

ITEM 660.06XXXXM DUCTILE IRON PIPE AND FITTINGS

DESCRIPTION

Work consists of the installation of ductile iron pipe water main and fittings as shown on the plans and as directed by the Resident Engineer.

REFERENCES

ANSI/AWWA C104 - Cement-Mortar Lining for Ductile Iron Pipe and Fittings for Water.

ANSI/AWWA C110 - Ductile Iron and Gray Iron Fittings, 3 inch through 48 inch, for Water and Other Liquids.

ANSI/AWWA C111 - Rubber-Gasket Joints for Ductile Iron and Gray Iron Pressure Pipe and Fittings.

ANSI/AWWA C151 - Ductile Iron Pipe, Centrifugally Cast in Metal Molds or Sand Lined Molds, for Water or Other Liquids.

ANSI/AWWA B300 - Sodium Hypochlorite.

ANSI/AWWA B301 - Standard for Liquid Chlorine.

ANSI/AWWA C651 - Standards for Disinfecting Water Mains

ASTM C31- Method of Making and Curing Concrete Compression and Flexure Test Specimens in the Field.

MATERIALS

DUCTILE IRON PIPE (SPECIFICATIONS)

Pipe: ANSI/AWWA C151.

Pipe Joints: ANSI/AWWA C111, rubber gasket.

Cement Lined: ANSI/AWWA C104.

Pipe Wall Thickness: Class 51 Minimum, unless otherwise stated or shown on Drawings.

Fittings: ANSI/AWWA C110 (full body) or ANSI/AWWA C153 (compact).

Fitting Joints: ANSI/AWWA C111, rubber gasket. All fittings shall be restrained joint when using restrained joint pipe.

PUSH-ON JOINT PIPE

Manufacturers:

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1. American Pipe Product: Fastite Joint.
2. U.S. Pipe Product: Tyton Joint.
3. Griffin Pipe Product: Super Bell-Tite Joint.
4. McWane Group (includes Atlantic States and Clow Products)

RESTRAINED JOINT PIPE

Manufacturers:

- 1 American Pipe Product: Flex Ring.
2. U.S. Pipe Product: TR FLEX.
3. Griffin Pipe Product: SNAP-LOK.
4. McWane Group (includes Atlantic States and Clow Products)

ANCHOR PIPE

Manufacturers:

1. American Pipe Product: A-10895.
2. U.S. Pipe Product: U-591.
3. Clow Product: Anchoring Pipe, MJ Anchoring Coupling.
4. Tyler Pipe Product.
5. Union Foundry Company Product: 20-4660.
6. Ductile Iron Pipe with mechanical joint restraint, per "Mechanical Joint Restraint" Section below.

PUSH-ON JOINT RESTRAINT

Specifications

Rubber gasket per ANSI/AWWA C111.

Stainless steel locking segments vulcanized into gasket.

1724 kPa operating pressure

Capable of being disassembled.

Approved for use on ductile iron pipe, 102 mm through 305 mm diameter inclusive.

Manufacturers:

1. U.S. Pipe Product: Field-Lok Gasket.
2. American Product: Fast Grip

MECHANICAL JOINT RESTRAINT

Specifications

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MJ rubber gasket per ANSI/AWWA C111.

Restraint (gripper) mechanism shall be hardened stainless steel gripping teeth welded to gripper gland or ductile iron gripping wedges heat-treated to a minimum hardness of 370 BHN with twist-off activation nuts.

Glands shall be made of ductile iron.

2413 kPa operating pressure.

Utilize standard T-bolt for MJ assembly (not restraint).

Capable of being disassembled.

Glands that closely resemble standard MJ glands shall be painted yellow.

Approved for use as a temporary restraint system only on ductile iron pipe, 102 mm through 305 mm, inclusive. Use of mechanical joint restraints in place of permanent concrete thrust blocks is not allowed.

Manufacturers:

1. EBAA Iron Sales, Inc. Product: MEGALUG.
2. Ford Meter Box Company Product: Uni-Flange, Series 1400.

STRAIGHT COUPLINGS

Specifications

ANSI/AWWA C111 - Rubber-Gasket Joints for Ductile-Iron and Gray-Iron Pressure Pipe.

ASTM A536 - Standard Specification for Ductile Iron Castings.

All ductile iron or steel construction.

Limited Range is a coupling that will fit only Class A, B, C, or D cast iron pipe, Class 51-56 ductile iron pipe or Class 100 or 150 rough barrel asbestos cement pipe.

Manufacturers:

1. Smith Blair: Product #441, 51 mm through 305 mm, Limited Range only.
2. Smith Blair: Product #411, 406 mm and greater.
3. Dresser: Product #138, 102 mm through 305 mm
4. Dresser: Product #38, 406 mm and above.
5. J.C.M.: Product #210, 51 mm through 305 mm.
6. J.C.M.: Product #201, 406 mm and greater.

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7. Clow: Product #3203, 102 mm through 305 mm.
8. Romac: Product #501, 102 mm through 305 mm.
9. Ford: Product #FC-1, 51 mm through 305 mm.
10. Cascade: Product #CDC, 102 mm through 406 mm.

TRANSITION COUPLINGS

Specifications

ANSI/AWWA C111 - Rubber-Gasket Joints for Ductile-Iron and Gray-Iron Pressure Pipe.

ASTM A536 - Standard Specification for Ductile Iron Castings.

All ductile iron or steel construction.

Limited Range is a coupling that will fit only Class A, B, C, or D cast iron pipe, Class 51-56 ductile iron pipe or Class 100 or 150 rough barrel asbestos cement pipe.

Manufacturers:

1. Dresser: Product #162, 102 mm through 305 mm.
2. Dresser: Product #62, 406 mm through 762 mm.
3. Smith Blair: Product #441, Omni, 102 mm through 305 mm.
4. Smith Blair: Product #415, 406 mm through 762 mm.
5. J.C.M.: Product #212, 102 mm through 305 mm.
6. Power Seal: Product #3501, 102 mm through 406 mm.
7. Romac: Product #501, 102 mm through 610 mm.
8. Ford: Product #FC-2, Steel, 102 mm through 610 mm.
9. Cascade: Product #CDC, 102 mm through 406 mm.

BITUMASTIC

Manufacturer:

1. Koppers 300M.
2. Approved equal.

POLYETHYLENE ENCASEMENT

Specifications

Polyethylene tube: ANSI/AWWA C105.

Thickness: 8 mils.

Pigmentation: Natural when exposure to ultraviolet light, such as sun, is less than 48 hours.
2.0% to 2.5% well-dispersed carbon black with stabilizers when exposure to ultraviolet light is 2 to 10 days.

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Material: Virgin polyethylene produced from Dupont Alathon or USI Petrothene resins.

Method of manufacture: Extruded tube form.

Closure Tape: Polyhen #900 or Scotchrap #50, 51 mm wide, plastic backed, adhesive tape.

Flat tube widths:

Nominal Pipe Sizes	Push-on Joint Flat Tube Width	Mechanical Flat Tube Width
150 mm	406 mm	508 mm
203 mm	508 mm	610 mm
254 mm	610 mm	686 mm
305 mm	686 mm	762 mm
356 mm	762 mm	864 mm
406 mm	864 mm	940 mm
457 mm	940 mm	1041 mm
508 mm	1041 mm	1143 mm
610 mm	1372 mm	1346 mm

DISINFECTION CHEMICALS

ANSI/AWWA B300 - Sodium Hypochlorite.

DECHLORINATION CHEMICALS

Sodium Thiosulfate or approved equal.

CONCRETE (THRUST-BLOCKS)

All tees, tapping sleeves, reducers, plugs or caps, vertical bends and horizontal bends, are to be restrained from movement with NYSDOT Class A Concrete, transit mix from batch plant. No fly ash will be allowed in the concrete mix. Concrete thrust blocks must also be installed at fittings assembled with joint restrainers, tapping sleeves shall include a cradle as directed by Engineer. Concrete thrust blocks are to be placed between the fitting and undisturbed soils. The size shall be as indicated on the plans, details, or as directed by the Engineer.

Steel reinforcement used for ties shall have a minimum yield strength of 482 MPa.

CONSTRUCTION DETAILS:

Preparation

Place pipe and related appurtenances on supports above flood level within right-of-way or

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easements or other approved locations. Use slings or other approved methods to unload and place pipe. Do not dump pipe from trucks. Cover both ends of each pipe segment when in outdoor storage or staging area.

Field cut pipes in accordance with manufacturer's instructions. Bevel all cuts. Remove all burrs.

Remove scale and dirt, on inside and outside of pipe, before assembly.

When material unsuitable for foundation has been removed, replace with select fill compacted to 95% Maximum Standard Proctor Density.

Excavate bell holes at each joint to permit the joint to be made properly and to provide uniform and continuous bearing for the pipe.

Relocate any water services which cross the water main trench (but will not be tied into the new water main) to pass under the new main.

Install water mains to the required lines and depths as shown on the plans and as ordered by the Resident Engineer. Locations, lines and depths of the mains, fittings, valves, and other appurtenances shown or specified are approximate only. Actual locations, lines and depths may be adjusted to meet field conditions at the time of installation as approved by the Resident Engineer. Control points shall be carefully preserved.

EXCAVATION

Excavate trenches to the lines and grades specified and as required.

Excavate the trench sides vertically between the centerline of pipe and an elevation 305 mm above the top of pipe unless this conflicts with requirements of OSHA. Maintain a minimum clearance of 152 mm around the pipe. Provide and maintain proper and satisfactory means and devices for the removal of all water entering the excavations, and remove all such water as fast as it may collect, in such a manner as shall not interfere with the progression of the work or proper placing of pipes, or other work.

Prevent damage to surrounding pavement, gutters and structures while excavating.

Furnish, place and maintain such sheeting, bracing and shoring as may be required. In no case will bracing be permitted against pipes or structures in trenches or other excavations. The adequacy of all sheeting and bracing is the sole responsibility of the Contractor.

Remove and dispose all material that slides, falls or caves into established limits of excavations due to any cause whatsoever, at the Contractor's expense.

Discontinue machine excavation in the vicinity of pipes, conduits and other underground structures and facilities and complete the excavation with hand tools as required by "NYS Department of Public Service 16 NYCRR Part 753, Protection of Underground Facilities".

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When determination of the exact location of a pipe or other underground structure is necessary for completing the work properly, excavate test holes to determine such locations.

When the bottom of any excavation is taken out beyond the limits indicated or prescribed, backfill and compact the resulting void with Select Fill compacted to 95% maximum modified Proctor density.

Remove material which, in the opinion of the Resident Engineer, is found to be unsuitable for foundation of the pipeline and appurtenances during excavation.

PIPE INSTALLATION

Maintain a minimum vertical separation of 152 mm when the water main crosses above a storm or sanitary sewer.

Maintain a minimum vertical separation of 457 mm with one full length of water main centered around the crossing so that both joints will be as far from the sewer as possible when the water main crosses under a storm or sanitary sewer. Provide adequate structural support (compacted select fill) between the water main and the sewer to prevent excessive deflection of joints and settling of the sewer on the main.

Maintain a minimum horizontal separation of 914 mm when the water main is installed 152 mm above and parallel to a storm or sanitary sewer.

Maintain a minimum vertical separation of 457 mm when the water main is installed under and parallel to a storm or sanitary sewer with less than 3 m of horizontal separation. Provide adequate structural support (compacted select fill) between the water main and the sewer to prevent excessive deflection of joints and settling of the sewer on the main.

Examine all pipe and appurtenances prior to installation for defects and damage. Immediately remove from site, all pipe or appurtenances that are known to be defective or damaged.

Maintain temporary plugs in all open ends of pipe when laying pipe is not actively in progress. Temporary plugs shall be water tight.

Maintain trench free of standing water when laying pipe.

In all areas where the surface elevation of the proposed trench is above that of the adjacent road or highway, install the water main to a depth that will result in a 1.5 m minimum elevation difference between the top of the proposed pipe and center line of adjacent road or highway.

Install pipe with a minimum cover, as measured from final grade, of 1.5 meters over the top of the pipe. Install pipe that runs longitudinally under street and highway pavement and adjacent shoulders with a minimum cover of 1.8 meters over the top of the pipe.

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Prevent floatation of the pipe in the event of water entering trench.

Route pipe as shown on the Plans, and as required by actual location of utilities and structures.

Install pipe in accordance with the manufacturer's instructions.

Install temporary facilities as required by Contract Documents or as necessary to permit flushing, pressure testing, chlorine injection for disinfecting, dechlorinating and sampling.

Install additional fittings as directed by the Resident Engineer.

Install temporary air releases as specified or shown on the Plans.

Install temporary Health Sampling points as indicated on the Plans and as specified.

Install a sand cushion when clearance between water main and any other existing facility or service is less than 305 mm.

PUSH-ON JOINTS

Assemble push-on joints using lubricant furnished by manufacturer. Guide plain end of pipe into bell until contact is made with gasket. Exert sufficient force to drive pipe home until penetration is made to depth recommended by manufacturer.

MECHANICAL JOINTS

Assemble mechanical joints in accordance with Notes on Method of Installation, AWWA C111, Appendix A. Tighten all bolts by means of torque wrenches such that the follower is brought up evenly.

Disassemble, clean and reassemble joint if effective sealing is not obtained at specified torques.

RESTRAINED JOINTS

Assemble restrained joint pipe in accordance with manufacturer's instructions. Retract each pipe joint until slack is removed, after it has been assembled and restrained. If required, deflect joint after retraction.

Assemble restrained push-on and mechanical joint restrainers in accordance with manufacturer's instructions.

ANCHOR PIPE JOINTS

Assemble anchor pipe joints in accordance with manufacturer's instructions.

COUPLINGS

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Install in accordance with the manufacturers instructions.

Completely coat coupling and bolts with bitumastic.

Wrap coupling with polyethylene tubing and secure.

POLYETHYLENE TUBING

Cut polyethylene tubing in lengths 610 mm longer than pipe section and place around pipe. After pipe joint has been made, overlap joint with polyethylene tube and secure in place with closure tape. Fold tube over at top and secure at quarter points along pipe section. Remove and replace all damaged tube.

CONCRETE THRUST-BLOCKS

Install concrete thrust blocks for all tees, tapping sleeves, hydrant tees, plugs, caps, bends and other locations as shown. No fly ash shall be allowed in the concrete mix.

Install concrete between fitting and undisturbed soil. The mass of the block and/or the area bearing on the pipe and on the ground in each instance shall be as shown on the Plans.

Form thrust blocks such that mechanical joint bolts are not covered nor access to them restricted.

Install concrete cradle for tapping sleeves.

At the direction of the Resident Engineer, obtain and prepare test cylinders (4 per concrete batch) in accordance with ASTM C31, Method of Making and Curing Concrete Compression and Flexure Test Specimens in the Field. Cylinders to be furnished to the Resident Engineer for testing.

BEDDING AND BACKFILL

Pipe bedding and immediate cover shall be sand, and shall be 305 mm minimum on each side of pipe, 152 mm below the bottom of pipe, and 305 mm above the top of pipe.

At the Resident Engineer's discretion, suitable native material may be used for bedding material. Suitable native material must be free of sod, debris, excavated rock and stones over 25 mm in diameter. Place the suitable material in by shovel in such a manner as not to damage pipe or appurtenances and in layers not to exceed 150 mm in depth.

All pipe bedding and cover shall be compacted according to the requirements of NYSDOT Standard Specifications, Section 203, latest revision. Bedding shall provide a solid bearing through the entire pipe length.

Timber blocking shall not be used without the written permission of the Resident Engineer. Timber blocking, if allowed in the work, shall be removed prior to trench backfilling.

Warning tape shall be placed in the open trench 305 mm above the water main. Tape shall run continuously along the centerline of the water main, with wording face up.

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Backfill under paved areas shall be select granular backfill, conforming to the requirements of Section 203. Backfill shall be placed according to the requirements of NYSDOT Standard Specifications, Section 203-3.15, latest revision, with the following modifications:

- a) Lift thickness shall not exceed 200mm.
- b) Minimum density for all backfill materials shall be 95 percent of Standard Proctor Maximum Density.

PRESSURE TESTING

Fill test section of pipe with water of approved quality, and remove all air from test section.

Maintain test section of pipe full of water for a period of 24 hours prior to test.

Pressure test all water mains from main line valve to main line valve or tapping valve unless otherwise specified.

1. Open all hydrant guard valves and pressure test against hydrant.
2. Resilient seat main line gate valves may be pressure tested from only one direction.
3. Pressure test butterfly and double disc main line gate valves from both directions, except for last valve on dead end mains (which may be tested from only one direction).

Use a pump to raise the water pressure, based on the elevation of the highest point of test section, to a minimum pressure of 1034 kPa (150 pounds per square inch). Use a 2069 kPa (300 psi) maximum test gauge to measure the pressure.

Maintain test pressure for a period of one hour without additional pumping or addition of water.

Repair and retest all sections of pipe that fail pressure test.

FLUSHING

Do not flush any section of main until completion of a successful pressure test.

Provide 24 hours notice to MCWA's Project Representative prior to flushing any section of main. MCWA's Project Representative shall review and approve both time and rate of flushing.

MCWA shall operate all prior existing valves.

Maintain a velocity of 0.8 m per second (2.5 feet per second) in section being flushed.

DISINFECTING AND HEALTH SAMPLING

Do not disinfect a section of pipe until successful completion of pressure testing and flushing.

Disinfect and sample in accordance with AWWA C651. Use of tablets not allowed.

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Apply chlorine solution by means of a solution feed device. Proportion chlorine solution flow rate to rate of water entering pipe or structure such that resulting free chlorine residual is not less than 50 parts per million (ppm).

Retain chlorinated water in pipe or structure a minimum of twenty-four (24) hours, unless otherwise directed. Operate all valves and hydrants within disinfection section during retention period.

Chlorine residual shall be not less than 25 ppm (mg/l) at any point in pipe or structure at the end of retention period.

After the retention period, thoroughly flush the pipe or structure until water in it has a chlorine residual comparable to that of the water in the adjacent public water supply system. Dispose of chlorinated water from any pipe or structure such that it will not cause damage to any vegetation, fish, or animal life.

Schedule health sampling of the test section by the Monroe County Department of Health. As a minimum, health samples shall be taken for every 305 m of water main and as indicated on the Plans. Health sample must be obtained in the presence of the MCWA's Project Representative and the Resident Engineer. Flame sampling point prior to sampling. Do not use fire hydrants for sampling points. The Resident Engineer and/or the Monroe County Health Department may refuse to collect bacteriological samples if the location of the taps are determined to be improper.

The Monroe County Health Department must receive at least 48-hour advance notification requesting sampling services. Sampling will not be performed prior to receipt from a New York State licensed or registered design professional (engineer, architect or land surveyor with a special exemption under Section 7208 of the Education Law) certifying that the water supply improvements, testing and disinfection procedures were completed in accordance with the approved plans, reports, specifications and any approved amendments. The Health Department will collect samples for free chlorine residual, total and fecal coliform and 24-hour bacterial plate count.

Flush and rechlorinate all sections of pipe that fail the health sample test in accordance with AWWA C651.

Provide written approval of the health sample from the Health Department to MCWA's Project Representative and the Resident Engineer prior to placing the test section of pipe in service, making tie-in connections, or installing any services. The water main shall not be placed into service until so authorized in writing by the Monroe County Health Department and MCWA.

All water main fittings not receiving 24-hour chlorine disinfection contact time must be swab-disinfected 30 minutes prior to installation. Apply 5% sodium hypochlorite solution when specified or when making repairs to structures and portions of pipelines or tie-in connections to existing pipelines. Apply solution, not more than 60 or less than 30 minutes, before installation using a wide brush or spray applicator.

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INTERRUPTION OF SERVICE

Do not shut down or interrupt flow through any Authority facility unless specifically permitted to do so, in writing, by the Monroe County Water Authority.

Do not operate main line valves, pumps and other facilities controlling flow. Assist the Authority in closing all valves necessary for interruption or shutdown of flow.

When an interruption of service occurs, work continuously and with expedience until completion of all work necessary to restore service to its normal state.

PLANNED SHUTDOWNS AND NOTIFICATIONS

Notify MCWA's Project Representative and the Resident Engineer in writing of proposed shutdown of any Authority facility, and approximate duration thereof, a minimum of three (3) days in advance. Include date, time and extent of duration of shutdown in the written notification.

Notify all consumers, in writing, twenty-four (24) hours prior to shutdown with the notification form provided by MCWA. Completely fill out notification form and distribute it to all affected consumers prior to shutdown.

Immediately prior to individual service work, notify the consumer again to verify that all water use has been stopped.

Bear all responsibility for any loss or damage arising out of the failure of any such customer to receive notice of proposed shutdown or interruption of service.

Identify material, size and location of water main or service prior to making shutdown. Do not shut down or cause any interruption of flow until all labor, material and equipment necessary to perform the work are present at the work site.

Restore service as soon as possible. Immediately notify MCWA of said restoration of service.

EMERGENCY SHUTDOWNS

In the event of a rupture of a water main or other failure of an Authority facility, whether the result of Contractor's activities or other unrelated matters, act in accordance with the provisions of this Section.

As soon as the shutdown or interruption of service has actually taken place, notify MCWA's Project Representative of the area affected and proposed duration of the shutdown. In addition, notify the consumers who are affected by the shutdown by going door-to-door.

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METHOD OF MEASUREMENT

Ductile Iron Pipe Water Main - Quantity to be measured for payment shall be the number of linear meters of ductile iron pipe installed, as measured along the centerline of the pipe, beginning with the face of the hub forming the commencement of the new work and extending to the face of the hub or spigot constituting the end of this particular line of pipe. Branch lines will be as measured from the centerline of the pipe which the branch joins, along the centerline of the branch, to the face of the hub or spigot constituting the end of that line.

BASIS OF PAYMENT

Unit price bid shall include the cost of notifications; furnishing and installing all pipe; polyethylene encasement; adhesive tape; pipe fittings; anchor pipe; pipe specials; hardware; warning tape; concrete thrust blocks; joint materials; making pipe joints; restrained joints; flushing and sampling taps; pressure testing; flushing; chlorinating; scheduling and assisting with obtaining health samples with Monroe County Department of Health; pavement saw cutting; preparation and distribution of service interruption notices; preparation and submittal of service information and cards; and furnishing all labor, material and equipment necessary to complete work.

The cost of furnishing, installing, maintaining, and removing temporary pipes, valves, plugs, taps, corporation stops, curb stops and boxes, blow-off pipes, sampling taps, installing brass plugs, and other fittings necessary for the construction of the new main, or for providing continuous service, shall be included in the unit price bid for Ductile Iron Pipe Water Main.

The cost of temporary sheeting for trench protection, pipe bedding, select backfill, and excavation including rock excavation, surface restoration, and connections to existing water mains will be paid for under separate items.

All hand or tunnel excavation in and around water lines, gas lines, sewers, steam lines, electric conduit, telegraph conduit, telephone conduit, fiber optic lines, tree roots, pipe joints, sidewalks, gutters, and curbs shall be included in the unit price bid for excavation.

Where, in the opinion of the Resident Engineer, more concrete for thrust blocks is required than is indicated on the detail drawings, additional payment shall be made for the extra concrete. No payment will be made for additional concrete used due to unnecessary excavation of trenches beyond required pay limits.

A partial payment of only 50 percent of the unit price bid will be made for installed water man that has not been tested, or has not satisfactorily passed both pressure and health tests.

Payment will be made under:

<u>Item No.</u>	<u>Item</u>	<u>Pay Unit</u>
660.065206 M	152 mm Ductile Iron Pipe Water Main and Fittings Class 52 (Including Polyethylene Encasement)	M
660.065208 M	203 mm Ductile Iron Pipe Water Main and Fittings	M

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660.065212 M	Class 52 (Including Polyethylene Encasement) 305 mm Ductile Iron Pipe Water Main and Fittings	M
660.065216 M	Class 52 (Including Polyethylene Encasement) 406 mm Ductile Iron Pipe Water Main and Fittings	M
660.065220 M	Class 52 (Including Polyethylene Encasement) 508 mm Ductile Iron Pipe Water Main and Fittings	M
660.065207 M	Class 52 (Including Polyethylene Encasement) 152 mm Restrained Joint Ductile Iron Water Main and Fittings, Class 52	M
660.065209 M	203 mm Restrained Joint Ductile Iron Water Main and Fittings, Class 52	M
660.065213 M	305 mm Restrained Joint Ductile Iron Water Main and Fittings, Class 52	M
660.065106 M	152 mm Ductile Iron Pipe Water Main and Fittings, Class 51 (Including Polyethylene Encasement)	M
660.065108 M	203 mm Ductile Iron Pipe Water Main and Fittings, Class 51 (Including Polyethylene Encasement)	M
660.065112 M	305 mm Ductile Iron Pipe Water Main and Fittings, Class 51 (Including Polyethylene Encasement)	M
660.065116 M	406 mm Ductile Iron Pipe Water Main and Fittings, Class 51 (Including Polyethylene Encasement)	M
660.065120 M	508 mm Ductile Iron Pipe Water Main and Fittings, Class 51 (Including Polyethylene Encasement)	M