

SECTION 15410
PLUMBING PIPING

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Extent of plumbing piping work is indicated on Drawings and by the requirements of this Section including but is not limited to the following:

1. Pipe
2. Fittings
3. Piping Joints
4. Sleeves for Pipes
5. Cleanouts and Cleaning Screw Plugs
6. Escutcheon Plates

1.02 RELATED SECTIONS

- | | |
|----------------------|---------------|
| A. Division 2 | Sitework |
| B. Firestopping..... | Section 07270 |
| C. Painting..... | Section 09900 |
| D. Drainage..... | Section 15415 |

1.03 CODES AND STANDARDS

A. Comply with applicable portions of the Building Code of the City of New York. Where requirements for products, materials, equipment, methods and other portion of the work specified herein exceed minimum requirements of NYC Building Code, contractor shall comply with such requirements specified herein, unless specifically approved otherwise by the Authority.

B. Standards listed below are referenced in this section.

1. American Society for Testing and Materials (ASTM)
2. American Standards Association (ASA)
3. American National Standards Institute (ANSI)

4. United States of America Standards Institute (USASI)
 5. Cast Iron Soil Pipe Institute (CISPI)
 6. American Water Works Association (AWWA)
 7. NSF International
- C. Approved Agency Certification: Certification and listing by an Approved Agency in accordance with NYC Dept. of Buildings rules, indicating that the materials and assemblies as regulated by the NYC Building Code are acceptable for the intended use. When test methods are stipulated in the NYC Building Code, the tests utilized shall be stated in the Certification. Prior MEA approvals are acceptable for materials and assemblies conforming to current Code requirements

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Deliver pipe materials properly protected, and undamaged.
- B. Properly protect all piping so as to prevent damage to the pipe or the introduction of foreign material into the pipe. For the purpose of protecting piping from pre-installation contamination, all piping shall be shipped to job site with suitable caps, sheet metal covers or plugs. Pipe caps shall not be removed until just before installation.
- C. Examine all pipe and fittings before laying. Do not install any piece that is found to be defective.

1.05 SUBMITTALS

- A. Product Data
 1. Clean-outs
 2. Escutcheons
 3. Pipes & fittings

OR

Submit a compliance affidavit, if pipe and fittings match contract documents. Manufacturer's technical product data submission will be required if a substitution is proposed.

- B. Submit Shop Drawings for all piping installations.
- C. Pipe Schedule: Itemize pipe and fitting materials for each specified application.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Piping shall conform to the following:

- 1. Cast-iron Pipe

- a. Bell and Spigot ends:

Evenly coated, cylindrical, smooth, free from all defects, of uniform thickness and of the weights required by the New York City rules governing Plumbing and Drainage, and shall be of the grade known in commerce as "service weight". Each length of pipe and each fitting shall be plainly marked with the manufacturer's name or registered trademark and with the letters "SV" to indicate "Service weight". The marking may be cast, stenciled, or otherwise applied on the pipe so as to be clear and legible at the time of installation. The marking shall be cast on fittings and shall be located away from the spigot end so as not to interfere with proper joining upon installation. Cast-iron soil pipe and fittings shall comply with ASTM A74;

- b. No-Hub:

Evenly coated, cylindrical, smooth, free from all defects, of uniform thickness and of the weights required by the New York City rules governing Plumbing and Drainage. Each length of pipe and each fitting shall be plainly marked with the manufacturer's name or registered trademark. The marking may be cast, stenciled, or otherwise applied on the pipe, and cast on fittings so as to be clear and legible at the time of installation. Cast-iron soil pipe and fittings for hubless cast iron sanitary system shall comply with

CISPI Standard 301, and ASTM A888, latest edition.

2. Steel Pipe

- a. Galvanized steel pipe shall be Grade A, seamless, electric resistance welded pipe, or type F furnace butt-welded, and shall be made in accordance with the current Edition of the ASTM A53. Pipe shall be free from scale, and rust, injurious sand marks, blisters, scale pits, laminations, imperfect welds, or other defects that might affect its strength, appearance or ability to resist corrosion. The maker's name shall be rolled or stamped in the metal at intervals of each length of pipe 2" and larger, and stamped on a metal tag secured to each bundle of pipe 1¹/₂" and smaller.
- b. Unless otherwise specified or indicated on Drawings, black steel pipe shall be standard weight and galvanized steel pipe shall be Schedule 40 galv. pipe.
- c. Available Manufacturers:

U.S. Steel Co.
Sawhill Tubular Co.
North Star Steel
Sharon Tube Co.
Koppel Steel Corp.
Wheatland Tube Company

B. Fittings and Joints

1. Cast-iron Hub and Spigot Piping:
 - a. Fitting shall be service weight pattern, evenly coated, manufactured in accordance with the current ASTM A74 and shall correspond with the pipe in all particulars.
 - b. Material used for Hub and Spigot caulked joints shall be molten lead and packed oakum.
2. Cast-iron No-Hub Piping (Hubless Coupling)

- a. Cast iron No-Hub pipe fittings shall be made up to comply with CISPI Standard 301 and ASTM A888. No-Hub coupling gaskets shall conform to ASTM C564. Each approved coupling shall be permanently marked on its external surface with: manufacturer's name or trade mark, nominal pipe size, and shall meet pressure testing standards set in ASTM C1540.
- b. Stainless steel couplings shall be heavy duty with shield of 28 gauge 304, 18-8 chromium nickel stainless steel, neoprene gasket and stainless steel bolts and bands and shall conform to ASTM C1540.

Couplings shall be HI-Torque 80 by Clamp-All Corp., with two (2) clamps for pipe sizes up to and including 4" and four (4) clamps for pipe 5" to 10"; or Husky HD-2000 by Husky Technologies Division of ANACO with four (4) clamps for pipe sizes up to and including 4" and six (6) clamps for sizes 5" to 10" or Mission HW Series by Mission Rubber Company, with four (4) clamps for pipes up to and including 4" and six (6) clamps for pipes 5" to 10"; or POC coupling by Thermafit Industries.

3. Fittings for Galvanized Pipe:

- a. Fittings and couplings shall be galvanized cast-iron, recessed and threaded drainage fittings conforming to ASTM A126, Class B, with smooth interior waterway and with threads tapped so as to give a uniform grade to branches of not less than 1/4" to the foot and keep the vertical lines plumb.

C. Cleanouts and Cleaning Screw Plugs

1. Cleanouts shall conform to the features of the cleanouts contained in the schedule below. The manufacturer's numbers are for the purpose of type only. The contractor shall submit manufacturer product technical data for each type required before installation for approval.
 - a. Gasket seal plugs will not be accepted in place of taper thread plugs.

2. Cleanout plugs shall be bronze and countersunk type with taper screw threads.
3. Cleanouts for cast iron pipe and galvanized steel pipe in exposed horizontal runs and accessible hung ceilings shall be as follows:
 - a. Cleanouts for membrane waterproof floors shall be provided with an integrally cast flashing flange with flashing clamp.
 - b. Cleanouts in unfinished areas shall have cast iron tops and covers and in finished areas shall have nickel bronze tops and covers.

Cleanout Schedule:

<u>Location</u>	<u>Piping</u>	<u>Figure Number</u>
Wall	Exposed Cast Iron	Smith 4420 Wade W-8550E w/8480R MIFAB C1450 Zurn Z1440-BP w/ZS-1469 WATTS CO-380-RD
		Cleanout: Cast iron spigot ferrule with cast bronze taper thread plug and S/S cover.
Wall	Concealed Cast Iron	Wade W-8560E w/8480R-75 MIFAB C1460-RD-6 Zurn Z1446-BP-VP WATTS CO-460-RD
		Cleanout: Cast iron cleanout tee, taper thread, bronze plug with stainless steel round cover and vandal-proof screw.
Floor-Concrete	Steel or Cast Iron	Smith 4248-U Wade W-6000Z,75 MIFAB C1100-XR Zurn ZN1400-BP-VP WATTS CO-200-RX-4
		Cleanout: Cast iron floor level cleanout assembly with heavy duty, round, adjustable, scoriated cast iron top, non-tilt tractor cover, and an inside caulk outlet; taper thread, bronze plug and vandal-proof screw.
Floor-Asphalt Tile	Cast Iron	Smith 4168-U Wade W-6000TS,75

MIFAB C1100-TS
 Zurn ZN1400-TX-BP-VP
 WATTS CO-200-TS

Cleanout: Cast iron floor level cleanout assembly with a square adjustable nickel bronze top recessed for 1/8" tile and an inside caulk outlet; taper thread, bronze plug and vandal-proof screw.

Floor-General Cast Iron Smith 4028-U
 Finished Area Wade W-6000-1,75
 MIFAB C1100
 Zurn ZN1400-BP-VP
 WATTS CO-200-R

Cleanout: Cast iron floor level cleanout assembly with round, adjustable, scoriated, nickel bronze top, and no-hub outlet; taper thread, bronze plug and vandal-proof screw.

D. Pipe Sleeves: Provide pipe sleeves of one of the following. Pipe sleeve must be appropriate type and thickness for the UL firestopping assembly selected:

1. Sleeves and materials for sealing sleeves for gas piping through exterior walls and floor slabs on earth shall be as specified and approved by the Gas Company.
2. Sheet-Metal: Fabricate from galvanized sheet metal; round tube closed with snaplock joint, welded spiral seams, or welded longitudinal joint. Fabricate from the following gauges: 3" and smaller, 20 gage minimum; 4" to 6", 16 gage minimum; over 6", 14 gage minimum.
3. Steel-Pipe: Fabricate from Schedule 40 galvanized steel pipe; remove burrs.
4. Iron-Pipe: Fabricate from cast-iron or ductile-iron pipe; remove burrs.
5. Firestop penetration materials for sealing sleeves shall be listed by Underwriters Laboratories and if not listed have MEA or OTCR approval. The materials shall be as specified in Section 07270. For pipes passing through fire-rated floor, cast-in place firestop device with Underwriters Laboratories listing, and if not listed have MEA or OTCR approval, is permitted as an acceptable sleeve alternative to a metallic sleeve with firestopping material. The cast-in place device is a one-step

firestopping process that does not require additional firestop penetration materials for sealing the sleeves. The device shall be installed where required for sleeving purposes. The cast-in place firestop device shall not be used for wall applications.

6. Materials for sealing space between each pipe and sleeve through non-fire rated exterior walls above grade shall be Non-shrinking cement. Materials for sealing space between each pipe and sleeve through non-rated interior walls shall consist of mineral wool and sealant.
7. Waterproof sleeves shall be Link-Seal Wall Sleeve as manufactured by Thunderline Corp, or MetraSeal wall sleeve by the Metraflex Co.

E. Traps

1. Brass traps shall be heavy pattern cast brass New York regulation traps conforming to the Building Code of New York City. All cast brass visible traps shall be chrome plated.
2. Cast-iron and silicon iron traps shall be extra heavy pattern, manufactured in accordance with the current ASTM Standard Specifications.
3. Traps associated with drains placed in slab on grade shall be deep seal type with floor cleanout as J.R. Smith Fig 7231S, Zurn Z-1012-1406-BP with adjustable housing ferrule and cover or approved equal.

F. Pipe escutcheons shall have inside diameter closely fitting pipe outside diameter or outside of pipe insulation where pipe is insulated. Select outside diameter of escutcheon to completely cover pipe penetration hole in floors, walls, or ceilings; and pipe sleeve extension, if any. Escutcheon plate types shall be as follows:

1. Galvanized cast-iron with set screw as manufactured by Anvil International, Fig. No. 395 or Carpenter & Paterson, Inc. Submit manufacturer product technical data.
2. Chrome-plated cast or sheet brass, solid or split-hinged, with brass set screws as manufactured by

Kohler, Zurn or McGuire Mfg. Co. Submit manufacturer product technical data.

3. Cast or sheet brass, solid or split-hinged, with brass set screws as manufactured by Kohler, Zurn or McGuire Mfg. Co. Submit manufacturer product technical data.

- G. Chromium: All metal parts including tubular shapes, castings, etc., shall be finely ground and polished to a smooth satin finish. Every particle of scale, rough or foreign matter shall be removed.

PART 3 - EXECUTION

3.01 PIPE AND FITTING SCHEDULE

- A. Storm Piping: Above Ground - Interior

1. Hubless Service Weight Cast Iron (SVCI) with mechanical stainless steel couplings.

- B. Storm Piping: Exterior - Leader

Service Weight Cast Iron bell and spigot with lead & oakum joints to point where sheet metal leader enters.

For existing gutter drains - Galvanized steel pipe schedule 40, with threaded drainage fittings

3.02 INSTALLATION

- A. Piping (General)

1. The run and arrangements of all pipes shall be approximately as shown on drawings or specified and as directed during installation, and shall be as straight and direct as possible, forming right angles or parallel lines with building walls and other pipes, and neatly spaced. No pipe shall be installed where the headroom will be interfered with unless the conditions are such that it is unavoidable and permission is obtained from the Authority. Offsets will be permitted where walls reduce in thickness or beams interfere with direct runs; offsets shall be made at an angle of 45° to the vertical; in no case shall the space between the pipes, partitions, walls, etc., exceed 5". All exposed risers shall be erected plumb, standing

free, close to and parallel with walls and other pipes and be uniformly spaced. All horizontal runs of piping hung from structural floor, slab or floor beams shall be erected as closely as possible to bottom of floor slabs, ceilings, or I-beams as the case may be. In no case shall the headroom, beneath the pipe, be less than (7'-0") where the pipe is installed more than (1'-0") from wall, partition, etc., except where piping is required to be installed in Boiler Room and Mechanical spaces above floor. Horizontal piping shall be so graded as to drain to the low points and water lines to drain bibbs. All piping installed in floor shall be painted with a heavy coat of asphaltum. All piping shall be installed with ample space for pipe covering.

2. For work in existing buildings the following addition requirements shall be adhered to:
 - a. Piping shall run as straight as possible with the fewest number of changes in direction, with such variations from the layout shown on the Drawings as conditions at the premises may require, as approved by the Authority at no extra cost to the Authority. Provide piping without sharp bends, quick changes of sections, pockets or bushings.
 - b. The locations of all existing piping which are indicated on the Drawings are approximate. The Contractor shall investigate and ascertain the exact locations of such piping and make whatever minor variations in runs of new piping that may be required at no extra cost to the Authority.
 - c. Contractor shall consider the location of all equipment, ductwork, piping, electric conduits, supports, steel work, etc., and all new piping shall be installed without interference therewith.
 - d. Unused dead ended soil, waste and vent piping shall be removed as far as each branch, main, stack, etc., and capped or plugged concealed in hung ceilings, below floors or behind walls.

B. Piping Joints

1. Cast iron bell and Spigot Type

- a. Joints in cast-iron bell and spigot piping shall be caulked joints made with packed oakum and molten lead, 12 ounces of which must be used for each inch in diameter of the pipes at each joint and must be poured in at one time. The lead to be used for this purpose shall be soft "Pig" or "Bar." After cooling and shrinking, the lead shall be thoroughly caulked and the joints made impermeable to gases and liquids, and also be capable of withstanding the tests applied. The face of the lead joints shall finish flush with the face of the hub and be left without putty, paints or cement. Whenever joints are made on the floor or surface they shall be re-caulked after being placed in position.

2. Joints in cast iron No-Hub pipe shall be heavy-duty type couplings. No-Hub cast iron pipe shall be cut square.

- a. The use of No-Hub pipe and fittings for soil, waste, vent and storm piping is PERMITTED when installed above ground within buildings.
- b. The use of No-Hub pipe and fittings is NOT PERMITTED for underground applications or when embedded in concrete.

3. Joints between galvanized steel and cast iron pipes shall be caulked joints as specified for cast iron piping.

C. Cleanouts and Cleaning Screw Plugs

1. Install cleanouts in the following locations: on all traps (except traps integral with floor drains), at the end of and at all points in change of direction of all drain pipes and branch drains, at all offsets, at the ends of all branch soil and waste pipes, and located in runs not more than fifty (50'-0") feet on center, and at all points to make accessible all parts of the drainage system. Cleanouts in connection with vertical cast iron pipe above the cellar, except the traps and fittings on horizontal branches, shall have tapped

tee fittings, same size as pipe, closed with bronze screw plugs. All other cleanouts in connection with cast iron pipes, traps and fittings shall have heavy full size cast iron ferrules, same size as pipes or fitting, caulked into hub and closed with bronze screw plug. All cleanouts in connection with galvanized steel pipe, traps and fittings shall consist of drainage fittings closed with bronze screw plugs of heavy pattern. All cleanouts for silicon iron pipe shall be silicon iron, with silicon iron bolted covers, except cleanouts flush with floor, which shall be of the type as indicated on drawings.

2. Plugs used for cleanouts shall be same size as the fittings up to and including 4 inches. Sizes above 4" shall be reduced to allow for 4" cleanouts. For house traps 8" and larger plugs allowing for 6" cleanouts shall be used.
3. Cleanouts occurring in membrane waterproof floors shall be provided with a flashing clamp device secured with brass bolts. Cleanouts in unfinished areas shall have brass or bronze tops and cover. Cleanouts in finished areas shall have polished nickel bronze tops and cover. Provide cleanouts with spanner type vandal proof screws.
4. Provide cleanouts at the base of all soil, waste and storm water leaders, and at all changes in direction on horizontal piping.
5. The complete list of locations of access doors and frames for cleanouts located behind walls shall be furnished by the plumbing subcontractor to the prime General Contractor prior to erection of walls.
6. Cleanouts on 3" and larger pipes shall be installed so as to allow clearance of at least 18". Cleanouts on pipes less than 3" shall be installed so as to allow at least 12" of clearance.

D. Sleeves for Pipes

1. General: All plumbing pipes passing through floors, roofs, walls, partitions, furring, beams, trenches, and wherever else indicated on drawings shall be provided with sleeves installed and maintained by the Contractor. Core drilled holes shall be

provided with sleeves. Where plumbing pipes pass through potentially wet floors that do not have membrane waterproofing such as toilet rooms, cafeteria kitchens, serving areas, dish washing room, janitor's sink closet, mechanical equipment rooms, pipe chases and areas that are provided with fire protection sprinkler systems, the Contractor shall install sleeves of galvanized steel pipe with welded clips or equivalent at bottom ends for securing sleeves to form work and shall project one inch above finished floors, and shall be caulked watertight.

2. For interior walls and floors and for pipes through roof, the space between each installed pipe and its sleeve shall be sealed with a three hour rated fire stop penetration material. Fire stop materials shall be installed in accordance with the instructions of the manufacturer.
For floors and for pipes and for pipes through roof and not in walls: Cast-in fire stop device with Underwriters Laboratories listing and Material and Equipment Acceptance (MEA) approval or Approved Agency Certification listed and/or label is permitted as an acceptable sleeve alternative to a metallic sleeve with fire rated sealing caulk. The cast-in device is a one-step fire stopping process that shall not require additional fire stop penetration materials for sealing the sleeves. The device shall be installed where required for sleeving purposes.
4. Sheet Metal Sleeves
 - a. Sleeves for pipes passing through floors, partitions, hung or furred ceilings, shall be installed with 1/2" maximum clearance all around pipes. Each sleeve for a pipe passing through an interior floor slab shall be fitted with a one-inch flange, or equivalent, at the bottom end for the purpose of securing it to the form work or sheet metal deck.
The sleeve shall finish flush with the top of the finished floor. Sleeves for pipes passing through partitions, hung or furred ceilings shall be of one-piece construction and shall finish flush with the finished surface.

- b. Sleeves installed for pipes passing through vent ducts shall be securely fastened, soldered and made airtight.
 - 5. Pipe Sleeve: Install pipe sleeves for pipes passing through roofs, concrete beams, brick walls, foundation walls and floor slabs on earth. Sleeves shall be installed with 1/2" maximum clearance all around pipe and shall finish flush with the surfaces penetrated. Pipe sleeves for pipes through roof shall be made of service weight cast iron only.
 - 6. Sleeves through foundation walls below grade shall be provided under General Construction Work.
- E. Traps: Install traps full size of the piping to which it connects as indicated on Drawings or as required. All traps, except integral trap with floor drains, shall have cleanout.
- F. Escutcheon Plates
- 1. Install galvanized cast iron or brass escutcheon plates with set screw on concealed pipes passing through walls, partitions, floors and on exposed to view piping in unfinished rooms and spaces. Material shall be appropriate for the material to prevent galvanic reaction (i.e. brass or chrome plated brass escutcheon for copper pipe)
 - 2. Install chrome-plated brass escutcheon plates with set screw at:
 - a. All exposed to view pipes passing through walls, partitions, floors and ceilings, in finished rooms and spaces
 - b. All exposed to view finished locations and within all cabinets on waste and water supply piping at all plumbing fixtures including lavatories, drinking fountains, cabinet sinks, wash sinks, etc.
 - 3. Plates shall fit snugly around the pipes or insulation so escutcheon covers penetration hole, and is flush with adjoining surface.

END OF SECTION

LIST OF SUBMITTALS

<u>SUBMITTAL</u>	<u>DATE SUBMITTED</u>	<u>DATE APPROVED</u>
Product Data:		
1. Clean-outs	_____	_____
2. Escutcheons	_____	_____
3. Pipe & fittings	_____	_____
<u>OR</u>		
Contractor's affidavit Stating compliance with Piping materials requirements	_____	_____
Shop Drawings	_____	_____
Schedule:		
1. Pipe & fittings	_____	_____

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