulk outlet, and P-Trap.

15A.22 ROOF DRAINS

- A. Roof drain Type A shall be similar to Josam 21520-3-26 cast iron body, clamping ring with gravel stop, inside caulk outlet.

15A.23 WALL HYDRANTS

- A. Josam Model No. 71200-72-73-81 series cast bronze non-freeze wall hydrant with satin finish nikaloy face, 3/4 inch HPT outlet, back flow preventer, pressure relief valve, bronze casing, bronze operating parts convertible into service tool, 3/4 inch female and 1 inch male NPT inlet connection.

15A.24 WATER HEATER

- A. Furnish and install water heater as manufactured by LOCHINVAR. The heater shall be LOCHINVAR Model No. ETN040-ES with a storage capacity of 40 gallons, a minimum gas input of 33,000 BTU/Hour and a minimum recovery capacity of 32.2 GPH of water from 40^o F to 140^o F.
- B. The heater shall be listed and approved by the American Gas Association and shall comply with ASHRAE 90-75 and ASME Code for a working pressure of 150 psig.
- C. The heater shall not be more than 18 inches diameter x 58-1/4 inches high.
- D. The heater shall include an approved pressure and temperature relief valve and dielectric couplings on connection points where piping of dissimilar metals are joined.

15A.25 SUMP PUMP (ELEVATOR PIT)

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A. Furnish and install one Weil Pump Co. Series 1400 Submersible Sump Pump, Model 1-1/4 - 140014 - 1/3, rated to deliver 33 GPM at 11' TDH with 1/3 HP, 115 volt, single phase, 60 cycle, AC, 1450 RPM hermetically sealed motor.

B. Controls:

1. A compression type micropressure switch complete with 10' of PVC breather type cord having molding grounded plug and manual test button for 115 volt.

15A.26 SHOCK ABSORBERS - (WATER HAMMER ARRESTORS)

A. Water Hammer arrestors shall be Watts No. 150A series. Sizes are indicated on the drawings.

15A.27 ACCESS PANELS

A. Furnish access panels for access to all concealed parts of the plumbing systems that require accessibility for the proper operation and maintenance of the system.

B. Size shall be sufficient for the purpose, but no less than 12 inches by 18 inches. Particular attention shall be exercised in the selection of doors for masonry walls in order that frame sizes used will match the courses of brick or block.

C. Access doors shall be prime coated of rust inhibitive paint, continuous hinge and manufactured by Inland Steel Products Company "Milcor", Miami-Carey or Walsh-Hannon-Gladwin, Incorporated "Way Lector". Type shall be as follows:

1. Acoustical Tile Ceilings: Style A with 16 gauge frame, 18 gauge panel and flush screwdriver operated cam locks.
2. Suspended Lath and Plaster Ceilings: Style K with 16 gauge frame, 14 gauge panel and flush screwdriver operated cam locks.
3. Masonry Non-Rated Walls: Style M with 16 gauge frame, 14 gauge panel and flush screwdriver operated cam locks.
4. Masonry Fire Rated Walls: Fire rated with UL 1-1/2 hour "B" rating, 16 gauge frame, 20 gauge sandwich type insulated panel, self-latching lock having interior release mechanism, and key operated cylinder lock keyed as required to suit requirements of the Architect.

D. Refer to the Contract Architectural Reflected Ceiling Drawings for plaster ceiling locations where the above panels are applicable.

- E. Point out to the Ceiling Subcontractor exactly which tile units are to be marked with a colored button to indicate equipment above.

15A.28 PLUMBING FIXTURES

- A. Plumbing fixtures shall be produced of Kohler, American Standard or Eljer. All exposed trim, fittings, valves and piping shall be chrome plated. The following model numbers refer to the Eljer Company and are intended to establish a standard of quality:

1. P-1. Water Closet

111-1405 Vitreous china siphon jet elongated bowl with 2-5/8 inch passageway and 1-1/2 inch top spud.

White open front solid plastic white seat with check hinge.

Sloan Royal 110-3-YB flush valve assembly.

Combination drainage carrier fitting with supply pipe support.

2. P-1A Water Closet

Same as P-1 except P-1A shall be mounted for handicap users, in accordance with all current Massachusetts Architectural Barriers Board rules and regulations.

3. P-1B - Water Closet

111-1115 Vitreous china siphon jet elongated bowl with 2-5/8 inch passageway, and 1-1/2 inch top spud 10 inch roughing in dimension open from solid plastic white seat with check hinge. Flat bolt covers.

Sloan Royal 110-2-YB flush valve assembly.

Closet flange and wax sealing ring to suit.

4. P-1C - Water Closet

111-0330 Vitreous china siphon jet, round front closet bowl with 1-1/2 inch top spud and bolt caps.

Sloan Royal 110-FYV flush valve.

Closet Flange and wax sealing ring to suit.

5. P-1D - Water Closet

091-1500 white vitreous china, floor mounted, floor outlet. Close coupled, siphon jet closet combination, plain rim bowl, hold down device and bolt caps, complete with anit siphon float valve and flush valve unit and 802-0225 3/8 inch flexible wall supply with wheel handle stop, 124-0200 seat, close front with cover.

6. P-2 Urinal

161-1030 Vitreous china wall hung, washout urinal with intergral flushing rim, integral trap, 3/4 inch top spud, wall hanger and 2 inch female flanged outlet connection.
Concealed carrier with foot support and supply support to suit,
803-0670 behive strainer.
Sloan Royal 195 flush valve.

7. P-2A Urinal

Same as P-2 except urinal shall be hung in accordance with all current Massachusetts Architectural Barriers Board rules and regulations.

8. P-3 Lavatory

051-2718 Vitreous china slab labatory punched for combination fittings and 805-0700 CP wall bracket.
559-1250 combination fittin with gooseneck spout aerator adn 4" wrist action handles.
803-0552 cast brass brain plug with flat striner and 1-1/4" OD tailpiece.
802-0552 wall supplies with wall flanges and 801-0110 wheel handle stops.
804-1125 cast brass 'P' trap with cleanout, slip joint inlet and IPS female outlet.
804-1155 6 inch CP nipple and cast brass flange, 1-1/2 inch 1P size threaded.
Concealed arm carrier with foot support to suit.

9. P-3A Lavatory

Same as P-3 except:
803-0530 grid strainer with 1-1/4" offser drain assembly.
409-1306 1/4" IPS male straight tailpieces.
802-0950 3/8" IPS wall supplies with loose key stops.
804-1185 1-1/4 x 1-1/2 cast body adjustable 'P' trap with cleanout.
Josam 17100-67-76 lavatory carrier for wheelchair use.
Lavatory shall be set 22" front wall to front.

10. P-3B Lavatory

Same as P-3 except:
Chicago No. 746-E12-374 chrome wide spread lavaotry faucet with drain, aerator outlet, chrome lever handles and escutcheons.

11. P-4 Bath Tub and Shower

012-1420 acid resisting enameled cast iron recess bath with

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perma-mat bottom, length 5'-0", width 30", height 14" 517-1100
pressure - equalizing valve, diverter tub filler and shower head
assembly with 3 gpm flow fittings.
512-1000 pop-up bath waste with overflow.

12. P-5 Mop Basin

Fiat Model No. MSB-2424 molded stone mop service basin with
integral 3 inch stainless steel drain body and dome strainer.
Fiat No. 830-AA rough plated faucet with vacuum breaker, threaded
spout with pail hook, No. E-77-AA bumperguard, No. 889-CC mop
hanger, No. 832-AA hose and bracket.
"P" trap No. 833-AA silicone sealant.

13. P-6 Sillcock

Nibco Fig. No. 763VB rough chrome plated, integral backflow and
vacuum breaker.

14. P-7 Water Cooler (Wall Hung, Surface Mounted)

Halsey Taylor Model No. (SW4A-1) self-contained electric water
cooler complete with mounting bracket, angle stop and "P" trap
with cleanout. (Color selected by the Architect).

15. P-7A Water Cooler (Wall Hung, Surface Mounted, Barrier Free)

Halsey Taylor No. (BFC-7F) self-contained electric water cooler
complete with mounting bracket, angle stop and "P" trap with
cleanout. (Cabinet color selected by the Architect).

15A.29 WATER METER

- A. Water meter shall be Hersey 2" Model MMDII - magnetic modular disc
meter screwed ends.

15A.30 PIPE IDENTIFICATION

- A. Label each piece of mechanical equipment with a 1-1/2 inch by 4 inch
long aluminum nameplate with a black enamel background and with the
designated equipment and area or system served engraved in natural
aluminum letters. Secure with two (2) "Phillips head" brass screws or
machine bolt with locknuts. Nameplates shall be manufactured by Seton
Nameplate Company, by Dennison Manufacturing Company, Markem Company or
approved equal.
- B. Identify piping as specified herein. Identification markers for piping
3/4 inch up to and including 5 inch shall be Setmark Type SNA. Piping 6
inches and above shall be identified with Setmark Type STR laminated
plastic markers.

- C. Exposed piping and piping above removable ceilings shall be identified at intervals of 20'-0" and at each change of direction together with an arrow showing the direction of flow.
- D. Legend and colors shall conform to the following, with all lettering and arrow colored black:

<u>Service</u>	<u>Band Color</u>	<u>Legend</u>
Cold Water	Green	CW
Hot Water Supply	Yellow	HWS
Sanitary	Green	SAN
Storm	Green	ST
Vent	Green	V
Gas	Yellow	G

15A.31 STERILIZATION

- A. All water systems shall be sterilized in accordance with Local Public Health and Plumbing Code Requirements.

15A.32 TESTS AND APPROVALS

- A. Pipe lines shall be blown or flushed clean, before piping tests are applied. All plumbing work shall be tested as herein specified. No portion shall be covered, concealed, used or made inaccessible to testing, inspection, repair, correction or replacement until tests thereof have been satisfactorily completed in the presence of the Architect's Authorized Representatives. The Plumbing Subcontractor must accommodate his testing operations to the progress of the project as a whole. Correct all defects appearing under test and repeat the tests until all parts of the work have withstood them successfully.
- B. Furnish all labor, material and services for testing, including testing plugs, pumps and compressors; he shall make and remove all temporary piping connections required for the tests and shall dispose of test water and all wastes after tests. Leave all work in good order, ready for full use.
- C. Tests on all plumbing systems shall be made in accordance with the requirements of the Local Plumbing Code.

PART 3 - EXECUTION

15A.33 DOMESTIC WATER SYSTEMS

- A. All copper tubing shall be cut accurately to measurements obtained at

the site and shall be installed without springing or forcing.

- B. Branch lines from service or main lines may be taken off the top or bottom of main using such crossover fittings as may be required by structural or installation conditions. All service pipes, fittings and valves shall be kept at sufficient distance from other work to permit not less than 1/2 inch from finished coverings and such other work and not less than 1/2 inch between finished coverings on the different services.
- C. All piping shall be supported from the building structure with pipe hangers. In general, all lines shall be installed concealed above ceilings in finished spaces where they may occur.
- D. All copper tubing shall be cut true with cutters; the ends shall be reamed out to the full inside diameter of the pipe. Cap all open ends to prevent the entrance of debris.
- E. Provide shock absorbers as required.
- F. Provide valves on every branch, to group of fixtures and wherever indicated on the Drawings.
- G. Pipes shall be run parallel and graded evenly to draining points. Provide a drain valve with cap and chain at each low point in piping so that all parts of the systems can be drawn off.

15A.34 NATURAL GAS SYSTEMS

- A. All piping shall be cut accurately to measurements obtained at the site and shall be installed without springing or forcing.
- B. Branch lines from service or mains shall be taken off the top of main using such crossover fittings as may be required by structural or installation conditions. All service pipes, fittings and valves shall be kept at sufficient distance from other work to permit not less than 1/2 inch between finished coverings on the different services.
- C. All piping shall be supported independently from the building structure with pipe hangers. In general, all lines shall be installed concealed above ceilings in finished spaces where they may occur.
- D. All piping shall be cut true and threaded. Cap all open ends to prevent the entrance of debris.
- E. Provide valves on every branch and where indicated on the Drawings.
- F. All pipes shall be run parallel and graded evenly to low points. Provide a drip leg at each low point and at the base of each riser.

- G. Provide dirt legs at all equipment.

15A.35 SANITARY SYSTEMS

- A. Soil, waste and vent piping inside the building shall be run as indicated on the Drawings, properly secured to the building structure with iron hangers. Extend to roof all lines of soil, waste and vent piping in stacks with all branches and fittings required and extension through roofs as required by the Local Plumbing Code. Where an end circuit vent pipe from any fixture or line of fixtures is connected to a vent line serving other fixtures, the connection shall be at least 3 feet or sufficiently above the floor on which the fixtures are located to prevent the use of the vent line as a waste.
- B. All changes in pipe size and direction on soil and waste lines shall be made with Y's and cleanouts, reducing fittings or recessed reducers. Y's and 45° fittings, or 45° combination fittings shall be used wherever possible. Use long sweep bends at the bottom of stacks.
- C. All fixtures and drains on the sanitary drainage system shall be separately trapped and each trap shall be vented.
- D. Sanitary long sweep bends and Y's shall be used for connections to branch lines for fixtures and T.Y's on vertical runs of pipe only. Long turn fittings shall be used wherever conditions permit. Short radius fittings may be installed where in conformity with the Plumbing Code. Furnish and install cleanouts at the bottom of all soil, and waste stacks, at every change in direction on soil, and waste piping. Plug all temporary open ends to prevent the entrance of debris.

15A.36 STORM SYSTEMS

- A. Storm piping inside the building shall be run as indicated on the Drawings, properly secured to the building structure with iron hangers.
- B. All changes in pipe size and direction on storm, lines shall be made with Y's and cleanouts, reducing fittings or recessed reducers. Y's and 45° fittings, or 45° combination fittings shall be used wherever possible. Use long sweep bends at the bottom of stacks.
- C. Sanitary long sweep bends and Y's shall be used for connections to branch lines and T.Y's on vertical runs of pipe only. Long turn fittings shall be used wherever conditions permit. Short radius fittings may be installed where in conformity with the Plumbing Code. Furnish and install cleanouts at the bottom of all storm, stacks, at every change in direction on storm piping. Plug all temporary open ends to prevent the entrance of debris.

15A.36 INSULATION

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- A. All pipe covering and insulation shall be carefully applied by mechanics skilled in the trade. All insulation shall be as manufactured by Owens Corning or approved equal.
- B. Pipe coverings and insulation shall be installed on all piping, valves and fittings except piping, valves and fittings which are to be chrome plated.
- C. All systems shall be tested and approved prior to installing pipe covering and insulation.
- D. Staples are not to be used.
- E. All pipe covering and insulation shall pass through all walls, ceiling and floor continuously. The only area where the insulation shall not pass continuously shall be at riser clamps. Hanger shall be installed with insulation shields on the outside of the insulation.

15A.38 PIPE SLEEVES, HANGERS AND SUPPORTS

- A. Pipe sleeves, hangers and fixture supports for all piping shall be furnished and set by this Contractor and this Contractor shall be responsible for their proper and permanent location.
- B. Pipe Sleeves shall be installed and properly secured at all points where pipes pass through masonry, concrete or wood. Pipe sleeves shall be of sufficient diameter to provide approximately 1/4 inch clearance around pipe. Pipe sleeves through masonry partitions and floors shall be Schedule 40 galvanized pipe with chromium plated escutcheons with set screws or clips for firmly holding in place. Sleeves in floors shall extend 1 inch above floor and after installation of pipe shall be packed and made water tight. Sleeves through walls shall end flush with surface of walls.
- C. All piping shall be rigidly supported from the building structure by means of approved hangers and supports. Pipes shall be supported to maintain required grading and pitching of lines to prevent vibration and to secure piping in place and shall be arranged so as to provide for proper expansion and contraction of pipe.
- D. All horizontal piping shall be hung with approved adjustable, malleable iron pipe hangers, unless otherwise specified and spaced not over the following distances:

Cast Iron	5'-0" at Joint
Copper Tubing and Brass Pipe	6'-0" on Center
Steel Pipe	10'-0" on Center

- E. Rod size shall be the same as that approved for use with the hanger assembly, and the size of the rods shall not be less than given in the

following table:

1/2" to 4" Pipe	3/8" Rod
5" and Larger	1/2" Rod

- F. All auxiliary framing required to support plumbing piping between structural frames or grids where they occur will be a part of this Section.

15A.39 CLEANOUTS

- A. All cleanouts shall be set flush with walls or floors. Finish shall be protected during construction with proper covering.

15A.40 VALVES

- A. All valves furnished and installed under this Section shall be located in a manner to allow proper access for service and repair.
- B. In no case shall valve stem and handle be installed below the center line of the pipe it serves.

15A.41 ACCESS PANELS

- A. Furnish and deliver access panels for access to all concealed parts of the plumbing systems that require accessibility for the proper operation and maintenance of the system. Access panels shall be installed by the appropriate trades.

15A.42 PLUMBING FIXTURES

- A. All plumbing fixtures, except as otherwise noted, shall be furnished and installed by this Contractor; he shall be responsible for correctly setting these fixtures as shown on Architect's Plans and interior elevations.
- B. Fixtures designated as handicapped use shall be mounted in accordance with Local Codes.

15A.43 PIPE IDENTIFICATION

- A. Exposed piping and piping above removable ceilings, shall be labeled at 20'-0" intervals, at each change in direction and on either side of a floor or wall penetration.
- B. All labels shall be placed so that they can be easily read from the floor.

15A.44 VALVE TAGS

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- A. Tags shall be attached to the valve handles or stem necks with brass hooks or chains and properly secured. All numbers shall be prefixed by letters corresponding to those listed for pipe identification.
- B. These numbers shall correspond with numbers indicated for valves and controls on the Record Drawings and on a minimum of two (2) printed valve lists. These printed lists shall state the number and locations of each valve and control and the section, fixtures or equipment which it controls and other necessary information, such as requiring the opening or closing of another valve when one (1) valve is to be opened or closed.

15A.45 CLEANOUTS

- A. Cleanouts shall be located and set flush with finished floors and walls in accordance with the Local Plumbing Code.
- B. Cleanouts shall be gas tight and protected against damage during construction and provided with the necessary adapters to conform to the pipe materials.

15A.46 FLOOR DRAINS

- A. Floor drains shall be furnished and installed by this Contractor; he shall be responsible for correctly setting these drains at the proper grade to assure proper drainage from all surrounding areas. These drains shall be as manufactured by J.R. Smith, Zurn, Josam or approved equal. Sizes of drains shall be the same size as the pipe it serves.

15A.47 ROOF DRAINS

- A. Roof drains shall be furnished by this Contractor and installed by the Roofing Contractor, including setting and flashing. These drains shall be as manufactured by J.R. Smith, Zurn, Josam or approved equal.

15A.48 WALL HYDRANTS

- A. Hydrants shall be set 18 inches above outside grade and placed as indicated. Loose key stops shall be turned over to the Owner prior to completion.