

TOWN OF MANCHESTER WATER & SEWER DEPARTMENT

APPROVED LIST OF CONSTRUCTION MATERIALS

Revised 10/29/14

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Note: Please contact the Engineering Division – Maps and Records Section at 860-647-3119 or 860-647-3157 for further information regarding these specified materials.

BRASS

1. Corporation Stops shall have a male iron pipe thread inlet, pack or quick joint connection for copper tubing outlet, a ball style valve, and shall meet the requirements of ANSI/AWWA C800 with latest revisions. Brass shall be “no-lead brass” meeting the requirements of USEPA’s Reduction of Lead in Drinking Water Act. The corporation stop shall be a one (1) inch or two (2) inch: Model No. FB1100-4-NL, FB1100-4-Q-NL, FB1100-7-NL or FB1100-7-Q-NL as manufactured by the Ford Meter Box Co., Inc., Wabash, IN.; Model No. P-25028N or B-25028N as manufactured by Mueller Co., Decatur, IL.; or Model No. NL 74704B-22, NL 74704BT or NL 74704BQ as manufactured by A.Y. McDonald Mfg. Co., Dubuque, IA.
2. Couplings for reconnecting existing ¾”, 1”, 1¼”, 1½” and 2” copper, brass or galvanized steel services shall be compression couplings meeting the requirements of ANSI/AWWA C800 with latest revisions. Brass shall be “no-lead brass” meeting the requirements of the USEPA’s Reduction of Lead in Drinking Water Act. Couplings shall be Model No. C44-XX-NL or C44-XX-Q-NL as manufactured by Ford Meter Box Co., Inc., Wabash, IN.; Model No. P-15403N or H-15403N as manufactured by Mueller Co., Decatur, IL.; or Model No. 74758-22, 74758T or 74758Q as manufactured by A.Y. McDonald Mfg. Co., Dubuque, IA. Couplings used for connections to other pipe sizes and materials shall be approved by the Engineer.
3. Curb Stops shall meet the requirements of ANSI/AWWA C800 with latest revisions. Brass shall be “no-lead brass” meeting the requirements of the USEPA’s Reduction of Lead in Drinking Water Act. The curb stop shall be a one (1) inch or two (2) inch: Model No. B44-444-NL, B44-444-Q-NL, B44-777-NL or B44-777-Q-NL as manufactured by Ford Meter Box Co., Inc., Wabash, IN.; Model No. P-25209N or B-25209N as manufactured by Mueller Co., Decatur, IL.; or Model No. 76100-22, 76100T or 76100Q as manufactured by A.Y. McDonald Mfg. Co., Dubuque, IA.

BRASS FITTINGS

1. Fittings shall be manufactured in North America by the Ford Meter Box Co., Mueller Co., A.Y. McDonald Mfg. Co. or approved equal. Brass shall be “no-lead brass” meeting the requirements of USEPA’s Reduction of Lead in Drinking Water Act and shall meet the requirements of ANSI/AWWA C800 with latest revisions.

BUTTERFLY VALVES

1. Butterfly Valves shall be wrench operated, non-rising stem with O-ring stem seals and have mechanical joints on both ends. Each valve shall be supplied with two (2) sets of mechanical joint retainer glands. Valves shall meet or exceed the requirements of the latest revision of AWWA C504. Valves shall have epoxy coated cast iron bodies with mechanical joint ends complying with the latest revisions of ANSI A21.11 (AWWA C111). Valves shall be a minimum Class 150B and suitable for a maximum nonshock shutoff pressure of 140 psi. The valves shall provide bubble-tight shutoff at 150 psi when tested in accordance with AWWA C504. Valve discs shall seat at an angle of 90 degrees to the axis of the pipe.

2. Valve seats shall be molded natural rubber. Rubber seats may be attached to the body or the disc. If the rubber seat is attached to the disc, the seat ring on the body shall be of stainless steel. The valve disc shall be of either case Ni-Resist or cast iron Class 40 conforming to ASTM A48. Rubber seats mounted on the disc shall be securely clamped to the disc. All clamps, retaining rings, and their fasteners shall be Series 300 stainless steel.
3. The valve shaft shall be Type 300 stainless steel or carbon steel with stainless steel joints. The valve disc and shaft connection shall be by means of mechanically secured taper pins extending through the disc and shaft. Taper pins, lockwashers and nuts shall be 18-8 stainless steel. The shaft seals shall be designed for the use of standard "O" - ring seals.
4. The manual operating mechanism shall be firmly fixed to the valve body and shall be rated at 450 lb. The operator shall be permanently lubricated, shall be totally enclosed with a cast iron case. The operator shall be suitable for submersion. The operator shall have adjustable threaded collars at each end of stroke. **Valves shall be right-opening (clockwise) or left-opening (counter clockwise) as directed by the Engineering Division.**
5. Valves shall be only those models and manufacturers listed below.

<u>Manufacturer</u>	<u>Model</u>
Mueller	Lineseal III
M & H	Style 450

COPPER TUBING - TYPE "K"

1. Water service lines shall be Type K seamless copper tubing of one (1) inch or two (2) inch nominal diameter. Tubing shall meet the requirements of ASTM Specification B 88 of latest revision.

CURB BOXES

1. The curb box shall be the extension type with a 42" or 45" stationary rod. Box shall be adjustable from 4' to 5' and be provided with a foot piece for 2" services. The upper sections of slide type curb boxes shall have a drop type cover with the word "WATER" or "W" cast on top and shall be a 2-hole Erie style. Valve boxes shall be installed for curb boxes located in paved areas and sidewalk, and for blow offs, and shall meet the requirements of "Valve Boxes" as defined in the pertinent sections of these Specifications. Only curb boxes manufactured in North America will be accepted. Curb boxes shall be manufactured in North America by Mueller, Ford, A.Y. McDonald, Sames, Trumbull, Bibby St. Croix, Fonderie La Roche or approved equal.

DUCTILE IRON FITTINGS

1. Fittings, including mechanical joint plugs and caps, shall be ductile iron meeting the requirements of AWWA C110 (ANSI A21.10) with mechanical joints in conformance with AWWA C111 (ANSI A21.11). Fittings shall have a minimum pressure rating of 350 psi and shall have an inside lining of cement-mortar in accordance with AWWA C104 (ANSI A21.4). Compact fittings meeting the requirements of AWWA C153 (ANSI A21.53) of latest revision may be used. Fittings shall have an asphalt coating both inside and outside, and be manufactured in North America by Griffin, Tyler, U.S. Pipe, Sigma, Clow, Union or approved equal.

DUCTILE IRON COUPLINGS

1. Couplings for connecting new main to oversized cast iron pipe shall be made of ductile iron with high strength low alloy steel nuts and bolts and shall be Rockwell Model 441 Cast Transition Couplings, or approved equal. These couplings shall be used only when oversized cast iron pipe is encountered which does not allow the use of solid sleeves.

DUCTILE IRON SLEEVES

1. Sleeves for connecting new mains to existing mains shall be mechanical joint solid sleeves with the mechanical joint ends restrained by the means of retainer glands. Solid sleeves shall meet the requirements of the latest revision of AWWA C110 (ANSI A21.10) and shall be Model F-1014 as manufactured by the Clow Corporation, Oak Brook, Illinois, or approved equal.
2. Connecting sleeves for connecting new water mains to existing metal lined cement mains (stovepipe) shall be Model 227 as manufactured by Rockwell, Pittsburgh, PA or approved equal.

DUCTILE IRON PIPE

1. Ductile iron pipe shall meet the requirements of the latest revision of AWWA C151 (ANSI A21.51). Joints shall be "Tyton Joint" design, rubber gasket push-on type manufactured in accordance with the latest revision of AWWA C111 (ANSI A21.11).
2. Pipe shall be supplied with the standard exterior bituminous coating of either coal tar or asphalt base approximately one mil thick. The interior shall be double cement lined in accordance with the latest revision of AWWA C104 (ANSI A21.4).
3. Pipe shall be of thickness Class 52 unless otherwise indicated.
4. Pipe shall be manufactured by Clow, Griffin, U.S. Pipe, Atlantic States or approved equal.

FIRE HYDRANT

1. Hydrants shall be dry-barrel, post-type hydrants, with compression shut-offs which open with the pressure. Hydrants shall meet the requirements of AWWA C502. They shall have a main valve opening of 5-1/4 inches and have a 6-inch mechanical joint inlet. Bury length shall be 5-1/2 feet. Two 2-1/2 inch hose and one 4-1/2 inch pumper nozzles shall be provided in standard nozzle arrangement. Outlet nozzle threads shall meet the requirements of ANSI B26, "National Standard Fire-Hose Coupling Screw Threads."
2. Hydrants shall be of break flange construction, shall have O-ring seals and **shall be right-opening (clockwise) or left-opening (counter clockwise) as directed by the Engineering Division.** Interior and exterior coatings shall meet the requirements of the latest revision of AWWA C502, and the color for that portion of the hydrant above the ground line shall be as directed by the Manchester Water Department.
3. In addition, that portion of each hydrant below finished grade shall be given a coating of hot bitumastic material, equal to that used for exterior coating of pipe and fittings, prior to installation. A drain outlet is required.
4. Hydrants shall be Eddy Model F-2640 manufactured by Clow Corporation, Bensenville, Illinois, the Pacer Model WB-67 with 16" traffic section manufactured by Waterous, South St. Paul, Minnesota, the Metropolitan 250-Model 94 manufactured by U.S.Pipe and Foundry Co., Birmingham, AL., or Super Centurion 250 by Mueller Co., Decatur, IL. Hydrants shall be installed so as to maintain an 18-inch nozzle height above finished grade without use of extension sections.
5. The type of hydrant to be installed shall be determined in the field by the Engineer.
6. Mechanical joint anchor tees shall be used to connect the hydrant lead to the water main.
7. All hydrant auxiliary gate valves shall be resilient wedge gate valves and shall meet the requirements specified in the pertinent section of these Specifications. **Auxiliary gate valves shall be right-opening (clockwise) or left-opening (counter clockwise) as directed by the Engineering Division.**
8. Paint for hydrants shall be high performance industrial coating alkyd enamel. Paint shall have a high gloss finish. Paint colors shall be Fire Hydrant Red (245385) for left-opening (counter clockwise) hydrants or Yellow (245488) for right-opening (clockwise) hydrants as manufactured by Rust-Oleum Corporation or approved equal. Surface preparation and paint application shall be in accordance with the manufacturer's recommendations.

FIRE HYDRANT EXTENSION KITS

1. Hydrant extension kits shall be specifically manufactured for the hydrants listed under "Fire Hydrant". Kits shall include an upper extension, drip rod extension, stem extension and all appurtenances necessary to complete the installation.

FIRE HYDRANT PARTS

1. Hydrant parts and traffic repair kits shall be specifically manufactured for the hydrants listed under "Fire Hydrant".

JOINT RESTRAINT FOR DUCTILE IRON PIPE

1. Restrained bell and spigot push on joints for ductile iron pipe shall meet the requirements of the latest revision of AWWA C151 (ANSI A21.51). Each restrained bell and spigot joint shall be achieved using a single rubber FIELD LOK 350 gasket, a Series 1700 Megalug restraint harness as manufactured by Ebaa Iron, Inc., Eastland, Texas, or approved equal, manufactured in accordance with the latest revision of AWWA C111 (ANSI A21.11). The bell and spigot push on joint restraint provided shall be sufficient to restrain working pressures of 350 psi (4" to 10" diameter), 250 psi (12" to 16" diameter) and 200 psi (18" to 20" diameter).
2. Mechanical joint thrust restraining glands, for valves and fittings, shall be the Megalug Series 1100, manufactured by Ebaa Iron, Eastland, Texas, or Ford series 1400.
3. Tiebolts, tiebolt nuts, rod couplings, threaded rods and rod nuts, retainer clamps, and round flat washers may be used for restrained joints and shall be steel meeting the requirements of ASTM A 36-77a. These components shall be similar or equal to the following figure numbers manufactured by Star National Products.

<u>ITEM</u>	<u>STAR FIGURE</u>
Tiebolt	7, 7-5, or SST 7
Tiebolt and Rod Nut	8
Rod Coupling	10
Retainer Clamp	11
Threaded Rod	12
Round Flat Washer	17

MANHOLE FRAMES AND COVERS

1. Manhole frames and covers located within paved areas shall be heavy duty and shall be Model 1027C as manufactured by Campbell Foundry Company, Model 2927E as manufactured by Laperle Foundry Company or Model/Product Numbers 00133872 and 00124811 as manufactured by East Jordan Ironworks.
2. Manhole frames and covers located within unpaved areas shall be heavy duty and water-tight (bolted and gasketed) with ½" stainless steel bolts and shall be Model 1502 as manufactured by Campbell Foundry Company, Model 6502 as manufactured by Laperle Foundry Company or Model/Product Numbers 00124872 and 0124872W03 as manufactured by East Jordan Ironworks.
3. The cover shall be cast with the words "MANCHESTER SEWER". Cast iron shall conform to ASTM A-48 Class 30B or its latest revisions. Frames and covers shall be coated with a bitumastic coating.

MANHOLE INVERTS

1. Inverts shall be constructed of precast concrete or cast-in-place concrete and shall conform accurately to the size of the adjoining pipes. Brick and mortar inverts shall be installed where directed by the Engineer.

MISCELLANEOUS SANITARY SEWER APPURTENANCES

1. Manhole frame adjustment rings shall be pressure injected molding consisting of a polypropylene/fiberglass mixture, precast concrete, concrete block or brick.
2. Polypropylene/fiberglass adjustment rings shall be manufactured by the Turner Company of Raleigh, North Carolina or Markham, Ontario.

PRECAST MANHOLE SECTIONS

1. Precast manhole sections shall be 4' diameter, unless specified otherwise, and shall conform to ASTM C-478 and C-443 (joint).
2. Coating for exterior surfaces of all manhole components shall be bituminous waterproofing material. The material shall be Minwax Fibrous Brush Coat made by Minwax Co., New York, New York; Tremco 121 Foundation Coating made by the Tremco Manufacturing Company, Cleveland, Ohio; Bitumastic Black Solution made by the Koppers Company, Inc., Pittsburgh, Pennsylvania; or approved equal product.
3. Precast manhole sections shall be manufactured by Arrow, Field, Leonard, United Concrete or approved equal.

PVC PIPE and FITTINGS

1. Polyvinyl chloride (PVC) pipe and fittings shall conform to the requirements of the latest revisions of either ASTM D3034, "Standard Specifications for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings" or ASTM F789, "Standard Specifications for Type PS-46 Poly (Vinyl Chloride) (PVC) Plastic Gravity Flow Sewer Pipe and Fittings."
2. The pipe shall have a maximum pipe diameter to wall thickness ratio (SDR) of 35 or minimum pipe stiffness (PS) of 46 psi. Straight pipe shall be furnished in lengths not more than thirteen (13) feet, unless otherwise indicated on the plans, and Y-branches shall be furnished in lengths of not more than three (3) feet. Saddle Y-branches will not be allowed.
3. Joints for PVC pipe shall be push-on bell and spigot joints using elastomeric ring gasket. The gaskets shall be securely fixed into place in the bells so that they cannot be dislodged during joint assembly. The gaskets shall be of a composition and texture which is resistant to common ingredients of sewage and industrial wastes, including oil and groundwater, and which will endure permanently under the conditions of the proposed use. The joints shall conform to the requirements of the latest revision of ASTM D-3212.

RESILIENT WEDGE GATE VALVES

1. All gate valves shall be resilient wedge gate valves and shall meet the requirements of AWWA C509 of latest revision. Valves shall have non-rising stems, mechanical joint ends meeting the requirements of AWWA C111 of latest revision and have O-ring stem seals. Each valve shall be supplied with two (2) sets of mechanical joint retainer glands.
2. Valves shall be wrench-operated and rated at a minimum working pressure of 200 psi. **Valves shall be right opening (clockwise) or left opening (counter clockwise) as directed by the Engineering Division.**
3. Wedge shall be encapsulated in molded rubber. Valve shall be coated with a fusion bonded epoxy-resin both inside and outside. Coating shall be a minimum of 10 mils thick and meet or exceed all requirements of the latest revision of AWWA C550.
4. Resilient wedge gate valves shall be only those models and manufacturers listed below.

<u>Manufacturer</u>	<u>Model</u>
American Flow Control	Series 2500
AVK	Series 25
Clow	F-6100
M & H	Style 4067
Mueller	A-2362 (Ductile Iron Body)
U.S. Pipe	A-USPO-23

SANITARY SEWER REPAIR SLEEVES

1. Repair sleeves for connecting clay to clay, clay to plastic and plastic to plastic sanitary sewers shall be Strong Back Couplings – 1000 RC Series stainless steel shielded with a molded in flexible PVC gasket as manufactured by Fernco, Inc., Stainless Steel Shear Rings for use with flexible PVC gaskets as manufactured by Fernco, Inc., or SDR 35 PVC Gasketed Repair Coupling Sleeves (without stop) as manufactured by Harco, Inc.

SERVICE SADDLES

1. The service saddle shall have a double strap with a one (1) inch or two (2) inch iron pipe thread tapping, meeting the requirements of ANSI/AWWA C800 with latest revisions.
2. Service saddle shall be only those models and manufacturers listed below.

<u>Manufacturer</u>	<u>Model</u>
Ford	F202
JCM	JCM 402
Romac	Style 202S
Smith-Blair	313

TAPPING SLEEVE AND VALVE - TYPE I (CAST IRON PIPE)

1. Tapping sleeves shall consist of a full body two-piece ductile iron or cast iron sleeve/tee with mechanical joint ends on the run and a flanged end on the branch. Each sleeve shall be supplied with two (2) sets of mechanical joint retainer glands. Tapping valves shall be resilient wedge gate valves meeting the requirements described below. The tapping valve shall have one flanged end and one mechanical joint end.
2. Valves shall be wrench operated, non-rising stem with O-ring stem seals. Each valve shall be supplied with one (1) set of mechanical joint retainer glands. **Valves shall be right-opening (clockwise) or left-opening (counter clockwise) as directed by the Engineering Division.**
3. Wedge shall be encapsulated in molded rubber. Valve shall be coated with a fusion bonded epoxy-resin both inside and outside. Coating shall be a minimum of 10 mils thick and meet or exceed all requirements of the latest revision of AWWA C550.
4. Valves and joints shall meet or exceed all requirements of the latest revision of AWWA C509 and AWWA C111 respectively.
5. Valves shall be only those models and manufacturers listed below.

<u>Manufacturer</u>	<u>Model</u>
American Flow Control	Series 2500
AVK	Series 25
Clow	F-6114
M & H	Style 4067
Mueller	A-2362 (Ductile Iron Body)
U.S. Pipe	A-USPO-23

6. Tapping sleeves shall be manufactured by U.S. Pipe, Mueller, American Flow Control or approved equal.

TAPPING SLEEVE AND VALVE - TYPE II (DUCTILE IRON PIPE)

1. Tapping sleeve shall consist of a stainless steel body with either a stainless steel or carbon steel integral mechanical joint outlet flange. Gasket shall be full circumference. Tapping valves shall be resilient wedge gate valves meeting the requirements described below. The tapping valve shall have mechanical joint ends.
2. Valves shall be wrench operated, non-rising stem with O-ring stem seals. Each valve shall be supplied with two (2) sets of mechanical joint retainer glands. **Valves shall be right-opening (clockwise) or left-opening (counter clockwise) as directed by the Engineering Division.**
3. Wedge shall be encapsulated in molded rubber. Valve shall be coated with a fusion bonded epoxy-resin both inside and outside. Coating shall be a minimum of 10 mils thick and meet or exceed all requirements of the latest revision of AWWA C550.

4. Valves and joints shall meet or exceed all requirements of the latest revision of AWWA C509 and AWWA C111 respectively.
5. Valves shall be only those models and manufacturers listed below.

<u>Manufacturer</u>	<u>Model</u>
American Flow Control	Series 2500
AVK	Series 25
Clow	F-6100
M & H	Style 4067
Mueller	A-2362 (Ductile Iron Body)
U.S. Pipe	A-USPO-23

6. Tapping sleeves shall be only those models and manufacturers listed below.

<u>Manufacturer</u>	<u>Model</u>
Ford	FAST-MJ
JCM	439 or 469
Smith-Blair	662-MJ or 663-MJ

VALVE BOXES

1. Valve boxes shall be 5-1/4", consisting of a base and adjustable slide type top section with top flange and cover that is adjustable from 4' to 5'.
2. Valve boxes shall be made of centrifugally spun iron with 1/4" uniform wall thickness and shall be coated with heavy bituminous coating.
3. Box cover shall have the word "WATER" cast on top.
4. Valve boxes shall be manufactured in the United States or Canada by Water Quality Products, Bibby Ste. Croix, Charlotte, Tyler, Bingham and Taylor, or approved equal.

WATER MAIN REPAIR SLEEVES

2. Repair sleeves for cast iron or ductile iron water main shall be double band, full circle clamps with lap type gaskets having molded tapered ends and shall be only those models and manufacturers listed below.

<u>Manufacturer</u>	<u>Model</u>
Ford	F2
JCM	102
Smith-Blair	227/228

3. Sleeves must cover the OD ranges indicated below:

<u>Pipe Size</u>	<u>OD Range (inch)</u>
6"	6.90 – 7.10
8"	9.05 – 9.30
10"	11.10 - 11.40
12"	13.20 – 13.50
16"	17.40 – 17.80