CATOOSA
UTILITY DISTRICT AUTHORITY

1058 OLD MILL ROAD | PO BOX 750 | RINGGOLD GA 30736 | (706) 937 - 4121

Water Line

Installation Specifications

June 2019

MATERIALS

DUCTILE IRON PIPE

Only Tyton Joint® ductile iron pipe manufactured by U.S. Pipe is allowed. The ductile iron pipe with Tyton joints complete with necessary gaskets and lubricant must be in accordance with ANSI/AWWA C151/A21.51-96 and ANSI/AWWA C111/A21.11-07 specifications. Pipe will be furnished cement lined per ANSI/AWWA C104/A21.4-03, seal coated inside and bituminous coated outside.

Nominal 18-foot lengths accepted.

The following sizes and classes of pipe are allowable:

- 6" Class 350
- 8" Class 350
- 12" Class 350
- 16" Class 250
- 24" Class 250

FITTINGS

Fittings are to be:

- Ductile Iron (ANSI/AWWA C110/A21.10.03)
- Cement-Lined (ANSI/AWWA C104/A21.4-03)
- Valves are to be Epoxy-Coated (ANSI/AWWA C116/A21.16-03)
- Mechanical Joint (ANSI/AWWA C111/A21.11-07)
- Compact (ANSI/AWWA C153/A21.53.06)
- Domestic

VALVES

The size and location of valves shall be shown on the accepted plans. All will be mechanical joint (except tapping valves that will be addressed later) according to ANSI/AWWA C111/A21.11-07 and ANSI/AWWA C550-05 specifications.

The gate valves are to be epoxy-coated and in accordance with ANSI/AWWA C509-01. They shall also be manufactured by either U.S. Pipe, Mueller, or M&H.

No butterfly valves.

All valves shall be equipped with a two-inch (2") square opening nut and OPEN LEFT.

VALVE BOXES & LIDS

Acceptable valve boxes are the round, two-piece, screw-type, and either an 18"to 24" or 24" to 36" screw type valve box with lid. If neither size will work, a piece of 6" ductile iron pipe can be used in conjunction with a valve box collar and lid.

The lids should say "WATER" and fit in the top of the valve box or valve box collar.

FIRE HYDRANTS

Fire hydrants shall conform to the requirements of ANSI/AWWA C502-05 and be dry barrel. They shall be M&H 129 with a 6" mechanical joint shoe and minimum 3 foot bury, more if necessary. Nozzle caps shall be provided with chains and gaskets. They shall be reverse threaded into the upper barrel and mechanically locked in place.

The specified fire hydrants shall have two 2-1/2" hose nozzles 180° apart and one 4-1/2" pumper nozzle. All nozzles shall be at the same elevation. The nozzle threads shall be National Standard Fire Hose Coupling Screw Thread as described in Appendix A of ANSI/AWWA C502-05.

The hydrants' color shall be silver with a primed bonnet.

The operating nut shall be 1-1/2" point to flat. Hydrant shall OPEN LEFT. Hydrants shall also be the breakaway type, with a frangible ground line and rod coupling designed to break upon traffic impact and prevent further damage to the hydrant and its connection.

The location of the fire hydrants will be dictated on the plans approved by the state, Catoosa Utility District Authority, and local governing body.

TAPPING SLEEVES & VALVES

There are only two tapping sleeves that can be used to make a connection to a Catoosa Utility District Authority water main. They are Mueller H-615 or Union Foundry MJ Tapping Sleeve. However, the tapping valve can be from either manufacturers or from M&H. The Tapping Valve must meet the 200psi working pressure and 400psi test pressure as defined by AWWA Standard C-509 or C-515. If tapping PVC, then the JCM 422 Fabricated Tapping Sleeve-PVC Steel should be used.

FOSTER ADAPTERS

Foster Adapters, a compact restraint device, shall be used to connect two mechanical joint pieces. They are typically used between a mechanical joint fitting and a mechanical joint valve but do not have other applications. For more information, please visit:
https://www.infactcorp.com/wp-content/uploads/2013/10/Infact-Foster-Specs.-rev-2013-Aug9.pdf

BLOW OFF

They will consist of the plug (Trim Tyton with set screws and tapped 2”), two 2” x 6” and two 2” x 8” epoxy coated, ductile iron nipples, two 2” brass 90° bends, a 2” threaded valve (open left) with 2” operating nut, and a Gil Industries Post Flushing Hydrant (https://www.gilindustries.com/postflushing.htm). These shall be constructed as shown in Figure 1. (If the ductile nipples are unavailable, use brass. Galvanized is unacceptable.) All connections made using a pipe joint compound.

FIELD LOK 350® GASKET

These gaskets, used for pipe restraint, are inserted into the bell of the pipe. They will be referred to as Field Lock for this standard. For more information, please visit:
https://www.uspipe.com/products/gaskets/field-lok-350-gaskets

MJ FIELD LOK®

This is another type of pipe restraint, similar to a mega lug. For more information, please visit:
https://www.uspipe.com/products/gaskets/mj-field-lok-gaskets

AIR RELEASE

Used to release the air trapped in the water main during its installation. The size of the air release is dictated by the size of pipe being installed. There are two accepted models. The first is the Crispin AR Series. For more information, please visit: https://crispinvalve.com/air-release-valves/air-release-valves/pressure-air-release/ar-series/. The second model is the APCO 50 or 200A series. For more information, please visit: https://www.dezurik.com/products/product-line/air-valves/clean-water-air-release-valves-arv/7/23/. They should be installed in a standard round meter box (plastic 18" tall with a black exterior and white interior with a cast iron lid) with a ¾" curb stop, either a Ford B44-333- Q or a Mueller B-25146, below it.

METER SETTINGS

Typically, a one-inch copper line is used to set two ¾" meter settings. The following starts at the water main and goes through to the tail piece where the customer connects their service line. The connection to the main water shall be made using a JCM Double Strap Service Saddle w/ CC Thread and a 1” outlet. A 1" corporation stop, the Cambridge Brass 1” AWWA x 1” Haystite (plug style / no lead) is to be used. Type K copper tubing shall be used throughout and sleeved with 1 ½” PVC that will span from pavement edge to pavement. Next is a 1" x ¾" Service Tee; the Cambridge Brass ¾” Haystite x 1” Haystite is to be used. Typically, one leg from the Tee goes to a yoke while the other is stubbed out with a ¾" curb stop, either a Ford B44- 333-Q or a Mueller B-25146. The copper setter, or yoke, shall be either a Ford VBH71- 7W-44-33-Q or a Mueller ⅝" x 7" 221B2470-R2. The meter box is a round (18" tall x 15” diameter) plastic one with a black exterior and white interior. The meter lid shall be cast iron. A 3’ piece of ¾” copper tubing will be left coming from the outlet side of the yoke and extending outside of the customer’s side of the box. The yoke shall be centered in the meter box. No part of the yoke, especially the cutoff and check valve, shall be touching the meter box.

INSTALLATION

First and foremost, all items are to be installed per the manufacturer's specifications, AWWA standards, and in accordance with the plans approved by the state, Catoosa Utility District Authority, and the local governing body.

WATERLINES

All ductile iron pipe shall be installed according to ANSI/AWWA C600-05 standards. The minimum cover on the pipe is 30 inches of clean (no rocks, asphalt, etc.) dirt. If rock is encountered, the pipe shall be bedded in at least 6" of gravel and the ditch backfilled with gravel to a minimum depth of 12" above the top of the pipe.

Bends of 90° and less are permitted. Mechanical joints are required. Bends must be protected with wraps prior to pouring a concrete thrust block. When alignment requires deflection greater than 5 degrees between full lengths of pipe, bends will be required. Short lengths of pipe in place of bends will not be permitted.

When the water main is going to end at a blow off, a minimum of five Field Lock gaskets are to be used prior to the termination. Also, an adequate thrust block must be poured as shown in Figure 2. If it is a valve (stub out for future growth), a minimum of five full pieces of pipe will be installed past the termination point with a 4x4 installed vertically in the ground to mark the end unless otherwise noted on the plat. The end of the pipe must be securely sealed to keep it free of dirt, groundwater, and animals.

When an existing or proposed road is crossed via an open cut, it shall be backfilled in accordance with the local governing body. It is the contractor's responsibility to verify what the regulations are. Existing pavement shall be cut in neat, straight lines with either a pavement breaker or pavement saw and returned to its previous state.

If the use of steel casing (continuous weld construction and installed with welded joints) is necessary or dictated by the local authority, Field Lock gaskets shall be used inside. The appropriate spacers and end seals are to be used also. The company doing the bore must be approved by Catoosa Utility District Authority.

The casing shall have minimum yield strength of 35,000 psi and minimum thickness:

Pipe Diameter (inches)	Minimum Thickness (inches)
≤12	0.188
16	0.219
24	0.344
30	0.406

It is also the contractor's responsibility to determine where the pipe is to be installed according to the centerline of the right of way. Consideration must be taken of sidewalks and other utilities.

When the water main is in the vicinity of a **sewer**, the following guidelines apply.

Parallel Installation

a. Normal conditions – Water mains shall be laid at least 10 feet horizontally from any sanitary sewer, storm sewer or sewer manhole, whenever possible; the distance shall be measured edge-to-edge.
b. Unusual conditions – When local conditions prevent a horizontal separation of 10 feet, a water main may be laid closer to a storm or sanitary sewer provided that:
    - The bottom of the water main is at least 18 inches above the top of the sewer
    - Where this vertical separation cannot be obtained, the sewer shall be constructed of materials and with joints that are equivalent to water main standards of construction and shall be pressure tested to assure watertightness prior to backfilling.

Crossings

a. Normal Conditions – Water mains crossing house sewers, storm sewers or sanitary sewers shall be laid to provide a separation of at least 18 inches between the bottom of the water main and the top of the sewer, whenever possible.
b. Unusual Conditions – Water mains passing under sewers, shall, in addition, be protected by providing:
    - A vertical separation of at least 18 inches between the bottom of the sewer and the top of the water main.
    - Adequate structural support for the sewers to prevent excessive deflection of joints and settling on and breaking the water mains.
    - That the length of water pipe be centered at the point of crossing so that the joints will be equidistant and as far as possible from the sewer.
    - Both the sewer and the water main shall be constructed of water pipe.

Sewer Manholes – No water pipe shall pass through or come into contact with any part of a sewer manhole.

When a water main is to cross a body of water (creek, stream, lake, etc.) Field Lock gaskets are to be used throughout the crossing. Valves shall be provided at both ends of the crossing so that the section can be isolated for test or repair; the valves shall be easily accessible and not subject to flooding.

When the water main is in the vicinity of a **gas main**, the following guidelines apply:

Parallel Installation

a. Normal conditions – Water mains shall be protected with a polyethylene encasement wrap to prevent corrosion. Water mains must be laid at least 5 feet horizontally from any gas main, whenever possible; the distance shall be measured edge-to-edge.
b. Unusual conditions – When local conditions prevent a horizontal separation of 5 feet, a water main may be laid closer to a gas main provided that:
    - The entire parallel length of water main is encased with a polyethylene wrap until the water main and gas main are no longer paralleling.
    - The Polyethylene Encasement Wrap shall meet and be installed in accordance with ANSI/AWWA C105/A21.5.

Crossings

a. Normal Conditions – Water mains shall be protected with a polyethylene encasement wrap to prevent corrosion. Water mains crossing gas mains, shall be laid to provide a separation of at least 24 inches between the bottom of the water main and the top of the gas main, or vice-versa whenever possible. The length of the polyethylene encasement wrap should span a minimum of 25 feet in both directions from the center of the crossing.

FITTINGS

Fittings are to be installed as shown on the plans. Any deviations must be approved beforehand by Catoosa Utility District Authority's Inspector. Concrete thrust blocks are to be used as shown on plans. Any time a thrust block is used, 5 Field Lock gaskets and either Mega Lugs or MJ Field Locks are to be installed as well. For a 90° bend, 5 Field Lock gaskets shall be installed on both sides of the fitting as well as either Mega Lugs or MJ Field Locks. Approved mechanical joint accessories (bolts, gaskets, and glands) are to be used.

VALVES

Gate valves, both mechanical joint and tapping, are to be installed per the requirements of ANSI/AWWA C509-01. Valves are to be installed, along with a valve box, such that a valve key can easily operate it after back-filling. The top of the valve box shall be flush with the finished grade. The locations, sizes, and types of the valves are dictated by the approved plans.

FIRE HYDRANTS

Each fire hydrant shall be installed in accordance with ANSI/AWWA C502-05. The assembly shall consist of a fire hydrant, a connector piece (MJ gland on one end and DI rotating MJ gland on the other end), a 6" MJ (isolation) valve, and MJ Fire Hydrant Tee. Erect the fire hydrant to stand plumb with the pumper nozzle facing the road. The weep holes are to be unobstructed. The location is dictated by the approved plans. The hydrant should be installed such that the lowest nozzle is at least 12 inches above finished grade. If extensions are needed, it will be the sole responsibility of the contractor to both purchase and install them.

TAPS

Taps are to be made by Catoosa Utility District Authority. The tapping sleeve, tapping valve, their installation and excavation are the responsibility of the contractor. For a fee, Catoosa Utility District Authority will air test the sleeve and valve as a whole and make the tap. A tap application and fee must be completed prior to commencing work.

FOSTER ADAPTERS

Foster adapters are to be used in connecting two mechanical joint fittings. They are typically used between a tee and a valve but do have other uses.

BLOW OFFS

Blow offs are to be installed at the end of a line that has no provision to ever be extended. The approved plans will show their locations.

POST INSTALLATION

FLUSHING

Prior to pressure testing, the contractor shall flush the water mains in an effort to eliminate air pockets and remove particulates. The flushing velocity in the main shall not be less than 2.5 ft/sec. Note that flushing is no substitute for preventive measures during construction. Certain contaminates, such as caked deposits, resist flushing at any feasible velocity and pigging of the main may be required. The flushing shall be done in accordance with ANSI/AWWA C651-05.

When flushing, the contractor is to use Best Management Practice that will allow the water to sheet flow over a vegetated area if possible, and not to cause erosion which in turn will cause fugitive sediment to be suspended. Please contact the Georgia Environmental Protection Division located in Cartersville, Georgia at 770-387-4900 if there is any uncertainty on handling the discharge.

PRESSURE TESTING

The contractor shall be responsible for the pressure testing of the water main.

Following the installation of any new pipeline, all newly laid pipe or any valved section thereof shall be subjected to a hydrostatic pressure test. Each valved section of pipeline shall be slowly filled with water. When venting air from pipelines, it is important to limit the pipeline fill rate to avoid excessive surge pressures when the water reaches the air venting opening(s). The specified test pressure shall be applied using a suitable pump connected to the pipeline. (NOTE: The test pressure shall not be less than 1.25 times the stated working pressure of the pipeline measured at the highest elevation along the test section and not less than 1.5 times the stated working pressure at the lowest elevation of the test section.) Before applying the specified test pressure, air shall be expelled completely from the pipeline section under test. The pipeline shall be allowed to stabilize at the test pressure before conducting the hydrostatic test. This may require several cycles of pressurizing and bleeding trapped air prior to beginning the test. The hydrostatic test shall be of a 24-hour duration with the results

provided to Catoosa Utility District Authority. The test pressure shall not vary by more than ±5 psi for the duration on the test. Test pressure shall be re-established within this tolerance by adding makeup water through the pressure test pump into the pipeline. The amount of makeup water added shall be accurately measured (in gallons per hour) by suitable methods and shall not exceed the applicable testing allowance. No pipeline will be accepted if the quantity of makeup water is greater than that determined in the following chart:

Hydrostatic testing allowance per 1,000 feet of pipe (gph)

Avg Test Pressure	Nominal Pipe Diameter - *in.*						
psi	**4**	**6**	**8**	**12**	**16**	**24**	**30**
300	0.23	0.35	0.47	0.70	0.93	1.40	1.75
275	0.22	0.33	0.45	0.67	0.89	1.34	1.68
250	0.21	0.32	0.42	0.64	0.85	1.28	1.60
225	0.20	0.30	0.40	0.61	0.81	1.21	1.52
200	0.19	0.28	0.38	0.57	0.76	1.14	1.43
175	0.18	0.27	0.36	0.53	0.71	1.07	1.34

DISINFECTION

A newly installed main shall be disinfected in accordance with ANSI/AWWA C651. Section 4.4 discusses several acceptable methods. Following chlorination, the main should be flushed as soon as possible (within 24hr), because prolonged exposure to high concentrations of chlorine might damage the asphaltic seal coating. Catoosa Utility District Authority will furnish the disinfectant for the contractor.

BACTERIOLOGICAL TEST

The contractor is responsible for obtaining a clean bacteriological test from an approved laboratory. The report must be sent to Catoosa Utility District Authority's state certified lab.

ONE YEAR WARRANTY

The contractor must guarantee the workmanship, including parts, for one year after the project ends. This includes, but not limited to, anything that was put in the ground. All meter boxes and valve boxes must remain flush with the ground and allow easy access.