

PLUMBING SPECIFICATIONS

I. GENERAL

A. GENERAL: THE WORK COVERED CONSISTS OF FURNISHING ALL LABOR AND MATERIALS NECESSARY TO INSTALL, COMPLETE AND READY FOR CONTINUOUS OPERATION, THE PLUMBING SYSTEMS, APPARATUS AND EQUIPMENT FOR THE STARBUCKS AT MASSPIKE WEST IN LUDLOW, MA .

B. SHOP DRAWINGS: SHOP DRAWINGS FOR ALL SPECIFIED FIXTURES, EQUIPMENT AND APPARATUS SHALL BE SUBMITTED TO THE ARCHITECT FOR APPROVAL.

C. CODES: ALL EQUIPMENT AND MATERIALS FURNISHED UNDER THE PLUMBING SUB-CONTRACT AND LABOR AND TESTING PERFORMED HEREIN SHALL BE IN COMPLETE ACCORDANCE WITH THE MASSACHUSETTS STATE BUILDING, FUEL GAS, PLUMBING CODES, LOCAL ORDINANCES AND REGULATIONS OF THE CITY OR TOWN, NATIONAL FIRE PROTECTION ASSOCIATION AND INSURANCE REGULATIONS AND REQUIREMENTS GOVERNING SUCH WORK.

D. PERMITS: ANY AND ALL PERMITS REQUIRED FOR INSTALLATION OF ANY MATERIAL SHALL BE OBTAINED AS PART OF THE WORK OF THIS SPECIFICATION INCLUDING ALL FEES OR EXPENSES INCURRED.

E. INSTRUCTIONS: DURING THE ASSEMBLY AND INSTALLATION OF ALL PLUMBING SYSTEMS, THE OWNER'S OPERATING PERSONNEL SHALL BE INSTRUCTED REGARDING ITS OPERATION AND MAINTENANCE. A TWO (2) HOUR INSTRUCTION PERIOD SHALL BE PROVIDED AFTER COMPLETION OF PROJECT. OPERATION AND MAINTENANCE MANUALS SHALL BE REQUIRED.

F. GUARANTEE: ALL MATERIALS AND EQUIPMENT FURNISHED AND INSTALLED UNDER THIS SPECIFICATION SHALL BE GUARANTEED IN WRITING FOR ONE (1) YEAR FROM THE DATE OF ACCEPTANCE OF THE BUILDING BY THE OWNER.

G. RECORD DRAWINGS: THE PLUMBING SUBCONTRACTOR SHALL MAINTAIN AT THE JOB, AT ALL TIMES, A COMPLETE AND SEPARATE SET OF BLACKLINE PRINTS OF THE PLUMBING DRAWINGS OF HIS TRADE ON WHICH HE SHALL MARK CLEARLY, NEATLY, ACCURATELY, AND PROMPTLY AS THE WORK PROGRESSES. TWO CADD DISKS, AUTOCAD RELEASE 14 OR COMPATIBLE SYSTEM AS WELL AS REPRODUCIBLE AS-BUILTS SHALL BE FURNISHED BY THE PLUMBING SUBCONTRACTOR AT THE JOB COMPLETION.

H. INSPECTION: ALL WORK SHALL BE SUBJECT TO THE INSPECTION OF THE OWNER, THE ARCHITECT AND SUCH OTHER INSPECTORS HAVING JURISDICTION. A PROPERLY EXECUTED CERTIFICATE OF INSPECTION SHALL BE PROVIDED.

I. EXAMINATION OF SITE: THE PLUMBING SUBCONTRACTOR, BEFORE SUBMITTING PRICES OR BEGINNING WORK, SHALL THOROUGHLY EXAMINE THE SITE AND CONTRACT DOCUMENTS. NO CLAIM FOR EXTRA COMPENSATION WILL BE RECOGNIZED IF DIFFICULTIES WHICH AN EXAMINATION OF SITE CONDITIONS AND CONTRACT DOCUMENTS PRIOR TO EXECUTING CONTRACT WOULD HAVE REVEALED.

J. COORDINATION: COORDINATE ALL WORK INSTALLED UNDER THIS SPECIFICATION WITH THAT OF ALL OTHER TRADES.

K. PROTECTION OF PROPERTY: PROTECT ALL NEW AND EXISTING WORK BEFORE, DURING AND AFTER INSTALLATION.

L. DISINFECTION: ALL DOMESTIC WATER SYSTEMS SHALL BE DISINFECTED IN ACCORDANCE WITH THE LOCAL PUBLIC HEALTH AND PLUMBING CODE REQUIREMENTS.

M. TESTS: THE PLUMBING SUBCONTRACTOR SHALL PERFORM ALL TESTS AT THE COMPLETION OF THE WORK, AND THE RESULTS FURNISHED TO THE OWNER AND ARCHITECT IN WRITING.

N. CERTIFICATES OF APPROVAL: UPON COMPLETION OF ALL WORK, THE PLUMBING SUBCONTRACTOR SHALL FURNISH, IN DUPLICATE, CERTIFICATES OF INSPECTIONS FROM ALL INSPECTORS AND AUTHORITIES HAVING JURISDICTION, NOTARIZED LETTERS FROM THE MANUFACTURERS STATING THAT AUTHORIZED FACTORY ENGINEERS HAVE INSPECTED AND TESTED THE INSTALLATION OF THEIR RESPECTIVE SYSTEMS AND FOUND SAME TO BE IN PERFECT OPERATING CONDITION.

O. CONTRACT DRAWINGS: THE CONTRACT DRAWINGS ARE DIAGRAMMATIC AND INDICATE ONLY THE GENERAL ARRANGEMENTS OF WORK. IT IS NOT THE INTENT OF THESE DRAWINGS TO SHOW EVERY PIPE, RISE, DROP, ELBOW, ETC. ANY ADDITIONAL WORK NOT SHOWN AND REQUIRED TO INSTALL THE PLUMBING SYSTEMS SHALL BE INCLUDED AS PART OF THIS CONTRACT.

P. REMOVAL WORK: PARTICULAR CARE SHALL BE TAKEN TO AVOID CREATING HAZARDS ON THE SITE OR CAUSING DISRUPTION OF SERVICE IN THE BUILDING. ALL EXISTING EQUIPMENT TO BE REMOVED SHALL BE DONE IN A NEAT AND WORKMANLIKE MANNER. ALL EXISTING EQUIPMENT TO BE TURNED OVER TO THE OWNER SHALL BE PRESENTED TO THE OWNER IN GOOD CONDITION AT A LOCATION DESIGNATED BY THE OWNER. ALL OTHER EQUIPMENT SHALL BE REMOVED FROM THE PREMISES. REMOVE ALL ABANDONED PIPING AND EQUIPMENT NOT BUILT INTO BUILDING CONSTRUCTION. WHERE CEILING OR WALLS ARE REMOVED, ALL ABANDONED PIPING SHALL BE REMOVED AND ENDS OF LIVE SERVICES CAPPED. ABANDONED ELEMENTS BUILT INTO WALLS OR LOCATED ABOVE EXISTING INACCESSIBLE CEILINGS SHALL REMAIN AND ENDS CAPPED AND MARKED ABANDONED.

Q. CONTINUITY OF SERVICES: SERVICES SHALL BE MAINTAINED IN ALL AREAS WHICH WILL BE OCCUPIED DURING THE CONSTRUCTION PERIOD. WHEN AN INTERRUPTION OF SERVICE BECOMES NECESSARY, SUCH SHALL BE MADE ONLY UPON CONSENT OF THE OWNER AT A TIME OUTSIDE NORMAL WORKING HOURS AS HE SHALL DESIGNATE. 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.

R. ASBESTOS REMOVAL: SHOULD THIS SUBCONTRACTOR OR ANY OF ITS SUB-SUBCONTRACTORS ENCOUNTER ANY ASBESTOS AND/OR ASBESTOS RELATED PRODUCTS OF MATERIALS (THE ASBESTOS MATERIALS) DURING THE PERFORMANCE OF ITS WORK, THIS SUBCONTRACTOR SHALL STOP WORK IMMEDIATELY AND SO INFORM THE GENERAL CONTRACTOR AND THE OWNER OF THE PRESENCE OF ASBESTOS.

S. SEISMIC RESTRAINTS: INSTALLATION OF PLUMBING EQUIPMENT, ACCESSORIES AND COMPONENTS SHALL BE IN ACCORDANCE WITH THE SEISMIC REQUIREMENTS IDENTIFIED IN THE MASSACHUSETTS STATE BUILDING CODE, SIXTH (6TH) EDITION.

II. SCOPE

A. THE WORK OF THIS SECTION CONSISTS OF ALL LABOR, MATERIALS AND EQUIPMENT REQUIRED TO PROVIDE ALL PLUMBING WORK COMPLETE, IN PLACE, AS SHOWN ON THE DRAWINGS, SPECIFIED HEREIN AND AS NECESSARY FOR A PROPER INSTALLATION.

- B. THE EXTENT OF THE PLUMBING WORK SHALL INCLUDE, BUT NOT BE LIMITED TO THE FOLLOWING:
 1. DOMESTIC COLD WATER SYSTEM.
 2. DOMESTIC HOT WATER SUPPLY AND HOT WATER RECIRCULATION SYSTEM.
 3. SANITARY WASTE AND VENT SYSTEM.
 4. FILTERED COLD WATER SYSTEM
 5. ALTERATIONS, ADDITIONS AND/OR REMOVAL OF EXISTING PLUMBING SYSTEMS AND FIXTURES WITHIN THE RENOVATED AREA IN ORDER TO CONFORM TO NEW SPACE REQUIREMENTS.
 6. INSTALLATION OF TOILET ROOM ACCESSORIES.
 7. CORE DRILLING.
 8. INSULATION OF ALL EXISTING COLD WATER, HOT WATER, HOT WATER RECIRCULATION AND CONDUCTORS SYSTEMS PIPING, VALVES AND FITTINGS MADE BARE AS A RESULT OF ASBESTOS ABATEMENT. WHEN CONNECTING TO EXISTING INSULATED SYSTEMS PROVIDE NEW INSULATION FOR THREE FEET ON EITHER SIDE OF THE NEW CONNECTION.
 9. FURNISHING OF ACCESS PANELS.

III RELATED WORK

A. THE FOLLOWING EQUIPMENT ITEMS AND WORK SHALL BE THE RESPONSIBILITY OF OTHERS:

1. CUTTING AND PATCHING
2. TEMPORARY WATER, HEAT, FIRE PROTECTION AND TOILET FACILITIES
3. TEMPORARY POWER AND LIGHTING
4. EXCAVATION AND BACKFILL
5. CONCRETE AND MASONRY SUPPORTS AND EQUIPMENT BASES
6. FLASHING AND CAULKING
7. FINISH PAINTING
8. HEATING, VENTILATING AND AIR CONDITIONING
9. ELECTRICAL POWER AND WIRING
10. FURNISHING OF TOILET ROOM ACCESSORIES
11. INSTALLATION OF ACCESS PANELS
12. FOOD SERVICE EQUIPMENT
13. FOUNDATIONS AND TRENCHING

IV MATERIALS

A. PIPE AND FITTINGS

1. TYPE A: (COLD, FILTERED, HOT AND HOT WATER RECIRCULATION AND INDIRECT WASTE SMALLER THAN 1-1/4")

TYPE L HARD DRAWN COPPER TUBING WITH WROUGHT COPPER SWEAT FITTINGS JOINED WITH APPROVED 95/5 LEAD FREE TIN ANTIMONY SOLDER.

2. TYPE B: (SANITARY, WASTE AND VENT 2" AND LARGER)

NO HUB CAST IRON SOIL PIPE AND FITTINGS JOINED WITH APPROVED STAINLESS STEEL MECHANICAL COUPLINGS WITH NEOPRENE GASKETS.

3. TYPE C: (SANITARY, WASTE AND VENT SMALLER THAN 2")

TYPE DWV HARD DRAWN SEAMLESS COPPER TUBING WITH WROUGHT COPPER DRAINAGE FITTINGS JOINED WITH 95/5 LEAD FREE TIN ANTIMONY SOLDER.

4. PIPE AND FITTINGS SHALL BE IN ACCORDANCE WITH THE FOLLOWING:

- a. COLD WATER TYPE
- b. HOT WATER SUPPLY AND RECIRCULATION TYPE
- c. SANITARY WASTE AND VENT TYPE
- d. WASTE AND VENT SMALLER THAN 2" TYPE
- e. WATER HEATER RELIEF VALVE DISCHARGE TYPE
- f. WATER HEATER SAFE PAN DISCHARGE TYPE
- g. STORM AND SANITARY FROM LAST BUILDING CLEANOUT TO 10'-0" BEYOND FOUNDATION WALL TYPE
- h. SPECIAL WASTE PUMP DISCHARGE TYPE
- i. INDIRECT WASTE PIPING SMALLER THAN 1 1/2" TYPE
- j. INDIRECT WASTE PIPING 1 1/2" AND LARGER TYPE

B. INSULATION

1. ALL DOMESTIC COLD AND HOT WATER SUPPLY AND RECIRCULATION PIPE, FITTINGS AND VALVES SHALL BE INSULATED WITH HEAVY DENSITY RIGID FIBERGLASS WITH A VAPOR BARRIER AND ALL PURPOSE JACKET WITH SELF-SEALING LAP JOINT. VALVES AND FITTINGS SHALL BE INSULATED WITH ZESTON HI-LO INSULATION AND COVERED WITH 25/50 RATED PVC COVERS SECURED WITH VAPOR RETARDER MASTIC.
2. INSULATION THICKNESS SHALL BE AS FOLLOWS:

COLD WATER = 1/2"
 FILTERED WATER = 1/2"
 HOT WATER SUPPLY AND RECIRCULATION UP TO 4" = 1"

C. PIPE SLEEVES, HANGERS AND SUPPORTS

1. ALL PIPING SHALL BE PROPERLY SUPPORTED FROM THE BUILDING STRUCTURE IN ACCORDANCE WITH LOCAL CODES AND MANUFACTURER'S RECOMMENDATIONS. HANGERS FOR INSULATED PIPING SHALL BE OVERSIZED AND FURNISHED WITH A SHEETMETAL INSULATION SHIELD TO ALLOW THE INSULATION TO PASS THROUGH UNCUIT. PROVIDE SCHEDULE 40 PIPE SLEEVES, EXTEND 1 INCH ABOVE FLOOR, MAKE WATERTIGHT AND PACK WITH MATERIAL THAT SHALL MAINTAIN FIRE RATING. PROVIDE CORE DRILLING WHERE REQUIRED AND PROVIDE FIRE RATED LINK SEAL PENETRATION CLOSURES.

C. VALVES

1. ALL SHUT OFF VALVES ON COLD WATER, HOT WATER, AND HOT WATER RECIRCULATION PIPING FROM 1/2 INCH UP TO AND INCLUDING 2 INCH SHALL BE APOLLO SERIES 77-200, SOLDER END, BRONZE BODY BALL VALVE, CHROME-PLATED BRONZE BALL, 600 PSI WOG, FULL PORT BALL VALVE.
2. ALL SHUT OFF VALVES ON COLD WATER, HOT WATER AND HOT WATER RECIRCULATION PIPING 1/2 INCH, 2-1/2 INCH AND 3 INCH SHALL BE APOLLO SERIES 70-200, SOLDER END, BRONZE BODY BALL VALVE, CHROME-PLATED BRONZE BALL, 600 PSI WOG.
3. ALL SHUT OFF VALVES ON COLD WATER, HOT WATER AND HOT WATER RECIRCULATION PIPING LARGER THAN THREE INCHES SHALL BE NIBCO FIGURE NO. F-617-0, FLANGED ENDS, IRON BODY BRONZE MOUNTED, SOLID WEDGE, INSIDE SCREW, NON-RISING STEM, 200 PSI WOG.
4. ALL CHECK VALVES ON COLD WATER, HOT WATER AND HOT WATER RECIRCULATION PIPING THREE INCHES AND LESS IN SIZE SHALL BE NIBCO FIGURE NO. S-413-W, SOLDER END, BRONZE BODY SWING CHECK, BRONZE DISC, 200 PSI WOG.
5. ALL DRAIN VALVES SHALL BE 1/2 INCH APOLLO MODEL 78-103 WITH WATTS NO. 8A HOSE CONNECTION VACUUM BREAKER, CAP WITH CHAIN OF LENGTH AS REQUIRED.
6. ALL BALANCING VALVES FOR HOT WATER RECIRCULATION SHALL BE THE SAME AS SPECIFIED FOR SHUT OFF VALVES AND SHALL BE MODIFIED TO INCLUDE BALANCING STOP PLATE.
7. ALL BALL VALVES FOR INSTALLATION IN INSULATED PIPING SHALL HAVE VALVE EXTENSIONS TO SUIT INSULATION THICKNESS.
8. BACKFLOW PREVENTERS 2 INCHES AND SMALLER SHALL BE REDUCED PRESSURE PRINCIPLE, ALL BRONZE, WATTS SERIES U-009-QTS FOR COLD WATER AND HOT WATER INCLUDING BRONZE STRAINER, VALVES, AIR GAP FITTINGS TEST COCKS AND SPARE PARTS KIT. BACKFLOW PREVENTER LARGER THAN 2 INCHES SHALL BE WATTS SERIES 909 OR SERIES 909HW INCLUDING STRAINER, VALVES, AIR GAP FITTINGS TEST COCKS AND SPARE PARTS KIT. EACH BACKFLOW PREVENTER AND SHUTOFF VALVES SHALL BE INSTALLED BETWEEN 3 AND 4 FEET ABOVE THE FLOOR AND A MINIMUM OF 12 INCHES FROM ANY WALL. SUPPORT THE ASSEMBLY FROM THE FLOOR OR THE WALL. RUN VENT TO NEAREST FLOOR DRAIN OR SIMILAR OPEN RECEPTOR. PRESSURE GAUGES SHALL BE INSTALLED ON THE SUPPLY AND DISCHARGE SIDE OF EACH BACKFLOW PREVENTER ASSEMBLY. EACH PRESSURE GAUGE ASSEMBLY SHALL INCLUDE TRENDE 600-C GAUGE, 0-160 PSI DIAL RANGE, 735-2 VALVE AND 872-1 SNUBBER. FURNISH TO THE OWNER ONE WATTS TR-9 MODEL A TEST KIT. THIS CONTRACTOR SHALL ACT AS THE OWNER'S AGENT IN SEEKING APPROVAL FROM THE DEPARTMENT OF ENVIRONMENTAL PROTECTION OR THEIR DESIGNEE. THIS CONTRACTOR SHALL SUBMIT ALL PLANS, SPECIFICATIONS, AND APPLICATIONS REQUIRED FOR APPROVAL AND SHALL PAY ALL FEES. APPROVALS SHALL BE SECURED PRIOR TO THE PURCHASE AND INSTALLATION OF BACKFLOW PREVENTERS. TEST AND CERTIFY BACKFLOW PREVENTER.

D. FLOOR DRAINS

1. FLOOR DRAINS SHALL BE CAST IRON BODY WITH WEEPHOLES AND FLASHING COLLAR. GRATES SHALL BE POLISHED CHROME-PLATED BRASS IN FINISHED AREAS AND COATED CAST IRON IN UNFINISHED AREAS.
2. TYPE A: CAST IRON BODY WITH ACID RESISTANT COATED INTERIOR, NICKEL BRONZE RIM AND HALF GRATE, WITH ALUMINUM SEDIMENT BUCKET, SIMILAR TO JAY R. SMITH FIGURE 2005Y.
3. PROVIDE TRAP PRIMER CONNECTION FOR ALL FLOOR SINKS OR FLOOR DRAINS.

E. PIPE IDENTIFICATION AND VALVE TAGS

1. ALL PLUMBING SYSTEMS SHALL BE LABELED AT EACH VALVE, AT EACH BRANCH, AT EACH PIPE PASSAGE THROUGH WALL AND AT INTERVALS OF NOT MORE THAN 20 FEET WITH COLOR CODED SEMI-RIGID SETMARK PIPE MARKERS WITH ARROWS INDICATING THE DIRECTION OF FLOW. ALL VALVES SHALL BE TAGGED WITH 1-1/2 INCH DIAMETER BRASS TAGS AND NUMBERED IN SEQUENCE FROM POINT OF ORIGIN. VALVE CHARTS SHALL BE PLACED UNDER GLASS, FRAMED AND PRESENTED TO THE OWNER.

K. CLEANOUTS

1. CLEANOUTS SHALL BE IRON BODY WITH HEAVY BRASS PLUG AND RAISED NUT, SAME SIZE AS PIPE FOR PIPING UP TO FOUR INCHES AND NOT LESS THAN FOUR INCHES IN SIZE FOR PIPING LARGER THAN FOUR INCHES AND CLOSED GAS TIGHT. FLOOR CLEANOUTS IN CARPETED AREAS SHALL HAVE CARPET CLEANOUT MARKERS. FLOOR CLEANOUTS SHALL NOT BE LOCATED BENEATH PARTITIONS, CASEWORK, NON-PORTABLE EQUIPMENT OR SIMILAR INSTALLATION CONDITIONS. END CLEANOUTS ON NO HUB CAST IRON SHALL BE JOSAM SERIES 58900-20. END CLEANOUTS ON COPPER WASTE SHALL BE NIBCO 816. FLUSH FLOOR CLEANOUT SHALL BE JOSAM SERIES 56000-2-22-41 IN CONCRETE FLOORS. THE LAST FLUSH FLOOR CLEANOUT BEFORE EXITING THE BUILDING SHALL BE JOSAM SERIES 56010-2-22-41. EXPOSED DANDY CLEANOUTS ON NO HUB CAST IRON SHALL BE JOSAM SERIES 58910-20. WALL CLEANOUTS AND CONCEALED DANDY CLEANOUTS ON NO HUB CAST IRON SHALL BE JOSAM SERIES 58910-19 WITH SERIES 58890 CLEANOUT PLUG WITH CENTER SCREW LENGTH AS REQUIRED. END CLEANOUTS ON POLYPROPYLENE PIPING SHALL BE FUSEAL FITTING CLEANOUT ADAPTER WITH THREADED PLUG.

L. WATER HAMMER ARRESTORS (SHOCK ABSORBERS)

1. MAINTENANCE-FREE WATER HAMMER ARRESTORS SHALL BE FURNISHED AND INSTALLED IN ACCESSIBLE LOCATIONS AT ALL LOCATIONS IN THE WATER SYSTEMS WHERE QUICK ACTING VALVES ARE INSTALLED AS WELL AS WHEREVER HAMMER MAY OCCUR.
2. WATER HAMMER ARRESTORS SHALL BE SIMILAR TO THE FOLLOWING JAY R. SMITH MODEL NUMBERS. SIZING AND PLACEMENT SHALL BE IN ACCORDANCE WITH PDI STANDARD PDI-WH-201 AND THE MANUFACTURER'S RECOMMENDATIONS.

TYPE	FIXTURE	UNIT RATINGS	MODEL
SA-A	1-11	JAY R. SMITH	5005
SA-B	12-32	JAY R. SMITH	5010
SA-C	33-60	JAY R. SMITH	5020

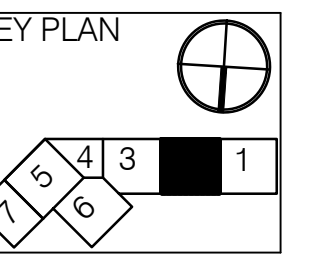
M. ACCESS PANELS

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. SIZE SHALL BE SUFFICIENT FOR THE PURPOSE, BUT NO LESS THAN 12 INCHES BY 18 INCHES. ACCESS DOORS SHALL BE PRIME COATED OF RUST INHIBITIVE PAINT, CONTINUOUS HINGE AND MANUFACTURED BY INLAND STEEL PRODUCTS COMPANY MILCOR.

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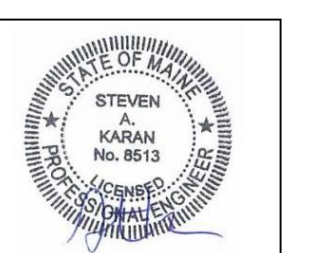


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