STANDARDS AND SPECIFICATIONS MANUAL

FAYETTE COUNTY WATER SYSTEM
245 MCDONOUGH ROAD
FAYETTEVILLE, GEORGIA 30214

April 2025

DEFINITIONS

"Department" - the individual, official, board, department or agency established and authorized by county, city and/or other political subdivision created by law to administer and enforce the provisions of the Plumbing Code, the Federal and State Safe Drinking Water Acts, and the Ordinances, Rules, Regulations, and Policies of Fayette County, in the state of Georgia.

"Authorized Representative" - any individual employed by the Fayette County Water System given direct authorization, from the Director of the Fayette County Water System to act as a department representative.

"Backflow" - a reverse flow in a water system from the normal or intended direction.

"Backflow Preventer (BFP)" - a device designed to prevent reverse flow in a water system. Specifically, the term should normally be used where backpressure-type backflow is implied.

"Branch Sewer" - a sewer which receives sewage from a relatively small area, and discharges into a main sewer.

"Contaminant" - means any physical, chemical, biological, or radiological substance or matter in water that could cause a public health hazard.

"Customer" - shall mean every person who is responsible for contracting (expressly or implicitly) with the Fayette County Water System in obtaining, having, or using water connections with, or water tap to, the water system of the Fayette County Water System and in obtaining, having, or using water and other related services furnished by the Fayette County Water System for the purpose of water supply through said system.

“Contractor” – any person or entity, including their agent or construction contractor, who wishes to replace or construct new water lines in FCWS service area.

“Drinking water” – water supplied for domestic use or human consumption, meeting the maximum contaminant levels established by the State.

“Easement” – shall mean an acquired legal right for the specific use of land owned by others.

“EPD” – shall mean the Environmental Protection Division of the Department of Natural Resources of the State of Georgia.

“FCWS” – Fayette County Water System.

“FRA” – Federal Railroad Administration

“GDOT” – Georgia Department of Transportation

“Industrial wastes” – shall mean the wastewater from industrial processes as distinct from domestic or sanitary wastes.

“Inspector” – an individual qualified in a vocation and authorized to make inspections, interpret codes, regulations, and procedures.

“Large stone” – Stone that is 2 in. or smaller in diameter.

“Large Diameter Meter” – meters greater than 2” (4”, 6”, 8”, 10”, 12”)
“Main” – a pipe for delivering wastewater from a pumping station to its destination which may be a treatment plant or a higher point in the sewerage system.
“Main Sewer” – a sewer to which one or more branch sewers are tributary. Also called a Trunk Sewer.
“May” – is permissive.
“Person” – shall mean any individual, firm, company, association, society, corporation, or group.
“Pollutant” – any substance that, if introduced into the potable water system, could be objectionable but could not create a health hazard.
Pollution” – the man-made or man-induced alteration of the chemical, physical, biological, and radiological integrity of water.
“Potable Water” – any water that, according to recognized standards, is safe for human consumption.
“Privately Owned Public Water System” – any system to provide piped water to the public for human consumption. Such term includes any collection, treatment, storage, and distribution facility, designed to serve 15 or more units from any source other than Fayette County, being owned and operated by any entity other than Fayette County.
“Professional Engineer” – a person registered to practice professional engineering in the State of Georgia in accordance with the provisions of the Act governing the practice of professional engineering in Georgia.
“Public Water System” – a water system (including but not limited to supply, treatment, transmission and distribution facilities and appurtenances) operated as a Public Utility that supplies potable water to the service-connection of the Consumer's water system. Herein defined, as the Fayette County Water System potable water supply/system as operated by the Fayette County Water System.
“Representative” – a person authorized to represent the Superintendent of the Fayette County Water System.
“Sanitary Sewer” – a sewer pipe which carries sewage and to which storm, surface, and ground waters are not intentionally admitted.
“Service-Connection” – the point of delivery of water to a premises: the normal location of the meter. It is the end of the water purveyor's jurisdiction and the beginning of the Plumbing Official's and the Consumer's, and defined as follows:
Dedicated – a single service connection that is designated for one use only (i.e. domestic, fire protection, or irrigation).
Combination – a single service connection that is designated for more than one use (i.e. domestic and fire protection).
“Sewage” – is the spent water of a community. (See Wastewater)
“Sewerage” –shall mean all facilities for collecting, pumping, treating, and disposing of sewage.
“Sewer” – a gravity flow pipe or conduit, normally not flowing full, for carrying storm water, sewage and other waste liquids.
“Sewer or Service Line” – a pipe conveying sewage from a single building to a common sewer or point of immediate disposal.
“Shall” – is mandatory.

“Spring” – a surface water where water naturally issues forth for the first time from rock or soil onto the land or into a body of water.

“Standard methods” – “Standard Methods for the Examination of Water.” As published jointly by the American Public Health Association, the American Water Works Association, and the Water Pollution Control Federation or with any other analytical procedure approved by the Commission.

“Storm drain” – shall mean a drain or sewer for conveying water, groundwater, subsurface water, or unpolluted water from any source and excluding sewage and industrial wastes other than unpolluted cooling water. (See Storm Sewer)

“Storm Sewer” – a sewer which carries storm water and surface water, street wash and other wash waters, or drainage, but excludes sewage and industrial wastes.

“Storm water” – any flow occurring during or following any form of natural precipitation and resulting therefrom.

“Suitable material” – clean dirt free of rock and debris.

“Surface water” – includes all rivers, streams, branches, creeks, ponds, tributary streams, and drainage basins, natural lakes, artificial reservoirs or impoundments.

“System” – Fayette County Water System.

“Warranty” – cost and replacement due to workmanship and material defect

“Wastewater” – shall mean the spent water of a community. From the standpoint of source, it may be a combination of the liquid and water carried wastes from residences, commercial storm water that may be present. (See Sewerage)

“Water Well” – any excavation that is cored, bored, drilled, jetted, dug, or otherwise constructed for the purpose of location, testing, or withdrawing groundwater.

1. WATER SYSTEM DESIGN SPECIFICATIONS

1.1 General Design Requirements

1.1.1 The following shall establish the general design requirements for publicly owned.

1.1.2 Connections to existing mains, other than service lines, will require a tee with three valves – nipple length for tie-in with sleeves shall be three times the pipe diameter.

1.1.3 All water mains shall be minimum of 8 in. diameter class 350 ductile iron.

1.1.4 Dead-end lines shall be minimized by looping of all mains when possible and provided with a hydrant.

1.1.5 Minimum horizontal distance between water lines and sanitary sewer lines, storm sewer lines, and sewer manholes shall be 10 ft. radius. Minimum distance for all other underground utilities or structures shall be 24 in. Vertical separation shall be at least 24 in. between the bottom of the water main and the top of the sanitary sewer main. At crossings, the water pipe should be located so both joints are as far from the sanitary sewer line as possible. Casing shall be provided per FCWS direction at perpendicular crossing of sanitary sewer and extending 24 in. outside circumference of sanitary sewer.

1.1.6 Unless otherwise approved by FCWS, all creek crossings shall be constructed by encasing a class 350 ductile iron water main in steel casing (reference section 1.2.2.3) with restrained joint pipe and stainless-steel casing spacers and sufficiently blocking each end of the casing to secure its position. The minimum depth from the existing creek bed to the top of the casing pipe shall be 2 ft. Valves should be at both ends of the crossing and easily accessible (not subject to flooding). Taps should be provided on each end of testing and leak determination.

1.1.7 All crossings of existing and proposed paved streets shall be by the bore and jack method, unless approved otherwise prior to installation. A county road shall be open cut only after written permission has been received from Fayette County Public Works. All pipe placed under county roads or underneath new roads shall be class 350 ductile joint pipe encased in steel casing with restrained joint pipe and stainless-steel casing spacers as determined by FCWS. All pipe under roads shall have a minimum cover of 4 ft. from finish grade to top of pipe.

1.1.8 Crossings of driveways shall be by means of uncased bore or open cut as may be determined by the Water System. Pipe over 10 in. in diameter shall be open cut unless casing is provided with the bore or approved otherwise prior to installation. Where open cut method is allowed, existing concrete and asphalt driveways shall be sawed and the debris removed prior to trenching. When pipe installation is complete, the driveway shall be backfilled, compacted to 98% standard proctor density, and damaged area replaced with material consistent with the existing driveway within five working days. No service taps to be made under driveways. Driveway installation shall be in

accordance with these standards. No service shall be left under a driveway. New service shall be installed and old service and tapping saddle shall be removed with tap covered with stainless steel full circle repair clamp.

1.1.9 Tees, crosses, valves, and other necessary fittings shall be provided at all road intersections to provide for future expansion. All tees and crosses shall be accompanied by equivalent sized valve. Water main shall be extended minimum of 4 ft beyond the radius of the intersection.

1.1.10 Magnetic detection tape shall be placed directly over all nonmetal pipe at a maximum depth of 2 ft. from finished grade. Tracing wire shall be in direct contact with the piping and must be accessible for locating purposes.

1.1.11 Fire hydrants spacing shall be at intervals specified in Fayette County Code Section 12-90 & 12-91. Minimum valve opening shall be 5 ¼ in. Minimum height of hydrant flange from final grade is between 2 in. – 6 in.

1.1.12 Fire hydrants are to be located on the right-of-way line and shall have a gate valve installed between the main and the fire hydrant.

1.1.13 FCWS requires installation of M&H 129 iHydrants as specified. Generally, one iHydrant for each non-residential development and one per every 50 lots of a residential development.

1.1.14 All fire service lines and connections with private fire hydrants, hand hose connections, sprinkler heads, and any other supply including domestic lines shall be required to be metered and have an approved backflow prevention assembly in accordance with paragraph 1.2.21 of these standards.

1.1.15 Shutoff valves shall be located along the main line at intervals not greater than every 1200 L.F. Less separation may be required by FCWS.

1.1.16 All fittings (valves, tees, crosses, bends, and reducers) shall be restrained in a method approved by FCWS. All fittings shall have a minimum of one full joint of D.I.P. extending out of each side of the fitting.

1.1.17 Each valve 2 in. or larger, except fire hydrant valves, shall have a valve marker 4 in. square by 4 ft. long with four #2 reinforcing rods placed directly behind the valve. The marker shall be set to leave 18 in. exposed above grade with a “V” stamped into the concrete. A “V” notch should also be cut into the curb and painted blue.

1.1.18 Each underground valve shall include a valve box placed vertically to allow operation of the valve. Valve boxes not located in roadways shall have a pre-cast concrete collar placed level around the top for protection.

1.1.19 Service lines shall be provided from the water main to each residential lot in the proposed development. Lines shall normally be 1 in. minimum diameter and furnished with full port curb stops, corporation stops, and meter boxes. Meter boxes shall be placed as directed by FCWS or as directed by GA DOT and installed on a 6 in. gravel

base. Double services may be accepted if approved by FCWS.

1.1.20 Water services for commercial, industrial, or multi-family residential shall be adequate to provide for the specific needs of the installation including adequate fire protection. Backflow prevention devices shall be in accordance with FCWS requirements.

1.1.21 All multi-tenant developments shall provide signed documentation in accordance with the state of Georgia Statute 12-5-180.1.

1.1.22 The location of service laterals and meters shall be indicated precisely on drawings.

1.1.23 All temporary and interim water connections connected to FCWS water sources shall be approved.

1.1.24 When roadways and streets are proposed to be constructed over existing water lines, it is required to relocate the water main and install steel casing pipe.

1.1.25 The Contractor shall ensure that no water infrastructure or connecting water lines are within proximity of an abandoned landfill site or any other waste disposal site per state of Georgia Rule 391-3-5-.04.

1.2 Materials of Construction

1.2.1 General Material Requirements All materials shall be domestically manufactured and specified herein or approved equal.

Any pipe, solder, or flux used in the installation or repair of water service lines or water mains must be lead free. Pipe and fittings must not contain more than 0.25 percent lead on wetted surface.

1.2.2 Pipe

1.2.2.1 Ductile Iron Pipe Pipe shall be Pressure Class 350 with slip joints conforming to ANSI specifications A-21.5, latest designation and must meet ANSI/AWWA Standard C151. Pipe shall have an exterior coating of coal tar varnish and an interior cement mortar lining with bituminous seal coat conforming to ANSI A-21.4, latest designation. The seal coat for the lining shall not impair the potability or impart color, taste, odor, phenols, toxicity, caustic alkalinity, or have deleterious effect to the water. Each pipe shall bear a mark denoting the class to which it belongs.

1.2.2.2 Polyvinyl Chloride Pipe PVC is not allowed

1.2.2.3 Steel Casing Pipe Pipe shall be of steel construction of the size and wall thickness below with lengths called for on the approved plans.

Water Main Size	Casing Size*	Wall Thickness
8”	16”	.250

10”	16”	.250
12”	18”	.312
16”	24”	.375
18”	30”	.375
20”	30”	.375
24”	36”	.500

*Slip Joint D.I.P. Applications with Field Lok Gaskets or approved equal. Special considerations will be given per FRA and GDOT requirements.

1.2.2.4 Copper Tubing All service lines from the main to the meter shall be Type K copper tubing 1 in. and 2 in. and shall conform to AWWA Specification 7S-CR, ASTM Specifications B-88, and Federal Specification WW-T-799.

1.2.2.5 Service Line Encasement Service line encasement installed following curb and gutter construction shall be 2 in. (for 1 in. service line) or 4 in. (for 2 in. service line) polyethylene or approved equal. If encasement is placed prior to curb and gutter construction, class 200 PVC will be allowed.

1.2.3 Joints and Gaskets

1.2.3.1 Mechanical Joint Ductile Iron Pipe Mechanical joint ductile iron pipe shall be furnished with mechanical joint wedge action restraint, complete with rings, gaskets, bolts, and joint materials conforming to ANSI A-21.11, latest designation.

1.2.3.2 Slip Joint Ductile Iron Pipe Gaskets shall conform to ANSI A-21.11, latest designation. Use lubricants and gaskets of proper size, shape, and composition as recommended by the pipe manufacturer.

1.2.3.3 Polyvinyl Chloride Pipe C900 PVC shall be furnished with C900 wedge action restraint, complete with rings, gaskets, bolts, and joint materials conforming to ANSI A-21.11, latest designation. Non-C900 PVC shall be furnished with standard mechanical joint gland, and transition gasket.

1.2.3.4 Polyethylene Service Pipe (not permitted or allowed)

1.2.4 Pipe Fittings

1.2.4.1 Fittings Fittings shall be C153 Class 350 ductile iron conforming to ANSI A-21.1 and A-21.10. Fittings shall be epoxy resin lined and conform to ANSI A-21.11. Ductile iron fitting shall be as manufactured by the Ductile Iron Company of America, or equal. Fittings shall be complete with rings, bolts,

gaskets, etc. for joints. C110 fittings may be required for certain applications approved by FCWS.

1.2.5 Valves

All valves shall meet current AWWA Standards. Valves shall be placed a minimum of 1,200 ft. apart and at all intersections of water mains. In areas where customer density is large, valve spacing shall be decreased as directed by FCWS. All valves shall be left opening valves.

1.2.5.1 Valves 16 in. and Larger Valves 16 in. and larger shall be Resilient Wedge Type Gate Valve or Butterfly Type or approved equal for underground service with a 2 in. square operating nut. Connections shall be mechanical joint with wedge action retainer glands unless otherwise specified.

1.2.5.2 Valves 12 in. and Smaller Valves 12 in. and smaller shall be Resilient Wedge Gate Type or approved equal for underground service with a 2 in. square operating nut. Connections shall be mechanical joint with wedge action retainer glands unless otherwise specified .

1.2.5.3 Air Release Valves Air release valves shall be with check valve on vent to prevent return of air into water main. Air release valves shall be installed at designated areas at the direction of FCWS.

1.2.5.4 Backflow Preventers Backflow Preventers are required in all new construction and shall be in accordance with requirements.

1.2.5.5 Crosses, Tees and Tapping Sleeves Crosses and tees shall be C153 Class 350 ductile iron conforming to ANSI A-21.1 and A-21.10 with wedge action retainer gland. Nipple length between fittings and valves shall be 3 times the pipe diameter or minimum of 24 in. (whichever is greater). Tapping sleeves may be required for certain applications approved by FCWS.

1.2.6 Valve Boxes

Valve boxes shall be of the roadway extension type, of proper length and base size with suitable detachable cover, coated inside and out with asphalt paint. Valve extensions are required on all valves at trench depths greater than 6 ft. Boxes shall be telescopic, manufactured of ductile iron, and be 5 ¼ in. inside diameter“”. Cover shall be marked “Water” in raised cast letters. All boxes not located in roadway shall have a 24 in. diameter pre-cast concrete collar placed level around the top for protection.

1.2.7 Fire Hydrants Hydrants shall be M&H 5 ¼ in. MVO 129S, mechanical joint end connections , two 2 ½ in. hose nozzles and one 4 ½ in. steamer nozzle, left opening., and silver in color. M&H 5 ¼ in. 129S “iHydrant” may be required at the direction of FCWS.

1.2.8 Service Saddles Service saddles shall be nylon coated ductile iron with dual stainless steel straps.

1.2.9 Service Pipe Couplings-All shall be Ford or approved equal as follows:

Size	Ford
1 in.	C44-44
2 in.	C44-77

1.2.10 Corporation Stops shall be as follows:

Size	Ford
1 in.	F1000-4
2 in.	FB1000

1.2.11 Meter Stops shall be as follows:

Size	Ford
1 in.	B43-444W
2 in.	BF43-777W

1.2.12 Meter Coupling/Backflow Preventer shall be as follows:

Size	Watts	Ford	Conbraco
¾ in.	7-U4-2	BF43	40-3C5-5A
1 in.		HHC 38323	40-105-01
1 ½ in.			
2 in.		HHC 31323	40-108-01

1 ½ in. and 2 in. couplings should be elliptical flanged.

1.2.13 Service Meters

1.2.13.1 Residential Service Meters Residential service meters shall be Badger E-series 5/8 in. x ¾ in., 1 in., 1 ½ in., or 2 in. with digital register, volume measured in gallons, and Orion cellular endpoint. FCWS is responsible to furnish and install meters.

1.2.13.2 Non-Residential Meters Non-residential meter installations shall be Badger E-series 5/8 in. x ¾ in., 1 in., 1 ½ in., or 2 in. with digital register, volume measured in gallons, and Orion cellular endpoint. FCWS is responsible to furnish and install non-residential meters 2 in. and smaller.

Larger diameter applications shall be Badger E-series 4 in., 6 in., 8 in., 10 in., or 12 in. with digital register, volume measured in gallons, and Orion cellular endpoint. Large diameter meter procurement and installation shall be the responsibility of the applicant.

1.2.14 Residential Backflow Preventers

Dual check valves shall be installed by FCWS after all new 5/8 in. x ¾ in. and 1 in. residential meters as specified in paragraph 1.2.12. Double-Check Assembly shall be installed by FCWS after new 1 ½ in. and 2 in. residential meters.

1.2.15 Non-Residential Backflow Preventers

These shall be installed on all connections to the System water main. The backflow prevention device shall generally be a Double-Check Assembly type. The actual selection of the device to be installed shall be approved on a case-by-case basis. The device shall be installed in the meter vault, with minimum of 24 in. separation in all directions to allow access and testing, served as applicable for the type device (refer to backflow prevention standards). Dedicated fire mains shall be contained by an approved Double-Check Assembly (minimum requirement). FCWS shall fully meter any dedicated fire main and require appropriate backflow prevention as conditions warrant. Any bypass shall also be required to have an approved backflow preventer installed with minimum of a 24 in. separation in all directions to allow access and testing.

1.2.16 Meter Boxes and Enclosures

1.2.16.1 Residential Meter Boxes Meter boxes and lids for 5/8 in. x ¾ in. or 1 in. meters for residential use shall be shall be domestically manufactured, locatable, made of polyethylene plastic/composite with a 2 in. inset endpoint opening, in the lid, having nominal lid opening dimension of 18 in. L x 10 in. W x 12 in. H or approved equal. FCWS may require differing material and Tier rating depending on specific application. See Detail.

1.2.16.2 Irrigation Meter Boxes Meter boxes and lids for irrigation use shall be domestically manufactured, locatable, made of polyethylene plastic/composite with a 2 in. inset endpoint opening in the lid. FCWS may require differing material and Tier rating depending on specific application. See Detail.

1.2.16.3 Non-residential Meter Enclosures Non-residential meter enclosures shall be domestically manufactured, locatable, made of polyethylene plastic/composite with a 2 in. inset endpoint opening in the lid All enclosures shall meet specifications as outlined by ANSI 77 and AASHTO H-20 for use in the specific application and as approved by FCWS. Covers shall have a minimum coefficient of friction of 0.5. See Detail.

Meter Enclosures may also be located in a vault with a water proof, lockable, 36 in. x 36 in. minimum aluminum access hatch. Vault shall have a sleeved 1 in. hole bored away from entry steps to allow meter endpoint wiring to pass through and into endpoint enclosure. See Detail.

Endpoint enclosures shall be domestically manufactured, locatable, made of

polyethylene plastic/composite with a 2 in. inset opening, in the lid, having nominal lid opening dimension of 18in. L x 10in. W x 12in. H or approved equal. FCWS may require differing material and Tier rating depending on specific application.

1.2.17 Manhole Covers, Frames, and Steps Manhole covers, frames, and steps shall be free from scale, lumps, blisters, sand holes, plugs, or other defects. Covers and Frames shall be tough, strong-even grained, Griffin type "R" Nennah, Higgins, or approved equal.

1.2.18 Concrete Manholes Concrete manholes shall conform to ASTM-C-478, latest designation.

1.2.19 Manhole Joints and Gaskets Manhole joints shall be "O" ring gaskets. Ring shall be sealed with Igas, Sika Seal, or equal. Joints shall also be mortar plastered inside and outside.

1.2.20 Valve Markers Valve markers shall be pre-cast reinforced concrete, 4 in. x 4 ft. with four #2 reinforcing bars. Markers shall be stamped "V".

1.2.21 Underground Warning Tape Detectable Underground Warning Tape shall be placed 18 to 24 inches above the water main. Tape shall be 5-mil with aluminum backing, acid and alkali resistant polyethylene, 6 inches wide and bearing ~~a~~ the continuous message: "Caution Water Line Buried Below."

2. GENERAL CONSTRUCTION REQUIREMENTS

2.1 General

2.1.1 The following shall establish general construction requirements for installation, maintenance, and repair of FCWS infrastructure, as well as clearing and grubbing rights-of-way and easements, and paving and grassing of areas behind curb lines.

2.1.2 Material specification submittals are required for approval by FCWS for each project prior to construction.

2.1.3 It shall be the responsibility of the Contractor to notify all utility companies prior to any excavation.

2.1.4 The Contractor shall notify FCWS 48 hours prior to beginning construction. FCWS shall request a pre-construction conference with the.

2.1.5 All construction shall be subject to inspection by authorized representatives of FCWS at any time. No dirt cover shall be placed on any portion of completed water system infrastructure pending inspection and approval by FCWS.

2.1.6 It shall be the responsibility of the Contractor to coordinate all construction and ensure the adherence of these standards. Any work not meeting these standards shall be corrected immediately by the Contractor after notification by FCWS.

2.2 Erosion Control and Sedimentation

The Contractor shall be responsible for maintaining proper control measures on the

construction site and adjacent areas for the duration of the project. Sediment control barriers, temporary sediment traps, sediment basins, grass, mulch, etc. will be required to adequately control erosion and prevent sedimentation. All materials and measures shall be in accordance with procedures of the State Soil and Water Conservation Committee *A Manual for Erosion and Sediment Control in Georgia*.

2.2.1 Clearing and Grubbing

The clearing and disposal of all trees, bushes, shrubbery, and miscellaneous debris as outlined in project plans and specification shall be the sole responsibility of the Contractor subject to the approval of FCWS.

2.2.1.1 Clearing Clearing operations shall be performed to prevent damage to existing trees. Safety of employees and others should be considered throughout the operation.

2.2.1.2 Grubbing It shall be the responsibility of the Contractor to remove all debris from fill material in areas to be excavated, areas to be striped of topsoil, and areas to receive fill.

2.2.1.3 Disposal All cleared and grubbed material shall be disposed of in a manner satisfactory to FCWS. Burning shall not be allowed unless specifically permitted by the County Fire Marshal.

2.2.2 Bench Marks and Monuments All established bench marks, property pins, monuments, and other reference points shall be maintained; if destroyed or disturbed, they shall be replaced as directed by FCWS.

2.3 Traffic Control

Operations shall be conducted so that there will be a minimum of interference with or interruption of traffic upon and of the roadway. This applies to both the initial installation, and the continuing maintenance and operation of facilities. Whenever construction is conducted along a highway, utility construction signs shall be provided at approximately 1,500 ft., 1,000 ft., and 500 ft. along the affected roadway prior to construction. In the case of single lane closings, a flagman shall also be required on each side of the construction side to direct traffic. Lane closings shall not be permitted without prior appropriate jurisdictional and FCWS approval. Reflective, 36-inch traffic cones shall also be placed along the closed lane, at a distance, in feet, not to exceed the maximum speed limit, in miles per hour, of the affected roadway. Road closings shall be protected by effective barricades and obstructions shall be lighted during hours of darkness. Flagmen and suitable warning signs shall be required as may be required to properly control and direct traffic. Safety of both motorists and the public shall be always provided. All traffic control must substantially conform to the federal MUTCD.

3. WATER SYSTEM CONSTRUCTION STANDARDS

3.1 Installation Procedures

3.1.1 General The following shall establish the general construction requirements for installation, operation, and maintenance of FCWS infrastructure. It shall be understood that these standards reflect the minimum requirements necessary for final acceptance by FCWS. Contractors shall adhere to all applicable OSHA regulations.

3.1.2 It shall be the contractor performing construction to notify all utility companies prior to any excavation and utilize 811 for utility locating.

3.1.3 The contractor shall schedule a pre-construction conference with FCWS and their sub-contractor at least a minimum of 5 business days prior to beginning construction.

3.1.4 FCWS shall be notified 48 hours (two full business days) prior to beginning construction.

3.1.5 All construction shall be subject to inspection by authorized representatives of FCWS at any time. No dirt cover shall be placed on any portion of water system infrastructure prior to inspection and approval by FCWS.

3.1.6 All construction shall adhere to this Standards and Specifications Manual. Any work not meeting these standards shall be corrected immediately after notification by FCWS.

3.1.7 .Trench Construction

3.1.7.1 Excavation All work performed in excavations shall be conducted in such a way as to ensure worker safety. Safe practices shall conform to OSHA regulations for working in confined spaces, especially as they pertain to excavations and the protective systems they require. An excavation shall consist of removing earthwork for the satisfactory placement of water mains and appurtenances. This includes vegetation, brush and debris, soil, rock, pavements, etc. for the intent and purpose of constructing the work required lines and grades, including sheathing, bracing and dewatering excavations, trench bed stabilization, and such other incidentals necessary to comply with plans and specifications. Refer to OSHA Trench Safety regulations.

3.1.7.2 Trenching A trench may be open cut from the ground surface where designated on the plans or approved by FCWS. Boring may be required to protect certain surface improvements and to satisfy requirements of GDOT and/or the railroad companies. Minimum width shall be nominal diameter of the pipe plus 12 in. and minimum cover on pipe shall be 48 in. Bottom of trenches shall be hand dressed so that the pipe has even bearing on loose granular soil, minimum of 4 in. in depth and free from rocks and debris throughout its entire length between bell holes. ,. Bell holes of sufficient size for making perfect joints shall be provided. Changes in grade shall be gradual.

Except as specified for jack/bore procedures under pavements and railroads, all excavation shall be made by open cut, unless otherwise authorized by FCWS. All work within right-of-way of railroads and state highways shall be subject to an approval permit for construction (processed through the Owner), and all rules and regulations of those authorities shall be required. It shall be the responsibility of the Contractor to prepare the applications for the required permits.

It is preferable that all trenching be done by a trencher made specifically for such purposes; however, a backhoe or other equipment will be acceptable.

Where excessive excavation results, the Contractor shall construct special foundations or use special backfill methods. Over-depth excavation will be required to remove material unsuitable to support the pipe.

3.1.7.3 Alignment Alignment shall be as indicated on the approved plans. When an obstruction is encountered, make necessary changes in alignment or grade as approved by FCWS. Injury or damage to adjacent structures, water, sanitary sewer, gas line, or other utilities shall be avoided.

3.1.7.4 Sheathing and Bracing When trench sides must be kept as nearly vertical as possible, it may be necessary to sheath, brace, or support trench sides.

When trench depth excavation exceeds 5 ft., sheathing and bracing shall be required to protect the pipe crew from injury, irrespective of the visible judgment of soil conditions by the Contractor. In event the sheathing cannot be removed without injury to the pipe of adjoining structures, it shall be left in place or cut, and the upper part then removed. All trenching, sheathing, bracing, side sloping, etc. shall conform to the regulations of OSHA. Side sloping in accordance with OSHA regulations is acceptable where conditions permit. It shall be the responsibility of the Contractor to ensure that all safety measures are met.

3.1.7.5 Stabilization and Bedding Subgrade stabilizer is to be used where required by FCWS. In soft ground, quicksand, or in areas where soil conditions are such that pipe alignment or grade is endangered, the trench shall be excavated below grade and then brought back to grade with stone stabilizer material. Stone stabilizer material shall be ASTM #57 crushed stone. Depth of stone shall be 6 in. minimum or as directed by FCWS.

3.1.7.6 Excavated Material All excavated material shall be placed on one side of the

trench in a manner to prevent blockage of surface drainage patterns and traffic. It shall be so placed as to not endanger the work, always allowing free access to the trench and all existing utilities publicly or privately owned, particularly fire hydrants. Spoil placement shall conform to the regulations of OSHA .

Where necessary, fencing or retainers shall be erected to retain the excavated material within narrow limits to prevent obstruction of traffic and/or encroachment upon pavements or other areas restricted by property owners. Included shall be protection of hedges, walls, flower/rock gardens, shade trees, fruit trees, and vegetable gardens. Satisfactory provisions shall be made for travel on sidewalks, crosswalks, streets, railroads, bridges, private ways, railings, barriers, etc. All drains, gutters, culverts, and sewers for surface drainage shall be kept open. If it is evident they must be temporarily closed, then all requirements of the Owner must be met prior to such closing.

Excavated material shall not, in any case, be placed upon the pavement surfaces of public roads or streets owned by the city, county, or state unless prior approval is given by the proper Department having jurisdiction. In periods between dusk and daylight, and during inclement weather when visibility is limited, caution lights and barricades shall be placed at each end along the excavated material. Each building, wall, fence, pile, bridge, railroad, sidewalk, driveway, tree, lawn, garden, or any other improvement encountered is to be properly protected from injury. In event of damage during the work, prompt repairs satisfactory to FCWS and the property owner shall be made by the Contractor.

3.1.7.7 Limit of Open Trench

The length of the trench to be opened or the area of surface to be disturbed and restored at any one time shall be limited to that which the Contractor can complete in one day's work, or less in event of apparent inclement weather, or not to exceed 100 ft.

It shall be the Contractor's responsibility to provide adequate barricades, warning signs, flagmen, flashing lights, etc. as necessary to safeguard the public. All trenches must be backfilled by the close of each workday.

3.1.7.8 Disposition of Water Keep trenches free of water. The Contractor shall furnish all equipment and labor necessary to remove any water found or accumulated in the trench. Other excavation shall be kept clear of water while

pipe is being laid or concrete or masonry is being placed. No pipe shall be laid in water, and water must not be permitted to flow over or rise upon any masonry or pipe until the work has been accepted to prevent flow-in of silty water, thus preventing buildup of foreign matter in the pipe. All water pumped or bailed from the trench or other excavation must be conveyed in an acceptable manner to a suitable point of discharge (i.e. a stream or ditch) where it shall not cause injury to public health, or public or private property, or to work under construction or previously completed to the street surfaces, or to cause interference with the use of streets by the public. Sediment control barriers, temporary sediment traps, sediment basins, grass, mulch, etc. will be required to adequately control erosion and prevent sedimentation following procedures of the State Soil and Water Conservation Committee A Manual for Erosion and Sediment Control in Georgia.

3.1.7.9 Excavation Near Roads and Railroads Special care must be exercised in trenching near roads and railroads to protect against collapsing of the roadbed structure. Each situation must be evaluated on account of varying soils. Coordination with GDOT, the local jurisdiction, and/or FRA shall be made prior to excavation.

3.1.7.10 Subsurface Obstructions In excavating, backfilling, and laying pipe, care must be taken not to remove, disturb, or injure any water, sewer, gas, electric, telephone, or other conduits or utilities without prior approval of the owner of the utility encountered, including private utilities.

If necessary, to perform the intended work, the Contractor shall sling, shore up, and maintain such utilities in operation and promptly repair any damage done to them. Before final acceptance of the work, all such utilities shall be made “equal to or better” than prior to construction.

It shall be the Contractor’s responsibility to contact 811 to locate underground utilities In event of damage to the utilities, the Contractor will promptly notify the utility owner (public or private) and must assume full responsibility.

In event pipe or conduits providing service to adjoining buildings are broken or damaged to some questionable degree of service, the Contractor shall immediately make repairs at their own expense or otherwise be liable for repair costs incurred by others. The utility owner reserves the right to make repairs caused by the Contractor without prior notice. Removal or relocation of a utility encountered may be done upon prior approval by the utility owner

given directly to the Contractor.

3.1.7.11 Rock Excavation Remove all rock to below 6 in. grade of trench and build back trench bottom with loose granular soil, minimum of 4 in. in depth and free from rocks and debris. When necessary, blasting operations shall be conducted in strict accordance with all existing local and state ordinances and regulations. Blasting shall be conducted by persons licensed to use explosives.

3.1.7.12 Where blasting is to be conducted along the right-of-way of a GDOT roadway, the Contractor shall provide FCWS all necessary information to submit blasting permit applications to GDOT for approval. Blasting may occur only after FCWS receives the GDOT permit.

3.1.8 Pipe Installation

3.1.8.1 Inspection Before Laying Pipe All pipe shall be subject to inspection prior to installation. Only new pipe with smooth surfaces (interior and exterior), free from cracks, flaws, blisters, etc. shall be used.

3.1.8.2 Handling Pipe shall not be dropped..

3.1.8.3 Laying Pipe shall be swept clean of trash or dirt before lowering into the trench. After the pipe has been cleaned, it shall be lowered into the trench in such a manner that the pipe shall not be damaged. Each joint shall be lined and brought to a uniform grade upon a trench bottom. Holes for couplings or bells shall be prepared with a minimum clearance of 2 in. Pipe shall be laid in straight lines on uniform grades and shall not be deflected either vertically or horizontally in excess recommended by the manufacturer. Before stopping work each day, all open pipe ends shall be closed with a proper size plug. Secure pipe from floating.

3.1.8.4 Joining

3.1.8.4.1 Mechanical Joints Clean spigot and bell of foreign material and apply a food grade lubricant solution before slipping gasket and gland over spigot end of pipe. Follow manufacturer guidelines for installation. Tighten bolts with a torque wrench to recommended tightness by the manufacturer.

3.1.8.4.2 Slip Joints Jointing shall be made with rubber gaskets and lubricant furnished by the manufacturer in strict accordance with the manufacturer's recommendations. Prepare field cut pipe by filing 1/8 in., 30 degree bevel on pipe end to avoid injuring gasket.

3.1.8.4.3 Threaded Pipe Wire-brush threads, clean and apply an approved joint compound. Tighten until joint is snug and watertight.

3.1.8.4.4 Polyvinyl Chloride Pipe PVC shall not be allowed without prior

approval from FCWS.

3.1.8.4.5 Polyethylene Pipe All connections shall be in accordance with manufacturer's recommendations.

3.1.8.4.6 Restrained Joints All restrained joints shall be installed in strict accordance with manufacturer's recommendations.

3.1.8.5 Connections to Existing Mains Connections to existing mains shall be governed by all applicable provisions of these specifications. The Contractor shall locate, excavate, and cut the existing main, remove the section of old pipe, rework the trench, connect the new pipe with the old, and set necessary appurtenances as shown on the approved plans. All necessary precautions shall be taken to brace valves and mains under pressure to prevent blow outs.

Connections to existing mains shall be made at the locations shown on the construction plans or as directed by FCWS. Connections to existing mains, other than service lines, will require a tee with three valves – nipple length for tie-in with sleeves shall be three times the pipe diameter. Alternate configuration may be allowed with approval from FCWS. Tie-ins requiring existing water mains to be shut down shall be scheduled by FCWS trying to affect a minimal number of customers. Valve operation shall be performed by FCWS; however, the Contractor may operate valves at the specific direction and approval of FCWS.

When an existing main has been cut, the work of making a connection shall proceed, without interruption, until completed.

Where new construction is required over existing piping, a steel, reinforced grade beam at least 4 ft. wide and 2 ft. deep is required.

3.1.9 Trenching and Backfilling The trench shall be dewatered prior to being backfilled with loose native earth that is free of clods, large stones, debris, or other objectionable material. In traffic areas, particularly roads, streets, parking lots, and walkways, the full depth of backfill shall receive thorough tamping in 6 in. lifts to a minimum of 98 percent standard proctor density. FCWS may request that soil compaction test be performed by an outside testing consultant. Particular attention is directed to driveways, walkways, and areas subject to mail delivery where prompt backfilling is required to prevent a public safety hazard.

In all areas of construction, the excavated material shall be cleared from the premises and the completed work left in a neat and acceptable condition, including broken

pavement and other matter not classified as earth.

Trenches and other excavated areas completed by the Contractor shall be kept in a good and safe condition during the maintenance period following acceptance by FCWS.

3.1.9.1 Timing

Trenches shall be backfilled as soon as practical after laying and jointing the pipe. Provisions for traffic as specified under “Excavated Material” must be adhered to.

3.1.9.2 In Non-Traffic Areas

Carefully refill with suitable material in layers not exceeding 6 in. in thickness and thoroughly tamp with mechanical tamps to 1 ft. above the top of the pipe. The remainder of the trench may be backfilled without tamping except for areas around valves and fire hydrants, which require tamping as specified under the installation of those items. The backfill shall be rounded over the trench to provide allowance for future backfill settlement.

3.1.10 Highway and Railroad Crossings Install in strict accordance with railroad or State Highway requirements and all applicable provisions of the plans and specifications. Install casing pipe by jacking, boring, or tunneling in strict accordance with the requirements of GDOT and FHWA or railroad. Diameter of the hole shall not exceed the outside diameter of the pipe. Seal ends of casing in accordance with GDOT or railroad requirements.

3.1.11 Casing

3.1.11.1 Ductile Iron Casing Casing pipe for ductile iron shall be as specified and joints shall be welded. Carrier pipe shall be ductile iron with mechanical joints as specified. Welds for steel pipe shall be filled arc-weld type meeting American Welding Society and American Institute of Steel Construction Standards. Welds shall be continuous, watertight, and develop a greater strength than the pipe.

3.1.11.2 Fusible PVC Casing… Fusion technician(s) shall be qualified by the pipe supplier to install fusible polyvinylchloride (PVC) pipe of the type(s) and size(s) specified. Qualification shall be current as of the date of fusion installation. Inside and outside of welds shall have all rust, mill scale, flux flumes, oxides, grease, and oil removed by chipping and wire brushing immediately before applying touch-up coating. All weld and scratched areas shall be recoated with coal tar material of same type and thickness as original coating. Outside shall be coated immediately after welding. Carrier pipe will be pushed into casing with stainless steel casing spacers to avoid damaging

coating in casing.

3.1.12 Uncased Bores for Driveways Uncased bores for lines under paved driveways shall be in strict accordance with GDOT Standard Specifications, Shore, brace, and maintain all safety measures to avoid danger or damage.

3.1.13 Asphalt Concrete Paving Replacement (Where Open Cut is Allowed)
Materials and construction methods shall conform to GDOT Standard Specifications, latest edition, and typical details of these standards.

3.1.13.1 Removal Existing pavement shall be sawed.

3.1.13.2 Excavation and Backfill Excavation and backfill shall be in accordance with this Section.

3.1.13.3 Base Base shall be 8 in. of "High Early Strength" concrete in accordance with Section 430 of the *Georgia Standard Specifications for Construction of Roads and Bridges*.

3.1.13.4 Pavement Pavement shall be hot mix asphaltic concrete either Type "E" or "F", and shall be in accordance with Section 400 of the *Georgia Standard Specifications for Construction of Roads and Bridges*.

3.1.14 Valves and Fittings Valves and fitting shall be installed as shown on the approved plans or directed by FCWS. Valves shall be set plumb and on firm bearing. Each underground valve shall include a valve box placed vertically to allow operation of the valve. All valve boxes shall be plumb at final grade and risers will not be allowed. Backfill around valves boxes shall be tamped in 6 in lifts to ensure proper compaction.

Valve boxes not located in roadways shall have a pre-cast concrete collar placed level around the top for protection. When valves are approved for installation in a roadway, the valve boxes shall be installed with single, reinforced concrete valve pad to encompass with # 4 rebar, 8 in. on center each way. All valves and fittings shall be secured with a method of restraint approved by FCWS.

3.1.15 Setting Valve Markers Set vertically in the ground with 30 in. to 36in. projecting and within 2 feet of the valve box.

3.1.16 Plugging Dead Ends All dead ends of pipes, tees, or crosses shall be plugged or capped. Installation of plugs or caps shall be as specified for similar pipe and fittings. A fire hydrant assembly shall be installed on the end of the pipe as directed by FCWS.

3.1.17 Pipe Restraint Requirements All bends, tees, ends of mains, and crosses shall be restrained as indicated on the plans or as directed by FCWS. All restrained joints shall conform to manufacturer's recommendations.

3.1.18 Thrust Blocking Requirements Thrust blocking shall be minimum 3000 psi concrete

and is required on all bends and tees. Ply sheeting shall be used to cover fittings and bolts. Calcium shall be required additive per the direction of FCWS

3.1.19 Fire Hydrants Fire hydrants shall be located and installed as shown on the plans, or as directed by FCWS, and set plumb from 30 in. to 36 in. of hydrant exposed above the ground. Minimum valve opening shall be 5 ¼ in. Minimum height of hydrant flange from final grade is between 2 in. – 6 in. Fire hydrants are to be located on the right-of-way line and shall have a gate valve installed between the main and the fire hydrant. Valve and hydrant shall be restrained to the satisfaction of FCWS. The contractor will furnish adjustable anchor couplings as required to maintain these dimensions. Hydrant extension kit will only be allowed if approved by FCWS prior to installation. Fire hydrants serving commercial, industrial, or multi-family residential areas shall be located at intervals not to exceed 400 L.F. along the street right-of-way (Reference Fayette County Code Section 12-90 & 1-91).

Foreign matter shall be removed from the interior of hydrants, stuffing boxes tightened, and the valve operated to assure they are in working order before installation.

Fourteen cubic feet of gravel shall be placed around base of hydrants to ensure drainage. Tie rods or hydrant tees and anchor couplings shall be installed and backfill shall be thoroughly tamped in 6 in. lifts around hydrants to ensure proper compaction.

3.1.20 Services

3.1.20.1 Service Connections Corporation stops and curb stops shall be used on all service connections. Connections to main lines shall require a double strap saddle. Use approved tapping machine to make all taps.

3.1.20.2 Service Lines Service line conduit and/or piping shall be installed at a minimum depth of 4 ft. Long side services installed in new subdivisions shall be installed by casing service lines in 2 in. conduit. Conduit may be installed under proposed streets either by open cut prior to curb and gutter installation, by mechanical boring from beyond back-of-curb to back-of-curb following curb installation, or by other acceptable means preapproved by FCWS.

3.1.20.3 Setting Meters and Meter Boxes Meter boxes shall be located as directed by FCWS, installed plumb, and backfill thoroughly tamped. Meter and Stop will be installed in box as shown in Details. Any meter boxes damaged during construction shall be replaced by Contractor. The location of and meters shall be marked in the field by sawing a “W” in the curbing and placing a 2 in. PVC pipe vertically and adjacent to an iron pin immediately

behind the curb or at the edge of the pavement. The 2 in. PVC pipe should extend 3 ft. above final grade and painted blue as per standardized color. Curb stops shall be full port and placed inside meter boxes at the end of all service lines.

3.1.20.4 Cross Connections Cross connection to any other water supply is strictly prohibited.

3.1.21 Cleanup and Property Restoration Upon completion of backfilling, all surplus earth, rock, or other materials shall be moved and disposed of offsite in a timely manner. All streets, driveways, monuments, mailboxes, or other private property damaged by the Contractor or Sub-Contractors shall be cleaned up and restored to their original condition as soon as possible.

3.2 Hydrostatic Testing

3.2.1 Expelled Air Before applying the specified test pressure, all air shall be expelled from the pipe. If hydrants, blow-offs, or air release valves are not available at the high elevations, the Contractor shall make the necessary taps at points of highest elevation before the test is made and insert plugs after the tests have been completed. Any cracked or defective pipe, fittings, valves, or hydrants discovered in consequence of this pressure test shall be removed and replaced with sound material and the test shall be repeated until satisfactory to FCWS.

3.2.2 Testing Required After all piping has been placed, each section shall be tested in the presence of the FCWS Inspector and tests shall be continued until all leaks have been made tight to the satisfaction of the FCWS Inspector. The Contractor shall furnish all water pumps, gauges, bulkheads, and other materials necessary to conduct the test as herein required. Every precaution must be taken to valve off or otherwise protect control equipment, in or attached to the pipe line, to prevent damage or injury thereto. All piping shall be hydrostatically tested at a pressure of at least one and one-half times the rated pressure of the pipe for 15 minutes, then at the rated pressure of the pipe for two hours.

3.2.3 Allowable Leakage Test Following the 15 minute pressure test, the pressure loss shall be recorded and the pressure dropped to the rated pressure of the pipe for the additional two hours.

At the end of the two-hour period, a leakage test shall be conducted as follows. The pipe being tested shall be refilled, monitoring the amount of water required until the original pressure rating is obtained. The maximum leakage allowed will be 10 gallons per inch diameter, per mile, per day.

3.2.4 Water for Testing

Prior to receiving water for hydraulic testing, FCWS shall be notified about the desire

for testing and disinfection. A temporary fill line shall be extended from an existing active water main to the water main being filled. This line shall be equipped with a meter and a backflow prevention device as specified herein. FCWS shall provide an inspector to operate all active water valves and witness tests and disinfection procedures. A contractor shall not operate active water valves under any circumstances.

3.3 Disinfection of Water Lines

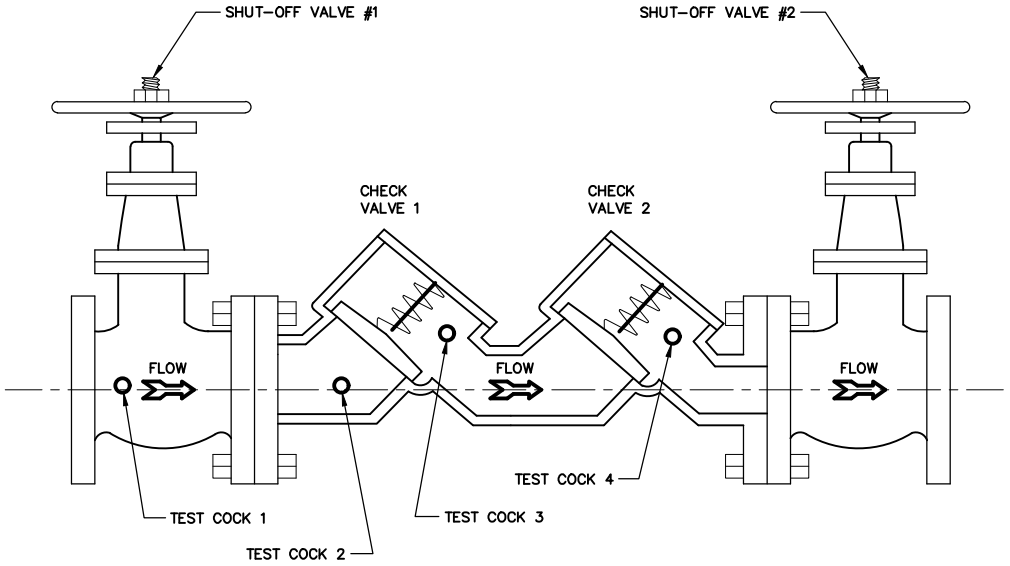
3.3.1 General

Disinfection of water lines and the disposal of heavily chlorinated water (following disinfection) must be accomplished in accordance with the latest edition of AWWA Standard C651.

3.3.1.1 Notification of Testing FCWS shall be notified 48 hours minimum before filling lines for disinfection.

3.3.1.2 Residual Testing After wasting the heavily chlorinated water in an approved manner and final flushing, water samples shall be taken from the water main and shall be tested in the FCWS lab. If water samples tested in a third party state approved lab, copies of written lab results must be received by FCWS prior to installation of any water meters.

DOUBLE CHECK VALVE BACKFLOW PREVENTERS (DCV) :
DOUBLE CHECK VALVES AND DUAL CHECK BACKFLOW PREVENTERS MAY BE USED AS PROTECTION FOR ALL PRESSURE CONNECTIONS THROUGH WHICH POLLUTANTS MIGHT ENTER THE POTABLE WATER STSTEM IN CONCENTRATION THAT COULD CONSTITUTE A NUISANCE OR BE AESTHETICALLY OBJECTIONABLE, SUCH AS AIR, STEAM, OR OTHER MATERIALS THAT DO NOT CONSTITUTE A HEALTH HAZARD.



FAYETTE County Water System

245 McDonough Road
Fayetteville, GA 30214
770.320.6020

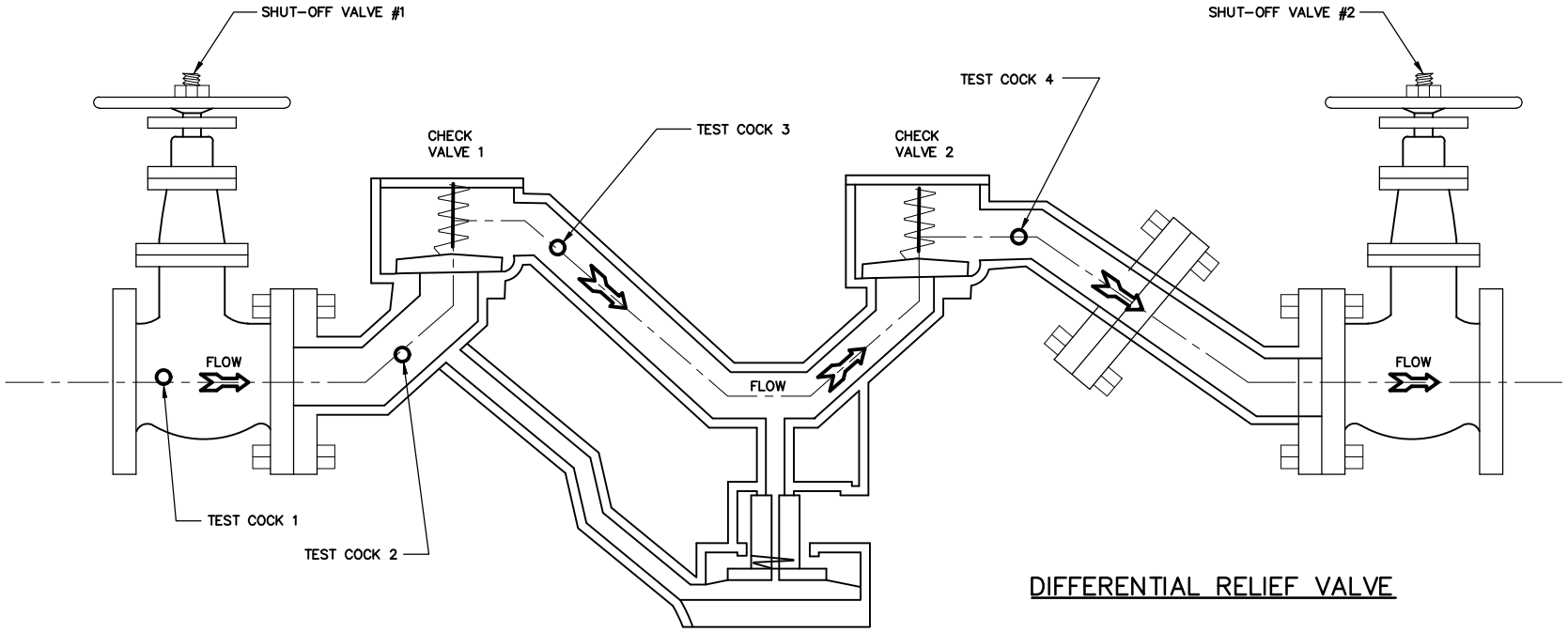
DOUBLE CHECK VALVE BACKFLOW PREVENTERS

BFP-0001

DESIGNED: J.F.C.	DRAWN: B.J.J.
DATE: 12/2024	SCALE: N.T.S.

BY	REVISIONS	DATE

FIG. 5
REDUCED PRESSURE ZONE BACKFLOW PREVENTERS (RPZ):
SHALL BE USED ON ALL PRESSURE CONNECTIONS THAT SHALL BE SUBJECT TO BACK PRESSURE, AND WHERE THERE IS THE POTENTIAL FOR CONTAMINATION AND HEALTH HAZARD.



DIFFERENTIAL RELIEF VALVE

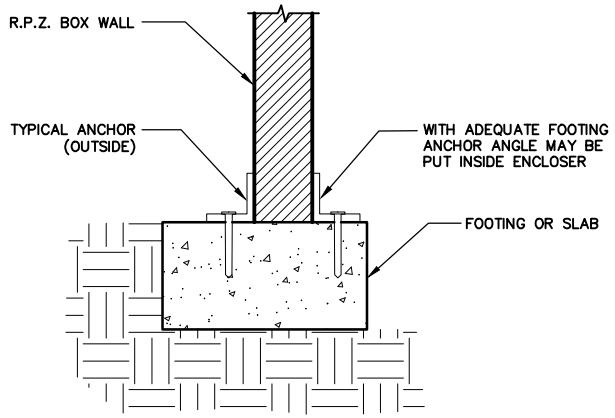
FAYETTE County Water System
245 McDonough Road
Fayetteville, GA 30214
770.320.6020

REDUCED PRESSURE BACKFLOW PREVENTER

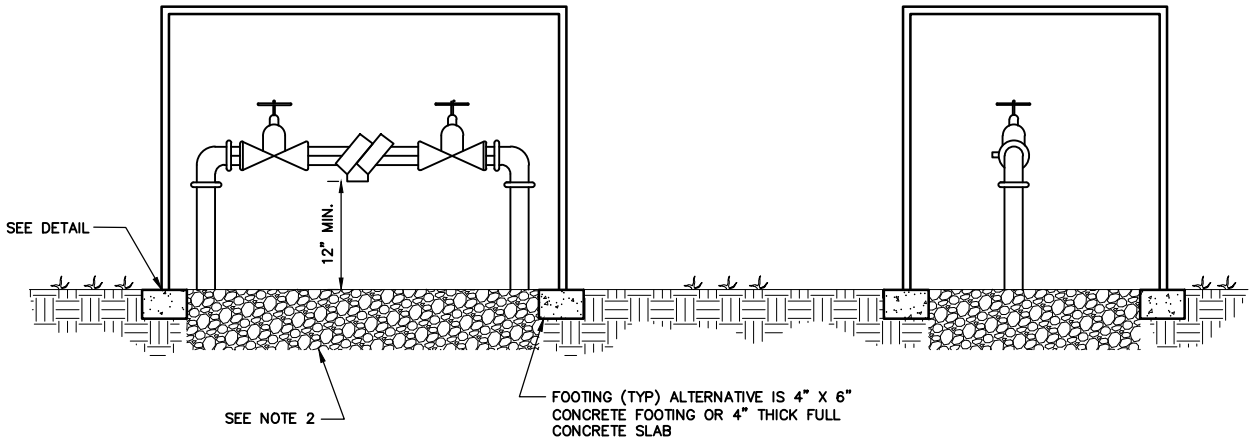
BFP-0002

DESIGNED: J.F.C.	DRAWN: B.J.J.
DATE: 12/2024	SCALE: N.T.S.

BY	REVISIONS	DATE



FOOTING OR CONCRETE SLAB (R.P.Z. BOX)



R.P.Z. INSTALLATION DETAIL

NOTES:
1. BOX SHOULD BE HEATED OR INSULATED TO PROTECT FROM FREEZING.
2. IF A PERIMETER FOOTING IS USED, THERE MUST BE GRAVEL COVERING THE ENTIRE BOTTOM OF THE ENCLOSER A FULL (12") TWELVE INCHES DEEP.

FAYETTE County Water System

245 McDonough Road
Fayetteville, GA 30214
770.320.6020

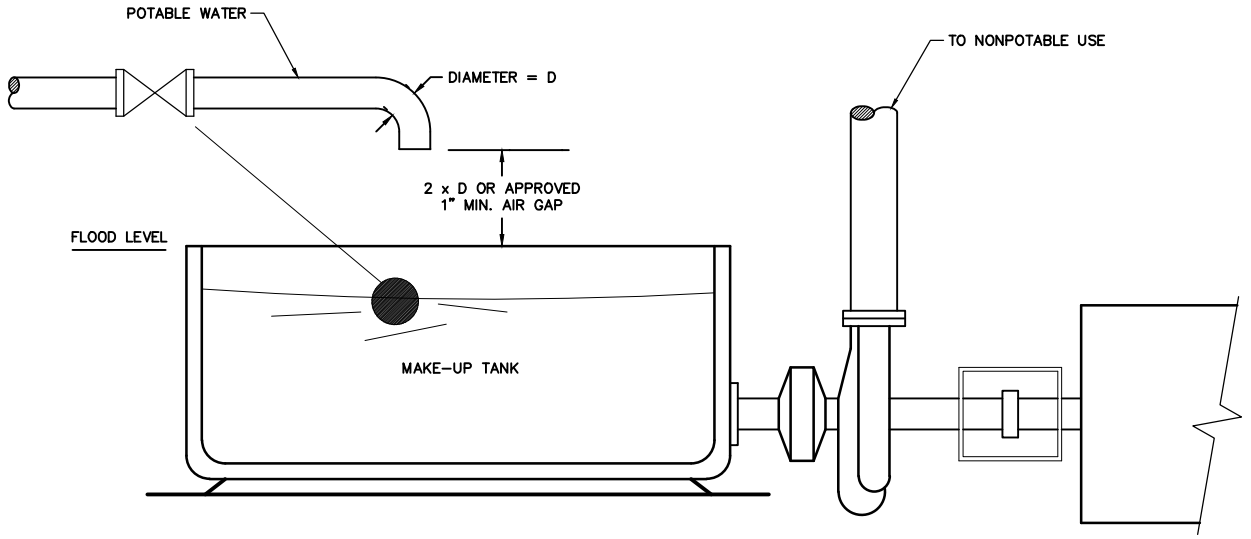
REDUCED PRESSURE ZONE ASSEMBLY INSTALLATION

BFP-0003

DESIGNED: J.F.C.	DRAWN: B.J.J.
DATE: 12/2024	SCALE: N.T.S.

BY	REVISIONS	DATE

AIR GAP (AG): THE PHYSICAL SEPERATION BY AN AIR SPACE OF THE POTABLE WATER SUPPLY AND AN OPEN VESSEL THAT CONTAINS NONPOTABLE FLUIDS. THE VERTICAL DISTANCE BETWEEN THE SUPPLY PIPE AND THE FLOOD LEVEL RIM SHOULD BE TWO TIMES THE DIAMETER OF THE SUPPLY PIPE, BUT NEVER LESS THAN 1 INCH.



FAYETTE County Water System
245 McDonough Road
Fayetteville, GA 30214
770.320.6020

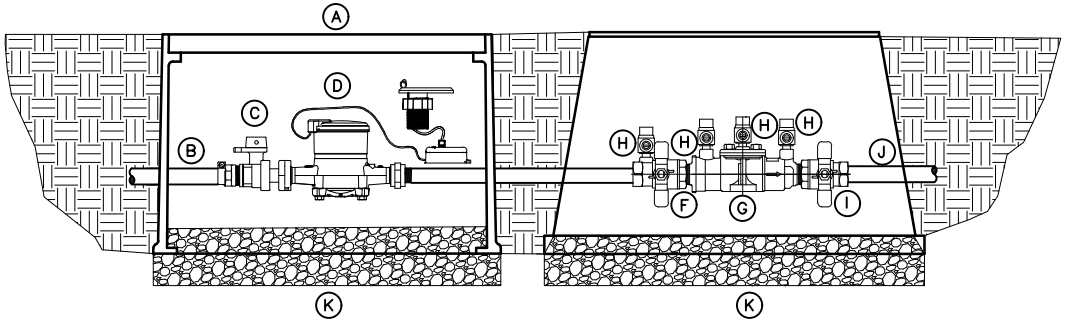
AIR GAP DETAIL

BFP-0004

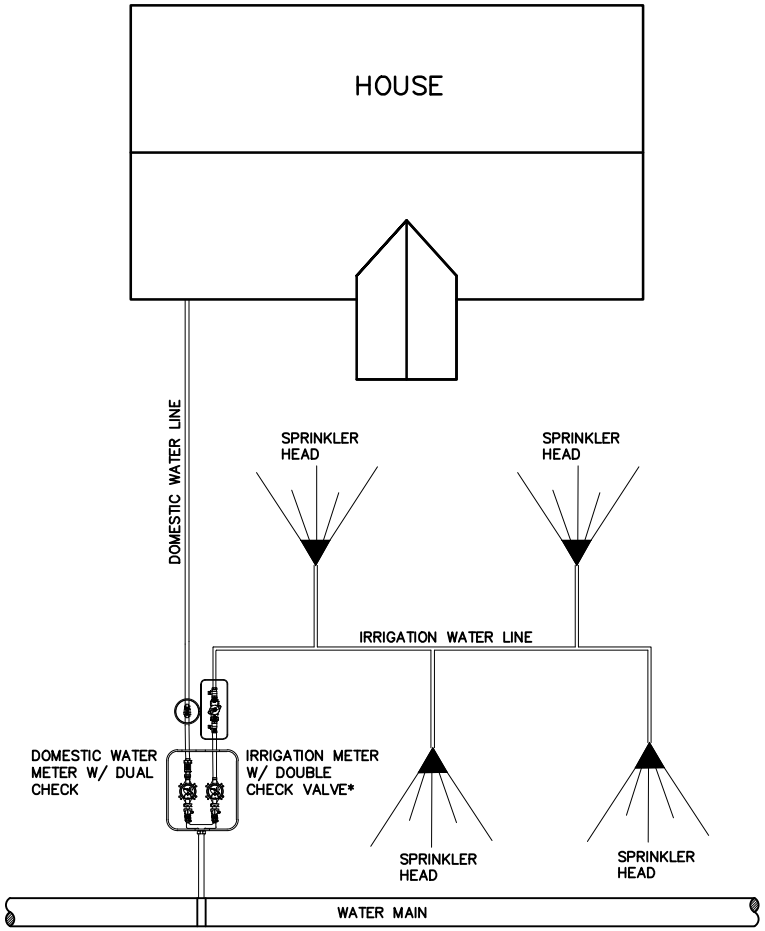
DESIGNED: J.F.C.	DRAWN: B.J.J.
DATE: 12/2024	SCALE: N.T.S.

BY	REVISIONS	DATE

IRRIGATION METER PLAN VIEW



A. LOCATABLE POLYPROPYLENE LID AND BODY WITH TWO 2" HOLES FOR TOUCH READ CAPABILITY (DEVELOPER INSTALLED)
B. TYPE K COPPER SERVICE LINE CONNECTION (DEVELOPER INSTALLED)
C. CURB STOP–FORD B43–332W OR APPROVED EQUAL (DEVELOPER INSTALLED)
D. 3/4" BADGER G2 ULTRASONIC WATER METER OR APPROVED EQUAL
E. DUAL CHECK –WILKINS 700 IUFMX34UF OR APPROVED EQUAL
F. 3/4" WATTS BRASS FBVSSTH BALL VALVE W / STAINLESS STEEL "T"
G. DOUBLE CHECK VALVE
H. TEST COCKS
I. 3/4" WATTS BRASS FBVSSTH BALL VALVE W / STAINLESS STEEL "T"
J. IRRIGATION LINE
K. 6" MIN #57 STONE



*NOTE:
ALL BACKFLOW PREVENTERS SHALL BE TESTED BY A CERTIFIED TESTER AND PAPERWORK TURNED IN TO THE FAYETTE COUNTY WATER SYSTEM NO LATER THAT 15 DAYS AFTER INSTALLATION.

FAYETTE County Water System
245 McDonough Road
Fayetteville, GA 30214
770.320.6020

RESIDENTIAL IRRIGATION METER WITH BACKFLOW PREVENTER INSTALLATION

BFP–0005

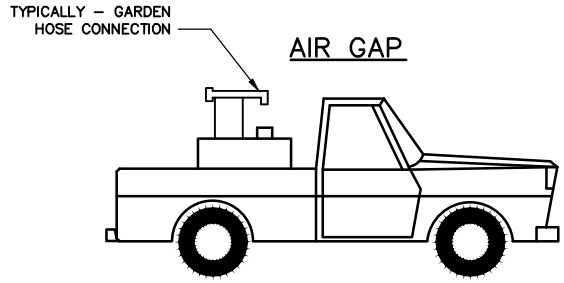
DESIGNED: J.F.C.	DRAWN: B.J.J.
DATE: 12/2024	SCALE: N.T.S.

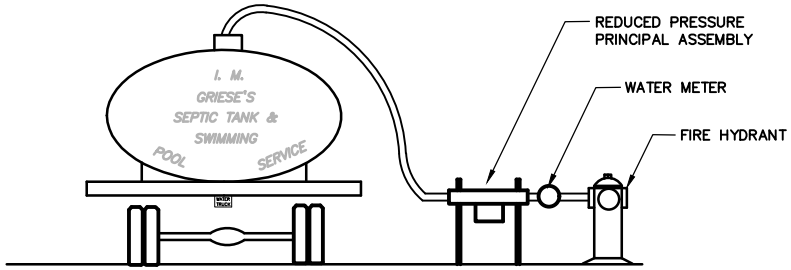
BY	REVISIONS	DATE

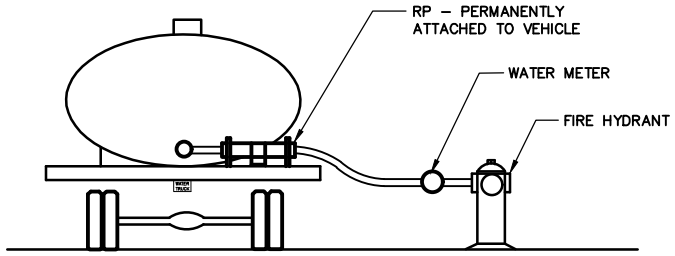
APPROVED METHODS OF FILLING TANKS, TANKER TRUCKS:
ANY WATER BEING INTRODUCED INTO A VESSEL, TANK, TANKER TRUCK ETC.; FROM ANY CONNECTION TO THE CITY OF FAIRBURN WATER DISTRIBUTION MUST BE THROUGH AN APPROVED BACKFLOW PREVENTION DEVICE. THE MOST EFFECTIVE AND ECONOMICAL METHOD IS BY AN APPROVED AIR-GAP SEPERATION BETWEEN THE WATER INLET AND OVERFLOW LEVEL OF THE VESSEL OR TANK. AT NO TIME SHALL A HOSE, EITHER HAND HELD OR OTHERWISE IMMERSED IN A VESSEL OR TANK BE AN ACCEPTABLE METHOD FOR THIS TYPE APPLICATION.

AIR GAP

AIR GAP







NOTE:
ANYONE FOUND IN VIOLATION WILL BE PROHIBITED FROM FURTHER USE OF THE CONNECTION AND WILL BE SUBJECT TO FINE.

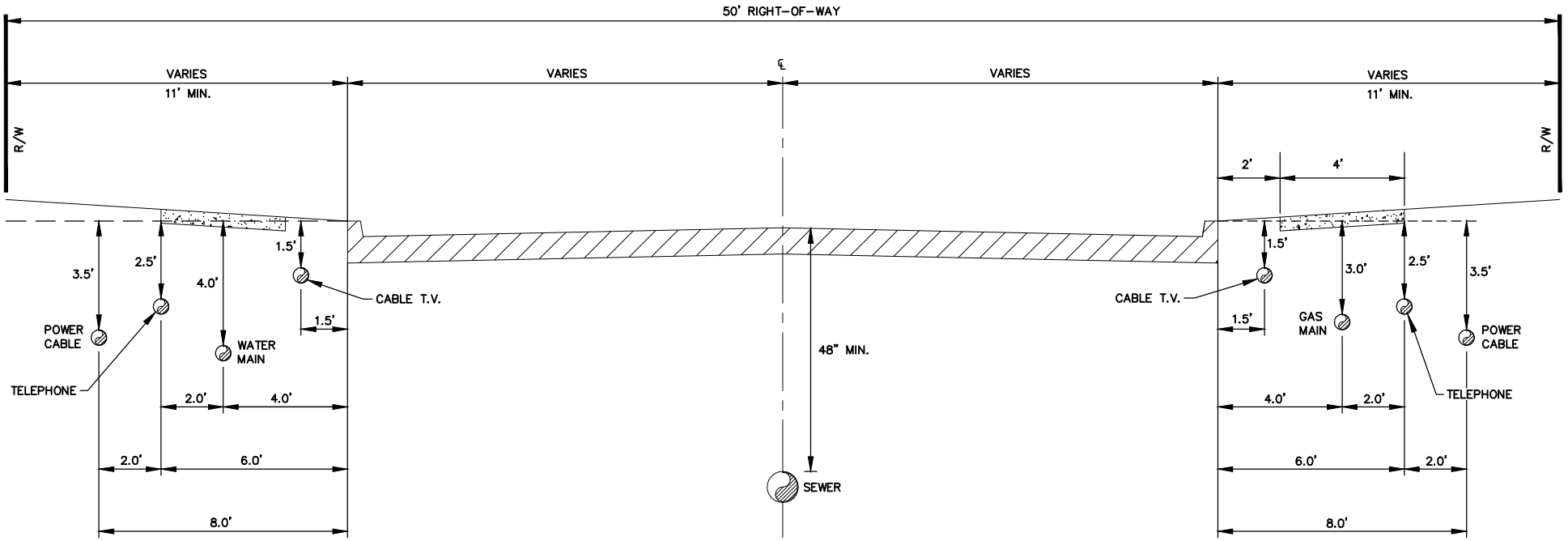
FAYETTE County Water System
245 McDonough Road
Fayetteville, GA 30214
770.320.6020

TANK/TRUCK FILLING METHODS

BFP-0006

DESIGNED: J.F.C.	DRAWN: B.J.J.
DATE: 12/2024	SCALE: N.T.S.

BY	REVISIONS	DATE



NOTES:

1. THIS STANDARD DETAIL IS TO BE USED FOR UTILITY LOCATIONS WITHIN RIGHT-OF-WAY OF SUBDIVISIONS ONLY.
2. BEFORE ANY UTILITY IS INSTALLED, THE ENTIRE WIDTH OF THE RIGHT-OF-WAY SHALL BE ROUGH GRADED.
3. IN GENERAL, THE DEEPEST UTILITIES SHOULD BE INSTALLED FIRST TO MINIMIZE ANY POSSIBLE INTERFERENCE WITH LATERALS OR SERVICE LINES.
4. IN CUL-DE-SAC OR EYEBROW TURNAROUNDS, THE DIMENSIONS FROM THE CURB SHALL VARY. HOWEVER, THE STANDARD UTILITY SPACING SHALL BE MAINTAINED.
5. BACKFILL OF ALL UTILITY TRENCHES CONSTRUCTED IN THE ROADWAY SHOULDER SHALL BE RETURNED TO 90% COMPACTION.
6. EACH UTILITY SHALL BE RESPONSIBLE FOR REPAIR OF ANY DAMAGE THEY CREATE TO OTHER UTILITY LINES, OR TO THE STREET IMPROVEMENTS WITHIN THE RIGHT-OF-WAY. NO UTILITY SHALL BE RESPONSIBLE FOR DAMAGES TO ANOTHER UTILITY WHICH IS LOCATED OUTSIDE THEIR ASSIGNED SPACE.
7. GEORGIA 811 MUST BE CONTACTED FOR UTILITY LOCATION PRIOR TO ANY DIGGING IN THE RIGHT-OF-WAY.
8. ONCE THE ROAD BASE HAS BEEN PLACED, ALL FURTHER INSTALLATION OF UTILITIES UNDER THE ROADWAY SHALL BE BORED.

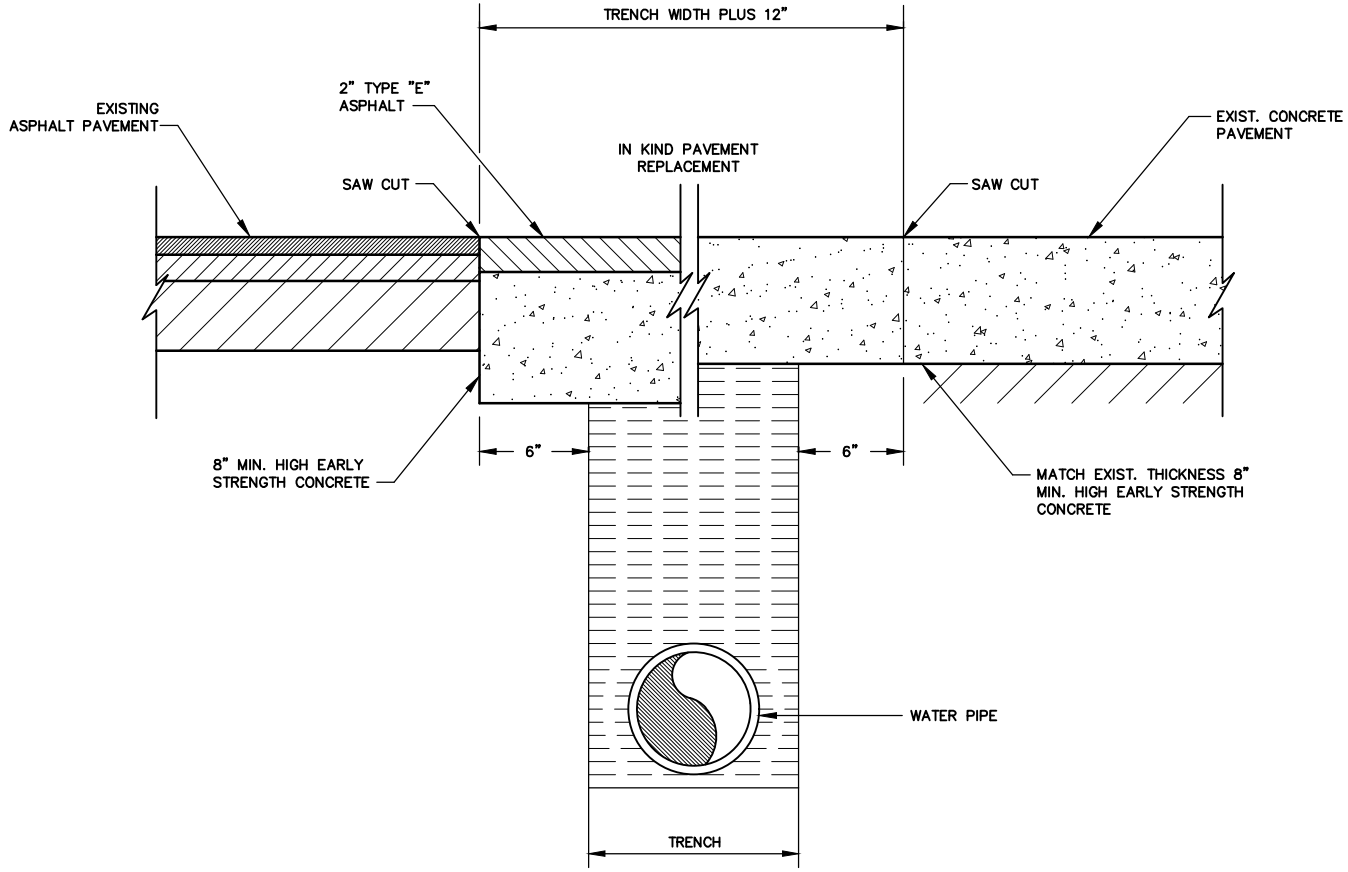
FAYETTE County Water System
245 McDonough Road
Fayetteville, GA 30214
770.320.6020

UTILITY PLACEMENT

U-0001

DESIGNED: J.F.C.	DRAWN: B.J.J.
DATE: 12/2024	SCALE: N.T.S.

BY	REVISIONS	DATE



NOTE:
TRENCH TO BE BACKFILLED IN MAXIMUM 8" (LOOSE) LIFTS AND THOROUGHLY COMPACTED TO NOT LESS THAN 95% STANDARD PROCTOR DENSITY AT OPTIMUM MOISTURE BY METHODS SATISFACTORY TO ENGINEER.

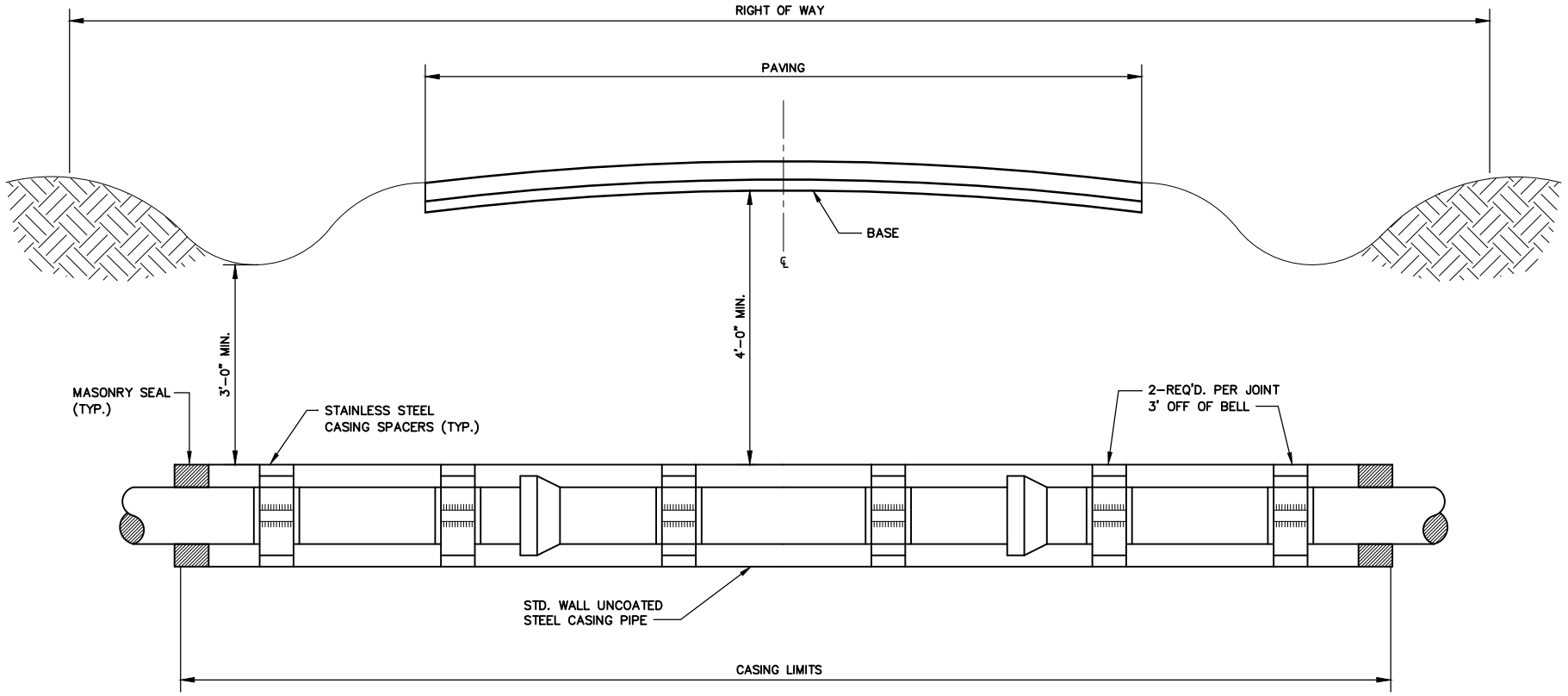
FAYETTE County Water System
245 McDonough Road
Fayetteville, GA 30214
770.320.6020

TYPICAL PAVEMENT CUT

U-0002

DESIGNED: J.F.C.	DRAWN: B.J.J.
DATE: 12/2024	SCALE: N.T.S.

BY	REVISIONS	DATE



NOTE:
STEEL CASING SHALL EXTEND 3' PAST ℄ OF DITCH

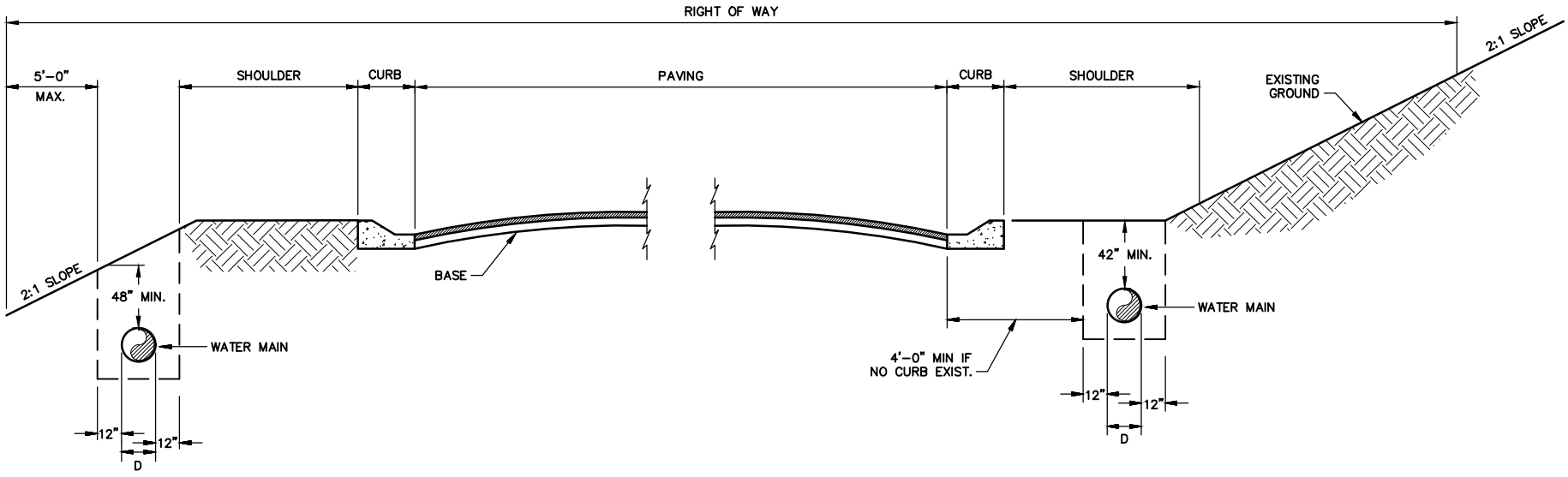
FAYETTE County Water System
245 McDonough Road
Fayetteville, GA 30214
770.320.6020

TYPICAL ROAD CROSSING

U-0003

DESIGNED: J.F.C.	DRAWN: B.J.J.
DATE: 12/2024	SCALE: N.T.S.

BY	REVISIONS	DATE



TYPICAL RIGHT-OF-WAY INSTALLATION

N.T.S.

TYPICAL SHOULDER INSTALLATION

N.T.S.

FAYETTE County Water System

245 McDonough Road
Fayetteville, GA 30214
770.320.6020

TYPICAL RIGHT-OF-WAY AND SHOULDER INSTALLATIONS

U-0004

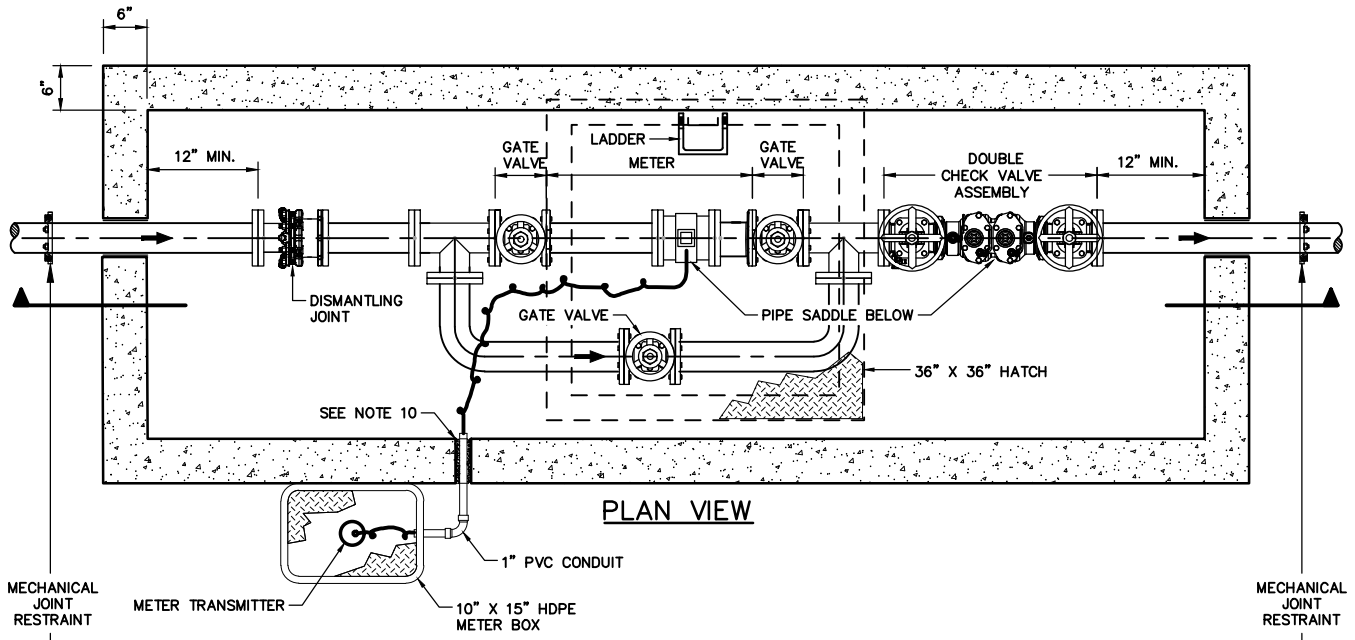
DESIGNED: J.F.C.	DRAWN: B.J.J.
DATE: 12/2024	SCALE: N.T.S.

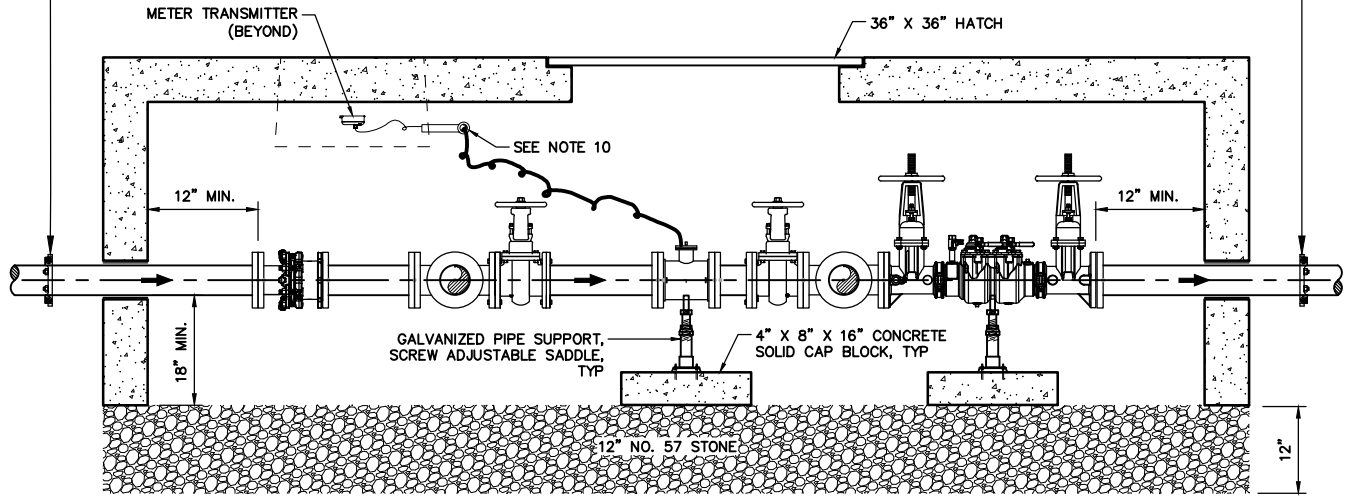
BY	REVISIONS	DATE

NOTES:

1. VAULT MUST BE CONSTRUCTED TO MEET ASTM C858, 'SPECIFICATION FOR UNDERGROUND PRECAST CONCRETE UTILITY STRUCTURES'. VAULTS THAT WILL BE SUBJECTED TO REGULAR TRAFFIC OF ANY TYPE, CONCENTRATED LIVE LOADS AND/OR SURFACE SURCHARGE LOADS WILL REQUIRE A DETAILED VAULT DESIGN FROM THE DEVELOPER SUBMITTED FOR FCWS APPROVAL PRIOR TO CONSTRUCTION.
2. VAULT AND LID THICKNESSES SHALL BE A MINIMUM OF 6". INSIDE HEIGHT OF VAULT SHALL BE A MINIMUM OF 6 FEET.
3. VAULT MUST BE OF SUFFICIENT SIZE TO MAINTAIN A MINIMUM 18" CLEARANCE BETWEEN INTERIOR WALLS AND METER, BACKFLOW AND BYPASS ASSEMBLIES.
4. VAULT SHALL BE PLACED ON A 12" BASE OF NO. 57 COMPACTED STONE.
5. VAULT LID SHALL BE EQUIPPED WITH A 36" X 36" ACCESS HATCH OFFSET TO ONE SIDE ALIGNED WITH INTERIOR LADDER.
6. VAULT INLET/OUTLET PENETRATIONS SHALL BE SEALED WITH NON-SHRINK GROUT.
7. ALL PIPE AND FITTINGS SHALL BE DUCTILE IRON. ALL FITTINGS SHALL BE FLANGED.
8. METER SHALL BE BADGER E-SERIES G2 ULTRASONIC METER WITH DOUBLE CHECK VALVE ASSEMBLY BACKFLOW PREVENTER.
9. PROVIDE A MINIMUM OF 10 FEET OF UNIMPEDED ACCESS TO ALL SIDES OF THE VAULT. IF THIS CANNOT BE ACHIEVED BY PLACEMENT IN THE RIGHT-OF-WAY, INCLUDE A RECORDED PERMANENT EASEMENT TO PROVIDE THE NECESSARY ACCESS.
10. NO SLEEVE REQUIRED FOR CONDUIT. PENETRATION SHALL BE SEALED WITH NON-SHRINK GROUT.

METER SIZE	BYPASS PIPE SIZE
3"	3"
4"	4"
6"	4"
8"	4"
10"	6"
12"	6"





FAYETTE County Water System
245 McDonough Road
Fayetteville, GA 30214
770.320.6020

STANDARD VAULT DETAIL

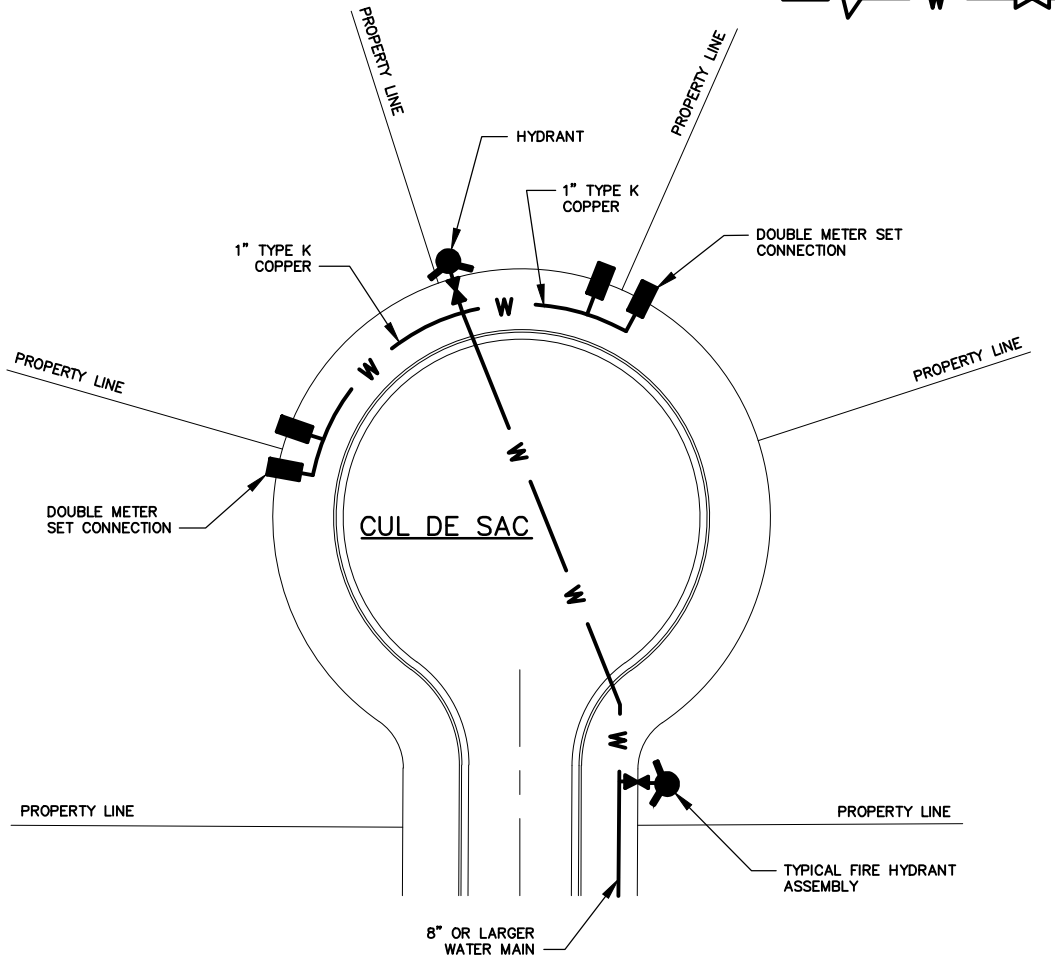
W-0001

DESIGNED: J.F.C.	DRAWN: B.J.J.
DATE: 12/2024	SCALE: N.T.S.

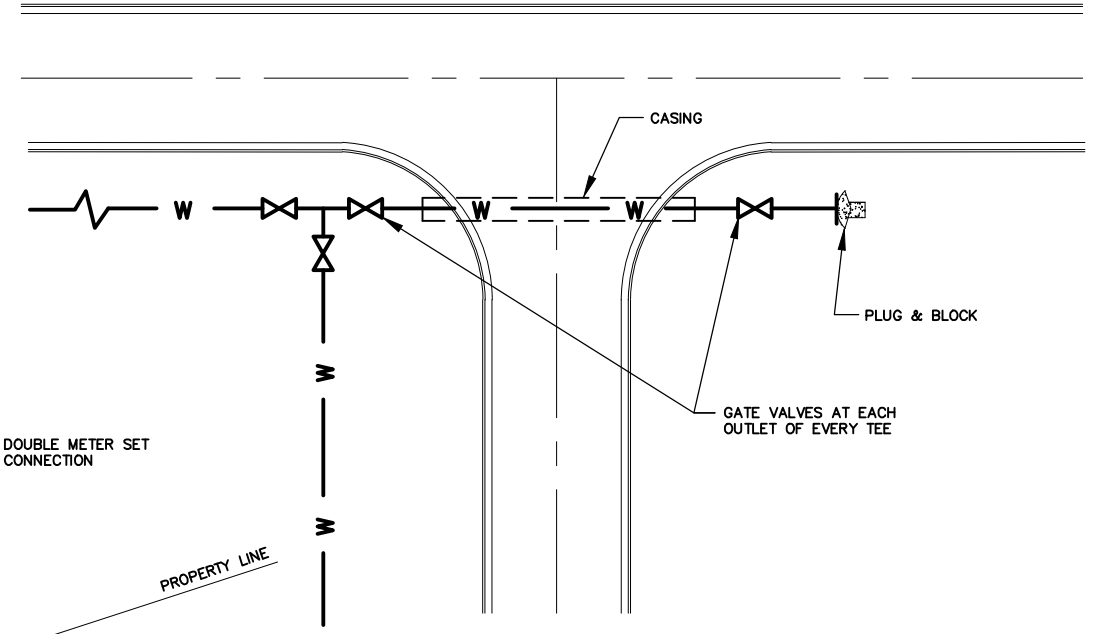
BY	REVISIONS	DATE

NOTES:

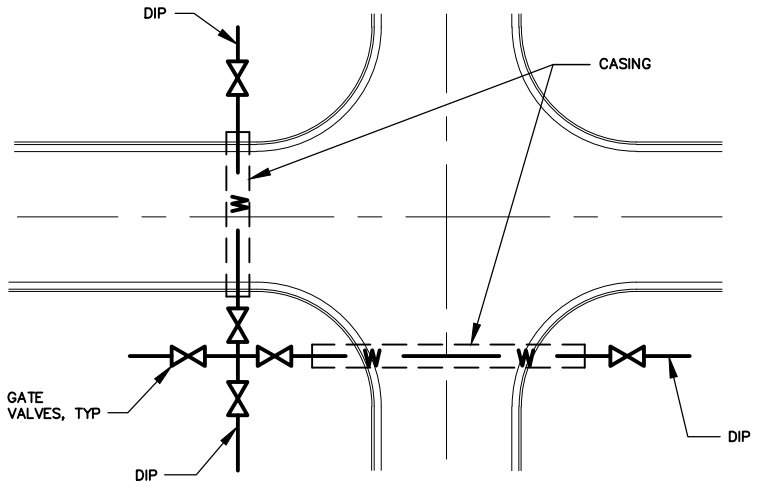
1. DUCTILE IRON TO EXTEND BEYOND ALL VALVES & FITTINGS (MIN 1 JOINT)
2. NO TAPS SHALL BE MADE UNDER PAVEMENT



TYPICAL STREET INTERSECTION



STANDARD VALVE LOCATIONS AT CROSS TYPE INTERSECTION



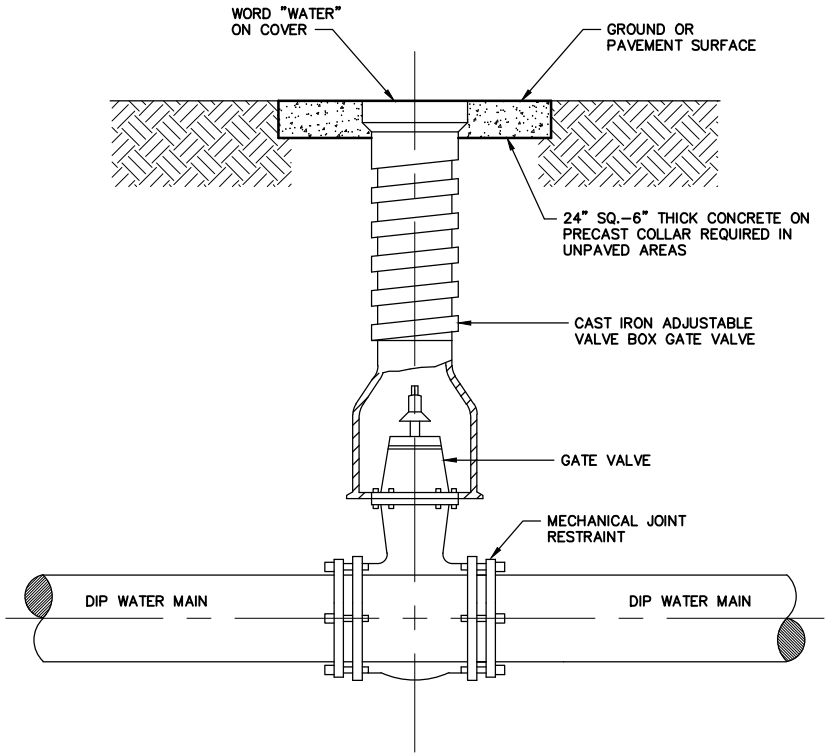
FAYETTE County Water System
245 McDonough Road
Fayetteville, GA 30214
770.320.6020

TYPICAL STREET CROSSINGS

W-0002

DESIGNED: J.F.C.	DRAWN: B.J.J.
DATE: 12/2024	SCALE: N.T.S.

BY	REVISIONS	DATE



NOTE:
WHERE VALVE MARKERS ARE REQUIRED, INSTALL PRECAST REINFORCED CONCRETE SQUARE POST, MINIMUM 4" SQUARE AND 6 FEET LONG, ENGRAVED WITH WORD "VALVE" IN 2" HIGH LETTERING.

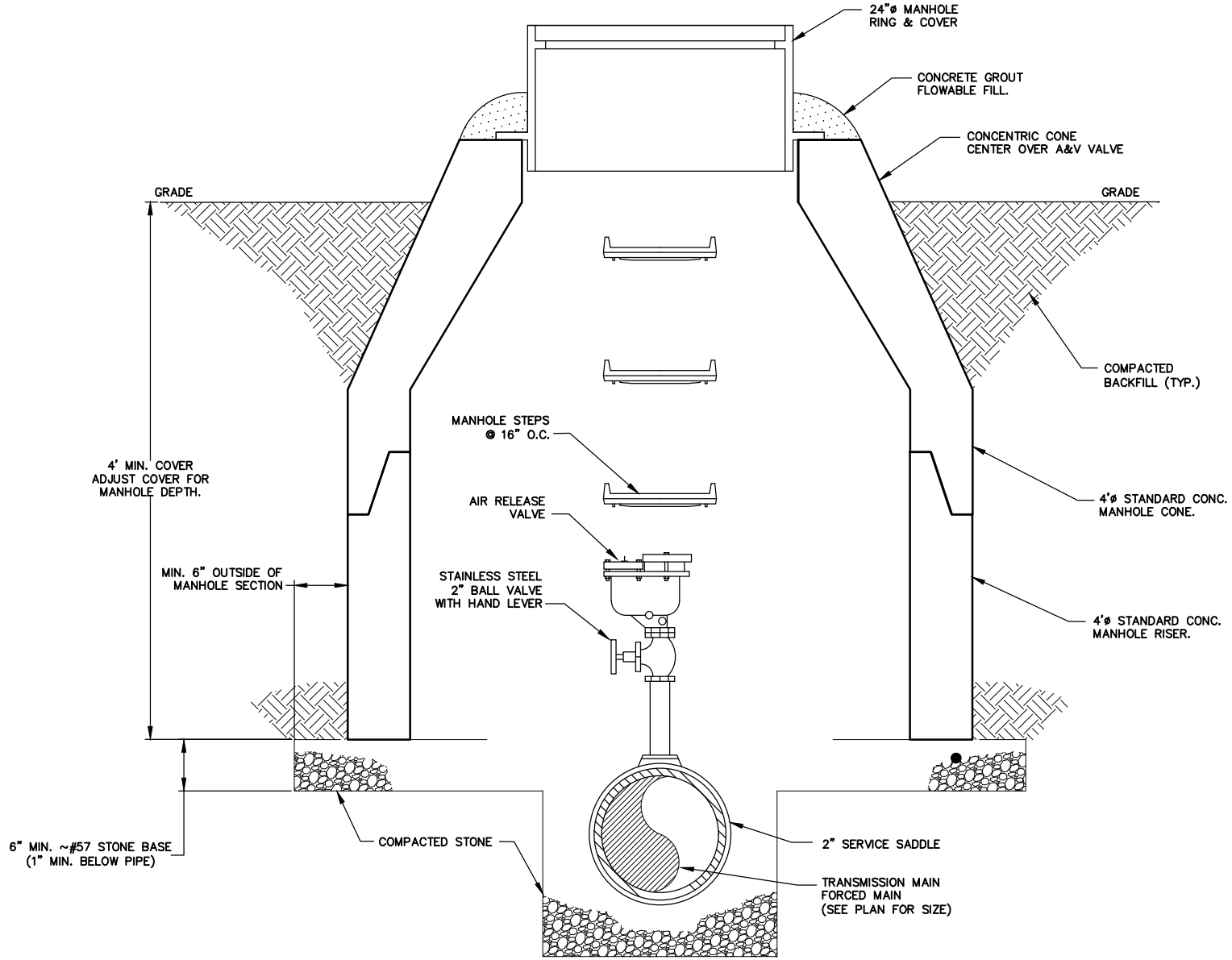
FAYETTE County Water System
245 McDonough Road
Fayetteville, GA 30214
770.320.6020

WATER LINE VALVE INSTALLATION

W–0003

DESIGNED: J.F.C.	DRAWN: B.J.J.
DATE: 12/2024	SCALE: N.T.S.

BY	REVISIONS	DATE



FAYETTE County Water System
245 McDonough Road
Fayetteville, GA 30214
770.320.6020

AIR RELEASE VALVE DETAIL

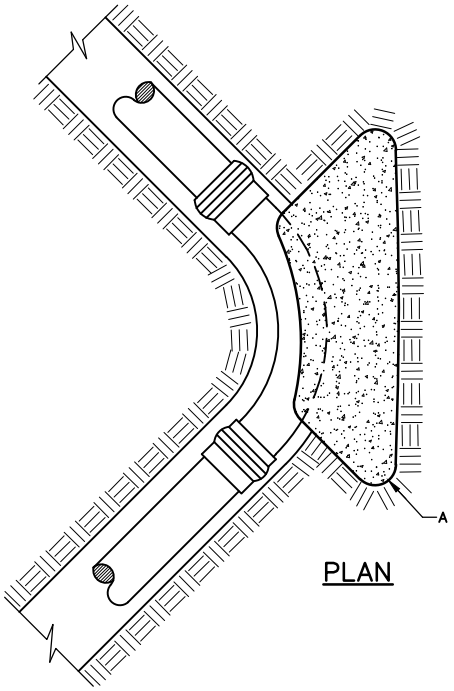
W-0004

DESIGNED: J.F.C.	DRAWN: B.J.J.
DATE: 12/2024	SCALE: N.T.S.

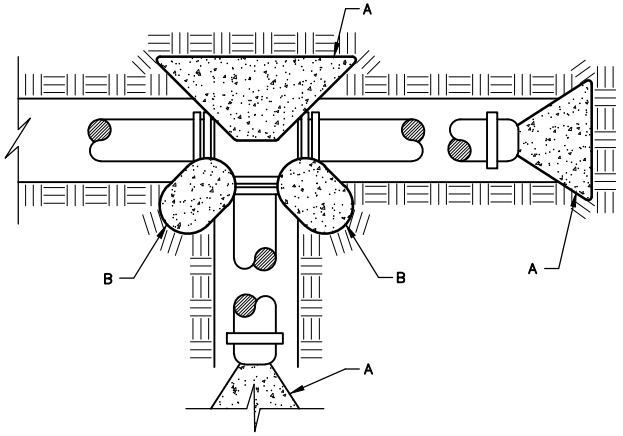
BY	REVISIONS	DATE

PIPE SIZE	2"	4"	6"	8"	10"	12"	14"	16"
A*	1	1.5	3	6	9	12	16	20
B*	1	1	2	4	5	8	10	12

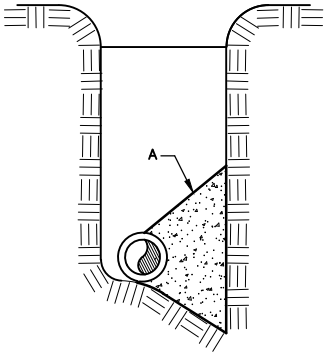
*CHART NO.'S ARE SQ. FT. BEARING ON UNDISTURBED MATERIAL



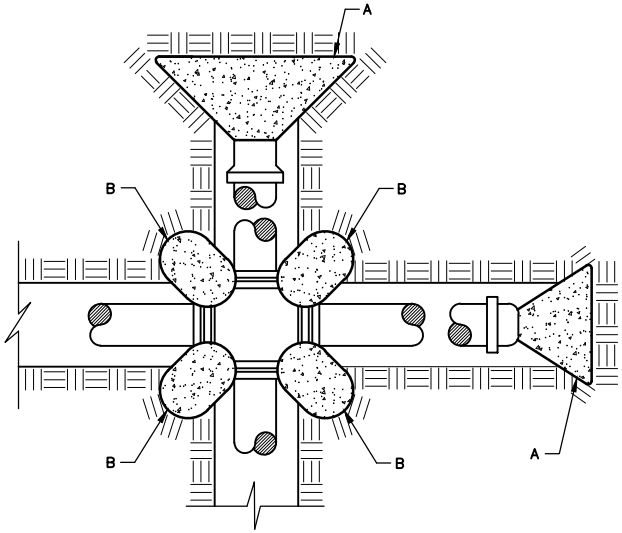
PLAN



TEE W/ 1 OR 2 PLUGS



TYP. SECTION



CROSS TEE OR CROSS TEE WITH 1 OR 2 PLUGS

NOTES:

1. POUR THRUST BLOCKS AGAINST UNDISTURBED MATERIAL. WHERE TRENCH WALL HAS BEEN DISTURBED, EXCAVATE LOOSE MATERIAL & EXTEND THRUST BLOCK TO UNDISTURBED MATERIAL.
2. ON BENDS & TEES, EXTEND THRUST BLOCKS FULL LENGTH OF FITTING.
3. PLACE BOARD IN FRONT OF ALL PLUGS BEFORE POURING THRUST BLOCK.
4. CONCRETE SHALL BE 3000 P.S.I.
5. BLOCKING SHALL BE CONSTRUCTED AS PER AWWA STANDARD C600–SECTION 12.3 OR LATEST REVISION.

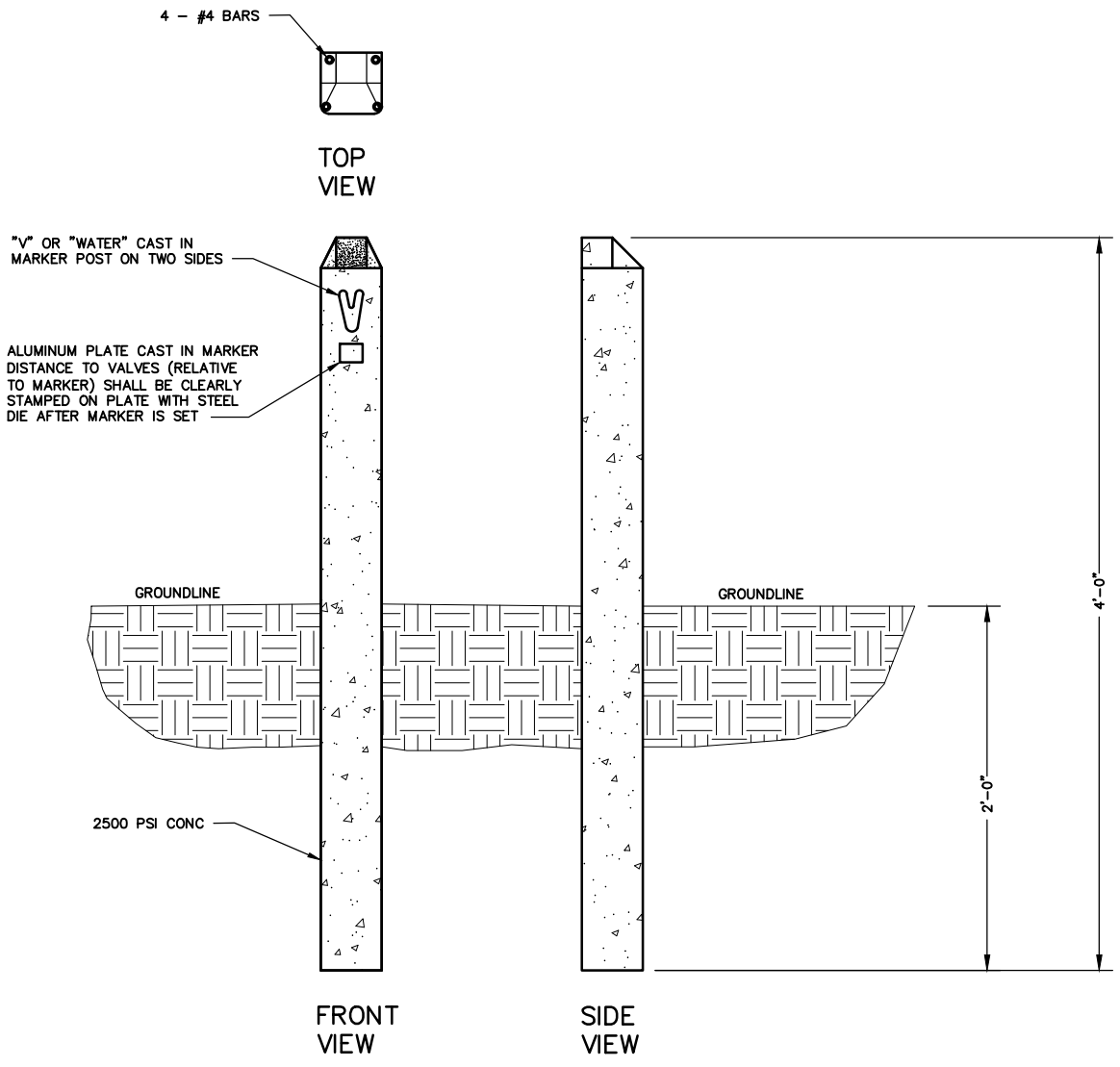
FAYETTE County Water System
245 McDonough Road
Fayetteville, GA 30214
770.320.6020

THRUST BLOCK DETAIL

W–0005

DESIGNED: J.F.C.	DRAWN: B.J.J.
DATE: 12/2024	SCALE: N.T.S.

BY | REVISIONS | DATE



FAYETTE County Water System
245 McDonough Road
Fayetteville, GA 30214
770.320.6020

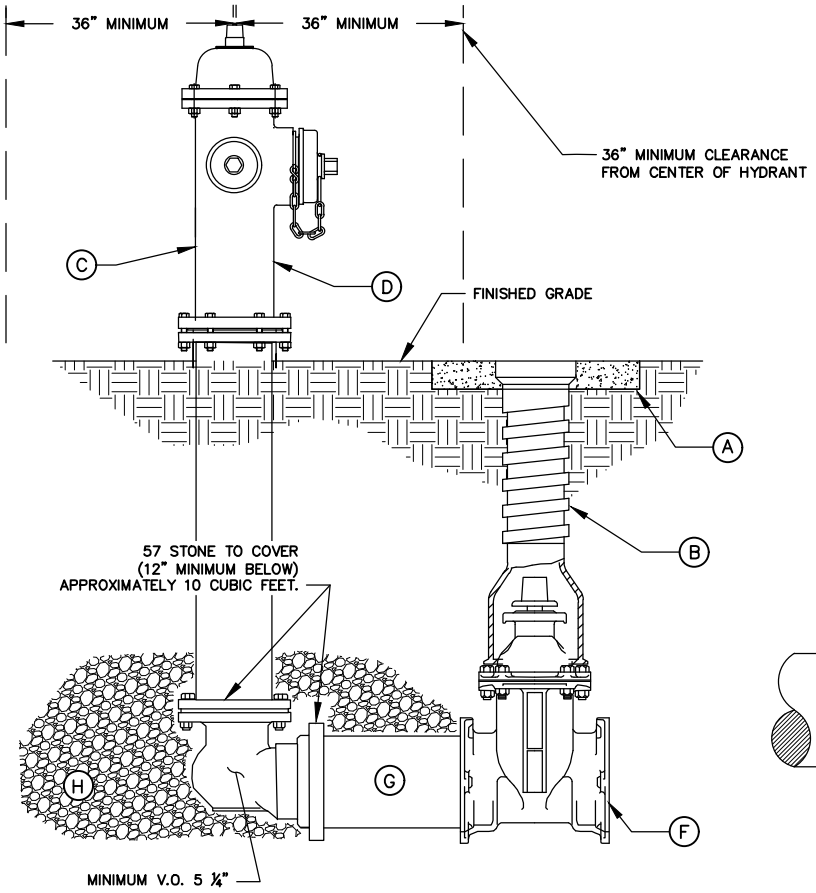
VALVE MARKER DETAIL

W–0006

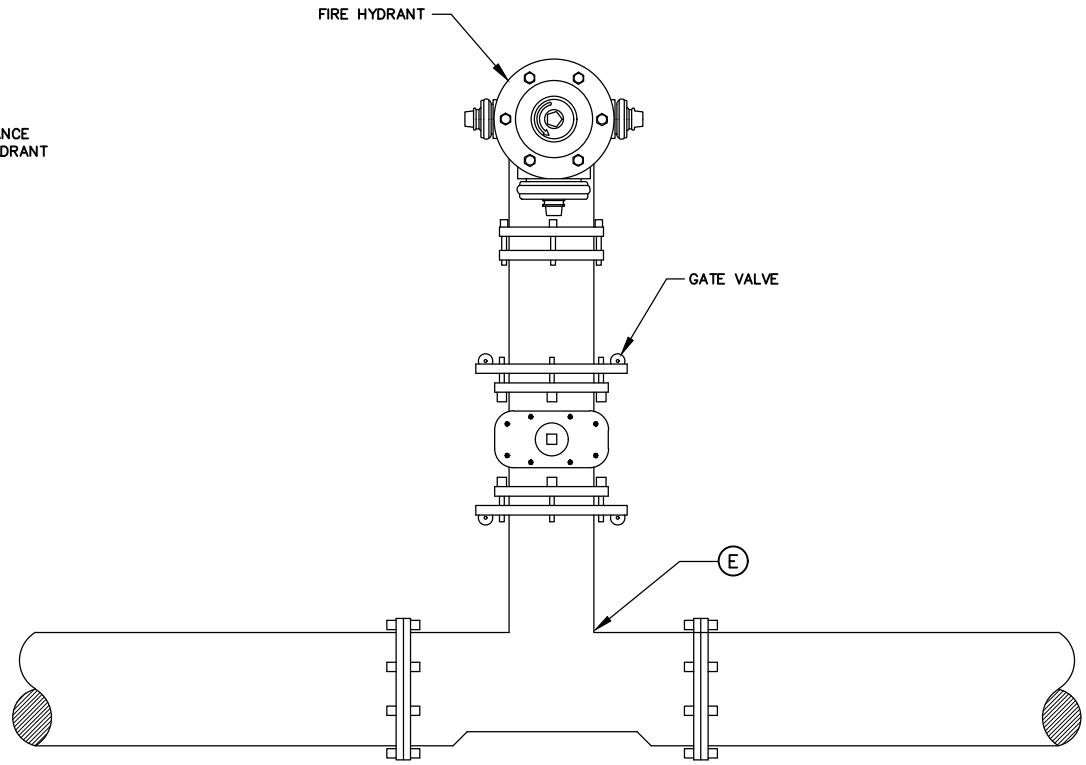
DESIGNED: J.F.C.	DRAWN: B.J.J.
DATE: 12/2024	SCALE: N.T.S.

BY	REVISIONS	DATE

PROFILE VIEW



PLAN VIEW



BILL OF MATERIALS	
ITEM	DESCRIPTION
A	CONCRETE COLLAR
B	CAST IRON VALVE BOX
C	M&H 129 OR APPROVED EQUAL
D	FIRE HYDRANT (3 WAY)
E	FIRE HYDRANT TEE
F	6" GATE VALVE
G	ANCHOR COUPLING OR GRADE LOC HYDRANT ADAPTER
H	GRAVEL (14 CUBIC FT. MIN)

GENERAL NOTES:

1. STEAMER CONNECTION TO FACE STREET
2. HYDRANT SET AS CLOSE TO R\W AS PRACTICAL
3. VALVE BOX ADJUSTED TO GRADE
4. CONC. COLLAR AROUND VALVE BOX
5. F.H. ADJUSTED TO GRADE WITH GRADE LOK ANCHOR COUPLING, OR APPROVED EQUAL

FAYETTE County Water System

245 McDonough Road
Fayetteville, GA 30214
770.320.6020

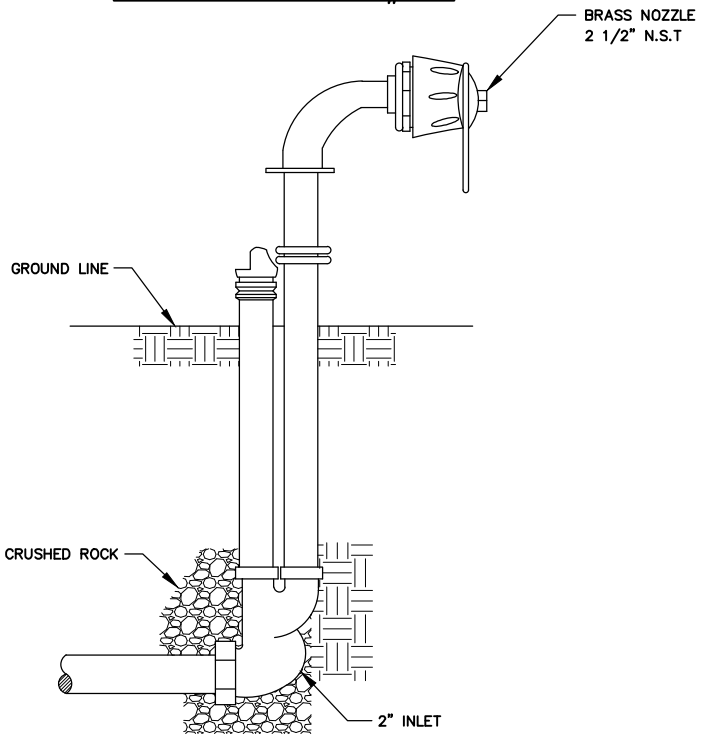
TYPICAL FIRE HYDRANT INSTALLATION

W-0007

DESIGNED: J.F.C.	DRAWN: B.J.J.
DATE: 12/2024	SCALE: N.T.S.

BY	REVISIONS	DATE

MAINGAURD MODEL # 77



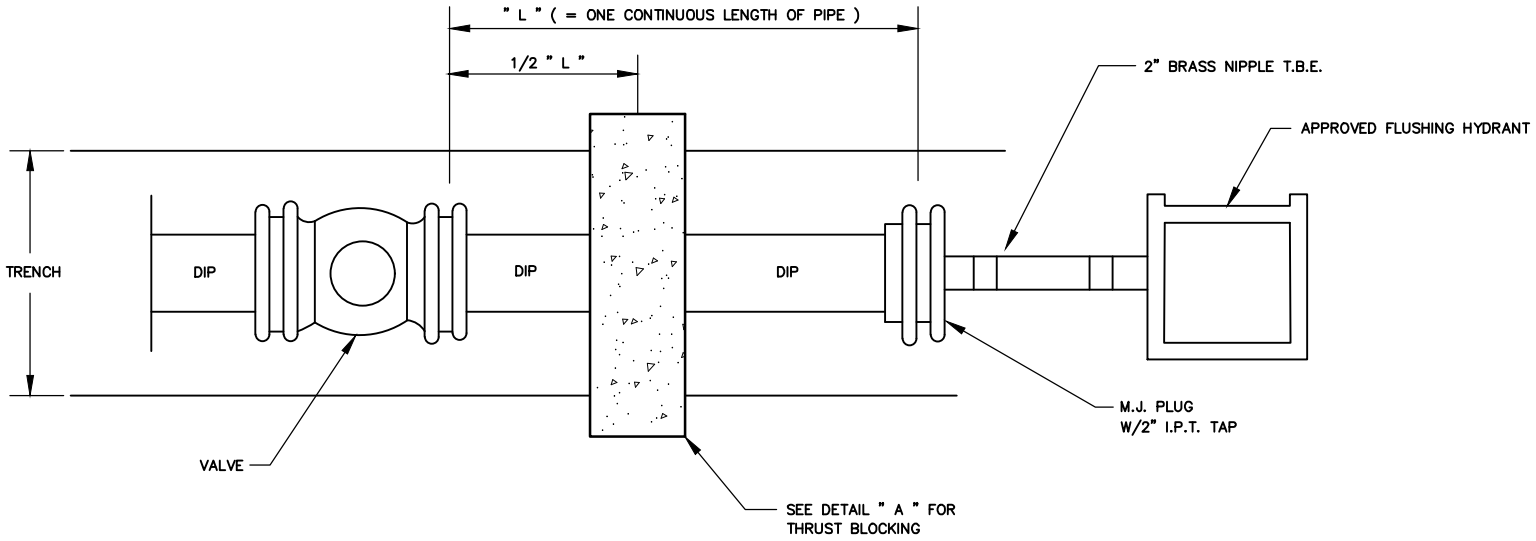
FAYETTE County Water System
245 McDonough Road
Fayetteville, GA 30214
770.320.6020

APPROVED FLUSHING HYDRANTS

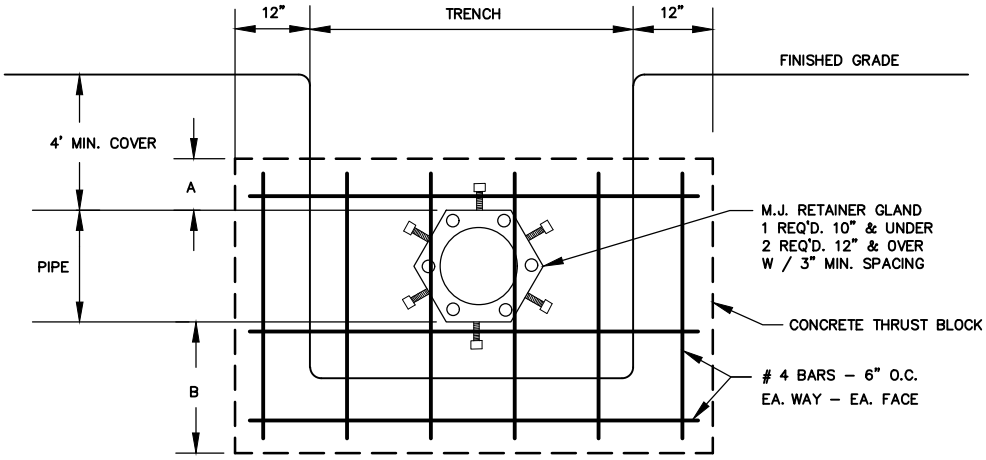
W-0008

DESIGNED: J.F.C.	DRAWN: B.J.J.
DATE: 12/2024	SCALE: N.T.S.

BY	REVISIONS	DATE



DETAIL A



DIA.	" A "	" B "
20"	2' – 0"	2' – 0"
16"	1' – 6"	2' – 0"
14"	1' – 6"	2' – 0"
12"	1' – 6"	2' – 0"
10"	1' – 0"	2' – 0"
8"	1' – 0"	2' – 0"
6"	1' – 0"	2' – 0"
4"	1' – 0"	2' – 0"

NOTE:
THE ABOVE FIGURES ARE BASED ON SOIL BEARING CAPACITY OF 2000"/S.F.

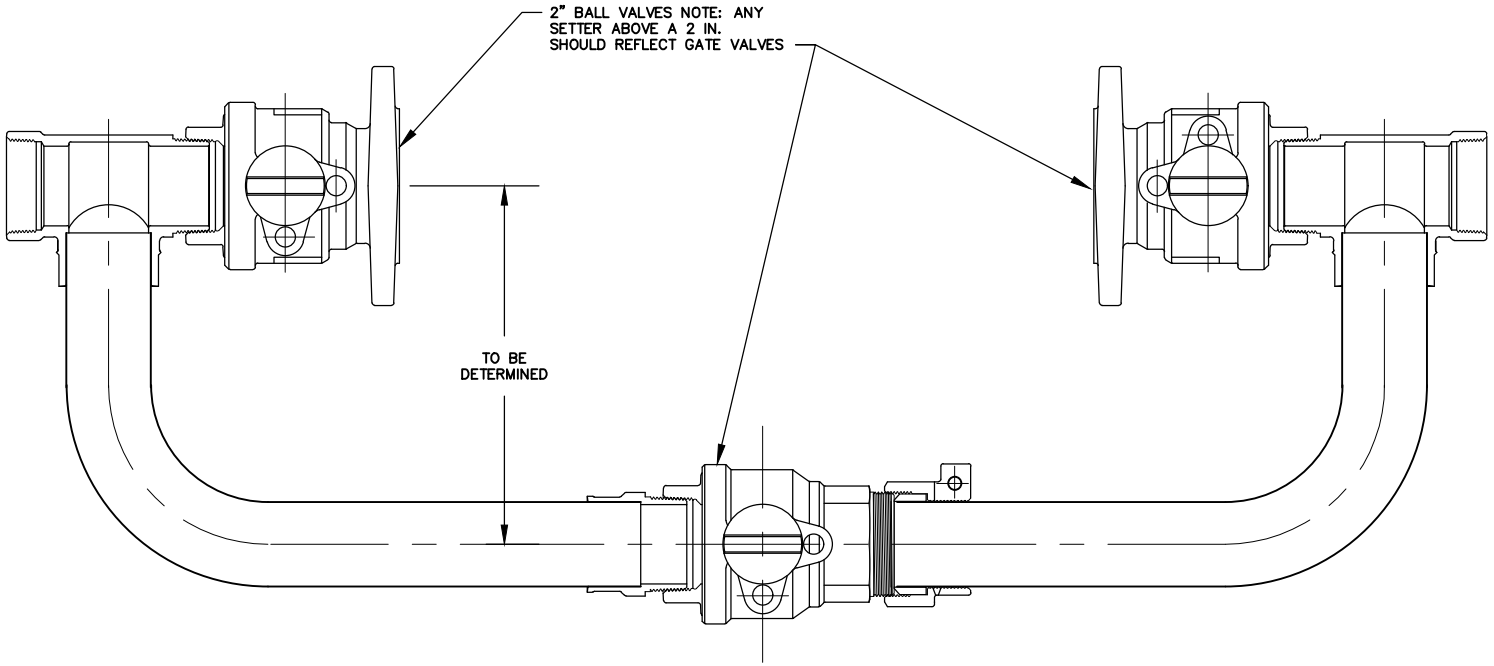
FAYETTE County Water System
245 McDonough Road
Fayetteville, GA 30214
770.320.6020

TERMINAL END DETAIL

W–0009

DESIGNED: J.F.C.	DRAWN: B.J.J.
DATE: 12/2024	SCALE: N.T.S.

BY | REVISIONS | DATE



FAYETTE County Water System

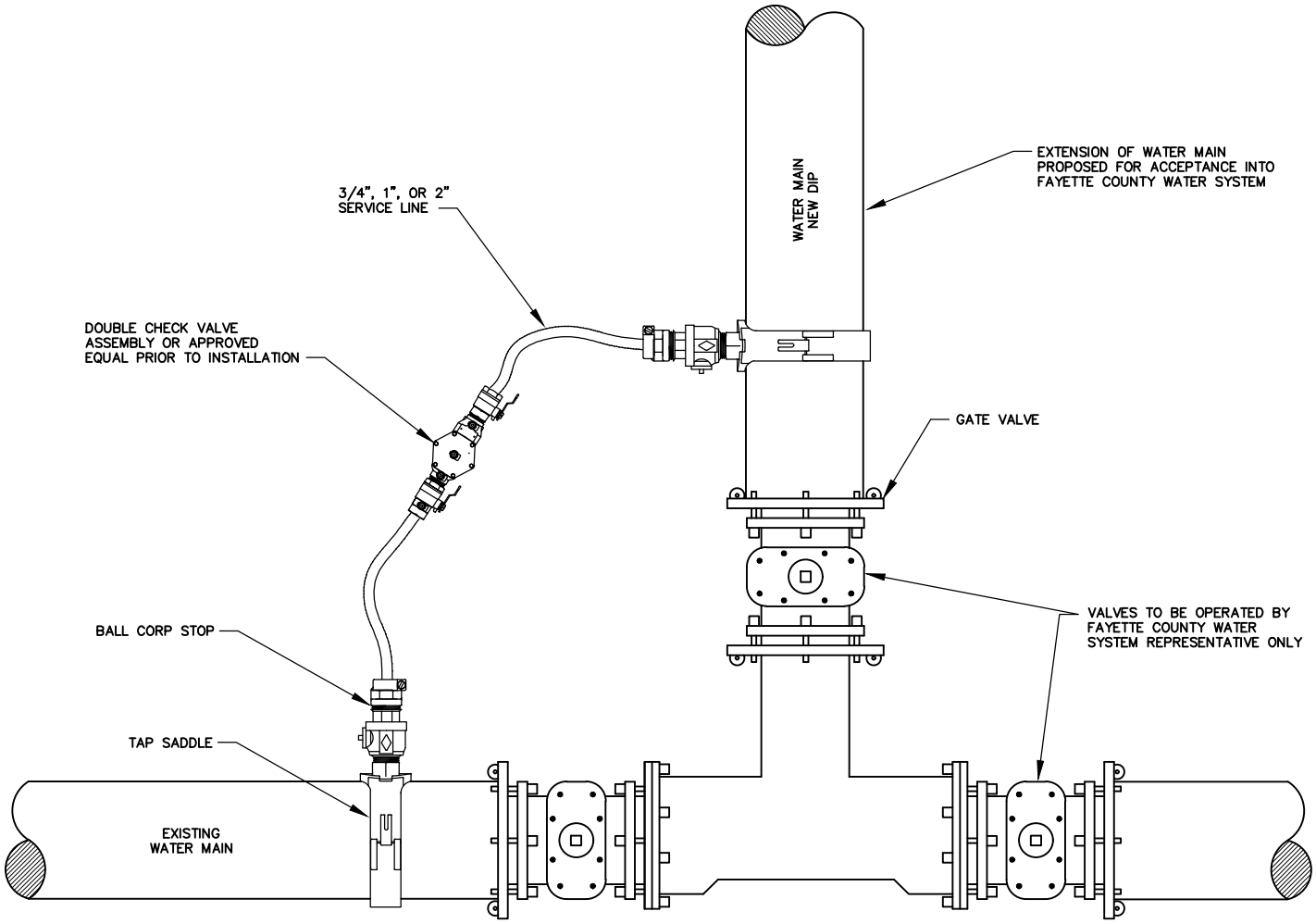
245 McDonough Road
Fayetteville, GA 30214
770.320.6020

BYPASS LINE ASSEMBLY

W-0010

DESIGNED: J.F.C.	DRAWN: B.J.J.
DATE: 12/2024	SCALE: N.T.S.

BY	REVISIONS	DATE



FAYETTE County Water System

245 McDonough Road
Fayetteville, GA 30214
770.320.6020

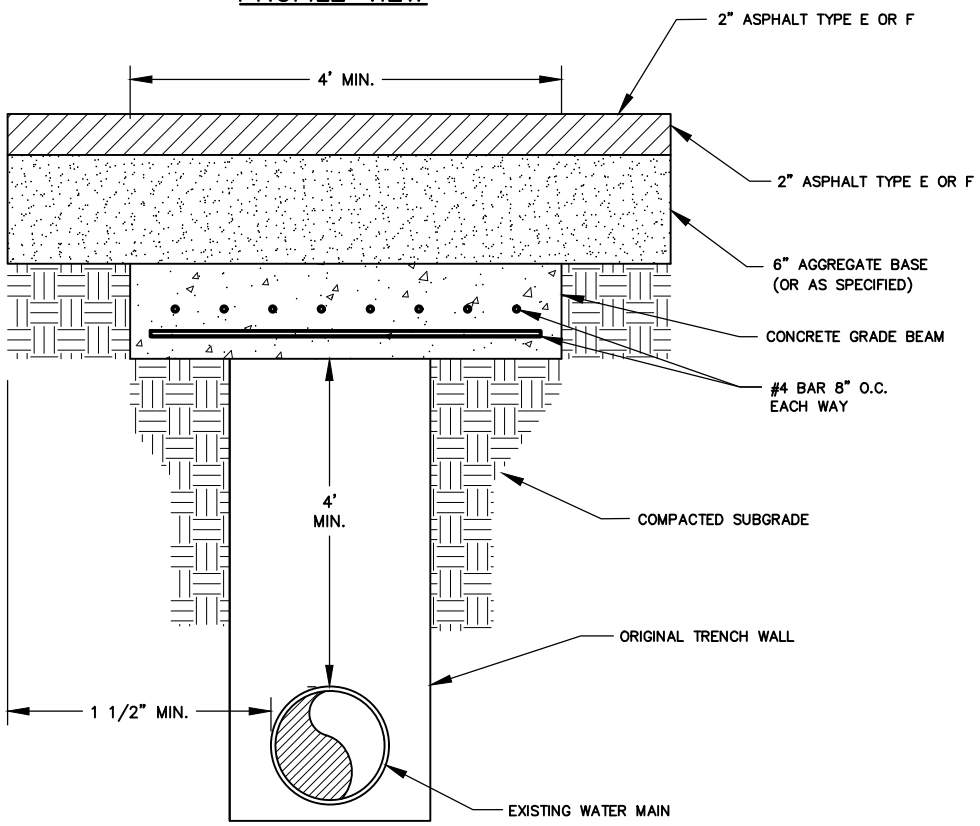
APPROVED METHOD FOR FILLING NEW WATER MAINS

W–0011

DESIGNED: J.F.C.	DRAWN: B.J.J.
DATE: 12/2024	SCALE: N.T.S.

BY	REVISIONS	DATE

PROFILE VIEW



NOTE:
THIS DETAILS APPLICATION USED FOR
WATER MAIN PROTECTION FOR ROADS
CONSTRUCTED OVER EXISTING WATER MAINS

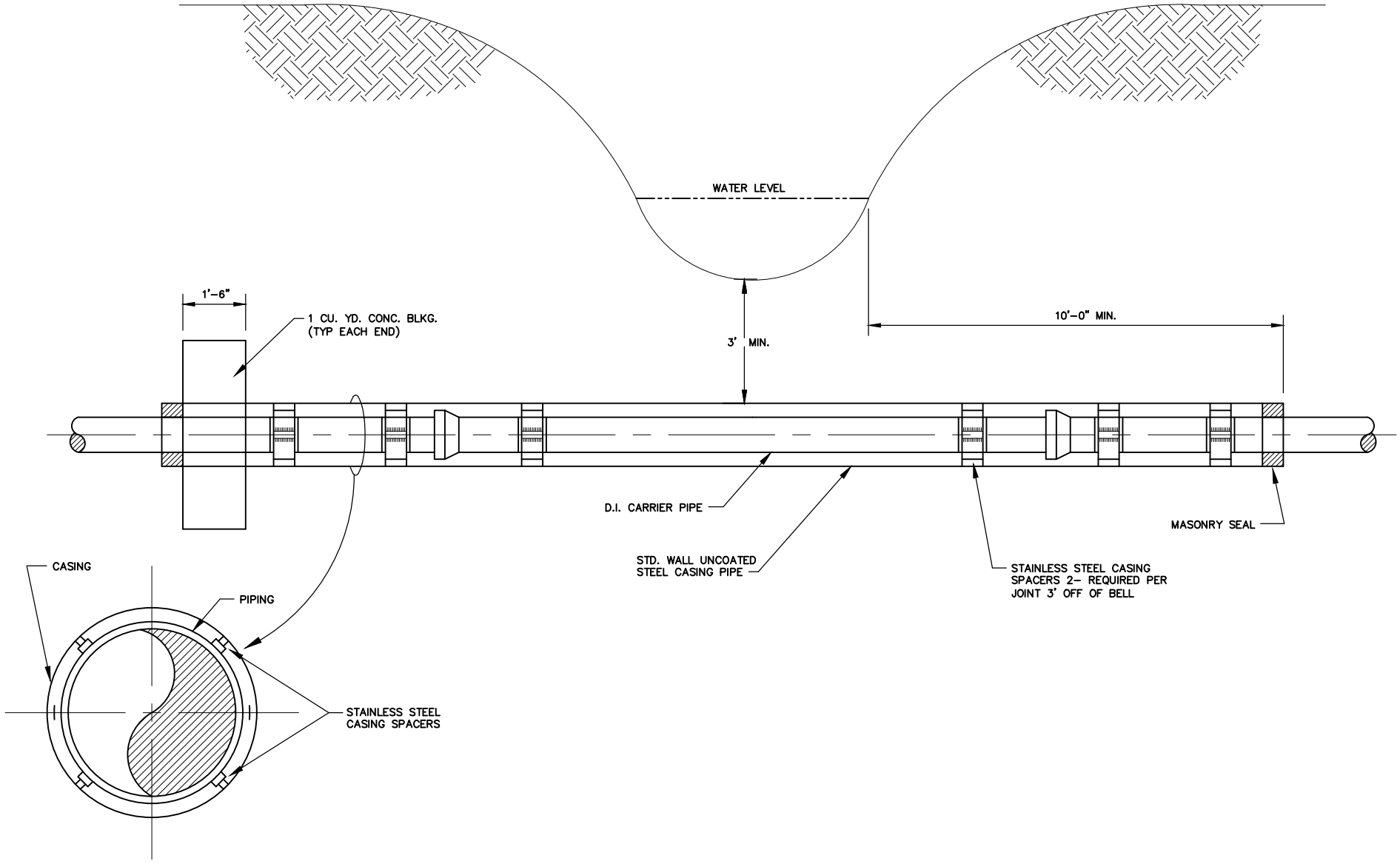
FAYETTE County Water System
245 McDonough Road
Fayetteville, GA 30214
770.320.6020

CONCRETE GRADE BEAM DETAIL

W-0012

DESIGNED: J.F.C.	DRAWN: B.J.J.
DATE: 12/2024	SCALE: N.T.S.

BY | REVISIONS | DATE



FAYETTE County Water System

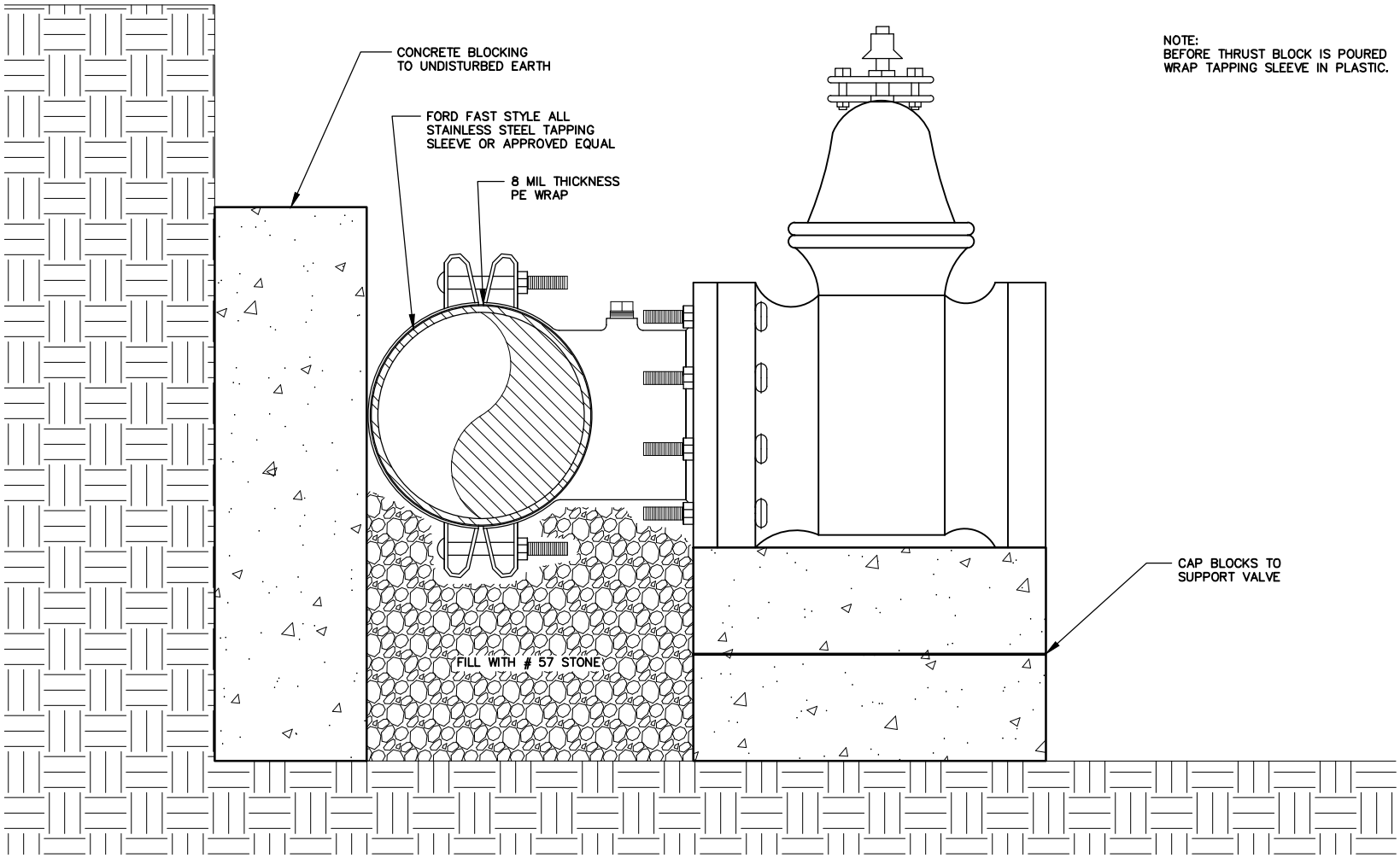
245 McDonough Road
Fayetteville, GA 30214
770.320.6020

TYPICAL CREEK CROSSING

W-0013

DESIGNED: J.F.C.	DRAWN: B.J.J.
DATE: 12/2024	SCALE: N.T.S.

BY	REVISIONS	DATE



FAYETTE County Water System

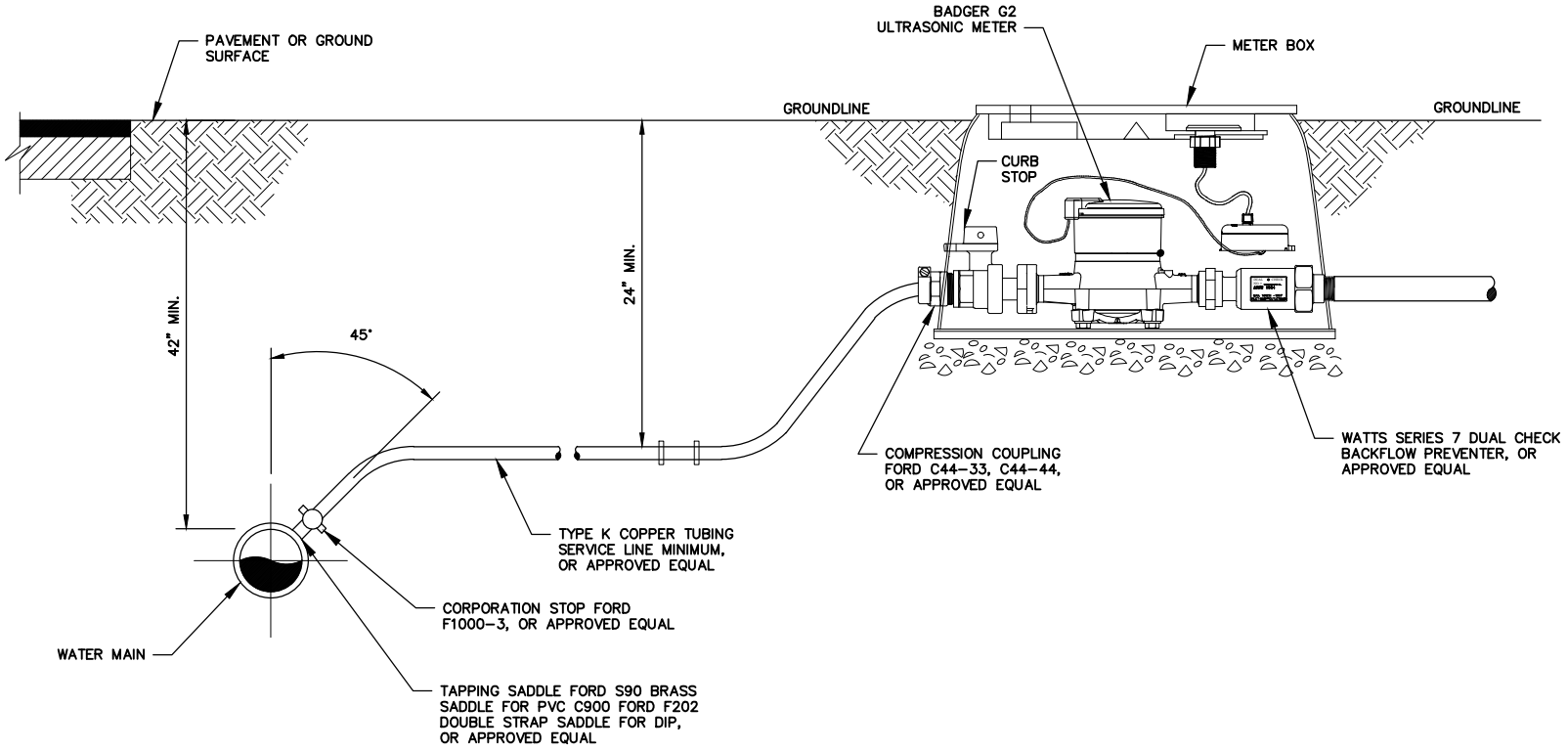
245 McDonough Road
Fayetteville, GA 30214
770.320.6020

WATER LINE VALVE TAPPING SLEEVE

W-0014

DESIGNED: J.F.C.	DRAWN: B.J.J.
DATE: 12/2024	SCALE: N.T.S.

BY	REVISIONS	DATE



MINIMUM DEPTH OF METER: 9"
MAXIMUM DEPTH OF METER: 11"

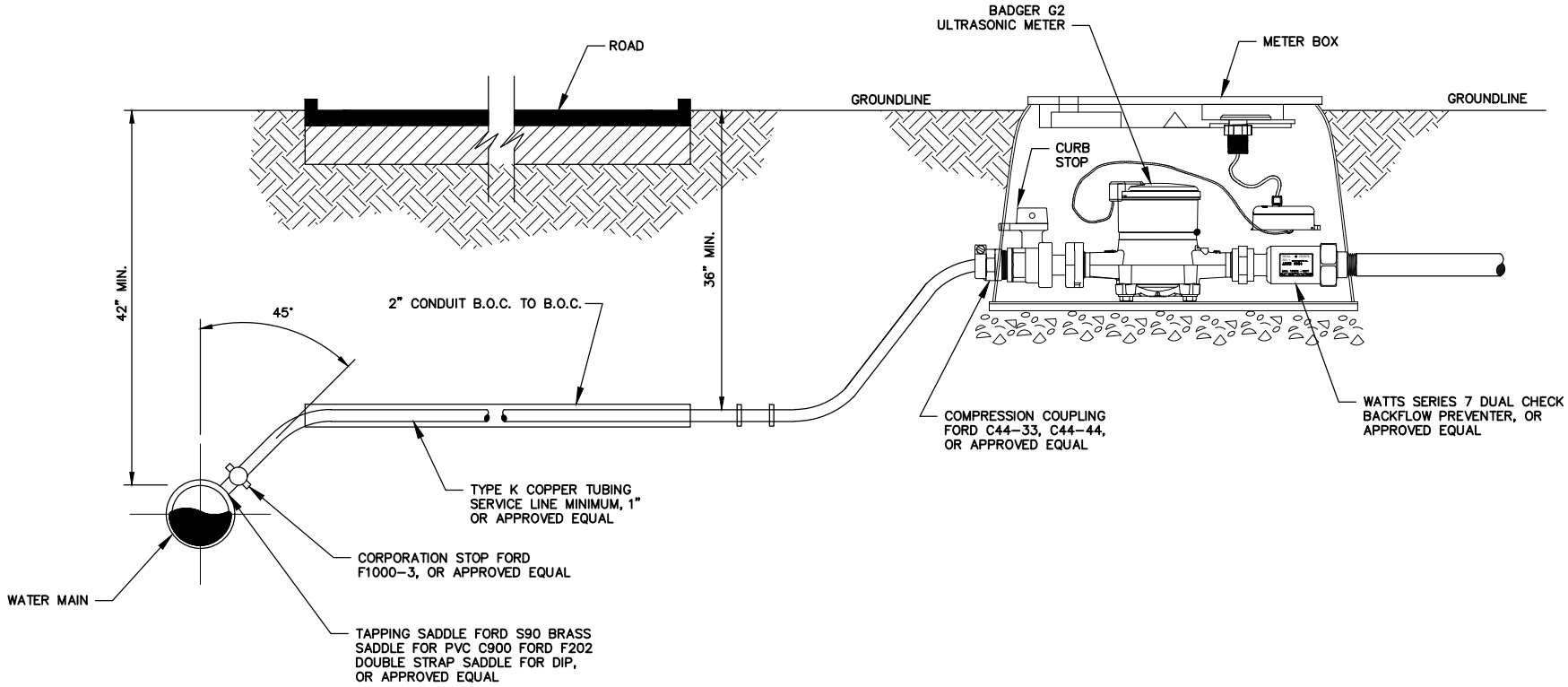
FAYETTE County Water System
245 McDonough Road
Fayetteville, GA 30214
770.320.6020

RESIDENTIAL SHORT SIDE SERVICE INSTALLATION

W-0015

DESIGNED: J.F.C.	DRAWN: B.J.J.
DATE: 12/2024	SCALE: N.T.S.

BY	REVISIONS	DATE



MINIMUM DEPTH OF METER: 9"
MAXIMUM DEPTH OF METER: 11"

FAYETTE County Water System

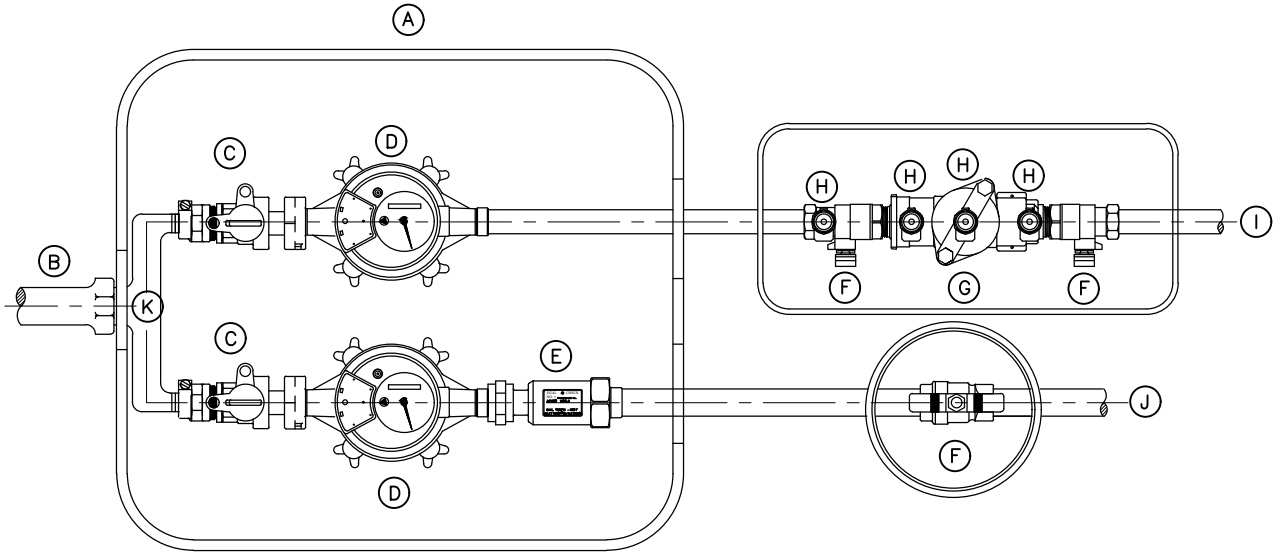
245 McDonough Road
Fayetteville, GA 30214
770.320.6020

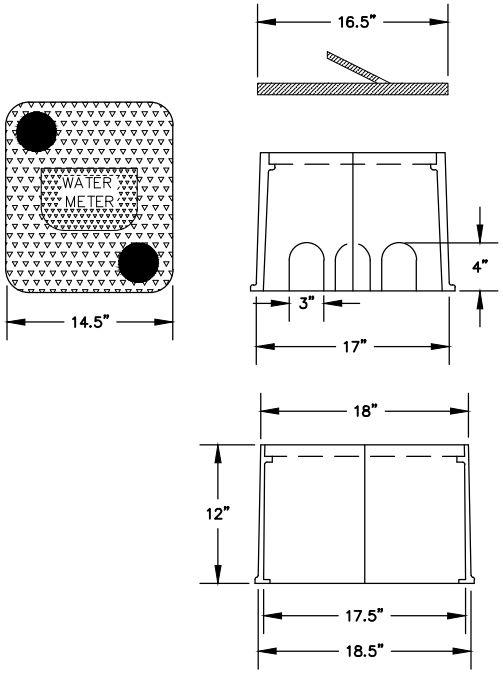
RESIDENTIAL LONG SIDE SERVICE INSTALLATION

W-0016

DESIGNED: J.F.C.	DRAWN: B.J.J.
DATE: 12/2024	SCALE: N.T.S.

BY	REVISIONS	DATE





METER BOX DETAIL

A. LOCATABLE POLYPROPYLENE LID AND BODY WITH TWO 2" HOLES FOR TOUCH READ CAPABILITY (DEVELOPER INSTALLED)
B. TYPE K COPPER SERVICE LINE CONNECTION (DEVELOPER INSTALLED)
C. CURB STOP–FORD B43–332W OR APPROVED EQUAL (DEVELOPER INSTALLED) MINIMUM DEPTH OF CURB STOP PLACEMENT: 9" FROM GROUND SURFACE TO CENTER OF FLOW MAXIMUM DEPTH OF CURB STOP PLACEMENT: 11" FROM GROUND SURFACE TO CENTER FLOW
D. 3/4" BADGER G2 ULTRASONIC WATER METER
E. DUAL CHECK– WILKINS 700 IUFMX34UF OR APPROVED EQUAL
F. 3/4" WATTS BRASS FBVSSTH BALL VALVE WITH STAINLESS STEEL "T" HANDLE OR APPROVED EQUAL
G. DOUBLE CHECK VALVE
H. TEST COCKS
I. IRRIGATION LINE
J. DOMESTIC LINE
K. 1" x 3/4" x 7.5" BRANCH PIECE (DEVELOPER INSTALLED)

FAYETTE County Water System
245 McDonough Road
Fayetteville, GA 30214
770.320.6020

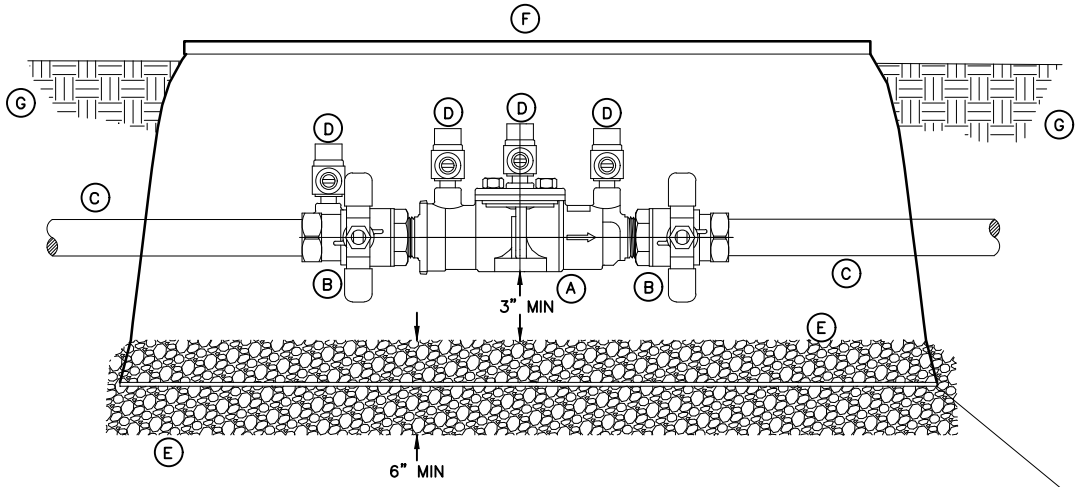
DUAL RESIDENTIAL AND IRRIGATION INSTALLATION

W–0017

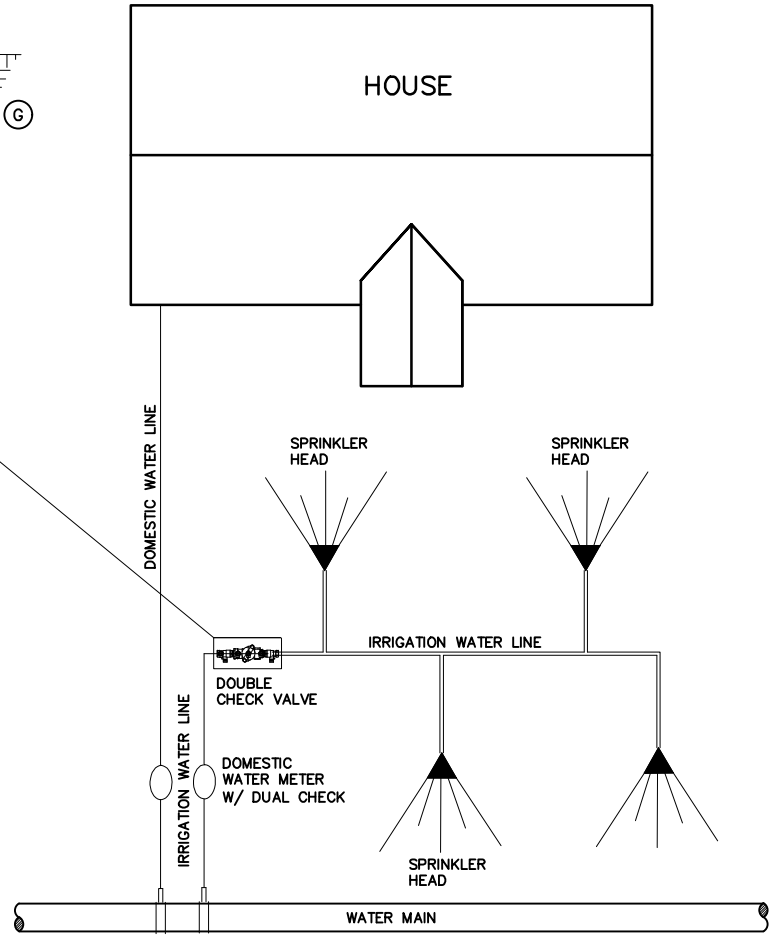
DESIGNED: J.F.C.	DRAWN: B.J.J.
DATE: 12/2024	SCALE: N.T.S.

BY	REVISIONS	DATE

IRRIGATION METER PLAN VIEW



A. DOUBLE CHECK VALVE
B. 3/4" WATTS BRASS DOUBLE CHECK VALVE ASSEMBLY WITH STAINLESS STEEL "T" HANDLE OR APPROVED EQUAL
C. WATER LINE
D. TEST COCKS
E. #57 STONE 6" MIN. DEPTH
F. 12" EXTENSION RECTANGLE VALVE BOX 3/4" UP TO 1" (2" NEEDS 80" BOX)
G. COMPACTED EARTH



FAYETTE County Water System

245 McDonough Road
Fayetteville, GA 30214
770.320.6020

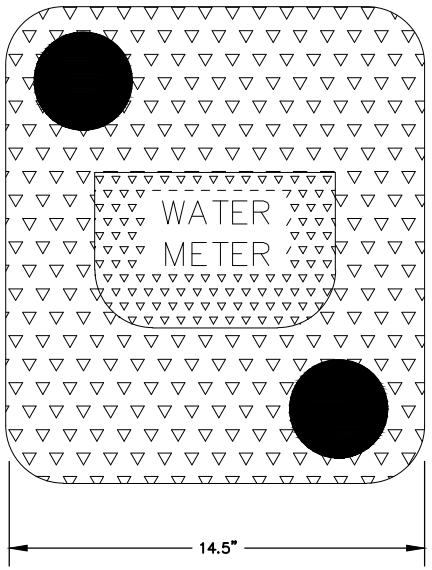
RESIDENTIAL IRRIGATION METER INSTALLATION

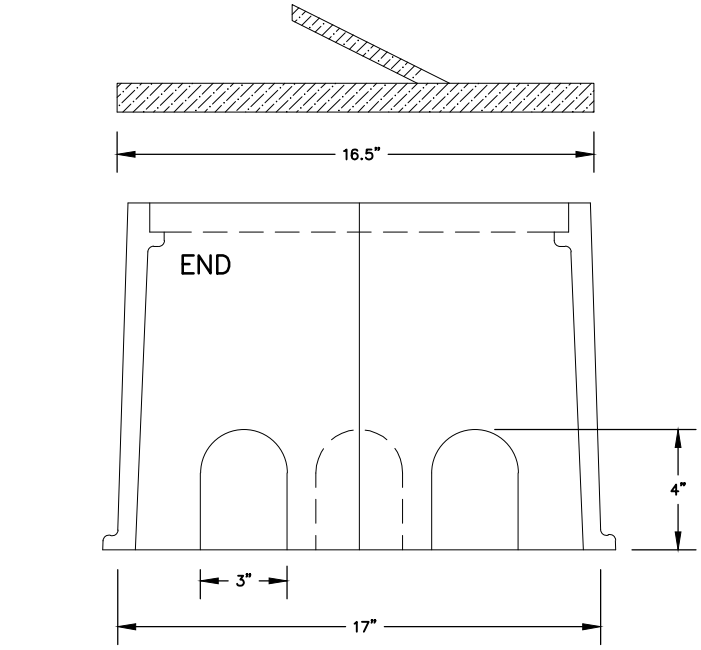
W-0018

DESIGNED: J.F.C.	DRAWN: B.J.J.
DATE: 12/2024	SCALE: N.T.S.

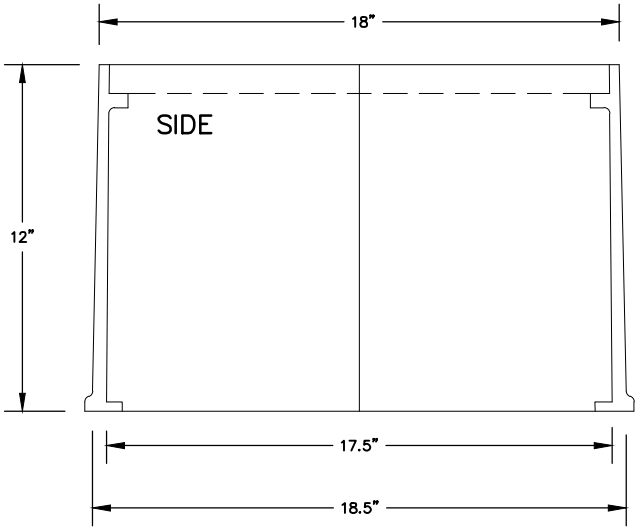
BY	REVISIONS	DATE

TOP





LOCATABLE POLYPROPYLENE LID AND BODY WITH TWO 2" HOLES FOR TOUCH READ CAPABILITY. DEVELOPER INSTALLED.



FAYETTE County Water System
245 McDonough Road
Fayetteville, GA 30214
770.320.6020

DUAL RESIDENTIAL AND IRRIGATION METER BOX

W-0019

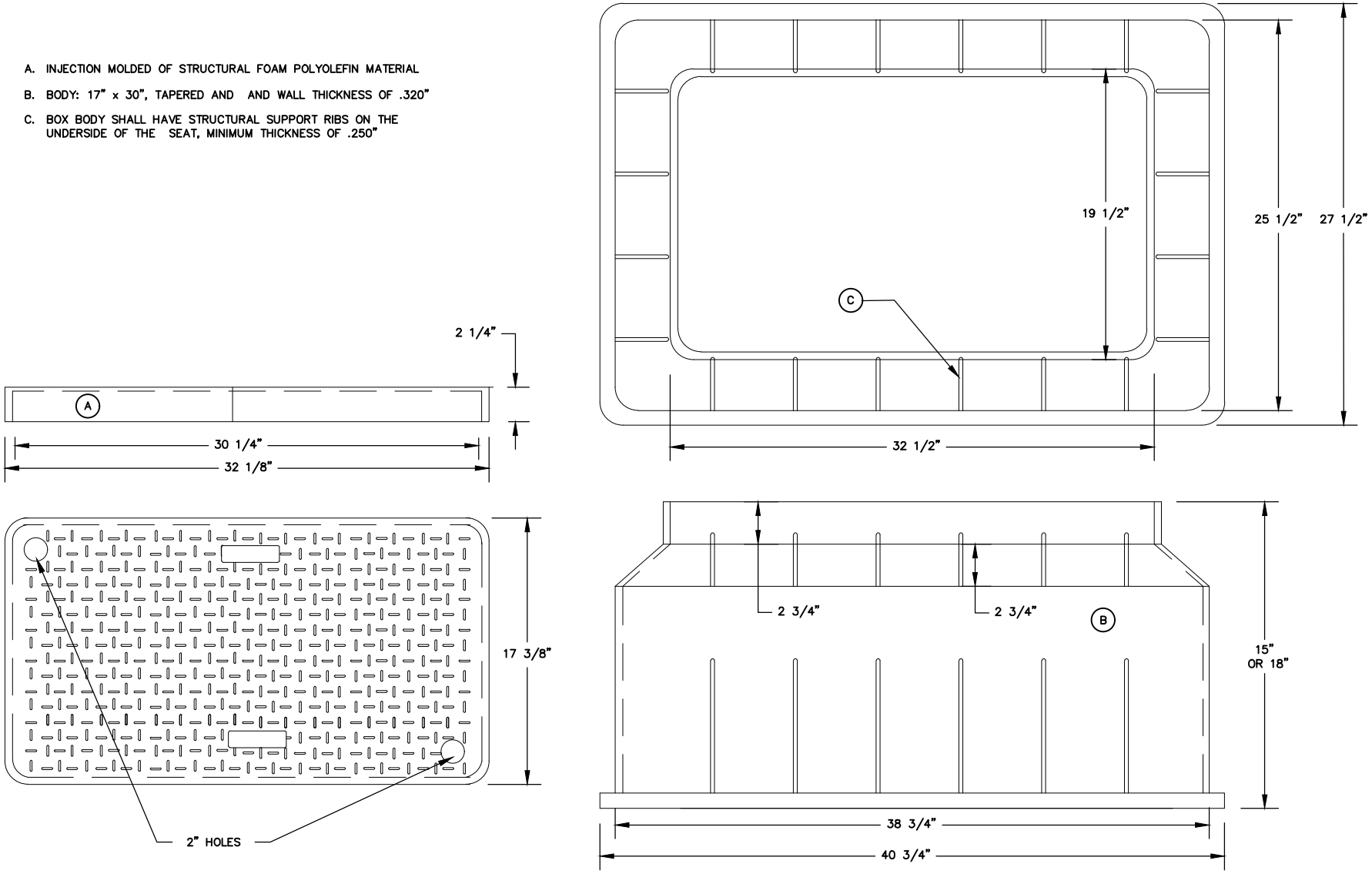
DESIGNED: J.F.C.	DRAWN: B.J.J.
DATE: 12/2024	SCALE: N.T.S.

BY	REVISIONS	DATE

A. INJECTION MOLDED OF STRUCTURAL FOAM POLYOLEFIN MATERIAL

B. BODY: 17" x 30", TAPERED AND AND WALL THICKNESS OF .320"

C. BOX BODY SHALL HAVE STRUCTURAL SUPPORT RIBS ON THE UNDERSIDE OF THE SEAT, MINIMUM THICKNESS OF .250"



FAYETTE County Water System

245 McDonough Road
Fayetteville, GA 30214
770.320.6020

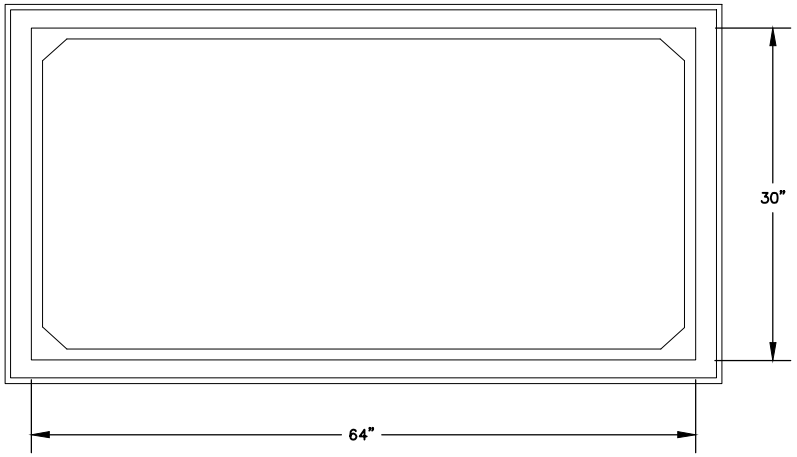
STANDARD 1" BADGER G2 ULTRASONIC METER WITH DOUBLE CHECK VALVE ASSEMBLY, METER BOX AND LID

W-0020

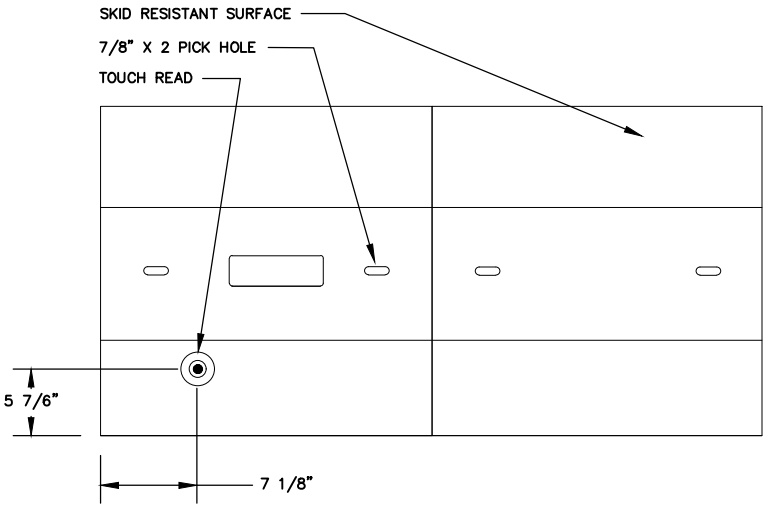
DESIGNED: J.F.C.	DRAWN: B.J.J.
DATE: 12/2024	SCALE: N.T.S.

BY	REVISIONS	DATE

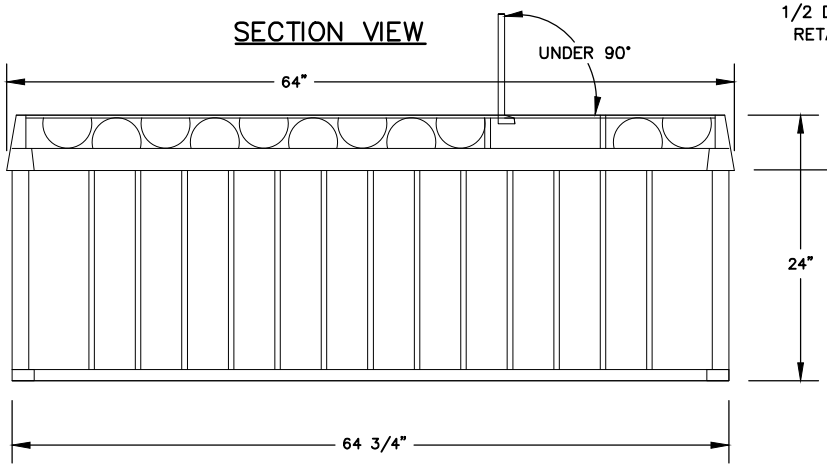
TOP VIEW



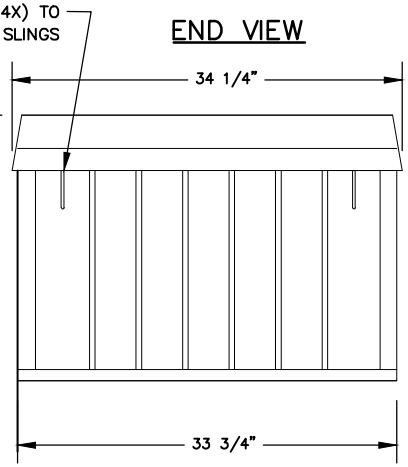
TWO PIECE COVER



SECTION VIEW



END VIEW



- MATERIAL: FIBERGLASS REINFORCED POLYMER CONCRETE & FIBERGLASS REINFORCED POLYMER.
- COLOR CONCRETE GRAY
- LOCATABLE TRAFFIC RATED LID

FAYETTE County Water System

245 McDonough Road
Fayetteville, GA 30214
770.320.6020

STANDARD 2" AND 1-½" BADGER G2 ULTRASONIC METER BOX AND LID

W-0021

DESIGNED: J.F.C.	DRAWN: B.J.J.
DATE: 12/2024	SCALE: N.T.S.

BY	REVISIONS	DATE