# Latham Water District
## Town of Colonie

# Standard Specifications for Water Distribution Systems

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## Section 1 - General

A. The following specifications apply to all water mains and services installed on public or private property that are connected directly or indirectly to the Latham Water District System. All plans and specifications for such water mains shall be reviewed and approved by the Superintendent of Latham Water District prior to construction.

B. Standard Details of the Latham Water District supplement these specifications and shall be considered an integral part hereof.

C. Whenever American Water Works Association (AWWA), American National Standards Institute (ANSI) standards, or National Science Foundation (NSF) are referenced in these specifications, the latest version of the standard referenced shall be applicable.

**End of Section**

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## Section 2 – Definitions

As used in these specifications, the following words are defined:

A. Superintendent: shall mean the Superintendent of the Latham Water District, Town of Colonie, Albany County, New York. Whenever the words “ordered”, “directed”, “required”, “approved”, or “accepted” or variations thereof are used, they shall refer to action by the Superintendent of the Latham Water District, or his designated representative(s), unless otherwise specified.

B. Owner: shall mean the party, such as a developer, who initiates and pays for the installation of the water distribution system. In the case of water services, the Owner shall mean the applicant who applies for water service.

C. Engineer: shall mean the party who is employed by the Latham Water District as the Design Engineer - or, the designated party who observes the construction of the water distribution system and who is responsible to certify the same.

D. Contractor: shall mean the party who is employed by the Owner to actually construct the water distribution system.

E. Water Main: shall generally mean pipe six inches (6”) in diameter or larger supplying water as part of a system to one or more buildings.

F. Water Services: shall generally mean pipe smaller than six inches (6”) in diameter supplying water to one or more buildings.

G. Preferred Method: shall generally mean the standard method of installation that shall be used. Methods other than the preferred method may only be used with the approval of the Superintendent.

H. Standard Details: Supplements to these specifications and an integral part thereof, located in the Appendix of this document.

**End of Section**

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# Section 3 – Ductile Iron Pipe and Fittings

## 3-1 General

Work Units

A. Ductile Iron Pipe and Fittings: For all water mains and services larger than two (2) inches in diameter.

Related Work

A. Section 4 - Polyethylene Encasement

B. Section 6 - Hydrants

## 3-2 Materials

Ductile Iron Pipe

A. Manufactured and supplied in complete conformance to ANSI/AWWA C151/A21.51.

B. Furnished in 18- or 20-foot nominal laying lengths.

C. Designed in accordance with ANSI/AWWA C150/A21.50 and have the following wall thickness.

**Table 3-1 – Ductile Iron Pipe**

| Pipe Diameter (inches) | Pipe Class | Nominal Wall Thickness (inches) |
|---|---|---|
| 3 | 52 | 0.28 |
| 4 | 52 | 0.29 |
| 6 | 52 | 0.31 |
| 8 | 52 | 0.33 |
| 10 | 52 | 0.35 |
| 12 | 52 | 0.37 |
| 16 | 50 | 0.34 |
| 20 | 50 | 0.36 |
| 24 | 50 | 0.38 |
| 30 | 50 | 0.39 |
| 36 | 50 | 0.43 |

D. All newly-constructed water mains to be owned by the Latham Water District must be 6”, 8”, 12”, 16”, 20", 24", 30", or 36" ductile iron pipe. Pipe sizes 3”, 4”, 10”, 14" and 18” will be rejected.

Pipe Joints

A. Push-on joints in complete conformance with ANSI/AWWA C111/A21.11.

B. Pipe manufacturers shall furnish the required rubber joint gaskets and joint lubricant.

Pipe Joints –Thrust Restraint Required

A. Mechanical joints in complete conformance with ANSI/AWWA C111/A21.11.
B. Pipe manufacturer shall furnish the required rubber joint gaskets, joint lubricant, and ductile iron follower or retainer glands.
C. Tee bolts and nuts shall be manufactured from cor-ten steel and coated with a fluorocarbon SC-1 coating as manufactured by Stand-Cote or equal.
D. Field LOK (U.S. Pipe) or Amarillo Fast-Grip (American Pipe) gaskets may be used for thrust restraint on push-on-joint pipe.

Pipe Fittings

A. Ductile iron fittings in complete conformance with ANSI/AWWA C110/A21.11 or ANSI/AWWA C153/A21.53.
B. Minimum pressure rating of 350 pounds per square inch (psi).
C. Shall have mechanical joints in complete conformance with ANSI/AWWA C111/A21.11.
D. Pipe manufacturer shall furnish the required rubber joint gaskets, joint lubricant, and ductile iron follower or retainer glands.
E. Tee bolts and nuts shall be manufactured from cor-ten steel and coated with a fluorocarbon SC-1 coating as manufactured by Stand-Cote or equal.
F. When tie rods are used at fittings they shall be encased in polyethylene and tar coated with Bitumastic 50 by Koppers or equal. Tie rods are not to be used without the approval of the Superintendent.

Pipe and Fittings – Linings and Coatings

A. All pipe and fittings shall be cement mortar lined and seal coated in conformance with ANSI/AWWA C104/A21.4.
B. Thickness of mortar lining shall be twice the standard and shall not be less than one-eighth inch (1/8”) thick for all pipe.

**3-3 Installation**

Workmanship

A. Examine pipe before installation and assure no defective materials are incorporated in the work. Any defective materials installed shall be removed and replaced with sound material in a satisfactory manner.

Placement

A. In addition to the various miscellaneous installation requirements given in preceding sections of this specification, all water distribution system installation shall be done in accordance with ANSI/AWWA C600 recommendations. Also, all work shall be done in accordance with the requirements of the Superintendent.
B. Trenches shall be open cut from the surface deep enough to provide a minimum of five feet (5’) of cover over the barrel of the pipe from finished grade. Trenches should be wide enough

to provide at least six inches (6") of clearance on each side of the bell of the pipe. The maximum trench width at the top of the pipe shall be no greater than the nominal pipe size or diameter plus 24 inches. Refer to the Standard Details of the Latham Water District for standard trench details.

C. All pipe and fittings shall be laid on good foundations trimmed to shape, and where required, secured against settlement, all in a manner to provide full support for the entire length of pipe. At the joints, enough width and depth, including bell holes, shall be made to permit proper jointing. Blocking support of pipe shall not be permitted unless the pipe is to be laid with a concrete cradle or encasement or inside a tunnel or casing pipe. When pipe is laid in tunnels or casings, the pipe shall be blocked in such a manner so as to take the weight off the bells. Sufficient selected bedding and backfill shall be placed or other precautions taken to prevent flotation, movement, or damage to the pipe, fittings and coatings.

D. The Standard pipe installation for trench in earth shall conform to ANSI/AWWA C600 Laying Condition Type 4 with the pipe bedded in tamped and shaped select bedding material to a minimum depth of four inches (4"), followed with tamped pipe zone backfill up to the top of the pipe. This installation method shall be used to secure better support for the pipe and/or to replace unstable trench bottoms with sound material. Excavation below grade and select bedding shall be in accordance with Section 3.2 of ANSI/AWWA C600-87. Select bedding material shall consist of compacted sand, gravel, or crushed stone depending on conditions.

E. Alternate pipe installation for trench in earth, when ordered by the Engineer and approved by the Superintendent, shall conform to ANSI/AWWA C600 Laying Condition Type 2 with the pipe laid on a flat or slightly shaped natural trench bottom with bell holes and tamped pipe zone backfill up to the springline of the pipe. Excavation to grade and backfilling shall be in accordance with ANSI/AWWA C600. When backfilling, use satisfactory excavated material, sand, gravel, or another special trench backfill as required by the Engineer. The backfill shall be brought by hand or approved mechanical means to a depth of one (1) foot over the pipe to provide a cushion and prevent movement and damage to the pipe during subsequent backfilling with equipment.

F. The Standard pipe installation for trench in rock shall conform to ANSI/AWWA C600 Laying Condition Type 4 with the pipe bedded in tamped and shaped select bedding material to a minimum depth of four (4) inches, followed with tamped pipe zone backfill up to the top of the pipe. Rock excavation below grade and select bedding shall be in accordance with Section 3.2 of ANSI/AWWA C600. Ledge rock, boulders, and large stones shall be removed to provide a clearance of at least six (6) inches below and on each side of all pipe (including bells), valves, and fittings. Such excavated rock shall be replaced with select compacted bedding material, generally sand, gravel, or crushed stone, depending on conditions. Backfilling shall be the same as 3-3 D. above.

G. All trench excavation and any required sheeting and shoring shall be done in accordance with the latest revisions of the following codes: Subpart 23-4 "Excavation Operations" of the New York State Department of Labor Industrial Code Rule 23, and Subpart P, "Excavations, Trenching and Shoring" of the U.S. Department of Labor OSHA Regulations for Construction. The more stringent requirement in each code shall apply.

H. Whenever pipes require cutting to fit, the work shall be done with approved cutting tools specifically designed to cut pipe, so as to leave a smooth end at right angles to the axis of the pipe. The cut end shall be ground or filed to a slight taper so as not to damage rubber gaskets. The spigot ends of pipe shall be installed at the correct depth in the bells with a rubber gasket per joint.

I. When making plain end connections with a sleeve on 12-inch or larger diameter pipe, ends shall butt together or a filler piece of pipe shall be installed between the ends.

J. The trench shall be kept free from water when pipe installation is in progress.

K. Pipe installation shall begin from the lower elevation and progress toward the upper elevation. Proper and suitable tools and appliances for the safe and convenient handling and installation of pipe shall be used. The pipes shall be thoroughly cleaned before they are installed, and kept clean until acceptance of the completed work.

L. At the end of each working day, the upper end of the installed pipe shall be plugged temporarily with a watertight stopper to prevent the entry of dirt and other substances into the pipe. The stopper shall be left in place and only removed just prior to installation of the next section of pipe.

M. Before joints are made, each pipe shall be well-bedded on a solid foundation, and no pipe shall be brought into position until the preceding length has been thoroughly embedded and secured in place.

N. All trenches shall be backfilled immediately after installation of pipe. Care shall be used to prevent disturbance of the joints or damage to the pipes during backfilling. There shall be no walking on or working over the pipes except as may be necessary in tamping, until the depth of backfill is at least two (2) feet above the top of the pipe.

O. Pipe shall be installed true to lines and grade. Pipe not installed in true alignment, or which shows abnormal settling after placement, shall be removed and reinstalled.

P. Pipe and fittings shall be installed in accordance with the standard details.

<u>Water Main – Sanitary Sewer Separation</u>

A. Water mains shall be installed at least 10 feet horizontally from any existing or proposed sanitary sewer. The distance shall be measured from edge to edge. In cases where it is not practical to maintain a 10-foot separation, the water main may be installed closer to the sanitary sewer provided that the water main is laid in a separate trench or on an undisturbed earth shelf located on one side of the sanitary sewer at such an elevation that the bottom of the water main is at least 18 inches above the top of the sanitary sewer. Water mains crossing sanitary sewers shall be installed to provide a minimum vertical distance of 18 inches between the outside of the water main and the outside of the sanitary sewer. This shall apply whether the water main crosses above or below the sanitary sewer. For all crossings, one full length of water main pipe shall be located so that each joint shall be as far away as possible from the sanitary sewer. Special structural support of the water main and sanitary sewer may be required.

B. When separations of less than 10 feet or crossings of less than 18 inches of depth occur, the sanitary sewer may be replaced with AWWA C900 PVC pipe or equivalent as approved by

the Superintendent.

Thrust Blocking and Restraint

A. All plugs, caps, tees, bends and other fittings shall be provided with concrete thrust blocking to resist test pressures, or shall be prevented from moving by using suitable metal rods or clamps. The use of thrust blocks shall be the preferred method of the Latham Water District. Refer to the Standard Details for typical concrete thrust block details. All concrete shall be 3,000 psi and shall be placed around the fittings to completely fill the space between the fittings and the undisturbed walls of the trench. Concrete shall not overlap any joint and shall be placed so as not to interfere with removing or installing any of the jointing hardware. All tie rod restraints shall be covered with Bitumastic 50 by Koppers or equal and with polyethylene, or they shall be ASTM A320 Grade B8 stainless steel.

B. Other means of thrust restraint utilizing anchoring fittings and retainer glands or Field-Lok/Amarillo Fast-Grip gaskets may be used where appropriate and approved by the Superintendent. These thrust restraint options shall be as described for use with hydrants in Section 6 of these specifications and/or as illustrated on the Standard Detail Sheets.

C. Epoxy Coated Foster Adapters as manufactured by INFACT Corp. are an acceptable means of Mechanical-Joint-to-Mechanical-Joint restraint.

Connection to Existing Systems

A. Connections to existing systems shall be reviewed and considered on an individual basis with the Superintendent of Latham Water District. In general, connections shall be made with a minimum of, or no disruption to, water service in the existing system. Latham Water District may require that connections be made during off-peak hours (i.e. night time) to avoid impacts to existing customers. All Latham Water District costs for work during off-peak hours must be paid by the contractor/developer prior to final approval of the project.

Dust Control

A. In order to control dust conditions during water main construction, the contractor shall furnish and apply water. When water is used on streets or roads, it shall be applied uniformly with a pressure distributor spray bar or by other approved equipment. When water is used on areas that shall be sodded or seeded later, it shall be free from acids, oils, salts, or any other substances injurious to plant growth.

Erosion and Sediment Control

A. Erosion and Sediment Control must be practiced in accordance with the requirements of the Town of Colonie Department of Public Works Highway and Drainage Standards.

Exceptions

A. The Latham Water District will consider the use of High-Density Polyethylene (HDPE) pipe on projects with environmental or constructability constraints on a case-by-case basis. A NYS licensed design professional must submit project plans inclusive of HDPE details and a letter or engineer's report requesting and justifying the use of HDPE to the Latham Water District for review. The use of HDPE pipe must be approved by the Superintendent.

**End of Section**

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# Section 4 – Polyethylene Encasement

## 4-1 General

Work Units

A. Polyethylene encasement of ductile iron pipe and fittings. All pipe installed shall be encased in polyethylene.

Related Work

A. Section 3 - Ductile Iron Pipe and Fittings

System Description

A. The polyethylene encasement shall prevent contact between the pipe and the surrounding backfill and bedding material but is not intended to be a completely air and watertight enclosure. Overlaps shall be secured by the use of adhesive tape, plastic string, or any other material capable of holding the polyethylene encasement in place until backfilling operations are completed.

Definitions

A. Polyethylene Encasement: The encasement of piping with virgin polyethylene film in tube or sheet form.

## 4-2 Materials

Polyethylene

A. Polyethylene in complete compliance with AWWA C105/ANSI A21.5.

B. Tube type

C. Flat sheet type

D. Thickness:

   a. Minimum nominal: 0.008 inches (8 mils)

   b. The minus tolerance on thickness shall not exceed 10 percent (10%) of the nominal tolerance.

E. The minimum polyethylene width shall be as listed in Table 4-1.

**Table 4-1 – Polyethylene Encasement**

| Nominal Pipe Diameter (inches) | Flat Tube Minimum Width (inches) | Sheet Minimum Width (inches) |
|---|---|---|
| 4 | 14 | 28 |
| 6 | 16 | 32 |
| 8 | 20 | 40 |
| 10 | 24 | 48 |
| 12 | 27 | 54 |
| 16 | 34 | 68 |
| 20 | 41 | 82 |

## 4-3 Installation

Inspection

A. Examine the areas to receive polyethylene for defects that adversely affect the execution and quality of work.

B. Start work only when conditions are satisfactory.

Methods

A. The following methods of installation have been taken from AWWA C105 and may be used as a guide for installing the polyethylene. However, the Contractor shall follow the manufacturer's recommendations during installation. Methods A and B are for use with polyethylene tubes and Method C is for use with polyethylene sheets.

*Method A – Polyethylene Tubes*

A. Cut polyethylene tube to a length approximately two (2) feet longer than the pipe section. Slip the tube around the pipe, centering it to provide a one-foot (1') overlap on each adjacent pipe section, and bunching it accordion-fashion lengthwise until it clears the pipe ends.

B. Lower the pipe into the trench and make up the pipe joint with the preceding section of pipe. A shallow bell hole must be made at joints to facilitate installation of the polyethylene tube.

C. After assembling the pipe joint, make the overlap of the polyethylene tube. Pull the bunched polyethylene from the preceding length of pipe, slip it over the end of the new length of pipe, and secure it in place. Then slip the end of the polyethylene from the new pipe section over the end of the first wrap until it overlaps the joint at the end of the preceding length of pipe. Secure the overlap in place. Take up the slack width to make a snug, but not tight, fit along the barrel of the pipe, securing the fold at quarter points.

D. Repair any rips, punctures, or other damage to the polyethylene with adhesive tape or with a short length of polyethylene tube cut open, wrapped around the pipe, and secured in place. Proceed with installation of the next section of pipe in the same manner.

*Method B – Polyethylene Tubes*

A. Cut polyethylene tube to a length approximately one (1) foot shorter than the pipe section.

Slip the tube around the pipe, centering it to provide six (6) inches of bare pipe at each end. Make polyethylene snug, but not tight; secure ends as described in Method A above.

B. Before making up a joint, slip three (3) feet of polyethylene tube over the end of the preceding pipe section, bunching it accordion-fashion lengthwise. After completing the joint, pull the three (3) feet of polyethylene over the joint, overlapping the polyethylene previously installed on each adjacent section of pipe by at least one (1) foot; make snug and secure each end as described in Method A above.

C. Repair any rips, punctures, or other damage to the polyethylene as described in Method A above. Proceed with installation of the next section of pipe in the same manner.

*Method C – Polyethylene Sheets*

A. Cut polyethylene sheet approximately two (2) feet longer than the pipe section. Center the cut length to provide a one-foot (1') overlap on each adjacent pipe section, bunching it until it clears the pipe ends. Wrap the polyethylene around the pipe so that it circumferentially overlaps the top quadrant of the pipe. Secure the cut edge of polyethylene sheet at intervals of approximately three (3) feet.

B. Lower the wrapped pipe into the trench and make-up the pipe joint with the preceding section of pipe. A shallow bell hole must be made at joints to facilitate installation of the polyethylene. After completing the joint, make the overlap as described in Method A above.

C. Repair any rips, punctures, or other damage to the polyethylene as described in Method A above. Proceed with installation of the next section of pipe in the same manner.

Covering Appurtenances

A. Cover bends, reducers, offsets, hydrant barrels and other pipe-shaped appurtenances with polyethylene in the same manner as the pipe.

B. When valves, tees, crosses, and other odd-shaped pieces cannot be wrapped practically in a tube, wrap with a flat sheet of split-length polyethylene tube by passing the sheet under the appurtenance and bringing it up around the body. Make seams by bringing the edges together, folding over twice, and taping down. Handle width and overlaps at joints as described in Method A above. Tape polyethylene securely in place at valve stem and other penetrations.

Openings in Polyethylene Encasement

A. Provide openings for branches, service taps, blow-offs, air valves, and similar appurtenances by wrapping two or three layers of polyethylene compatible adhesive tape completely around the pipe to cover the area where the tapping machine and chain will be mounted. Next, mount the tapping machine on the pipe area covered by the polyethylene tape. Then make the tap and install the appurtenance directly through the tape and polyethylene. After making the connection, inspect the entire circumferential area for damage and make necessary repairs.

Junctions Between Wrapped and Unwrapped Pipe

A. Where polyethylene-wrapped pipe joins an adjacent pipe that is not wrapped, extend the polyethylene wrap to cover the adjacent pipe for a distance of at least two (2) feet. Secure

the end with circumferential turns of tape.

Backfill for Polyethylene-Wrapped Pipe

A. Use the same backfill material as that specified for pipe without polyethylene wrapping, exercising care to prevent damage to the polyethylene wrapping when placing backfill. Backfill material shall be free from cinders, refuse, boulders, rocks, stones, or other material that could damage polyethylene. In general, backfilling practice should be in accordance with the requirements of Section 3 Ductile Iron Pipe and Fittings.

**End of Section**

# Section 5 – Gate Valves and Valve Boxes

## 5-1 General

Work Units

A. Gate valves and valve boxes.

Related Work

A. Section 3 - Ductile Iron Pipe and Fittings

## 5-2 Materials

Gate Valves

A. All gate valves and valve boxes for water mains, hydrant connections, and water services larger than two (2) inches in diameter shall meet the same specifications. All gate valves shall be resilient-wedge gate valves and shall be suitable for a minimum working pressure of 200 psi after having been hydrostatically tested to 400 psi after manufacture. All valves shall open left with a standard two-inch (2") square operating nut. Latham Water District's minimum valve size shall be six (6) inch.

B. All gate valves shall conform to AWWA C509 or AWWA C515 and shall be manufactured by the following:
    a. Clow Resilient Wedge Valves
    b. American Flow Control Resilient Wedge Valves
    c. U.S. MetroSeal Resilient Wedge Valves
    d. Mueller Resilient Wedge Valves
    e. Valves 16 inches and larger shall be approved by the Superintendent

C. Stem Construction
    a. Valves installed underground shall be non-rising stem.
    b. Valves installed inside structures shall be outside screw and yoke.
    c. Stem seal shall be O-ring type.

D. End Connections
    a. Valves installed underground shall be mechanical joint.
    b. Valves installed inside structures shall be flanged.
    c. Valves shall be furnished with the required rubber joint gaskets, joint lubricant, and ductile iron glands.
    d. Bolts and nuts shall be cor-ten steel with a fluorocarbon SC-1 coating as manufactured by Stand-Cote or equal.

E. Body and Bonnet Bolts
    a. All bolts incorporated into the valve body and bonnet shall be ASTM A320 Grade B8

stainless steel.

Valve Boxes

A. All valve boxes shall be cast or ductile iron, telescopic pattern, at least five-and-one-quarter inches (5-1/4") in diameter. Valve boxes for valves three (3) inches through 12 inches in diameter shall have a 26-inch top section and a 36-inch bottom section.

B. Valve box extensions over six (6) feet deep shall be constructed of five-inch (5") cast iron pipe and a standard 26-inch valve box top section. Valves over seven (7) feet deep to the operating nut shall be installed with a riser attached to the valve stem.

C. All valve boxes shall be furnished with a cast iron cover, drop style, with both the word 'WATER" and an arrow indicating the direction of the valve opening (open left) cast on the cover in raised characters. Valve boxes shall be Sigma Model VB466 with a VB2600 cover, or approval equal.

Tapping Sleeves and Valves

A. All tapping sleeves shall be ductile iron as manufactured by American Flow Control (Model 2800C) or Mueller (Model H-615) mechanical joint tapping sleeves.

B. The valves provided with the tapping sleeves shall conform in all respects to the valve requirements previously specified in this section.

C. All tapping sleeves shall be provided with the appropriate size gasket for the size and material (ductile or cast iron) of pipe to be tapped.

D. Tee bolts and nuts shall be manufactured of cor-ten steel and coated with a fluorocarbon SC-1 coating as manufactured by Stand-Cote or equal.

E. Tapping valves shall be bolted to the sleeve with stainless steel hex nuts and bolts.

**5-3 Installation**

General

A. Gate valve and valve box installation shall conform to the requirements of the Standard Details of the Latham Water District. All hydrant leads shall incorporate a gate valve which, in general, shall be located as far from the hydrant and as close to the main as possible. Gate valves at main-line junctions shall be located plus or minus four feet (4'±) away measured center of the valve to center of the junction or fitting. The only exceptions to the four (4) feet distance shall be when an anchor tee is utilized or a foster adapter is utilized for restraint. Gate valves on ductile iron water services shall be located on the street line or property line, or otherwise where required by the Superintendent. All gate valve locations shall be reviewed and approved by the Superintendent of Latham Water District prior to valve installation and preferably during the design of the system. Tops of the valve boxes shall be set flush with grade in paved areas and set one (1) inch above grade in grassed areas.

B. Valve boxes shall be plumb and shall be centered over the operating nut.

C. All fill placed around valve boxes shall be placed in six-inch (6") lifts and shall be mechanically compacted.

D. All tapping sleeves and valves shall be hydrostatically tested.

**End of Section**

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# Section 6 – Hydrants

## 6-1 General

Work Units

A. Installation of fire hydrants

Related Work

A. Section 3 – Ductile Iron Pipe and Fittings
B. Section 5 – Gate Valves and Valve Boxes

## 6-2 Materials

Fire Hydrants

A. Fire hydrants shall be manufactured in conformance with AWWA C-502.
B. Fire hydrants shall have a minimum valve opening of five-and-one-quarter-inch (5-1/4") and a six-inch (6") mechanical joint inlet connection.
C. Depth of Trench or Bury: five (5) feet to top of pipe.
D. Accessories to include: ductile iron glands, rubber gaskets, joint lubricant, and Rodon Hydrafinder five-foot (5') length with flat bracket.
E. Tee bolts and nuts shall be manufactured of cor-ten steel and coated with a fluorocarbon SC-1 coating as manufactured by Stand-Cote or equal.
F. Nozzle Alignment:
    a. Two (2) two-and-one-half-inch (2-1/2") base connections with nozzle caps and chains
    b. One (1) four-and-one-half-inch (4-1/2") pumper connection with nozzle cap and chain
    c. Threads shall be National Standard hose threads.
G. Operating nut and nozzle cap nuts shall be five-sided National Standard measuring one-and-one-half-inches (1-1/2") from point to opposite flat side.
H. Direction of opening shall be left.
I. The lower barrel flange bolts shall be ASTM A320 Grade B8 stainless steel.
J. All fire hydrants shall be of break flange construction with a frangible break flange located slightly above the ground line and a cast iron break coupling on the stem at the same location which shall be designed that in case of breakage, only the break flange and cast-iron coupling require replacement to complete the repair.
K. All hydrants shall be Clow F2640 or Mueller Super Centurion 250. Clow F2640 must be ordered with the Type 304 stainless steel middle stem.

## 6-3 Installation

General

A. Install hydrants and accessories in accordance with manufacturer's instructions.

B. Hydrant installations shall conform to the requirements shown on the Standard Details of the Latham Water District. Hydrants shall be installed truly vertical at the locations staked by the Engineer/Architect and shall be carefully plumbed before the connection is made. All hydrants shall be set on a solid, precast concrete slab at least 12-inches square and four inches (4") thick. The concrete slab shall be supported by firm, undisturbed material or well-compacted fill.

C. In pervious soil, such as sand or gravel, crushed stone shall be placed around the hydrant drain up to a level at least six (6) inches above the drain. In rock or other impervious soil, such as clay, a drainage pit two (2) feet in diameter and three (3) feet deep shall be excavated under and around the bottom of the hydrant and completely filled with crushed stone up to a level at least six (6) inches above the drain. In both cases, the top of the crushed stone shall be completely covered with polyethylene sheet or building paper to prevent the backfill from sifting down into the crushed stone.

D. Whenever groundwater is encountered within seven (7) feet of finished grade, or when required by the Engineer or the Superintendent because of evidence of high ground water, the hydrant drain opening shall be plugged to prevent the entrance of ground water. In this case, no crushed stone shall be placed under the hydrant.

E. All hydrant leads shall include a gate valve located as far from the hydrant and as close to the main as possible. Separate mechanical restraints shall be used to secure the hydrant to the valve and then the valve to the main line tee or other fittings. An anchoring tee shall be the standard installation method used to restrain the hydrant valve to the main. From the valve to the hydrant, various means of hydrant restraint may be used. A mechanical joint anchoring pipe shall be the preferred method of hydrant restraint. However, retainer glands may also be used to suit the specific installation. Mechanical joint retainer glands shall be ductile iron.

F. All hydrant-lead-valve assemblies shall be blocked against movement with solid precast concrete blocks, both behind the hydrant and behind the tee, as shown on the Standard Details of the Latham Water district. These blocks shall bear against undisturbed material.

G. Whenever the distance between the centerline of the lowest nozzle and the finished grade is less than 18 inches, due to a difference in ground elevation between the main and the hydrant, the Contractor shall furnish and install a hydrant extension of appropriate length to achieve an 18-inch minimum difference.

H. All hydrants shall receive a finish coat of paint above the ground line after installation. Paint shall be weather-resistant enamel by Sherwin Williams (Sherwin Williams Industrial Enamel - Pure White) or approved equal. Hydrants shall be painted red (Sherwin Williams Kem Lustral Enamel - Vermillion) with white top and nozzle caps. All hydrants shall be furnished completely shop-primed or painted in the same color and pattern as that required above. Shop primer or paint shall be chosen so as to be compatible with the type of finish paint specified above.

I. Hydrant guard posts shall be installed around hydrants when required by the Superintendent and in accordance with the Standard Details of the Latham Water District. The post shall be a six (6) inch diameter piece of ductile iron or steel pipe set vertically plumb four (4) feet in the ground with its tip extending six (6) inches above the top of the hydrant. The pipe shall be filled with crushed stone except the top 12 inches which shall be filled and neatly capped with concrete. After installation, the portion of the guard posts above the finished grade shall be painted in alternating six-inch (6") wide red and white stripes starting with red on top. The paint shall be a double coat of weather-resistant enamel of the same type used on the hydrant.

J. All hydrants shall be equipped with a fire hydrant marker. Fire hydrant marker shall have a White laminar matrix fiberglass shaft three-eighths-inches (3/8") in diameter and 60" tall with six-inch (6") wide red reflective banding pattern, and stainless-steel spring assembly. Fiberglass shaft shall be attached to a heavy-duty MIL SPEC zinc plated carbon steel bolt on "Flat" spring mount that allows for 360-degree total flexibility. Fire hydrant marker shall be the Rodon Hydrafinder bolt on steel flat mount or equal.

K. Dead end hydrant installation shall require that the last three (3) pipe joints be restrained with Field-Lok gaskets or other restraint as approved by the Superintendent.

**End of Section**

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# Section 7 – Water Services

## 7-1 General

Work Units

A. Seamless copper tubing and fittings

B. Service clamps

C. Corporation stops

D. Curb stops

E. Curb boxes

Related Work

A. Section 3 - Ductile Iron Pipe and Fittings

Water Services

A. Water services three-quarter inch (3/4”), one inch (1”), one-and-one-half inch (1-1/2”), and two-inch (2”) in diameter will generally be installed on public property or right-of-way by Latham Water District extending from the water main to the property or right-of-way line. Refer to the Standard Details of the Latham Water District for installation details.

    a. The complete three-quarter inch (3/4”) through two-inch (2”) water service shall consist of the tap, corporation stop, branch connection with extra taps and corporation stops if required, copper service pipe and fittings, and curb stop and box. Taps made on mains owned by the Latham Water District will generally be made by Latham Water District. Taps made on new mains installed as part of approved development projects will generally be made by the Developer’s contractor after the main has been tested and chlorinated. If tapped tees are used in lieu of taps, the tapped tees shall be supplied and installed by the Developer’s contractor. Copper service pipe shall be run in trenches a minimum of five (5) feet in depth as measured from finished grade. The curb stop and box shall generally be located on the property or right-of-way line with the top of the curb box set one (1) inch above grade in grassed areas and set flush with grade in paved areas with sleeve.

    b. The rates and fees for the installation of water services by the Latham Water District are as approved by the Town Board.

B. Water services larger than two (2) inches in diameter in any location shall be furnished and installed by the Owner completely at the Owner’s expense. For installation details, refer to the Standard Details of the Latham Water District.

    a. The complete water service (larger than two (2) inches) shall generally consist of a main line tee or tapping sleeve and valve, ductile iron service pipe and fittings, and standard gate valve and valve box. Such ductile iron service pipe and fittings shall meet the same specifications as given previously in Section 3 for the main line pipe and fittings, and shall be installed in a trench a minimum of five (5) feet deep to provide at least five (5) feet of cover or more over the barrel of the pipe, all as

measured from finished grade.

b. The standard gate valve and valve box shall generally be located as close to the main as possible or where required by the Superintendent. The gate valve and valve box shall be the same as used for main line valves and valve boxes.

c. The exact configuration of these water services larger than two (2) inches in diameter shall be reviewed and approved by the Superintendent of the Latham Water District prior to their construction.

C. Water services of any size on private property shall be furnished and installed by the Owner completely at the Owner's expense. All such services shall meet all the same material and installation details as given in these specifications for other water services. Installation details shall be reviewed and approved by the Superintendent of Latham Water District before the service is installed.

## 7-2 Materials

Copper Service Pipe

A. All water services up to two (2) inches in diameter shall be soft temper Type K seamless copper tubing in complete conformance with ASTM B88-81 and Federal Specification WWT-799.

B. Copper service pipe shall have the dimensions and weights in Table 7-1.

**Table 7-1 – Copper Service Pipe**

| Nominal Pipe Size (inches) | Outside Diameter (inches) | Weight Per Foot (pounds) |
|---|---|---|
| 3/4 | 0.875 | 0.641 |
| 1 | 1.125 | 0.839 |
| 1-1/2 | 1.625 | 1.360 |
| 2 | 2.125 | 2.060 |

Copper Service Pipe Fittings

A. Fittings for copper service pipe shall have compression-type connections.

B. Three-part unions for copper-to-copper shall be either of the following:

a. Mueller H-15403N

b. McDonald 74758GNS

C. Other fittings as required shall be Mueller or McDonald as approved by the Superintendent.

D. Service lines shall be a continuous piece of copper service pipe without joints, where possible.

Corporation Stops

A. All corporation stops shall have compression connections and AWWA inlet threads, except as otherwise noted.

B. Corporation stops three-quarter (3/4) inch and one (1) inch shall be either of the following:
    a. Mueller H-15008N
    b. McDonald 74701BT

C. Corporation stops one-and-one-half (1-1/2) and two (2) inch shall be either of the following:
    a. Mueller H-15013N
    b. McDonald 74701BT

D. When tapped tees are used that have iron pipe thread taps, use Mueller H-15028N corporation stops, sizes three-quarter (3/4) to two (2) inch.

Curb Stops and Boxes

A. All curb stops shall be ball valves and have compression connections.

B. Curb stops for three-quarter (3/4) to two (2) inch copper service pipe shall be either of the following:
    a. Mueller H-15209N
    b. McDonald 76100G

C. Curb stops shall be set on solid concrete blocks.

D. Curb boxes for three-quarter (3/4) inch and one (1) inch curb stops shall be extension-type with a stationary rod and arch pattern base suitable for a six-foot-deep trench and having a one (1) inch inside diameter upper section with lid. The curb boxes shall be either of the following:
    a. Mueller H-10314, with four-foot stationary rod 5/8” diameter (Grade 304 Stainless Steel) and lid 87081
    b. McDonald 5601 with four-foot stationary rod 5/8” diameter (Grade 304 Stainless Steel) and 5601L lid

E. Curb boxes for one-and-one-half (1-1/2) inch and two (2) inch curb stops shall be one-and-one-quarter (1-1/4) inch inside diameter telescoping upper section five-and-one-half (5-1/2) feet extended length with stationary rod, cast bottom and lid. The curb boxes shall be either of the following:
    a. Mueller H-10386, with matching 84247 stationary rod 5/8” diameter (grade 304 stainless steel) with cast bottom and 89990 lid
    b. McDonald equivalent to specified Mueller

F. When curb boxes for three-quarter (3/4) inch and one (1) inch services are installed in concrete or paved surfaces, they shall be installed to allow freedom of movement of the ground key lid. Curb box sleeves shall be four (4) inch I.D. PVC SDR 26, CL 160 pipe, 18” long.

G. When curb boxes for one-and-one-half (1-1/2) inch and two (2) inch services are installed in concrete or paved surfaces, they shall be installed to allow freedom of movement of the ground key lid. Curb box sleeves shall be valve box pavement extensions 12 inches long with

covered marked WATER.

**7-3 Installation**

Workmanship

A. Examine copper tubing and fittings before installation to ensure that no defective materials are incorporated into the work.

B. Visually inspect all copper tubing and joints to ensure there are no leaks. Repair any leaks disclosed by visual inspection.

Placement of Copper Services

A. Curb stops shall be set on solid concrete blocks.

B. When the curb boxes are installed in concrete or paved surfaces, sleeves shall be installed to allow freedom of movement of the ground key lid.

C. Trenching, backfilling, and compacting shall be performed in accordance with Section 3-3 of these standards.

D. The trenches shall be kept free from water when water service installation is in progress.

E. Trenches shall be open cut from the surface deep enough to provide a minimum cover of five (5) feet over the service pipe from the finished grade.

F. Refer to the Standard Details of the Latham Water District for the standard details to be used in service connections.

G. Whether tapped in or used with tapped tees, corporation stops shall be installed tilted up at about 15 degrees from horizontal so that a partial loop can be formed in the copper service pipe to allow for possible differential movement of the service pipe and main. A minimum cover of five (5) feet below finished grade shall be maintained over the top of the partial loop in the copper service pipe.

H. Corporation stops used with tapped tees shall be installed horizontally.

I. Corporation stop taps larger than the maximum tap size allowable in the main shall not be made. AWWA and DIPRA (Ductile Iron Pipe Research Association) recommendations shall be followed. Consideration shall be given to minimum pipe wall thickness required for each tap size to insure a serviceable threaded connection. Service conditions should indicate the extent of full-thread engagement necessary. As a guide, tap size should be limited so that at least three (3) full threads of the corporation stop are engaged in the pipe wall for ductile iron pipe.

J. All one-and-one-half (1-1/2) inch and two (2) inch taps on mains less than 12 inches in diameter shall be made using bronze service saddles. No direct taps will be allowed for one-and-one-half (1-1/2) inch and two (2) inch services on pipe less than 12 inches in diameter.

**End of Section**

# Section 8 – Water Meters

## 8-1 General

Work Units

A. Water meters

Related Work

A. Section 7 – Water Services

Procurement

A. Water meters for all water services one-inch (1") in diameter and less must be obtained from the Latham Water District.

B. All water meters larger than one (1) inch shall be purchased and installed by the Owner in accordance with Latham Water District requirements.

## 8-2 Materials

Meters Two Inches (2") and Smaller

A. Meter size – two (2) inches and smaller

B. Shall be displacement-type meters, frost-proof, cold water service, straight reading in gallons, or ultrasonic water meters reading in gallons.

C. Acceptable manufacturers:
    a. Neptune
    b. Rockwell

Meters Greater Than Two Inches (2")

A. Meter size - greater than two (2) inches

B. Shall be of a size and type approved by the Superintendent, reading in gallons.

C. Acceptable manufacturers:
    a. Neptune
    b. Rockwell

## 8-3 Installation

A. Installation shall be in accordance with the requirements of the Latham Water District. For meters larger than one (1) inch in diameter, the installation details shall be reviewed and approved by the Superintendent prior to installation.

B. Valves shall be installed on both sides of the meter.

C. No bypasses will be permitted unless written approval is granted by the Superintendent.

D. All water meters shall be accessible to the Latham Water District for inspection and reading. No water meters shall be installed in crawl spaces.

E. For positive displacement, turbine or compound water meter installations, where the NYS Building Code requires the installation of a pressure-regulating valve, the pressure-regulating valve must be installed before the water meter.

F. For ultrasonic water meter installations where the NYS Building Code requires the installation of a pressure-regulating valve, the pressure-regulating valve must be installed after the water meter.

**End of Section**

# Section 9 – Cleaning Lines

## 9-1 General

A. At the conclusion of the work, the Contractor shall thoroughly clean all new pipes by flushing with water or other means to remove dirt, stones, pieces of wood, etc., which may have entered during the construction period. If, after this cleaning, any obstructions remain, they shall be removed to the satisfaction of the Engineer and the Superintendent. Pipes shall be flushed at a rate of two-and-one-half (2-1/2) feet per second for a duration suitable to the Engineer and the Latham Water District. The rates of flow required to produce two-and-one-half (2-1/2) feet per second flushing velocity in different sizes of pipe are as shown in Table 9-1.

**Table 9-1 – Pipe Flushing**

| Pipe Size (inches) | Required Flow for 2.5 fps Velocity (gpm) | Required Hydrant Opening at 40 psi Residual |
|---|---|---|
| 6 | 220 | One – 2 1/2" |
| 8 | 390 | One – 2 1/2” |
| 12 | 880 | One – 2 1/2" |

**End of Section**

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# Section 10 – Hydrostatic Testing

## 10-1 General

A. Testing shall be done within 72 hours of conclusion of installation.

B. Hydrostatic acceptance tests, consisting of a pressure test and a leakage test, shall be performed on all sections of all water systems installed after the trench has been backfilled. Hydrostatic presumptive tests may be performed when the system is partially backfilled to simply check the work, but acceptance of the system shall be based on hydrostatic tests run on the finished system after it is completely backfilled. All hydrostatic tests shall be performed in accordance with Section 4 of ANSI/AWWA C600.

C. For the pressure test, the system shall be pressure tested by pressurizing to a minimum of 150 pounds per square inch (psi), based on the elevation of the highest point in the section under test and corrected to the elevation of the gage. Provisions shall be made to relieve air trapped at high points in the system through adjacent hydrants or through taps and corporation stops installed for this purpose by the Contractor. After this pressure has been maintained successfully, with further pumping as required, for a period of at least one (1) hour, the section under test shall be considered to have passed the pressure test and leakage tests shall then be performed.

D. Leakage tests shall be performed under a minimum test pressure of 150 psi (200 psi for fire lines), based on the elevation of the highest point of the section under test and corrected to the elevation of the gage. The test section should be limited to a maximum length of about 2,000 feet. The leakage test duration shall be a minimum of two (2) hours after the leakage rate has stabilized.

E. The maximum allowable leakage for a two-hour test per 1,000 feet length of different sizes and nominal laying lengths of pipe shall be as shown in Table 10-1.

**Table 10-1 – Hydrostatic Testing Allowable Leakage**

| Pipe Size (inches) | Allowable Leakage at 150 psi (gallons per two hours, per 1,000 feet of pipe) |
|---|---|
| 3 | 0.56 |
| 4 | 0.74 |
| 6 | 1.10 |
| 8 | 1.48 |
| 12 | 2.20 |
| 16 | 2.94 |

F. All water for tests shall be furnished, dechlorinated, and disposed of by the Contractor at his own expense. Source and/or quality of the water which the Contractor proposed to use in testing the lines shall be acceptable to the Engineer and the Superintendent.

G. All tapping sleeves and valves if approved for use by the Superintendent shall be hydrostatically tested.

H. All water mains including dead ends and all service lines greater than two (2) inches in

diameter shall be hydrostatically tested. Services greater than two (2) inches in diameter and all fire lines shall be hydrostatically tested to the flange above the first-floor level.

I. All corporation stops installed to facilitate hydrostatic testing shall be removed upon acceptance of the water main and the tap hole plugged with a Mueller H-10033N plug, or equal.

**End of Section**

# Section 11 – Disinfection

## 11-1 General

A. All pipes and fittings connected to and forming a portion of a potable water supply shall be sterilized and flushed in a manner acceptable to the Engineer and the Superintendent. Disinfection shall be accomplished after the pipe has passed the pressure and leakage tests.

B. Disinfection shall be performed in accordance with ANSI/AWWA C651 except as modified herein (excluding Section 5.1 covering the tablet method). Sterilization shall be accomplished by applying a chlorine solution that will give a 50-parts-per-million (ppm) chlorine residual throughout the main being disinfected. The chlorine solution shall remain in the water mains for a minimum period of 24 hours. At the termination of this period, the chlorine residual shall be a minimum of 25 ppm. If the residual is less than 25 ppm, the entire procedure shall be repeated. The chlorine solution shall be thoroughly flushed out prior to placing the new section of the main in service.

C. After the water mains have been flushed with potable water to the satisfaction of the Engineer and the Superintendent, samples of water from the mains shall be taken by the Latham Water District for bacteriological analysis. If Latham Water District is unable to perform the bacteriological analysis, the contractor may elect to send the sample(s) to a NYS Department of Health Environmental Laboratory Approval Program (ELAP) approved laboratory at their expense. Results of the bacteriological tests must be transmitted to the Latham Water District for our review and approval.

D. The number of samples and their collection points shall be reviewed with and be acceptable to the Latham Water District. Also, the testing laboratory that will do the bacteriological analysis shall be approved by the Superintendent. The water samples shall test bacteriologically safe before the water mains are placed in service.

E. Water used for disinfecting mains shall be disposed of in a manner that will in no detrimental way affect fish, plant or animal life. If discharged to local streams, the water shall not have a chlorine residual exceeding 0.05 milligrams per liter (mg/l) at the point of discharge.

**End of Section**

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# Section 12 – Modifications and Repairs at Existing Water Mains

## 12-1 General

Work Units

A. Repairs to cast or ductile iron pipe

B. Replacement of water mains at utility casings

C. Couplings

Related Work

A. Section 3 - Ductile Iron Pipe and Fittings

B. Section 4 - Polyethylene Encasement

## 12-2 Materials

Couplings

A. Where possible, ductile iron solid sleeves shall be used. In instances where ductile iron solid sleeves cannot be used, couplings shall be epoxy-coated Hymax 2 Wide Range Coupling for sizes up to and including 12", or shall be epoxy-coated Hymax Large Diameter Coupling for sizes 16" and larger, or approved equal. Bolts and nuts shall be coated with Bitumastic 50 by Koppers or equal, or they shall be stainless steel.

B. All couplings installed shall be wrapped in polyethylene.

## 12-3 Installation

A. All repairs to cast iron and ductile iron water mains shall be wrapped with polyethylene two (2) feet past the area of repair. The polyethylene shall be securely taped to the existing water main.

B. At all locations where new sanitary sewers or storm sewers cross under existing cast iron water mains, the existing water mains shall be removed back two (2) feet into undisturbed soils and shall be replaced with new ductile iron pipe, cast couplings, and wrapped with polyethylene as previously described, where required by the Superintendent.

C. As an alternative to the above referenced water main replacement, Latham Water District will allow that flowable fill be used to backfill the trench from the bottom of the excavation to the centerline of the existing water main. The limits of the flowable fill must extend five (5) feet in each direction from the crossing. The use of flowable fill must be approved by the Superintendent.

D. At all locations where new utilities are to be installed such that they may conflict with existing water mains, the existing water main shall be removed and replaced as far back as necessary to allow the crossing to occur. The main shall be replaced with new ductile iron pipe without vertical bends. If bends or offsets are required, the crossing shall be installed in accordance with the Standard Details of the Latham Water District. All new work shall be installed in accordance with these specifications.

E. At all locations where new steel gas mains are to cross existing water mains, the existing

water main shall be wrapped with polyethylene for 20 feet on each side of the existing gas main.

F. All modifications or repairs to existing water mains shall be approved and inspected by the Latham Water District

**End of Section**

# Section 13 – Time of Construction

## 13-1 General

A. Unless specifically approved by the Superintendent in writing, no water distribution system installation and construction shall take place between November 1st and April 1st.

**End of Section**

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# Section 14 – Record Maps and Certifications

## 14-1 General

A. At the conclusion of the water system installation, the Engineer shall prepare detailed record maps of the completed water distribution system. These record maps shall be of a form acceptable to the Superintendent and prepared in accordance with the Latham Water District "Guidelines for Record Plans" available at the following website link: Guidelines for Record Plans. The Engineer shall furnish one electronic copy (PDF format) and two (2) complete sets of 22" x 34" prints of these record drawings to the Latham Water District.

B. Also, at the conclusion of the water system installation, the Engineer is required to furnish to the Latham Water District, a signed and stamped Engineer's Certification form stating that the water system is complete and was installed in accordance with the previously submitted and approved plans and specifications. The form is available as a hard copy from the Superintendent or electronically at the following website link: Water System Installation Certification. The Superintendent will submit a copy of the Engineer's Certification and a copy of the laboratory bacteriological analysis to the Albany County Health Department.

**End of Section**

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# Section 15 – Water District Control

## 15-1 General

A. Installation and construction of all water mains and services installed in public or private property that are connected directly or indirectly to the Latham Water District system shall be under the jurisdiction of the Latham Water District.

B. Operation of all valves and hydrants under pressure shall be done only by representatives of the Latham Water District or by such responsible person approved by the Superintendent.

C. The Latham Water District shall be notified at least 24 hours prior to the start of making connections to the existing systems. Also, the Latham Water District shall be notified at least 24 hours prior to the start of pressure testing, leakage testing, and sterilization.

D. The Superintendent may not authorize any meter installations prior to receiving record drawings and certifications.

E. Fire department personnel may operate hydrants in emergency situations. The Latham Water District shall be notified in advance of all non-emergency hydrant use, i.e., during drills and training exercises. The Superintendent must authorize all non-emergency hydrant use. The Latham Water District shall be notified as soon as possible when hydrants are used in an emergency.

F. Access shall be maintained to all curbs and valves in the construction area at all times.

G. All water mains and appurtenances in easements on private property shall be accessible to the Latham Water District at all times.

**End of Section**

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# Section 16 – Ownership of Water Distribution System

## 16-1 General

A. All water mains, fittings and valves larger than six (6) inches in diameter and all hydrants shall be owned by the Latham Water District after their construction by the Owner and their inspection and acceptance by the Superintendent. Such facilities shall be located in public right-of-way or in easements granted to the Latham Water District or Town of Colonie.

B. All water services of any size between the main and the curb stop or valve, including the curb stop or valve, shall be owned by the Latham Water District. Such facilities shall be located in public rights-of-way or in easements granted to the Latham Water District. The curb box and access to it shall be maintained by the property owner.

C. All water meters shall be of a type approved by the Superintendent and shall be owned and maintained by the Owner. The installation of such meters shall be approved and sealed by the Latham Water District and such meters shall be accessible to the Latham Water District for inspection and reading. The Owner of water meters larger than one (1) inch shall be responsible for having their meter calibrated every two (2) years and for repairing or replacing their meter if it is defective or inaccurate.

D. Any booster pressure pump systems, check valves, or backflow prevention devices required on a water service by the Owner, the Superintendent, or code requirements shall be owned and maintained by the Owner.

E. Any pressure-regulating valves required on a water service due to distribution system pressures shall be owned and maintained by the Owner.

**End of Section**

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# Section 17 – Conformance with Regulations

## 17-1 General

A. It is intended that these Standard Specifications conform in all ways with the regulations and requirements of the Albany County Health Department, the New York State Department of Health and NFPA. In cases where discrepancies exist, Health Department regulations shall govern.

**End of Section**

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# Appendix – Standard Detail Sheets – Latham Water District

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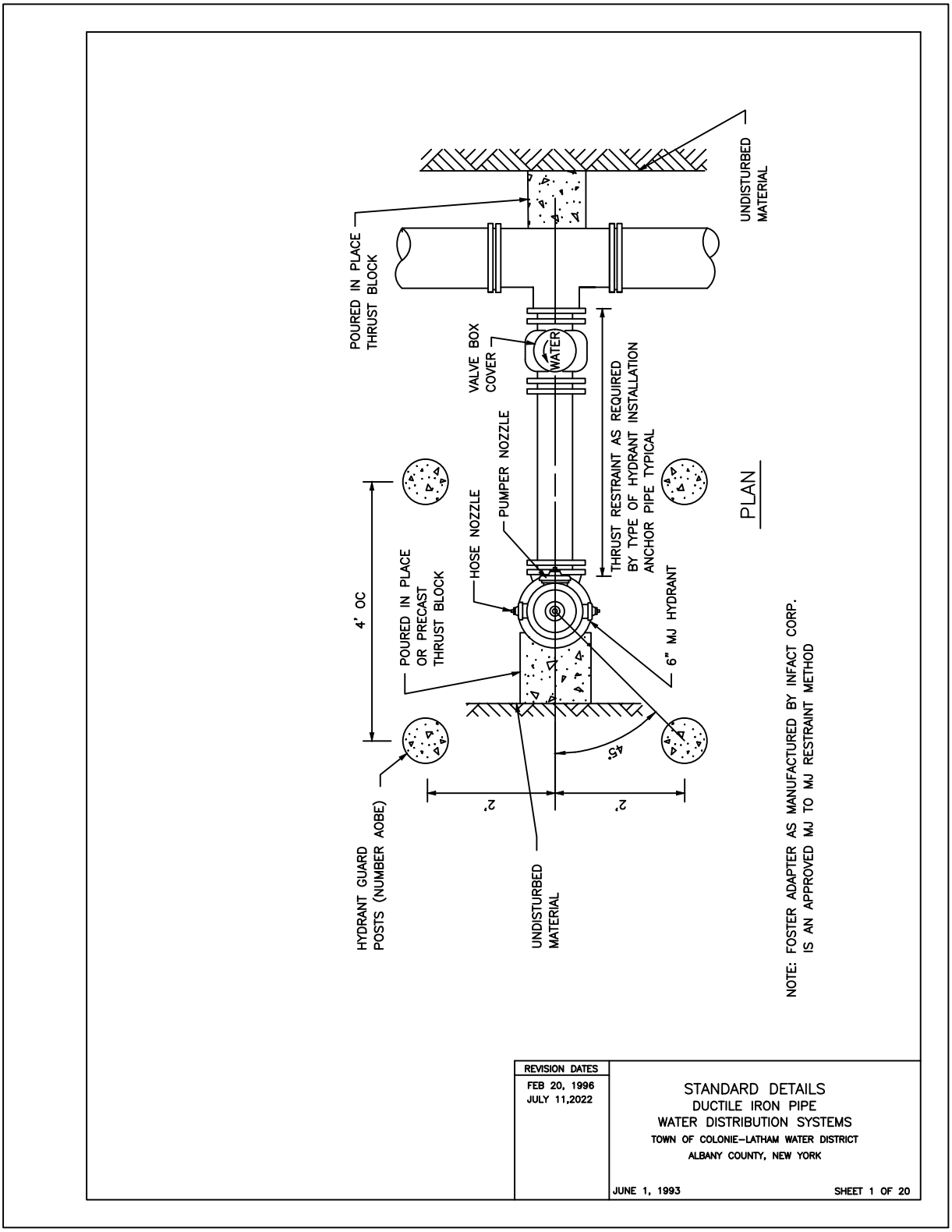
UNDISTURBED MATERIAL
POURED IN PLACE THRUST BLOCK
VALVE BOX COVER
WATER
PUMPER NOZZLE
THRUST RESTRAINT AS REQUIRED BY TYPE OF HYDRANT INSTALLATION ANCHOR PIPE TYPICAL
HOSE NOZZLE
4' OC
POURED IN PLACE OR PRECAST THRUST BLOCK
6" MJ HYDRANT
45°
2'
2'
HYDRANT GUARD POSTS (NUMBER AOBE)
UNDISTURBED MATERIAL
PLAN
NOTE: FOSTER ADAPTER AS MANUFACTURED BY INFACT CORP. IS AN APPROVED MJ TO MJ RESTRAINT METHOD
REVISION DATES
FEB 20, 1996
JULY 11,2022
STANDARD DETAILS
DUCTILE IRON PIPE
WATER DISTRIBUTION SYSTEMS
TOWN OF COLONIE–LATHAM WATER DISTRICT
ALBANY COUNTY, NEW YORK
JUNE 1, 1993
SHEET 1 OF 20

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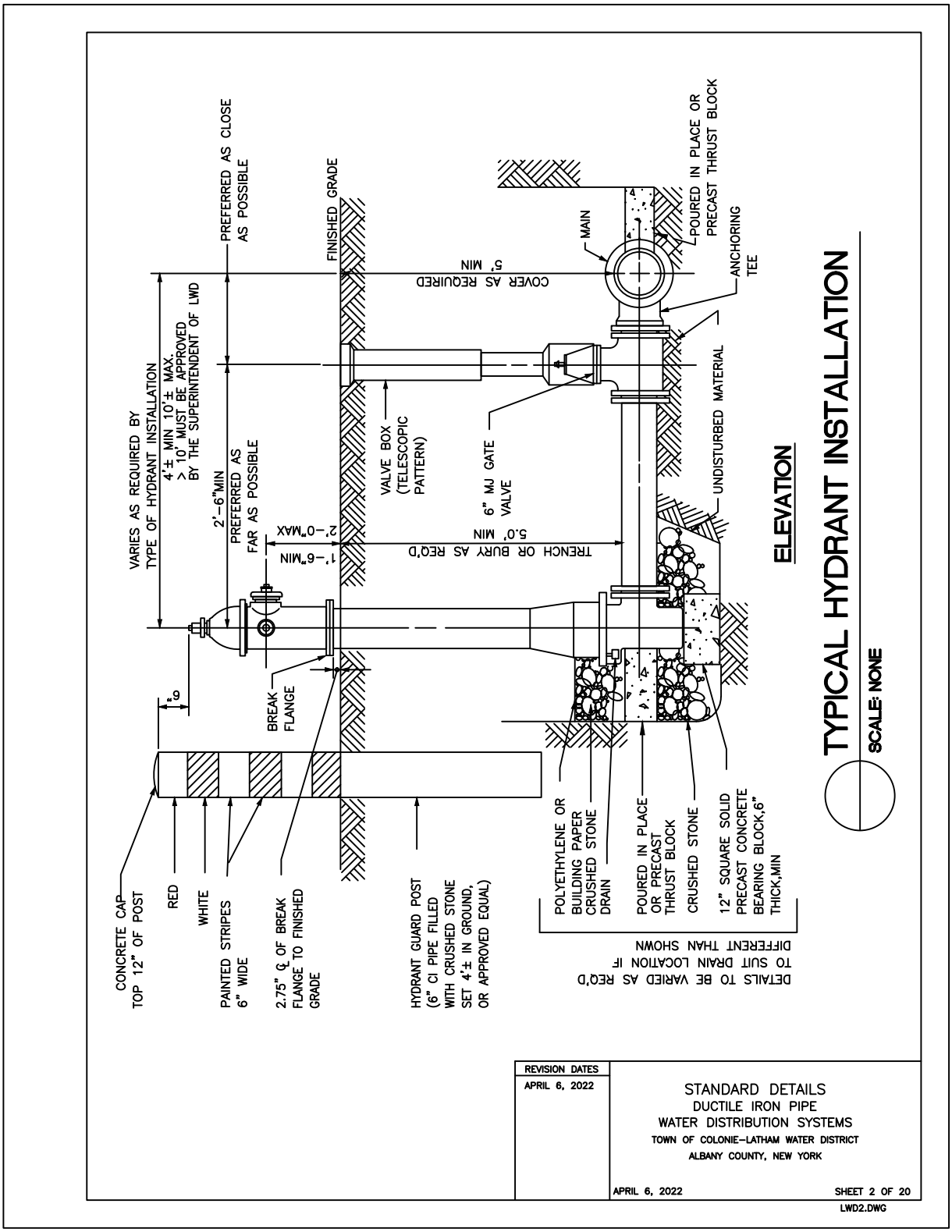
TYPICAL HYDRANT INSTALLATION
SCALE: NONE
ELEVATION
CONCRETE CAP TOP 12" OF POST
RED
WHITE
PAINTED STRIPES 6" WIDE
2.75" ℄ OF BREAK FLANGE TO FINISHED GRADE
HYDRANT GUARD POST (6" CI PIPE FILLED WITH CRUSHED STONE SET 4'± IN GROUND, OR APPROVED EQUAL)
POLYETHYLENE OR BUILDING PAPER CRUSHED STONE DRAIN
POURED IN PLACE OR PRECAST THRUST BLOCK
CRUSHED STONE
12" SQUARE SOLID PRECAST CONCRETE BEARING BLOCK,6" THICK,MIN
DETAILS TO BE VARIED AS REQ'D TO SUIT DRAIN LOCATION IF DIFFERENT THAN SHOWN
BREAK FLANGE
6"
VARIES AS REQUIRED BY TYPE OF HYDRANT INSTALLATION 4'± MIN 10'± MAX. > 10' MUST BE APPROVED BY THE SUPERINTENDENT OF LWD
2'-6"MIN PREFERRED AS FAR AS POSSIBLE
PREFERRED AS CLOSE AS POSSIBLE
FINISHED GRADE
1'-6"MIN
2'-0"MAX
TRENCH OR BURY AS REQ'D
5.0' MIN
COVER AS REQUIRED
5' MIN
VALVE BOX (TELESCOPIC PATTERN)
6" MJ GATE VALVE
MAIN
POURED IN PLACE OR PRECAST THRUST BLOCK
ANCHORING TEE
UNDISTURBED MATERIAL
REVISION DATES
APRIL 6, 2022
STANDARD DETAILS
DUCTILE IRON PIPE
WATER DISTRIBUTION SYSTEMS
TOWN OF COLONIE–LATHAM WATER DISTRICT
ALBANY COUNTY, NEW YORK
APRIL 6, 2022
SHEET 2 OF 20
LWD2.DWG

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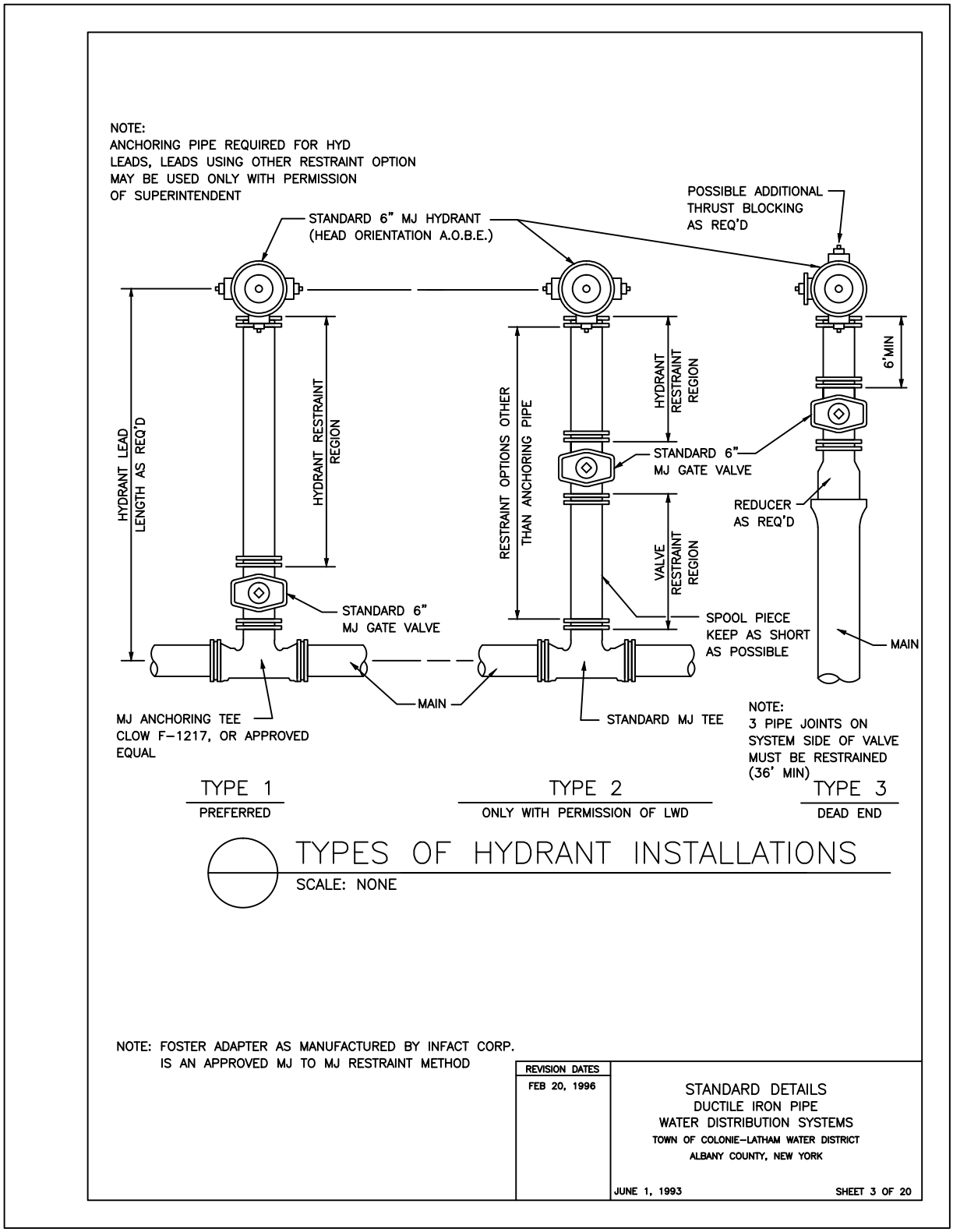
NOTE:
ANCHORING PIPE REQUIRED FOR HYD LEADS, LEADS USING OTHER RESTRAINT OPTION MAY BE USED ONLY WITH PERMISSION OF SUPERINTENDENT
STANDARD 6" MJ HYDRANT (HEAD ORIENTATION A.O.B.E.)
POSSIBLE ADDITIONAL THRUST BLOCKING AS REQ'D
HYDRANT LEAD LENGTH AS REQ'D
HYDRANT RESTRAINT REGION
RESTRAINT OPTIONS OTHER THAN ANCHORING PIPE
HYDRANT RESTRAINT REGION
6'MIN
STANDARD 6" MJ GATE VALVE
REDUCER AS REQ'D
VALVE RESTRAINT REGION
STANDARD 6" MJ GATE VALVE
SPOOL PIECE KEEP AS SHORT AS POSSIBLE
MAIN
MAIN
MJ ANCHORING TEE CLOW F-1217, OR APPROVED EQUAL
STANDARD MJ TEE
NOTE:
3 PIPE JOINTS ON SYSTEM SIDE OF VALVE MUST BE RESTRAINED (36' MIN)
TYPE 1
PREFERRED
TYPE 2
ONLY WITH PERMISSION OF LWD
TYPE 3
DEAD END
TYPES OF HYDRANT INSTALLATIONS
SCALE: NONE
NOTE: FOSTER ADAPTER AS MANUFACTURED BY INFACT CORP. IS AN APPROVED MJ TO MJ RESTRAINT METHOD
REVISION DATES
FEB 20, 1996
STANDARD DETAILS
DUCTILE IRON PIPE
WATER DISTRIBUTION SYSTEMS
TOWN OF COLONIE-LATHAM WATER DISTRICT
ALBANY COUNTY, NEW YORK
JUNE 1, 1993
SHEET 3 OF 20

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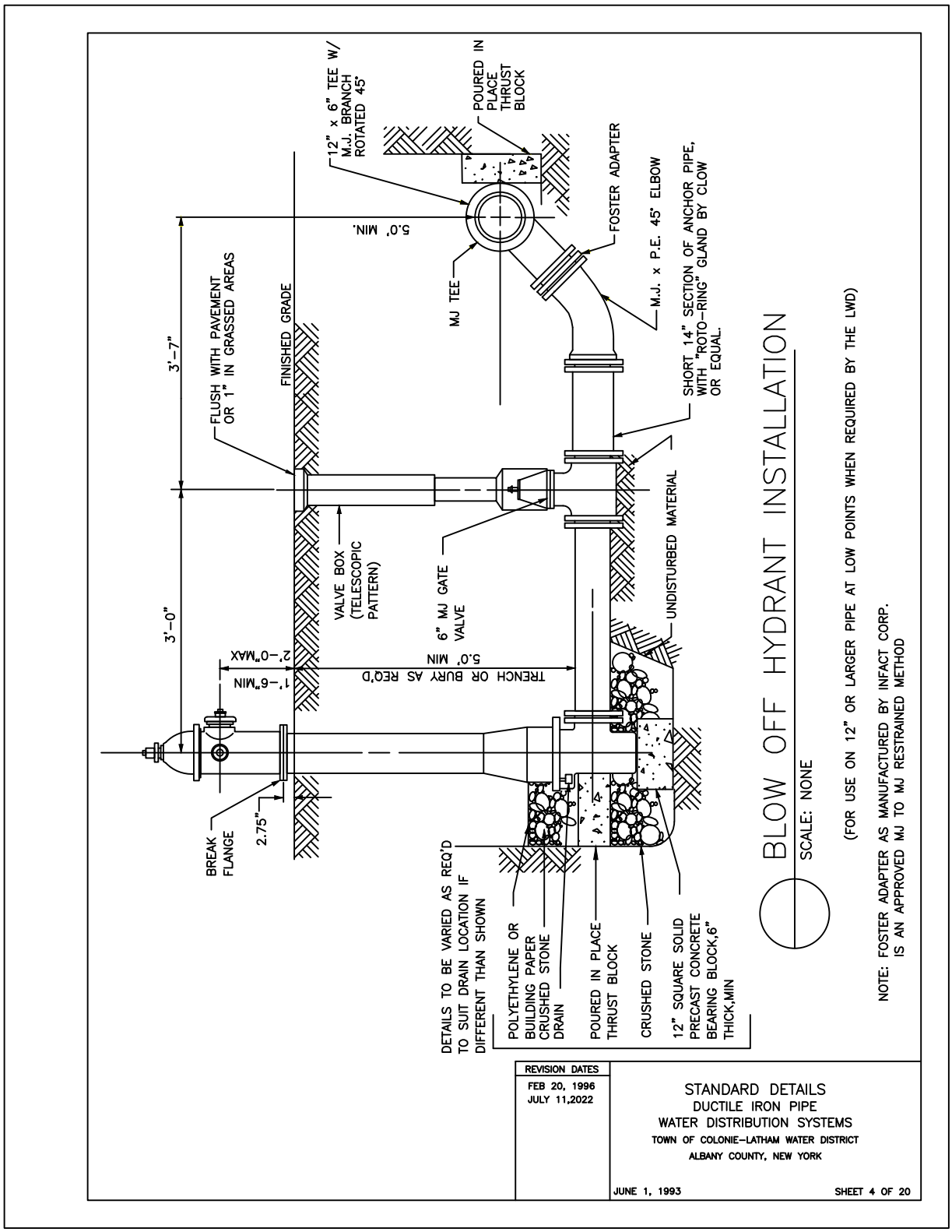
BLOW OFF HYDRANT INSTALLATION
SCALE: NONE
(FOR USE ON 12" OR LARGER PIPE AT LOW POINTS WHEN REQUIRED BY THE LWD)
NOTE: FOSTER ADAPTER AS MANUFACTURED BY INFACT CORP.
IS AN APPROVED MJ TO MJ RESTRAINED METHOD
12" x 6" TEE W/ M.J. BRANCH ROTATED 45°
POURED IN PLACE THRUST BLOCK
FOSTER ADAPTER
M.J. x P.E. 45° ELBOW
SHORT 14" SECTION OF ANCHOR PIPE, WITH "ROTO-RING" GLAND BY CLOW OR EQUAL.
MJ TEE
5.0' MIN.
FINISHED GRADE
FLUSH WITH PAVEMENT OR 1" IN GRASSED AREAS
3'-7"
VALVE BOX (TELESCOPIC PATTERN)
6" MJ GATE VALVE
UNDISTURBED MATERIAL
3'-0"
TRENCH OR BURY AS REQ'D
5.0' MIN
2'-0"MAX
1'-6"MIN
BREAK FLANGE
2.75"
DETAILS TO BE VARIED AS REQ'D TO SUIT DRAIN LOCATION IF DIFFERENT THAN SHOWN
POLYETHYLENE OR BUILDING PAPER
CRUSHED STONE DRAIN
POURED IN PLACE THRUST BLOCK
CRUSHED STONE
12" SQUARE SOLID PRECAST CONCRETE BEARING BLOCK,6" THICK,MIN
REVISION DATES
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STANDARD DETAILS
DUCTILE IRON PIPE
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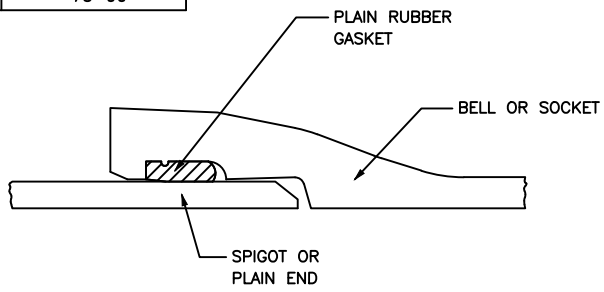
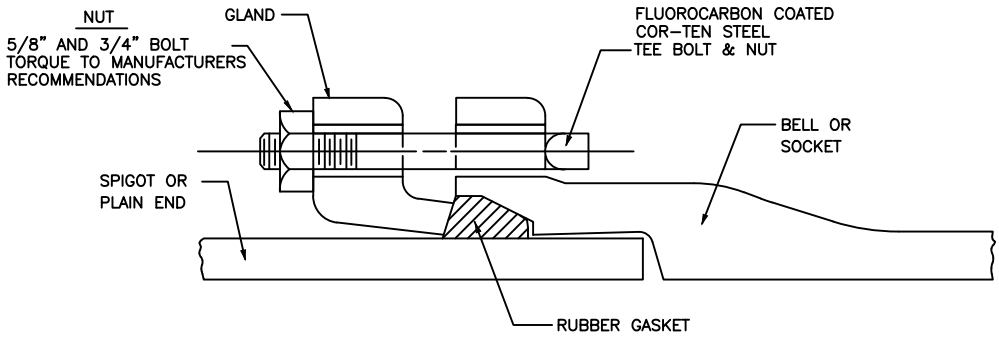
| MJ BOLT TORQUE | | |
|---|---|---|
| JOINT SIZE (IN) | BOLT SIZE (IN) | RANGE OF TORQUE (FT–LB) |
| 3 | 5/8 | 45–60 |
| 4–24 | 3/4 | 75–90 |




PUSH–ON JOINT(P.O.J.)




MECHANICAL JOINT(M.J.)

## TYPICAL JOINT DETAILS

SCALE: NONE

| REVISION DATES | STANDARD DETAILS<br>DUCTILE IRON PIPE<br>WATER DISTRIBUTION SYSTEMS<br>TOWN OF COLONIE–LATHAM WATER DISTRICT<br>ALBANY COUNTY, NEW YORK |
|---|---|
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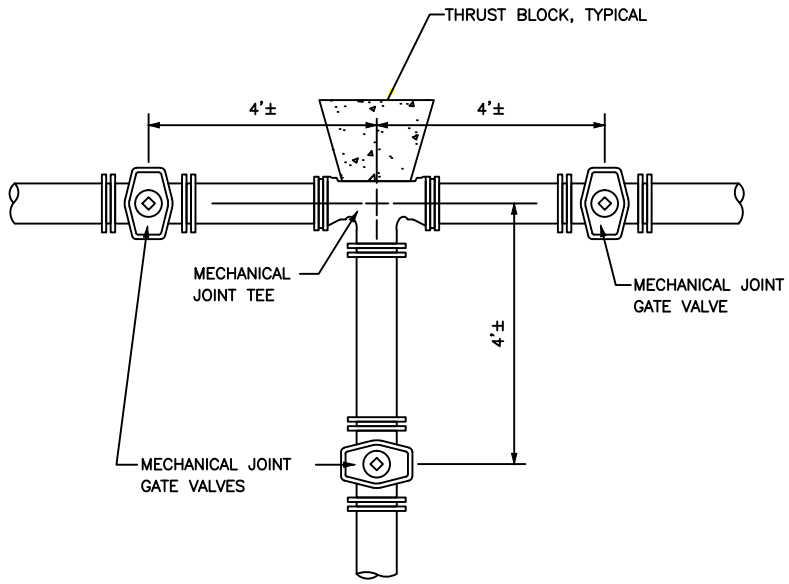


TYPICAL JUNCTION LAYOUT

SCALE: NONE

| REVISION DATES | STANDARD DETAILS<br>DUCTILE IRON PIPE<br>WATER DISTRIBUTION SYSTEMS<br>TOWN OF COLONIE–LATHAM WATER DISTRICT<br>ALBANY COUNTY, NEW YORK |
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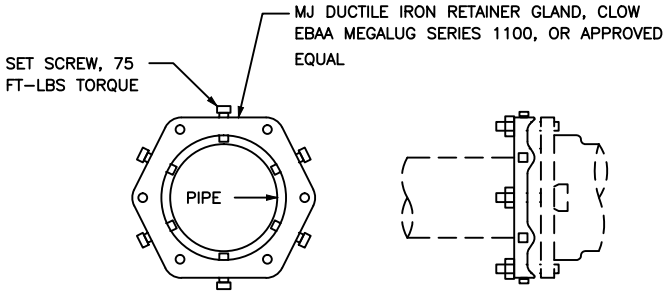
NO. OF TIE RODS REQ'D

| PIPE SIZE INCHES | MIN NO. OF 3/4 "RODS |
|---|---|
| 2 | 2 |
| 3 | 2 |
| 4 | 2 |
| 6 | 2 |
| 8 | 2 |
| 12 | 2 |
| 16 | 4 |

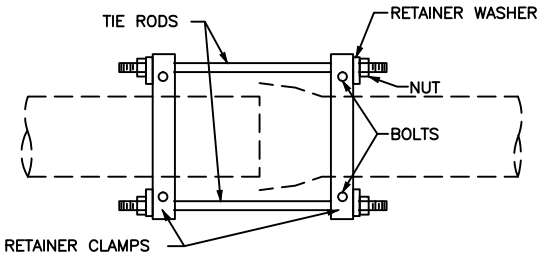
NOTES:

1. 5/8" RODS ACCEPTABLE FOR 2" AND 3" PIPE



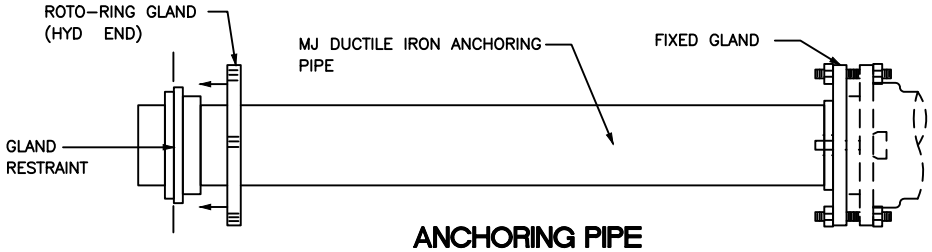

RETAINER GLAND

PREFERRED RESTRAINT METHOD




RETAINER CLAMPS

ONLY WITH PERMISSION OF LWD




ANCHORING PIPE

PREFERRED FOR HYD INSTALLATION

# THRUST RESTRAINT OPTIONS

SCALE: NONE

| REVISION DATES |
|---|
| APRIL 6, 2022 |

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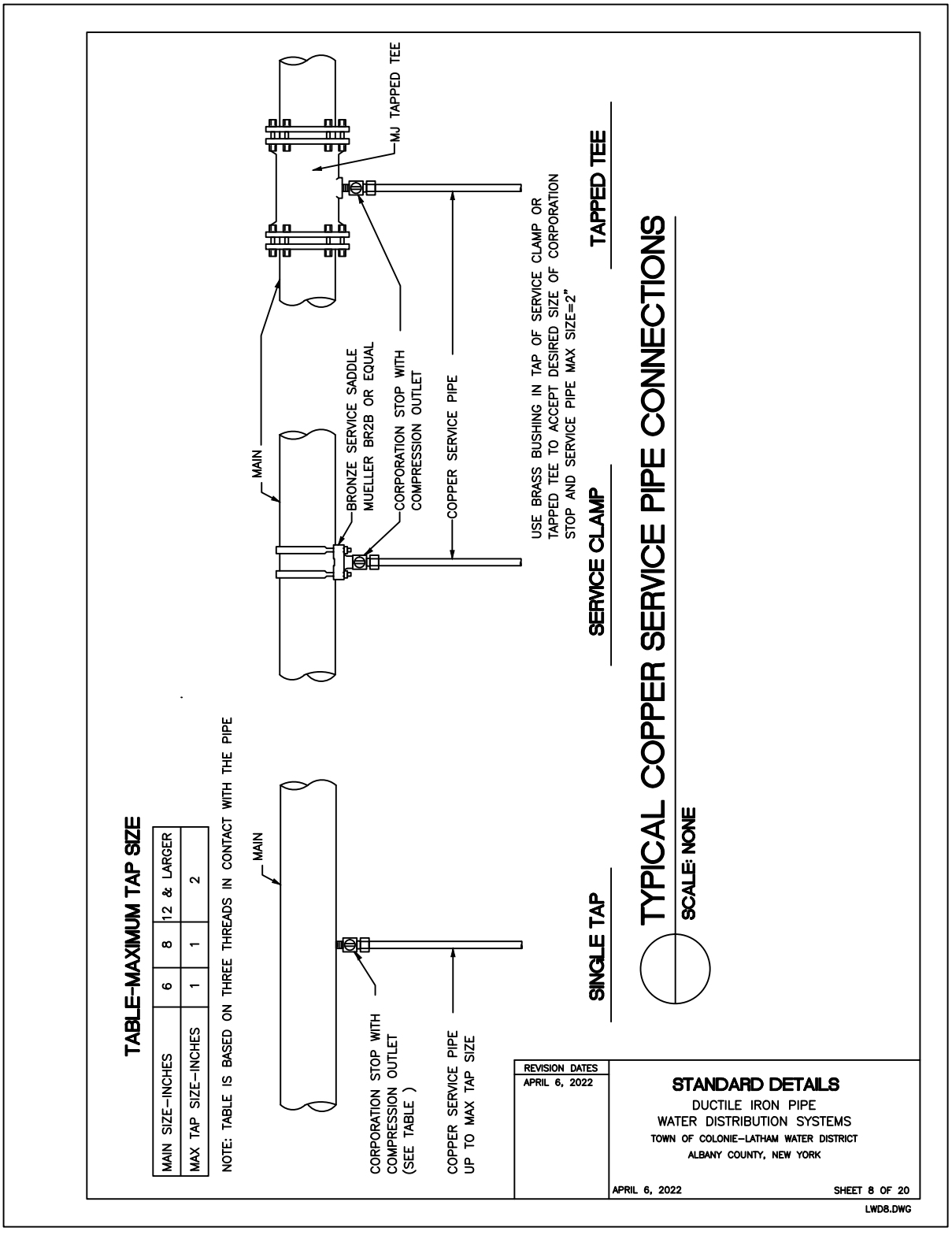
TYPICAL COPPER SERVICE PIPE CONNECTIONS
SCALE: NONE
SINGLE TAP
SERVICE CLAMP
TAPPED TEE
MAIN
CORPORATION STOP WITH COMPRESSION OUTLET (SEE TABLE )
COPPER SERVICE PIPE UP TO MAX TAP SIZE
BRONZE SERVICE SADDLE MUELLER BR2B OR EQUAL
CORPORATION STOP WITH COMPRESSION OUTLET
COPPER SERVICE PIPE
MJ TAPPED TEE
USE BRASS BUSHING IN TAP OF SERVICE CLAMP OR TAPPED TEE TO ACCEPT DESIRED SIZE OF CORPORATION STOP AND SERVICE PIPE MAX SIZE=2"
TABLE-MAXIMUM TAP SIZE
MAIN SIZE-INCHES | 6 | 8 | 12 & LARGER
MAX TAP SIZE-INCHES | 1 | 1 | 2
NOTE: TABLE IS BASED ON THREE THREADS IN CONTACT WITH THE PIPE
REVISION DATES
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STANDARD DETAILS
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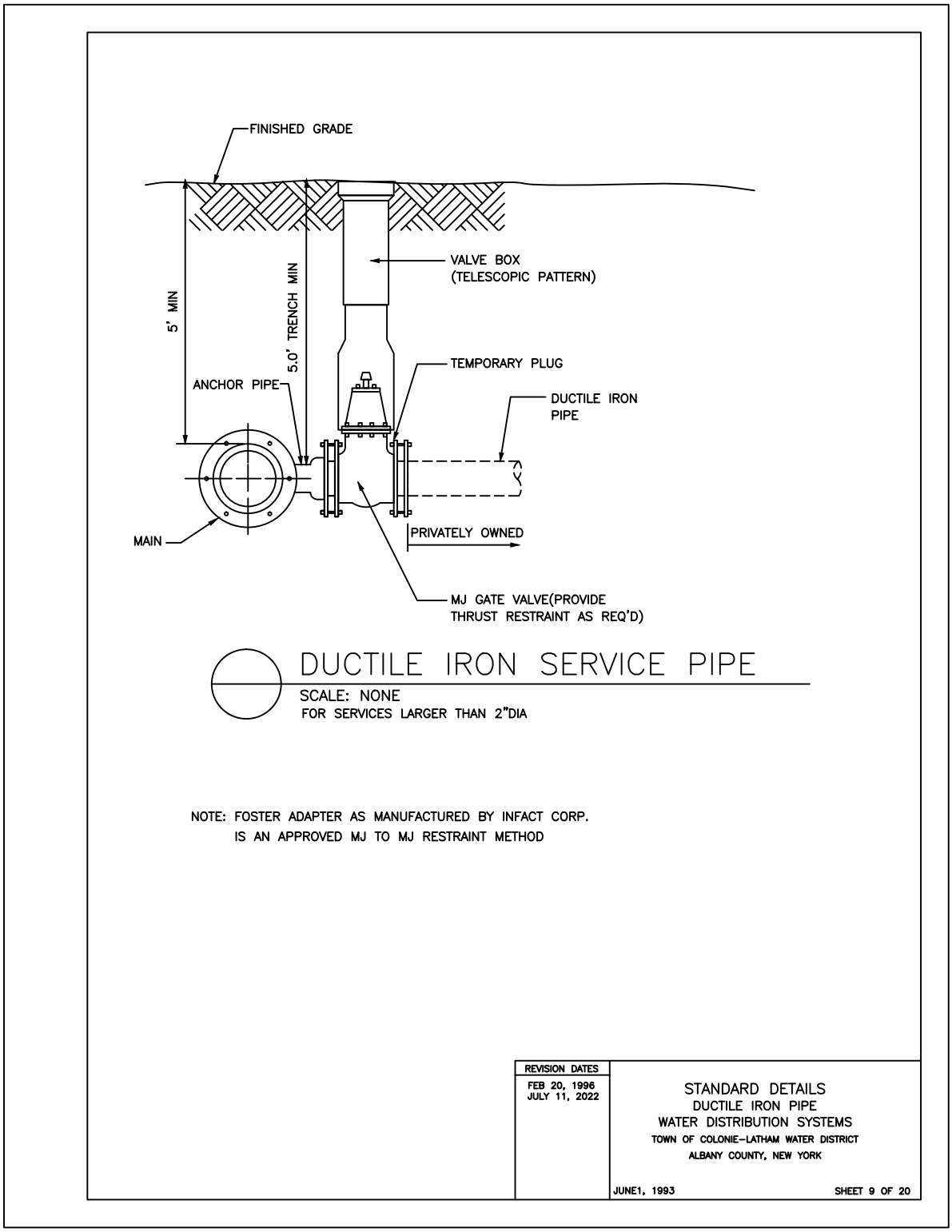
FINISHED GRADE
VALVE BOX
(TELESCOPIC PATTERN)
5' MIN
5.0' TRENCH MIN
TEMPORARY PLUG
ANCHOR PIPE
DUCTILE IRON
PIPE
MAIN
PRIVATELY OWNED
MJ GATE VALVE(PROVIDE
THRUST RESTRAINT AS REQ'D)
DUCTILE IRON SERVICE PIPE
SCALE: NONE
FOR SERVICES LARGER THAN 2"DIA
NOTE: FOSTER ADAPTER AS MANUFACTURED BY INFACT CORP.
IS AN APPROVED MJ TO MJ RESTRAINT METHOD
REVISION DATES
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WATER DISTRIBUTION SYSTEMS
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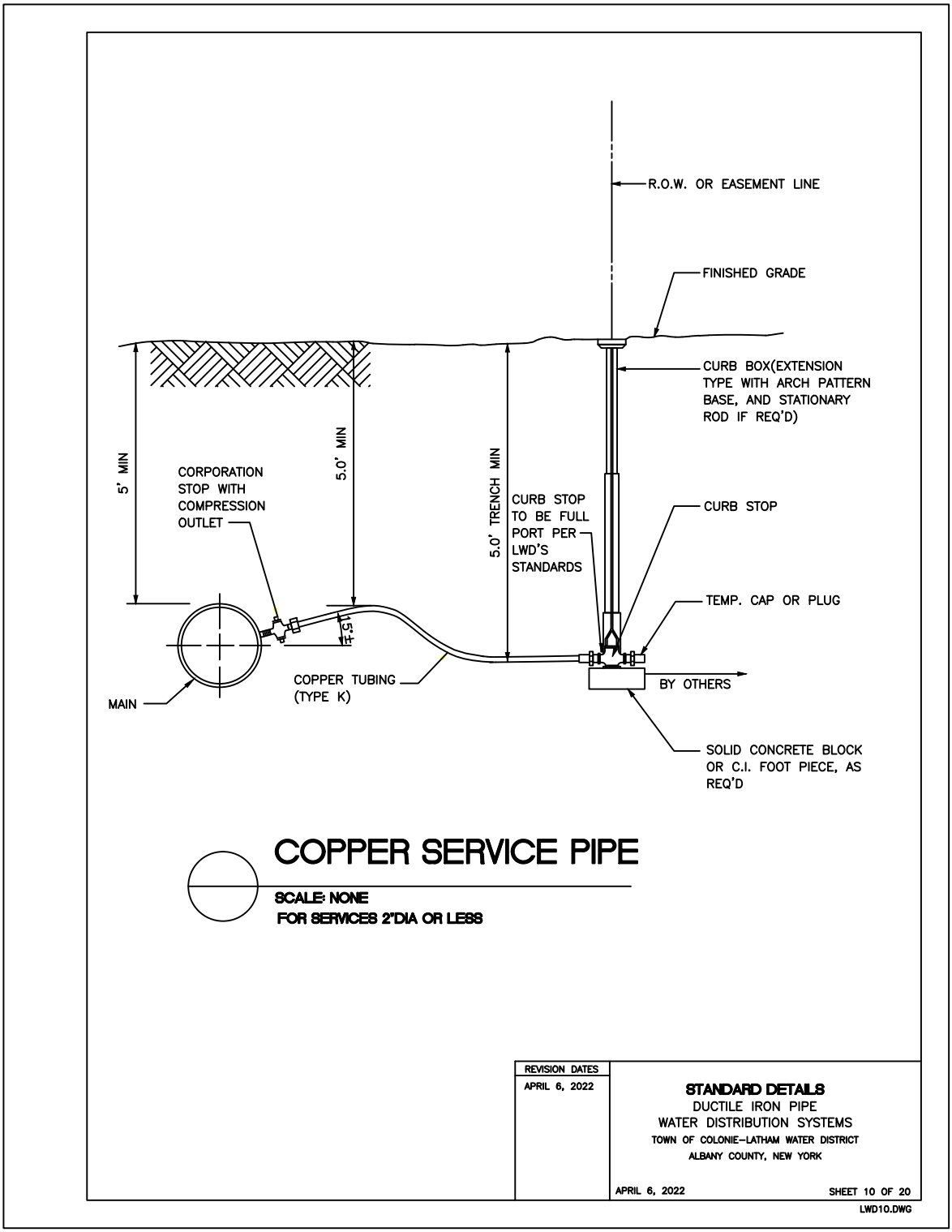
R.O.W. OR EASEMENT LINE
FINISHED GRADE
CURB BOX(EXTENSION TYPE WITH ARCH PATTERN BASE, AND STATIONARY ROD IF REQ'D)
5' MIN
5.0' MIN
5.0' TRENCH MIN
CORPORATION STOP WITH COMPRESSION OUTLET
CURB STOP TO BE FULL PORT PER LWD'S STANDARDS
CURB STOP
TEMP. CAP OR PLUG
1.5'
COPPER TUBING (TYPE K)
MAIN
BY OTHERS
SOLID CONCRETE BLOCK OR C.I. FOOT PIECE, AS REQ'D
COPPER SERVICE PIPE
SCALE: NONE
FOR SERVICES 2"DIA OR LESS
REVISION DATES
APRIL 6, 2022
STANDARD DETAILS
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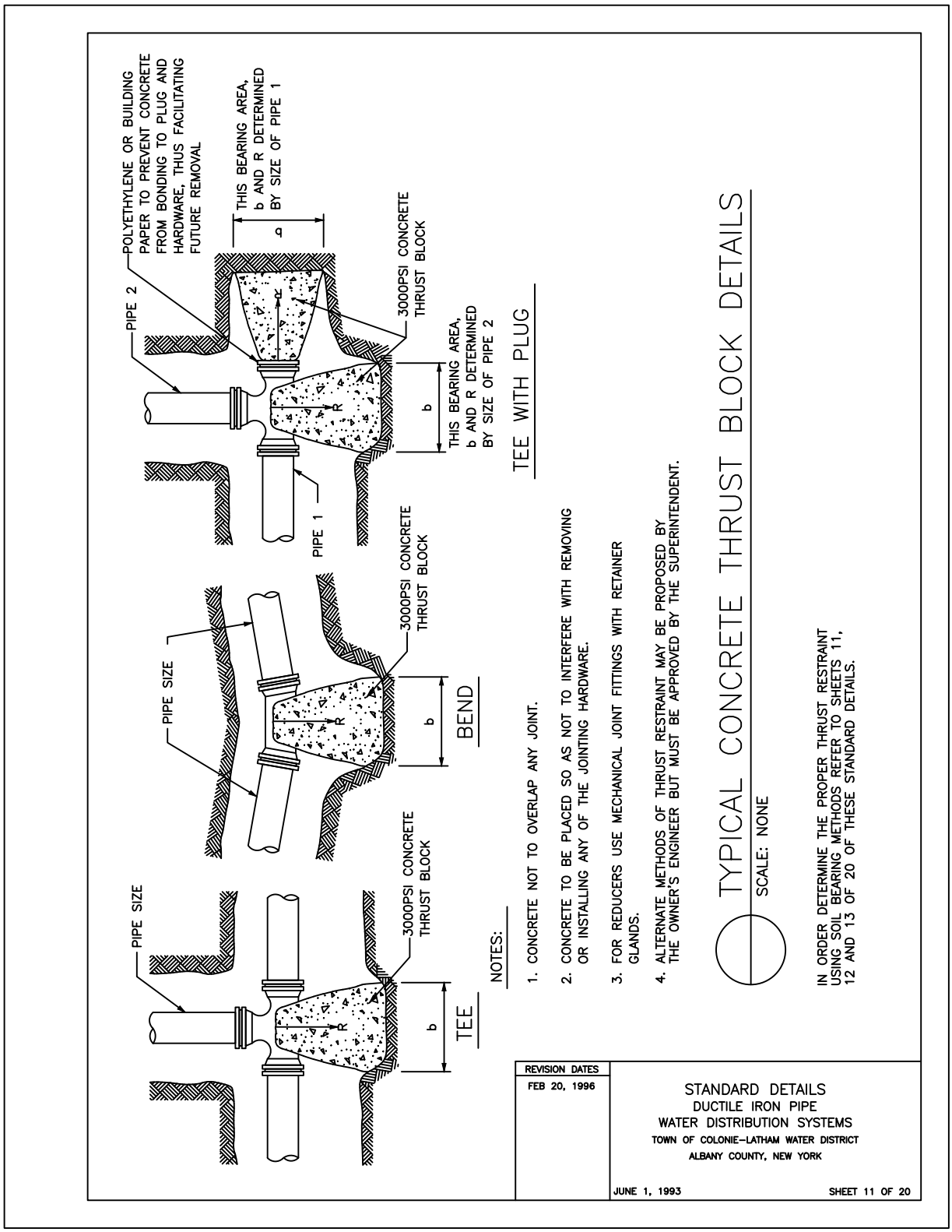
POLYETHYLENE OR BUILDING PAPER TO PREVENT CONCRETE FROM BONDING TO PLUG AND HARDWARE, THUS FACILITATING FUTURE REMOVAL
PIPE 2
THIS BEARING AREA, b AND R DETERMINED BY SIZE OF PIPE 1
a
3000PSI CONCRETE THRUST BLOCK
THIS BEARING AREA, b AND R DETERMINED BY SIZE OF PIPE 2
b
R
PIPE 1
TEE WITH PLUG
PIPE SIZE
3000PSI CONCRETE THRUST BLOCK
BEND
PIPE SIZE
3000PSI CONCRETE THRUST BLOCK
TEE
NOTES:
1. CONCRETE NOT TO OVERLAP ANY JOINT.
2. CONCRETE TO BE PLACED SO AS NOT TO INTERFERE WITH REMOVING OR INSTALLING ANY OF THE JOINTING HARDWARE.
3. FOR REDUCERS USE MECHANICAL JOINT FITTINGS WITH RETAINER GLANDS.
4. ALTERNATE METHODS OF THRUST RESTRAINT MAY BE PROPOSED BY THE OWNER'S ENGINEER BUT MUST BE APPROVED BY THE SUPERINTENDENT.
TYPICAL CONCRETE THRUST BLOCK DETAILS
SCALE: NONE
IN ORDER DETERMINE THE PROPER THRUST RESTRAINT USING SOIL BEARING METHODS REFER TO SHEETS 11, 12 AND 13 OF 20 OF THESE STANDARD DETAILS.
REVISION DATES
FEB 20, 1996
STANDARD DETAILS
DUCTILE IRON PIPE
WATER DISTRIBUTION SYSTEMS
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ALBANY COUNTY, NEW YORK
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SHEET 11 OF 20

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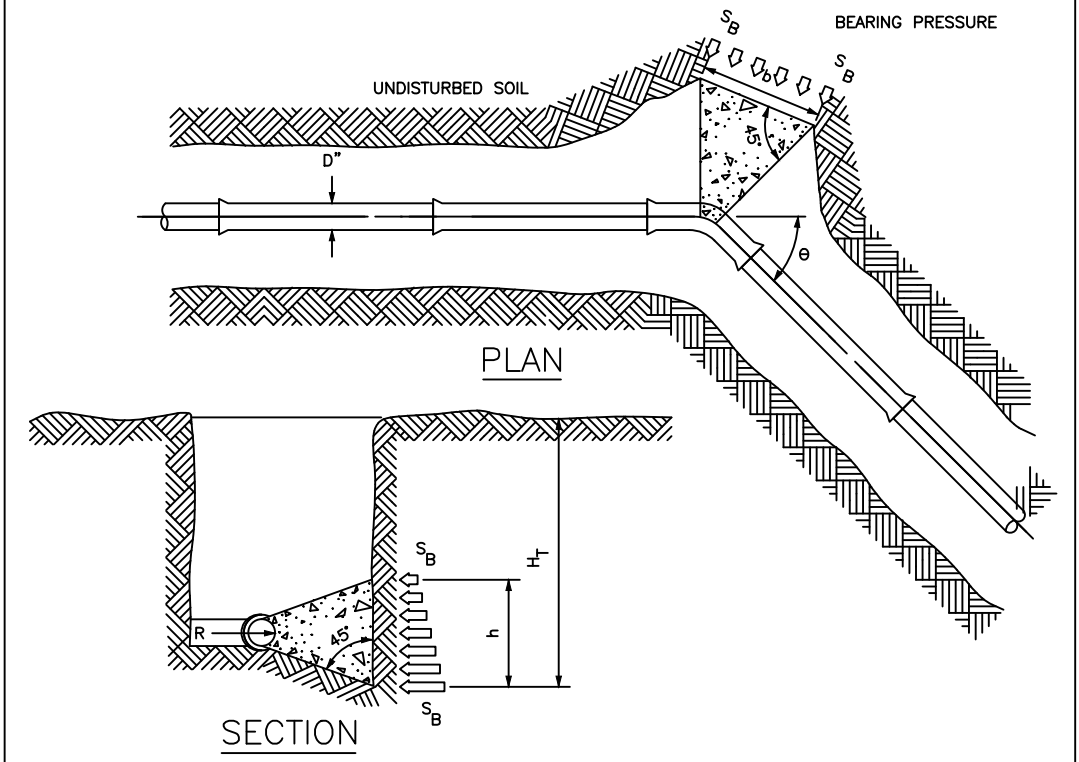


NOTES:

1. BEARING SURFACE SHOULD, WHERE POSSIBLE, BE PLACED AGAINST UNDISTURBED SOIL. WHERE IT IS NOT POSSIBLE, THE FILL BETWEEN THE BEARING SURFACE AND UNDISTURBED SOIL MUST BE COMPACTED TO AT LEAST 90% STANDARD PROCTOR DENSITY.

2. BLOCK HEIGHT(h) SHOULD BE EQUAL TO OR LESS THAN ONE–HALF THE TOTAL DEPTH TO THE BOTTOM OF THE BLOCK, ($H_T$), BUT NOT LESS THAN THE PIPE DIAMETER (D").

3. BLOCK HEIGHT(h) SHOULD BE CHOSEN SUCH THAT THE CALCULATED BLOCK WIDTH(b) VARIES BETWEEN ONE AND TWO TIMES THE HEIGHT.

## BEARING BLOCK DETAILS

SCALE: NONE

IN ORDER DETERMINE THE PROPER THRUST RESTRAINT USING SOIL BEARING METHODS REFER TO SHEETS 11, 12 AND 13 OF 20 OF THESE STANDARD DETAILS.

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## REQUIRED BEARING AREAS –b (SQFT) FOR BEARING BLOCKS*

| PIPE SIZE (INCHES) | TEE | 90° BEND | 45° BEND | 22 1/2 ° BEND | 11 1/4 ° BEND |
|---|---|---|---|---|---|
| 3, 4 | 2.0 | 2.8 | 1.5 | 0.8 | 0.4 |
| 6 | 4.2 | 5.9 | 3.2 | 1.6 | 0.8 |
| 8 | 7.2 | 10.1 | 5.5 | 2.8 | 1.4 |
| 12 | 15.4 | 21.8 | 11.8 | 6.0 | 3.0 |
| 16 | 26.8 | 37.9 | 20.5 | 10.4 | 5.2 |

*FACTOR OF SAFETY=1.5
SOIL BEARING OF 3,000 PSF
225 PSI DESIGN PRESSURE

## THRUST REACTIONS–R(LB) PER 100PSI INTERNAL PRESSURE

| NOM PIPE DIA IN. | DEAD END | 90° BEND | 45° BEND | 22 1/2 ° BEND | 11 1/4 ° BEND |
|---|---|---|---|---|---|
| 3, 4 | 1,810 | 2,559 | 1,385 | 706 | 355 |
| 6 | 3,739 | 5,288 | 2,862 | 1,459 | 733 |
| 8 | 6,433 | 9,097 | 4,923 | 2,510 | 1,261 |
| 12 | 13,685 | 19,353 | 10,474 | 5,340 | 2,683 |
| 16 | 23,779 | 33,628 | 18,199 | 9,278 | 4,661 |

NOTES:

1. VALUES FOR TEE APPLY TO TEES, END PLUGS, CAPS, AND TAPPING SLEEVES.
2. REQUIRED BEARING AREAS ARE DUE TO THRUSTS CAUSED BY 150PSI WORKING PRESSURE PLUS 50%(75 PSI) SURGE ALLOWANCE RESULTING IN 225 PSI TOTAL INTERNAL PRESSURE.
3. REQUIRED BEARING AREAS ARE BASED ON ALLOWABLE SOIL BEARING CAPACITY OF 3,000 POUNDS PER SQUARE FOOT. DUE TO OTHER SOIL CONDITIONS ENCOUNTERED, BEARING AREAS MAY BE MODIFIED BY THE ENGINEER.

| SOIL | BEARING STRENGTH $S_B$ (LB/SQ FT) |
|---|---|
| MUCK | 0 |
| SOFT CLAY | 1,000 |
| SILT | 1,500 |
| SANDY SILT | 3,000 |
| SAND | 4,000 |
| SANDY CLAY | 6,000 |
| HARD CLAY | 9,000 |

4. IN MUCK, PEAT, OR RECENTLY PLACED FILL ALL THRUSTS SHALL BE RESISTED BY PILES OR TIE RODS TO SOLID FOUNDATIONS, OR BY REMOVAL OF SUCH UNSTABLE MATERIAL AND REPLACEMENT WITH BALLAST OF SUFFICIENT STABILITY TO RESIST THE THRUSTS, ALL AS REQUIRED BY THE ENGINEER.

IN ORDER DETERMINE THE PROPER THRUST RESTRAINT USING SOIL BEARING METHODS REFER TO SHEETS 11, 12 AND 13 OF 20 OF THESE STANDARD DETAILS.

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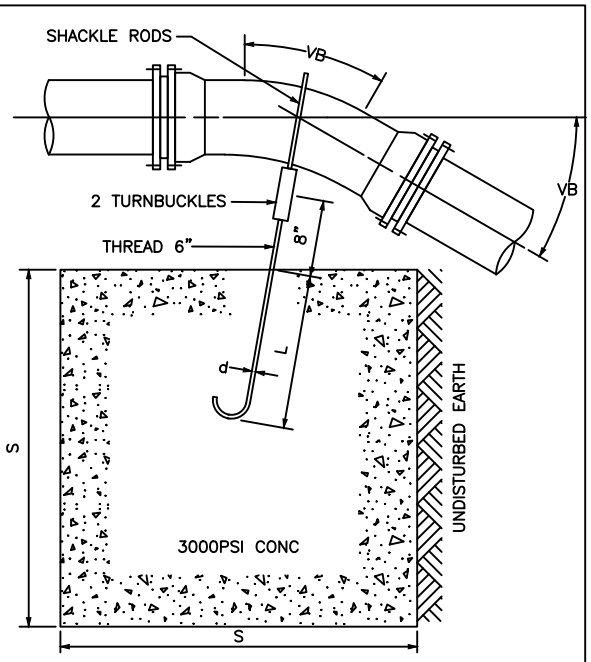
## TYPE A BLOCKING
FOR 11 1/4 – 22 1/2 VERTICAL BENDS

| PIPE SIZE NOM DIA(INCHES) | VB: VERTICAL BEND DEGREES | NO. OF CUFT OF CONC BLOCKING | S: SIDE OF CUBE (FEET) | d: DIA OF SHACKLE RODS(2) * (INCHES) | L: DEPTH OF RODS IN CONC (FEET) |
|---|---|---|---|---|---|
| 4" | 11 1/4 | 8 | 2.0 | 3/4 " | 1.6 |
| | 22 1/2 | 16 | 2.5 | | |
| 6" | 11 1/4 | 16 | 2.5 | 3/4 " | 1.6 |
| | 22 1/2 | 32 | 3.2 | | |
| 8" | 11 1/4 | 28 | 3.0 | 3/4 " | 1.6 |
| | 22 1/2 | 55 | 3.8 | | |
| 12" | 11 1/4 | 60 | 3.9 | 3/4 " | 1.6 |
| | 22 1/2 | 118 | 4.9 | 7/8 " | 2.2 |
| 16" | 11 1/4 | 104 | 4.7 | 7/8 " | 2.2 |
| | 22 1/2 | 205 | 5.9 | 1 1/8" | 3.7 |

* FOR 60KSI THREADED REBAR

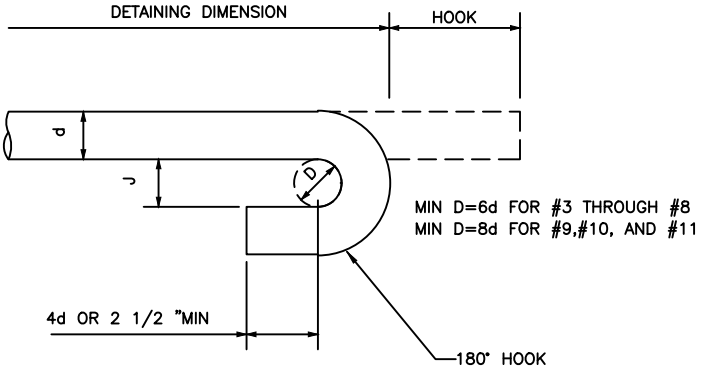



TYPE A BLOCKING
FOR 11 1/4 °–22 1/2 ° VERTICAL BENDS

## GRAVITY THRUST BLOCK DETAILS
SCALE: NONE
(FOR VERTICAL BENDS)

RECOMMENDED 180° END HOOK DIMS

| BAR SIZE | J (IN) |
|---|---|
| #6 | 6 |
| #7 | 7 |
| #8 | 8 |
| #9 | 11 1/4 |
| #10 | 12 3/4 |
| #11 | 14 1/4 |




## ACI STANDARD HOOKS
SCALE: NONE

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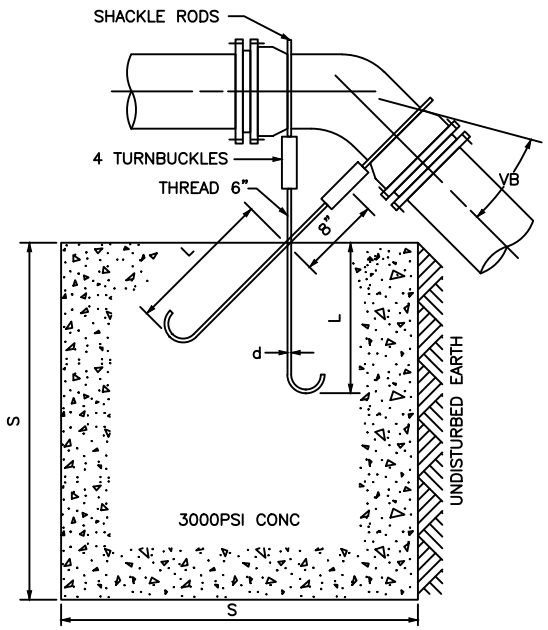
TYPE B BLOCKING
FOR 45° VERTICAL BENDS

| PIPE SIZE NOM DIA(INCHES) | NO. OF CUFT OF CONC BLOCKING | S SIDE OF CUBE (FEET) | d DIA OF SHACKLE RODS(2) (INCHES) | L DEPTH OF RODS IN CONC (FEET) |
|---|---|---|---|---|
| 4" | 29 | 3.1 | 3/4 " | 1.6 |
| 6" | 59 | 3.9 | | |
| 8" | 102 | 4.7 | | |
| 12" | 218 | 6.0 | | |
| 16" | 378 | 7.2 | 1 1/8" | 3.7 |




TYPE B BLOCKING
FOR 45° VERTICAL BENDS

## GRAVITY THRUST BLOCK DETAILS

SCALE: NONE
(FOR VERTICAL BENDS)

| REVISION DATES | STANDARD DETAILS<br>DUCTILE IRON PIPE<br>WATER DISTRIBUTION SYSTEMS<br>TOWN OF COLONIE–LATHAM WATER DISTRICT<br>ALBANY COUNTY, NEW YORK |
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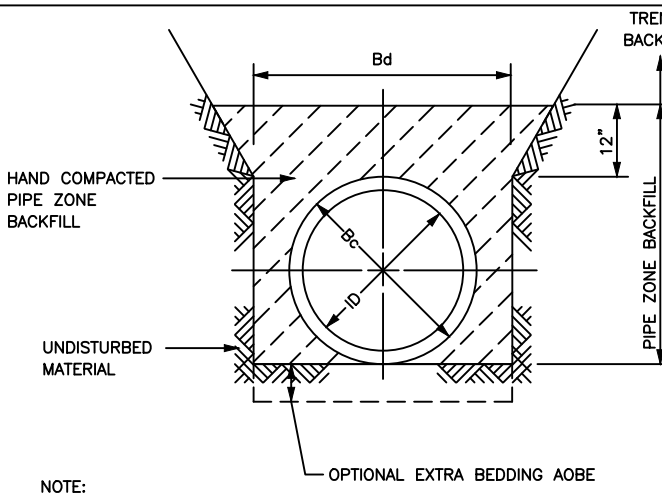
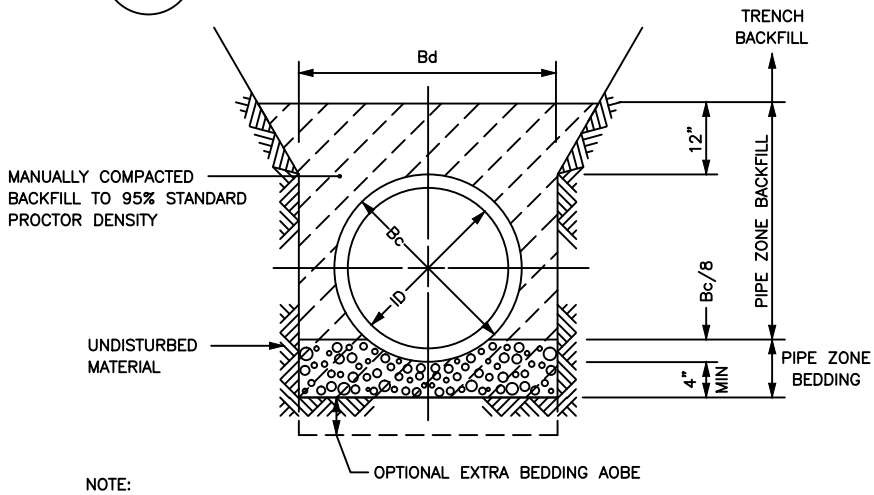



NOTE:
1. AOBE: AS ORDERED BY ENGINEER.

2. OVEREXCAVATE FOR BELLS.

## LAYING CONDUIT TYPE 4

SCALE: NONE




NOTE:
1. OVEREXCAVATE AT BELLS TO PROVIDE 4" BEDDING BELOW BELLS.

## LAYING CONDITION TYPE 2

SCALE: NONE

THIS IS THE STANDARD CONSTRUCTION METHOD AND SHOULD BE USED UNLESS OTHERWISE DIRECTED BY ENGINEER

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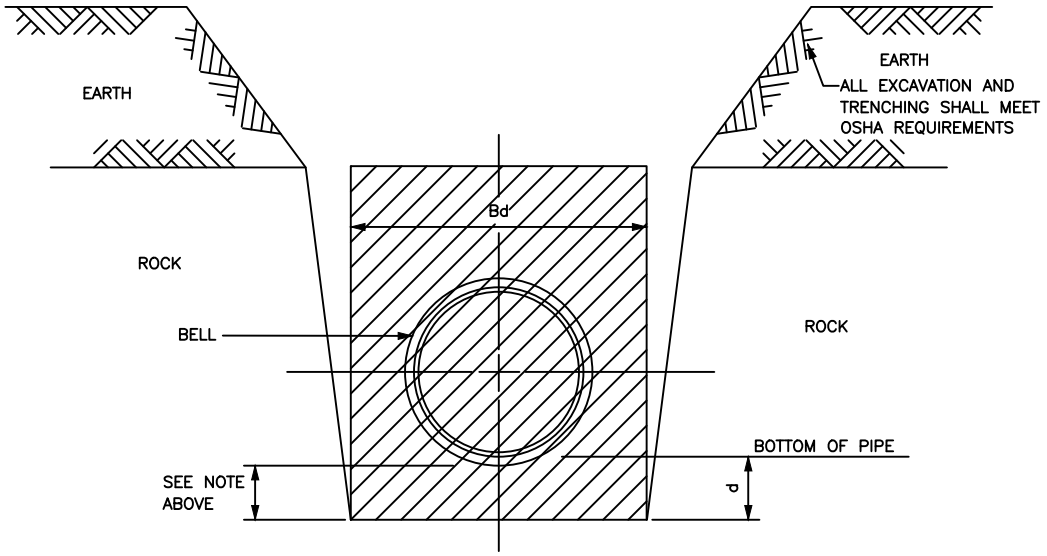
NOTE:
EXCAVATE TO A MIN OF 6" BELOW BELL FOR 16" AND SMALLER PIPE.




## TYPICAL TRENCH WITH ROCK EXCAVATION

SCALE: NONE

| PIPE DIMENSIONS | | | | TRENCH DIMENSIONS | |
|---|---|---|---|---|---|
| NOMINAL ID | DISPLACEMENT 1/2 PIPE OD (CY/LF) | BARREL OD (Bc) | BELL OD | Bd | ROCK* EXCAVATION BELOW PIPE(d) |
| 6" | 0.005 | 6.9" | 8.75" | 30" | 6" |
| 8" | 0.008 | 9.1" | 11.05" | 32" | 6" |
| 12" | 0.018 | 13.2" | 15.30" | 36" | 6" |
| 16" | 0.031 | 17.4" | 20.00" | 40" | 6" |

*BELOW AND ON EACH SIDE OF ALL PIPE, VALVES & FITTINGS.

| REVISION DATES |
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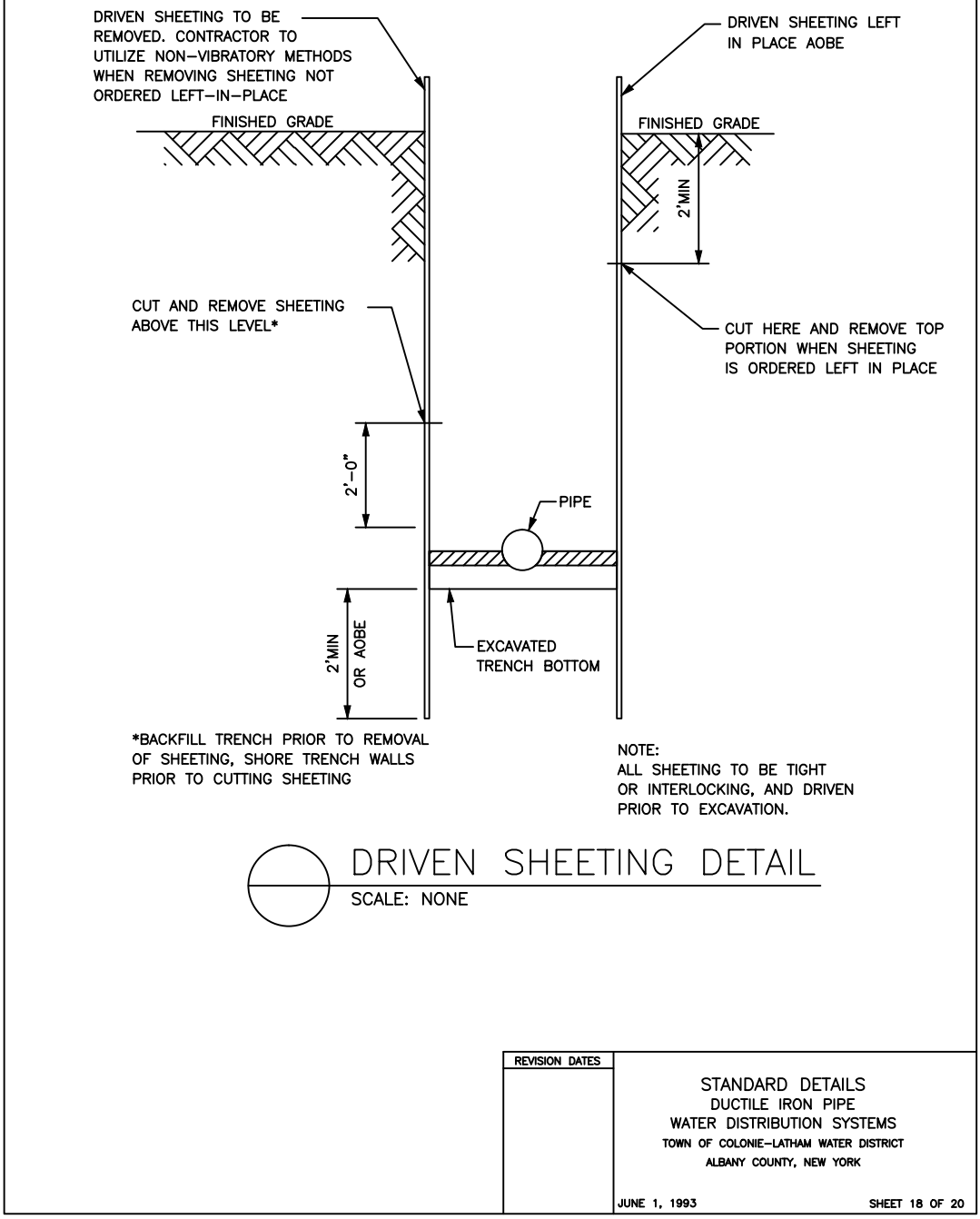
DRIVEN SHEETING TO BE REMOVED. CONTRACTOR TO UTILIZE NON-VIBRATORY METHODS WHEN REMOVING SHEETING NOT ORDERED LEFT-IN-PLACE
FINISHED GRADE
CUT AND REMOVE SHEETING ABOVE THIS LEVEL*
2'-0"
2'MIN OR AOBE
PIPE
EXCAVATED TRENCH BOTTOM
*BACKFILL TRENCH PRIOR TO REMOVAL OF SHEETING, SHORE TRENCH WALLS PRIOR TO CUTTING SHEETING
DRIVEN SHEETING LEFT IN PLACE AOBE
FINISHED GRADE
2'MIN
CUT HERE AND REMOVE TOP PORTION WHEN SHEETING IS ORDERED LEFT IN PLACE
NOTE:
ALL SHEETING TO BE TIGHT OR INTERLOCKING, AND DRIVEN PRIOR TO EXCAVATION.
DRIVEN SHEETING DETAIL
SCALE: NONE
REVISION DATES
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WATER DISTRIBUTION SYSTEMS
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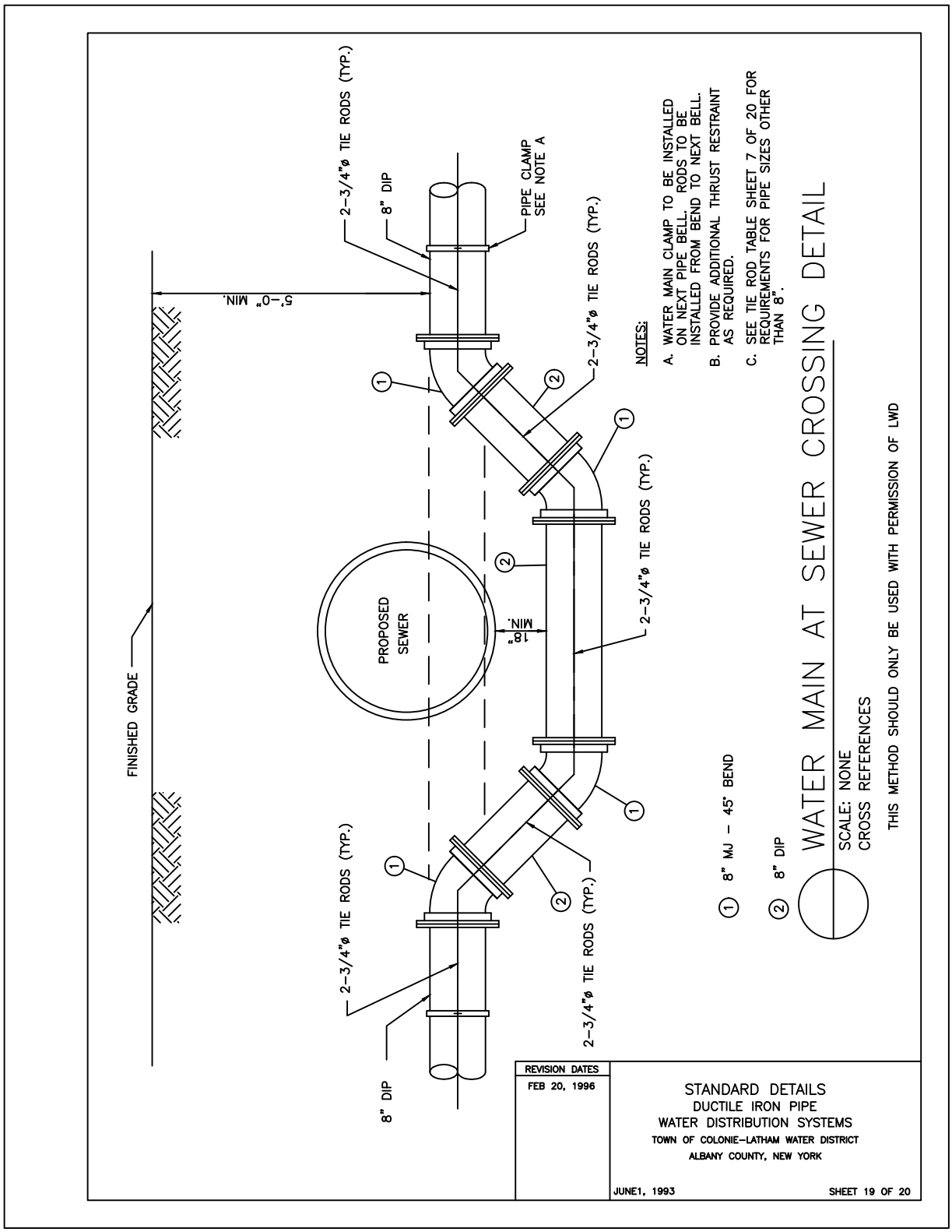
WATER MAIN AT SEWER CROSSING DETAIL
SCALE: NONE
CROSS REFERENCES
THIS METHOD SHOULD ONLY BE USED WITH PERMISSION OF LWD
NOTES:
A. WATER MAIN CLAMP TO BE INSTALLED ON NEXT PIPE BELL. RODS TO BE INSTALLED FROM BEND TO NEXT BELL.
B. PROVIDE ADDITIONAL THRUST RESTRAINT AS REQUIRED.
C. SEE TIE ROD TABLE SHEET 7 OF 20 FOR REQUIREMENTS FOR PIPE SIZES OTHER THAN 8".
① 8" MJ - 45° BEND
② 8" DIP
2-3/4"ø TIE RODS (TYP.)
8" DIP
PIPE CLAMP SEE NOTE A
5'-0" MIN.
FINISHED GRADE
PROPOSED SEWER
18" MIN.
REVISION DATES
FEB 20, 1996
STANDARD DETAILS
DUCTILE IRON PIPE
WATER DISTRIBUTION SYSTEMS
TOWN OF COLONIE-LATHAM WATER DISTRICT
ALBANY COUNTY, NEW YORK
JUNE1, 1993
SHEET 19 OF 20

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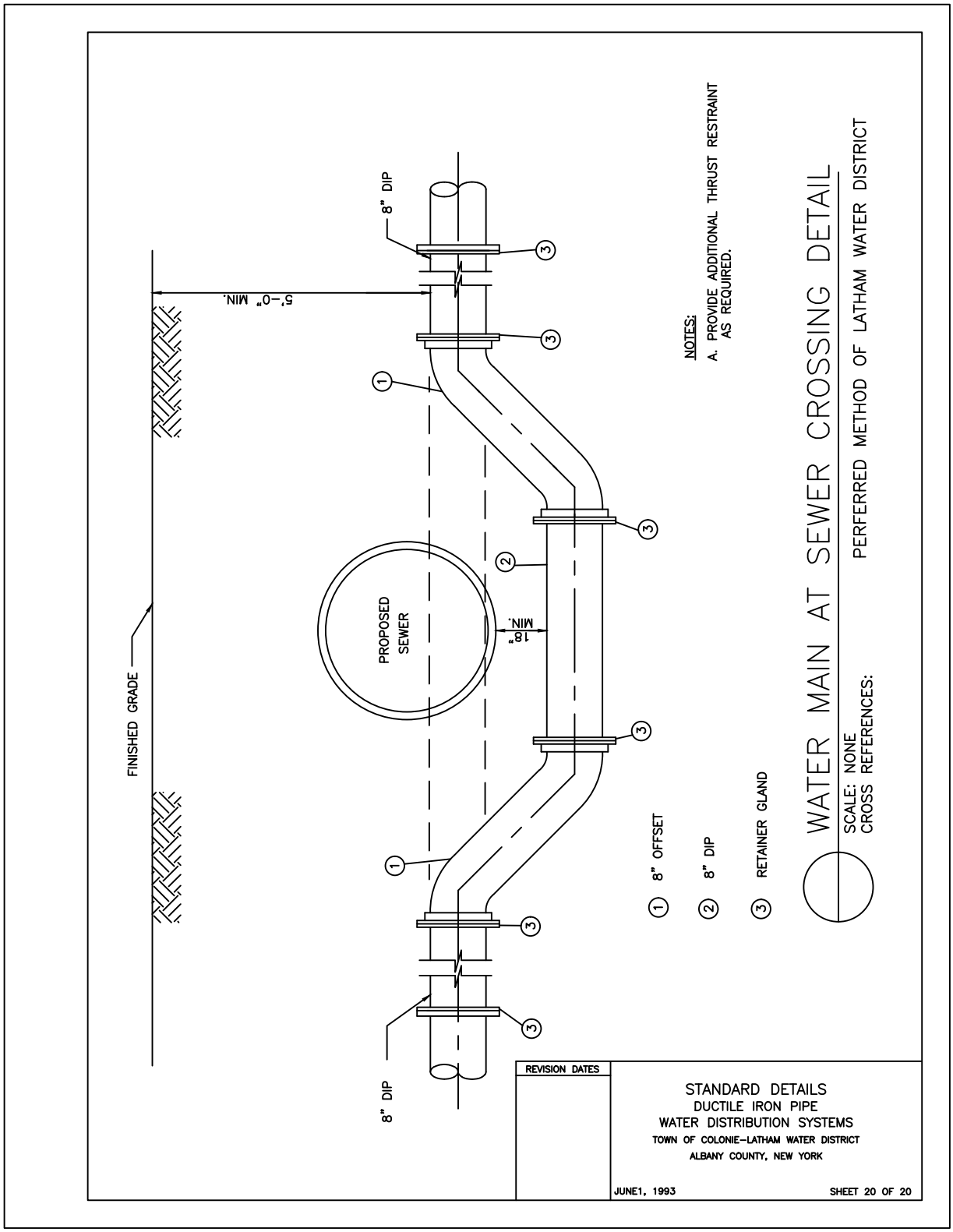
WATER MAIN AT SEWER CROSSING DETAIL
PERFERRED METHOD OF LATHAM WATER DISTRICT
SCALE: NONE
CROSS REFERENCES:
NOTES:
A. PROVIDE ADDITIONAL THRUST RESTRAINT AS REQUIRED.
8" DIP
8" DIP
5'-0" MIN.
FINISHED GRADE
PROPOSED SEWER
18" MIN.
1 8" OFFSET
2 8" DIP
3 RETAINER GLAND
REVISION DATES
STANDARD DETAILS
DUCTILE IRON PIPE
WATER DISTRIBUTION SYSTEMS
TOWN OF COLONIE–LATHAM WATER DISTRICT
ALBANY COUNTY, NEW YORK
JUNE1, 1993
SHEET 20 OF 20

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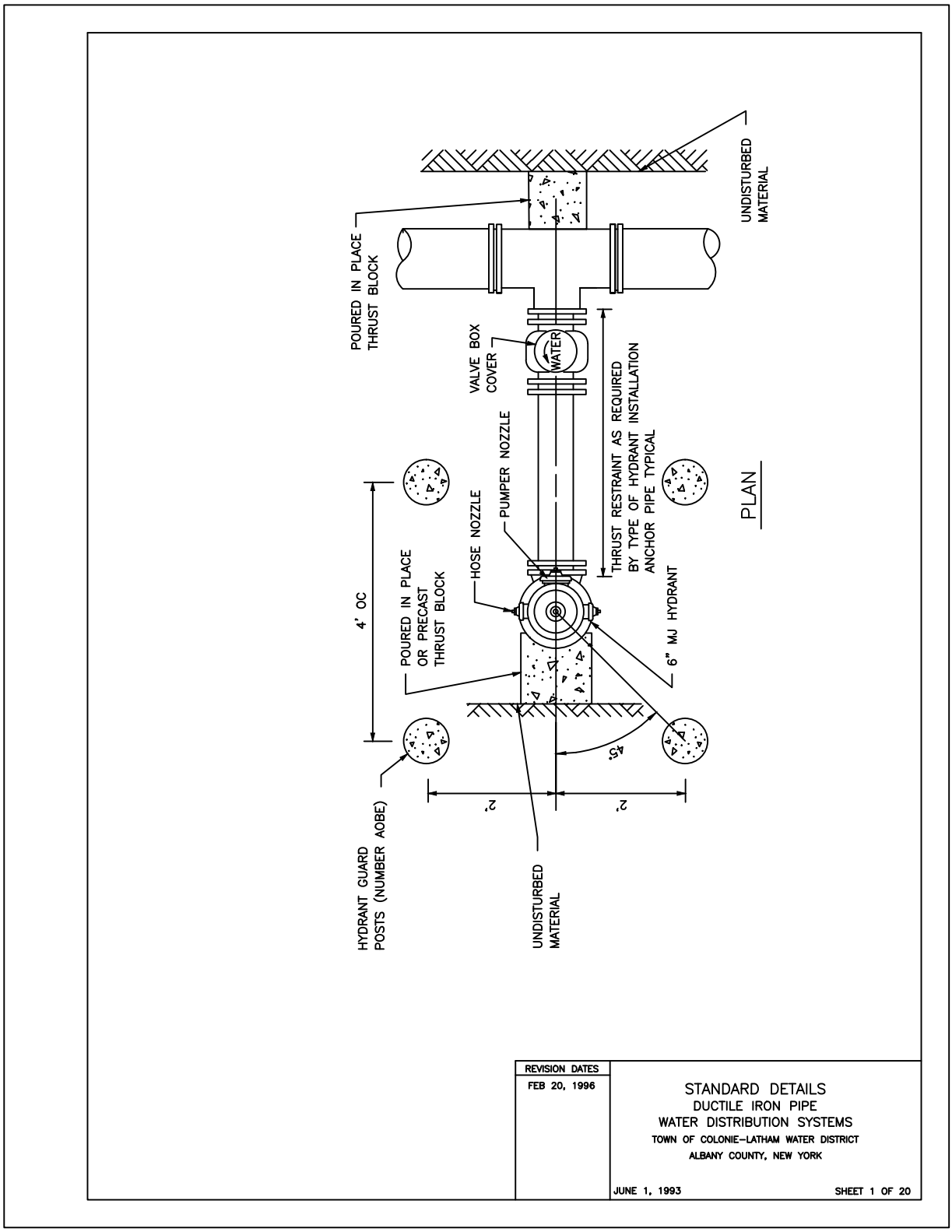
UNDISTURBED MATERIAL
POURED IN PLACE THRUST BLOCK
VALVE BOX COVER
WATER
PUMPER NOZZLE
HOSE NOZZLE
THRUST RESTRAINT AS REQUIRED BY TYPE OF HYDRANT INSTALLATION ANCHOR PIPE TYPICAL
PLAN
4' OC
POURED IN PLACE OR PRECAST THRUST BLOCK
6" MJ HYDRANT
45°
2'
2'
HYDRANT GUARD POSTS (NUMBER AOBE)
UNDISTURBED MATERIAL
REVISION DATES
FEB 20, 1996
STANDARD DETAILS
DUCTILE IRON PIPE
WATER DISTRIBUTION SYSTEMS
TOWN OF COLONIE–LATHAM WATER DISTRICT
ALBANY COUNTY, NEW YORK
JUNE 1, 1993
SHEET 1 OF 20

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