STANDARD CONSTRUCTION SPECIFICATIONS

FOR

THE WATER WORKS BOARD OF THE CITY OF OXFORD

WATER DISTRIBUTION SYSTEM

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SECTION 1: GENERAL

A. The purpose of this document is to set forth the policies, regulations, and procedures governing the design, construction, use, and operation of the Oxford Water Works water distribution system. Oxford Water Works shall review and approve the design and inspect the installation of the water distribution systems that will be owned and maintained upon completion of the project. The Designer/Contractor shall notify Oxford Water Works immediately of any conflicts between the information contained within these specifications and/or the plans and miscellaneous details. It shall be the sole responsibility of the
The designer/contractor closely coordinates all aspects of the work within these specifications. Oxford Water Works reserves the right to modify these specifications at any time as deemed necessary by Oxford Water Works. As such, it shall be the sole responsibility of the Designer/Contractor to verify with Oxford Water Works the date of the latest/issue of these specifications.

SECTION 2: GOVERNING STATE AND FEDERAL STANDARDS

A. The standards set forth in these specifications are not intended to supersede any Federal or State Law regulating potable water distribution, supply, and/or treatment. In the event of a conflict between Federal, State, and these specifications, the more stringent requirement shall apply.

B. All products permanently incorporated into the water system shall be manufactured of lead-free materials.

C. All products and materials intended for potable water service shall be NSF 61 certified.

D. All materials and methods for each respective item of work shall meet or exceed applicable requirements as published by the American Water Works Association (AWWA).

SECTION 3: DEVELOPMENT DESIGN REVIEW

A. Oxford Water Works encourages project contractors to request a Conceptual Design Meeting prior to the submittal of any design materials by calling (256) 831-5618 and asking for the Oxford Water Works Project Coordinator.

B. Oxford Water Works maintains its Standard Details at www.oxfordwater.com.

C. Construction plans shall consist of plans stamped by a licensed professional engineer registered in the State of Alabama.

D. Plan submittals for development review must be provided in Adobe PDF electronic format and submitted to Oxford Water Works as part of the Development Review.

E. Material submittals shall be submitted to the Oxford Water Works as part of the Material Submittal form. Submittals will be considered "approved" upon review and approval by an Oxford Water Works Project Coordinator.
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F. Final Submittal of design materials is required to be submitted to Oxford Water Works. Upon approval of the Final Submittal of Design Materials, Oxford Water Works shall maintain a digital copy of the

Approved Design Materials and one paper copy on-site at the project location, as detailed in these specifications.

SECTION 4: SUBMITTAL PROCEDURES

A. Submittal Development and Contractor Review: Designer/Contractor shall develop and submit submittals as required to allow adequate time for review without delaying/affecting the schedule for the work. Contractor shall thoroughly review and familiarize himself with the existing facilities and shall obtain/incorporate all necessary field dimensions into the submittals prior to submitting and prior to beginning work. The Contractor shall be solely responsible for coordinating the preparation and review/processing of the submittals with manufacturers and suppliers, and for ensuring completeness with respect to the approved manufacturers, models, and materials outlined in the specifications.

B. Submittals shall be delivered in digital Adobe PDF format. Submittals shall be divided into sections, with each section containing a cover sheet identifying the materials that are included.

C. Product Data: Submittals shall be provided for each component of the work and shall include, at a minimum, manufacturer's catalog cuts, product specifications, statement of compliance with specified referenced standards, testing data, and any other relevant information. One (1) complete submittal, which includes all equipment/materials to be incorporated into the project shall be submitted to Oxford Water Works.

D. The Contractor and all manufacturers and suppliers shall thoroughly review the materials, products, and equipment being supplied and shall familiarize themselves with the existing and proposed/new facilities, as well as connections to existing facilities/water. This shall include field verification of the location, nature, size/dimensions, current and intended future use, etc. Prior to ordering and installation, the Contractor shall coordinate with all manufacturers and suppliers to provide all needed information, including field dimensions, photographs, information on related materials and equipment, etc. The Contractor and all manufacturers and suppliers shall confirm the following:

a. The materials, products, and equipment being supplied are of the correct size, materials and type.

b. The materials, products, and equipment being supplied do not conflict with existing or proposed/new facilities.

c. The products/equipment being supplied are intended for use in this application.

d. All manufacturer(s) and supplier(s) shall provide (either with submittals or separately) written concurrence/acknowledgment of their review/coordination and concurrence with the items above.

E. The Construction Materials Submittal shall be considered "approved" upon review and approval by an Oxford Water Works Project Coordinator, as demonstrated by the affixing of their official stamp on an original copy of the Construction Materials Submittal.

SECTION 5: PROJECT RECORD DOCUMENTS

A. Maintain one set of marked-up hard copies of the approved Plans. Mark-ups should show where the actual installation was different than what was shown on the Construction Drawings. Note any and all changes and include/attach photos if needed. Record Drawings and any photos are required to be submitted directly to the Oxford Water Works Project Coordinator at Substantial completion with the Project Name as the subject.

B. Geospatial Data Collection: Oxford Water Works will collect geospatial data on all installed infrastructure. Data collection will occur on a daily basis as the work proceeds. Daily work shall remain exposed until Oxford Water Works has collected that data. However, excavations are not to remain open overnight. Excavations shall be reopened at Oxford Water Works request if the Contractor fails to schedule the collection of data in a timely manner. It shall be the sole responsibility of the Contractor to schedule and coordinate the collection of this data with the Oxford Water Works Project Coordinator and/or the Project Inspector.

SECTION 6: INSPECTION

A. Oxford Water Works will provide an on-site inspector to oversee the installation of the work. The inspector must review and approve all materials before work begins on any new construction. Any change or deviation from the approved plans must be approved in writing by the inspector prior to proceeding with the change. The responsibility of the Contractor shall not be lessened by the presence of the inspector.

SECTION 7: PROTECTION OF INSTALLED WORK

A. The Contractor shall protect and maintain the work in new condition (without damage or degradation) until Final Completion. This includes maintaining the cleanliness of adjacent areas of new and/or existing construction (i.e. roads, sidewalks, curbs, etc.). The Contractor shall be solely responsible for maintaining and/or cleaning to achieve a new finish, even if it requires resurfacing/recoating and/or replacing the affected work.

SECTION 8: LIMITED USE OF EXISTING WATER SYSTEM AND APPURTENANCES

A. The Contractor shall under no circumstances operate, alter, or modify the appurtenances and accessories of the existing system without written permission from Oxford Water Works. This shall include, but is not limited to, valves, meters, fire hydrants, blow-offs, and other in-place appurtenances.

B. Metered use of water through a fire hydrant is available upon request and rental of a fire hydrant meter from Oxford Water Works. All unauthorized use of water from the distribution system shall be considered theft and is punishable under Alabama State Law.

SECTION 9: CONNECTIONS TO EXISTING WATER SYSTEM

A. All connections to the existing water system shall be made by means of cutting in of ductile iron fittings and valves. Under no circumstances shall existing water mains be tapped ("hot tapped"). Cut-in ductile iron fittings, specifically ductile iron tees, shall be surrounded by three valves matching the sizes of the branch and run of the tee. Valves shall be in accordance with these specifications.

SECTION 10: DUCTILE IRON PIPE AND FITTINGS (WATER SYSTEM)

A. All ductile iron pipe shall be manufactured, lined, coated, and tested in the United States of America. Pipe manufacturer shall provide a sworn certificate that the source manufacturing facility has been producing DIP domestically of the specified diameters, pressures, and dimensions for a period of not less than 10 years. Approved manufacturers are American, U.S. Pipe, and McWane only.

B. Ductile iron fittings shall be provided by one of the following approved manufacturers: American (ACIPCO), U.S. Pipe, Tyler Union, and McWane Ductile. Sigma Corporation shall manufacture the only approved, non-domestically manufactured ductile iron fittings. All other fittings shall be domestically manufactured.

C. Pipe and fittings shall be stored on the project site in a manner acceptable to the manufacturer. Pipe and fittings shall be transported within the project site by means of a sling made of materials that will prevent damage to the exterior of the product being transported. At no time will it be permissible to drag or roll materials to the installation location. It shall not be permissible for a Contractor to transport or lift pipe by inserting the forks of a forklift into the pipe.

D. It shall be the sole responsibility of the installing Contractor to carefully examine all pipe, piping material, and fittings before placing them in the work. If materials are found to be defective, the Contractor shall promptly notify the manufacturer and arrange for replacement materials. Materials found to be defective shall be marked and discarded.

E. Ductile Iron pipe shall be manufactured in accordance with the requirements of ANSI A21.51 / AWWA C151. Where ductile iron pipe and fittings are equipped with push-on joints, such joints shall conform to the requirements of ANSI A21.11 / AWWA C111, latest revision. Where ductile iron pipe and fittings are equipped with mechanical joints, such joints shall conform to the requirements of ANSI A21.11 / AWWA C111 latest revision.

F. Gaskets for flanged, mechanical joint, restrained joint, and push-on ductile iron pipe shall meet the requirements of ANSI/AWWA Specification ANSI A21.11/AWWA C111, latest Standard Construction Specifications revision. Gasket materials for potable water service up to 120° F shall be manufactured from vulcanized styrene-butadiene rubber (SBR). All gaskets shall be domestically manufactured.

G. Ductile iron fittings shall have mechanical joint connection flanges. Fittings shall have compact bodies and shall conform to the requirements of NSIA21.53/AWWA C153, latest revision.

H. All ductile iron pipe and fittings shall be furnished with cement lining in accordance with NSI A21.4/AWWA C104, latest revision; standard thickness. Cement lining shall be certified for use with potable water. All below-grade piping and fittings shall receive a 1 mil thick asphaltic coating on the exterior of the pipe/fitting in accordance with ANSI 21.51/AWWA C151, latest revision.

SECTION 11: RESTRAINT OF DUCTILE IRON PIPE AND FITTINGS (4-INCH THRU 12-INCH)

A. **ALL INSTALLED PIPE JOINTS, FITTINGS, VALVES, AND OTHER APPURTENANCES SHALL BE FULLY RESTRAINED BY MEANS OF APPROVED RESTRAINT SPECIFIED HEREIN**.

B. New Push-on Joints: All new push-on joints shall be restrained by use of a domestically manufactured rubber gasket containing stainless steel gripping segments (teeth) vulcanized into the gasket. Approved products are American Fast-Grip, U.S. Pipe Field-Lok 350, McWane Sure Stop 350 and Romac Piranha.

C. New Mechanical Joints (Pipe to Fitting): All pipe to mechanical joint fitting connections shall be made by using a combination of a gripping gasket identified above and a ductile iron follower gland. Approved products are U.S. Pipe MJ Field-Lok, and Romac Grip Ring.

D. Mechanical Joints (Valves to Fittings): All connections between valves and fittings or between multiple fittings shall be made by use of a manufactured ductile iron component intended for close coupling of fittings and valves. Approved products are ductile iron foster adapters and 12-inch-long ductile iron anchor couplings. Whenever possible in new construction, valves should be separated from fittings by 40 feet of pipe.

E. Where new piping meets/connects to the existing water system, the affected portions of the existing water system shall be adequately restrained in accordance with Appendix A: Design & Construction Specifications for Ductile Iron Pipe Restrain of Existing Pipe Connections to New Construction Under 12" Diameter.

SECTION 12: INSTALLATION OF DUCTILE IRON PIPE (WATER SYSTEM)

A. installation and joining of ductile iron water pipe shall be completed in accordance with the requirements of AWWA C600, latest revision, and/or additional recommendations from the manufacturer of the pipe.

B. Minimum permissible depth of vertical cover over new water mains shall be 36". Maximum permissible depth of vertical cover over new water mains shall be 48". Variance from the depth of cover identified above must be approved in writing by Oxford Water Works.

C. Minimum permissible depth of horizontal cover (when paralleling slopes or ditch lines) shall be 36".

D. All backfill around pipe and fittings shall be compacted to 95% Standard Proctor as defined by ASTM D698-07.

E. At no time shall water be installed under existing or proposed roadways, sidewalks, curbs, gutters, storm sewers, or any other permanent or proposed impervious surfaces. Exceptions to this requirement are locations where it is necessary to cross perpendicular to proposed or existing impervious surfaces.

F. Electronic ball markers, as specified herein, shall be placed at every fitting location prior to backfilling.

SECTION 12: CONSTRUCTION-RELATED ACTIVITIES

A. Each Contractor and subcontractor performing the installation of infrastructure is to be turned over to Oxford Water Works, must be licensed as a Municipal & Utility Contractor under the provisions of Title 34, Chapter 8, Code of Alabama, 1975, as established by the Alabama Licensing Board for General Contractors.

B. Contractors must notify Oxford Water one week before performing any work that requires inspection.

C. The System Development Fee associated with work being performed must be paid in full prior to work beginning on the water system.

D. All installations must be in accordance with the project's Approved Design Materials.

E. All craftsmanship must meet American Water Works Association (AWWA) standards.

F. An original copy of the Approved Design Materials must be maintained on-site throughout the construction process until the Final Inspection is complete and Oxford Water Works assumes the infrastructure.

G. Construction materials received on-site throughout the construction process must be reviewed upon receipt to confirm that they comply with the approved construction Materials Submittal. Evidence of the review and confirmation of materials must be maintained on-site for review by Oxford Water Works staff, upon request, until the Final Inspection is completed, and Oxford Water Works assumes the infrastructure.

H. The interior of all pipes, fittings, valves, and accessories shall be kept free from dirt and foreign Material. Suitable bulkheads shall be used to block or plug ends of piping at the close of each work day or when work on a particular section of piping is temporarily discontinued. Suitable bulkheads shall be plugs, caps, and similar items that provide a watertight seal. Plywood, buckets, and similar materials that do not provide a watertight connection are not allowed. Should dirt, mud, or other foreign materials be allowed to enter the piping, such piping or section of piping shall immediately be cleaned.

I. Compacting of all backfill around the pipe shall be verified to 95% Standard Proctor as defined by ASTM D698-07. Verification must be by a licensed Geotechnical Professional Engineer registered by the Alabama Board of Engineers and Land Surveyors. The Geotechnical Report must be submitted to the Oxford Water Works Project Coordinator when it is reasonably available.

J. For water mains installed in rock, the trench area of removed rock must be a minimum of 12 inches wider than the outside wall of the pipe installed on both sides, and must extend at least one foot below the pipe invert. Pipe bedding and pipe zone materials shall be as detailed in Appendix B, DT-01, with no rock larger than ALDOT No. 57 stone to be used over the pipe for backfill.

SECTION 13: DUCTILE IRON PIPELINE TESTING PROCEDURES (WATER SYSTEM)

A. All water supply mains and other water lines underground (including service pipe up to curb stop) shall be tested by the installing Contractor in accordance with the requirements of ANSI/AWWA C600 (for ductile iron pipe) and in accordance with the requirements of these Specifications. The Contractor

shall familiarize himself with the requirements of this AWWA standard prior to initiating the pressure test.

B. Should any pipeline, or any section of the pipeline, fail to meet the criteria established herein below, any deficiencies shall be corrected and the testing repeated until the specified test results have been achieved.

C. Sections of mains placed under test shall be 1,200 feet or less in length.

D. The duration of the test shall not be less than 4 hours, and the test pressure shall be 150 psi or 1½ times the normal working pressure, whichever is greater. Contractor shall verify the system static pressure from Oxford Water Works.

E. Pressure shall be recorded on a 24-hour pressure recorder satisfactory to Oxford Water Works, and test charts shall be provided to Oxford Water Works prior to acceptance of testing.

F. Oxford Water Works will calculate allowable leakage rates based upon the requirements/procedures outlined in AWWA C600, latest revision.

G. The installing Contractor shall furnish all meters, gauges, pressure recorders, test plugs, valves, couplings, pitot gauges, test piping and fittings, pumps, compressors, receivers, motors, engines, electric power, fuel, water, supplies, labor, tools, materials, equipment, and supervision necessary to perform the tests required, and shall make all connections necessary to perform the tests required.

SECTION 14: PVC PIPE

A. PVC water main pipe shall be manufactured in accordance with the requirements set forth in AWWSA SDR 17/ CL250 and ASTM D-2241.

B. All PVC must be buried with blue tracer wire. Each dead end must be connected to a ground point. Oxford Water Works must inspect all grounded connections before they are buried.

SECTION 15: DISINFECTION OF WATER MAINS

A. All disinfection shall be in accordance with AWWA C651, latest revision.

B. The Contractor shall disinfect the pipe, pipe fittings, valves, service lines, and hydrants installed within the limits of work.

C. Prior to disinfection, the Contractor shall flush the installed mains to achieve a velocity of at least 3.0 feet per second. At no time during flushing activities shall chlorinated water be allowed to enter storm drains or waters of the United States. The Contractor shall be responsible for dechlorinating flushing water prior to discharge.

D. The mains shall be chlorinated (after flushing) with sufficient liquid chlorine, or powdered chlorine, to provide at least 50 mg/L available chlorine to the water in the mains.

E. The chlorine solution shall remain in the pipe at least 24 hours and then flushed until the main is filled with water having a normal chlorine residual.

F. Oxford Water Works will obtain samples for bacteriological examination. Oxford Water Works will perform bacteriological sampling and inform the Contractor of the test results.

SECTION 16: VALVES FOR WATER SERVICE

A. Gate Valves (2" – 12")

a. Gate valves shall be provided by M&H Valves.

b. Gate valves shall be resilient seated solid wedge gate valves, rated for 250 psi cold working pressure, shall be bi-directional, and shall be manufactured in accordance with AWWA C509, latest revision.

c. Valves shall be iron body construction, full opening, non-rising stem. Stem shall be brass, bronze or stainless steel and shall have a minimum of three O-ring seals. The top seals shall be replaceable with the valve fully open and while under full operating pressure. Thrust collar and bearing surfaces shall be isolated from the waterway and provided with continuous lubrication. Alternatively, non-corrosive thrust bearings shall be furnished above and below the collar. Wedge shall be encapsulated with EPDM rubber. Bolting materials shall be 304 stainless steel.

d. Valves shall be equipped with mechanical joint ends.

e. All gate valves 2" – 12" shall be equipped with a 2-inch square operating nut constructed of ductile iron.

f. Ferrous metal surfaces shall have a 12 mil, fusion-bonded, NSF 61 certified coating applied in accordance with AWWA C550, latest revision.

B. All buried valves shall be equipped with a valve box. Valve boxes shall be cast iron, screw.

SECTION 17: FIRE HYDRANTS

A. Fire hydrants shall be provided by M & H Vales. Hydrants shall be yellow in color.

B. Fire Hydrants shall be manufactured in accordance with AWWA C502, latest revision, and have the following characteristics:

a. Fire hydrants shall be the 3-way with two (2) 2½" nozzles and one 4 ½ pump nozzle. Nozzles shall have National Standard Hose Coupling Threading and shall be equipped with caps and chains.

b. The hydrant shall be "Safety" or "Traffic" Model with safety flanges and safety stem couplings so that the hydrant valve will remain tightly closed after the upper section has been broken.

c. Shall have an oil reservoir and oiling system or a permanent lubrication system incorporated in the bonnet assembly.

d. Shall have not less than 5¼" valve opening.

e. Shall have a 6" inlet opening with a mechanical joint connection.

f. Shall have National Standard "Pentagon" operating nut
g. The Fire Hydrant model shall be fully parts-upgradeable and compatible for more than 50 years.

h. Fire Hydrant shall include "retro pressure monitoring kits" to be provided to the Oxford Water Works for later installation at a ratio of 1 in 6. There must be at least one pressure monitoring hydrant on a project

C. Fire hydrants shall be set such that the "bury" line is at the surface of the expected final grade. Each fire hydrant shall be purchased specifically for the expected depth at its intended location; however, no more than one 12-inch hydrant extension may be used per hydrant. In the event that a hydrant extension is required, the Contractor shall properly orient the extension (including stem) such that the traffic breakaway lines match and are set at the final grade.

D. Hydrants shall be set plumb and true with pumper nozzles facing the street.

E. Broken stone (#57 unless specified otherwise) shall be placed at a depth of 8" below the foot of the hydrant to 8" above the weep holes. Volume of stone shall not be less than five (5) cubic feet.

F. Fire hydrants shall be installed by using a combination of fire hydrant tee, valve, valve box, and anchor coupling (length as required)

SECTION 18: WATER SERVICE INSTALLATIONS

A. Water service connections for residential ¾-inch and 1-inch water meters shall consist of the following:

a. connection to water main, double strap saddle Smith Blair
b. One (1) brass corporation stop
c. Length as required of Type K Copper water service pipe or Rehau Munipex.
d. One (1) brass curb stop
e. One meter coupling
g. Two (2) electronic locator balls. One at the main tap and one at the curb stop.
h. Meter box DFW1200.121A

B. Water main taps shall be separated by a minimum of 3’-0".

C. Water meters, backflow preventers, and initiation of service will be installed/established by Oxford Water Works upon receipt of a request for water service for each specific address.

D. Any connection 2 inches and above must be housed in a concrete vault with a board-approved check valve. **The Oxford Water Works must approve all other materials used to make the connection.**

E. Fireline must be housed in two concrete vaults. One vault for the Oxford Water Works-approved meter and the other with a Watts check valve must be placed on the customer's side.

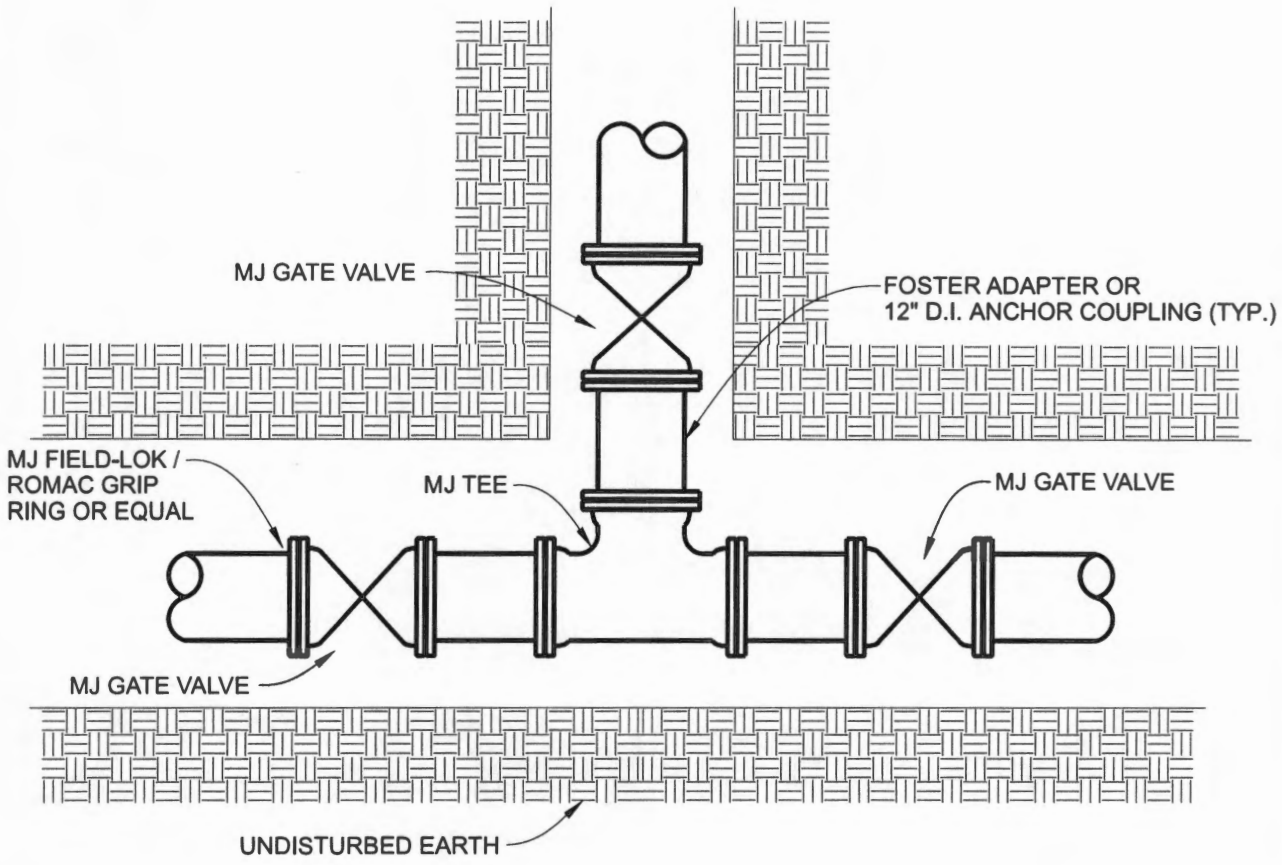
F. **The Board must approve all Concrete Vault assemblies before installing**.

SECTION 19: REVISION OF SPECIFICATIONS

A. The **Oxford Water Works** reserves the right to revise, amend, supplement, or otherwise modify these Standard Construction Specifications at any time, as deemed necessary to protect the integrity, reliability, and operation of the water distribution system or to comply with changes in applicable laws, regulations, industry standards, or Board policies. Notice of revisions will be provided through the Oxford Water Works official website, written correspondence, or other means deemed appropriate by the Board. It is the responsibility of all engineers, developers, contractors, and other parties performing work on the Oxford Water Works system to ensure they are using the most current version of these specifications before commencing any work.

Compliance with the latest published specifications shall be required for all projects unless otherwise approved in writing by the Oxford Water Works & Sewer Board.

END OF SPECIFICATIONS



NOTES:

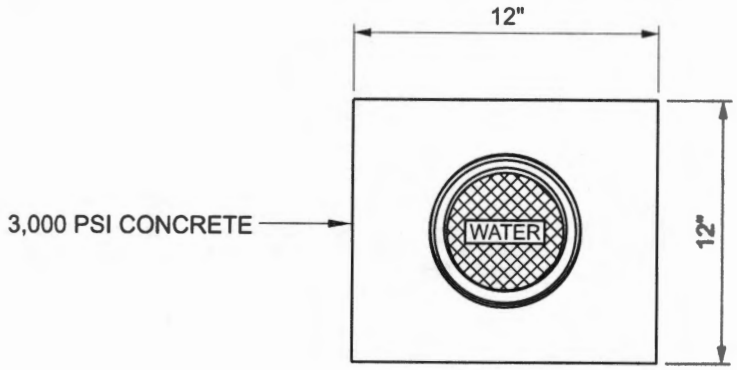
1. GATE VALVES REQUIRED FOR 12" & SMALLER APPLICATIONS.
   BUTTERFLY VALVES REQUIRED FOR 14" & LARGER APPLICATIONS.

2. PIPE SHALL BE CONNECTED TO MJ VALVES & FITTINGS BY AN APPROVED
   METHOD OR RESTRAINT. (MJ FIELD-LOK OR EQUAL)

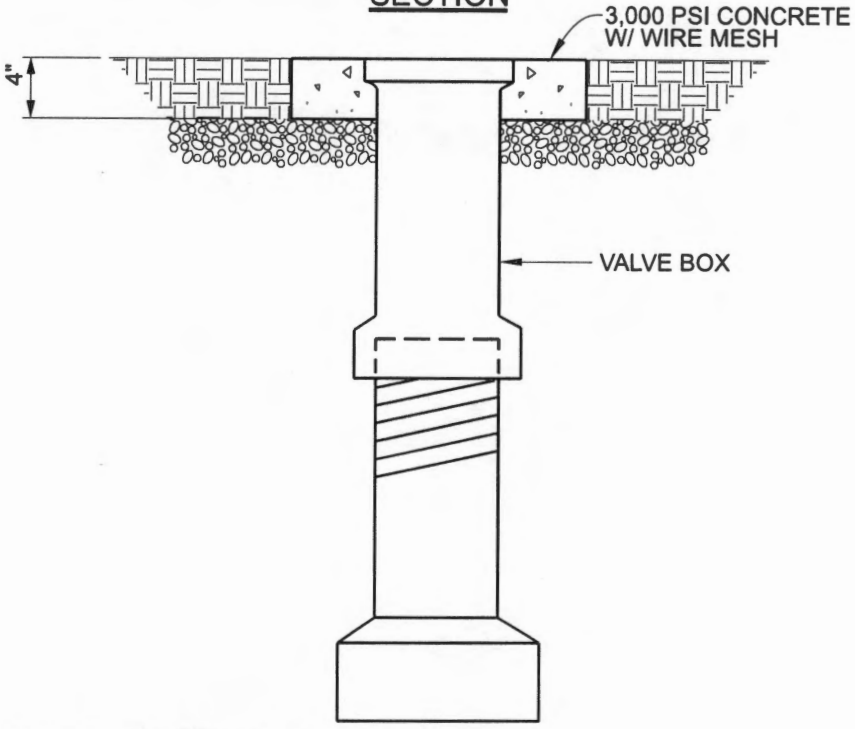
3. WHEN POSSIBLE IN NEW CONSTRUCTION, VALVES SHALL BE SEPARATED FROM
   TEES AT INTERSECTIONS BY A MINIMUM OF 40 FEET OF RESTRAINED PIPE.

SHEET TITLE	
TYPICAL VALVE ARRANGEMENT	
SHEET NO.	PROJECT N.
DT-02	SCALE NO SCALE
	DATE

PLAN



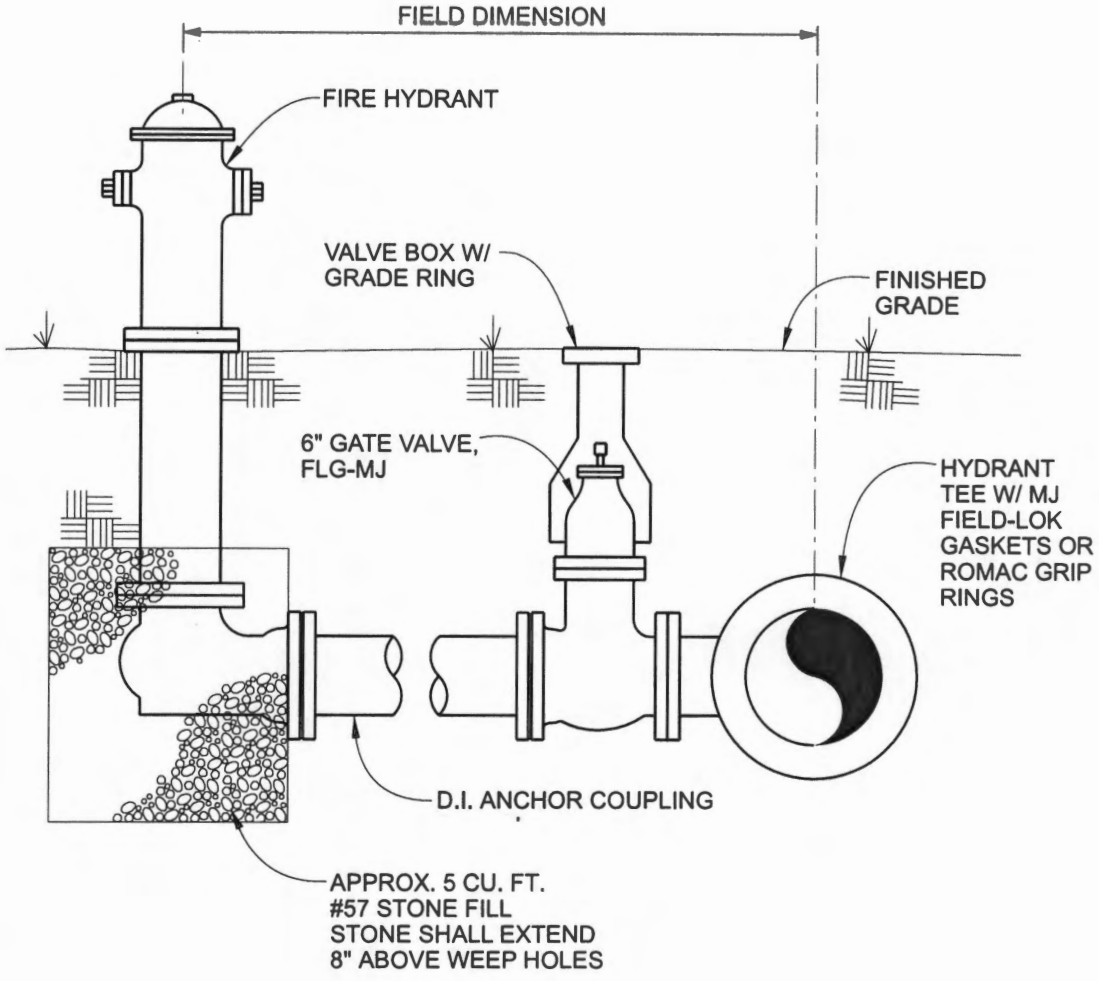
SECTION



NOTES:

1. VALVE BOX AND EXTENSION MATERIAL SHALL BE CAST IRON. DUCTILE IRON PIPE SHALL NOT BE USED AS AN EXTENSION. MULTIPLE EXTENSIONS ARE NOT ALLOWED.
2. PRECAST CONCRETE RINGS ARE ACCEPTABLE IN LIEU OF POURED-IN-PLACE.
3. VALVE STEM EXTENSIONS SHOULD BE PROVIDED IF REQUIRED DUE TO DEPTH.
4. CONCRETE GRADE RING NOT REQUIRED IF INSTALLED IN ASPHALT.

SHEET TITLE	
VALVE BOX	
SHEET NO.	PROJECT NO.
DT-03	SCALE NO SCALE
	DATE



SECTION

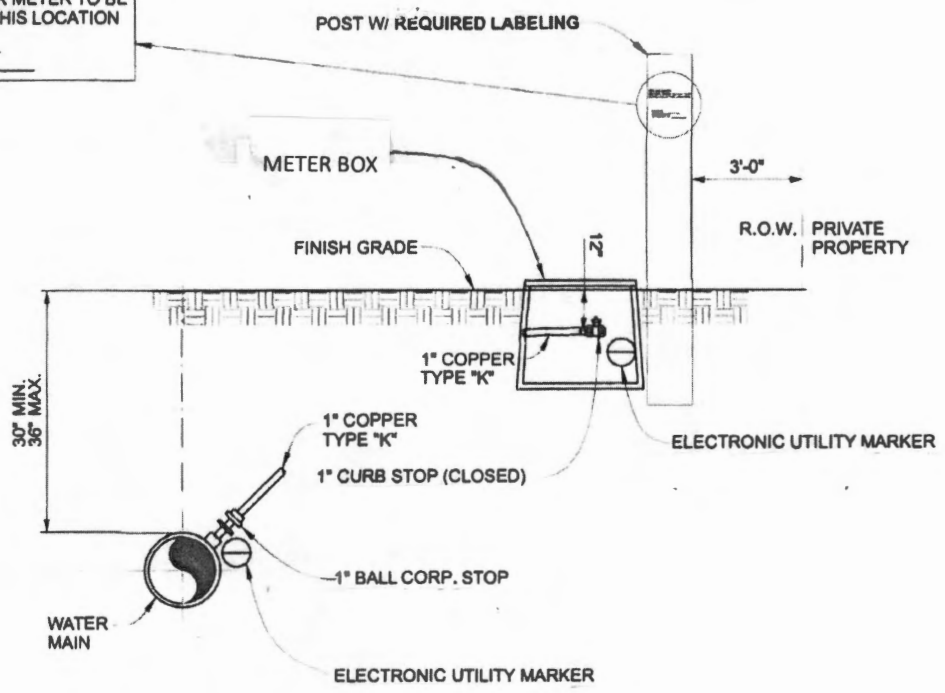
NOTES:

1. ADJUST LENGTH OF ANCHOR COUPLING AND LENGTH OF HYDRANT BARREL FOR EACH SPECIFIC LOCATION. IN NO CASE SHALL MORE THAN ONE (1) HYDRANT EXTENSION BE USED PER HYDRANT.
2. HYDRANT SHALL BE INSTALLED SUCH THAT BURY LINE NOTED ON HYDRANT IS AT FINISHED GRADE.

SHEET TITLE	
FIRE HYDRANT	
SHEET NO.	PROJECT NO
DT-05	SCALE NO SCALE
	DATE

LABEL MUST READ AS FOLLOWS:

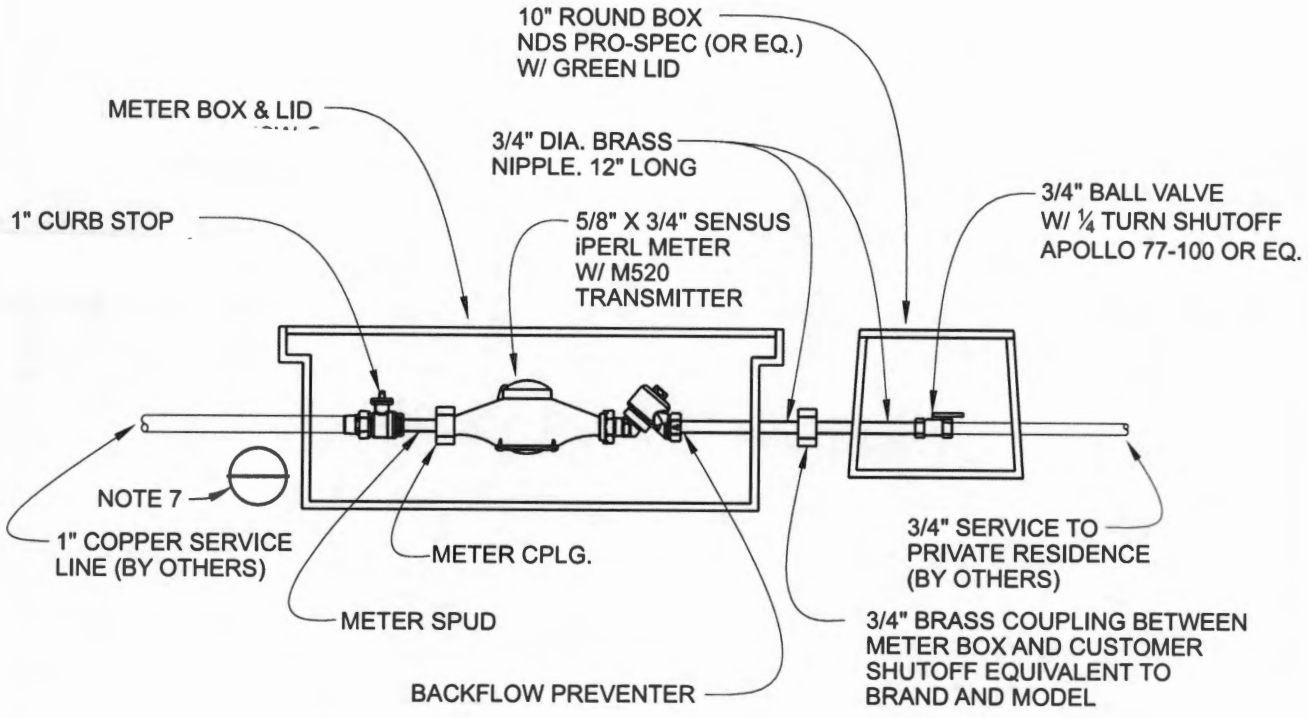
NOTICE!: WATER METER TO BE INSTALLED AT THIS LOCATION
LOT #: _____
STREET #: _____



NOTE:

1. INSERTION THREADS OF CORPORATION STOP SHALL BE DOUBLE WRAPPED WITH TEFLON TAPE (1/2 x 3 MILS); AND STOPS SHALL BE TORQUED IN AT 30 - 50 FOOT-POUNDS
2. ELECTONIC UTILITY MARKER BALLS SHALL BE SECURELY FASTENED TO BOTH THE CORPORATION STOP AND THE CURB STOP VIA STAINLESS STEEL WIRE OR BY OTHER MEANS APPROVED BY THE OWNER.
3. UPON COMPLETION OF WATER SERVICE INSTALLATION; CLOSE CURB STOP, INSTALL BRASS PLUG, AND LOCK WITH A CAPPED #5 BARREL LOCK.
4. MINIMUM AND MAXIMUM DEPTHS OF COVER SHOWN ABOVE CORRESPONDS TO SOIL COVERAGE AND SHALL NOT INCLUDE THE THICKNESS OF ANY INSTALLED ASPHALT, CONCRETE, OR OTHER PERMANENT OR TEMPORARY SURFACE FINISHING.

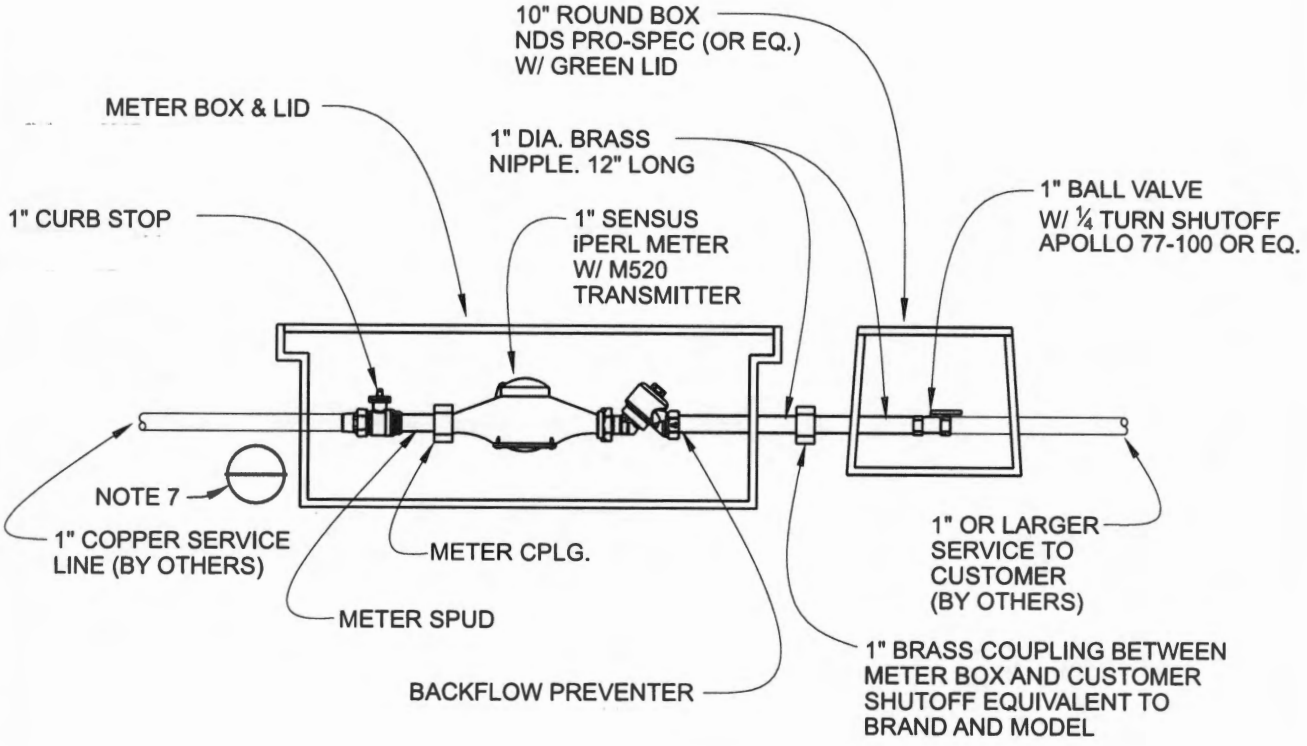
SHEET TITLE	PROJECT NO	SCALE	DATE
3/4" OR 1" SERVICE INSTALLATION	2024-SD	NO SCALE	AUG 2024
SHEET NO. DT-07			



NOTES:

1. BACKFLOW DEVICE SHALL BE DIRECT COUPLED TO THE WATER METER USING A METER SWIVEL NUT.
2. METER BOX AND 10" ROUND SHUTOFF BOX SHALL BE INSTALLED FLUSH WITH FINAL GRADE. IF SOD AND GRASSING HAS NOT BEEN INSTALLED, BOXES SHALL BE SET PROUD OF ANY AND ALL BACKFILL SUCH THAT INSTALLATION OF SOD WILL RESULT IN BOXES BEING SET FLUSH WITH FINAL GRADE.
3. METER BOXES AND 10" ROUND SHUTOFF BOX SHALL BE INSTALLED ON A 6" BED OF CLEAN STONE, LEVELED. BRICKS OR OTHER MEANS OF SUPPORT BELOW THE METER BOX OR 10" SHUTOFF BOX WILL NOT BE ALLOWED.
4. ALL ITEMS SHOWN WITHIN THIS ARRANGEMENT SHALL BE INSTALLED STRAIGHT AND IN A WORKMANLIKE MANNER. ALL ITEMS SHOWN SHALL BE CENTERED ABOUT THE VERTICAL AXIS. VALVES, METERS AND BACKFLOW PREVENTERS WHICH ARE INSTALLED OUT OF ROTATION WILL NOT BE ACCEPTED.
5. A MINIMUM OF CABLE LENGTH OF 6-FEET SHALL BE PROVIDED BETWEEN THE WATER METER AND M520 TRANSMITTER.
6. UPON COMPLETION OF WATER SERVICE INSTALLATION; CLOSE CURB STOP AND LOCK WITH A CAPPED #5 BARREL LOCK (DeWALCH DT 1000). CURB STOP SHALL REMAIN LOCKED UNLESS/UNTIL AN ACTIVE WATER SERVICE ACCOUNT HAS BEEN ESTABLISHED THROUGH OPELIKA WATER.
7. ELECTRONIC UTILITY MARKER, MODEL 1403-XR BY 3M COMPANY (BLUE).

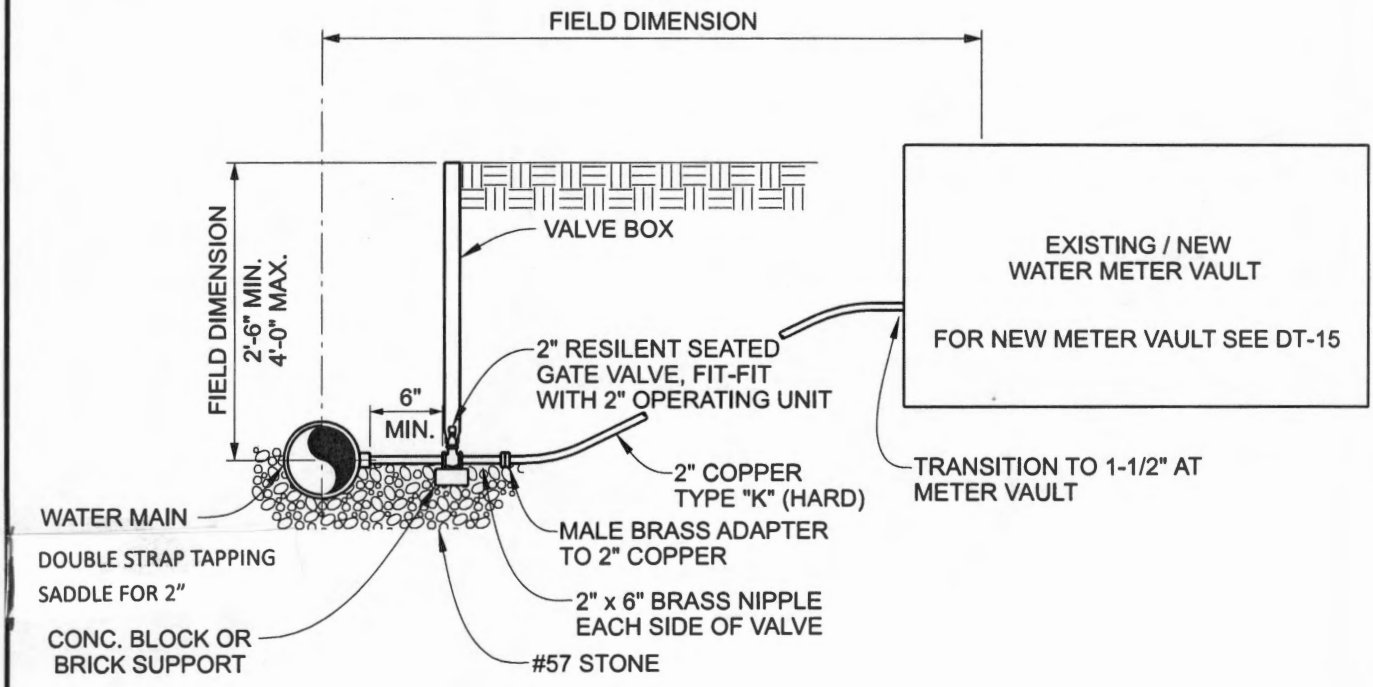
SHEET TITLE	
3/4" METER INSTALLATION	
SHEET NO. DT-08	PROJECT NO.
	SCALE NO SCALE
	DATE



NOTES:

1. BACKFLOW DEVICE SHALL BE DIRECT COUPLED TO THE WATER METER USING A METER SWIVEL NUT.
2. METER BOX AND 10" ROUND SHUTOFF BOX SHALL BE INSTALLED FLUSH WITH FINAL GRADE. IF SOD AND GRASSING HAS NOT BEEN INSTALLED, BOXES SHALL BE SET PROUD OF ANY AND ALL BACKFILL SUCH THAT INSTALLATION OF SOD WILL RESULT IN BOXES BEING SET FLUSH WITH FINAL GRADE.
3. METER BOXES AND 10" ROUND SHUTOFF BOX SHALL BE INSTALLED ON A 6" BED OF CLEAN STONE, LEVELED. BRICKS OR OTHER MEANS OF SUPPORT BELOW THE METER BOX OR 10" SHUTOFF BOX WILL NOT BE ALLOWED.
4. ALL ITEMS SHOWN WITHIN THIS ARRANGEMENT SHALL BE INSTALLED STRAIGHT AND IN A WORKMANLIKE MANNER. ALL ITEMS SHOWN SHALL BE CENTERED ABOUT THE VERTICAL AXIS. VALVES, METERS AND BACKFLOW PREVENTERS WHICH ARE INSTALLED OUT OF ROTATION WILL NOT BE ACCEPTED.
5. A MINIMUM OF CABLE LENGTH OF 6-FEET SHALL BE PROVIDED BETWEEN THE WATER METER AND M520 TRANSMITTER.
6. UPON COMPLETION OF WATER SERVICE INSTALLATION; CLOSE CURB STOP AND LOCK WITH A CAPPED #5 BARREL LOCK (DeWALCH DT 1000). CURB STOP SHALL REMAIN LOCKED UNLESS/UNTIL AN ACTIVE WATER SERVICE ACCOUNT HAS BEEN ESTABLISHED THROUGH OPELIKA WATER.
7. ELECTRONIC UTILITY MARKER, MODEL 1403-XR BY 3M COMPANY (BLUE).

SHEET TITLE	
1" METER INSTALLATION	
SHEET NO.	PROJECT NO.
DT-08A	SCALE NO SCALE
	DATE

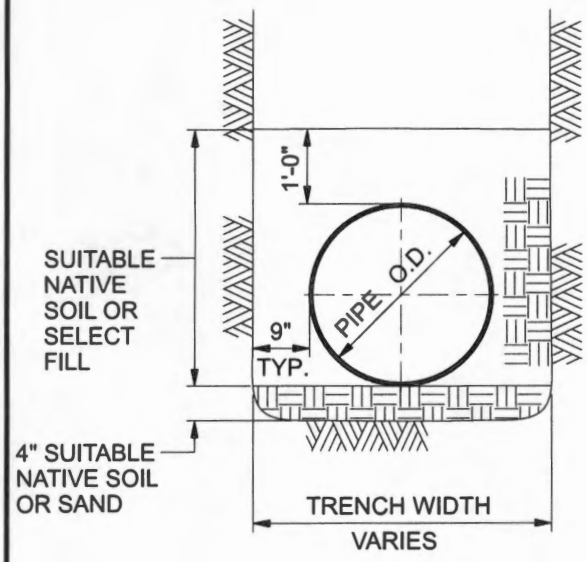


NOTE:

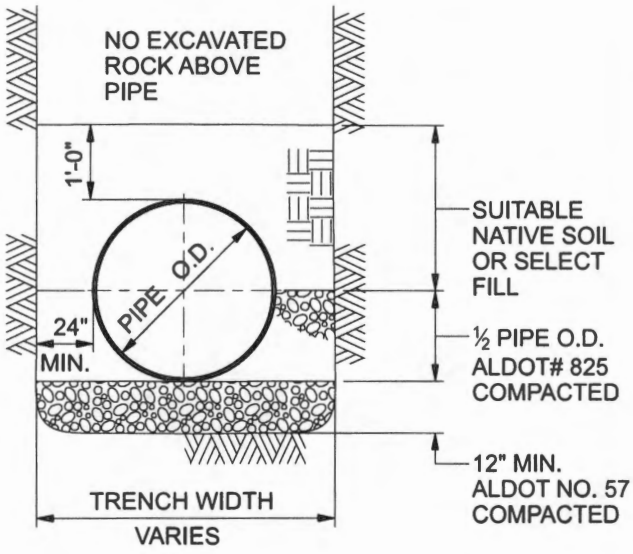
1. ELECTRONIC UTILITY MARKER TO BE PLACED AT TAP AND AT 2" GATE VALVE.

SHEET TITLE: 1 1/2" TO 2" SERVICE CONNECTION	
SHEET NO.: DT-09	PROJECT NO.:
	SCALE: NO SCALE
	DATE:

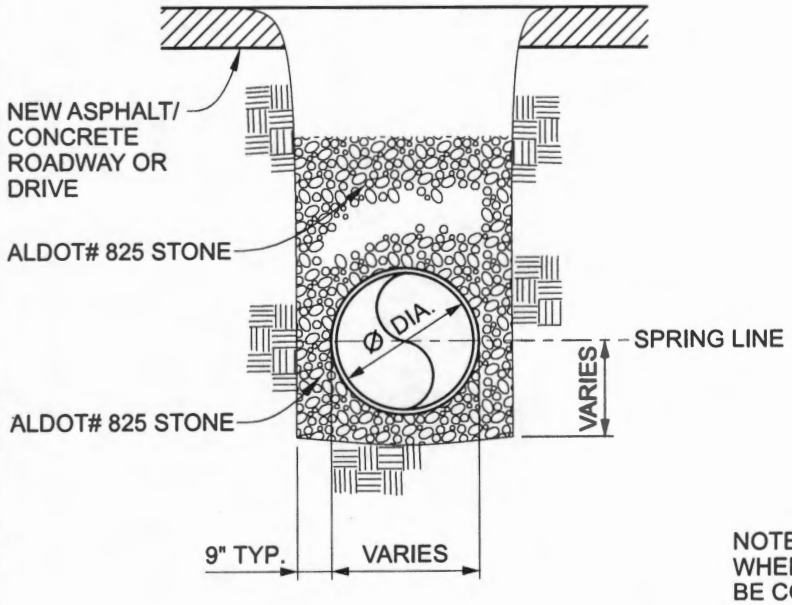
TRENCH EXCAVATED IN SOIL



TRENCH EXCAVATED IN ROCK

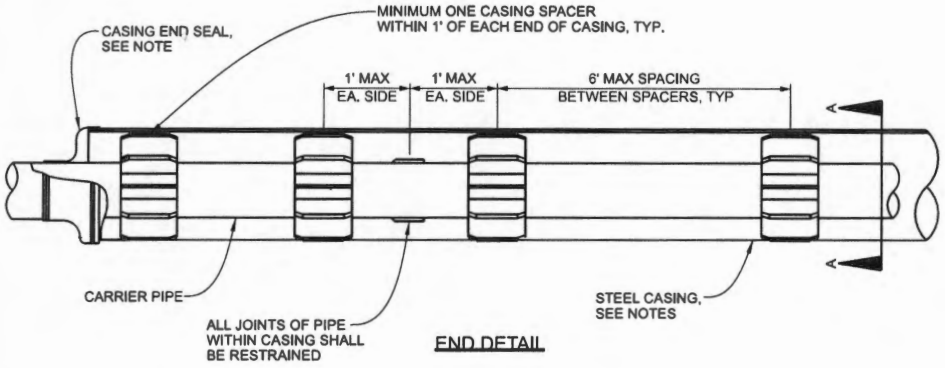


PIPE TRENCH UNDER EX. PAVEMENT

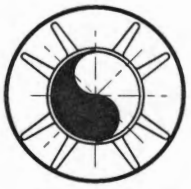


NOTE:
WHERE INSTALLED UNDER ASPHALT, STONE SHALL BE COMPACTED IN 4" LIFTS TO 95% STANDARD PROCTOR DENSITY. COMPACTION SHALL BE VERIFIED BY USE OF COMBINATION SAND CONE/NUCLEAR DENSITY TESTING BY A LICENSED GEOTECHNICAL ENGINEER.

SHEET TITLE: PIPE BEDDING & BACKFILL	
SHEET NO.: DT-01	PROJECT NO.
	SCALE: NO SCALE
	DATE



END DETAIL



SECTION A-A

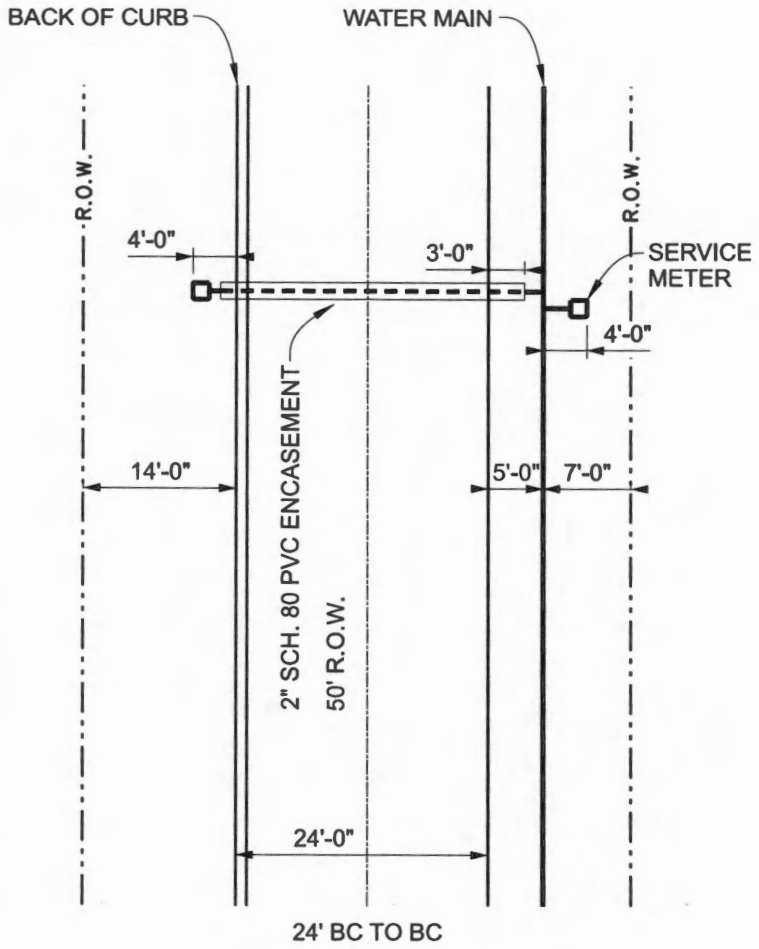
NOTES:

1. BORING SHALL BE AT 90 DEGREES TO ALL CROSSINGS UNLESS OTHERWISE APPROVED. THE BORING OF THE HOLE AND INSTALLATION OF THE CASING PIPE SHALL BE SIMULTANEOUS. BORE HOLE DIAMETER SHALL ESSENTIALLY BE THE SAME AS THE OUTSIDE DIAMETER OF THE CASING PIPE TO BE INSTALLED.
2. AERIAL CROSSINGS SHALL BE AS INDICATED.
3. JOINTS SHALL CONFORM TO THE REQUIREMENTS OF AWWA C206. JOINTS BETWEEN SECTIONS SHALL BE COMPLETELY WELDED TO THE PRECEDING SECTIONS. PRIOR TO WELDING JOINTS, THE CONTRACTOR SHALL ENSURE THAT BOTH ENDS OF THE CASING SECTIONS BEING WELDED ARE SQUARE.
4. STEEL PIPE CASING WALL THICKNESS SHALL BE AS INDICATED. VERIFY CASING SIZES PRIOR TO ORDERING AND SIZING CASING INSULATORS.
5. CASING SPACERS SHALL BE RESTRAINED-TYPE BOLTED SPACERS AND SHALL HAVE A MAXIMUM SPACING AS SHOWN, OR AS RECOMMENDED BY MANUFACTURER, WHICHEVER IS CLOSER. PIPE CASING SPACERS SHALL BE AS MANUFACTURED BY PIPELINE SEAL AND INSULATOR, INC., ADVANCE PRODUCTS AND SYSTEMS, INC., OR APPROVED EQUAL.
6. CASING END SEALS FOR AERIAL OR EXPOSED ENDS SHALL BE SYNTHETIC NEOPRENE RUBBER PULL-ON TYPE END SEALS WITH STAINLESS STEEL BANDS AS MANUFACTURED BY THE ABOVE MANUFACTURERS, OR APPROVED EQUAL. CASING END SEALS FOR BURIED APPLICATIONS SHALL BE MASONRY BULKHEADS FOR CASINGS LARGER THAN 16" IN DIAMETER. CASINGS 16" DIAMETER AND SMALLER MAY USE SYNTHETIC NEOPRENE RUBBER SEALS OR MASONRY BULKHEADS.

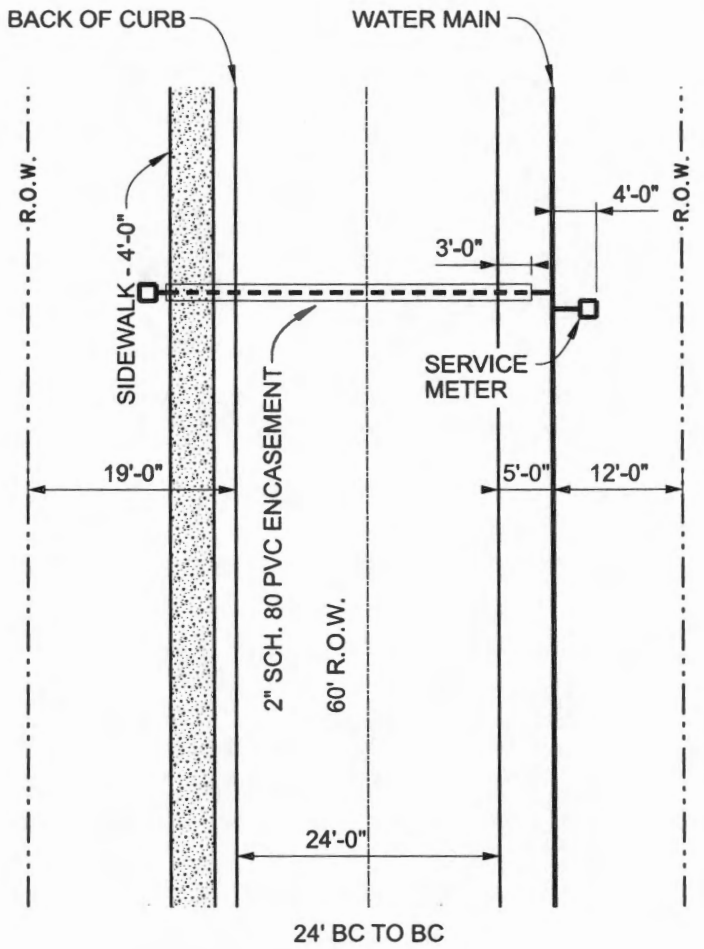
MINIMUM STEEL CASING SIZES

CARRIER PIPE		CASING SPACER		STEEL CASING		
NOMINAL PIPE DIAMETER	PIPE O.D.	O.D. OVER SPACER RUNNERS	BAND WIDTH	MINIMUM CASING THICKNESS	CASING I.D.	MINIMUM CASING O.D.
4	4.8	9.2	4	0.25	11.5	12
6	6.9	11.3	6	0.25	13.5	14
8	9.05	13.45	8	0.25	15.5	16
10	11.1	15.5	10	0.25	17.5	18
12	13.2	18.6	12	0.25	23.5	24
14	15.3	20.7	14	0.25	23.5	24
16	17.4	22.8	16	0.3125	29.375	30
18	19.5	24.9	18	0.3125	29.375	30
20	21.6	27	20	0.3125	29.375	30
24	25.8	31.2	24	0.3125	35.375	36
30	32	37.4	30	0.5	41	42
36	38.3	43.7	36	0.5	47	48
42	44.5	49.9	42	0.5	53	54

SHEET TITLE: PIPE CASING INSTALLATION
SHEET NO.: DT-11
PROJECT NO.: 2_4-SL
SCALE: NO SCALE
DATE:



DETAIL OF METER PLACEMENT
50' R.O.W.



DETAIL OF METER PLACEMENT
60' R.O.W. WITH 4' SIDEWALK

SHEET TITLE
TYPICAL METER PLACEMENT

SHEET NO.
DT-12

PROJECT NO.

SCALE
NO SCALE

DAT