



CITY OF CUMMING DEPARTMENT OF UTILITIES

Water System Technical Standards Manual

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LIST OF ABBREVIATIONS AND TERMS

ABC	Aggregate base course	EVC	End of vertical curve
AC	Asphalt cement or concrete	EXIST	Existing
ACB	Asphalt concrete base	FCWS	Forsyth County Water System
ACI	American Concrete Institute	FF	Finished Floor
ACPA	American Concrete Pipe Association	FG	Finished Grade
AISC	American Institute of Steel Construction	FH, F. Hyd	Fire hydrant
ANSI	American National Standards Institute	FPS	Feet per second
APWA	American Public Works Association	GA	Gauge
ASCE	American Society of Civil Engineers	GDOT	Georgia Department of Transportation
ASME	American Society of Mechanical Engineers	GALV	Galvanized
ASTM	American Society for Testing Materials	GPM	Gallons per minute
AWWA	American Water Works Association	HDPE	High Density Polyethylene
BM	Bench Mark	HORIZ	Horizontal
BOC	Back of Curb	ID	Inside diameter
BST	Bituminous Surface Treatment	IE	Invert Elevation
BTB	Bituminous Treated Base	INV	Invert
CB	Catch Basin	IP, IPS	Iron Pipe Size
C/C	Center to Center	JCT	Junction
FOC	Face of Curb	LIN	Linear
CFS	Cubic Feet per second	MH	Manhole
CIP	Cast Iron pipe	MH F/C	Manhole frame and cover
CIPP	Cast-in-place concrete pipe	MJ	Mechanical Joint
CL	Centerline	MSL	Mean Sea Level
CLFMI	Chain Link Fence Manufacturers Institute	NIST	National Institute of Standards and Technology
CMP	Corrugated metal pipe	NEC	National Electric Code
CO	Clean out	NEMA	National Electrical Manufacturer's Assoc.
COL	Column	NFPA	National Fire Protection Association
CONC	Concrete	NSC	National Safety Council
CONSTR	Construction	NSF	Public Health and Safety Organization
CP	Concrete pipe (non-reinforced)	OC	On Center
CTB	Cement Treated Base	OD	Outside diameter
DI	Drop Inlet	OHP	Overhead Power
DIP	Ductile Iron Pipe	OSHA	Occupational Safety & Health Administration
DIPRA	Ductile Iron Pipe Research Association	PI	Point of intersection
EC	End of curve	PL	Property line
EG	Existing Grade	POC	Point of Curve
ELEV	Elevation	PP	Power pole
		PRC	Point of reverse curve
		PSI	Pounds per square inch
		PSF	Pounds per square foot
		PT	Point of Tangent



PVC	Polyvinyl Chloride	SDL	Saddle
PVMT	Pavement	SECT	Section
Q	Rate of flow	SJ	Slip Joint
R	Radius	TH	Test Hole
RC	Reinforced concrete	TRANS	Transition
RCP	Reinforced concrete pipe	UL	Underwriters' Laboratories LLC
RDWY	Roadway	UPC	Utility Protection Center, (Ga. 811)
REINF	Reinforced / Reinforcing	V	Velocity of flow
RET	Retaining Wall	VC	Vertical curve
RPM	Revolutions Per Minute	VERT	Vertical
R/W	Right-of-way (City, County, State Roadways)		
SAN	Sanitary Sewer		
SD	Storm Drain		

"Authority" shall mean the City of Cumming Department of Utilities.

"Contractor" shall mean the individual, firm or corporation undertaking the execution of the Work under the terms of the contract and acting through its agents and employees.

"Standards" and/or "Specifications" shall refer to the Water System Technical Standards and Details for Cumming Utilities.

"Work" of the contractor shall include all labor, material, equipment, skills, transportation, tools, machinery, and other equipment and things useful and necessary to complete the contract.

"Owner" shall mean the project owner and/or developer and/or property owner as an individual or a collective.

SECTION 100 GENERAL

101 PURPOSE OF THIS DOCUMENT

1. The City of Cumming Water System Technical Standards and Details provide standard design direction and construction standards for improvements within the City of Cumming Service Area. These standards govern system improvements accepted by the City for maintenance and operation and serves as coordinated development of those facilities used by and for the public. This includes certain private works, as well as improvements installed within existing City right-of-way and easements. The City shall interpret and apply these Standards in a manner which achieves their intent and is not limited strictly to new construction.
2. These Standards shall apply to, regulate, and guide preparation/design of plans for construction of utilities, drainage, water system(s), site access, and related public improvements. Additionally, they shall set guidelines for any private works which involve drainage, grading, trees, and related improvements. The result of these standards shall protect and promote the health, safety, and general welfare of the public as well as conserving and protecting the natural, economic, and scenic resources of the community.

102 USE OF THIS DOCUMENT

1. This document shall be used jointly with the City's Comprehensive plans, including Cumming's Water, Sewer and Storm Water Master Plans which provide utility services to the community such as water supply, sewer conveyance, storm water management and flood control. Minimum requirements for water system work unless otherwise specified herein, shall conform to the latest provisions of the AWWA Specifications. This document and the related standard details are downloadable in electronic format at www.cummingutilities.com for developers, contractors, and engineers in preparing plans, documents, and construction of public improvements within the City Service Area.
2. This Manual is updated regularly to reflect current minimum and uniform requirements from the City of Cumming adopted Codes and Ordinances. They shall be applied jointly with the latest issue of federal and state regulations. When the provisions of any other statute, ordinance, or regulation are more restrictive than the provisions of this Manual, the provisions of the more restrictive regulation shall apply.

103 TRAFFIC CONTROL AND SAFETY

1. It is the responsibility of the General Contractor, any subcontractor, their employees, and inspectors of job sites to observe all safety regulations. Deficiencies in safety measures noted should be immediately reported to the Contractor's superintendent.
2. Traffic control within the state of Georgia right-of-way shall comply with the State of Georgia D.O.T. Standard Construction Specifications or the U.S. Manual on Uniform Traffic Control Devices for Streets and Highways, latest editions. Adequate temporary bridges or crossings shall be constructed and maintained where required to permit uninterrupted vehicular and pedestrian traffic. The City's on-site inspector or authorized representative shall have the right to limit the amount of open trench or cleared at any one time.

SECTION 200 DESIGN CRITERIA

201 GENERAL

1. Developments requesting water service at elevations in excess of 1280 feet above Mean Sea Level (MSL) will be responsible for designing and constructing a pumping system which meets the specifications within this manual. Developments shall also obtain the approval of the City of Cumming for meeting water and fire service requirements for both system supply and pressures and that is in accordance with the latest Water Master Plan.

202 BOOSTER PUMP STATIONS

1. Single Source Supplier

Water booster pump stations (BPS) within the City of Cumming’s service area shall be single source manufactured package type pump station where responsibility for the manufacture, warranty, service, and operation is the same provider. The package BPS shall be a prefabricated, skid mounted, fully automatic pumping system for potable water. Manufacturer/provider shall be a registered ISO manufacturer and hold a current Quality Management Certificate, for the assembly of custom packaged pumping systems accessories and controls for use in commercial, irrigation, municipal, industrial and fire applications.

The developer shall hold full responsibility for including everything necessary to provide a complete, automatic, smooth operating, and reliable pumping system. Technical information which should be included as part of the BPS design includes the following:

- | | |
|--|--|
| a) System model number | j) Mechanical major component properly marked cut sheets |
| b) Design GPM | k) Electrical major component properly marked cut sheets |
| c) Rated system suction pressure or lift | l) Manufacturer recommended spare parts list |
| d) Rated system discharge pressure | m) SCADA and/or SCADA interface |
| e) Voltage phase and frequency of required power | n) Owner’s manual description |
| f) System approximate dry weight | o) Shipment method and carrier type |
| g) System footprint | p) Notes clarification and exceptions |
| h) Operation sequence | q) Receiving instructions |
| i) Alarm sequence | r) Storage instructions |
| | s) Warranty statement |

2. Codes and Industry Standards

Without exception, pumping system shall be UL and ETL listed as finally assembled. Control panel with controls shall be built in accordance with NEC, and UL and ETL standards. The pumping system shall be manufactured under the manufacturer’s ISO9001:2008 quality assurance program.

- a) Without exception, the electrical components and enclosure shall be labeled as a complete UL and ETL listed industrial control panel assembly.
- b) Manufacturer's UL and ETL labels shall be applied to the door.

203 WATER MAINS

- 1. The size of water mains within the City of Cumming’s Service Area shall be determined by the type of development being served and the quantity of water necessary for fire protection. Minimum water main size shall be 8 inches. The minimum water flow necessary for fire protection for various types of developments are shown below in Table 1.

Table 1 - Minimum Water Flow Required for Fire Protection

Type of Development	Required Flow	Test Requirement
Residential	750 GPM	Test for 20 Minutes
Multi-Family, Patio Homes, and Developments with Greater than 3 Units Per Acres	1000 GPM	Test for 20 Minutes
Shopping Centers	1500 GPM	Test for 30 Minutes
Motels, Light Industry	1500 GPM	Test for 30 Minutes
Heavy Industry	1500 GPM	Test for 45 Minutes

- 2. A minimum residual pressure of 20 psi shall be used when determining water main sizes. When calculating residual pressures, system Hydraulic Grade Line (HGL) shall be assumed to be elevation 1401 MSL.

3. All new and re-developments shall be designed in accordance with the most current edition of the City of Cumming Water Master Plan.
4. A predevelopment fire flow test must be conducted on the water main that will be used to supply water to the proposed development in addition to a 24-hour static pressure test.
 - A. The results of the fire flow test shall be used to perform a water model of the proposed development.
 - B. If the fire flow test and water model results do not meet the City requirements, system-wide upgrades and improvements must be made at the expense of the developer.
 - C. No new development will be permitted if, in the opinion of the City, the new development will negatively impact the water supply, fire flow, or pressure of existing or future development.
 - D. Final Plat On-Site Fire Flow Tests shall be required.
5. As-built fire flow tests must be conducted at each new fire hydrant, at the expense of the developer, before the City will sign off on the final plat. The water system must be completed before the City will accept the results from an as-built fire flow test. The as-built fire flow test reports on each hydrant must be submitted to the City along with the final plat. The test report shall include the information with sample data described in Table 2 below.

Table 2 – Fire Hydrant Test Data Reporting

Unique Hydrant ID	FH 1	FH 2
Latitude	34.08656665	34.08658662
Longitude	-84.05631578	-84.05632198
Elevation	1192.45	1185.46
Static Pressure (PSI) adjusted to 24-Hour Minimum	94	97
Residual Pressure or Pitot (PSI) adjusted to 24-Hour Minimum	65	68
Flow at 20 psi (GPM)	2,214	2,330
Date of Test	9/7/21	9/7/21

6. New development shall not diminish water supply, fire flow, or water pressure of existing or future development. The Director of Utilities will make the determination as to whether a new development will or will not diminish the water supply, fire flow, or water pressure of existing or future development or customer.
7. It shall be the policy of the City of Cumming to require developers to obtain, at their own expense, an easement located outside of the public right-of-way for all utilities that are to be installed along roadways. The purpose for this policy is to avoid unnecessary costs to the City that are associated with moving utilities for road-widening projects.
8. For water mains or services that are to be located within the Georgia DOT right-of-way, an approved permit which meets the requirements of the Georgia DOT shall be obtained prior to installation of the line. The developer shall provide to the City all supporting maps, drawings, and details necessary to complete the Georgia DOT permit application. The City shall submit the application to the Georgia DOT for approval and will receive the permit from the State. The utility contractor will be responsible for posting the necessary permit documentation at the job site.
9. When water mains are to be located along existing County roads, the location shall be as far off the edge of the roadway as practicable, utilizing the back five feet of right-of-way, whenever possible. Any utility work that is proposed within the right-of-way of a County road will require a Utility Permit from the Forsyth County Department of Engineering. The utility contractor will be responsible for obtaining such permit.
10. When water mains are to be located within City of Cumming Right-of-Way and Private Roads
 - A. Along existing roads, location of water mains to be installed shall be as far off the edge of the roadway as practicable. When the main location must be under paving such as concrete, sidewalk, driveway, or parking lot, the water main material shall be Ductile Iron Pipe (DIP).
 - B. Along new roads, location of water mains installed shall be within the back five (5) feet of the right-of-way. When the main location must be under paving such as concrete, sidewalk, driveway, or parking lot, the water main material shall be Ductile Iron Pipe (DIP).
 - C. Water mains shall be deflected around all existing cross drains and headwalls. When the water main crosses a stream, a minimum of 4-foot cover shall be provided per the standard details. Water mains shall not be placed over existing cross drains unless approved by the Department of Utilities. Water main location restricted by existing drainage structures or near catch basins shall include a minimum of three joints of ductile iron pipe centered about the structure.

- D. Water mains shall be installed with a minimum 4 feet of cover. In rock cuts, a minimum of 6 inches of earth cushion below and along the side of the mains shall be provided and in accordance with any bedding and backfill requirements.

11. Roadway Crossings

- A. For water mains that cross Georgia DOT roads, an approved GDOT permit which meets their requirements shall be completed and approved prior to installation. The City of Cumming shall make application for all Georgia DOT Utility Permits. The developer shall provide all required data for the permit to the City including but not limited to, maps, surveys, legal descriptions, and other pertinent data.
- B. Water mains which cross existing paved City and County streets shall be installed in steel casing and extend a minimum 3 feet from edge of paving. Streets within subdivisions (non-thoroughfares), the casing size shall be at a minimum 6 inches larger in diameter than the water main nominal diameter. For all other streets and roads, the casing size shall be 8 inches larger in diameter at a minimum than the water main nominal diameter. Casing sizes not meeting this requirement must be approved by the Cumming Utility Department prior to installation. See Water Casing Detail for typical sizing.
- C. Open cutting of any paved street or driveway within the City of Cumming's Service Area is prohibited unless prior approval has been obtained from the Cumming Utility Department.
- D. Water mains that cross existing unpaved City or County streets may be installed by the open-cut method, if approved by the Department of Utilities. Water-main street-crossings in new developments are required to be ductile iron pipe. No steel casing is required if the water main is installed prior to street paving.

204 SERVICE CONNECTIONS

1. Service Line Size

- A. Water service lines for residential areas shall be a minimum of 1-inch in size (type “K” rolled copper tubing) from the double-strap saddle up to the ball valve. From the ball valve installed at a minimum 18-24 inches below grade up to the meter, the residential service line shall be ¾-inch, type “K” rolled copper tubing. Water meters for residential areas shall be a minimum of three quarter (3/4) inch and located according to the standard construction details.
- B. Commercial and Industrial water service line sizes and water meter sizes for businesses shall be as required by the City of Cumming.

2. Location of Services

- A. Water meter and boxes shall be installed at the right-of-way line of the roadway unless the proposed installation is in a more recent development. More recent developments have curbed streets and the water-main is located five (5) feet behind the curb. Therefore, the location of the water-meter and meter-boxes in more recent developments shall be at the curb. In addition, the location of new water meters and meter boxes shall be consistent with the existing installations in the immediate area. The street curb shall be marked with an imprinted or saw-cut “W” and painted blue at each meter box location.
- B. Service connections to the main line shall incorporate double strap tapping saddles. Direct taps to the water main will not be allowed.

3. Services Crossing Paved Roads

- A. Water service lines which cross paved streets shall not be installed by the open-cut method. All water service lines shall be installed by boring under all paved streets. Steel casings are not required for bored service lines. Service lines shall be installed in accordance with the standard details.
- B. Service lines shall not be installed by the open-cut method across unpaved roadways, unless permission is given, in writing, for the permitting authority (City, County, or State road departments).

4. Services Minimum Cover

- A. Minimum cover of 3-feet shall be provided for bored water service lines. Minimum cover at the water meter box shall be fourteen (14) inches.

205 FIRE HYDRANTS

1. Hydrant Spacing or Hose Lay

Maximum hydrant spacing or hose lay requirements for various types of development are listed below in Table 3. Maximum hose lay is defined as the distance from a hydrant to the most remote location of the structure to be served.

Table 3 - Fire Hydrant Spacing

Type of Development	Distance Between Hydrants or Maximum Hose Lay
Single Residential	500 Feet
Multi-Family	300 Feet
Commercial	300 Feet

Shopping Centers	300 Feet
Motels, Light Industry	300 Feet

206 WATER VALVES

1. Only gate valves are allowed for water main installations.
2. Spacing and Location of Valves
 - A. Valves shall be located such that minimal sections of the water distribution system would be taken out of service during repair work.
 - B. When a water line branches off from the main, a valve shall be placed at the branch of the tee.
 - C. Valves are to be placed at all intersections of water mains. Valves shall be located at not more than 2000-foot intervals in commercial districts and at not more than one block or 800-ft intervals in other districts. Where systems serve widely scattered customers, the valve spacing should not exceed 2,000 feet and locations shall be in accordance with the standard construction details for valve placement in subdivisions. See Water Detail W-1 for typical spacing.
 - D. Valves shall be provided at both ends of water crossings (creek, river, lake, etc. crossings) so that the section can be isolated for testing or repair (valves shall be easily accessible and not subject to flooding); the valve closest to the supply source shall be in a manhole.
 - E. On a one-way feed water main, which has branch lines from the main, main-line valves shall be placed at each branch of the tee. The valves shall be placed on the run of the tee which is furthest from the water supply source.
 - F. When a water main is looped, or there is a possibility that it will be looped, a valve shall be placed on each run and branch of all tees.
 - G. A valve shall be placed at the dead-end of each water main.
 - H. Refer to Standard Drawings for typical valve placement details.

207 AIR RELEASE VALVES

1. At high points in water mains where air can accumulate, provisions shall be made to remove the air by means of hydrants or air relief valves. Automatic air relief valves shall not be used in areas where flooding of the manhole or chamber may occur.
2. Refer to the Standard Drawings for typical water service details.

SECTION 300 MATERIALS SPECIFICATIONS

301 MATERIAL AND WORKMANSHIP

1. Furnish materials that are new, and unused, free of defects and imperfections, and suitable for the service intended.
2. Provide workmanship that is first-class in every respect. Have installation performed by workmen thoroughly experienced in such work. A neat and workmanlike appearance in the finished work will be required.

302 WATER MAINS

1. Pipe for water mains shall be Pressure Class 350 Ductile Iron (D.I.P.). Each pipe shall be subjected to a hydrostatic test pressure of at least 500 psi at the time and place of manufacture. Pipe wall thickness shall be sufficient to meet the above conditions, and in accordance with the Pressure Class listed in the Proposal or shown on the contract drawings.
2. The Pressure Class or nominal thickness, net weight without lining, and casting period shall be clearly marked on each length of pipe. Additionally, the manufacture's mark, country where cast, year in which the pipe was produced and the letters "DI" or "Ductile" shall be cast or stamped on each length of pipe.
3. Ductile Iron Pipe shall have an inside cement lining and asphaltic seal coat in accordance with the latest revision of ANSI/AWWA C104/A21.4.
4. The exterior of ductile iron pipe shall be coated with a layer of arc-sprayed zinc. The mass of the zinc applied shall be 200g/m² of pipe surface area. A finishing layer topcoat shall be applied to the zinc. The mean dry film thickness of the finishing layer shall not be less than 3 mils with a local minimum not less than 2 mils.
5. All pipe shall be manufactured and coated in the United States at the pipe manufacturer's facility.
6. PVC pipe for water mains is not allowed.

303 JOINTS

1. Joints for ductile iron pipe shall be mechanical joint or push-on joint in accordance with AWWA C111 (latest revision).
2. Solvent-cemented joints are not allowed for buried pipes.

3. Coating: Ductile iron pipe shall be lined with an approved cement lining sealed with an approved bituminous seal coat in accordance with AWWA C104 (latest revision). A standard pipe outside coating shall be used in accordance with AWWA C108 (latest revision).
4. Casing Pipe: Jacked casing pipe shall be a smooth steel pipe with a minimum tensile strength of 35,000 psi, or as approved by Georgia DOT. The minimum wall thickness shall be as indicated in the Table below.

Table 4 - Minimum Wall Thickness of Casing Pipe

Nominal Diameter (Inches)	Nominal Thickness (Inches)
Under 14	0.188
14	0.219
16	0.219
18	0.250
20	0.281
22	0.312
24	0.344
26	0.375
28	0.406
30	0.406
32	0.438
34	0.469
36	0.469
42	0.500
48	0.625
54	0.750

304 SERVICE LINES

1. Both ¾-inch and 1-inch water service lines shall be type “K” rolled copper tubing. Copper tubing shall be Type K, DHP soft or hard copper pipe conforming to ASTM B88.
2. All 2-inch water service lines shall be Type K, DHP rolled or hard copper pipe, and shall conform to ASTM B88.
3. All PVC water service lines for commercial developments installed underneath pavement shall be wrapped in No. 12 AWG solid copper locator wire.

4. Brass Fittings

- A. Curb Stops: Curb stops for copper service lines shall be Ford 90o c.t.s. pack-joint x meter swivel or equivalent as approved by the City of Cumming Utility Inspector.
- B. Corporation Stops: Corporation stops for copper service outlets shall be Ford model F-1000-4 c.t.s. pack-joint or equivalent as approved by the City of Cumming Utility Inspector.
- C. Copper female iron pipe adapters shall be Ford c.t.s. pack joint x f.i.p. or equivalent as approved by the City of Cumming Utility Inspector.
- D. Copper by copper unions shall be Ford c.t.s. x c.t.s. pack joint or equivalent. All proposed equivalent brands must be approved by the City of Cumming Utility Inspector.
- E. Copper by male iron pipe adapters shall be Ford shall be Ford c.t.s. pack joint x m.i.p. or equivalent. All proposed equivalent brands must be approved by the City of Cumming Utility Inspector.

305 FITTINGS

- 1. Ductile iron fittings shall conform to ASA 21.10 and AWWA C110, or AWWA C153 (latest revision). Fittings shall have minimum classification of Class 350 type of joints, and fittings shall be mechanical joints only. All mechanical joint fittings shall include accessories. All fittings shall be cement lined with tar coated outside.
- 2. Plastic, or galvanized, fittings on any size pipe will not be allowed.

306 VALVES:

- 1. Gate valves are required for all water mains.
 - A. Gate valves shall be non-rising stem design, ductile iron body, bronze mounted with compression resilient seat manufactured in accordance with AWWA Standard C-515.
 - B. Valves shall be designed for a minimum working pressure of 250 psi (except where plans call for a higher-pressure rating) and shall have 2" square operating nuts, except in meter vaults where handwheels shall be installed. The wedge shall be constructed of ductile iron fully encapsulated with EPDM rubber.

- C. Valves shall have non-rising stems, shall open when turned to the left and shall meet AWWA Specifications. The valves shall have a flange connection conforming to ANSI B 16.1 when flanges are shown on the plans.
 - D. Restrained valve ends shall employ a boltless positive joint restraint equal to the Flex-Ring joint. Friction style restrainers, which point load the adjoining pipe, will not be allowed.
 - E. Gate valves shall be Series 2500 Flex-Ring RW Ductile Iron Resilient Wedge Gate Valve as manufactured by American Flow Control or approved equal.
2. Butterfly Valves are not allowed in any water main installation unless authorized by the City of Cumming.
3. Tapping Valves
- A. Tapping sleeves shall be properly sized to fit the existing pipe and shall be of the fabricated stainless steel with wrap-around gasket type with ends suitable for connection into the pipeline onto which it will be installed.
 - B. The valves furnished with the sleeves shall conform to the requirements for gate valves, except for modifications required to permit the use of full-size cutters through the valves.
 - C. The outlet of the valves shall be mechanical joint for joining with the water mains. All 2-inch tapping valves shall be furnished with FIP ends. All proposed brands must be approved by the City of Cumming Utility Inspector.
4. Valve Markers
- A. Valve markers shall be furnished and installed with each valve installed, with exception of fire hydrant valves.
 - B. The markers shall be of Class A concrete Georgia DOT (highway specifications) four (4) inches square by five (5) feet long, same construction as that of highway right-of-way marker, with the letter "V" firmly made into the marker six (6) inches below the top with a 1-1/4 inch brass plug one (1) inch below the letter "V", which shall be imprinted with the distance between the valve and marker.
 - C. The markers shall be set opposite the valves in such a location as they would not be destroyed by traffic. The top of the marker should be set about eighteen (18) inches above ground. The street curb shall also be marked with a saw-cut letter "V" and the "V" shall be painted blue.

5. Valve Boxes

- A. Valve boxes and covers shall be provided for all valves. Valve boxes shall be of the adjustable slide type, of the length required by field conditions, and installed in accordance with the City's latest water construction standard details.
- B. The shaft shall be a minimum of 5-1/4-inch inner diameter, the base shall be a minimum 8-inch diameter, and the interior height according to field conditions.
- C. The valve box covers shall be of the stay put or drop type, with the word "WATER" cast on top in raised letters. Base size and extension piece shall be as required for each individual size of valve and depth according to the specific manufacturer's sizing requirements.
- D. Valve Pads shall be furnished and installed with each valve installed. The pads shall be 2-foot squares of 3,000 psi concrete.

307 MARKER BALLS

1. Locator balls shall be 3M DYNA TEL Series EMS ID Ball Markers. The model number shall be 1423-XR/iD.
 - A. Marker balls shall be located every 200-LF along straight sections of pipe, every fitting and ends of casing.
 - B. Contractor shall coordinate with Owner's Representative to program marker balls and provide data on Construction Record drawings.

308 FIRE HYDRANTS

1. Fire hydrants shall conform to the latest requirements of AWWA C502, be the traffic type, dry top, 5-1/4-inch valve opening with O-ring seals, three-way only. The three-way hydrants are to have two, 2-1/2-inch NST hose nozzles and one, 4-1/2-inch NST hose nozzle. The main valve shall be rubber faced, shall seat against a bronze seat, and shall open against pressure.
 - A. Hydrants shall range from 3-foot to 5-foot bury with 6-inch mechanical joint inlet connection.
 - B. Operating nuts shall be pentagon (1-1/2-inch point to flat) and shall open by turning counterclockwise.
 - C. All fire hydrant laterals shall have 6-inch gate valves and valve boxes.

- D. All fire hydrants shall be painted in accordance with AWWA C502, Section 2.22 and Section 4.5. The color shall be silver.
- E. All fire hydrants shall be connected to the water main with a 6-inch ductile iron lead. PVC pipe will not be allowed for fire hydrant leads.
- F. Fire hydrants shall be as manufactured by M & H, Mueller, or approved equal.

309 TAPPING SADDLES

- 1. All service connections to the water main shall use 1-inch CC Tap Thread Saddles.
- 2. 2-inch through 30-inch shall use double strap Smith Blair or approved equal.

310 COUPLINGS

Repair, transition, and bolted couplings to be used for water line installation shall be as shown in Table 5.

Table 5 - Pipe Couplings

Water Line Size	Specification	Coupling
3/4 "	Type "K" Soft Copper	Ford brass "Pack- Joint" or A.Y. McDonald Brass "Mac-Pak"
1 "	Type "K" Soft Copper	Ford brass "Pack- Joint" or A.Y. McDonald Brass "Mac-Pak"
2"	Type "K" Soft & Hard Copper	Ford brass "Pack- Joint" or A.Y. McDonald Brass "Mac-Pak"
6"	C900 Ductile iron pipe	M.J. Ductile Iron Solid Sleeve
8"	C900 Ductile iron pipe	M.J. Ductile Iron Solid Sleeve
10"	C900 Ductile iron pipe	M.J. Ductile Iron Solid Sleeve
12" And Larger	C900 Ductile iron pipe	M.J. Ductile Iron Solid Sleeve

311 WATER METERS

1. General

- A. Service Line Meters Water meters for normal residential service shall be three-quarter (3/4)-inch in size. Water services requiring meters up to and including 2-inch size shall be installed by the City of Cumming.
- B. Master Meters (And Other Large Meters): Water meters 3-inches and larger, shall be compound type meters. These meters shall have a cast bronze main-case, measure in gallons per minute, and have a hermetically sealed register with a magnetic coupling drive, as manufactured by Neptune. The general arrangement of the meter pit shall include locking by-pass lines, valves, double check valves, strainers, etc., as may be required by the City's Engineer for the specific application. There are two options available for water meters larger than 3-inches:
- Option 1 – The owner or contractor may purchase and install a meter that meets the specifications of the City of Cumming. A fee of eight dollars per gallon per minute (\$8.00 per gpm) must be paid to the City of Cumming before the installation of the meter will be permitted. (Note: this rate is subject to change without notice. Please contact the Utility Billing Department for a current rate).
 - Option 2 – The City of Cumming will purchase and install the meter. The City will then charge the owner or contractor the eight dollars per gallon per minute (\$8.00 per gpm) fee plus the cost of materials and labor. (Note: this rate is subject to change without notice. Please contact the Utility Billing Department for a current rate).

2. Meter Boxes For 3/4 Inch Water Service

- A. Typical residential water meter boxes shall be composed of cast iron and shall be approximately 14 1/2 inches long with an approximate 7 1/8-inch-wide oval top opening. The meter box shall be approximately 11-inches deep. A cast iron locking lid shall be provided with all meter boxes. Each lid shall be supplied with a hole of the following diameter: 1 27/32 inches. Residential meter box details shall be in accordance with the standard construction details. Accepted brands include Ford cast iron long yoke-boxes and A.Y. McDonald cast iron long-boxes.
- B. Meter box inlets shall be configured as follows:
- i. 3/4-inch cts angle locking type ball valve with Ford Pack Joint or McDonald Mac-Pac compression fittings for dual meter service lines.

- ii. 3/4-inch angle locking-type ball valve with Ford Pack Joint or McDonald Mac-Pac compression fittings for single meter service lines.

NOTE: Dual meter service lines use a ball valve and “Y” fitting with 1-inch inlet X two 3/4-inch outlets. All single meters use a 1” X 3/4” adapter in place of the “Y” fitting.

C. Meter box outlets shall be configured as follows:

- i. All outlets will be 3/4-inch iron pipe threads
- ii. A 3/4-inch brass nipple and 3/4-inch brass ball valve are to be installed at the outlet of the meter box.

3. Backflow Preventer

- A. The City of Cumming is responsible for protecting the public potable water distribution system from contamination or pollution due to the backflow of contaminants or pollutants through a water service connection.
- B. A cross-connection is a connection or potential connection between any part of a potable water system and any other environment containing other substances in a manner that, under any circumstances would allow such substances to enter the potable water system. Other substances may be gases, liquids, or solids, such as chemicals, waste products, steam, water from other sources (potable or nonpotable), or any matter that may change the color or add odor to the water.
- C. In certain cases, the City will require a reduced pressure backflow prevention assembly. The City will dictate when these type of backflow preventers are to be installed.
- D. Examples of businesses that will require an RPZ include but are not limited to mortuaries, industrial facilities, wastewater pumping systems, chemical plants, wastewater treatment facilities, commercial facilities, agricultural facilities, etc.
- E. An approved RPZ and “hotbox” will be required so that the backflow preventer is elevated above the ground level and heated during freezing weather. Elevating an RPZ is required so that the appropriate “air-gap” is always provided.
- F. An RPZ below grade could become submerged in water and thereby be rendered inoperable and ineffective. Reference the standard construction details for required configuration of the RPZ and hotbox. Please note that the hotbox must be supplied with electrical power and a heating element.

- G. All residential services shall have backflow preventers installed in series with the water meter in the meter box.
- H. The City of Cumming will install the backflow preventer with each water meter for sizes $\frac{3}{4}$ -inch – 2-inch.
- I. For sizes $\frac{3}{4}$ -inch through 1-inch, the backflow preventer shall be Watts No. 7 Residential Dual Check Backflow Preventer with bronze body or approved equal.
- J. For sizes larger than 1-inch, or for services other than residential, backflow preventer shall be designed for the specific application and shall be approved by the City of Cumming Utility Inspector.

SECTION 400 CONSTRUCTION STANDARDS

401 EARTH EXCAVATION

1. Clearing and Grubbing
 - A. Areas for water line installation must be cleared and grubbed. All trees, stumps, brush, paving and other waste material must be removed from the site. No large trees located within the right-of-way shall be removed without the approval of the City of Cumming.
2. Protection of Existing Structures and Landscape
 - A. No trees or shrubs will be removed without the approval of the Owner and the City of Cumming. All trees, shrubs, fences, mailboxes, or other personal property damaged or removed, shall be replaced.
 - B. Upon completion of the water line installation, all disturbed areas shall be seeded, fertilized, and mulched with hay. All seeding shall be approved by the City of Cumming. Care must be taken to ensure proper drainage of the area as approved by the City.
3. Excavation Methods
 - A. When excavation is in open cut, the sides of the trench should be sloped as necessary to maintain stability and meet OSHA standards.
 - B. When sheeting is used, it shall be left in place until the backfilling is completed no less than twelve (12) inches above the top of the pipe. Then, the upper section of the sheeting may be removed. When the removal of sheeting endangers adjoining improvements, it will be left in place.
 - C. All water shall be removed from trenches by pumping, bailing, or draining. Groundwater encountered in the excavation shall be depressed to an elevation twelve (12) inches below the bottom of the excavation before pipe-laying may continue.
4. Disposal of Material
 - A. All excess material and waste material should be disposed of immediately after the backfill operation has been completed.
5. Borrow
 - A. When excavated material cannot be used as a suitable backfill, an approved borrow material shall be used.

402 ROCK EXCAVATION

1. Blasting

- A. When blasting is necessary for rock excavation, the explosives must be used, handled, and stored as prescribed by the laws and regulations of the State of Georgia and all local laws applicable. The blasting work must be done by an experienced person. Any damage occurring to persons or personal property due to blasting will be repaired at the Contractor's expense.

2. Disposal

- A. All rock larger than two (2) inches in diameter must be removed from the site and disposed of in a manner approved by the City of Cumming.

403 SUBSURFACE OBSTRUCTIONS

1. General

- A. It is the responsibility of the Contractor to locate and protect all underground utilities and structures. No utility is to be moved or disturbed without the approval of that utility company. Any damage caused by water line installation to any utility or structure shall be immediately reported to the City and repaired at the Contractor's expense. The Contractor shall be responsible for any expenses incurred because of damage to existing utilities. Contractors must adhere to all state laws and the rules of the Georgia Utility Protection Center (UPC).

2. Existing Underground Utilities and Obstructions

- A. Where known or unforeseen underground utilities or obstructions are encountered, minimum depth of cover, or the location and alignment may be changed, upon written approval of the City of Cumming.

3. Relocation of Services

- A. The City of Cumming reserves the right to determine which services shall remain in place and those services which shall be relocated in accordance with the following:
 - i. Services to Remain in Place: Where the City of Cumming determines the services shall remain in place, minimum specified depths of cover for the pipelines may be changed to avoid interference with such services.

- ii. Services to be Relocated: Where the City of Cumming determines the services shall be relocated, the Contractor will make the necessary changes at its expense.

404 INTERRUPTION OF WATER SERVICE

1. No interruption of water service for connections will be allowed without the permission and supervision of the City of Cumming.
2. Proposed interruptions to water service shall be coordinated with the City.
3. Customer notification prior to water service interruption is mandatory and must be given at least 24 hours prior to the interruption.
4. Contractors shall make every effort to minimize the impact of the interruption. For example, when possible, thrust blocks should be poured in advance of the interruption so that concrete curing time is not a factor.

405 PIPELINE INSTALLATION

1. Trenches shall be excavated to their required depth and width to provide for an efficient and safe working environment.
2. Proper and suitable tools and equipment for the safe and convenient handling and laying of pipe shall be used, and great care shall be taken to prevent the pipe from being damaged, particularly the cement lining on the interior of the ductile iron pipe. All pipe and fittings shall be carefully examined for cracks and other defects; if any pipe or other casting is discovered to be cracked, broken, or defective after being laid, it shall be removed and replaced with new material. All pipe and fittings shall be thoroughly cleaned before being laid and shall be kept clean until completion of the work.
3. Where pipe is laid in earth excavated trenches, the bottom of such trenches shall be fine graded to a true line, the pipelines shall not be laid on loose rock or other hard material. Over excavation in the bottom of trenches shall be filled to grade with compacted graded aggregate or suitable earth material.
4. Where pipe is laid in rock trenches, it must be bedded with a minimum of six (6) inches of compacted graded aggregate. The trench must be backfilled with graded aggregate backfill material to a level at least one (1) foot over the top of the pipe.
5. Water mains shall be laid at least ten (10) feet horizontally from any existing or proposed sanitary sewer, storm sewer or sewer manhole. The distance shall be measured edge-to-edge.

6. When local conditions prevent a horizontal separation of 10 feet, the water main may be laid closer to a sewer (on a case-by-case basis) provided the water main is laid in a separate trench or on an undisturbed earth shelf located on one side of the sewer at such an elevation that the bottom of the water main is at least 18 inches above the top of the sewer.
7. The sewer shall be constructed of materials and with joints that are equivalent to water main standards of construction and be pressure tested to assure watertightness prior to backfilling. When separation distance cannot be achieved, approval must be obtained from the City Engineer, and concrete encasement may be required.

406 BACKFILL

1. Backfill under permanent concrete or bituminous pavement shall be compacted graded aggregate. Compaction shall be 100% of the dry rodded unit weight in accordance with AASHTO T99. Compaction shall be accomplished by using a hand vibratory compactor.
2. Backfill under gravel surfaced roadways and surface treated type bituminous roadways shall be backfilled using select material placed in six (6) inch layers thoroughly compacted for the full depth and width of the trench. Compaction shall be to 95% as determined by AASHTO T99. Compaction shall be accomplished by using a hand vibratory compactor.
3. Backfill in unpaved areas shall be select material compacted to 90% as determined by AASHTO T99, or compatible with the surrounding area.
4. Bedding types to be used in water line installation shall be Type V bedding shall be used. Refer to the City standard construction details for typical installation.

407 ROAD CROSSINGS

1. Street Cuts

When open street cuts have been approved by the City of Cumming, the following rules must be adhered to:

- A. Construction work allowed between 9 A.M. and 4 P.M. on weekdays only, unless otherwise approved by the City of Cumming.
- B. One (1) lane of traffic must be always open.
- C. Traffic control devices, as required by Georgia DOT, must be used to direct traffic.

- D. Repair of the street cut shall be in accordance with the Standard Drawing.
 - E. If an open ditch is left unattended for any length of time, a 3/4-inch steel plate must be used to cover the ditch.
- 2. Tunneling
 - A. When tunneling under roadways, the methods used must be in accordance with the rules and regulations of the Georgia DOT.
- 3. Boring and Casing
 - A. Water lines crossing all paved streets shall be installed by boring and casing unless otherwise approved by the City of Cumming. The boring and casing methods used must be in accordance with requirements of the Georgia DOT.
 - B. Whenever a state route or heavily traveled off-system road is crossed, the agency that has jurisdiction over the road or the railroad must be notified, prior to the installation of the mains. At the crossing, a steel casing with sufficient diameter must be jacked and bored to accommodate the carrier pipe. Any free boring at low traffic city streets and county roads must conform to the applicable local and/or state requirements.

408 DRIVEWAY CROSSINGS

- 1. Water lines must be bored under existing asphalt or concrete driveways. Paved driveways shall not be open cut without prior permission of the owner and the City.
- 2. When water lines are installed by the open-cut method, smooth, even saw cuts shall be made across the paved area before any material is removed. Ripping up pavement using a backhoe, without saw cuts, will not be allowed.
- 3. When water lines are bored under driveways, a minimum of three (3) foot cover is required. Steel casing under driveways is not required.

409 REPLACEMENT OF PAVEMENT AND STRUCTURES

- 1. Asphalt Pavement
 - A. Asphalt pavement replacement for water lines installed under paved roadway surfaces shall be type "A" and repair or replacement made in accordance with the standard construction details. Base course shall be placed and compacted immediately after backfilling and made level with adjacent existing paving.

- B. If compaction is sufficient after the base course is placed, the base course shall be removed to a sufficient depth to provide no less than two (2) inches of wearing course level with adjacent grade. A bituminous priming treatment shall be applied to the base course prior to the placing of the two (2) inch type "E", or "F" surface course.
- C. Asphalt pavement replacement for transverse street cuts shall be of type "B" pavement and repaired or replaced in accordance with the standard construction details.

2. Gravel Roadway Replacement

- A. The material used in restoring gravel roadways shall be the same as those which composed the wearing and base courses of the existing roadway. As a minimum, roadway material shall be equal to crusher run stone conforming to the Georgia DOT Standard Specification.

3. Driveway Replacement

- A. Concrete driveways shall be constructed to the thickness of the adjoining wearing surface and base course shall be constructed of similar materials and dimensions as the original base course. As a minimum, 3,000 psi concrete shall be used as a wearing course, as detailed in the standard construction details.
- B. Asphalt driveways shall be repaired in kind and depth, matching the existing grades for a contiguous complete repair.
- C. Gravel driveways shall be restored to their original condition and dimensions using materials like those already in place. As a minimum, gravel driveways shall be six (6) inches of No. 57 crushed stone or graded aggregated base (G.A.B.), conforming to the Georgia DOT Standard Specifications and as detailed in the standard construction details.

4. Curb and Gutter Replacement

- A. All curbs and combination curbs and gutters, which have been removed or disturbed in the progress of the work, shall be replaced at the Contractor's expense. Curbing shall be made to conform accurately in size, line, grade, and materials with that adjoining at the saw cut locations. In restoring curbs, the subsoil and foundation material shall be well compacted to prevent any future settlement.
- B. All granite curbs shall be restored with material equal to that already in place.
- C. All concrete curbing shall have minimum 28 days compressive strength of 3,000 psi.

5. Sidewalk Replacement

- A. All sidewalks, disturbed in the process of the work, shall be constructed to the same grade, dimensions, and materials as were originally in place.
- B. Where necessary to cut a sidewalk, entire slabs or squares shall be removed and replaced.
- C. The sub-base shall be thoroughly rolled or tamped and shall be set just before, if necessary, the concrete is placed, but shall show no pools of water.

410 THRUST RESTRAINT FOR PRESSURE LINES

1. Water pipe installed around curves and at all unsupported changes of direction, all tees, wyes, crosses, plugs and other like fittings, shall be solidly and properly blocked with concrete against solid earth to take the reaction of the main pressure and to prevent lateral movement of the pipe or fitting when under pressure.
2. Concrete for reaction blocking shall have a minimum compressive strength of 3,000 psi at 28 days. The blocking, unless otherwise shown, shall be so placed that the pipe and fitting joints will be accessible for repair.
3. Refer to the standard construction details for typical installations.
4. Concrete collars and thrust rods may be required by the City where concrete blocking is inadequate or where the interruption of service is not permissible.

411 FIRE HYDRANT INSTALLATION

1. Hydrants shall be set plumb, and the hydrant lateral shall have at least 36 inches cover over the pipe.
2. The bottom flange of the hydrant shall be set 1-1/2 inches above the finished ground level.
3. Backfill shall be carefully placed in six (6) inch layers and carefully tamped.
4. Concrete thrust blocks shall be poured at each hydrant tee.
5. The hydrant shall be properly anchored to the hydrant tee using anchoring pipe.
6. Not less than seven (7) cubic feet of crushed or broken stone shall be placed around the base of the hydrant to insure drainage.
7. The interior of the hydrant shall be thoroughly cleaned of all foreign matter prior to installation.
8. See the typical standard construction details for installation.
9. After installation, each hydrant and valve shall be inspected in both opened and closed positions to assure that all parts are in satisfactory working condition.
10. All hydrants shall be marked on the top layer of asphalt of each street by a blue reflective marker. (Astro Optics Corporation TPM-2B or equivalent).
11. The marker shall be set in the middle of the lane nearest to the fire hydrant and shall be made to adhere to the asphalt with the appropriate epoxy-type glue or cement.

412 VALVE INSTALLATION

1. Valve boxes and covers shall be provided with all valves, shall be of the adjustable slide type, of the length required, and installed according to the City standard construction details. The valve boxes shall be centered over the operating nut of the valve.
2. Valve Pads shall be furnished and installed with each valve installed. The pads shall be 2-foot squares of 3,000 psi concrete.
3. The markers shall be set opposite the valves in such a location as they would not be destroyed by traffic. The top of the marker should be set about 18 inches above ground.
4. Valve locations shall be marked on the street curb with a saw-cut letter “V”. The saw-cut letter “V” shall be painted blue.

413 WATER SERVICE LINE INSTALLATION

1. Service line installation shall have a minimum cover of 18 inches.
2. The service line shall be continuous from the water meter to the corporation stop.
3. Refer to typical detail in the Standard Drawings.
4. All PVC water service lines for commercial developments installed underneath pavement shall be wrapped in No. 12 AWG solid copper locator wire.

414 TESTING AND ACCEPTANCE

1. Pressure and Leakage Tests
 - A. After pipe has been laid and backfilled, it shall be subjected to a hydrostatic pressure of 150% of the working pressure at point of test, but not less than 125% of normal working pressure at highest elevation for two (2) hours.
 - B. Before applying the specified test pressure, all air must be expelled from the line.
 - C. The City Utility Inspector must witness all tests.
 - D. Any cracked or defective pipe, fittings, valves, or hydrants discovered during this pressure test, shall be removed, and replaced with sound material.
 - E. The test shall be repeated until satisfactory.
 - F. Leakage is defined as the quantity of water to be supplied into the newly laid pipe, or any valved section thereof, after the air has been expelled and the pipe has been filled with water to the 200-psi test pressure. No pipe installation will be accepted until the leakage is less than the number of gallons per hour, as determined by the formula below and by following Table 5-1:

$$L = \frac{ND \sqrt{P}}{7400}$$

L = Allowable leakage in gallons per hour.

N = Number of joints in the section of pipe tested.

D = Nominal diameter of pipe in inches.

P = Average test pressure during the leakage test in pounds per square inch gauge.

- G. The following table is based on the above leakage formula. Allowable leakage is shown in gallons per 1,000 feet of pipeline for a two (2) hour pressure test at 200 psi.

Table 6 - Allowable Leakage During Water Test

Pipe Size	Allowable Leakage Per 1000 feet During Test
8	1.5 Gallon
10	1.8 Gallon
12	2.2 Gallon

2. Flushing And Disinfection

- A. All piping, complete with fittings and appurtenances, shall be flushed until clean and sterilized as specified in AWWA C601 (latest revision) "Disinfecting Water Mains", except that the tablet method, Section 7.3, shall not be allowed. The requirements of this paragraph apply equally to new pipe and fittings and to existing pipelines into which connections have been made, or which may have been otherwise disturbed to the extent that contamination may have occurred.
- B. Chlorine shall be added, and a residual of 50 mg/l shall be maintained in the portion of line to be disinfected for a 24-hour period. After 24 hours, a sample shall be taken by the City Utility Inspector and tested at the City's Water Treatment Facility Labs (770) 781-2026. The test shall show a residual chlorine level of at least 25 mg/l.
- C. When it has been determined that a residual chlorine concentration of 25 mg/l exists after a 24-hour period, the heavy chlorinated water shall be flushed from the water line. After flushing, the chlorine residual shall be less than or equal to 1.0 mg/l.
- D. After the water line has been flushed, the City Utility Inspector shall take two (2) samples from the water line. One (1) sample shall be tested and show a chlorine residual less than or equal to 1.0 mg/l. The other sample shall be tested for bacteriologic quality and show the absence of coliform organisms. If chlorine residual tests exceed 1.0 mg/l, the water line must be flushed until chlorine residual is equal to or less than 1.0 mg/l. The chlorine residual must be 1.0 mg/l or less before samples can be taken and tested for bacteriologic quality.
- E. The "tablet method" of disinfection, which consists of placing calcium hypochlorite granules or tablets in the water main as it is being installed and then filling the main with potable water when installation is complete, is not allowed.

- F. Before the main is chlorinated, it shall be filled to eliminate air pockets and shall be flushed to remove particulates. A flushing velocity of not less than 2.5 feet/second is usually maintained in pipe sizes less than 24 inches in diameter. For larger diameter mains, an alternative to flushing, such as broom sweeping of the main, is acceptable prior to chlorinating the main.
- G. The chlorine solution used for disinfection of water mains shall have a free chlorine residual concentration not less than 25 mg/L. This heavily chlorinated water shall be retained in the main for at least 24 hours, during which time all valves and hydrants shall be operated to ensure disinfection of the appurtenances.
- H. After the applicable retention period, the heavily chlorinated water must not be disposed in a manner that will harm the environment. Neutralizing chemicals, such as Sulfur Dioxide, Sodium Bisulfite, Sodium Sulfite or Sodium Thiosulfate can be used to neutralize the chlorine residual remaining in the water to be wasted.
- I. Flush all lines until residual is equal to existing system. After final flushing and before the water main is placed into service, water samples shall be collected from the main and tested for microbiological quality in accordance with the Georgia Rules for Safe Drinking Water, Chapter 391-3-5.

NOTE: The highly chlorinated water that is generated during the disinfection of any water line shall not be allowed in any way to enter the City's distribution system. If the City discovers that any person has allowed highly chlorinated water to enter the City's distribution system, the City shall hold that person in violation of the City's Utility Ordinance. In addition, chlorinated water shall not be allowed to enter the City's Municipal Separate Storm Sewer System (MS4). A fine of not less than \$1000 per day shall be levied against those individuals and/or companies who violate these requirements.

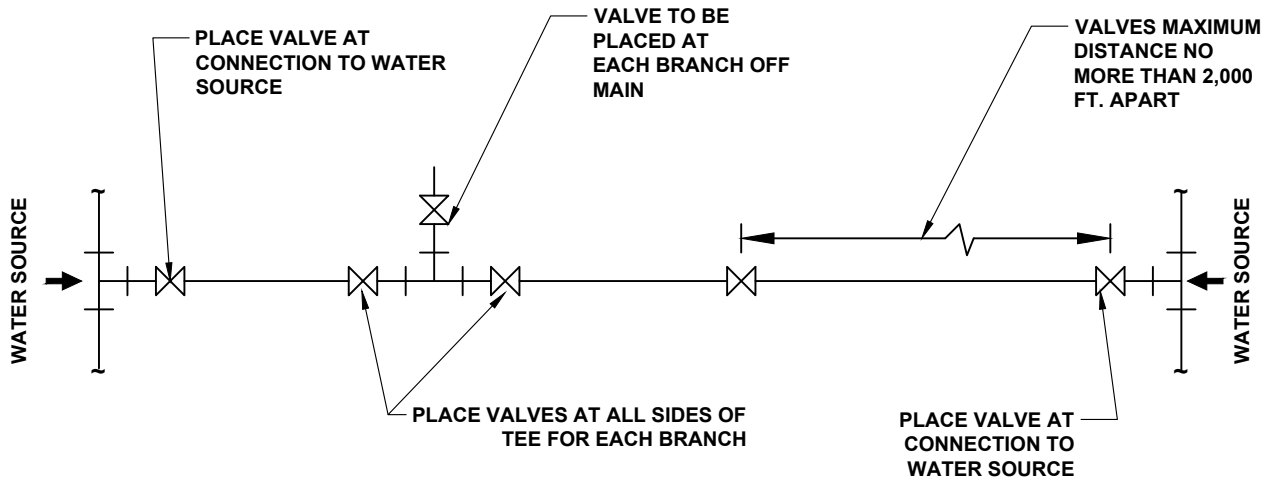
3. Final Acceptance, As-Built Drawings, Spare Parts, O&M

- A. As-built drawings shall be submitted to the City of Cumming for every project governed by this book of specifications. The City of Cumming will not permit the issuance of any certificate of occupancy or the approval of any final plat until appropriate as-built drawings are received. This includes both hard copies and electronic copies in AutoCAD format on CD ROM

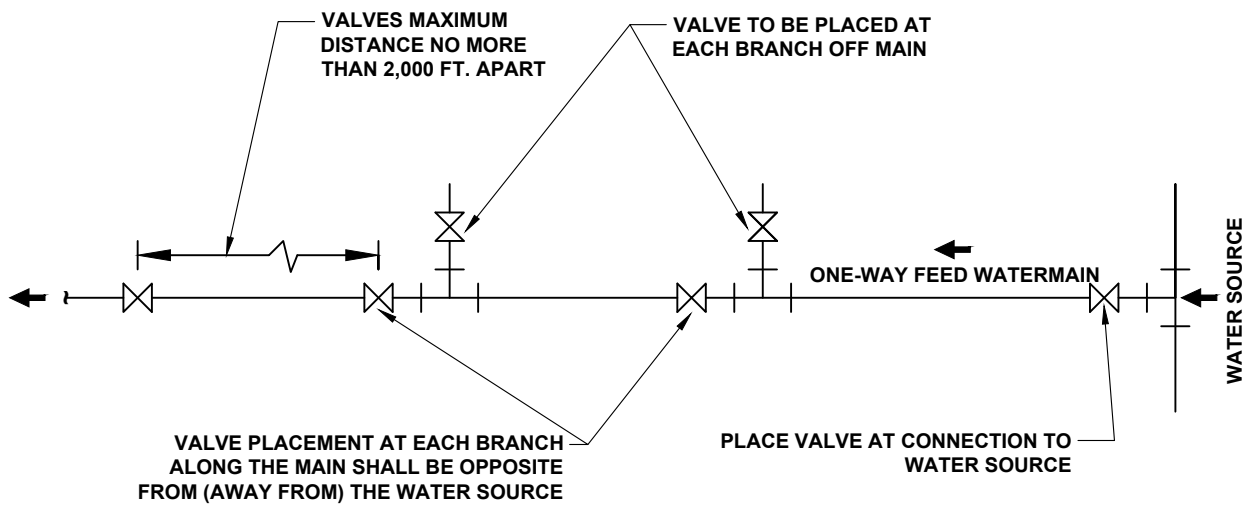
SECTION 500 STANDARD CONSTRUCTION DETAILS

W-1	TYPICAL VALVE LOCATIONS
W-2	WATER SERVICE LINE LOCATION DETAIL
W-3A	BEDDING DETAILS FOR WATER MAINS
W-3B	ALLOWABLE TRENCH WIDTH CHART
W-4	CURB AND GUTTER DETAILS
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W-6	GATE VALVE INSTALLATION DETAILS
W-7A	WATER UTILITY LOCATION PROFILE IN R/W
W-7B	WATER UTILITY LOCATION ALONG COUNTY AND GDOT ROADS
W-7C	WATER UTILITY LOCATION ALONG SUBDIVISION/CITY ROADS
W-7D	WATER UTILITY LOCATION AT INTERSECTIONS
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W-28	SIDEWALK, CURB, AND GUTTER REPAIRS
W-29	STREAM CROSSING

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W-30C	STANDARD GANG METER ASSEMBLY
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W-31	COMMERCIAL/INDUSTRIAL RPZ BACKFLOW PREVENTER
W-32	CONCRETE ENCASEMENT DETAIL
W-33	FIRE LINE VALVE VAULT
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W-35	DOUBLE DETECTOR CHECK VALVE CONFIGURATION 6-INCH
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W-37A	WATER SERVICE METER BOX
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W-39	MARKER BALLS
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W-41	WATER NOTES
W-42	FIRE LINE DOUBLE DETECTOR CHECK VALVE ASSEMBLY FOR 6" AND 8"
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W-55	RPZ BACKFLOW PREVENTER AND VALVE BOX
W-56	MATERIAL LIST QUICK REFERENCE SHEET
W-57	WATER NOTES



LOOPED WATER SOURCE



SINGLE WATER SOURCE



LATEST REVISION

12/01/2021

CITY OF CUMMING

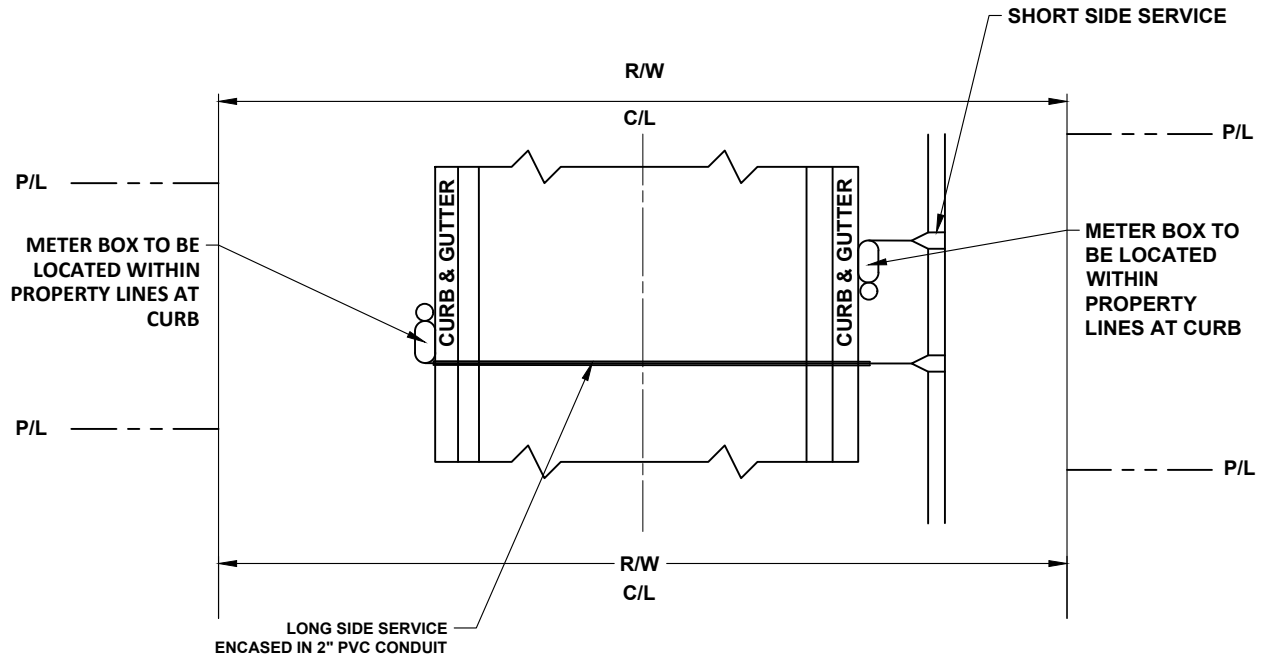
DEPARTMENT OF UTILITIES

TYPICAL VALVE LOCATION

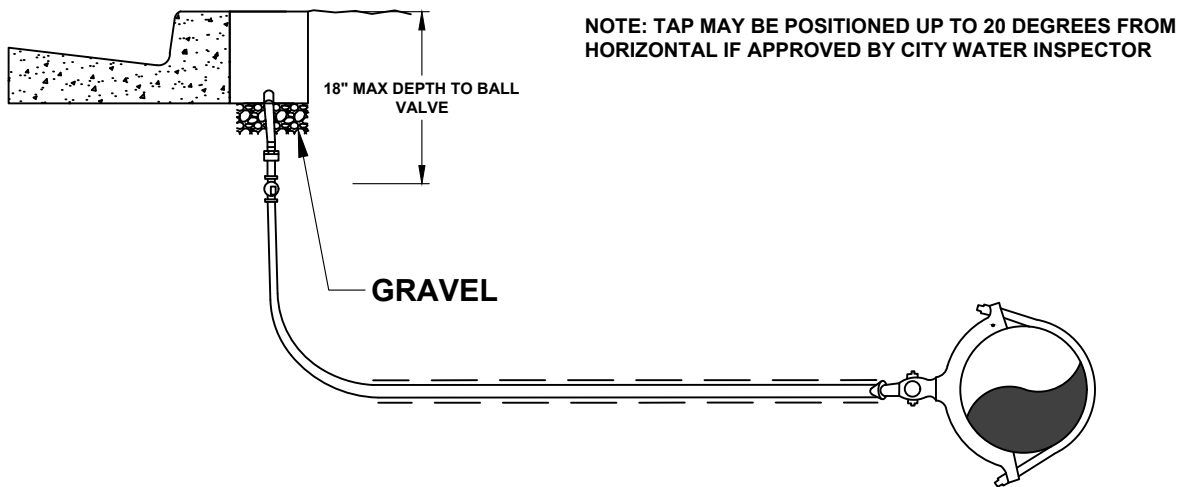
DETAIL NUMBER:

W-1

SCALE: NOT TO SCALE



PLAN



NOTE: TAP MAY BE POSITIONED UP TO 20 DEGREES FROM HORIZONTAL IF APPROVED BY CITY WATER INSPECTOR



LATEST REVISION

12/01/2021

CITY OF CUMMING

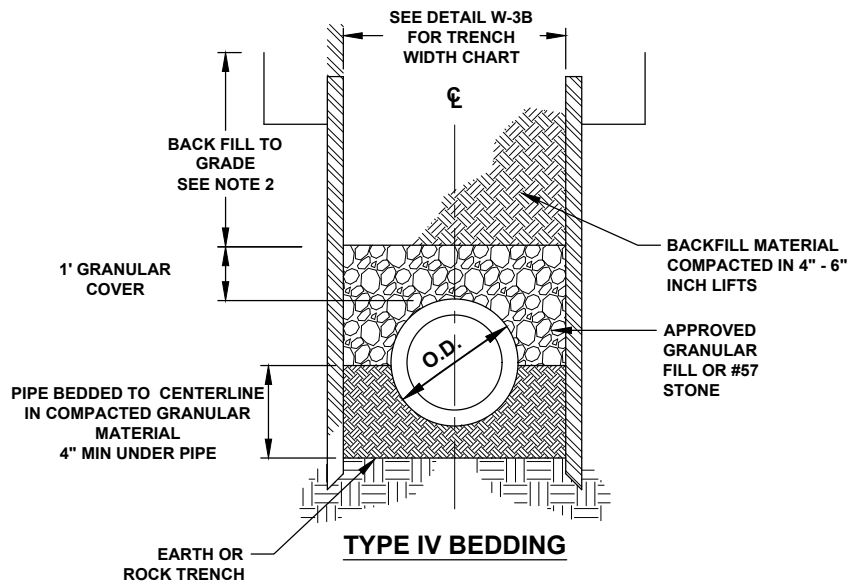
DEPARTMENT OF UTILITIES

WATER SERVICE LINE LOCATION DETAIL

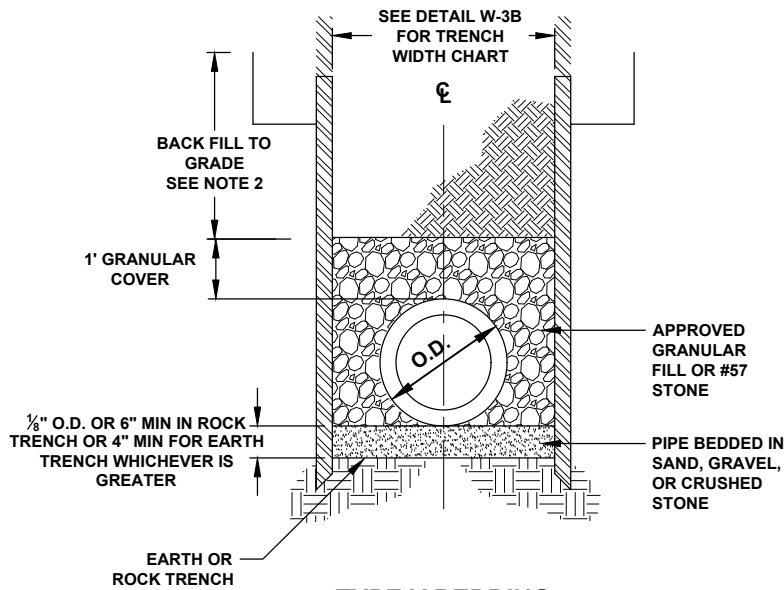
DETAIL NUMBER:

W-2

SCALE: NOT TO SCALE



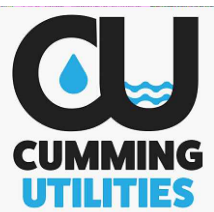
TYPE IV BEDDING



TYPE V BEDDING

NOTES:

1. TRENCH WIDTH MINIMUMS PER DETAIL W-2B.
2. BACKFILL SHALL BE PLACED IN MAXIMUM 4-6 INCH LIFTS, TAMPED OR COMPACTED IN ACCORDANCE WITH AWWA C600 (CURRENT EDITION).
3. NATIVE OR LOOSE SOILS ARE THOSE EXCAVATED FROM THE TRENCH, FREE OF LARGE ROCKS (GREATER THAN 2-INCHES), FOREIGN MATERIALS, AND FROZEN EARTH.
4. GRANULAR OR SELECT FILL MATERIAL SHALL BE COMPACTED TO 90% STANDARD PROCTOR PER AASHTO T-99.
5. TYPE "V" AND "IV" BEDDING REQUIRED FOR ALL WATER MAIN INSTALLATION.
6. WHERE TRENCH IS EXPOSED ROCK, 6-9 INCHES MIN. CUSHION REQUIRED BETWEEN PIPE & ROCK.
7. TYPE I, II, AND III LAYING CONDITIONS SHALL NOT BE ALLOWED FOR WATER MAINS.
8. TYPE "V" BEDDING REQUIRED AT ROADWAY CROSSINGS AND RESTRAINED JOINT LOCATIONS



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CITY OF CUMMING

DEPARTMENT OF UTILITIES

BEDDING DETAIL WATER MAINS

DETAIL NUMBER:

W-3A

SCALE: NOT TO SCALE

PIPE SIZE (NOMINAL)	A SIDE CLEARANCE - INCH		B DITCH WIDTH - INCH				C SHORING WIDTH (ADDITIONAL - INCH)	D CUT REPAIR WIDTH - FEET			
	SOIL	ROCK	SOIL		ROCK			SOIL		ROCK	
			MJ	SJ	MJ	SJ		MJ	SJ	MJ	SJ
3/4"-2"	2	6	NA	8	NA	14	AS APPROVED	NA	3.00	NA	3.17
4"	9	12	25	23	27	25	AS APPROVED	4.08	3.92	4.25	4.08
6"	9	12	28	28	30	30	AS APPROVED	4.33	4.33	4.50	4.50
8"	9	12	32	30	34	32	AS APPROVED	4.67	4.50	4.83	4.67
10"	9	12	34	32	36	34	AS APPROVED	4.83	4.67	5.00	4.83
12"	9	12	36	34	38	36	AS APPROVED	5.00	4.83	5.17	5.00
14"	9	14	39	36	41	38	AS APPROVED	5.25	5.00	5.42	5.17
16"	9	14	42	38	44	40	AS APPROVED	5.50	5.17	5.67	5.33
20"	9	14	45	44	47	46	AS APPROVED	5.75	5.67	5.92	5.83
24"	9	14	50	48	52	50	AS APPROVED	6.17	6.00	6.33	6.17
30"	9	18	58	54	60	56	AS APPROVED	6.83	6.50	7.00	6.67
36"	9	18	64	61	66	63	AS APPROVED	7.33	7.08	7.50	7.25
42"	9	18	72	64	74	66	AS APPROVED	8.00	7.33	8.17	7.50
48"	9	18	78	73	80	75	AS APPROVED	8.50	8.08	9.34	8.25



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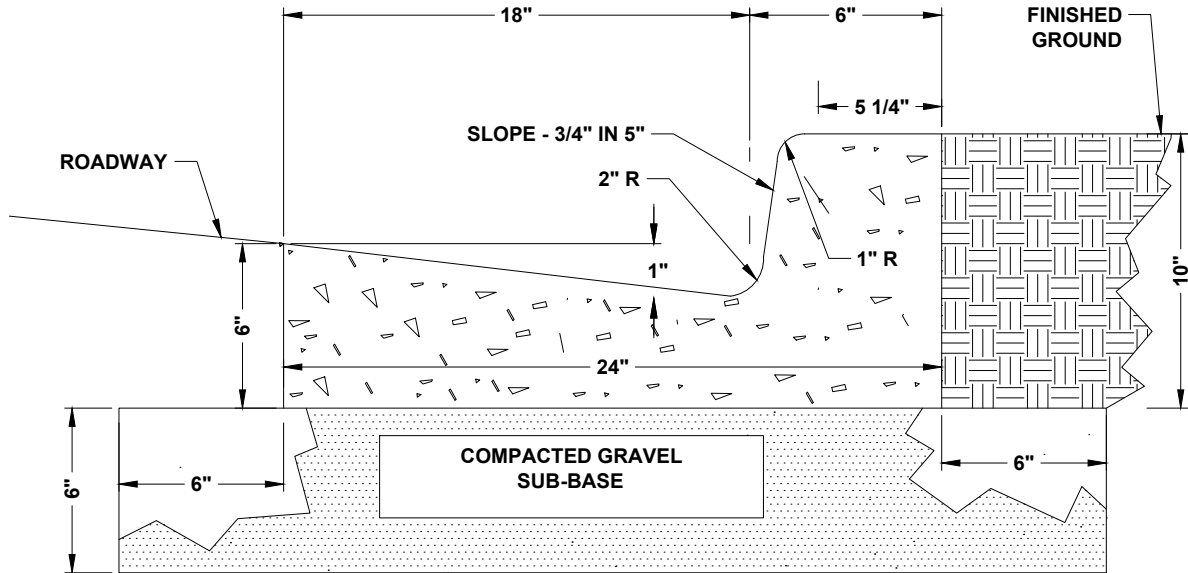
DEPARTMENT OF UTILITIES

ALLOWABLE TRENCH WIDTH CHART

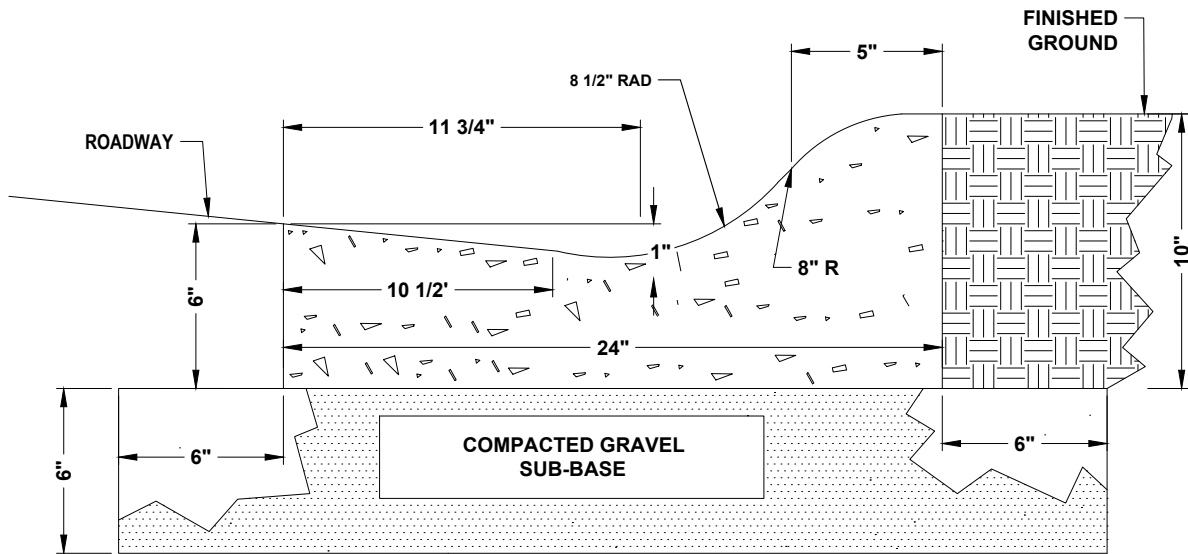
DETAIL NUMBER:

W-3B

SCALE: NOT TO SCALE



HIGH BACK CURB



ROLL BACK CURB



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CITY OF CUMMING

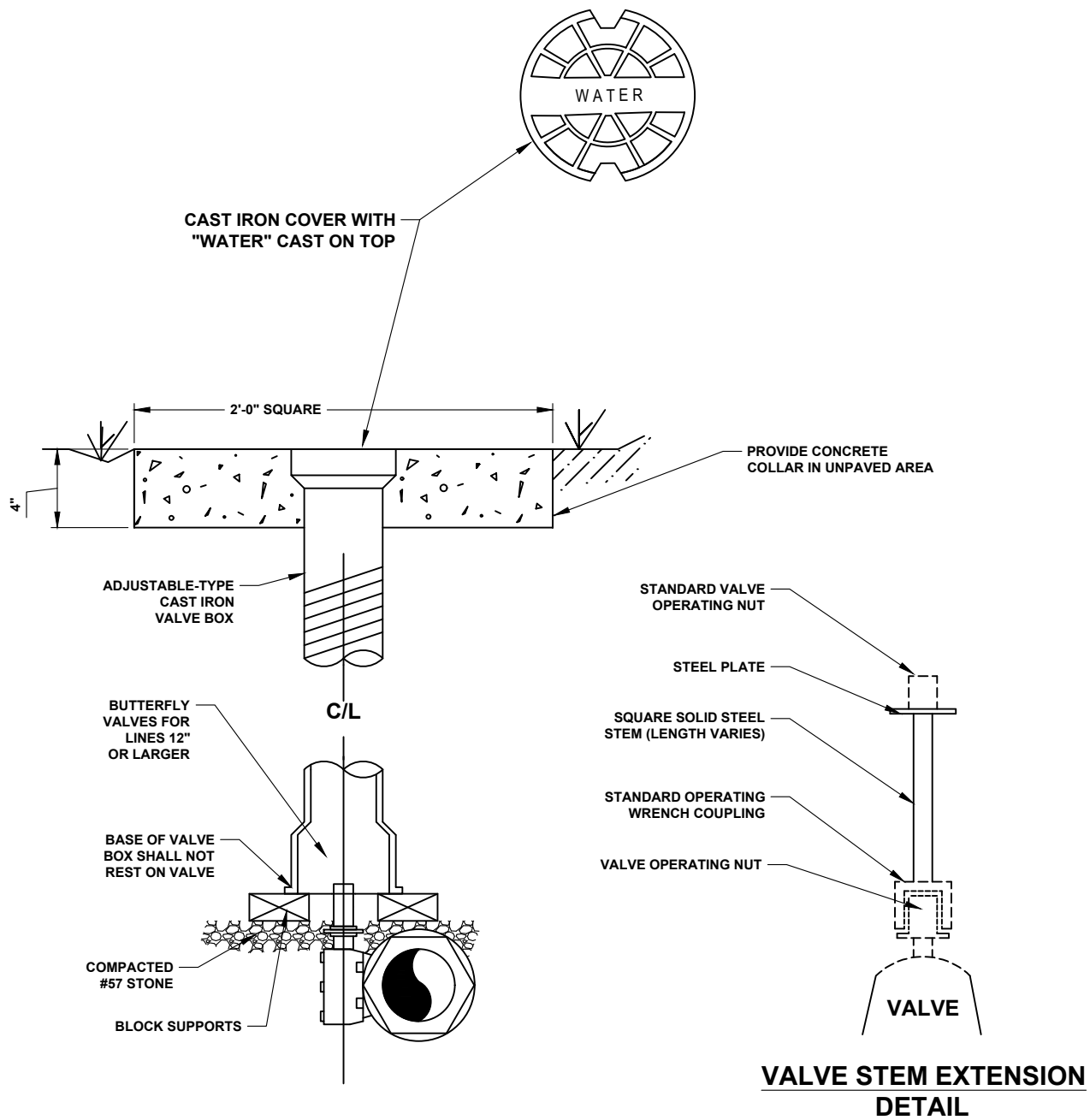
DEPARTMENT OF UTILITIES

CURB AND GUTTER DETAILS

DETAIL NUMBER:

W-4

SCALE: NOT TO SCALE



**VALVE STEM EXTENSION
DETAIL**

NOTES:

1. BUTTERFLY VALVES ONLY ALLOWED AT THE DISCRETION OF THE CITY OF CUMMING UTILITIES.
2. ALL GATE VALVES SHALL HAVE A VALVE BOX.
3. VALVE STEM REQUIRED ON INSTALLATIONS OVER 4' OF DEPTH, BROUGHT TO WITHIN 2' OF FINISHED GRADE.
4. VALVE EXTENSION TO HAVE SET SCREWS.



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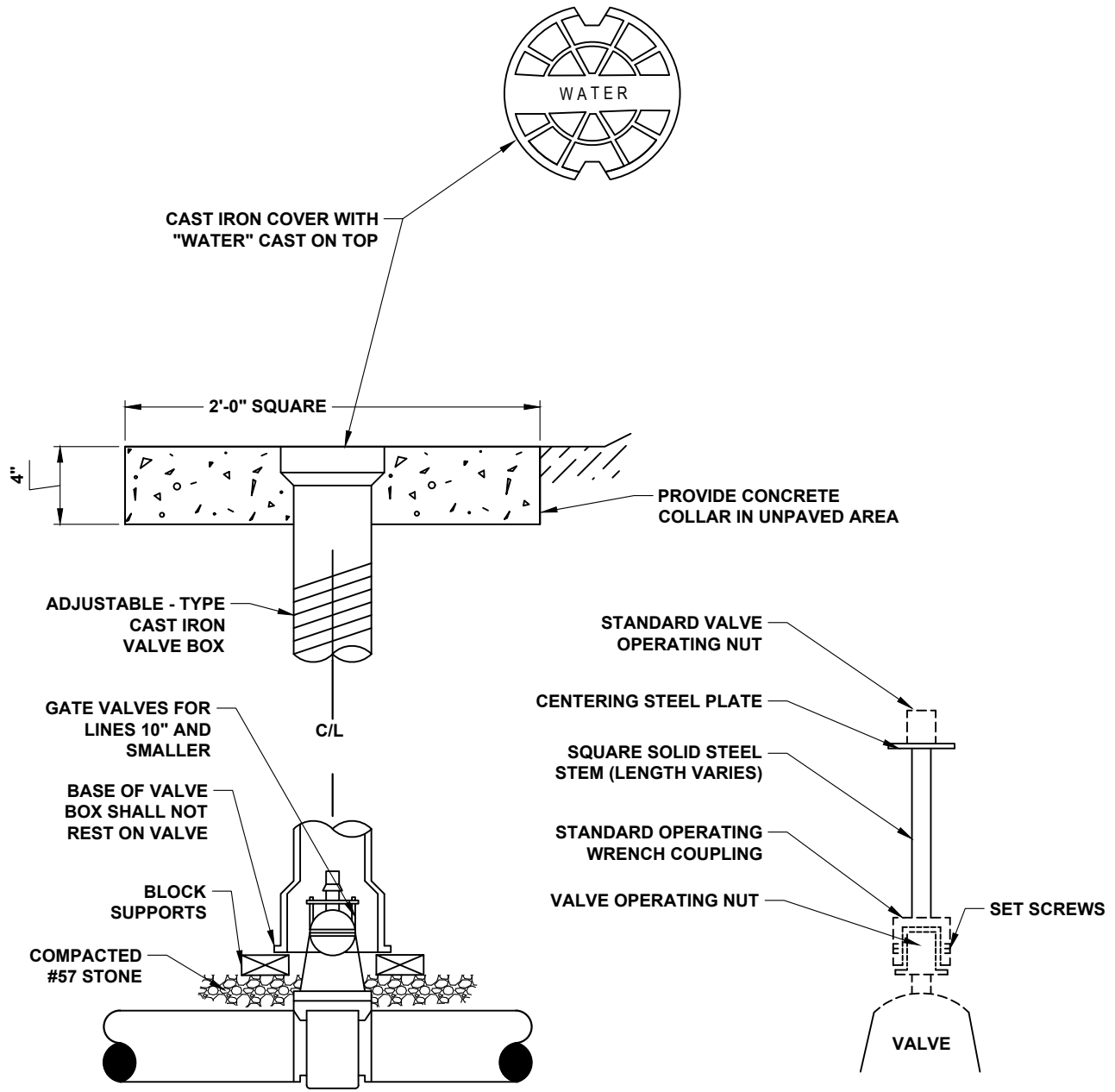
DEPARTMENT OF UTILITIES

**BUTTERFLY VALVE INSTALLATION
DETAIL - 12" OR LARGER**

DETAIL NUMBER:

W-5

SCALE: NOT TO SCALE



VALVE STEM EXTENSION DETAIL

NOTES:

1. ALL GATE VALVES SHALL HAVE A VALVE BOX.
2. VALVE STEM REQUIRED ON INSTALLATIONS OVER 4' OF DEPTH, BROUGHT TO WITHIN 2' OF FINISHED GRADE.
3. VALVE EXTENSION TO HAVE SET SCREWS.



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CITY OF CUMMING

DEPARTMENT OF UTILITIES

GATE VALVE INSTALLATION DETAIL
20" AND SMALLER

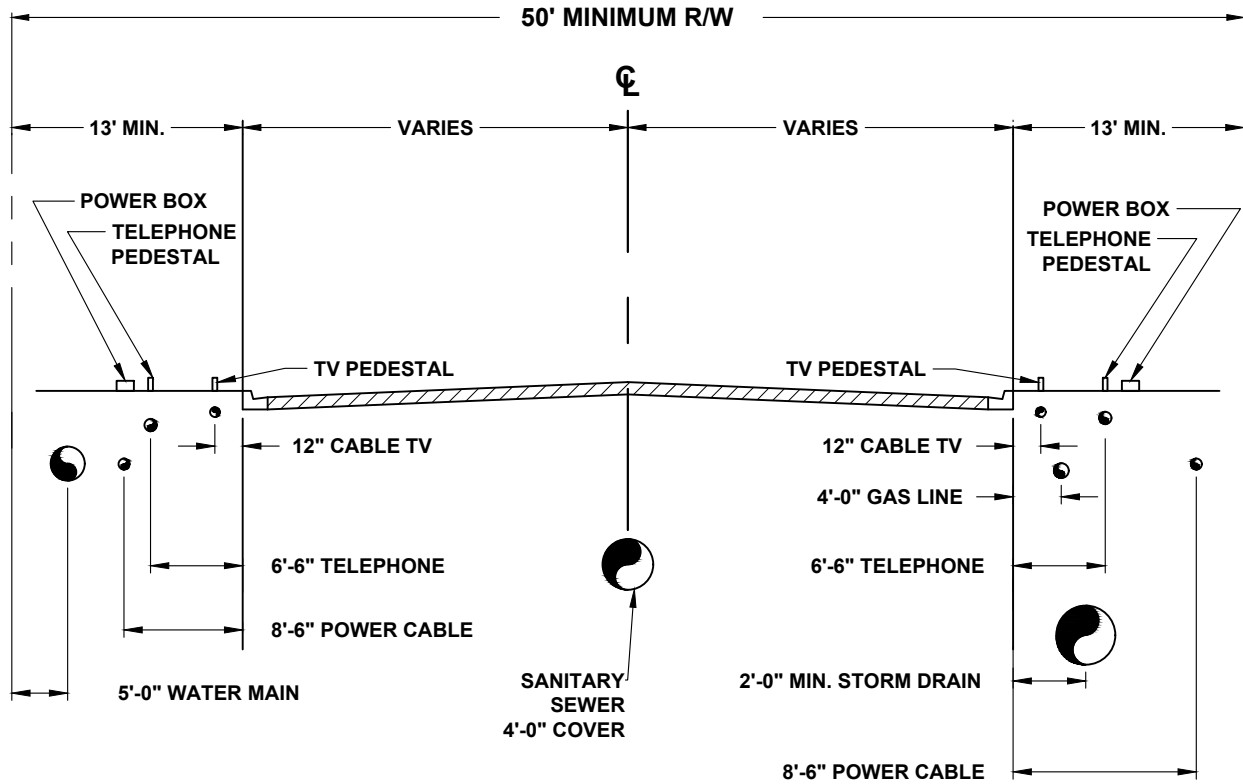
DETAIL NUMBER:

W-6

SCALE: NOT TO SCALE

R/W

R/W



NOTES:

1. BEFORE ANY UTILITY IS INSTALLED, THE REQUIRED WIDTH OF THE ROADWAY SHALL BE ROUGH GRADED AND ALL CONCRETE CURBING SHALL BE SET AT FINAL GRADES.
2. IN GENERAL, THE WATER MAINS SHOULD BE INSTALLED FIRST. FOLLOWING WATER MAIN INSTALLATION, UTILITIES ARE TO BE INSTALLED IN THIS ORDER: 1) ELECTRIC POWER 2) GAS 3) TELEPHONE 4) CABLE T.V. ALL UTILITIES SHALL BE INSTALLED PRIOR TO PAVING.
3. ON THOSE SUBDIVISION STREETS WHERE NO CURB IS CALLED FOR IN THE PLANS, MEASUREMENTS SHALL BE FROM THE EDGE OF PAVEMENT.
4. AT CUL-DE-SACS, ALL DIMENSIONS SHALL REMAIN IDENTICAL TO STANDARD STREET SPACING, EXCEPT THAT GAS WILL BE 3.0 FT AND TELEPHONE WILL NOT BE LOOPED.
5. EACH UTILITY SHALL BE RESPONSIBLE FOR REPAIRS OF ANY DAMAGE THEY CREATE TO OTHER UTILITIES AND TO THE STREET IMPROVEMENTS WITHIN THE RIGHT-OF-WAY.
6. MINIMUM COVER FOR ALL WATER MAINS (WITHIN SUBDIVISION ROAD ROWS) THAT ARE 6 INCHES - 10 INCHES IN DIAMETER SHALL BE 3.0 FT. FOR ALL WATER MAINS 12 INCHES AND LARGER IN DIAMETER (WITHIN SUBDIVISION ROAD ROWS), MINIMUM COVER SHALL BE 4.0 FT. MINIMUM COVER FOR ALL WATER MAINS LOCATED IN THE ROW OF COUNTY OR DOT ROADS SHALL BE 4.0 FT



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DEPARTMENT OF UTILITIES

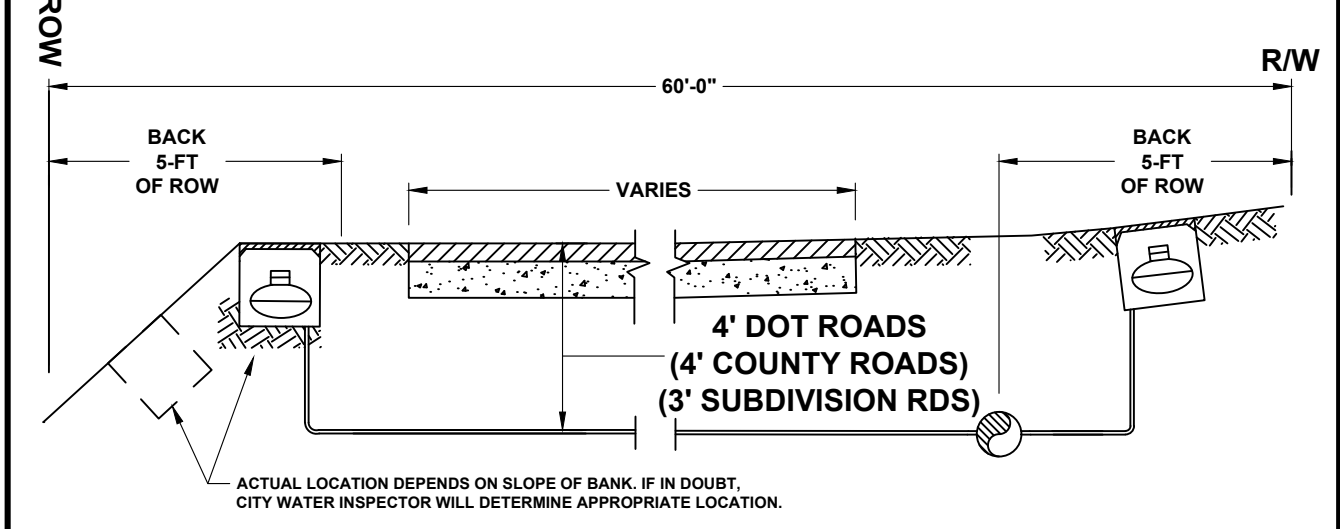
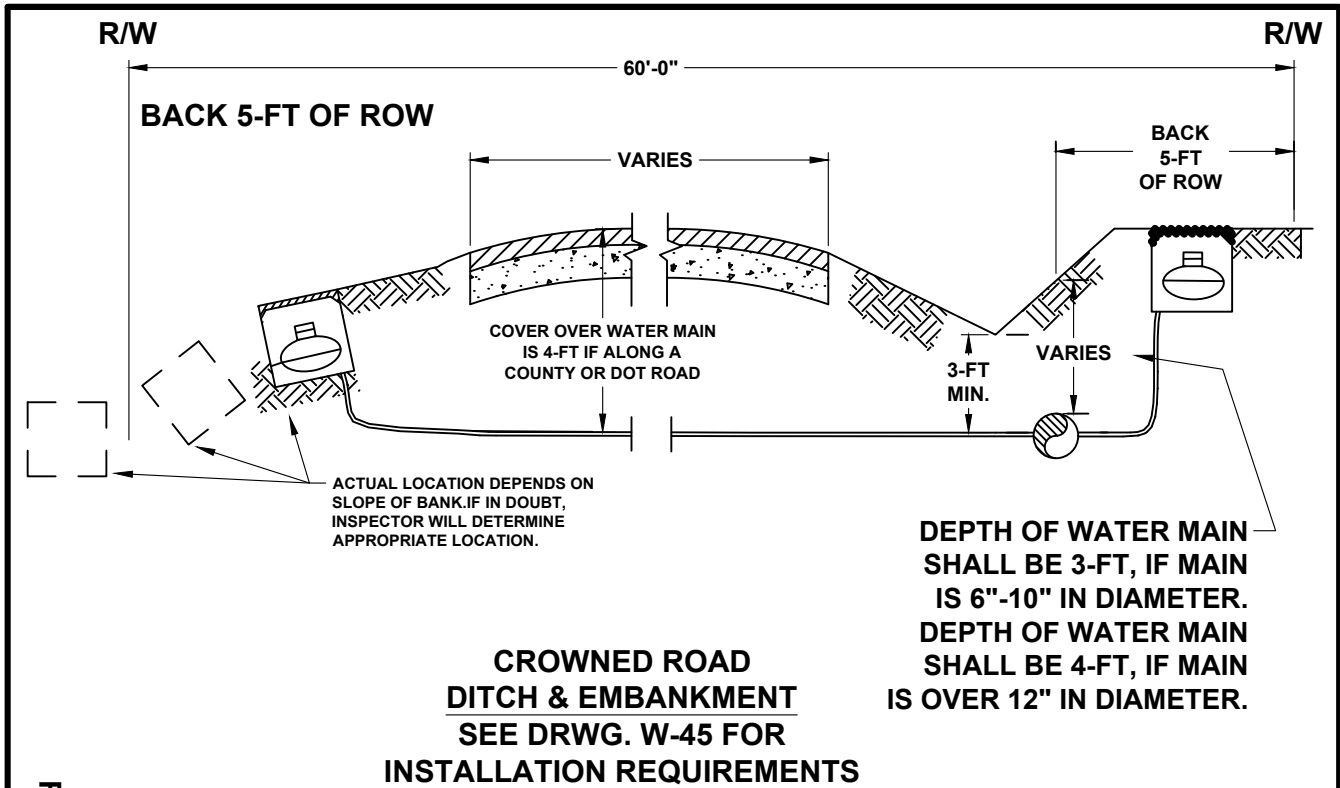
WATER UTILITY LOCATIONS

IN RIGHT-OF-WAY

DETAIL NUMBER:

W-7A

SCALE: NOT TO SCALE



NOTE: CITY WATER INSPECTOR MUST APPROVE LOCATION OF ALL WATER METERS

**FLAT OR CONCRETE ROAD
SLIGHT DITCH & EMBANKMENT
SEE DRWG. W-45 FOR
INSTALLATION REQUIREMENTS**



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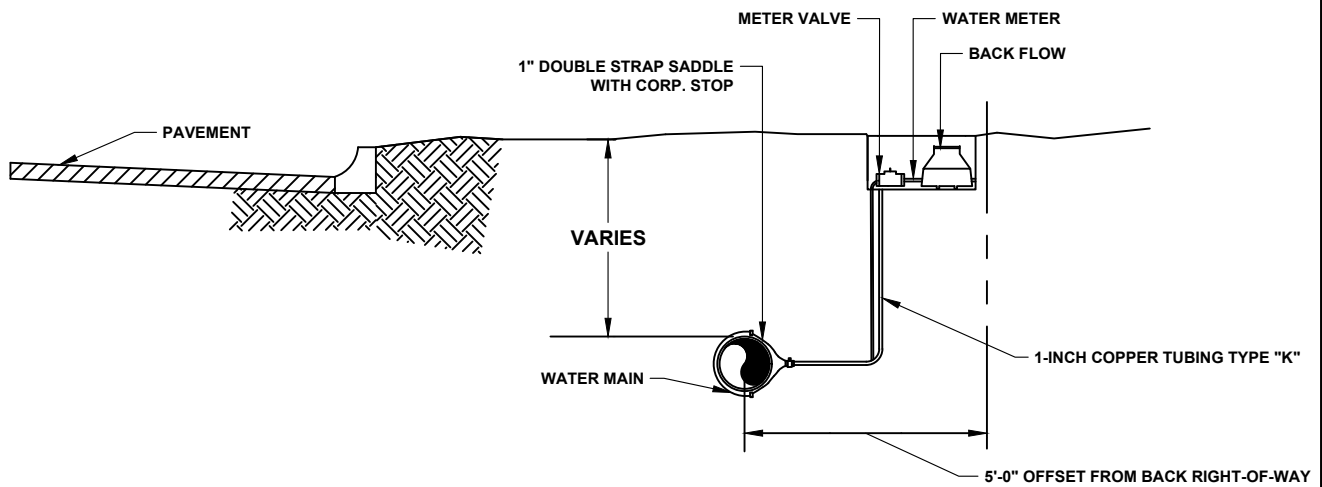
DEPARTMENT OF UTILITIES

WATER UTILITY LOCATIONS ALONG COUNTY AND GDOT ROADS

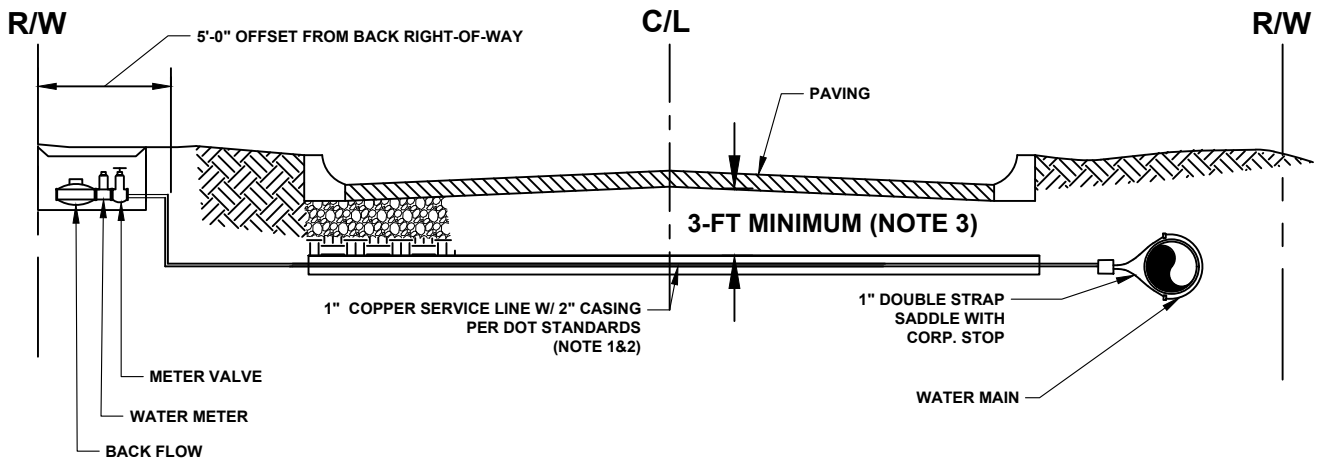
DETAIL NUMBER:

W-7B

SCALE: NOT TO SCALE



SHORT SIDE SERVICE



LONG SIDE SERVICE

NOTES:

1. IN THE EVENT CASING IS NOT PRESENT ON LONG SIDE LOT, BORING SHALL BE PERMITTED.
2. NO PAVEMENT CUTS WILL BE PERMITTED WITHOUT APPROVAL OF THE CITY WATER INSPECTOR AND THE (CITY, COUNTY, OR STATE) ROAD ENGINEER.
3. 3-4 FT MIN. COVER FOR SUBDIVISION ROADS. STATE AND COUNTY ROADS, MIN. 4 FT COVER.
4. ALL CUTS IN PAVEMENT SHALL BE REPAIRED IN ACCORDANCE WITH GA D.O.T. OR FORSYTH CO. STANDARDS. SEE PAVEMENT CUT REPAIR STANDARD DETAIL.
5. METERS SHALL NOT BE OFFSET Laterally FROM TAP ON WATER MAIN, SET DIRECTLY OPPOSITE TAP LOCATION.
6. FOR SERVICE LINE RELOCATIONS TO NEW MAINS COPPER TUBING TYPE "K" SHALL BE REQUIRED.



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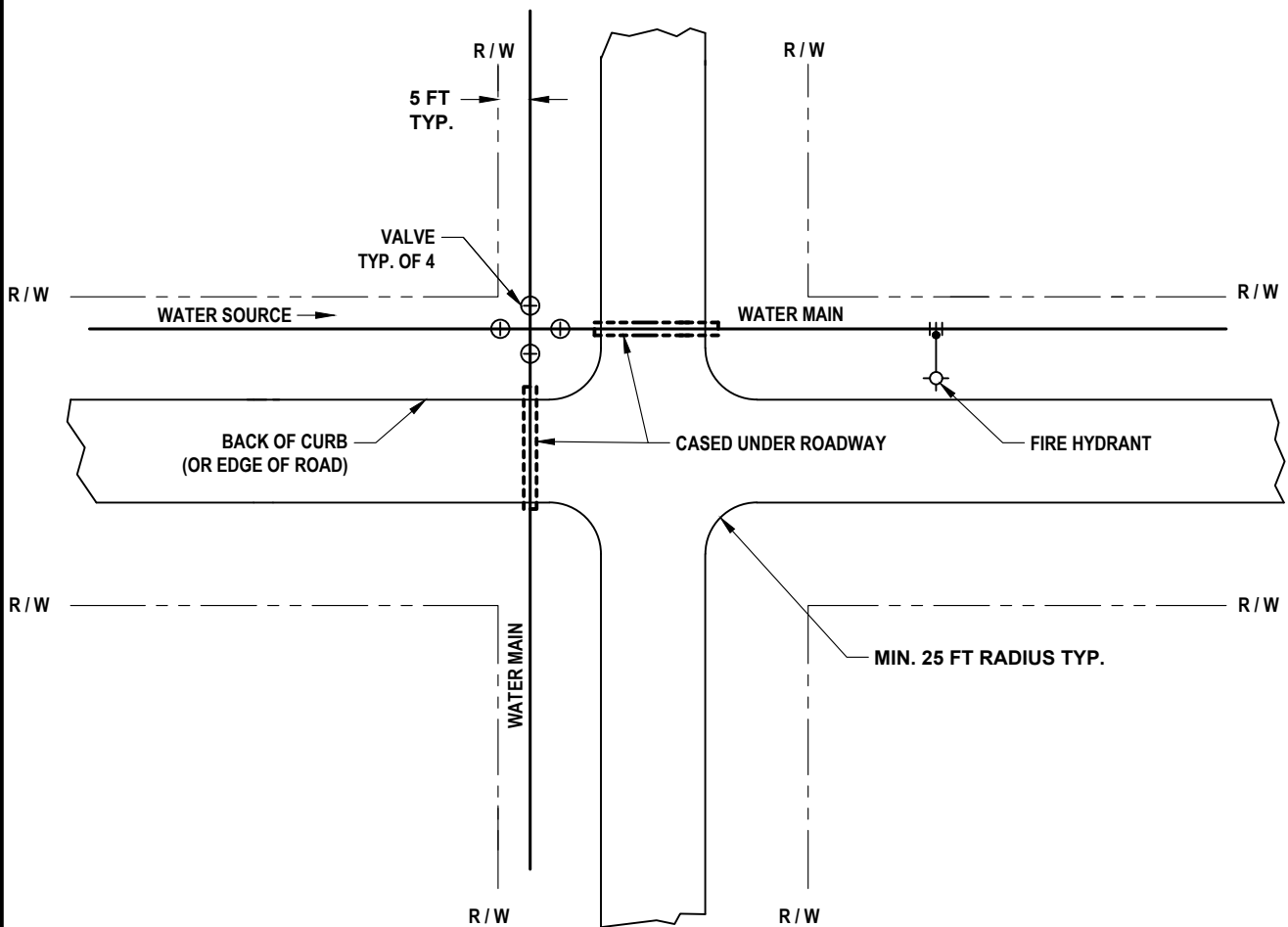
DEPARTMENT OF UTILITIES

**WATER UTILITY LOCATIONS ALONG
SUBDIVISIONS**

DETAIL NUMBER:

W-7C

SCALE: NOT TO SCALE



NOTES:

1. DEPTH OF COVER ON WATER MAINS SHALL BE 4 FT OR SPECIFIED IN GADOT PERMIT (SEE DETAIL W-7A).
2. MINIMUM 6" COMPACTED SOIL BETWEEN BOTTOM OF PIPE AND ROCK. MINIMUM 9" COMPACTED SOIL BETWEEN SIDES OF PIPE AND ROCK.
3. NO ROCK IN BACKFILL FOR FIRST 2 FT ABOVE TOP OF PIPE.
4. BORE OR BORE AND CASING MAY BE REQUIRED BY PERMITTING AGENCY.
5. ALL PIPE SHALL BE DUCTILE IRON.
6. VALVES TO BE 6 FT FROM BACK OF CURB OR EDGE OF PAVEMENT. BOX WILL HAVE CONCRETE COLLAR, DRAWING W-18.
7. VALVES SHALL NOT BE LOCATED IN THE STREET.
8. FIRE HYDRANTS TO BE PLACED SO THAT THEY FACE THE STREET (LARGE HOSE CONNECTOR FACES THE STREET)



CITY OF CUMMING

DEPARTMENT OF UTILITIES

**WATER UTILITY LOCATIONS
AT INTERSECTIONS**

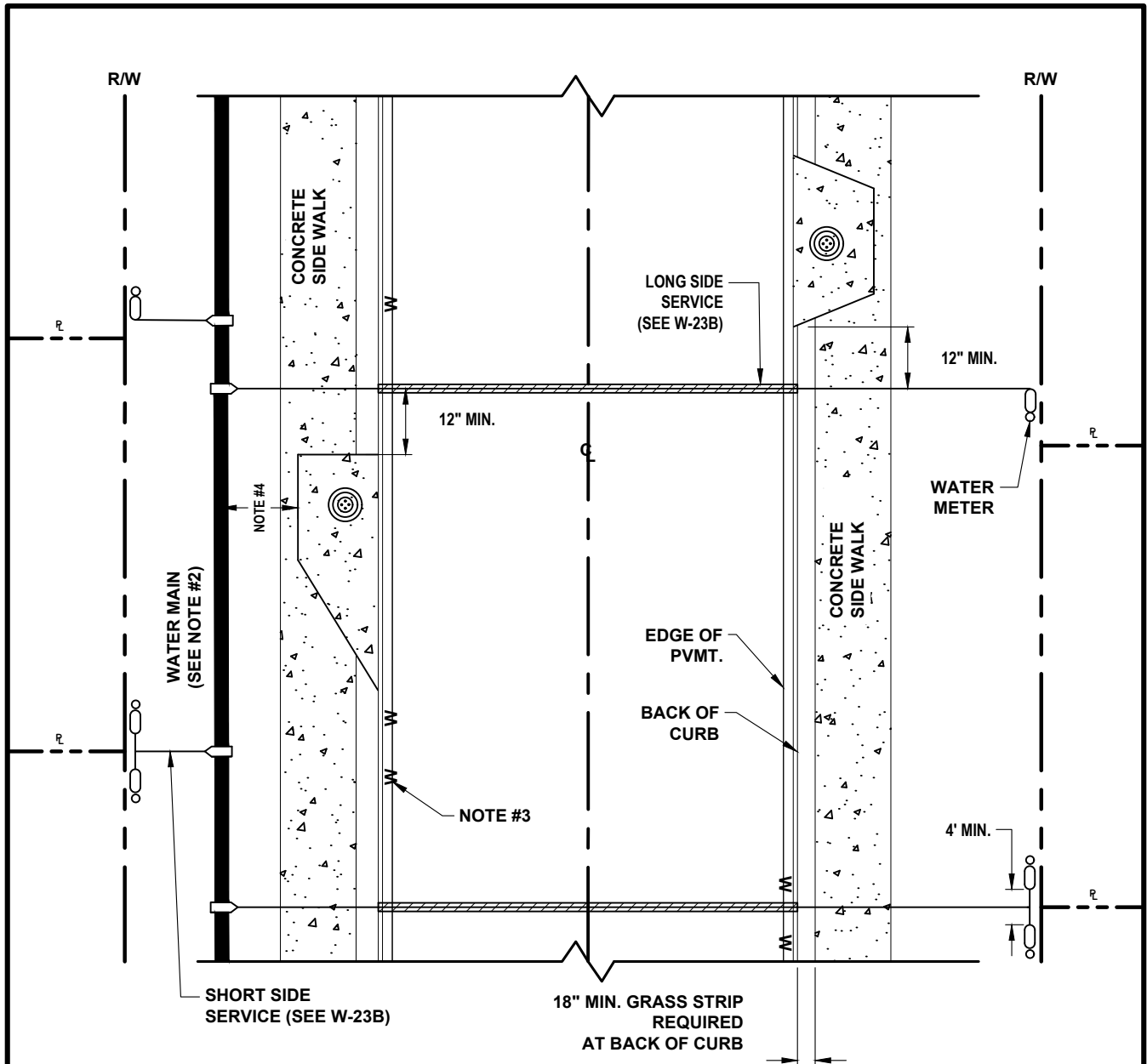
DETAIL NUMBER:

W-7D

LATEST REVISION

12/01/2021

SCALE: NOT TO SCALE



NOTES:

1. WATER MAINS CROSSING STORM SEWER LINES MUST BE DIP.
2. LOCATE WATER MAIN WITHIN BACK 5 FT. OF RIGHT-OF-WAY.
3. ALL WATER METERS MARKED "W" AT CURB.
4. WATER MAIN SHALL BE LOCATED 18 INCHES CLEAR OF ANY MANHOLE OR BURIED STRUCTURE.



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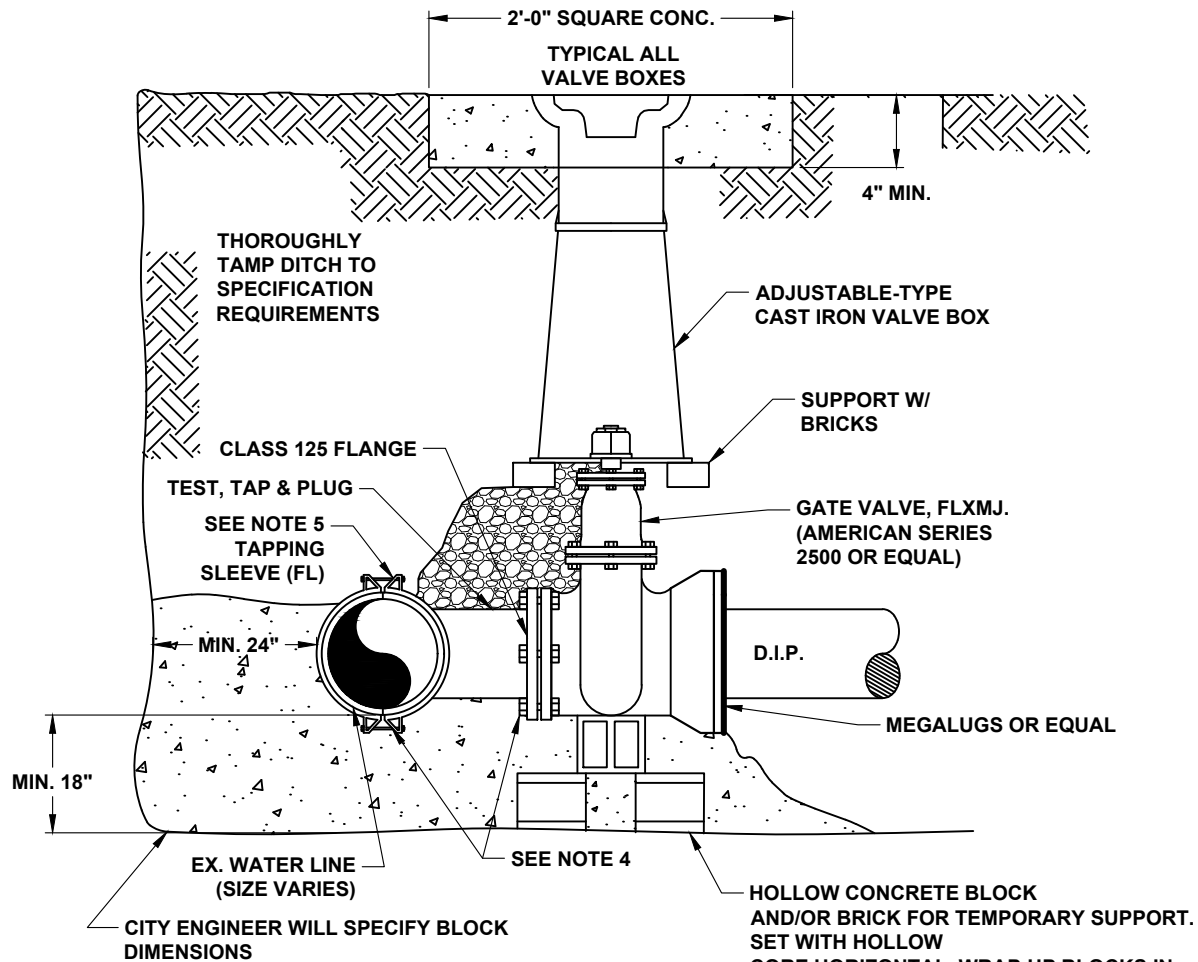
CITY OF CUMMING

DEPARTMENT OF UTILITIES
WATER MAIN AND SERVICE
LINE LOCATIONS IN RELATION
TO SIDEWALKS

DETAIL NUMBER:

W-7E

SCALE: NOT TO SCALE



NOTES

1. TEMPORARILY SUPPORT TAPPING SADDLE AND VALVE AND APPLY STANDARD HYDROSTATIC TEST.
2. IF NO LEAKS, POUR INDICATED PERMANENT CONCRETE BLOCK AND SUPPORT PAD.
3. MAKE TAP, LINE EXTENSION AND BACKFILL.
4. COVER GLANDS AND BOLTS WITH HEAVY POLYETHYLENE SHEETING TO KEEP CONCRETE FROM BONDING. TYPICAL WHENEVER BOLTS OR GLANDS MAY BE "WRAPPED-UP" IN CONCRETE.
5. COAT TAPPING SLEEVE AND BOLTS WITH AN APPROVED BITUMASTIC COATING BEFORE POURING CONCRETE. TYPICAL FOR ALL STEEL INCLUDING RODS, COUPLINGS, STRAPS AND OTHER BURIED STEEL.

HOLLOW CONCRETE BLOCK AND/OR BRICK FOR TEMPORARY SUPPORT. SET WITH HOLLOW CORE HORIZONTAL. WRAP-UP BLOCKS IN CONCRETE POUR. MAKE SURE CONCRETE FILLS HOLLOW PORTION OF BLOCKS.

ALL TAPPING SLEEVES MUST BE AMERICAN 2800-C OR APPROVED EQUAL FOR 4" TO 24". SIZE 24" AND LARGER SHALL BE APPROVED BY THE ENGINEER.



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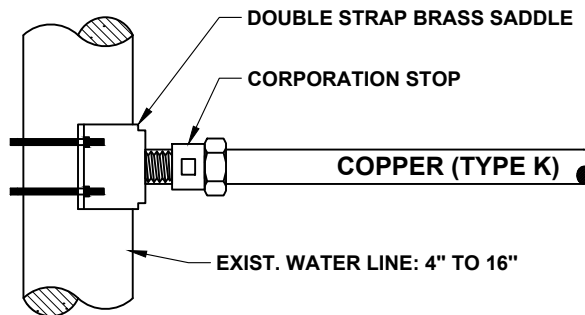
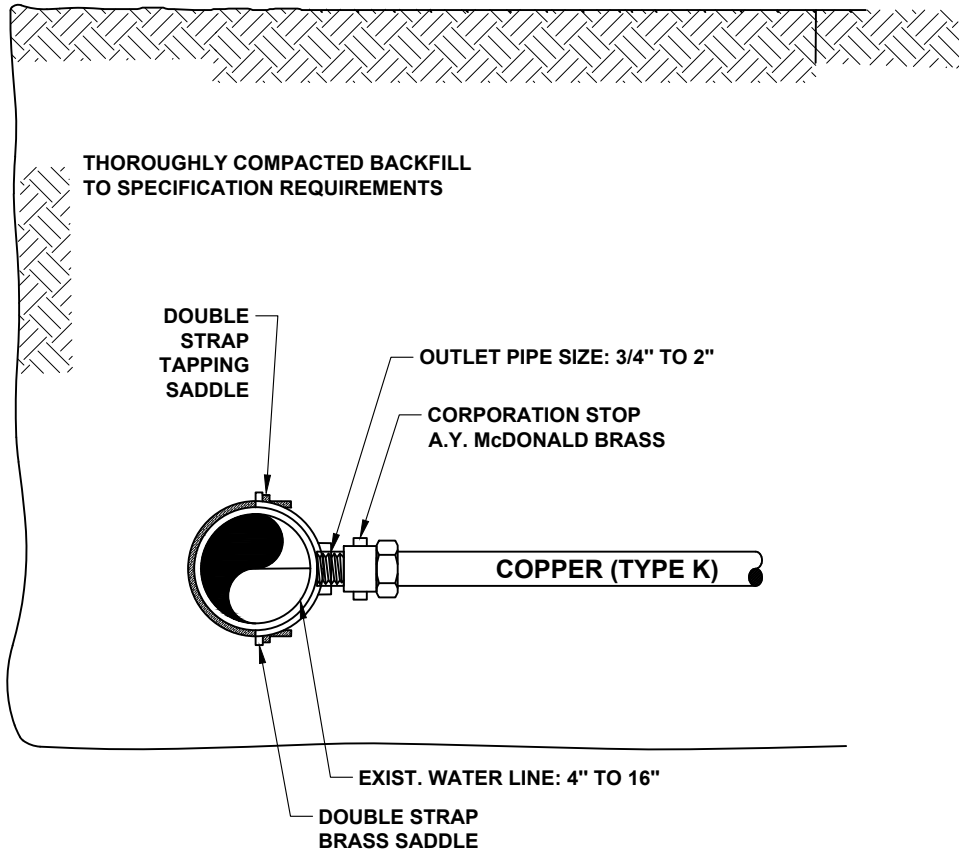
DEPARTMENT OF UTILITIES

TAPPING SLEEVE AND VALVE

DETAIL NUMBER:

W-8A

SCALE: NOT TO SCALE



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CITY OF CUMMING

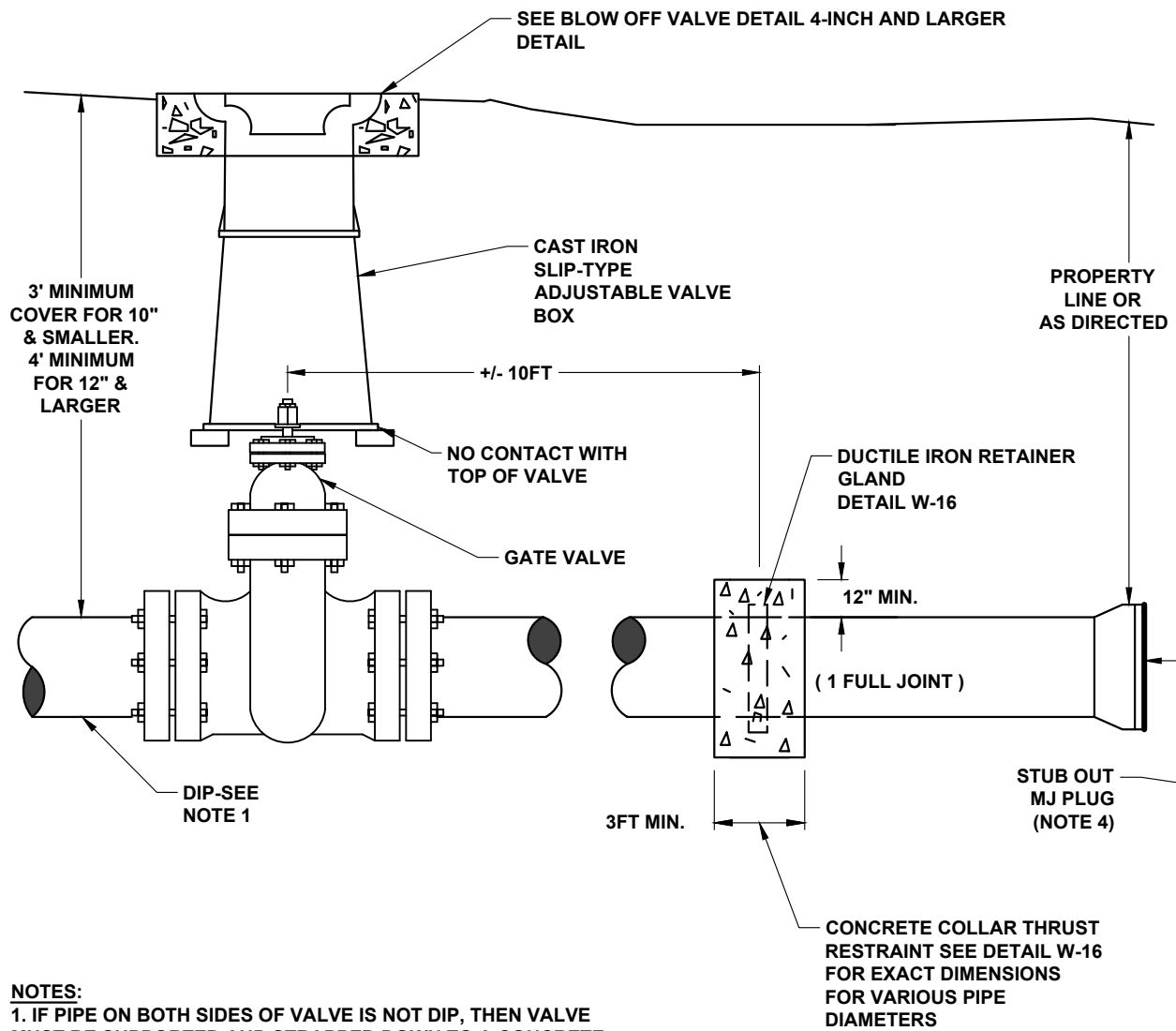
DEPARTMENT OF UTILITIES

TAPPING SADDLE AND CORPORATION STOP

DETAIL NUMBER:

W-8B

SCALE: NOT TO SCALE



NOTES:

1. IF PIPE ON BOTH SIDES OF VALVE IS NOT DIP, THEN VALVE MUST BE SUPPORTED AND STRAPPED DOWN TO A CONCRETE PAD.
2. STUB OUT MUST BE HYDROSTATICALLY TESTED WITH REST OF WATER MAIN.
3. IN LIEU OF SLIP-JOINT AND COMPRESSION PLUG, AN M.J. JOINT MAY BE USED WITH A M.J. PLUG
4. STUB OUT PLUG SHALL BE TAPPED W/ 3/4" COPPER CORPORATION STOP & ROUTED TO METER BOX & CURB STOP



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CITY OF CUMMING

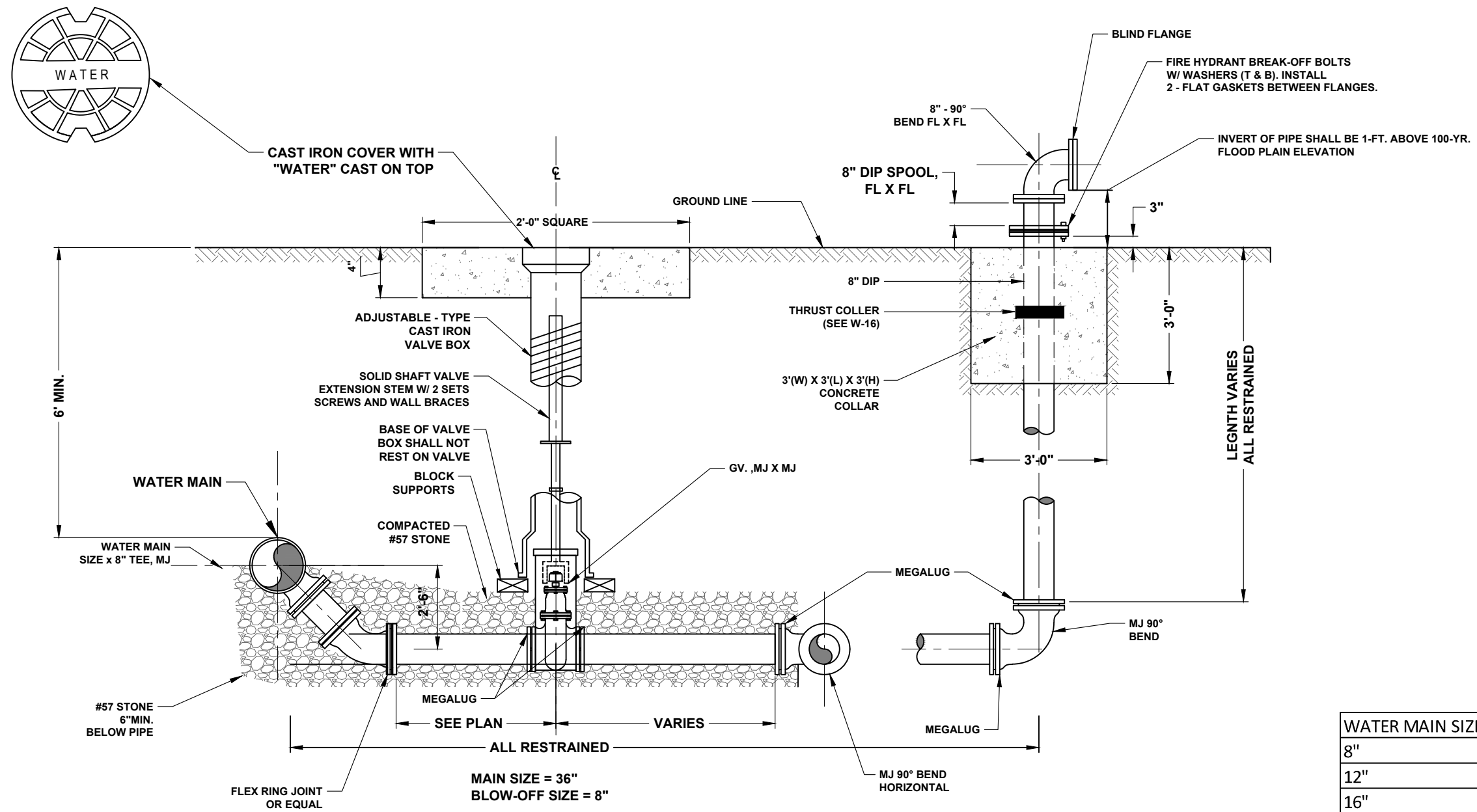
DEPARTMENT OF UTILITIES

STUB OUT DETAIL

DETAIL NUMBER:

W-9

SCALE: NOT TO SCALE



WATER MAIN SIZE	TAP SIZE
8"	3"
12"	3"
16"	4"
18"	4"
20"	4"
24"	6"

MINIMUM TAP SIZES TO PROVIDE 2.5 FPS WITH 50 PSI OF WATER PRESSURE

- NOTES:**
- MEGALUGS TO BE USED WITH ALL MECHANICAL JOINT FITTINGS. PUSH-ON JOINTS TO BE RESTRAINED WITH FAST GRIP GASKETS
 - TEES & BENDS SHALL BE MECHANICAL JOINT WITH MEGALUGS.
 - USE AMERICAN RED RUBBER FLAT GASKET OR APPROVED EQUAL.
 - FIRE HYDRANT BREAK-OFF BOLTS REQUIRED.
 - COORDINATE WITH PLAN FOR BLOW OFF PIPING CONFIGURATION.

CUMMING UTILITIES

LATEST REVISION

09/07/2021

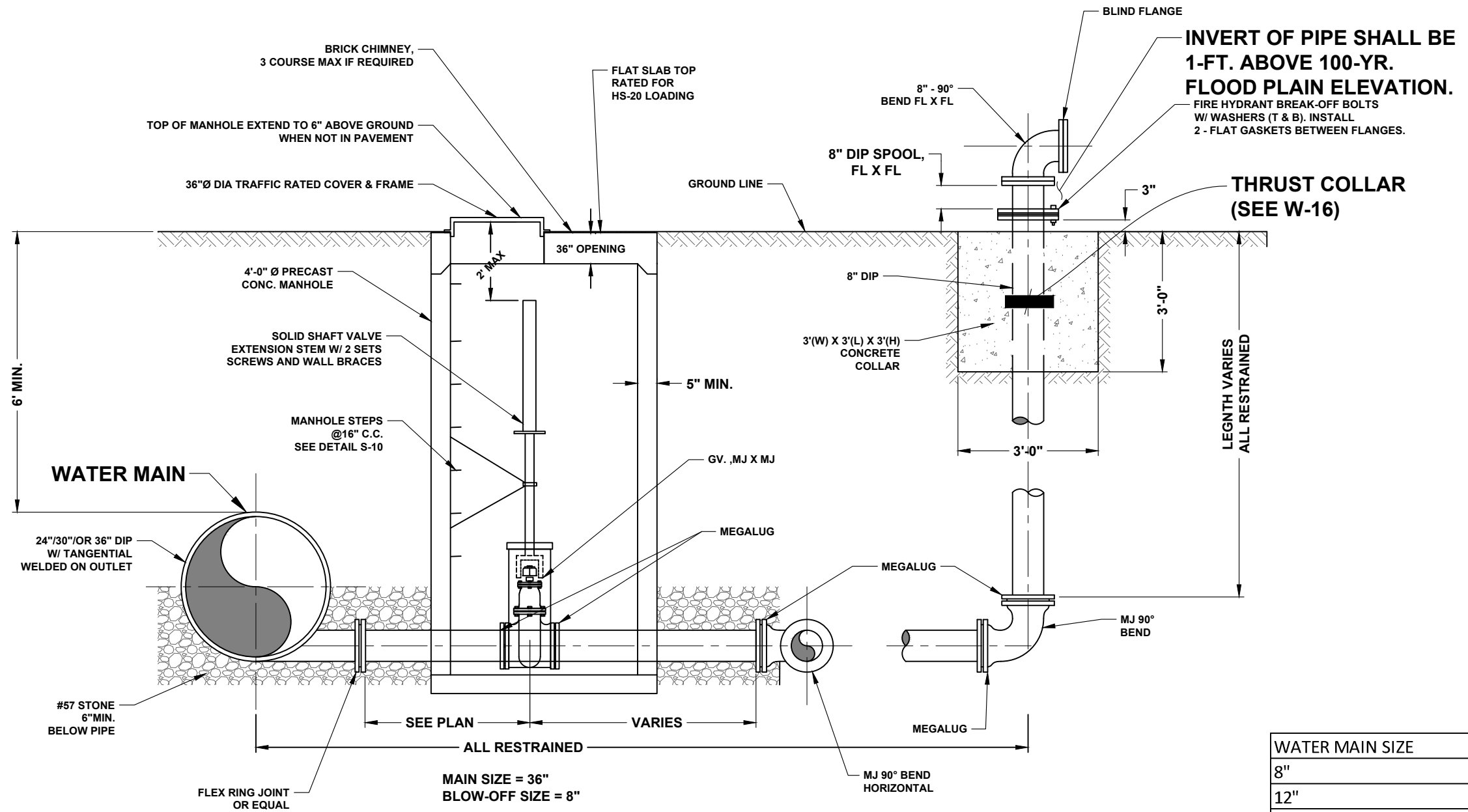
CITY OF CUMMING
 DEPARTMENT OF UTILITIES

BLOW-OFF ABOVE GRADE INSTALLATION
 (W.M. SIZE 24" AND SMALLER)

DETAIL NUMBER:

W-10A

SCALE: NOT TO SCALE



- NOTES:**
- MEGALUGS TO BE USED WITH ALL MECHANICAL JOINT FITTINGS. PUSH-ON JOINTS TO BE RESTRAINED WITH FAST GRIP GASKETS
 - TEES & BENDS SHALL BE MECHANICAL JOINT WITH MEGALUGS.
 - USE AMERICAN RED RUBBER FLAT GASKET OR APPROVED EQUAL.
 - FIRE HYDRANT BREAK-OFF BOLTS REQUIRED.
 - COORDINATE WITH PLAN FOR BLOW OFF PIPING CONFIGURATION.

WATER MAIN SIZE	TAP SIZE
8"	3"
12"	3"
16"	4"
18"	4"
20"	4"
24"	6"

MINIMUM TAP SIZES TO PROVIDE 2.5 FPS WITH 50 PSI OF WATER PRESSURE



LATEST REVISION

09/07/2021

CITY OF CUMMING

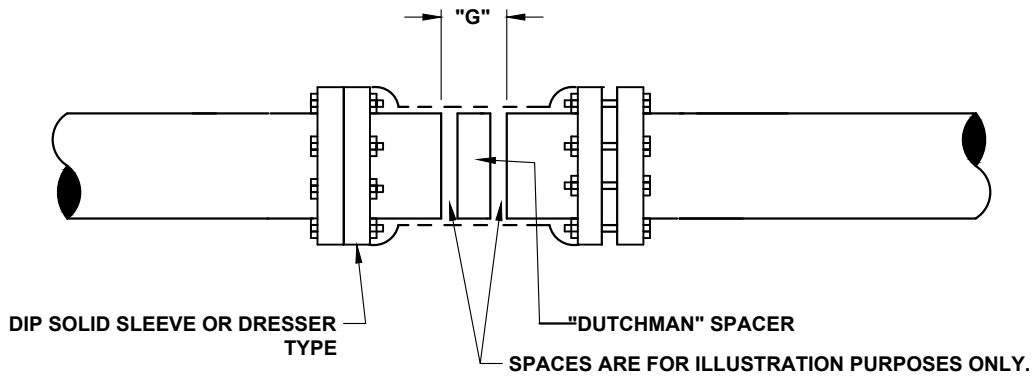
DEPARTMENT OF UTILITIES

BLOW-OFF ABOVE GRADE INSTALLATION (W.M. SIZE 24", 30", AND 36") TRANSMISSION MAINS

DETAIL NUMBER:

W-10B

SCALE: NOT TO SCALE



NOTES:

1. IF "G" IS GREATER THAN 1 / 2", AT ITS NARROWEST POINT, THEN A FULL-CIRCLE SPACER OR "DUTCHMAN" MUST BE CUT AND PLACED IN THE GAP BEFORE THE SLEEVE IS USED TO CLOSE THE JOINT.
2. THE "DUTCHMAN" SPACER SHALL BE CUT TO A WIDTH NO LESS THAN 1 / 4" LESS THAN THE NARROWEST WIDTH OF "G".
3. EACH PIPE SPIGOT SHALL BE MARKED TO INDICATE THE POINT WHERE THE SLEEVE WILL BE PROPERLY CENTERED OVER THE POINT.
4. "FULL-CIRCLE" REPAIR CLAMPS ARE NOT APPROVED FOR JOINING PIPE.



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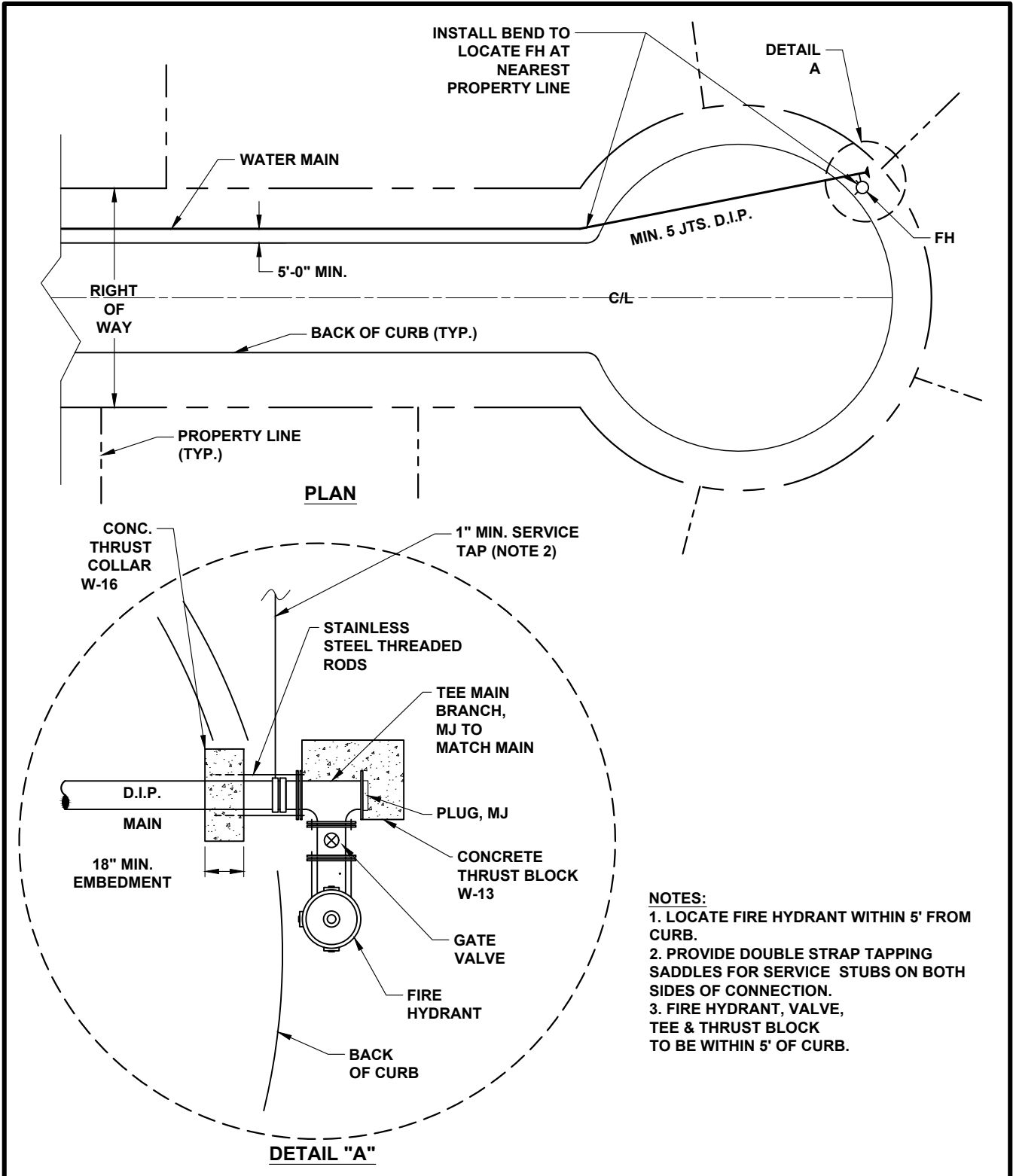
DEPARTMENT OF UTILITIES

PIPE JOINING: USE OF SOLID SLEEVE

DETAIL NUMBER:

W-11

SCALE: NOT TO SCALE



- NOTES:**
1. LOCATE FIRE HYDRANT WITHIN 5' FROM CURB.
 2. PROVIDE DOUBLE STRAP TAPPING SADDLES FOR SERVICE STUBS ON BOTH SIDES OF CONNECTION.
 3. FIRE HYDRANT, VALVE, TEE & THRUST BLOCK TO BE WITHIN 5' OF CURB.



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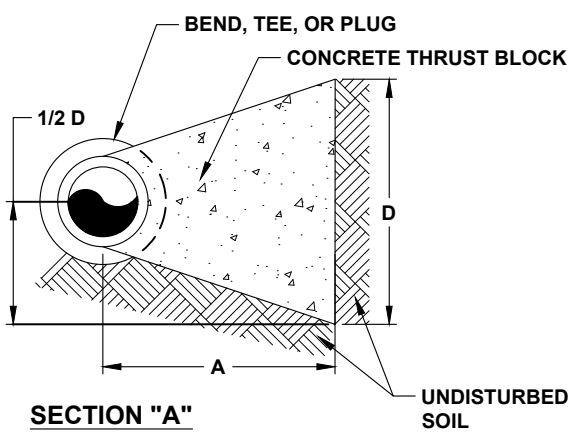
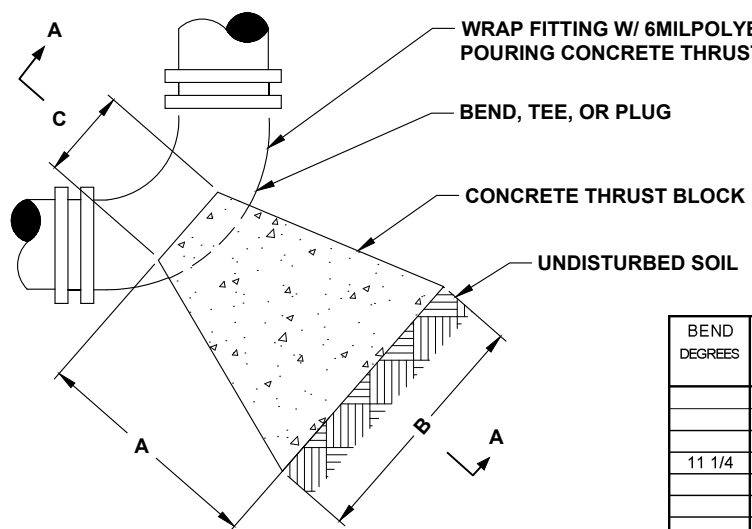
DEPARTMENT OF UTILITIES

WATER MAIN TERMINATION SUBDIVISIONS ONLY

DETAIL NUMBER:

W-12

SCALE: NOT TO SCALE



- NOTES:**
1. SOIL CONDITIONS SHALL BE VERIFIED BY THE ENGINEER BEFORE THRUST BLOCK DESIGN IS IMPLEMENTED.
 2. COVER GLANDS & BOLTS W/ POLYETHYLENE BEFORE PLACING CONCRETE.
 3. ALLOW CONCRETE TO SET UP A MIN. OF 6 HOURS BEFORE PLACING BACKFILL.

BEND DEGREES	SIZE	A (FT)	B (FT)	C (IN)	D (FT)	VOLUME CU.YDS APPROX	THRUST LBS
	6"	1.0	2.0	6	1.0	0.04	1,385
	8"	1.0	2.0	7	1.0	0.05	2,465
	10"	1.0	2.0	9	1.0	0.07	3,850
11 1/4	12"	1.0	2.5	11	1.5	0.12	5,550
	14"	2.0	2.5	11	2.0	0.24	7,550
	16"	2.0	2.5	12	2.0	0.26	9,860
	20"	2.0	3.5	15	2.5	0.48	15,405
	24"	2.0	4.0	18	3.0	0.7	22,185
	6"	1.0	2.0	6	1.0	0.04	2,760
	8"	1.0	2.0	7	1.5	0.06	4,905
	10"	1.0	2.0	9	2.0	0.1	7,665
22 1/2	12"	1.0	3.0	11	2.0	0.16	11,040
	14"	2.0	3.5	11	2.5	0.37	15,025
	16"	2.0	3.5	12	3.0	0.45	19,625
	20"	2.0	4.0	15	4.0	0.74	30,665
	24"	3.0	5.0	18	4.5	1.47	44,160
	6"	1.0	2.0	6	1.5	0.06	5,415
	8"	1.0	2.5	7	2.0	0.1	9,625
	10"	2.0	3.5	9	2.5	0.31	15,040
45	12"	2.0	3.5	11	3.0	0.41	21,655
	14"	2.0	4.0	11	3.75	0.56	29,475
	16"	3.0	5.0	12	4.0	1.45	38,495
	20"	4.0	6.0	15	5.0	2.06	60,145
	24"	4.0	7.5	18	6.5	3.35	91,610
	6"	1.0	2.5	12	2.0	0.13	10,005
	8"	2.0	3.0	14	3.0	0.38	17,785
	10"	2.5	4.5	18	3.0	0.74	27,785
90	12"	3.0	5.0	20	4.0	1.24	40,010
	14"	3.0	5.5	24	5.0	1.77	54,460
	16"	4.0	6.5	26	5.5	2.91	71,125
	20"	4.0	8.0	32	7.0	4.68	111,135
	24"	5.0	10.0	40	8.0	8.5	160,035
	6"	1.0	2.5	12	1.5	0.1	7,070
	8"	1.7	3.25	14	2.0	0.27	12,565
	10"	2.0	4.0	18	2.5	0.5	19,635
TEES	12"	2.5	4.5	20	3.25	0.91	28,275
AND	14"	3.0	5.0	24	4.0	1.41	38,485
PLUGS	16"	3.0	5.0	26	5.0	1.77	50,265
	20"	4.0	7.0	32	5.75	3.69	78,540
	24"	6.0	9.0	40	6.5	7.94	113,100

MINIMUM DIMENSIONS FOR CONCRETE BLOCKING

DESIGN DATA

1. DIMENSION OF THRUST BLOCK IN FEET BASED ON 2000 POUNDS PER SQUARE FOOT SOIL BEARING PRESSURE. ACTUAL INSIDE DIAMETER OF DIP, CLASS 50, 250 PSI TEST PRESSURE.
2. CONCRETE SHALL BE CLASS A, 3000 PSI.
3. UNDER ADVERSE CONSTRUCTION CONDITIONS, CONCRETE SHALL BE "HIGH EARLY" TYPE.



LATEST REVISION
12/01/2021

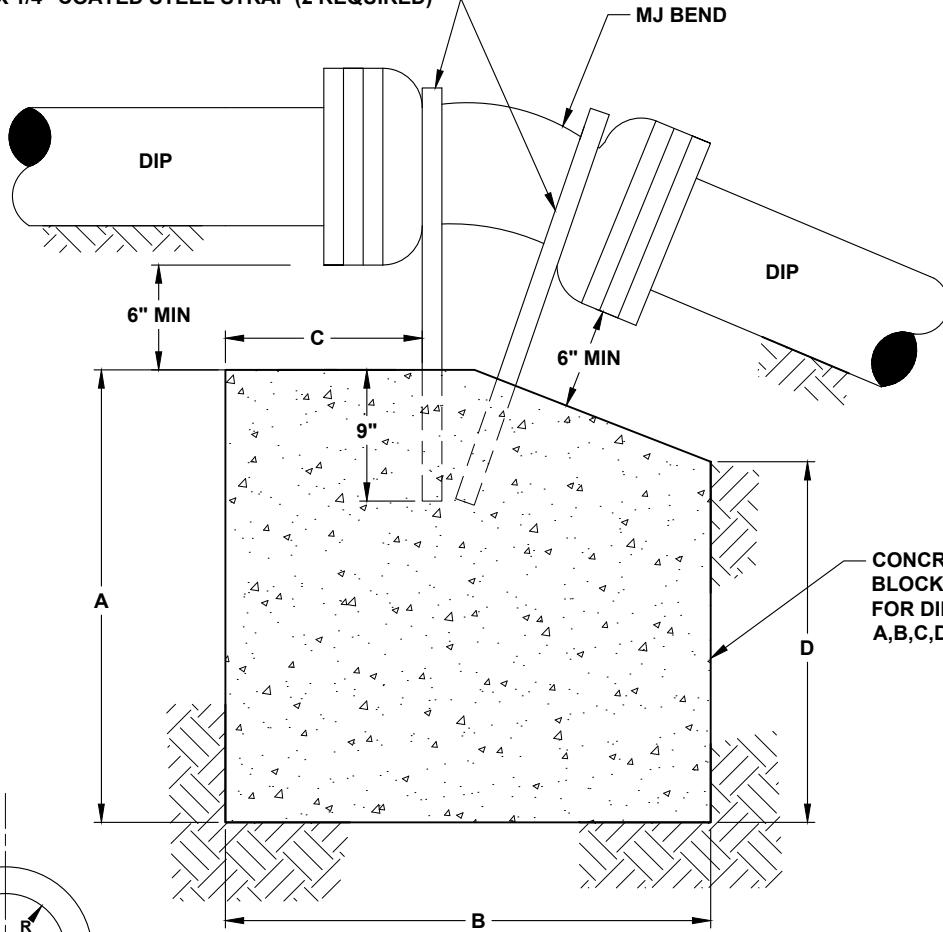
CITY OF CUMMING
DEPARTMENT OF UTILITIES
THRUST RESTRAINT:
HORIZONTAL THRUST

DETAIL NUMBER:

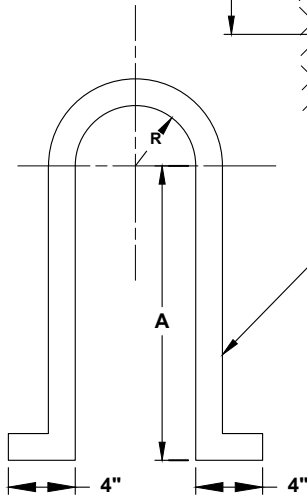
W-13

SCALE: NOT TO SCALE

2" X 1/4" COATED STEEL STRAP (2 REQUIRED)



CONCRETE THRUST BLOCK SEE W-16B FOR DIMENSIONS A,B,C,D.



STRAP DETAIL

2" X 1/4" COATED STEEL STRAP

SIZE	A	R	LENGTH OF STEEL STRAP
6"	1' - 11 1/2"	3 1/2"	5' - 4 1/2"
8"	1' - 11 7/8"	4 21/32"	5' - 10 1/4"
10"	2' - 1"	5 45/64"	6' - 4"
12"	2' - 2"	6 3/4"	6' - 9 3/4"
14"	2' - 3 3/8"	7 21/16"	7' - 3"
16"	2' - 4 3/4"	8 3/4"	7' - 8 1/2"
20"	2' - 6"	10 3/4"	8' - 8"
24"	2' - 9 1/2"	12 7/8"	9' - 7 1/2"



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CITY OF CUMMING

DEPARTMENT OF UTILITIES

THRUST RESTRAINT UPWARD THRUST

DETAIL NUMBER:

W-14A

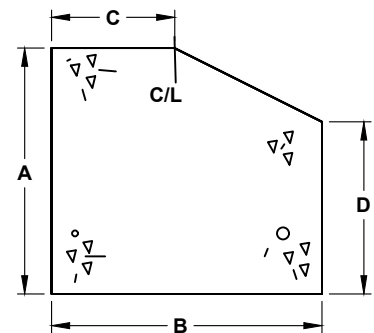
SCALE: NOT TO SCALE

	PIPE SIZE	A	B	C	D	WIDTH	CU. YARDS
11 1/4°	6"	2' - 0"	2' - 0"	1' - 0"	1' - 10"	2' - 0"	0.29
	8"	2' - 4"	3' - 0"	1' - 6"	2' - 1"	2' - 0"	0.51
	10"	2' - 9"	2' - 9"	1' - 4.5"	2' - 6"	2' - 9"	0.78
	12"	3' - 0"	3' - 4"	1' - 6"	2' - 8"	3' - 0"	1.11
	14"	3' - 0"	4' - 0"	1' - 8"	2' - 8"	3' - 4"	1.48
	16"	4' - 0"	4' - 0"	1' - 8"	3' - 8"	3' - 4"	2.22
	20"	4' - 1"	5' - 0"	2' - 0"	3' - 9"	4' - 2"	3.69
	24"	5' - 1"	5' - 0"	2' - 4"	4' - 8"	4' - 9"	4.22
	30"	5' - 3"	6' - 0"	3' - 0"	4' - 8"	6' - 0"	7.00
	36"	6' - 1"	7' - 0"	3' - 2"	5' - 6"	6' - 4"	10.30
22 1/2°	6"	2' - 10"	2' - 6"	1' - 3"	2' - 4"	2' - 6"	0.56
	8"	3' - 4"	3' - 0"	1' - 6"	2' - 9"	3' - 0"	1.01
	10"	3' - 11"	4' - 0"	2' - 0"	3' - 1"	3' - 0"	1.54
	12"	4' - 2"	4' - 0"	2' - 0"	3' - 5"	4' - 0"	2.19
	14"	4' - 4"	5' - 0"	2' - 6"	3' - 4"	4' - 0"	2.98
	16"	4' - 6"	5' - 0"	2' - 6"	3' - 6"	5' - 0"	3.88
	20"	5' - 4"	5' - 6"	2' - 9"	4' - 2"	6' - 0"	6.07
	24"	6' - 4"	6' - 7"	3' - 4"	5' - 1"	6' - 0"	8.75
	30"	7' - 4"	7' - 6"	3' - 9"	5' - 10"	7' - 0"	13.64
	36"	8' - 4"	8' - 5"	4' - 2"	6' - 8"	8' - 0"	19.87
45°	6"	3' - 6"	3' - 0"	1' - 6"	1' - 9"	3' - 3"	1.08
	8"	3' - 9"	4' - 0"	2' - 0"	1' - 10"	4' - 0"	1.19
	10"	4' - 6"	4' - 0"	2' - 0"	2' - 3"	5' - 0"	2.92
	12"	4' - 6"	4' - 2"	2' - 1"	2' - 3"	5' - 0"	3.06
	14"	5' - 6"	5' - 5"	2' - 7"	2' - 9"	6' - 0"	5.83
	16"	6' - 1"	6' - 0"	3' - 0"	3' - 0"	6' - 0"	7.41
	20"	7' - 1"	7' - 0"	3' - 6"	3' - 6"	7' - 0"	11.88
	24"	7' - 9"	8' - 0"	4' - 0"	3' - 10"	8' - 0"	17.29
	30"	9' - 6"	9' - 0"	4' - 5"	4' - 9"	9' - 0"	26.70
	36"	10' - 5"	10' - 5"	5' - 2"	5' - 3"	10' - 0"	38.48

MINIMUM DIMENSIONS FOR CONCRETE BLOCKING

NOTES:

1. SEE STRAP DETAIL IN W-16A FOR REQUIRED STRAPS.
2. COVER GLANDS & BOLTS W/ 6 MIL POLYETHYLENE BEFORE PLACING CONCRETE.
3. ALLOW CONCRETE TO SET FOR A MINIMUM OF 6 HOURS BEFORE PLACING BACKFILL.
4. CONCRETE SHALL BE 3000 PSI CLASS A.
5. ALL DUCTILE IRON FITTINGS SHALL BE BLOCKED AND SUPPORT AS SHOWN
6. UNDER ADVERSE CONSTRUCTION CONDITIONS, CONCRETE SHALL BE "HIGH EARLY" TYPE.
7. COAT STEEL STRAP W. BITUMINOUS ASPHALT COATING.



LATEST REVISION

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CITY OF CUMMING

DEPARTMENT OF UTILITIES

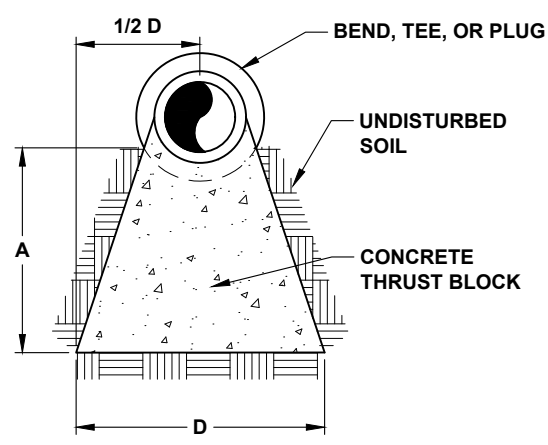
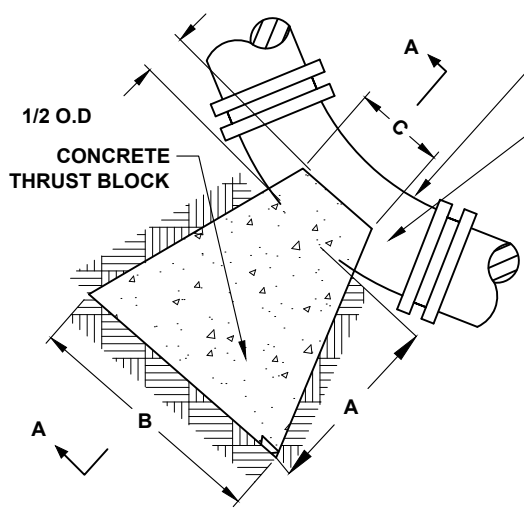
THRUST RESTRAINT SIZE CHART

UPWARD THRUST

DETAIL NUMBER:

W-14B

SCALE: NOT TO SCALE



SECTION "A"

NOTES:

1. SOIL CONDITIONS SHALL BE VERIFIED BY THE ENGINEER BEFORE THRUST BLOCK DESIGN IS IMPLEMENTED.
2. COVER GLANDS & BOLTS W/ POLYETHYLENE BEFORE PLACING CONCRETE.
3. ALLOW CONCRETE TO SET UP A MIN. OF 6 HOURS BEFORE PLACING BACKFILL.

BEND DEGREES	SIZE	A (FT)	B (FT)	C (IN)	D (FT)	VOLUME CU.YDS APPROX	THRUST LBS
	6"	1.0	2.0	6	1.0	0.04	1,385
	8"	1.0	2.0	7	1.0	0.05	2,465
	10"	1.0	2.0	9	1.0	0.07	3,850
11 1/4	12"	1.0	2.5	11	1.5	0.12	5,550
	14"	2.0	2.5	11	2.0	0.24	7,550
	16"	2.0	2.5	12	2.0	0.26	9,860
	20"	2.0	3.5	15	2.5	0.48	15,405
	24"	2.0	4.0	18	3.0	0.7	22,185
	6"	1.0	2.0	6	1.0	0.04	2,760
	8"	1.0	2.0	7	1.5	0.06	4,905
	10"	1.0	2.0	9	2.0	0.1	7,665
22 1/2	12"	1.0	3.0	11	2.0	0.16	11,040
	14"	2.0	3.5	11	2.5	0.37	15,025
	16"	2.0	3.5	12	3.0	0.45	19,625
	20"	2.0	4.0	15	4.0	0.74	30,665
	24"	3.0	5.0	18	4.5	1.47	44,160
	6"	1.0	2.0	6	1.5	0.06	5,415
	8"	1.0	2.5	7	2.0	0.1	9,625
	10"	2.0	3.5	9	2.5	0.31	15,040
45	12"	2.0	3.5	11	3.0	0.41	21,655
	14"	2.0	4.0	11	3.75	0.56	29,475
	16"	3.0	5.0	12	4.0	1.45	38,495
	20"	4.0	6.0	15	5.0	2.06	60,145
	24"	4.0	7.5	18	6.5	3.35	91,610
	6"	1.0	2.5	12	2.0	0.13	10,005
	8"	2.0	3.0	14	3.0	0.38	17,785
	10"	2.5	4.5	18	3.0	0.74	27,785
90	12"	3.0	5.0	20	4.0	1.24	40,010
	14"	3.0	5.5	24	5.0	1.77	54,460
	16"	4.0	6.5	26	5.5	2.91	71,125
	20"	4.0	8.0	32	7.0	4.68	111,135
	24"	5.0	10.0	40	8.0	8.5	160,035
	6"	1.0	2.5	12	1.5	0.1	7,070
	8"	1.7	3.25	14	2.0	0.27	12,565
	10"	2.0	4.0	18	2.5	0.5	19,635
TEES AND PLUGS	12"	2.5	4.5	20	3.25	0.91	28,275
	14"	3.0	5.0	24	4.0	1.41	38,485
	16"	3.0	5.0	26	5.0	1.77	50,265
	20"	4.0	7.0	32	5.75	3.69	78,540
	24"	6.0	9.0	40	6.5	7.94	113,100

MINIMUM DIMENSIONS FOR CONCRETE BLOCKING

DESIGN DATA

1. DIMENSION OF THRUST BLOCK IN FEET BASED ON 2000 POUNDS PER SQUARE FOOT SOLI BEARING PRESSURE AND 250 PSI TEST PRESSURE. ACTUAL INSIDE DIAMETER OF DIP, CLASS 50, USED AS STANDARDS.
2. CONCRETE SHALL BE CLASS A, 3000 PSI. UNDER ADVERSE CONSTRUCTION CONDITIONS, CONCRETE SHALL BE "HIGH EARLY" TYPE.



LATEST REVISION
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CITY OF CUMMING

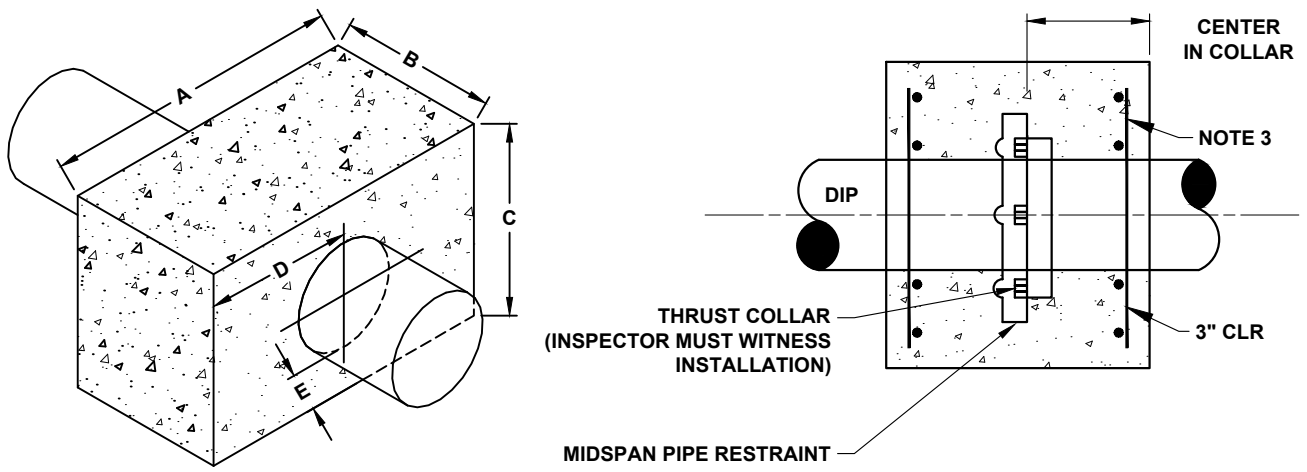
DEPARTMENT OF UTILITIES

**THRUST RESTRAINT:
DOWNWARD THRUST**

DETAIL NUMBER:

W-15

SCALE: NOT TO SCALE



MINIMUM DIMENSIONS

(TO BE USED WITH EMBEDDED DUCTILE IRON RETAINER GLAND)

PIPE SIZE	A	B	C	D	E	VOLUME CU YDS	CONC WT	THRUST
4"	3' - 6"	3' - 0"	1' - 5"	1' - 6"	1' - 0"	0.55	2230	3150
6"	4' - 0"	3' - 0"	2' - 7"	2' - 0"	1' - 0"	1.15	4650	7070
8"	4' - 6"	3' - 0"	3' - 0"	2' - 3"	1' - 3"	1.5	6075	12,570
10"	5' - 2"	3' - 0"	3' - 2"	2' - 7"	1' - 3"	1.81	7330	19,635
12"	5' - 9"	3' - 0"	3' - 8"	2' - 10.5"	1' - 8"	2.34	9475	28,775
14"	6' - 6"	3' - 0"	4' - 0"	3' - 3"	1' - 9"	2.89	11,700	38,490
16"	6' - 9"	3' - 0"	4' - 9"	3' - 3"	2' - 3"	3.56	14,410	50,270

NOTES:

1. PIPE SHALL BE DUCTILE IRON.
2. SOIL CONDITIONS SHALL BE VERIFIED BY THE ENGINEER PRIOR TO THRUST RESTRAINT DESIGN.
3. WATER MAINS 4"-8" DIAMETER SHALL USE #5'S AT 9" ON CENTER E.W.E.F. WITH 3" CLEAR COVER. 10"-16" DIAMETER SHALL BE ON #6'S AT 9".
4. WATER MAINS LARGER THAN 16" I.D. SHALL BE SIZED AND DESIGNED BY THE ENGINEER.

DESIGN DATA:

1. DIMENSION OF THRUST RESTRAINT IN FEET BASED ON 2000 POUNDS PER SQUARE FOOT SOIL BEARING PRESSURE AND 250 PER SQUARE INCH TEST PRESSURE. ACTUAL INSIDE DIAMETER OF DUCTILE IRON PIPE, CLASS 50, USED AS STANDARD.
2. CONCRETE SHALL BE CLASS A, 3000 PSI.
3. CONCRETE SHALL BE "HIGH EARLY" TYPE FOR ADVERSE APPLICATIONS.
4. ALLOW CONCRETE TO SETUP A MINIMUM OF 6 HOURS BEFORE PLACING BACKFILL.



LATEST REVISION
10/20/2021

CITY OF CUMMING

DEPARTMENT OF UTILITIES

**THRUST RESTRAINT
CONCRETE COLLAR**

DETAIL NUMBER:

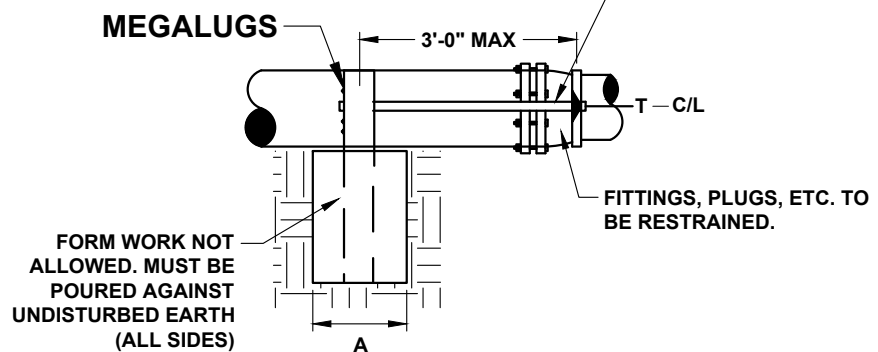
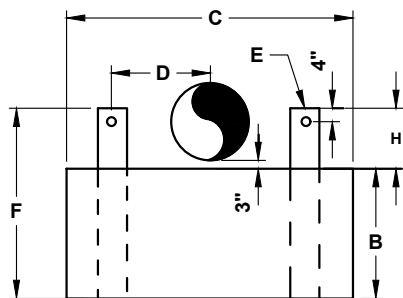
W-16

SCALE: NOT TO SCALE

BEND DEGREES	SIZE	A (FT)	B (FT)	C (IN)	D (FT)	VOLUME CU.YDS APPROX	THRUST LBS
	6"	1.0	2.0	6	1.0	0.04	1,385
	8"	1.0	2.0	7	1.0	0.05	2,465
	10"	1.0	2.0	9	1.0	0.07	3,850
11 1/4	12"	1.0	2.5	11	1.5	0.12	5,550
	14"	2.0	2.5	11	2.0	0.24	7,550
	16"	2.0	2.5	12	2.0	0.26	9,860
	20"	2.0	3.5	15	2.5	0.48	15,405
	24"	2.0	4.0	18	3.0	0.7	22,185
	6"	1.0	2.0	6	1.0	0.04	2,760
	8"	1.0	2.0	7	1.5	0.06	4,905
	10"	1.0	2.0	9	2.0	0.1	7,665
22 1/2	12"	1.0	3.0	11	2.0	0.16	11,040
	14"	2.0	3.5	11	2.5	0.37	15,025
	16"	2.0	3.5	12	3.0	0.45	19,625
	20"	2.0	4.0	15	4.0	0.74	30,665
	24"	3.0	5.0	18	4.5	1.47	44,160
	6"	1.0	2.0	6	1.5	0.06	5,415
	8"	1.0	2.5	7	2.0	0.1	9,625
	10"	2.0	3.5	9	2.5	0.31	15,040
45	12"	2.0	3.5	11	3.0	0.41	21,655
	14"	2.0	4.0	11	3.75	0.56	29,475
	16"	3.0	5.0	12	4.0	1.45	38,495
	20"	4.0	6.0	15	5.0	2.06	60,145
	24"	4.0	7.5	18	6.5	3.35	91,610
	6"	1.0	2.5	12	2.0	0.13	10,005
	8"	2.0	3.0	14	3.0	0.38	17,785
	10"	2.5	4.5	18	3.0	0.74	27,785
90	12"	3.0	5.0	20	4.0	1.24	40,010
	14"	3.0	5.5	24	5.0	1.77	54,460
	16"	4.0	6.5	26	5.5	2.91	71,125
	20"	4.0	8.0	32	7.0	4.68	111,135
	24"	5.0	10.0	40	8.0	8.5	160,035
	6"	1.0	2.5	12	1.5	0.1	7,070
	8"	1.7	3.25	14	2.0	0.27	12,565
	10"	2.0	4.0	18	2.5	0.5	19,635
TEES AND PLUGS	12"	2.5	4.5	20	3.25	0.91	28,275
	14"	3.0	5.0	24	4.0	1.41	38,485
	16"	3.0	5.0	26	5.0	1.77	50,265
	20"	4.0	7.0	32	5.75	3.69	78,540
	24"	6.0	9.0	40	6.5	7.94	113,100

NOTES:

1. BASED ON ROD AND NUT HAVING YIELD STRENGTH OF 96,000 PSI.
2. SOIL BEARING CAPACITY OF 2000 PSI.
3. RODS TO HAVE 6" OF THREADS ON ENDS.
4. ALL METAL TO BE CLEANED AND COATED WITH APPROVED PROTECTIVE COATING FOLLOWING INSTALLATION AND PRIOR TO BACKFILLING. SEE NOTE 2 ON DETAIL 18



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CITY OF CUMMING

DEPARTMENT OF UTILITIES

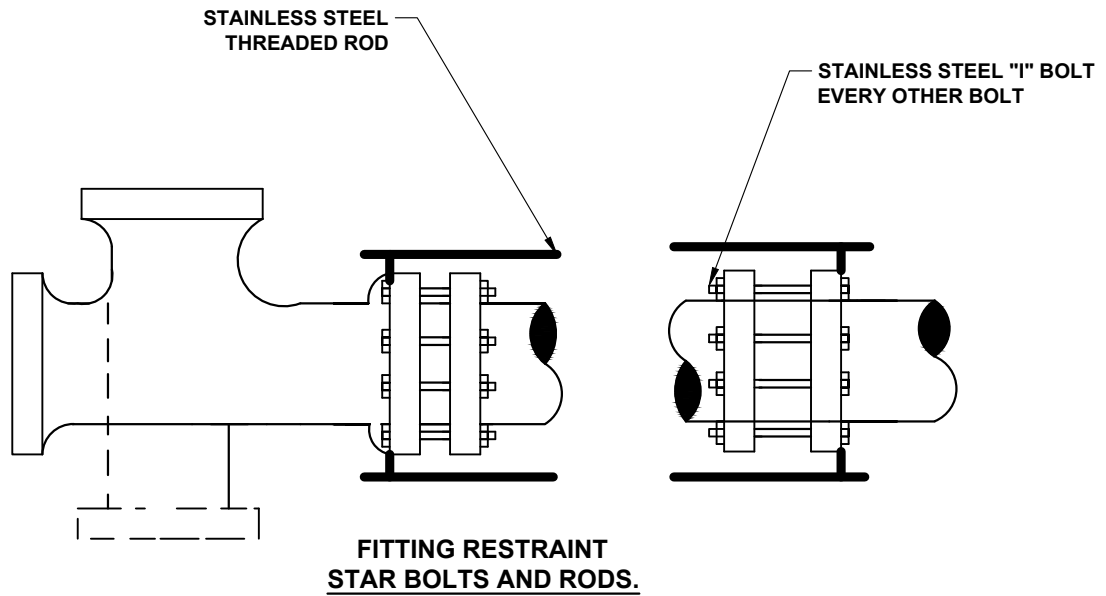
THRUST RESTRAINT

"DEAD MAN" CONCRETE TYPE

DETAIL NUMBER:

W-17

SCALE: NOT TO SCALE



NOTES:

1. NO FLANGED JOINTS ARE TO BE BURIED.

2. AFTER INSTALLATION, TIE-RODS AND CLAMP ASSEMBLIES SHALL BE CLEANED AND THOROUGHLY COATED WITH BITUMASTIC OR APPROVED EQUIVALENT.



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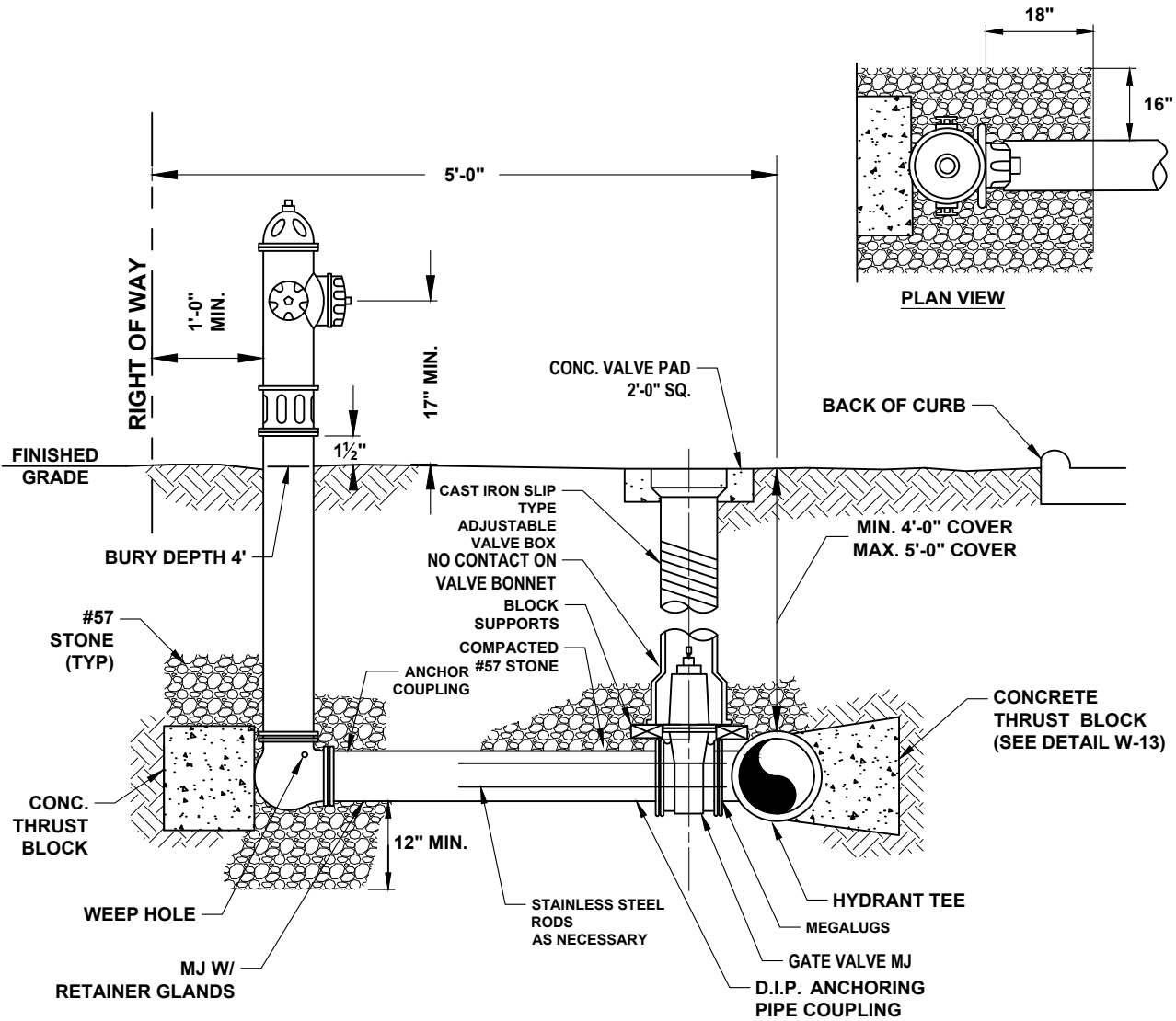
DEPARTMENT OF UTILITIES

**THRUST RESTRAINT:
TIE ROD INSTALLATION**

DETAIL NUMBER:

W-18

SCALE: NOT TO SCALE



NOTES:

1. WORK WITHIN GEORGIA D.O.T. OR COUNTY RIGHT OF WAY REQUIRE A PERMIT FROM THE APPROPRIATE AGENCY AND MORE STRINGENT STANDARDS MAY APPLY.
2. WATER MAINS SHALL HAVE MIN. 4-FT COVER (FIN. GRADE TO TOP OF PIPE).
3. SET HYDRANT PLUMB WITH MIN. 1.5 IN. FROM FIN. GRADE TO BOTTOM FLANGE.
4. FOR REGULAR TEE FITTING, MIN. NIPPLE LENGTH SHALL BE 12-INCHES.
5. COMPACTED #57 STONE UNDER HYDRANT. STONE SHALL BE PLACED 6-INCHES ABOVE WEEP HOLES, 18-INCHES BELOW WEEP HOLES AND 18-INCHES TOWARDS THE MAIN. ALSO 16-INCHES LATERALLY ON EACH SIDE.
6. THRUST BLOCKING SHALL NOT COVER WEEP HOLES



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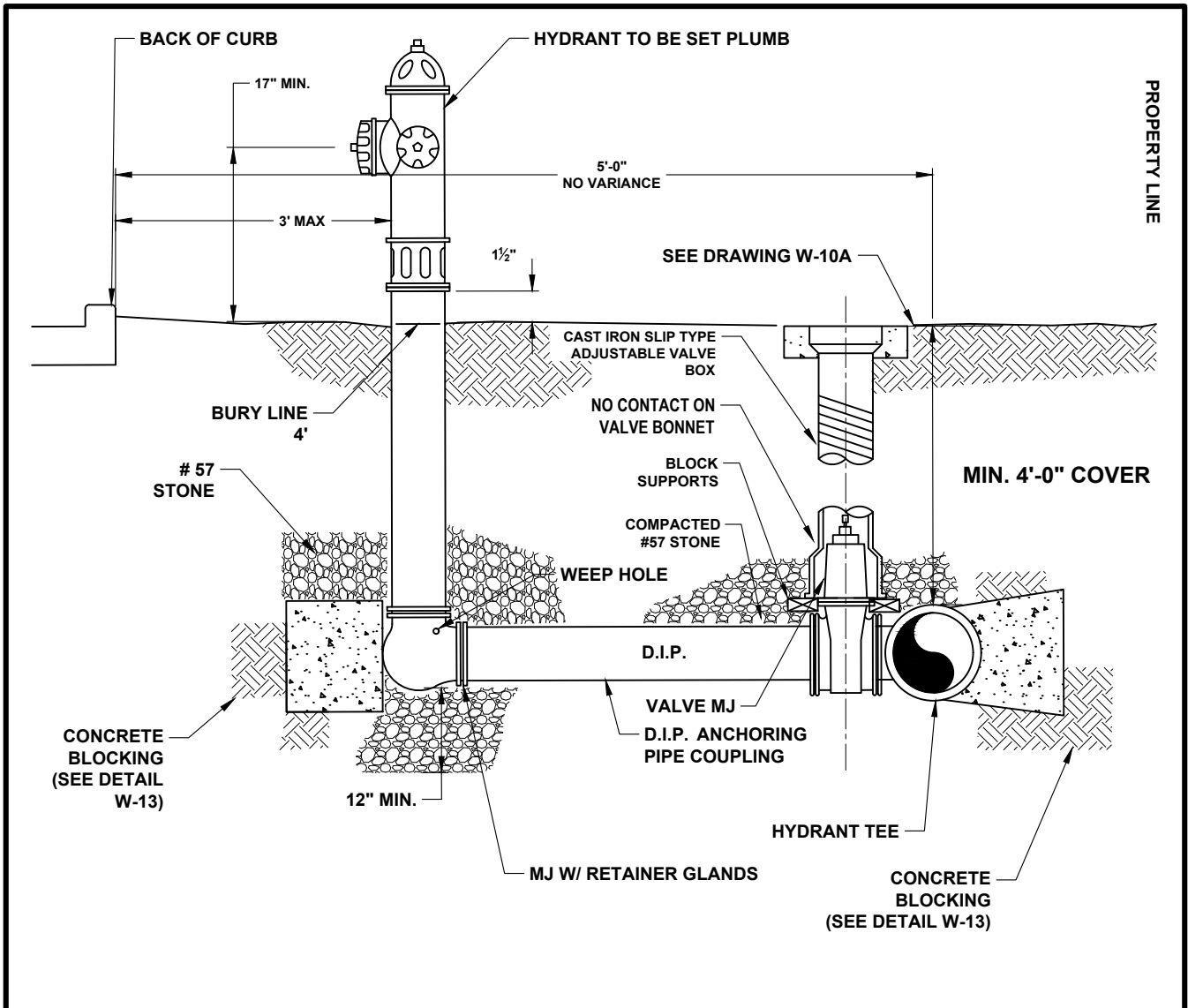
DEPARTMENT OF UTILITIES

FIRE HYDRANT INSTALLATION

DETAIL NUMBER:

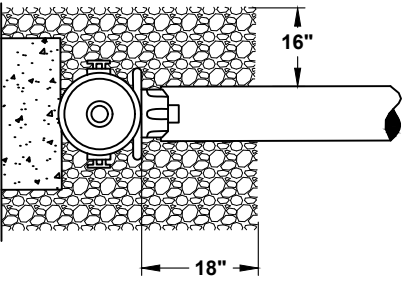
W-19

SCALE: NOT TO SCALE



NOTES:

1. FOR ALL WATER MAINS MIN. COVER SHALL BE 4' - 0" (FINISHED GRADE TO TOP OF PIPE).
2. IF REGULAR TEE USED, MIN. NIPPLE LENGTH SHALL BE 12".
3. PLACE STONE TO 6" ABOVE WEEP HOLES, 18" BELOW WEEP HOLES AND 18" TOWARDS THE MAIN. ALSO 16" Laterally ON EACH SIDE. COMPACT STONE UNDER HYDRANT.



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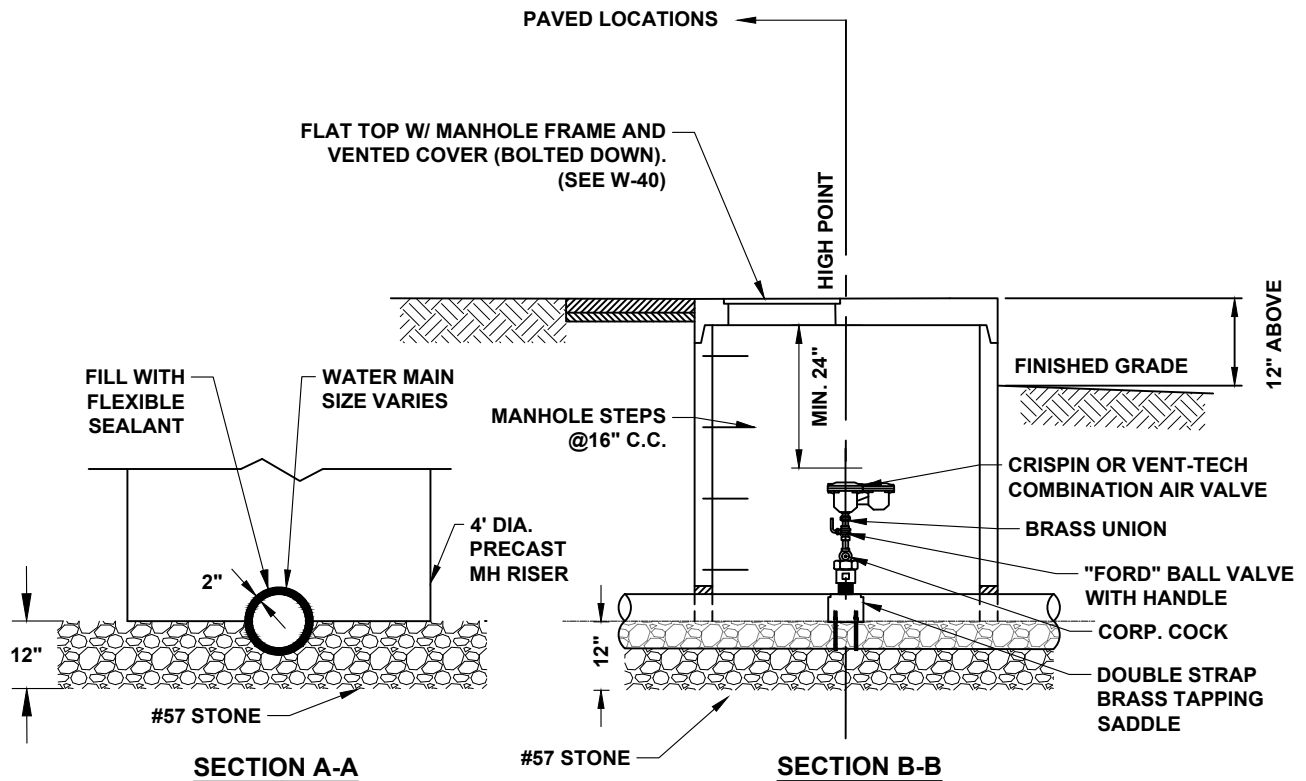
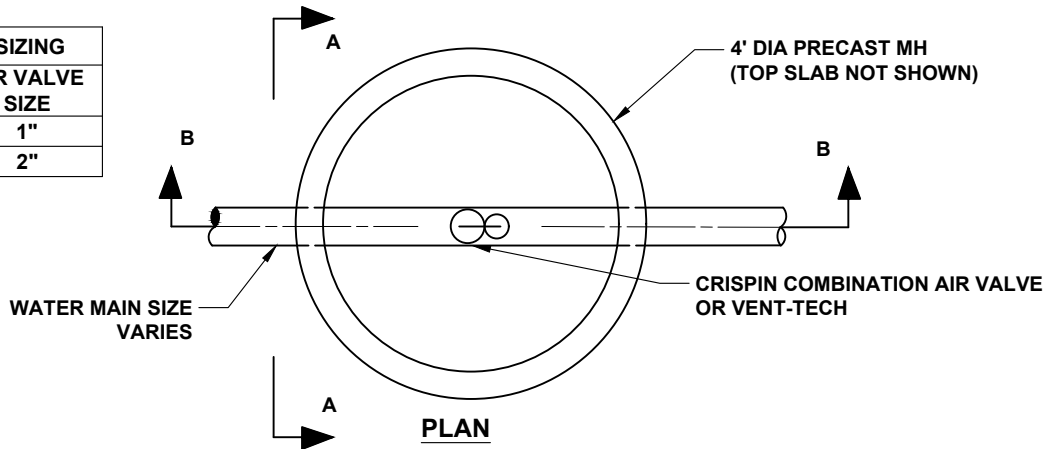
CITY OF CUMMING
DEPARTMENT OF UTILITIES
FIRE HYDRANT INSTALLATION
SUBDIVISION ONLY

DETAIL NUMBER:

W-20

SCALE: NOT TO SCALE

AIR VALVE SIZING	
MAIN SIZE	AIR VALVE SIZE
6" - 10"	1"
12" - 20"	2"



NOTES:

1. ALL NIPPLES TO BE "ALL THREADED" MINIMUM LENGTH.
2. ALL PIPE TO BE RED BRASS.
3. ALL FITTINGS TO BE BRASS.

VALVE MAY NOT BE LOCATED UNDER PAVEMENT WITH MANHOLE IN THE FLOW OF TRAFFIC. IF MANHOLE MUST BE IN PAVEMENT, IT IS TO BE VENTED TO OUT OF THE PAVEMENT AND FLOW OF TRAFFIC.



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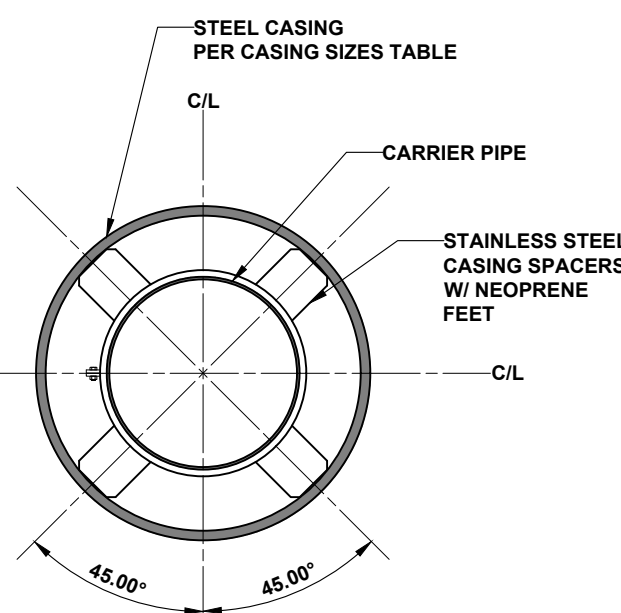
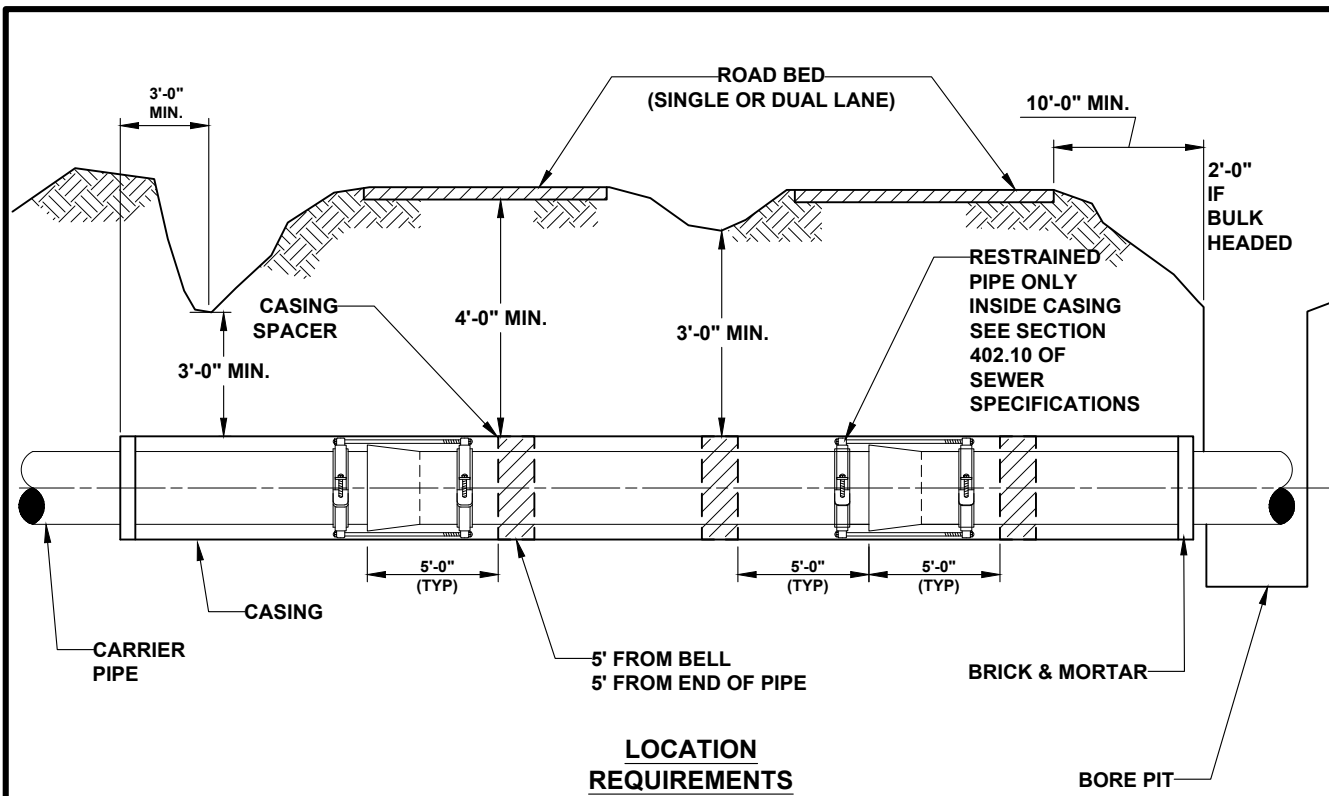
CITY OF CUMMING

DEPARTMENT OF UTILITIES
AIR VALVE INSTALLATION
(WATER MAIN SIZE 20" AND SMALLER)

DETAIL NUMBER:

W-21

SCALE: NOT TO SCALE



CASING SIZES				
PIPE SIZE	PIPE O.D.	BELL O.D.	CASING O.D.	CASING I.D.
6"	6.3"	9.54"	12"	11.62"
8"	9.05"	11.78"	16"	15.56"
10"	11.1"	14.05"	18"	17.50"
12"	13.20"	16.34"	20"	19.44"
16"	17.40"	20.72"	24"	23.31"
20"	21.60"	25.5"	30"	29.12"
24"	25.80"	30.7"	34"	33.12"

NOTE:
 1. ALL SEWER LINES CROSSING INTERSTATE OR LIMITED ACCESS ROADS SHALL BE CASED.
 2. ALL PIPE INSIDE CASING SHALL BE RESTRAINED.



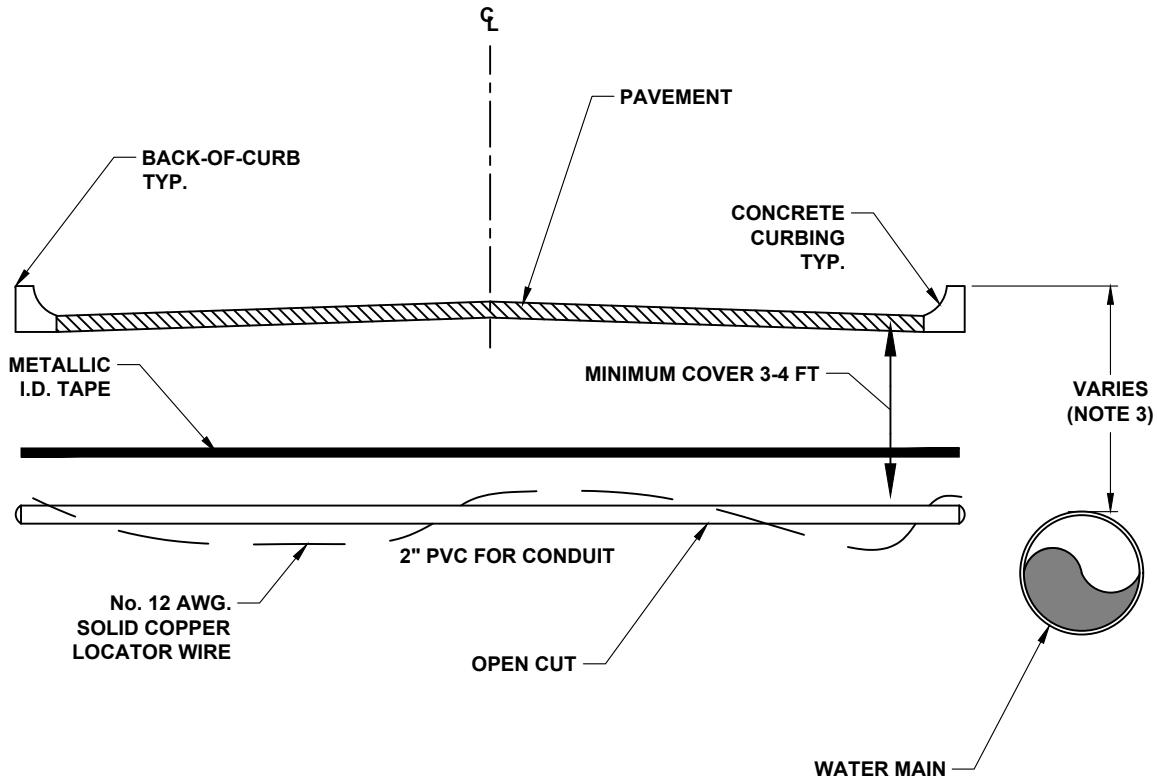
CITY OF CUMMING
 DEPARTMENT OF UTILITIES
CASING DETAILS

DETAIL NUMBER:

W-22

LATEST REVISION
 12/01/2021

SCALE: NOT TO SCALE



NOTES:

1. CONDUIT LOCATIONS SHALL BE MARKED "W" AT CURBS ON EACH SIDE OF STREET.
2. INSPECTOR SHALL VERIFY PRESENCE AND DEPTH OF CONDUITS.
3. MINIMUM COVER FOR ALL WATER MAINS 6 -10 INCH DIAMETER SHALL BE 3 FT. 12-INCH AND LARGER SHALL BE 4 FT.



LATEST REVISION

12/01/2021

CITY OF CUMMING

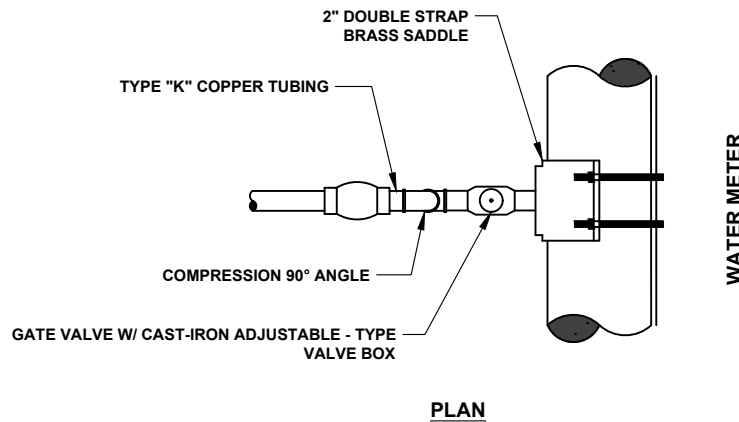
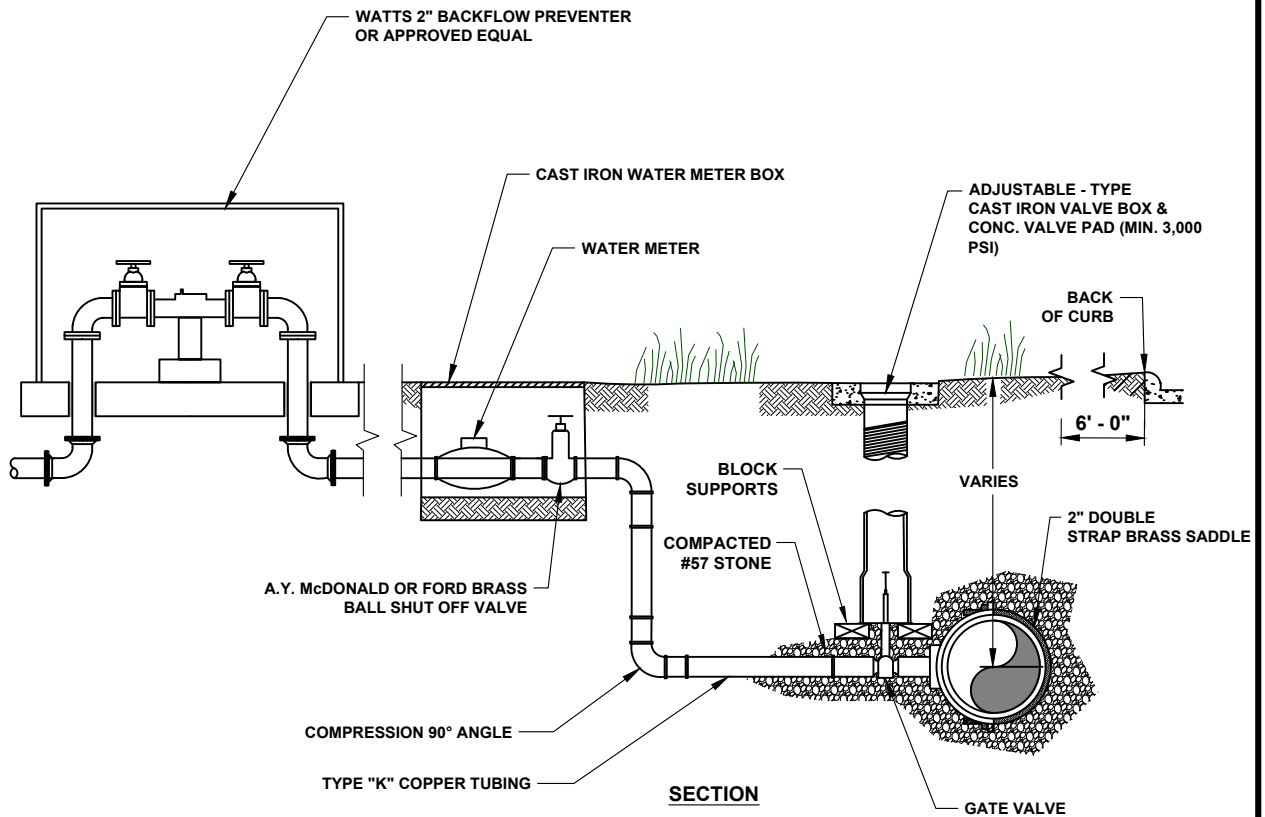
DEPARTMENT OF UTILITIES

NEW SERVICE LINE CONDUIT SUBDIVISIONS

DETAIL NUMBER:

W-24

SCALE: NOT TO SCALE



CITY OF CUMMING

DEPARTMENT OF UTILITIES

2" METER SETTING

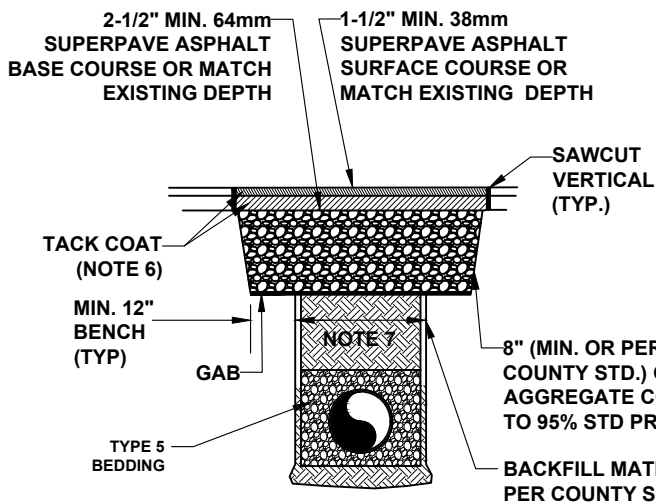
DETAIL NUMBER:

W-25

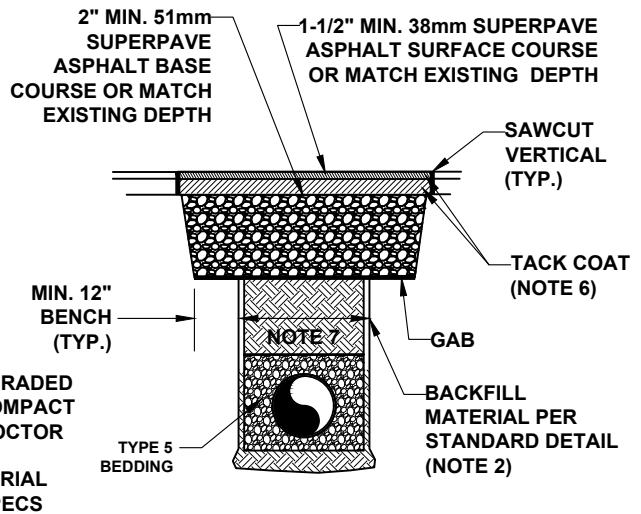
LATEST REVISION

12/01/2021

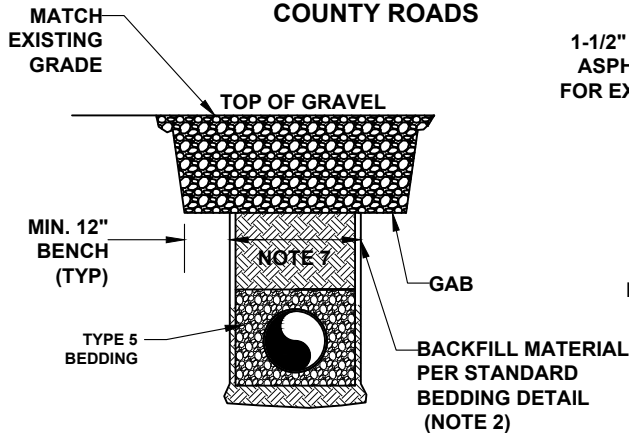
SCALE: NOT TO SCALE



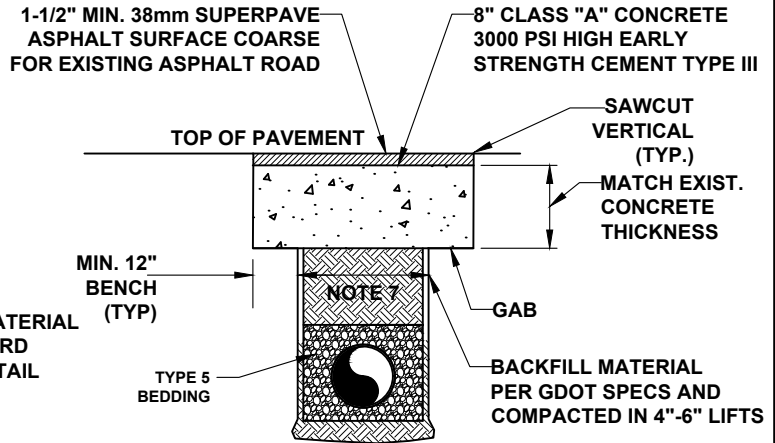
**TYPE "A" ASPHALT
COUNTY ROADS**



**TYPE "A" ASPHALT
PRIVATE ROADS**



**TYPE "B" GRAVEL
PRIVATE / COMMERCIAL**



**TYPE "C" CONCRETE
GDOT ROADS**

NOTES:

1. FINAL APPROVAL OF PAVEMENT CUT REPAIRS RESIDES WITH THE AUTHORITY HAVING JURISDICTION. FOR GEORGIA D.O.T. ROADS ALL MATERIALS AND METHODS OF INSTALLATION SHALL COMPLY WITH THE GEORGIA D.O.T. "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION", LATEST REVISION.
2. BACKFILL SHALL BE PLACED AND COMPACTED IN 4-6" LIFTS, IN ACCORDANCE WITH CITY STD BEDDING DETAILS.
3. TRAFFIC CONTROL PLAN MUST BE APPROVED BY THE AUTHORITY HAVING JURISDICTION BEFORE WORK BEGINS.
4. FOR TYPE "C" PAVEMENT REPAIR THE POURED CONCRETE SHALL BE COVERED WITH TRAFFIC RATED STEEL PLATES A MINIMUM OF 24-HOURS TO ALLOW ADEQUATE CONCRETE SET.
5. STABILIZATION STONE SHALL BE REQUIRED IN AREAS WHERE TRENCH BOTTOM IS UNSTABLE. PIPE BEDDING SHALL HAVE A MINIMUM OF 4" OF #57 STONE OR AS SHOWN IN THE BEDDING STANDARD DETAILS.
6. TACK COAT REQUIRED BETWEEN EACH COURSE.
7. MINIMUM TRENCH WIDTHS ACCORDING TO TRENCH WIDTH CHART STANDARD DETAIL.
8. PRIVATE ROADS SHALL HAVE A MIN. OF 6" DEPTH OR MATCH EXISTING. COMMERCIAL ROADS SHALL HAVE A MIN. OF 8" DEPTH OR MATCH EXISTING.



LATEST REVISION

12/01/2021

CITY OF CUMMING

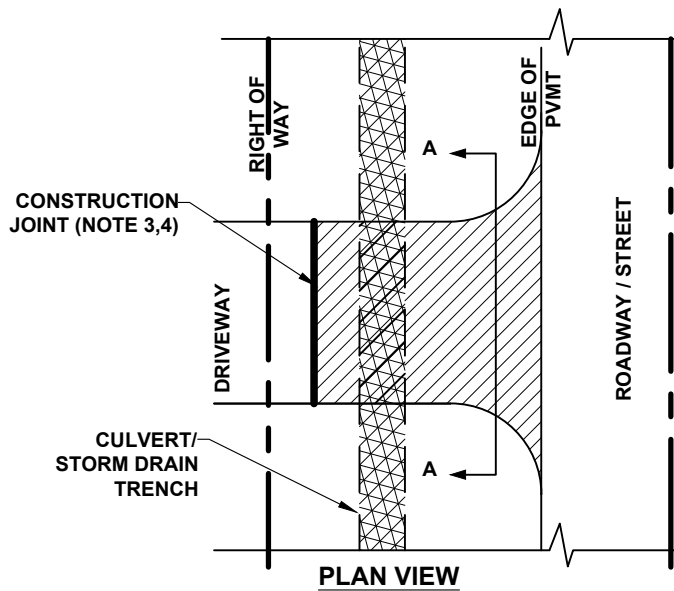
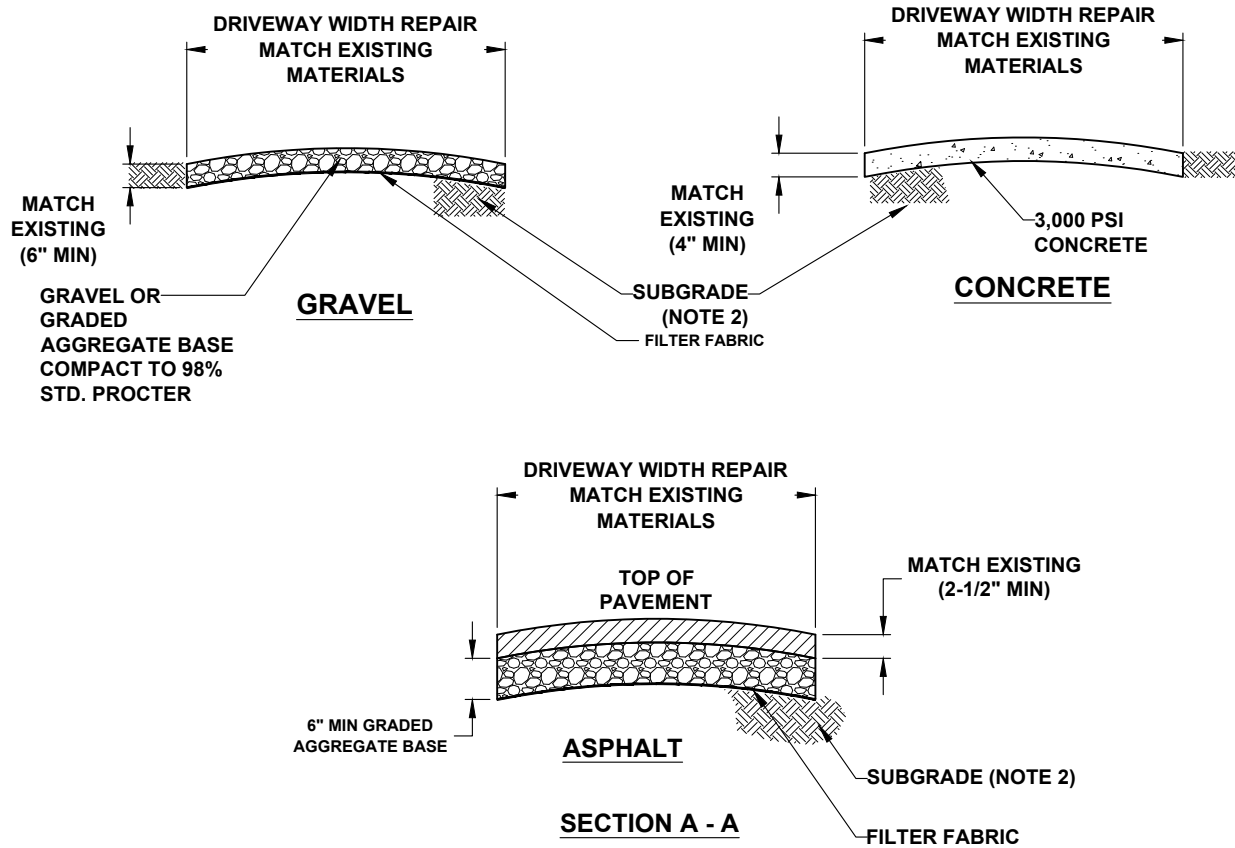
DEPARTMENT OF UTILITIES

**PAVEMENT CUT REPAIRS -
TYPE A, B & C**

DETAIL NUMBER:

W-26

SCALE: NOT TO SCALE



NOTES:

1. ALL CROSSINGS SHALL BE FREE-BORE UNLESS SPECIFIED BY CONTRACT DRAWINGS OR APPROVED BY THE CITY.
2. SUBGRADE COMPACTION AND MATERIALS SHALL MEET CITY SPECIFICATIONS AND TRENCHING STANDARD DETAILS.
3. SAW CUTS SHALL BE VERTICAL AND EXPANSION MATERIAL INSTALLED AS REQUIRED.
4. FOR CONCRETE DRIVEWAYS REMOVE & REPLACE BACK TO THE NEAREST CONSTRUCTION JOINT(S).
5. FINISHED GRADE TO BE FLUSH WITH EDGE OF DRIVE.
6. FINISHED SURFACE OF REPAIRED AREA TO MATCH EXISTING SURFACE.



CITY OF CUMMING

DEPARTMENT OF UTILITIES

DRIVEWAY CUT REPAIRS

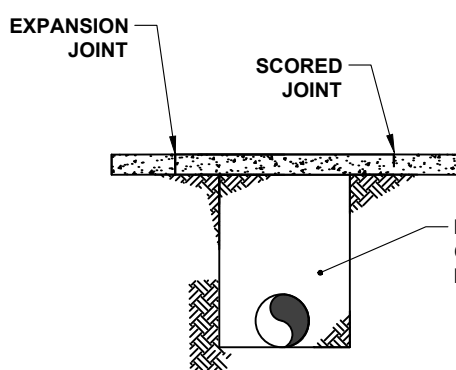
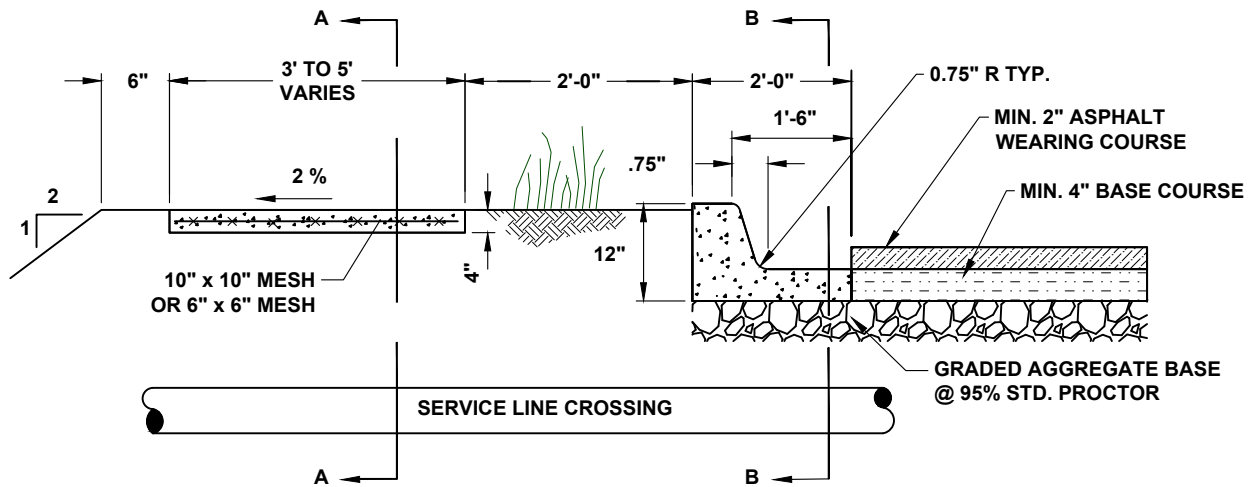
DETAIL NUMBER:

W-27

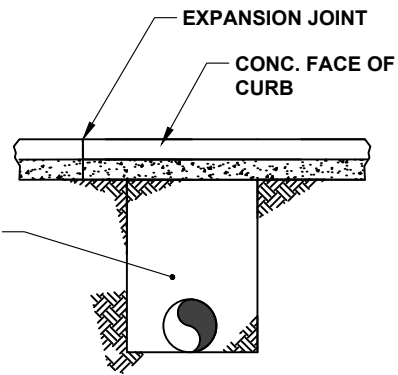
LATEST REVISION

12/01/2021

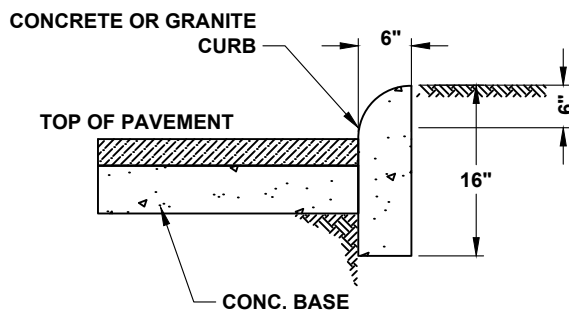
SCALE: NOT TO SCALE



SECTION A-A



SECTION B-B



NOTES:

1. SIDEWALKS, CURB AND GUTTER AND ANY STREET SCAPE STRUCTURES REMOVED OR DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED OR REPLACED.
2. MATCH EXISTING TYPE, MATERIALS AND GRADES FOR CONTIGUOUS CONNECTION TO EXISTING.
3. CONCRETE SHALL MEET MIN. 4000 PSI OR AS INDICATED BY THE ENGINEER.
4. LOCATION OF SERVICE LINES SHALL BE PER CITY STANDARD DETAIL.
5. SCORED SIDEWALK JOINTS PLACED AT A MAXIMUM OF 6 FT.



LATEST REVISION

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CITY OF CUMMING

DEPARTMENT OF UTILITIES

SIDEWALK, CURB AND GUTTER REPAIRS

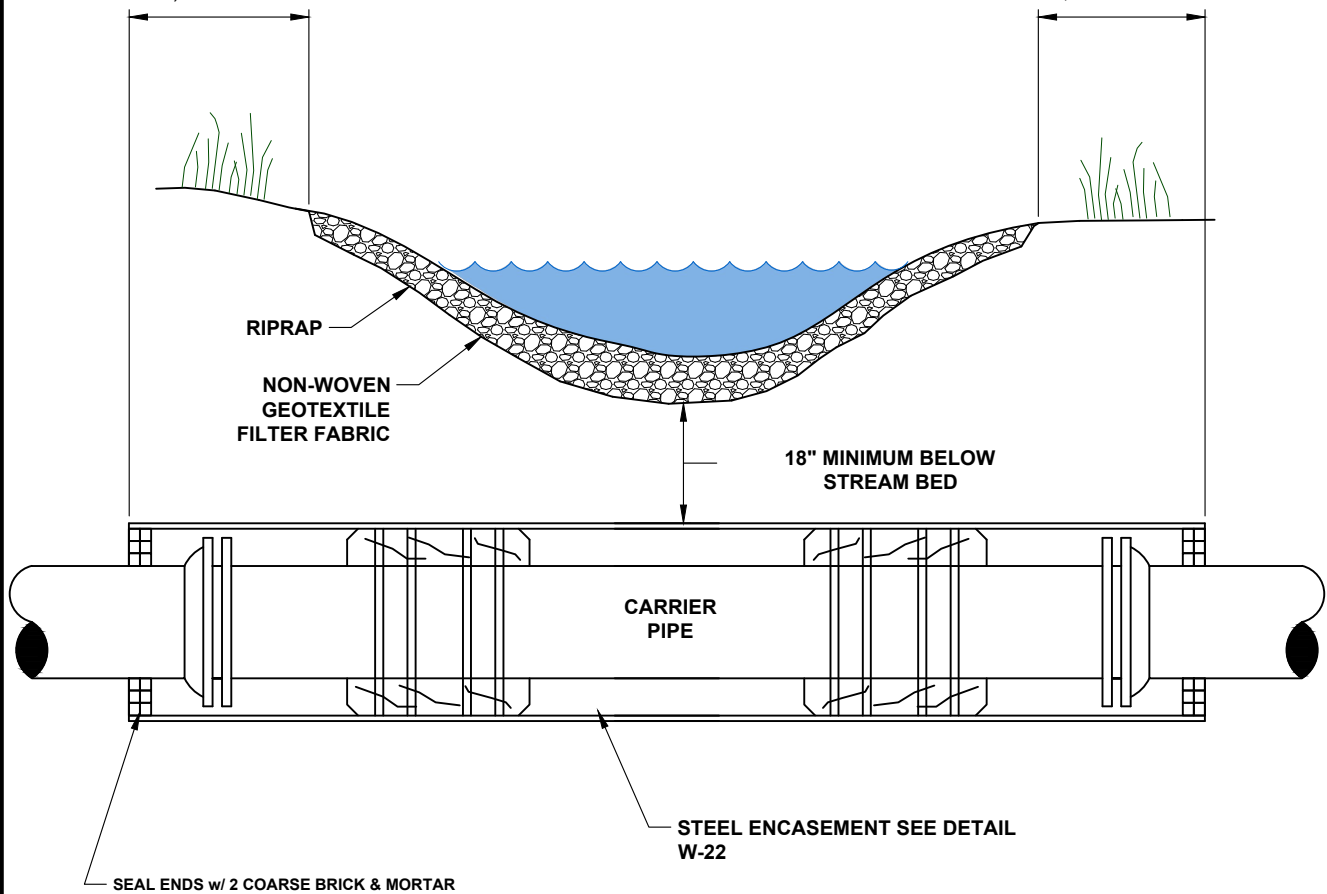
DETAIL NUMBER:

W-28

SCALE: NOT TO SCALE

10'-0" MINIMUM FROM EDGE
OF STREAM BANK TO EDGE
OF STEEL ENCASEMENT OR TO 25'
SETBACK, WHICH EVER IS LESS

10'-0" MINIMUM FROM EDGE
OF STREAM BANK TO EDGE
OF STEEL ENCASEMENT OR TO 25'
SETBACK, WHICH EVER IS LESS



LATEST REVISION

12/01/2021

CITY OF CUMMING

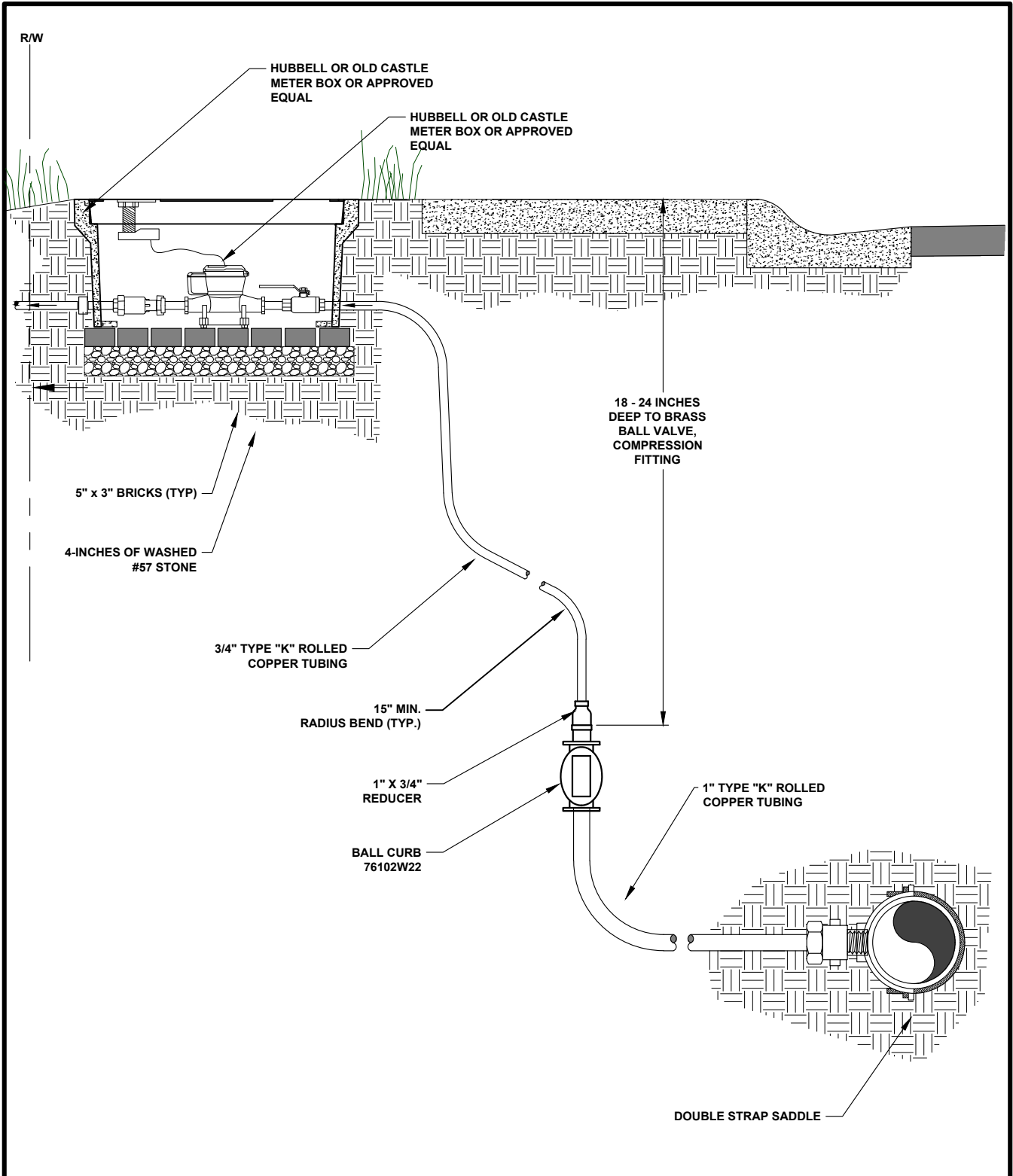
DEPARTMENT OF UTILITIES

STREAM CROSSING

DETAIL NUMBER:

W-29

SCALE: NOT TO SCALE



LATEST REVISION

12/01/2021

CITY OF CUMMING

DEPARTMENT OF UTILITIES

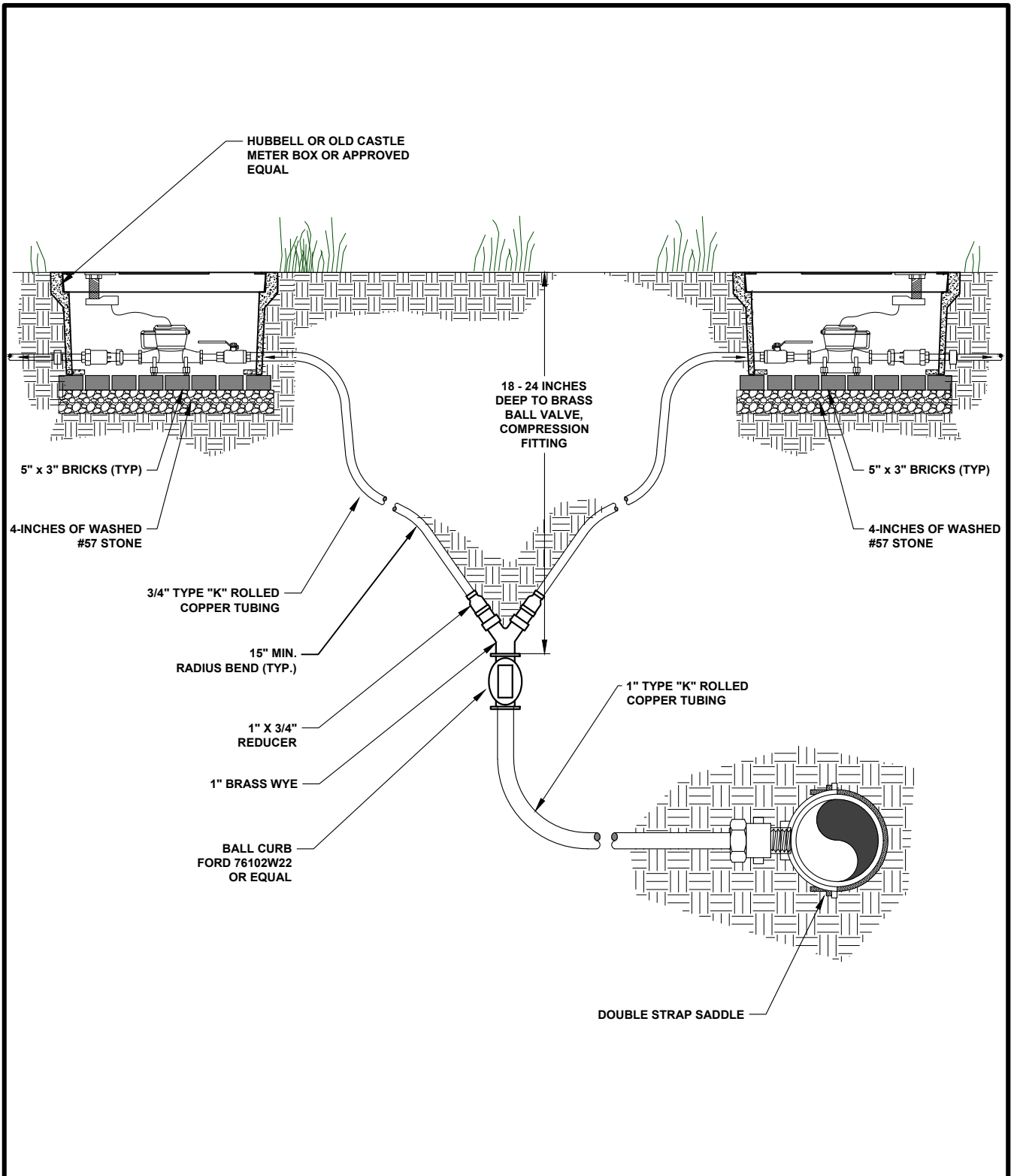
SINGLE IRRIGATION SERVICE

LINE DETAIL

DETAIL NUMBER:

W-30A

SCALE: NOT TO SCALE



LATEST REVISION

12/01/2021

CITY OF CUMMING

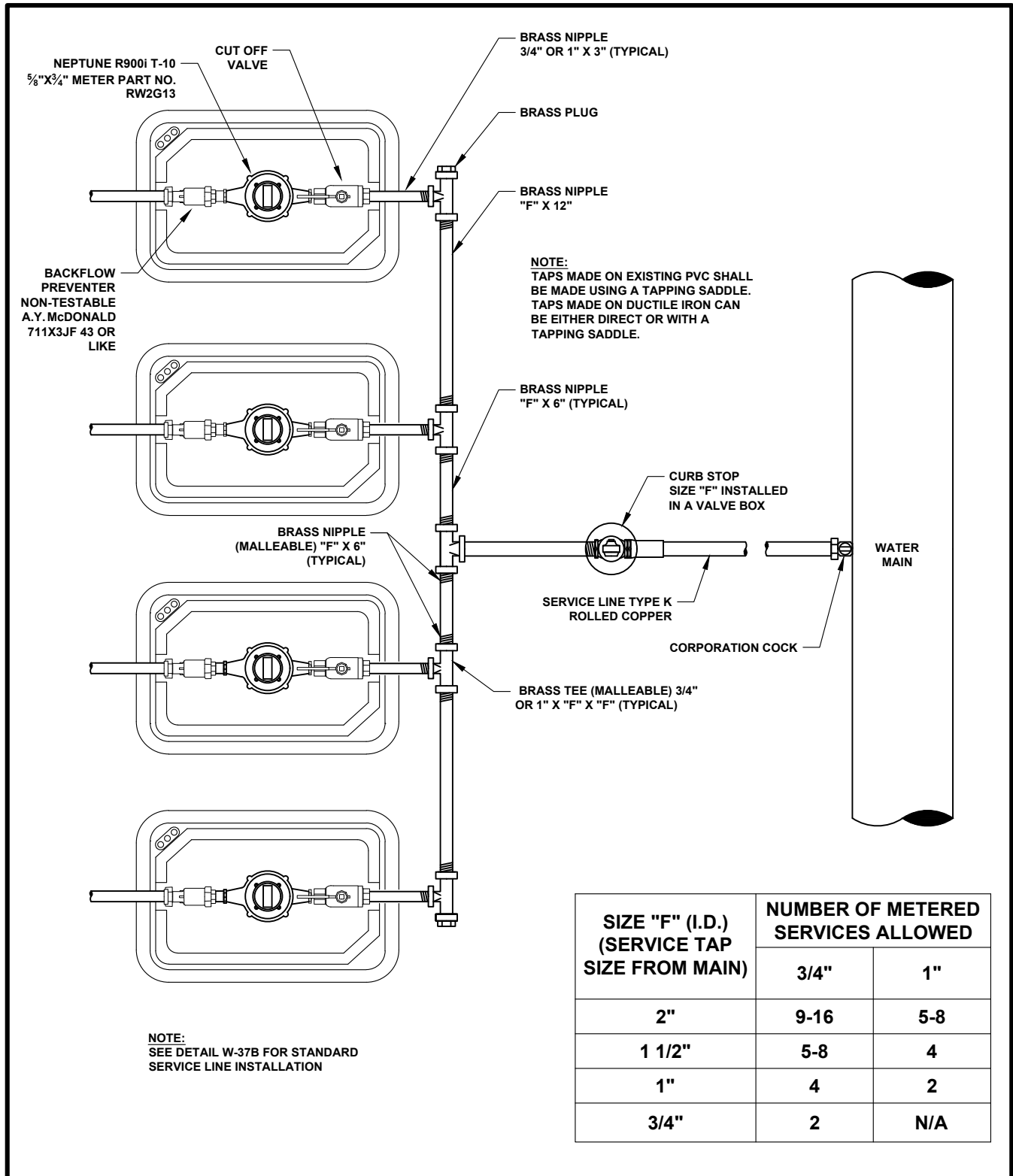
DEPARTMENT OF UTILITIES

DOUBLE SERVICE LINE DETAIL

DETAIL NUMBER:

W-30B

SCALE: NOT TO SCALE



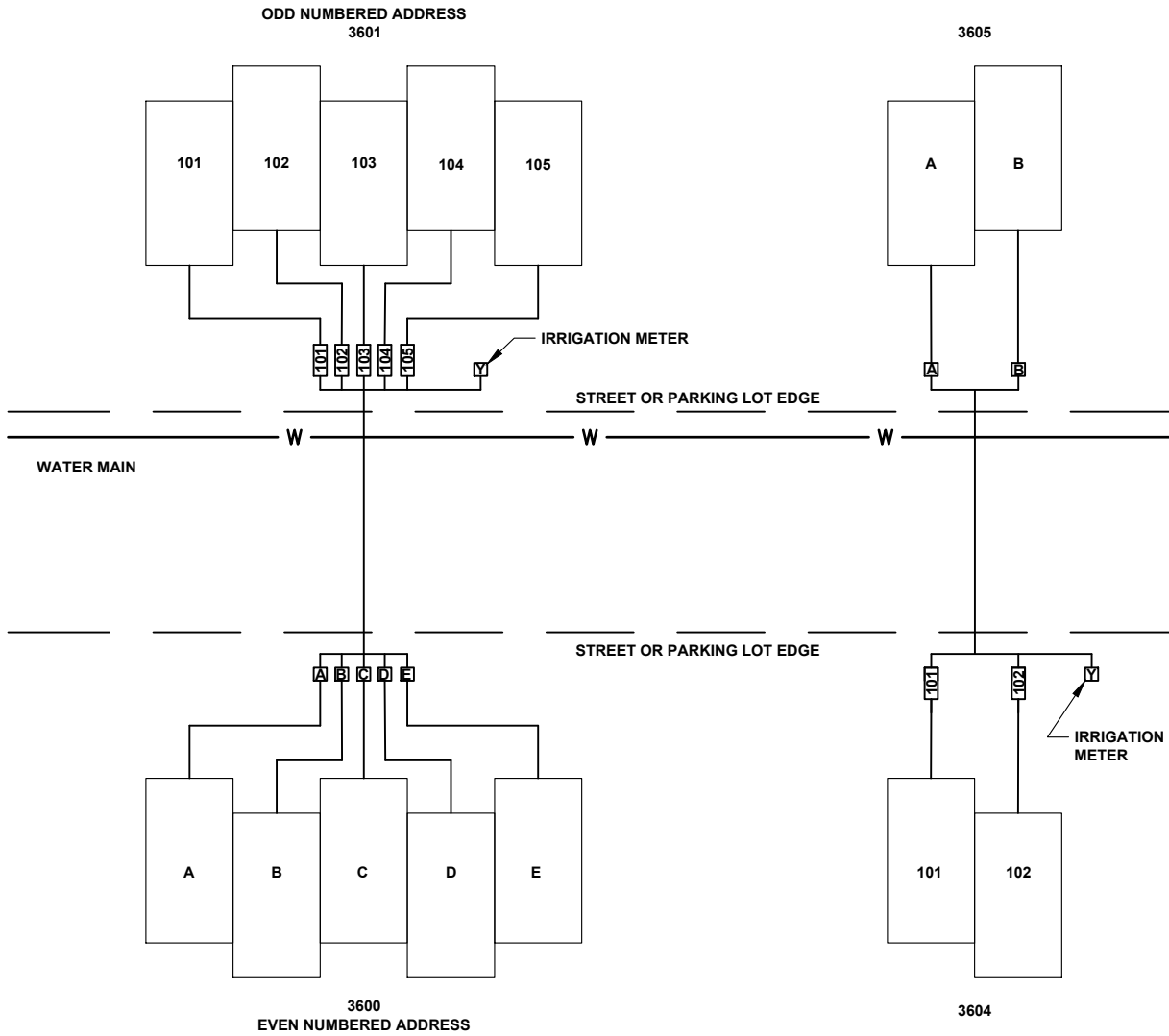
LATEST REVISION
12/01/2021

CITY OF CUMMING
DEPARTMENT OF UTILITIES
**STANDARD GANG METER
ASSEMBLY**

DETAIL NUMBER:

W-30C

SCALE: NOT TO SCALE



- NOTES:**
1. EVEN NUMBERED UNITS' METERS SHALL BE SET TO BE READ RIGHT TO LEFT (WHEN FACING BUILDING)
 2. ODD NUMBERED UNITS' METERS SHALL BE SET TO BE READ LEFT TO RIGHT (WHEN FACING BUILDING)
 3. IF IRRIGATION METER IS INCLUDED, IT SHALL BE THE LAST METER IN NUMBERING SEQUENCE.
 4. UNIT 'Y' (FOR YARD METER) SHALL BE USED TO INDICATE IRRIGATION METER.



CITY OF CUMMING
 DEPARTMENT OF UTILITIES
GANG METER ADDRESSING
SINGLE STORY BUILDING

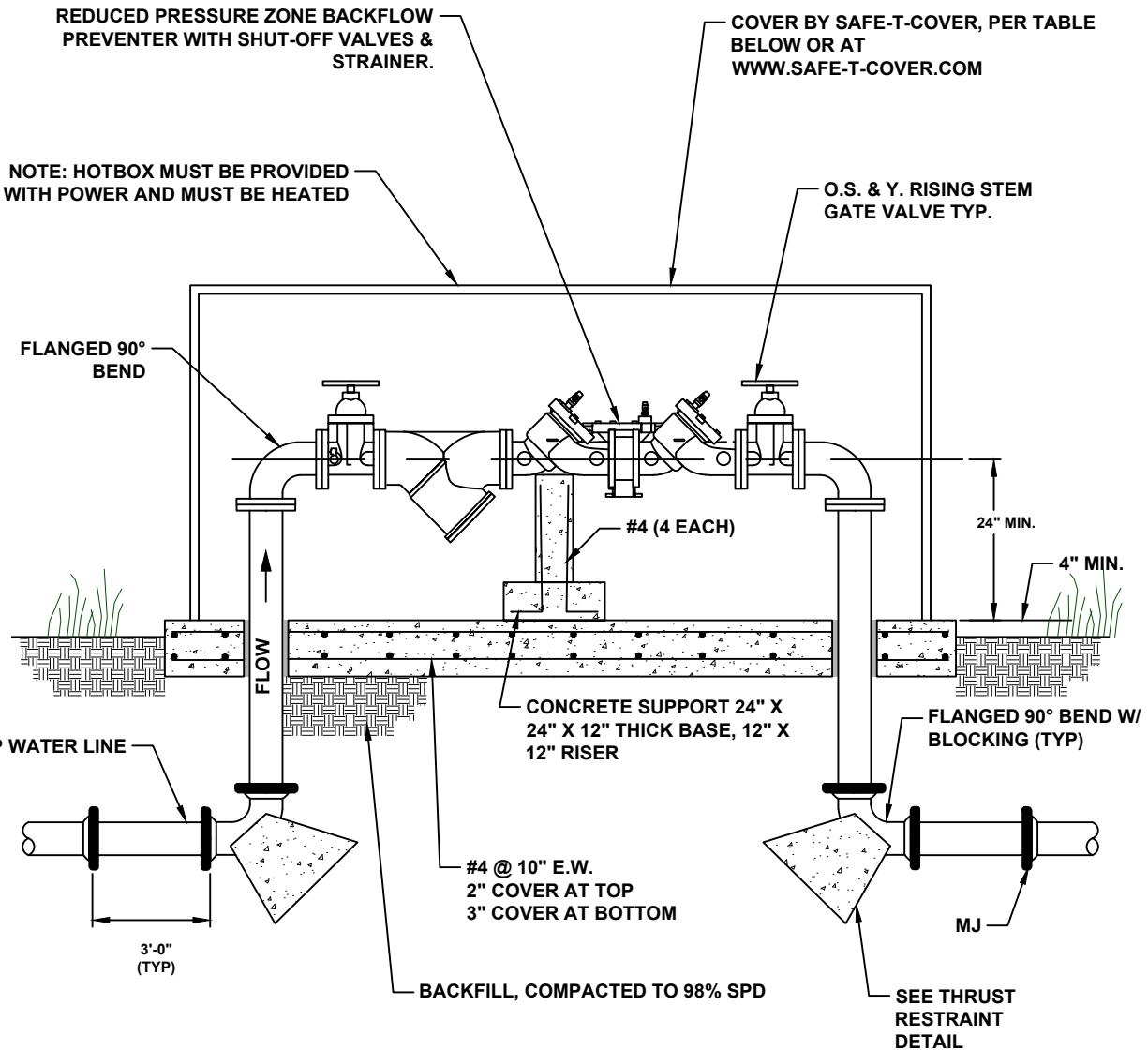
DETAIL NUMBER:

W-30D

LATEST REVISION

12/01/2021

SCALE: NOT TO SCALE



RPZ SIZE	WATTS RPZ MODEL NO.	HOT BOX MODEL	CONCRETE DIM. (LxWxD)
4"	LF909-NRS	400-AL	9'-0" x 3'-0" x 16"
6"	LF909-NRS	600-AL	11'-0" x 4'-0" x 16"
8"	LF909-NRS	800-AL	13'-0" x 4'-0" x 16"
10"	LF909-NRS	1000-AL	16'-0" x 4'-6" x 16"



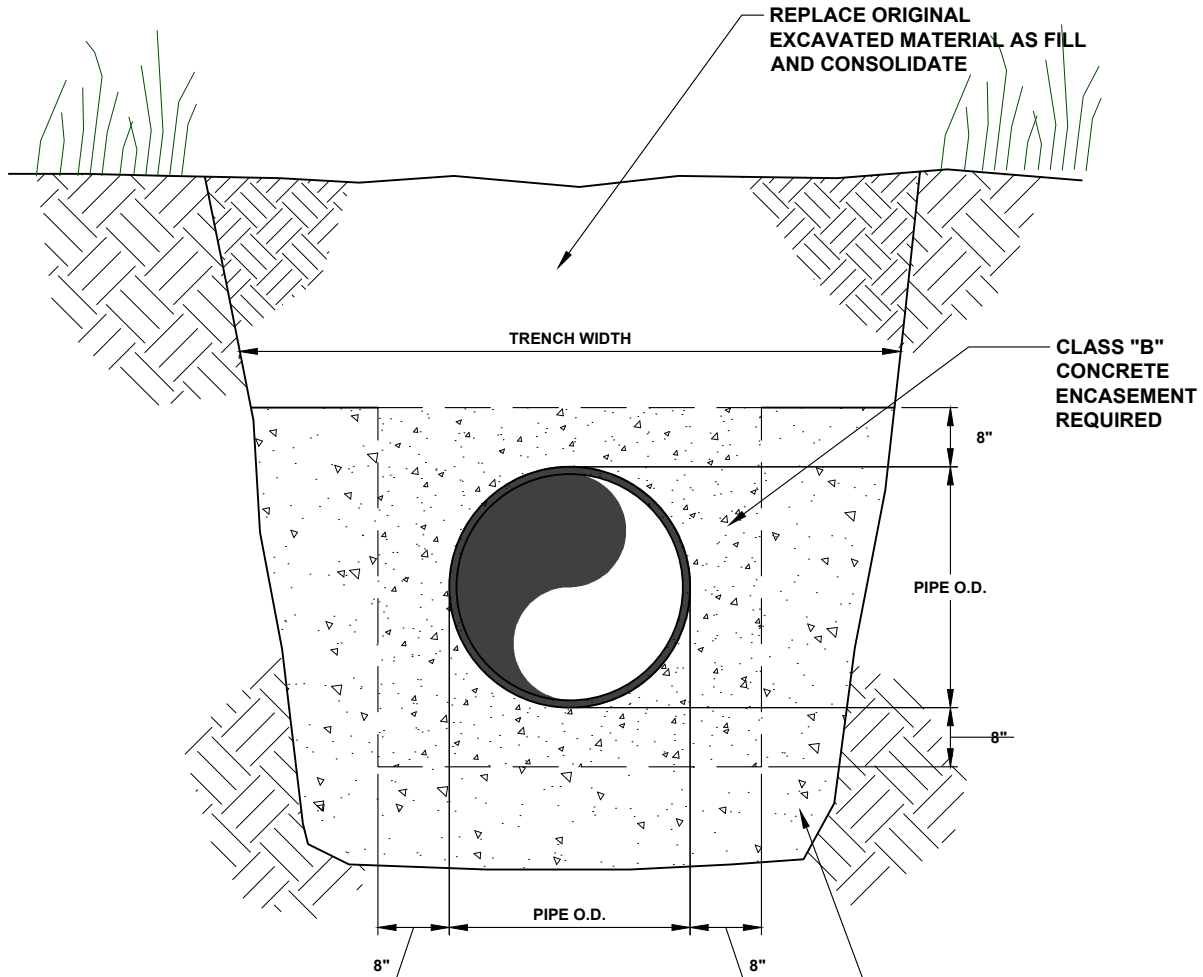
LATEST REVISION
12/01/2021

CITY OF CUMMING
DEPARTMENT OF UTILITIES
COMMERCIAL/INDUSTRIAL RPZ
BACKFLOW PREVENTER

DETAIL NUMBER:

W-31

SCALE: NOT TO SCALE



NOTE:
 WHERE CONCRETE ENCASEMENT IS
 REQUIRED, ANY OVER EXCAVATION
 OF TRENCH SHALL BE FILLED
 W/CLASS "B" CONCRETE

TRENCH WIDTH SHALL BE IN ACCORDANCE WITH THE SEE
 ALLOWABLE TRENCH WIDTH CHART STANDARD DETAIL.



LATEST REVISION

12/01/2021

CITY OF CUMMING

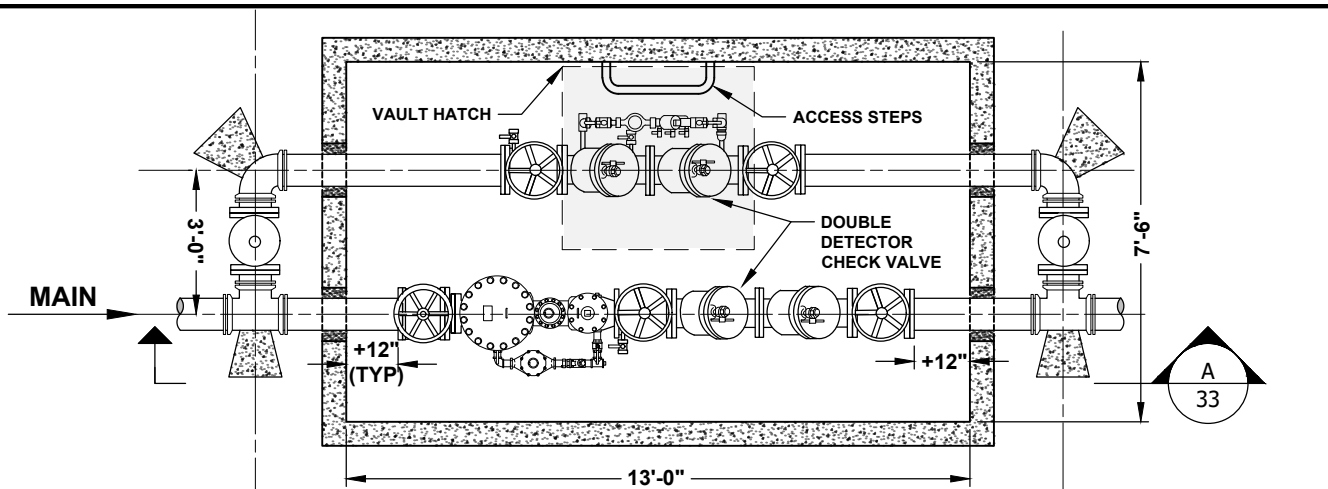
DEPARTMENT OF UTILITIES

CONCRETE ENCASEMENT DETAIL

DETAIL NUMBER:

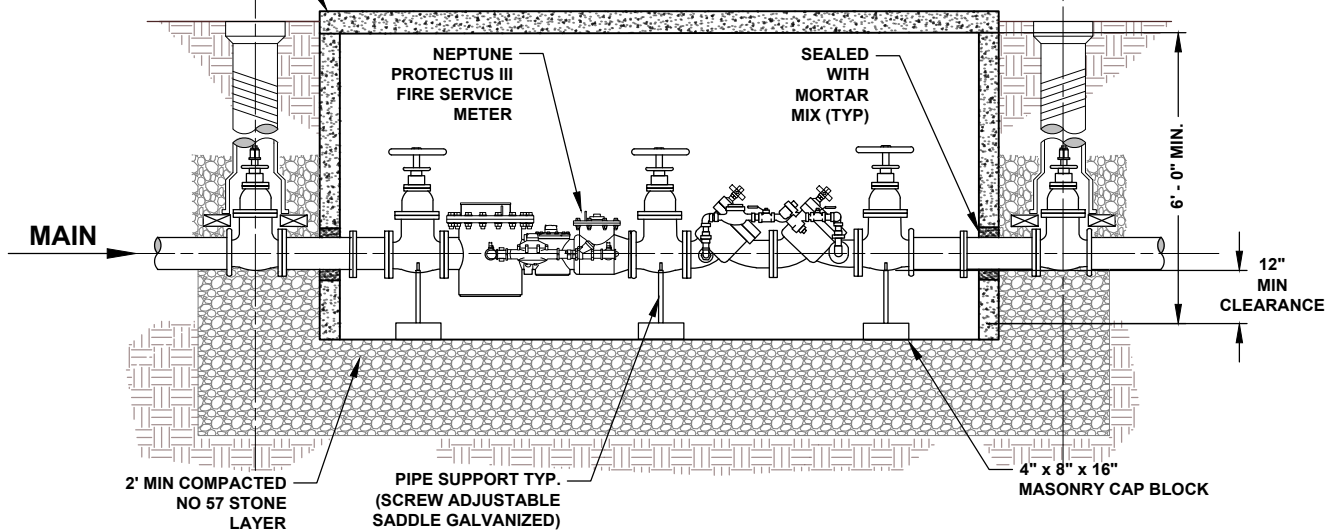
W-32

SCALE: NOT TO SCALE



PLAN VIEW

TOP OF VAULT LID SHALL SET NO MORE THAN 3 INCHES ABOVE FINISHED GRADE



A-A SECTION VIEW

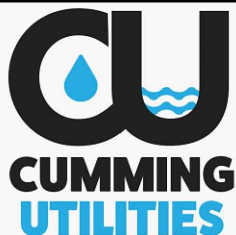
GENERAL NOTES

1. ALL BURIED BENDS AND TEES SHALL BE MJ MEGA-LUG GLANDS AND HAVE RESTRAINT THRUST BLOCKING IN ACCORDANCE WITH THE STANDARD DETAILS.
2. "ROMA GRIP" RESTRAINED MJ/FLANGED COUPLING ADAPTERS SHALL BE USED FOR TRANSITION INTO THE VAULT.
3. ALL INTERIOR VAULT FITTINGS SHALL BE FLANGED.
4. GATE VALVES SHALL BE RISING STEM OS & Y TYPE
5. "CONBRACO" OR LIKE DOUBLE CHECK VALVE SHALL INCLUDE 3/4 INCH BYPASS METER AND CHECK VALVE ASSEMBLY.

6. COMPOUND METER WITH DUAL PORT R900V2 TRANSMITTER KIT SHALL BE AS MANUFACTURED BY NEPTUNE PROTECTUS III FIRE SERVICE METER.
7. ACCESS HATCH SHALL BE BILCO ALUMINUM SINGLE SWING AND LOCATED FOR OPTIMUM MAINTENANCE ACCESS.
8. PRECAST CONCRETE VAULT 5 INCH MIN. WALL THICKNESS.
9. VAULTS SHALL BE OPTIMALLY LOCATED WITHIN LANDSCAPED AREAS AND 3-5 FT. CLEAR OF ANY PLANTINGS OR MATURE TREE ROOTS.
10. FINISH GRADE INSIDE VAULT SHALL BE OPEN. MIN. 2' (FOOT) COMPACTED #57 STONE AND 1 FT. MIN. CLEARANCE FROM FINISH FLOOR TO BOTTOM OF FLANGES.

VAULT HATCH REQUIREMENTS

1. RATED TO WITHSTAND A MINIMUM H-10 LIVE LOAD
2. A MANUAL LOCKING ARM TO PREVENT HATCH LIDS FROM CLOSING
3. CAPABLE OF BEING SECURED USING A KEYED LOCK, OR BY A T-HANDLE LATCH
4. 4' x 4'



CITY OF CUMMING

DEPARTMENT OF UTILITIES

FIRE METER AND VAULT

6" AND 8"

DETAIL NUMBER

W-33

SCALE: 1/4" = 1'-0"

IF
1.25"

LATEST REVISION

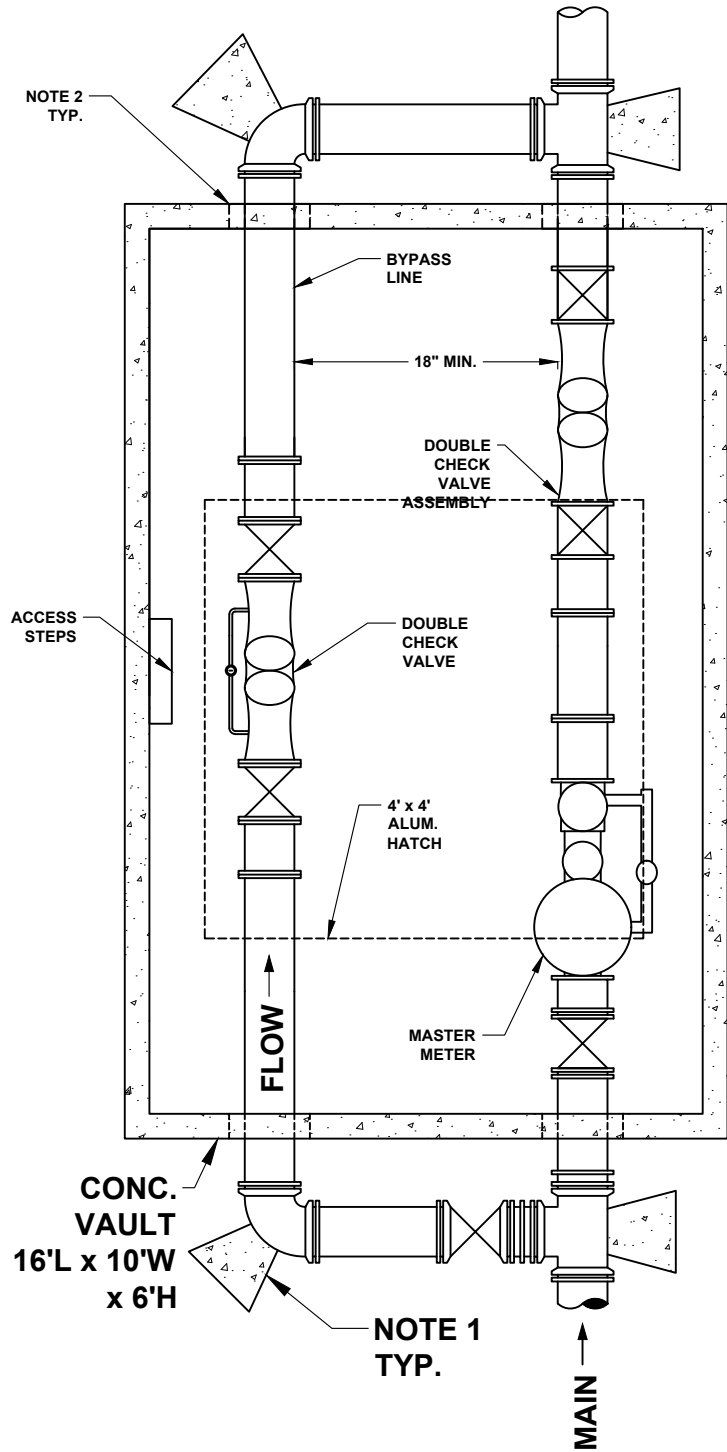
03/15/2022

GENERAL NOTES

1. ALL BURIED BENDS AND TEES SHALL BE MJ MEGA-LUG GLANDS AND HAVE RESTRAINT THRUST BLOCKING IN ACCORDANCE WITH THE STANDARD DETAILS.
2. "ROMA GRIP" RESTRAINED MJ/FLANGED COUPLING ADAPTERS SHALL BE USED FOR TRANSITION INTO THE VAULT.
3. ALL INTERIOR VAULT FITTINGS SHALL BE FLANGED.
4. GATE VALVES SHALL BE RISING STEM OS & Y TYPE
5. "CONBRACO" OR "WATTS" DOUBLE CHECK VALVE SHALL INCLUDE 3/4 INCH BYPASS METER AND CHECK VALVE ASSEMBLY.
6. COMPOUND METER WITH DUAL PORT R900V2 TRANSMITTER KIT SHALL BE AS MANUFACTURED BY NEPTUNE (HP PROTECTUS III).
7. WHEN NO FIRE VAULT IS REQUIRED, COMPOUND METER SHALL BE NEPTUNE (HP PROTECTUS III).
8. ACCESS HATCH SHALL BE BILCO ALUMINUM SINGLE SWING AND LOCATED FOR OPTIMUM MAINTENANCE ACCESS.
9. PRECAST CONCRETE VAULT 5 INCH MIN. WALL THICKNESS.
10. VAULTS SHALL BE OPTIMALLY LOCATED WITHIN LANDSCAPED AREAS AND 3-5 FT. CLEAR OF ANY PLANTINGS OR MATURE TREE ROOTS.
11. FINISH GRADE INSIDE VAULT SHALL BE OPEN. MIN. 6 INCH #57 STONE AND 2 FT. MIN. CLEARANCE FROM FINISH FLOOR TO BOTTOM OF FLANGES.

3-6 INCH MAIN ONLY

12. ACCESS HATCH SHALL BE BILCO ALUMINUM 3' X 3' SINGLE SWING AND LOCATED FOR OPTIMUM MAINTENANCE ACCESS.
13. COMPOUND METER SHALL BE AS MANUFACTURED BY NEPTUNE (TRU/FLO). FOR 6 INCH MAINS, CONFIRM TYPE WITH CITY BASED ON DESIGN FLOW RATES.



LATEST REVISION

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CITY OF CUMMING

DEPARTMENT OF UTILITIES

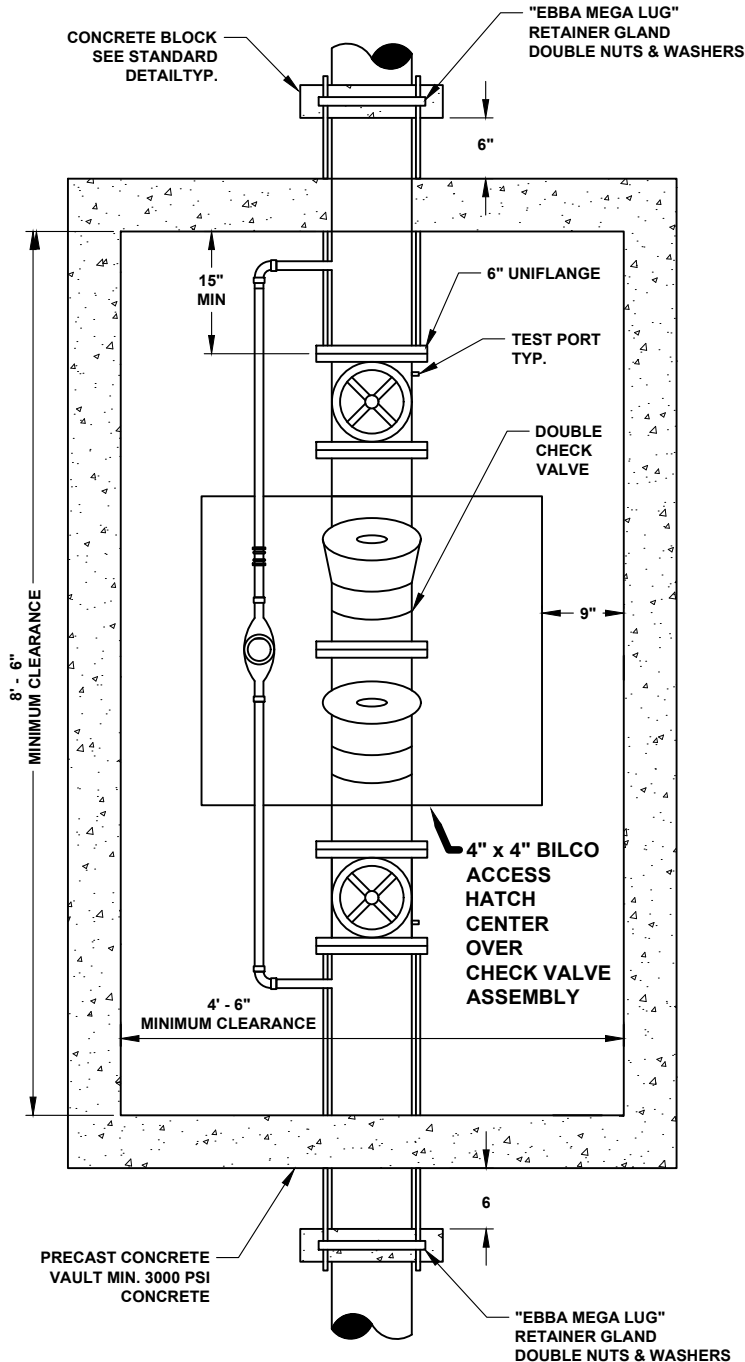
MASTER METER WITH BYPASS DETAIL

6" AND 8" MAIN

DETAIL NUMBER:

W-34

SCALE: NOT TO SCALE



NOTES:

1. ALL FITTINGS INSIDE VAULT SHALL BE FLANGED.
2. VAULT TOP IS REINFORCED. MINIMUM INSIDE HEIGHT IS 6 FEET. VAULT BOTTOM IS 4" CONCRETE SLAB SLOPED TO DRAIN TO 4" OFF-CENTER SUMP HOLE. SLAB TO BE POURED ON 4" OF COMPACTED NO. 57 STONE.
3. HATCH IS BILCO ALUMINUM SINGLE MODEL J-4AL OR EQUAL APPROVED IN ADVANCE BY THE CITY OF CUMMING.
4. VAULT INLET/OUTLET OPENINGS TO BE SEALED WITH MORTAR MIX AROUND PIPE.
5. DOUBLE CHECK VALVE ASSEMBLY SHALL BE SUPPORTED IN AT LEAST THREE (3) PLACES ON CAP BLOCKS OR BRICK.
6. VAULT SHALL BE PRECAST NON-LOAD BEARING. WHERE VAULT WILL BE SUBJECT TO LIVE LOAD, CUSTOMER SHALL SUBMIT DETAILED VAULT DESIGN FOR CITY APPROVAL PRIOR TO CONSTRUCTION.
7. ALL RODS SHALL BE BITUMASTIC COATED AND SHALL EXTEND FROM FIRST FLANGE INSIDE VAULT TO TAPPING VALVE. (WELDED TO CASING ON LONG SIDE BORE)
8. ALL PIPE AND FITTINGS TO BE DUCTILE IRON.
9. DOUBLE CHECK VALVE ASSEMBLY SHALL BE WATTS MODEL 700, AMES MODEL 3000SE, OR FEBCO 806 W/OS&Y RESILIENT SEATED GATE VALVES TAPPED FOR TESTING OR EQUIVALENT AS APPROVED BY THE CITY PRIOR TO CONSTRUCTION BY-PASS ASSEMBLY SHALL BE SIZED TO LARGE VALVE.
10. MINIMUM CLEARANCE FROM VAULT FLOOR TO BOTTOM OF FLANGES SHALL BE 12" MIN.
11. VAULT SHALL BE INSTALLED ON PRIVATE PROPERTY. CUSTOMER SHALL PROVIDE A 15' x 30' EASEMENT.
12. ALL MATERIALS SHALL BE FURNISHED BY THE CUSTOMER.



LATEST REVISION

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CITY OF CUMMING

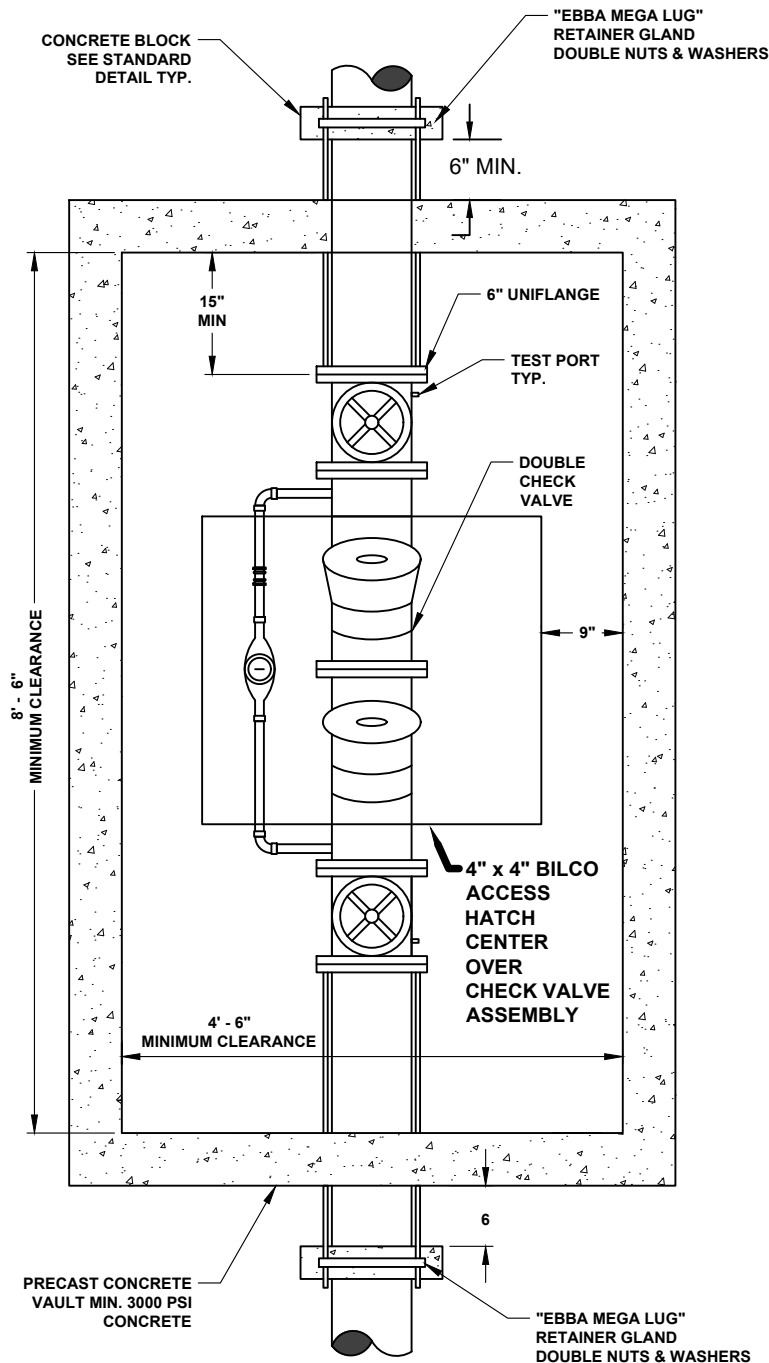
DEPARTMENT OF UTILITIES

DOUBLE DETECTOR CHECK VALVE CONFIGURATION 6-INCH

DETAIL NUMBER:

W-35

SCALE: NOT TO SCALE



NOTES:

1. ALL FITTINGS INSIDE VAULT SHALL BE FLANGED.
2. VAULT TOP IS REINFORCED. MINIMUM INSIDE HEIGHT IS 6 FEET. VAULT BOTTOM IS 4" CONCRETE SLAB SLOPED TO DRAIN TO 4" OFF-CENTER SUMP HOLE. SLAB TO BE POURED ON 4" OF COMPACTED NO. 57 STONE.
3. HATCH IS BILCO ALUMINUM SINGLE MODEL J-4AL OR EQUAL APPROVED IN ADVANCE BY THE CITY OF CUMMING.
4. VAULT INLET/OUTLET OPENINGS TO BE SEALED WITH MORTAR MIX AROUND PIPE.
5. DOUBLE CHECK VALVE ASSEMBLY SHALL BE SUPPORTED IN AT LEAST THREE (3) PLACES ON CAP BLOCKS OR BRICK.
6. VAULT SHALL BE PRECAST NON-LOAD BEARING. WHERE VAULT WILL BE SUBJECT TO LIVE LOAD, CUSTOMER SHALL SUBMIT DETAILED VAULT DESIGN FOR CITY APPROVAL PRIOR TO CONSTRUCTION.
7. ALL RODS SHALL BE BITUMASTIC COATED AND SHALL EXTEND FROM FIRST FLANGE INSIDE VAULT TO TAPPING VALVE. (WELDED TO CASING ON LONG SIDE BORE)
8. ALL PIPE AND FITTINGS TO BE DUCTILE IRON.
9. DOUBLE CHECK VALVE ASSEMBLY SHALL BE WATTS MODEL 700, AMES MODEL 3000SE, OR FEBCO 806 W/OS&Y RESILIENT SEATED GATE VALVES TAPPED FOR TESTING OR EQUIVALENT AS APPROVED BY THE CITY PRIOR TO CONSTRUCTION BY-PASS ASSEMBLY SHALL BE SIZED TO LARGE VALVE.
10. MINIMUM CLEARANCE FROM VAULT FLOOR TO BOTTOM OF FLANGES SHALL BE 16" MIN.
11. VAULT SHALL BE INSTALLED ON PRIVATE PROPERTY. CUSTOMER SHALL PROVIDE A 15' x 30' EASEMENT.
12. ALL MATERIALS SHALL BE FURNISHED BY THE CUSTOMER.



LATEST REVISION

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CITY OF CUMMING

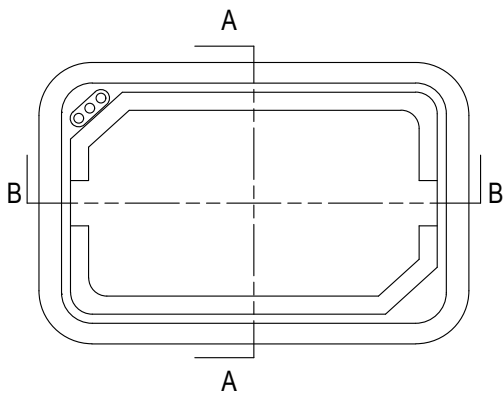
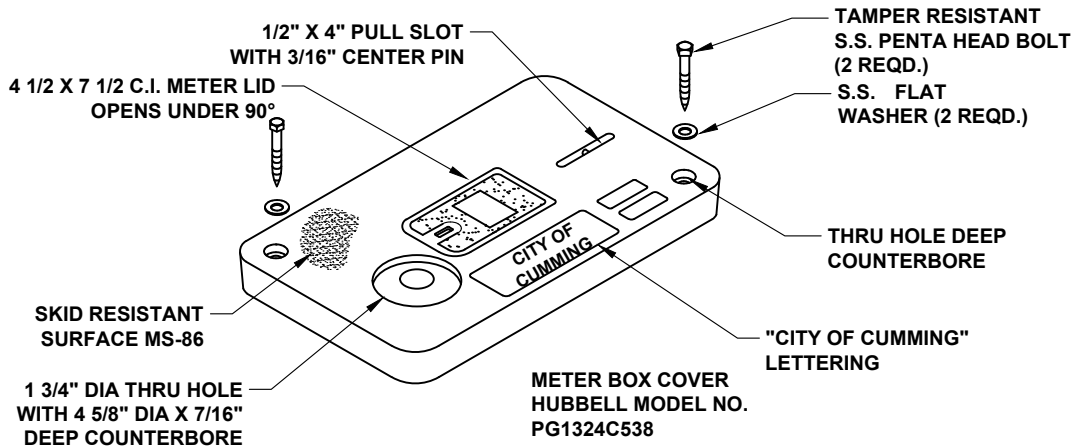
DEPARTMENT OF UTILITIES

8-INCH DOUBLE DETECTOR CHECK VALVE CONFIGURATION

DETAIL NUMBER:

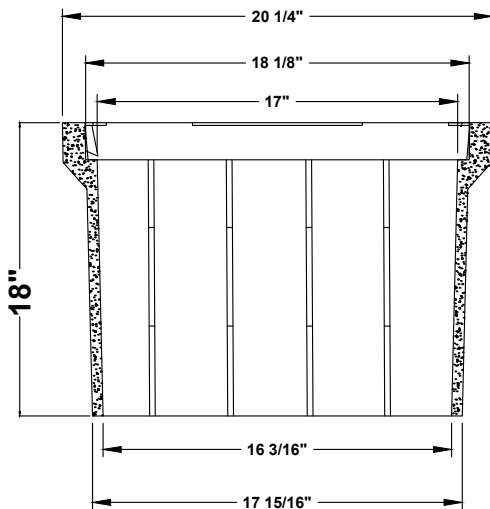
W-36

SCALE: NOT TO SCALE

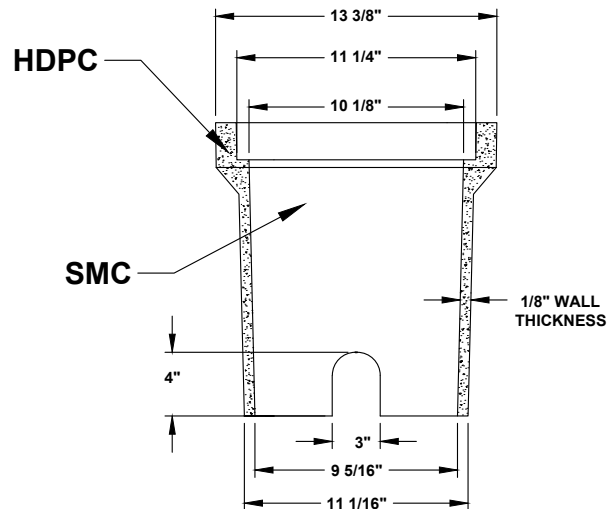


JUNCTION BOX WITH 3 X 4 MOUSE HOLE:

1. DUOMOLDING MANUFACTURING
2. GREY "SMC" SKIRT
3. HIGH DENSITY POLYMER CONCRETE (HDPC) RING
4. WEIGHT OF 24 LBS.
5. ASSEMBLY RATED FOR STATIC DESIGN LOAD OF 5,000 LBS OVER 10X10 AREA
6. ACCEPTABLE MANUFACTURERS: HUBBELL OR OLD CASTLE (EQUIVELANT BY APPROVAL ONLY)



SECTION B-B



SECTION A-A
(COVER REMOVED)



LATEST REVISION

12/01/2021

CITY OF CUMMING

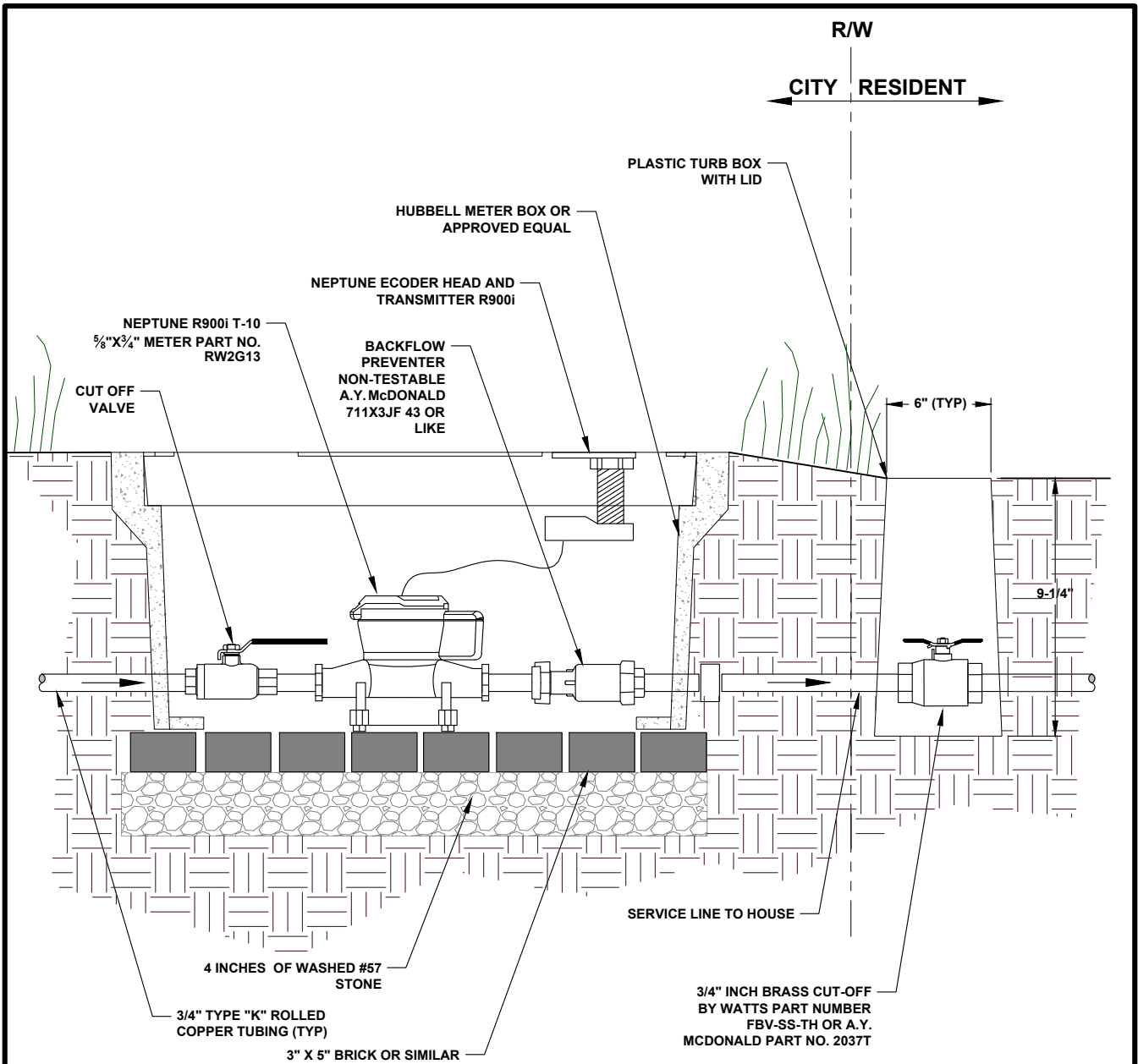
DEPARTMENT OF UTILITIES

WATER SERVICE METER BOX AND COVER

DETAIL NUMBER:

W-37A

SCALE: NOT TO SCALE



NOTES:

1. DUAL CHECK VALVE BACKFLOW DEVICE TO BE INSTALLED BY CITY.
2. EXPANSION CONNECTION TO BE INSTALLED BY CITY.
3. 5/8" x 3/4" RADIO READ WATER METER TO BE INSTALLED BY CITY.
4. METER VALVE: ANGLE PLUG TYPE WITH 3/4" CTS CONNECTION (FORD PACK JOINT OR A.Y. McDONALD MAC-PAK)
5. HORIZONTAL OUTLET WITH 3/4" FEMALE IRON PIPE THREAD.



LATEST REVISION

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CITY OF CUMMING

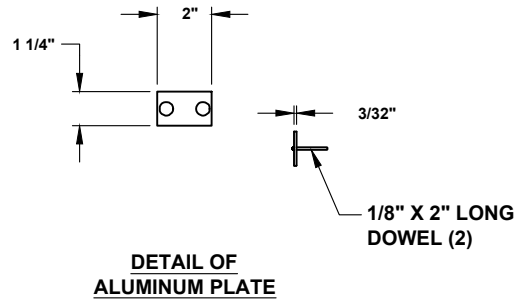
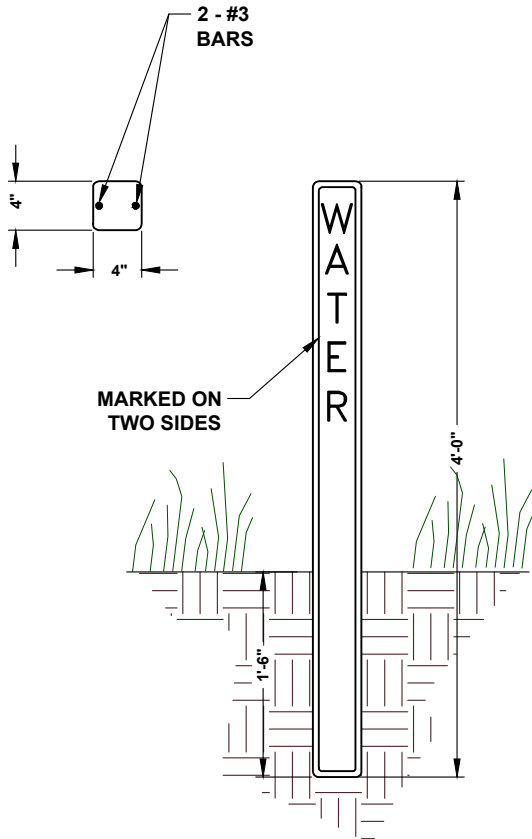
DEPARTMENT OF UTILITIES

**WATER SERVICE METER BOX
PART CONFIGURATION**

DETAIL NUMBER:

W-37B

SCALE: NOT TO SCALE



NOTES:

1. ALUMINUM PLATE CAST IN SIDE OF MARKER POST.
2. DISTANCE (NEAREST FOOT) FROM CENTER LINE OF POST TO CENTER LINE OF VALVE BOX AND DIRECTION ARROW TO BE STAMPED INTO PLATE WITH STEEL DIE AFTER MARKER IS SET.



CITY OF CUMMING

DEPARTMENT OF UTILITIES

VALVE MARKER DETAIL

DETAIL NUMBER:

W-38

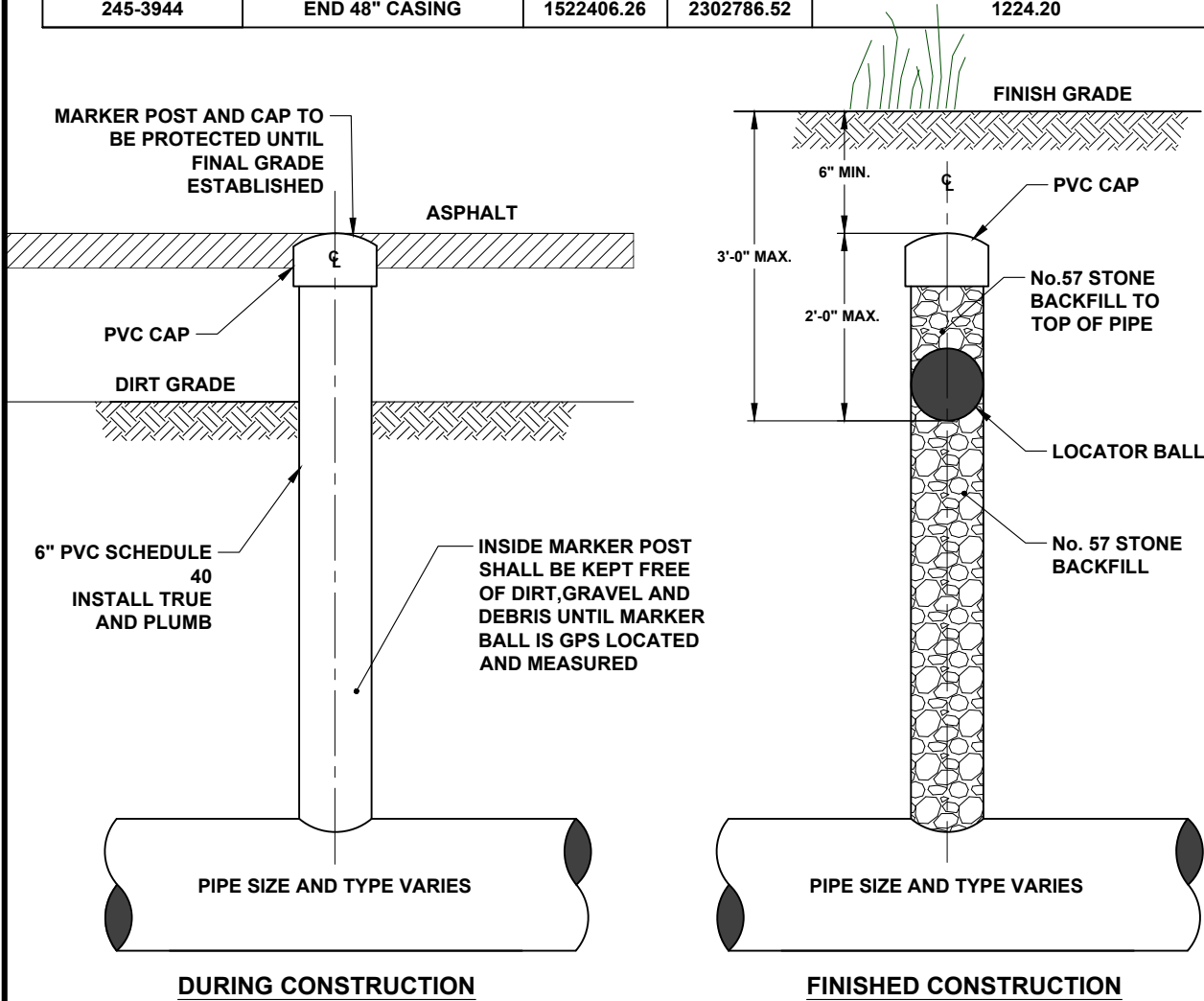
LATEST REVISION

12/01/2021

SCALE: NOT TO SCALE

MARKER BALL TABLE

MARKER BALL #	DESCRIPTION	NORTHING	EASTING	ELEVATION: TOP OF PIPE OR FITTING
165-9312	36 IN X 45 DEG BEND	1526675.18	2300936.89	1196.60
245-3944	END 48" CASING	1522406.26	2302786.52	1224.20



NOTES:

1. MARKER BALLS SHALL BE 3M DYNATEL SERIES EMS ID BALL MARKERS, MODEL NUMBER 1424-XR/ID FOR SEWER, WITH LOCATOR 3M DYNATEL 2250M-ID-UU-3W-RT.
2. IN ASPHALT PAVING, CUT OFF MARKER POST TO BRING TOP OF CAP FLUSH WITH TEMPORARY PAVING.
3. MARKER BALLS SHALL BE INSTALLED ALONG ϕ OF PIPE AT A MAXIMUM 200 FT INTERVALS, AT ALL TEES, BENDS AND CASING ENDS.



LATEST REVISION

12/01/2021

CITY OF CUMMING

DEPARTMENT OF UTILITIES

MARKER BALLS

DETAIL NUMBER:

W-39

SCALE: NOT TO SCALE

1. FIRE HYDRANTS SHALL BE EITHER M & H STYLE 129 OR CLOW MEDALLION.
2. MECHANICAL JOINT (MJ) TEE AND VALVE INSTALLATION MAY BE ACCOMPLISHED WITH ANY OF THE FOLLOWING COMBINATIONS: MJ TEE WITH A FOSTER TYPE ADAPTER; MJ TEE WITH A SWIVEL-TYPE ADAPTER; OR MJ TEE WITH AN ANCHOR COUPLING.
3. GATE VALVES SHALL HAVE DUCTILE IRON BODY, BE RESILIENT SEAT TYPE, AND SHALL OPEN IN A COUNTER CLOCKWISE DIRECTION.
4. THE CITY WATER INSPECTOR WILL APPROVE OR DISAPPROVE THE USE OF BUTTERFLY VALVES.
5. ALL PIPE SHALL BE C900 AND SDR-14.
6. ALL FITTINGS FOR WATER MAINS SHALL BE COMPOSED OF DUCTILE IRON AND SHALL BE MECHANICAL JOINT (MJ) TYPE.
7. ALL SERVICE LINES (3/4-INCH - 2-INCH) SHALL BE COMPOSED OF TYPE "K" ROLLED COPPER TUBING.
8. LONG-SIDE WATER SERVICE LINES THAT CROSS UNDER A ROADWAY SHALL BE INSTALLED INSIDE CASING. ALL CASING FOR WATER SERVICE LINES SHALL BE COMPOSED OF SCHEDULE 40 POLYVINYL CHLORIDE.
9. ALL PIPE SHALL BE INSTALLED WITH 12-GAUGE COPPER LOCATE-WIRE. THE LOCATE-WIRE SHALL BE WRAPPED AROUND EACH JOINT OF PIPE A TOTAL OF TWO TIMES AND CONNECTED TO A TEE-BOLT ON EACH SIDE OF ALL FITTINGS AND VALVES. A LOOPED WIRE SHALL BE INSTALLED FROM THE LOCATE WIRE, UP EACH VALVE BOX, AND SHALL BE EXTENDED TO THE LID OF EACH VALVE BOX.
10. ROUND, CEMENT VALVE PADS SHALL BE INSTALLED AROUND THE TOP OF EACH VALVE BOX.
11. MARKERS MUST BE PLACED AT ALL VALVES. SEE WATER DETAIL W-38. THIS DOES NOT APPLY TO THOSE VALVES LOCATED AT FIRE HYDRANTS.
12. ALL GLANDS SHALL BE MEGA-LUG TYPE.
13. TAPPING SADDLES FOR WATER SERVICE LINES SHALL BE DOUBLE-STRAP TYPE.
14. A FABRICATED STAINLESS STEEL TAPPING SADDLE WITH A FULL WRAP AROUND GASKET SHALL BE USED FOR WET TAPS.
15. ALL BRASS FITTINGS SHALL BE FORD PACK-JOINT TYPE OR A.Y. MCDONALD MAC-PAC COMPRESSION TYPE WITH HOLD-DOWN NUT.
16. ALL NIPPLES, PLUGS, BENDS, AND OTHER SMALL FITTINGS SHALL BE BRASS.
17. ALL 3/4-INCH WATER METER BOXES SHALL BE HUBBELL OR OLD CASTLE.



LATEST REVISION

12/01/2021

CITY OF CUMMING

DEPARTMENT OF UTILITIES

MATERIALS LIST QUICK **REFERENCE SHEET**

DETAIL NUMBER:

W-40

SCALE: NOT TO SCALE

1. ALL WATER CONSTRUCTION SHALL COMPLY WITH THE MOST CURRENT EDITION OF THE CITY OF CUMMING MANUAL OF TECHNICAL SPECIFICATIONS AND CONSTRUCTION STANDARD DETAILS.
2. NOTIFY THE CITY OF CUMMING UTILITY INSPECTOR AT (770) 781-2020 AT LEAST 24-HOURS PRIOR TO EACH PHASE OF CONSTRUCTION AND WHENEVER WORK IS TO BE STOPPED FOR MORE THAN 24-HOURS FOR ANY REASON EXCEPT FOR WEATHER.
3. ALL MATERIALS, INCLUDING BUT NOT LIMITED TO FITTING, SHALL BE INSPECTED BY THE CITY OF CUMMING UTILITY INSPECTOR PRIOR TO INSTALLATION.
4. THE PROJECT OWNER OR ENGINEER SHALL BE RESPONSIBLE FOR PROVIDING THE CONTRACTOR WITH AN APPROVED, STAMPED SET OF CONSTRUCTION PLANS PRIOR TO CONSTRUCTION
5. THE PROJECT OWNER SHALL BE RESPONSIBLE FOR MAINTAINING A MARKED-UP SET OF CONSTRUCTION DRAWINGS THAT INCLUDE ALL AS-BUILT CONDITIONS. AS-BUILT OR RECORDED DRAWINGS WILL BE REQUIRED PRIOR TO FINAL APPROVAL AND RELEASE OF THE PROJECT. IN ADDITION, AS-BUILT DRAWINGS IN ELECTRONIC, AUTOCAD FORMAT MUST BE SUBMITTED TO THE DEPARTMENT OF UTILITIES PRIOR TO FINAL APPROVAL AND RELEASE OF THE PROJECT
6. PROPOSED OR FUTURE SIDEWALKS SHALL NOT BE DESIGNED OR CONSTRUCTED IN A MANNER THAT IN ANY WAY COVERS A WATER MAIN OR WATER METER
7. NO CONSTRUCTION WORK WILL BE ALLOWED WITHIN THE RIGHT-OF-WAY OF A GEORGIA DEPARTMENT OF TRANSPORTATION ROADWAY OR JOB SITE WITHOUT AN APPROVED PERMIT AND WITHOUT 48-HOURS PRIOR NOTICE TO THE CITY OF CUMMING UTILITY INSPECTOR
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A UTILITY PERMIT FROM THE FORSYTH COUNTY DEPARTMENT OF ENGINEERING PRIOR TO THE CONSTRUCTION OF ANY UTILITY WITHIN THE RIGHT-OF-WAY OF A COUNTY MAINTAINED ROAD. (770) 781-2165.
9. DEVELOPERS, CONTRACTORS, OWNERS, ETC. REQUESTING WATER SERVICE AT ELEVATIONS EXCESS OF 1280 FEET (MSL) SHALL BE RESPONSIBLE FOR DESIGNING AND CONSTRUCTING A WATER BOOSTER PUMPING SYSTEMS WHICH MEETS THE APPROVAL OF THE CITY OF CUMMING UTILITIES ENGINEER.



CITY OF CUMMING

DEPARTMENT OF UTILITIES

WATER NOTES

DETAIL NUMBER:

W-41

LATEST REVISION

12/01/2021

SCALE: NOT TO SCALE

1. CONCRETE BLOCKING ON ALL TEES AND BENDS.

2. MJ BENDS WITH "MEGA-LUGS" TYPE GLANDS.

3. MJ TEES WITH "MEGA-LUG" TYPE GLANDS OR "FOSTER ADAPTERS".

4. MJ GATE VALVES

5. "FOSTER ADAPTERS".

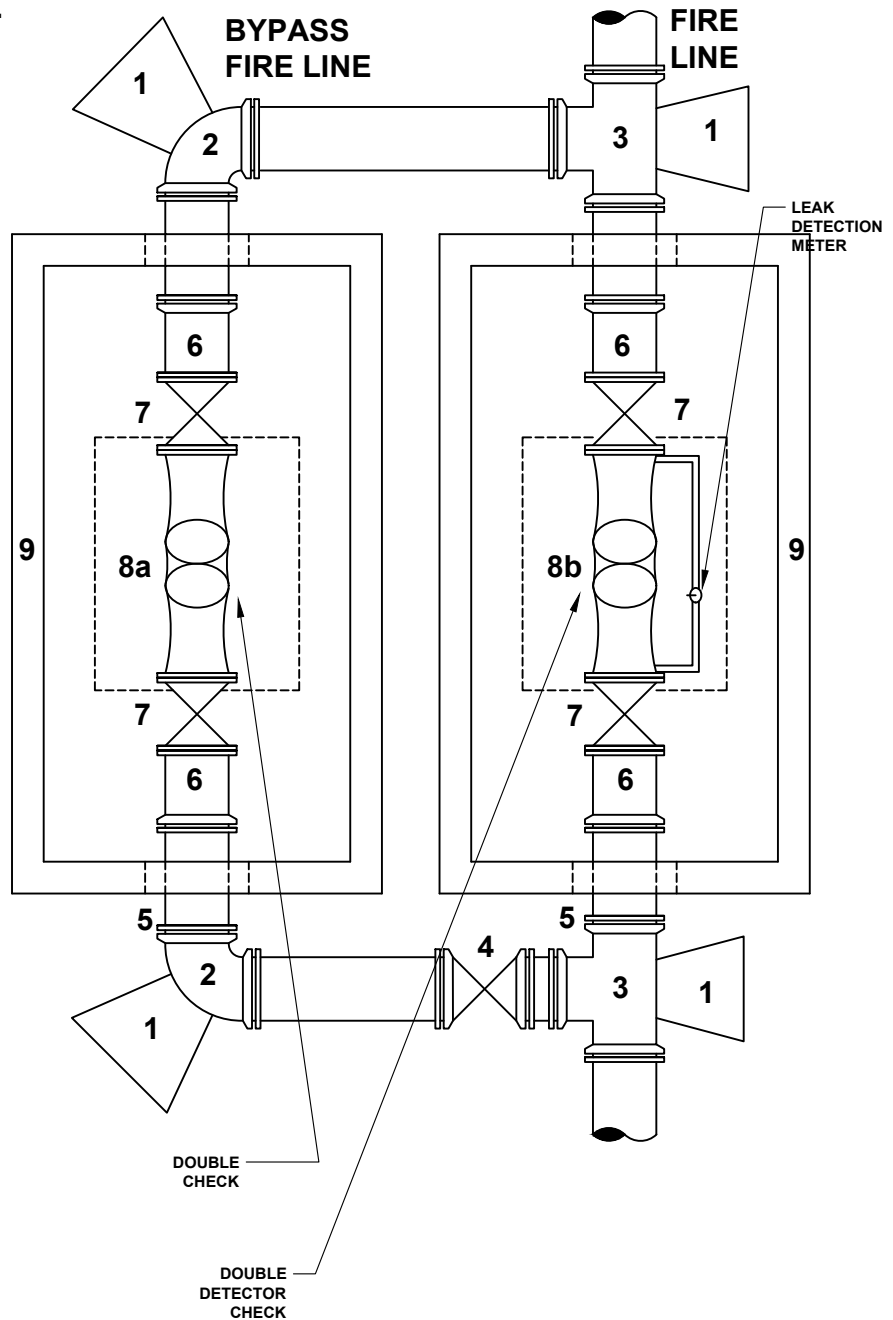
6. "ROMA GRIP" RESTRAINED MJ/FLANGE COUPLING ADAPTERS.

7. FLANGE TYPE RISING STEM (OS&Y) GATE VALVES.

8a. "CONBRACO" OR "WATTS" DOUBLE CHECK VALVE.

8b. DOUBLE DETECTOR CHECK.

9. CONCRETE VAULT INSIDE DIMENSIONS 108"L x 72"W x 72"H WITH 3' x 3' ALUM. HATCH, 6" WALLS AND 6" TOP.



LATEST REVISION

12/01/2021

CITY OF CUMMING

DEPARTMENT OF UTILITIES

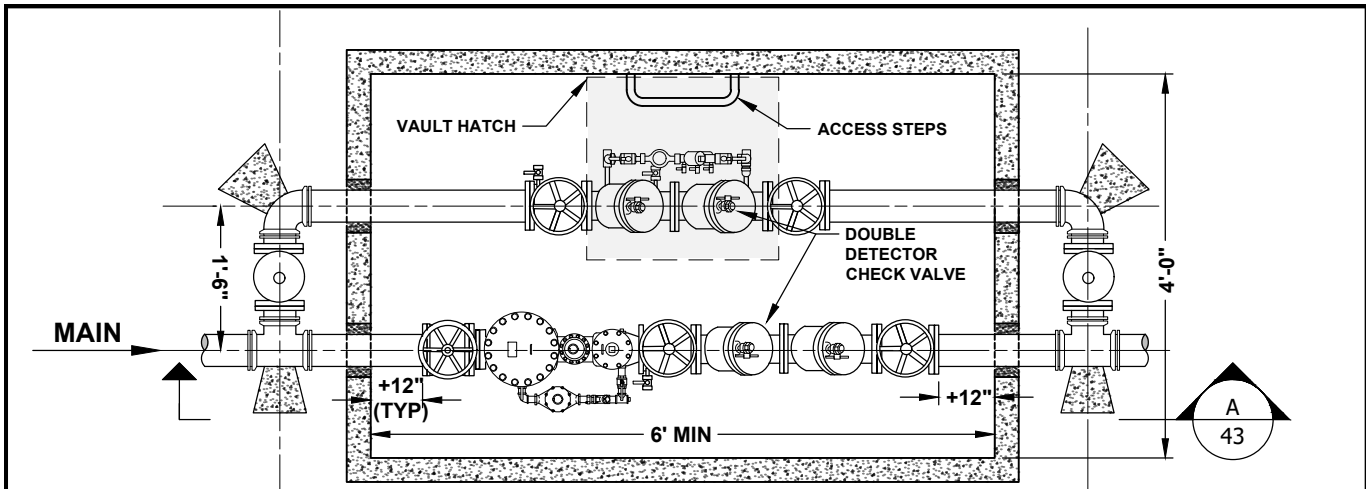
FIRE LINE DOUBLE DETECTOR CHECK VALVE ASSEMBLY DETAILS FOR 6"

AND 8"

DETAIL NUMBER:

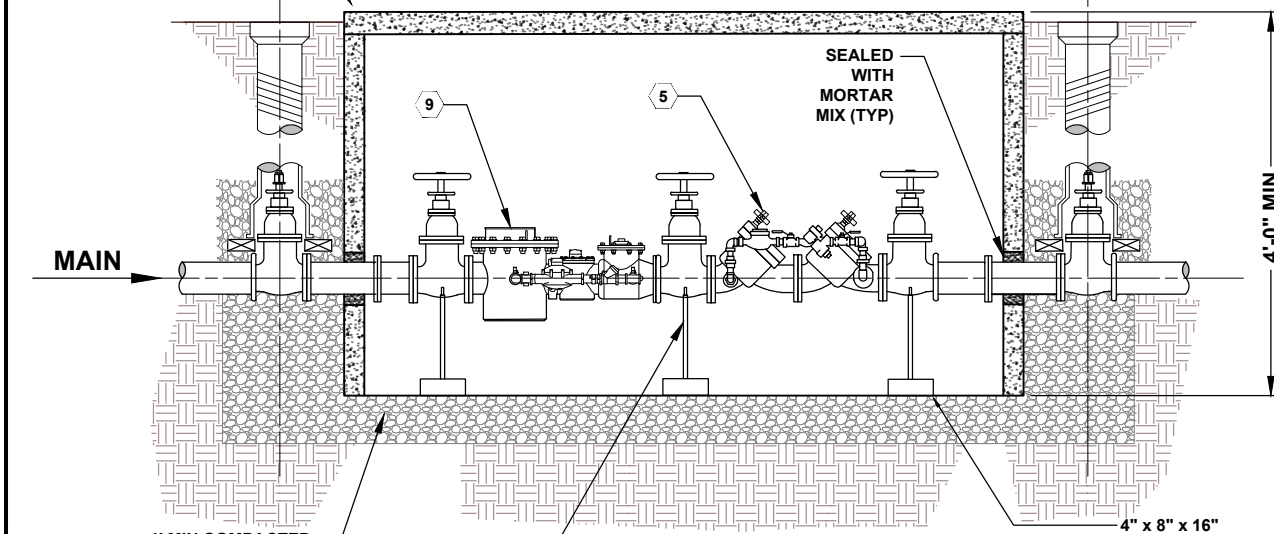
W-42

SCALE: NOT TO SCALE



PLAN VIEW

TOP OF VAULT LID SHALL SET NO MORE THAN 3 INCHES ABOVE FINISHED GRADE



A-A SECTION VIEW

1' MIN COMPACTED NO 57 STONE LAYER
PIPE SUPPORT TYP. (SCREW ADJUSTABLE SADDLE GALVANIZED)

SEALED WITH MORTAR MIX (TYP)

4" x 8" x 16" MASONRY CAP BLOCK

GENERAL NOTES:

1. ALL BURIED FITTINGS SHALL BE MJ MEGA-LUG WITH THRUST BLOCKING IN ACCORDANCE WITH THE STANDARD DETAILS
2. ALL INTERIOR VAULT FITTINGS SHALL BE FLANGED.
3. "ROMA GRIP" RESTRAINED MJ/FLANGED COUPLING ADAPTERS SHALL BE USED FOR PIPE TRANSITION AT VAULT WALLS.
4. GATE VALVES SHALL BE RISING STEM OS & Y TYPE.
5. DOUBLE DETECTOR CHECK VALVE SHALL INCLUDE $\frac{3}{4}$ " BYPASS METER AND CHECK

VAULT ASSEMBLY (CONBRACO OR EQUAL)

6. ACCESS HATCH SHALL BE ALUMINUM SINGLE SWING AND LOCATED FOR OPTIMUM MAINTENANCE ACCESS.
7. PRECAST CONCRETE VAULT SHALL HAVE MIN 5 INCH WALL THICKNESS.
8. VAULTS SHALL BE OPTIMALLY LOCATED WITHIN LANDSCAPED AREAS AND 3-5' CLEAR OF ANY PLANTINGS OR MATURE TREE ROOTS.
9. NEPTUNE TRU/FLO COMPOUND METER WITH DUAL PORT R900V2 TRANSMITTER KIT.
10. $\frac{3}{4}$ " ALL THREADED ROD & $\frac{3}{4}$ " EYE BOLTS.

VAULT HATCH REQUIREMENTS

1. RATED TO WITHSTAND A MINIMUM H-10 LIVE LOAD
2. A MANUAL LOCKING ARM TO PREVENT HATCH LIDS FROM CLOSING
3. CAPABLE OF BEING SECURED USING A KEYED LOCK, OR BY A T-HANDLE LATCH
4. 2' x 2'

CUMMING UTILITIES

LATEST REVISION

03/22/2022

CITY OF CUMMING

DEPARTMENT OF UTILITIES

**MASTER METER W/ BYPASS
DETAIL FOR 3" AND 4"**

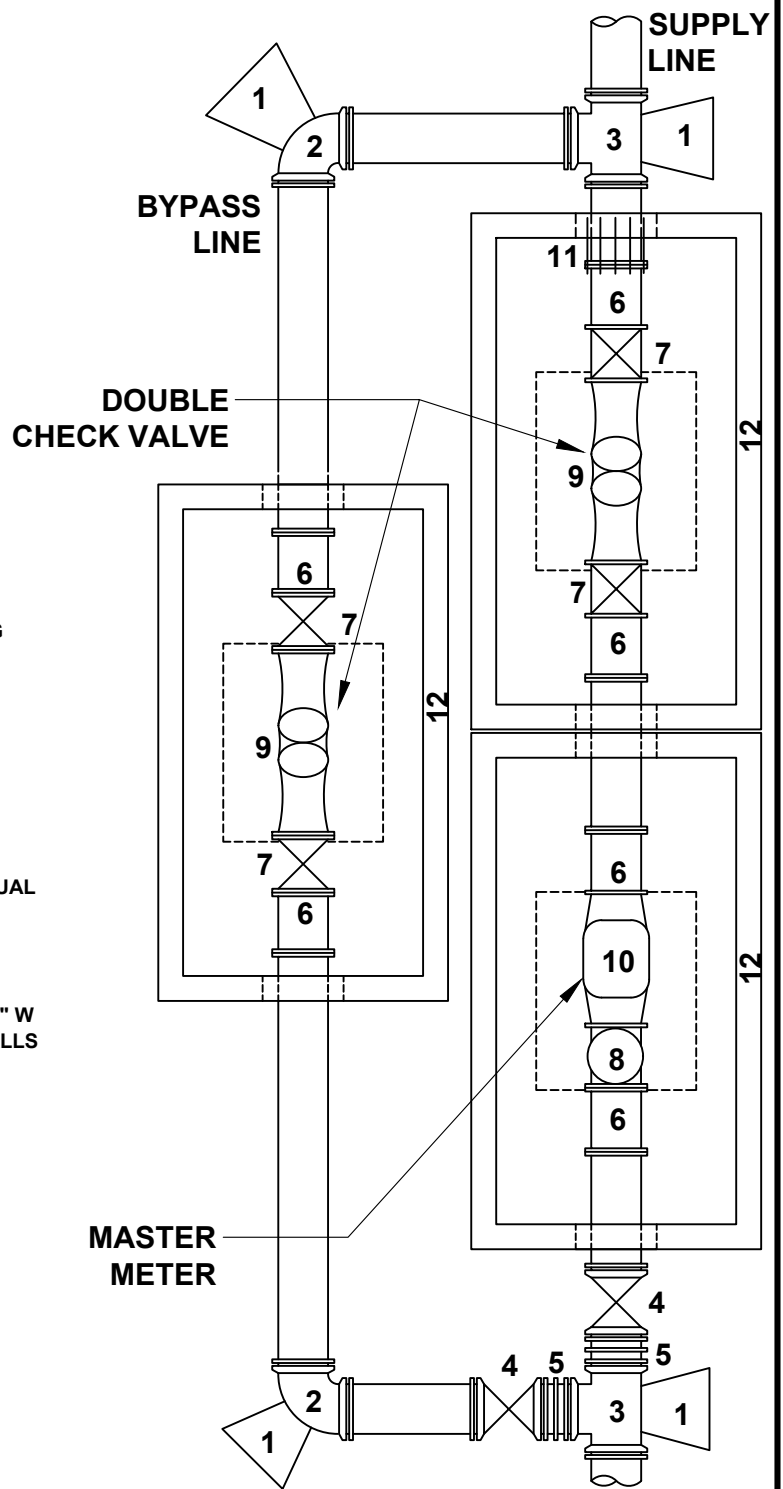
DETAIL NUMBER

W-43

SCALE: 1/2" = 1'-0"

IF 1.25"

1. CONCRETE BLOCKING ON ALL TEES AND BENDS
2. MJ BENDS WITH "MAGE-LUG" TYPE GLANDS
3. MJ TEES WITH "MEGA-LUG" TYPE GLANDS
- 3b. MJ TEES WITH "MEGA-LUG" TYPE GLANDS OR "FOSTER ADAPTERS".
4. MJ GATE VALVES.
5. "FOSTER ADAPTERS".
6. "ROMA GRIP" RESTRAINED MJ/FLANGE COUPLING ADAPTERS.
7. FLANGE TYPE NON-RISING STEM (OS & Y) GATE VALVES.
8. "NEPTUNE" BRONZE STRAINERS.
9. "CONBRACO MODEL DC" DOUBLE CHECK VALVE.
10. "NEPTUNE TRU/FLO" COMPOUND METER WITH DUAL PORT R900V2 TRANSMITTER KIT.
11. $\frac{3}{4}$ " ALL THREADED ROD & $\frac{3}{4}$ " EYE BOLTS.
12. CONCRETE VAULT INSIDE DIMENSIONS 60" L x 36" W x 44" H WITH 2'-0" x 2'-0" ALUM. HATCH, 4" THICK WALLS AND 6" THICK TOP.



LATEST REVISION

12/01/2021

CITY OF CUMMING

DEPARTMENT OF UTILITIES

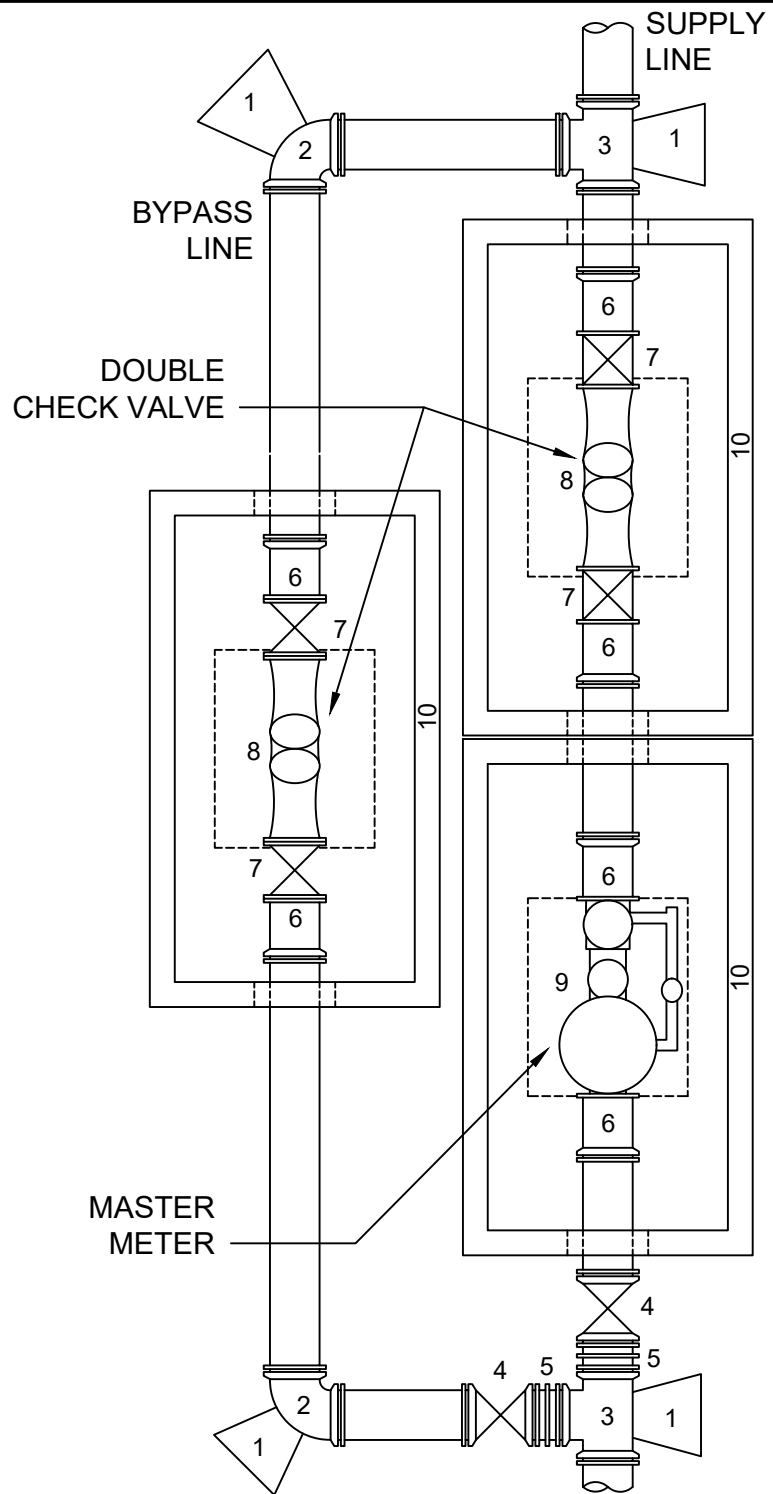
MASTER METER W/ BYPASS DETAIL FOR 3' AND 4'

DETAIL NUMBER:

W-44

SCALE: NOT TO SCALE

1. CONCRETE BLOCKING ON ALL TEES AND BENDS.
2. MJ BENDS WITH "MEGA-LUGS" TYPE GLANDS.
- 3a. MJ TEES WITH "MEGA-LUG" TYPE GLANDS.
- 3b. MJ TEES WITH "MEGA-LUG" TYPE GLANDS OR "FOSTER ADAPTERS".
4. MJ GATE VALVES.
5. "FOSTER ADAPTERS".
6. "ROMA GRIP" RESTRAINED MJ/FLANGED COUPLING ADAPTERS.
7. FLANGE TYPE RISING STEM (OS & Y) GATE VALVES.
8. "CONBRACO" OR "WATTS" DOUBLE CHECK VALVE.
9. "NEPTUNE HP PROTECTUS III" COMPOUND METER WITH DUAL PORT R900V2 TRANSMITTER KIT.
10. CONCRETE VAULT INSIDE DIMENSIONS 108"L x 72"W x 72"H WITH 3' x 3' ALUM. HATCH, 6" WALLS AND 6" TOP.



LATEST REVISION

12/01/2021

CITY OF CUMMING

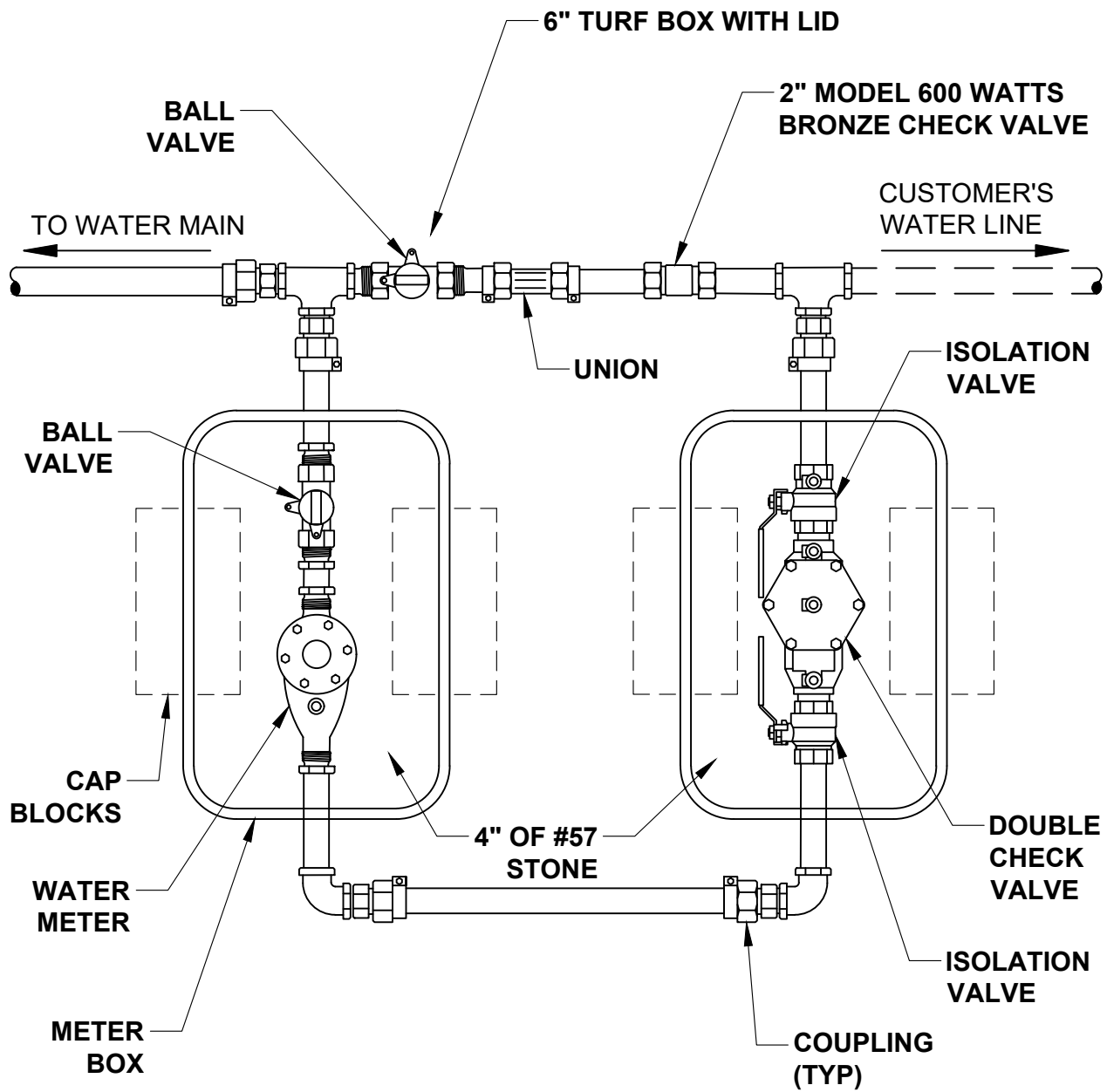
DEPARTMENT OF UTILITIES

MASTER METER W/ BYPASS DETAIL FOR 6" AND 8"

DETAIL NUMBER:

W-45

SCALE: NOT TO SCALE



LATEST REVISION

12/01/2021

CITY OF CUMMING

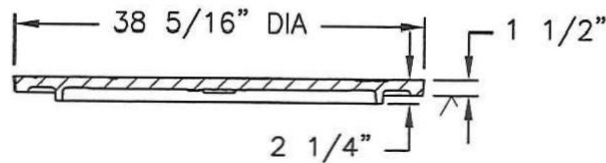
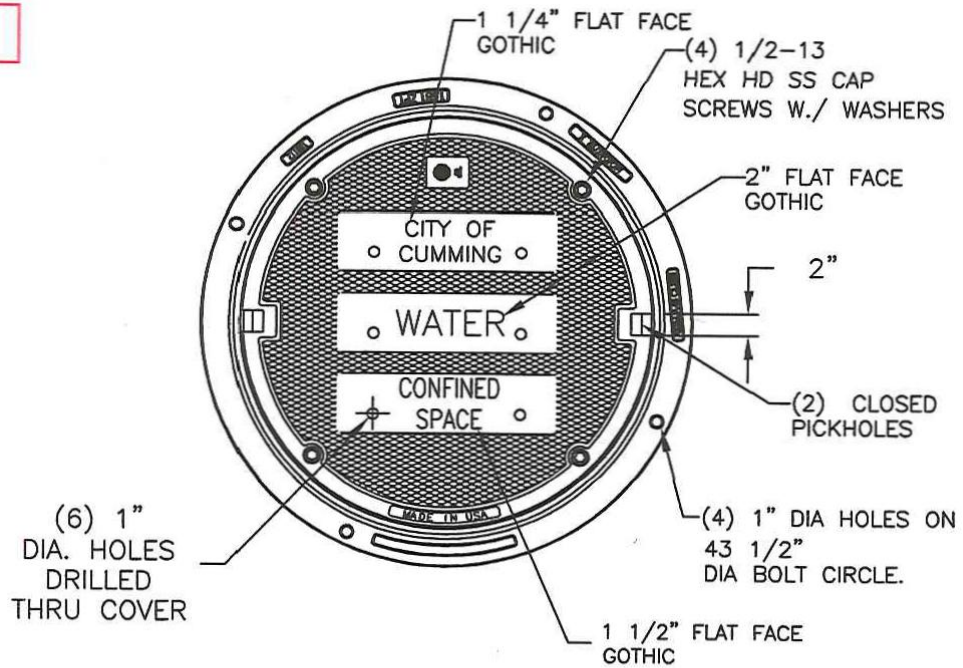
DEPARTMENT OF UTILITIES

2" WATER METER WITH BYPASS

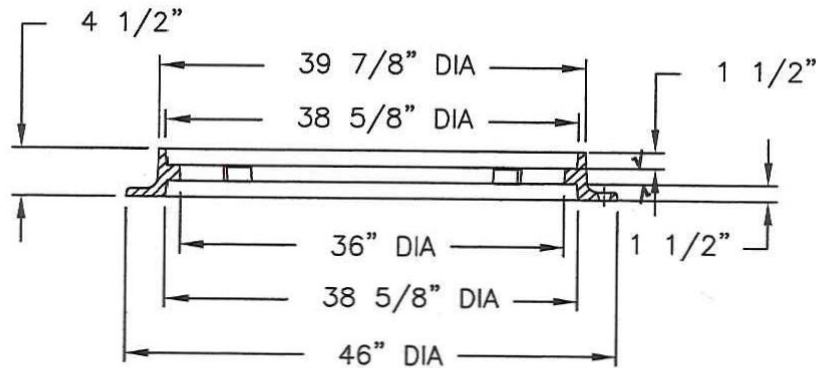
DETAIL NUMBER:

W-46

SCALE: NOT TO SCALE



COVER SECTION



FRAME SECTION



CITY OF CUMMING
 DEPARTMENT OF UTILITIES
MANHOLE FRAME AND COVER

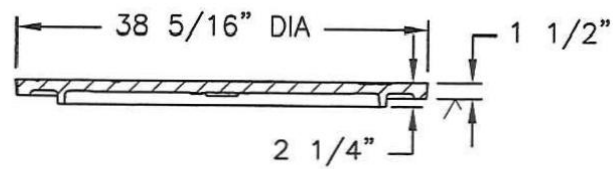
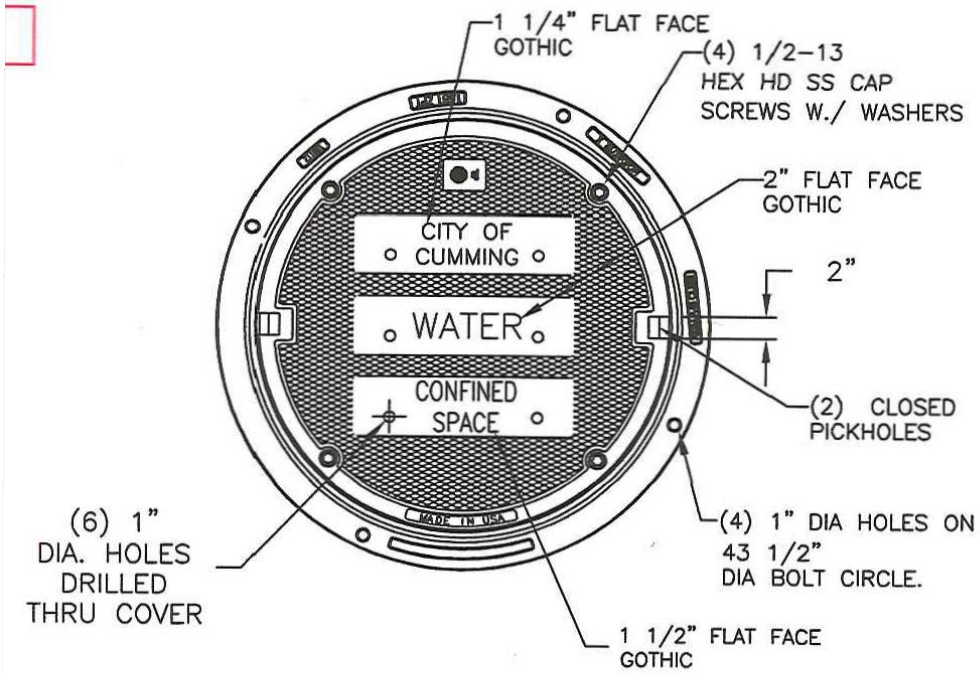
DETAIL NUMBER:

W-47

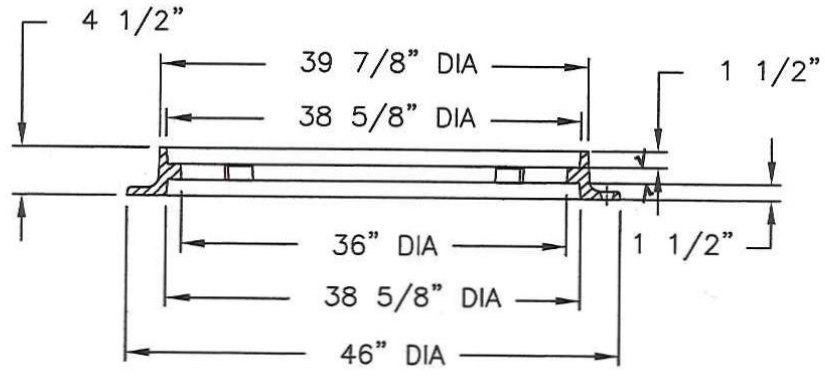
LATEST REVISION

12/01/2021

SCALE: NOT TO SCALE



COVER SECTION



FRAME SECTION



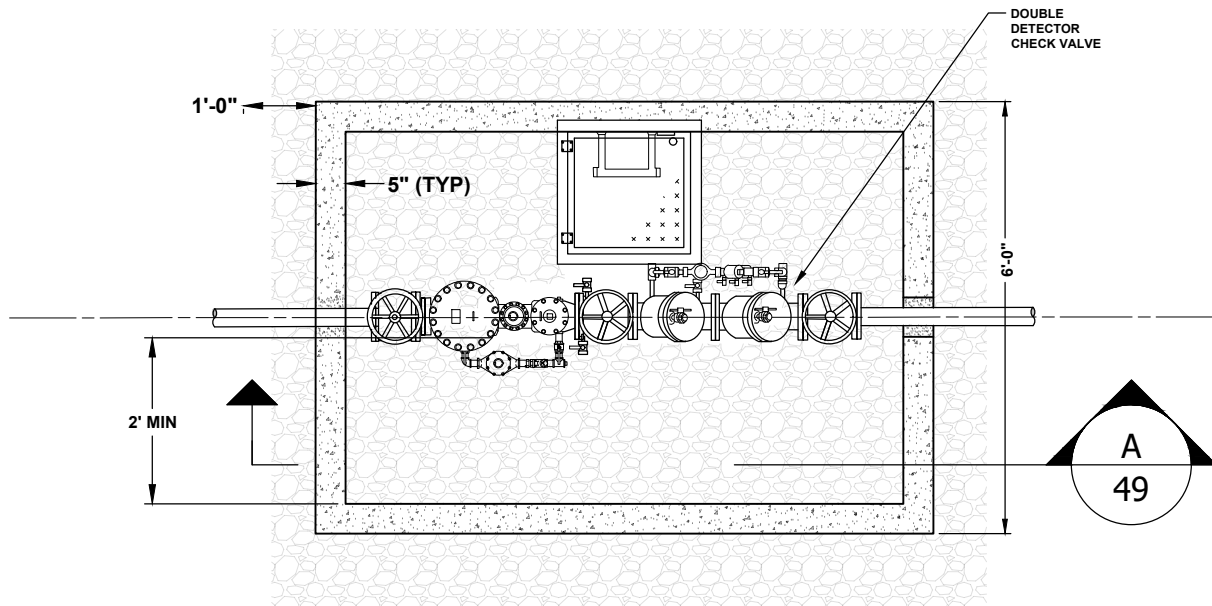
LATEST REVISION
12/01/2021

CITY OF CUMMING
DEPARTMENT OF UTILITIES
MANHOLE FRAME AND COVER
FOR BLOW OFF & GATE
VALVE MANHOLES

DETAIL NUMBER:

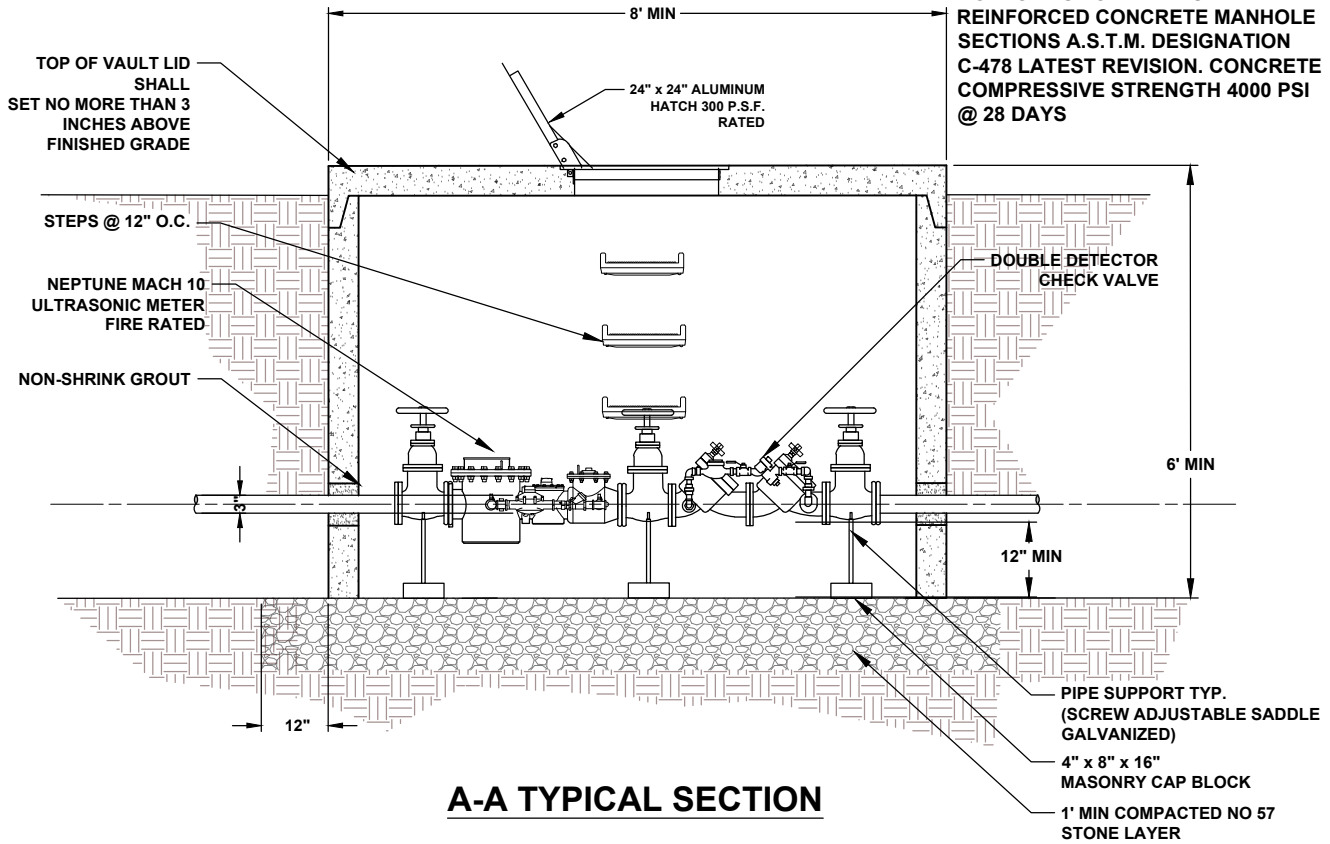
W-48

SCALE: NOT TO SCALE



PLAN VIEW

NOTE:
 MANHOLE DESIGN SPECIFICATION
 CONFORMS TO: PRECAST
 REINFORCED CONCRETE MANHOLE
 SECTIONS A.S.T.M. DESIGNATION
 C-478 LATEST REVISION. CONCRETE
 COMPRESSIVE STRENGTH 4000 PSI
 @ 28 DAYS



A-A TYPICAL SECTION



LATEST REVISION

10/5/2022

CITY OF CUMMING

DEPARTMENT OF UTILITIES

2" or 3" SPRINKLER FIRE VAULT

DETAIL NUMBER

W-49

SCALE: 3/8" = 1'-0"

IF
 1.25"

PRECONSTRUCTION NOTES FOR WATER:

1. THE FOLLOWING REQUIRE INSPECTION PRIOR TO BACK-FILLING: WET TAPS, TEES, BENDS, FIRE HYDRANT TEES, INSTALLATION OF 57 STONE AT FIRE HYDRANTS, PIPE BEHIND CATCH BASINS AND STORM SEWERS, AND STREAM CROSSINGS.
2. DUCTILE IRON PIPE REQUIRED FOR THE FOLLOWING: AREAS BEHIND CATCH BASINS AND STORM SEWERS AND AT STREAM CROSSINGS.
3. SERVICE TAPS SHALL BE AT LEAST 1-INCH. CONNECTION TO MAIN SHALL BE BY BRASS DOUBLE STRAP SERVICE SADDLE.
4. SERVICE STUB- OUT LINES SHALL BE 1-INCH TYPE "K" COPPER TUBING WITH PACK-JOINT TYPE FITTINGS.
5. LONG-SIDE SERVICE LINES SHALL BE INSTALLED INSIDE A 2-INCH PVC CASING. "PUNCH-HOLE" UNDER CURB SHALL BE THE SAME SIZE AS THE CASING. CASING SHALL BE 3-FEET FROM THE CURB. A 1-INCH CURB STOP SHALL BE INSTALLED ON THE MAIN-SIDE OF THE WYE.
6. A BALL METER VALVE WITH A METER SWIVEL NUT IS REQUIRED ON EACH SERVICE LINE. THE METER VALVE AND METER BOX SHALL BE POSITIONED IN A STRAIGHT ALIGNMENT WITH SUFFICIENT SPACE IN THE BOX FOR WATER METER AND BACK FLOW INSTALLATION. THE MINIMUM WATER METER VALVE DEPTH SHALL BE THE SAME DEPTH AS THE BOTTOM OF THE CURB.
7. METER BOXES SHALL BE LOCATED AT THE STREET CURB.
8. EACH WATER METER SHALL HAVE A CORRESPONDING SAW-CUT "W", PAINTED BLUE, IN THE CURB NEXT TO THE METER. EACH WATER VALVE SHALL HAVE A CORRESPONDING SAW-CUT "V", PAINTED BLUE, IN THE CURB NEXT TO THE VALVE.
9. WATER LINES THAT CROSS UNDERNEATH A CUL-DE-SAC SHALL BE DUCTILE IRON. THE SERVICE TAPS FOR THOSE LOTS LOCATED IN A CUL-DE-SAC SHALL BE 1-INCH IN SIZE AND THE TAP(S) SHALL BE LOCATED BETWEEN THE FIRE-HYDRANT AND THRUST COLLAR. SERVICES FROM THE MAIN TO THE METER SHALL BE LOCATED 5-FEET BEHIND THE CURB WHICH IS WITHIN THE 5-FT UTILITY COORIDOR.
10. CONCRETE VALVE PADS AND CONCRETE VALVE MARKERS ARE REQUIRED. CONCRETE VALVE MARKERS SHALL BE BURIED SO THAT AT LEAST TWO FEET OF THE MARKER IS EXPOSED ABOVE THE GROUND.
11. COMPACTION: WHERE WATER LINES, SERVICE LINES (LONG-SIDE SERVICE LINES) ARE INSTALLED UNDER A ROAD, STREET, OR DRIVEWAY, SUFFICIENT COMPACTION (A MINIMUM 95%) IS REQUIRED.
12. ALL PVC WATER LINES MUST HAVE A TRACER-LOCATE WIRE. TRACER-LOCATE WIRES SHALL BE BROUGHT UP INTO EACH VALVE BOX TO PROVIDE CONNECTION FOR THE CITY'S LOCATE DEVICE.
13. WATER MAIN DEPTHS: 2-INCH THROUGH 8-INCH LINES SHALL BE AT A DEPTH NO LESS THAN 3-FEET FROM THE TOP OF THE CURB TO THE TOP OF THE PIPE. 10-INCH THROUGH 12-INCH PIPE SHALL BE INSTALLED SO THAT THERE IS NO LESS THAN 4-FEET FROM THE TOP OF THE CURB TO THE TOP OF THE PIPE.
14. TRENCH WIDTHS: NO LESS THAN 30-INCHES WIDE FOR 6-INCH PIPE, 32-INCHES WIDE FOR 8-INCH PIPE, 34-INCHES WIDE FOR 10-INCH PIPE, AND 36-INCHES WIDE FOR 12-INCH PIPE.
15. ALL MECHANICAL JOINT GLANDS SHALL BE THE MEGA-LUG TYPE.
16. ALL VALVE BOXES SHALL BE THE "SLIDE" TYPE.
17. DEVELOPERS AND CONTRACTORS SHALL PROVIDE 24-HOURS NOTICE TO THE INSPECTOR PRIOR TO FLUSHING, CHLORINATING, OR PERFORMING A PRESSURE TEST ON THE WATER SYSTEM.
18. THE CITY WILL NOT PERMIT VALVES, TEES, BENDS, OR SERVICE CONNECTIONS TO BE PLACED UNDER ANY PAVEMENT OR CURBING.



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CITY OF CUMMING

DEPARTMENT OF UTILITIES

PRECONSTRUCTION LIST FOR WATER

DETAIL NUMBER:

W-50

SCALE: NOT TO SCALE

FINAL PLAT CHECKLIST PART A

1. WATER AND SANITARY SEWER AS-BUILT INFORMATION SHALL BE INCLUDED WITHIN THE FINAL PLAT. ADEQUATE TIME MUST BE PROVIDED TO THE CITY OF CUMMING UTILITY INSPECTOR SO THAT HE CAN PERFORM A FIELD INSPECTION AND VERIFY THAT THE INFORMATION ON THE PLAT IS CORRECT.
2. ALL WATER AND SEWER LINES THAT ARE LOCATED OUTSIDE THE PUBLIC RIGHT-OF-WAY MUST BE INSTALLED WITHIN AN EASEMENT THAT HAS BEEN PROPERLY DEDICATED TO THE CITY OF CUMMING. THIS INCLUDES, BUT IS NOT LIMITED TO, THOSE LINES INSTALLED ALONG PRIVATE STREETS, PARKING LOTS, AND OTHER PRIVATE OR PUBLIC PROPERTY. PROPER EASEMENT DEDICATION SHALL BE ACCOMPLISHED BY USING CITY-APPROVED EASEMENT DOCUMENTS, WHICH ARE AVAILABLE FROM THE CITY IN PDF FORMAT. AN ACCEPTABLE EASEMENT PACKAGE WILL CONTAIN THE FOLLOWING: CITY APPROVED EASEMENT DOCUMENT, A LEGAL DESCRIPTION OF THE EASEMENT AREA, AND A SURVEY PLAT THAT CONTAINS A DRAWING OF THE EASEMENT AND THE SURVEY BEARINGS. EACH EASEMENT MUST BE CLEARLY SHOWN ON THE FINAL PLAT. **NOTE: THE FINAL PLAT WILL NOT BE APPROVED UNTIL A COMPLETE EASEMENT PACKAGE IS RECEIVED AND APPROVED BY THE DIRECTOR OF UTILITIES. PLEASE CALL (770)781-2020 FOR FUTHER INFORMATION.**
3. THE FINAL PLAT SHALL CONTAIN A SEPARATE WATER AND A SEPARATE SANITARY SEWER MATERIALS LIST. THESE LISTS SHALL INCLUDE THE FOLLOWING: **A.** QUANTITIES AND TYPES OF PIPE THAT WERE USED TO CONSTRUCT THE WATER SYSTEM **B.** QUANTITIES AND TYPES OF PIPE THAT WERE USED TO CONSTRUCT THE SANITARY SEWER SYSTEM **C.** THE TOTAL NUMBER OF FIRE HYDRANTS **4.** THE TOTAL NUMBER OF GATE VALVES **D.** THE TOTAL NUMBER OF MANHOLES.
4. THE FINAL PLAT SHALL CONTAIN WATER AND SANITARY SEWER LINES THAT ARE CLEARLY LABELED AS TO THE SIZE AND TYPE OF PIPE.
5. THE FINAL PLAT SHALL INCLUDE SANITARY SEWER LINE PROFILES THAT INCLUDE THE FOLLOWING INFORMATION: AS-BUILT SANITARY SEWER LINE TYPE (PVC, DIP, ETC.) AND LENGTH, SLOPE OF PIPE, INVERT ELEVATIONS AND MANHOLE TOP ELEVATIONS.
6. THE FINAL PLAT SHALL CONTAIN SYMBOLS AND LABELS FOR ALL MAJOR FEATURES SUCH AS: GATE VALVES, FIRE HYDRANTS, MANHOLES, METER BOXES, WATER SERVICE LINES, SANITARY SEWER LATERALS, ETC. THESE FEATURES SHALL BE SHOWN ON THE PLAT IN THEIR ACTUAL LOCATIONS AS MEASURED IN THE FIELD.
7. SANITARY SEWER LATERALS FOR EACH LOT SHALL CONTAIN A STATION NUMBER THAT REFLECTS THE ACTUAL LOCATION OF THE LATERAL IN THE FIELD.
8. FINAL PLAT DRAWINGS WHICH INCLUDE WATER AND SEWER AS-BUILT DRAWINGS SHALL BE SUBMITTED TO THE DIRECTOR OF UTILITIES IN AUTOCAD FORMAT AND ON A COMPACT DISK.
9. ACTUAL FIRE-FLOW RESULTS ON EACH NEW FIRE HYDRANT MUST BE INCLUDED ON THE FINAL PLAT. AS-BUILT FIRE FLOW TESTS ARE MANDATORY.



LATEST REVISION

12/01/2021

CITY OF CUMMING

DEPARTMENT OF UTILITIES

FINAL PLAT CHECK LIST PART A

DETAIL NUMBER:

W-51

SCALE: NOT TO SCALE

FINAL PLAT CHECKLIST PART B

10. THE FINAL PLAT SHALL INCLUDE THE FOLLOWING NOTES:

" DEVELOPMENTS REQUESTING WATER SERVICE AT ELEVATIONS IN EXCESS OF 1280-FEET MSL WILL REQUIRE AN APPROVED WATER BOOSTER PUMPING SYSTEM. THE DEVELOPER SHALL BE RESPONSIBLE FOR DESIGNING AND CONSTRUCTING A WATER BOOSTER PUMPING SYSTEM THAT MEETS THE REQUIREMENTS OF THE CITY OF CUMMING WATER BOOSTER PUMPING STATION DESIGN MANUAL AND THE CITY ENGINEER."

"THE CITY OF CUMMING WILL NOT BE RESPONSIBLE FOR THE REPLACEMENT OF SUCH ITEMS AS SIDEWALKS, FENCES, SIGNS, LANDSCAPING, SPRINKLER SYSTEMS OR OTHER IMPROVEMENTS THAT HAVE BEEN INSTALLED WITHIN THE PUBLIC RIGHT-OF-WAY OR WITHIN A WATER, SEWER, ACCESS OR OTHER EASEMENT. SUCH IMPROVEMENTS ARE SUBJECT TO REMOVAL AND DAMAGE WHEN THE CITY PERFORMS REPAIR AND MAINTENANCE WORK TO WATER AND SEWER LINES OR OTHER UTILITY COMPONENTS."

" SIDEWALKS SHALL NOT BE INSTALLED ON TOP OF WATER LINES OR WATER METERS."

"**HOME BUILDERS:** DRIVEWAYS AND PARKING PADS SHALL NOT BE INSTALLED OVER WATER METERS OR SANITARY SEWER LATERALS. THE DEVELOPER SHALL BE RESPONSIBLE FOR RESOLVING THESE ISSUES AND SHALL OBTAIN APPROVAL FROM THE CITY OF CUMMING DEPARTMENT OF UTILITIES BEFORE RELOCATING ANY UTILITY THAT IS IN CONFLICT WITH THESE STRUCTURES."

" THE DEVELOPER SHALL BE RESPONSIBLE FOR MAINTAINING WATER AND SEWER LINES AND APPURTENANCES FOR A PERIOD OF ONE YEAR FROM THE DATE OF THE APPROVAL OF THE FINAL PLAT BY THE CITY OF CUMMING DEPARTMENT OF UTILITIES"



LATEST REVISION

12/01/2021

CITY OF CUMMING

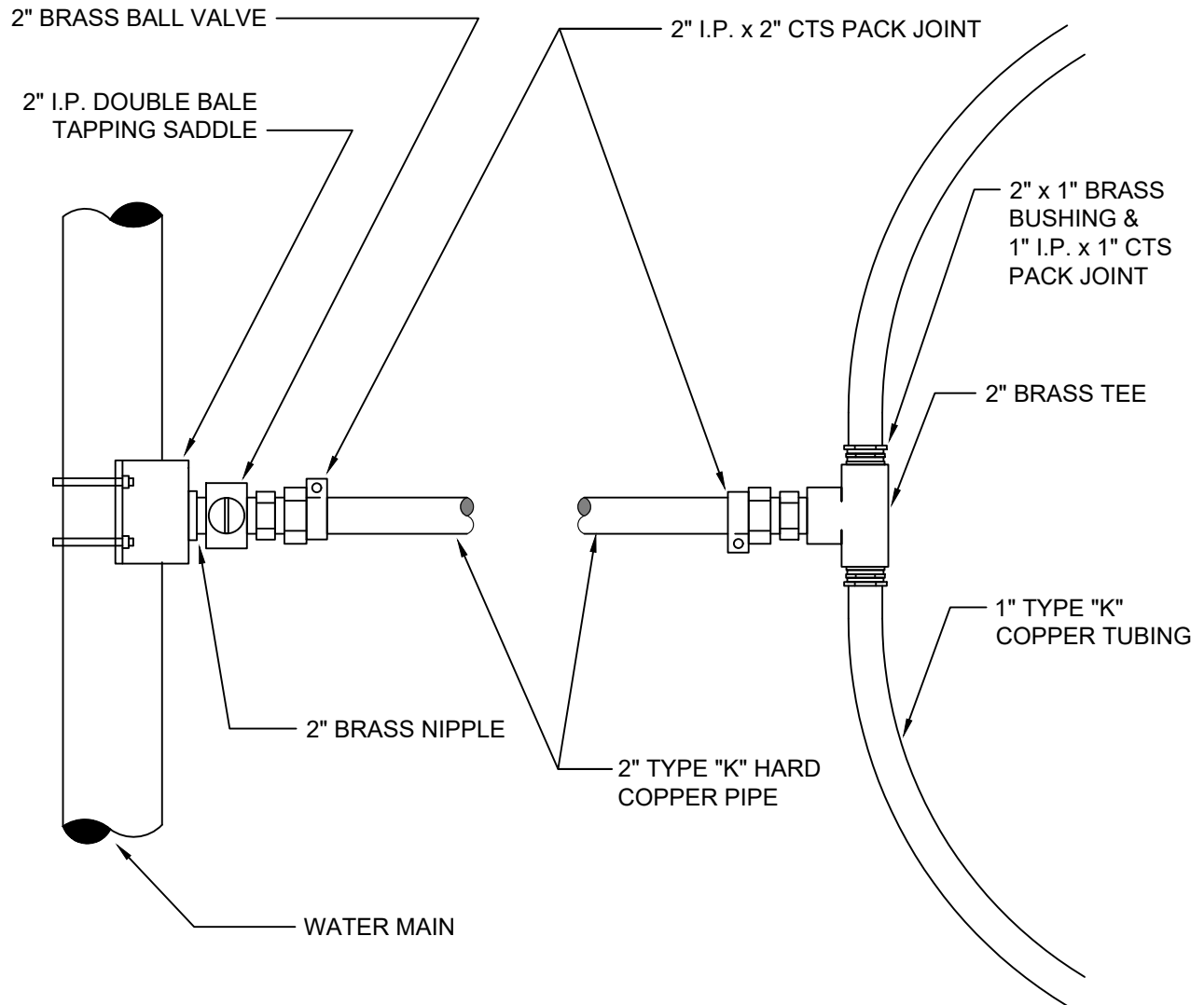
DEPARTMENT OF UTILITIES

FINAL PLAT CHECK LIST PART B

DETAIL NUMBER:

W-52

SCALE: NOT TO SCALE



LATEST REVISION

12/01/2021

CITY OF CUMMING

DEPARTMENT OF UTILITIES

MULTIPLE SERVICES

DETAIL NUMBER:

W-53

SCALE: NOT TO SCALE

1. FIRE HYDRANTS SHALL BE EITHER M & H STYLE 129 OR CLOW MEDALLION.
2. MECHANICAL JOINT (MJ) TEE AND VALVE INSTALLATION MAY BE ACCOMPLISHED WITH ANY OF THE FOLLOWING COMBINATIONS: MJ TEE WITH A FOSTER TYPE ADAPTER; MJ TEE WITH A SWIVEL-TYPE ADAPTER; OR MJ TEE WITH AN ANCHOR COUPLING.
3. GATE VALVES SHALL HAVE DUCTILE IRON BODY, BE RESILIENT SEAT TYPE, AND SHALL OPEN IN A COUNTER CLOCKWISE DIRECTION.
4. THE CITY WATER INSPECTOR WILL APPROVE OR DISAPPROVE THE USE OF BUTTERFLY VALVES.
5. ALL PIPE SHALL BE DUCTILE IRON.
6. ALL FITTINGS FOR WATER MAINS SHALL BE COMPOSED OF DUCTILE IRON AND SHALL BE MECHANICAL JOINT (MJ) TYPE.
7. ALL SERVICE LINES (3/4-INCH - 2-INCH) SHALL BE COMPOSED OF TYPE "K" SOFT COPPER TUBING.
8. LONG-SIDE WATER SERVICE LINES THAT CROSS UNDER A ROADWAY SHALL BE INSTALLED INSIDE CASING. ALL CASING FOR WATER SERVICE LINES SHALL BE COMPOSED OF SCHEDULE 40 POLYVINYL CHLORIDE.
9. ALL PIPE SHALL BE INSTALLED WITH 12-GAUGE COPPER LOCATE-WIRE. THE LOCATE-WIRE SHALL BE WRAPPED AROUND EACH JOINT OF PIPE A TOTAL OF TWO TIMES AND CONNECTED TO A TEE-BOLT ON EACH SIDE OF ALL FITTINGS AND VALVES. A LOOPED WIRE SHALL BE INSTALLED FROM THE LOCATE WIRE, UP EACH VALVE BOX, AND SHALL BE EXTENDED TO THE LID OF EACH VALVE BOX.
10. ROUND, CEMENT VALVE PADS SHALL BE INSTALLED AROUND THE TOP OF EACH VALVE BOX.
11. CEMENT, MONUMENT-TYPE MARKERS SHALL BE PLACED AT ALL VALVES. THIS DOES NOT APPLY TO THOSE VALVES LOCATED AT FIRE HYDRANTS.
12. ALL GLANDS SHALL BE MEGA-LUG TYPE.
13. TAPPING SADDLES FOR WATER SERVICE LINES SHALL BE DOUBLE-STRAP TYPE.
14. A FABRICATED STAINLESS STEEL TAPPING SADDLE WITH A FULL WRAP AROUND GASKET SHALL BE USED FOR WET TAPS.
15. ALL BRASS FITTINGS SHALL BE FORD PACK-JOINT TYPE OR A.Y. MCDONALD MAC-PAC COMPRESSION TYPE WITH HOLD-DOWN NUT.
16. ALL NIPPLES, PLUGS, BENDS, AND OTHER SMALL FITTINGS SHALL BE BRASS.
17. ALL 3/4-INCH WATER METER BOXES SHALL BE CAST IRON FORD LONG YOKEBOXES OR A.Y. MCDONALD MANUFACTURING COMPANY LONGBOXES.



LATEST REVISION

12/01/2021

CITY OF CUMMING

DEPARTMENT OF UTILITIES

MATERIAL LIST QUICK REFERENCE

SHEET

DETAIL NUMBER:

W-56

SCALE: NOT TO SCALE

1. ALL WATER CONSTRUCTION SHALL COMPLY WITH THE MOST CURRENT EDITION OF THE CITY OF CUMMING MANUAL OF TECHNICAL SPECIFICATIONS AND CONSTRUCTION STANDARD DETAILS.
2. NOTIFY THE CITY OF CUMMING UTILITY INSPECTOR AT (770) 781-2020 AT LEAST 24-HOURS PRIOR TO EACH PHASE OF CONSTRUCTION AND WHENEVER WORK IS TO BE STOPPED FOR MORE THAN 24-HOURS FOR ANY REASON EXCEPT FOR WEATHER.
3. ALL MATERIALS, INCLUDING BUT NOT LIMITED TO FITTING, SHALL BE INSPECTED BY THE CITY OF CUMMING UTILITY INSPECTOR PRIOR TO INSTALLATION.
4. THE PROJECT OWNER OR ENGINEER SHALL BE RESPONSIBLE FOR PROVIDING THE CONTRACTOR WITH AN APPROVED, STAMPED SET OF CONSTRUCTION PLANS PRIOR TO CONSTRUCTION
5. THE PROJECT OWNER SHALL BE RESPONSIBLE FOR MAINTAINING A MARKED-UP SET OF CONSTRUCTION DRAWINGS THAT INCLUDE ALL AS-BUILT CONDITIONS. AS-BUILT OR RECORDED DRAWINGS WILL BE REQUIRED PRIOR TO FINAL APPROVAL AND RELEASE OF THE PROJECT. IN ADDITION, AS-BUILT DRAWINGS IN ELECTRONIC, AUTOCAD FORMAT MUST BE SUBMITTED TO THE DEPARTMENT OF UTILITIES PRIOR TO FINAL APPROVAL AND RELEASE OF THE PROJECT
6. PROPOSED OR FUTURE SIDEWALKS SHALL NOT BE DESIGNED OR CONSTRUCTED IN A MANNER THAT IN ANY WAY COVERS A WATER MAIN OR WATER METER
7. NO CONSTRUCTION WORK WILL BE ALLOWED WITHIN THE RIGHT-OF-WAY OF A GEORGIA DEPARTMENT OF TRANSPORTATION ROADWAY OR JOB SITE WITHOUT AN APPROVED PERMIT AND WITHOUT 48-HOURS PRIOR NOTICE TO THE CITY OF CUMMING UTILITY INSPECTOR
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A UTILITY PERMIT FROM THE FORSYTH COUNTY DEPARTMENT OF ENGINEERING PRIOR TO THE CONSTRUCTION OF ANY UTILITY WITHIN THE RIGHT-OF-WAY OF A COUNTY MAINTAINED ROAD. (770) 781-2165.
9. DEVELOPERS, CONTRACTORS, OWNERS, ETC. REQUESTING WATER SERVICE AT ELEVATIONS EXCESS OF 1280 FEET (MSL) SHALL BE RESPONSIBLE FOR DESIGNING AND CONSTRUCTING A WATER BOOSTER PUMPING SYSTEMS WHICH MEETS THE APPROVAL OF THE CITY OF CUMMING UTILITIES ENGINEER.



CITY OF CUMMING

DEPARTMENT OF UTILITIES

WATER NOTES

DETAIL NUMBER:

W-57

LATEST REVISION

12/01/2021

SCALE: NOT TO SCALE