

OKTOC WATER ASSOCIATION

SUBDIVISION REGULATIONS CONSTRUCTION STANDARDS

Adopted: XX, 2021

New Developments

Oktoc Water Association (OWA) has the following document and processing requirements that must take place prior to providing water service to a new subdivision development:

Developers are encouraged to become familiar with this document and its requirements. All communications, questions, etc. shall first be directed to the Association's Engineer, Jess Wiygul, Cook Coggin Engineers, 662-842-7381. The Developer is responsible for reimbursing OWA for all Engineer expenses incurred through communications between the Developer and OWA's Engineer.

The Association should receive and keep on file a copy of the "Approval Letter" from Mississippi Department of Environmental Quality regarding waste water collection and disposal.

The development's design engineer must submit all drawings and specifications to the Association's engineer for policy compliance review prior to submitting to Oktibbeha County and/or MSDH.

The Association should receive and keep on file a copy of the Mississippi Department of Health "Letter of Approval" for the water distribution system. The Association is not responsible for providing hydraulic computations to the Health Department.

The Association should receive and keep on file a copy of the Mississippi Public Service Commission order granting a "Certificate of Need" to the operator of the waste water system servicing the subdivision.

The Association should receive and keep on file a "Letter of Commitment" from the Developer and his financial institution (Letter of credit) that the proposed development will actually be built within a specified time frame. The Association is not agreeable to providing the "Will Serve Letter" if the development will not proceed as proposed.

The Association should receive and keep on file a letter from the development design engineer that the developer "holds harmless" the Association for complying with any of Oktibbeha County, MS subdivision regulations, as adopted by the Oktibbeha County Board of Supervisors.

It is the responsibility of the Developer to acquire and provide to the Association all required documentation listed above.

Oktoc Water Association has the following connection requirements that apply to new developments:

1. Contractor pays for all valves and connections to water lines. An Association official is to be present when work on Association mains is in progress and finished. It is the Contractor's responsibility to coordinate inspection with the Association.

2. Contractor installs all lines and runs pipe to meters. The meter and box will be provided and installed by the Association.
3. Contractor is responsible for all taps to Oktoc water lines.
4. Contractor must install a cut off valve at the main water line connection to the existing system.
5. Contractors must install a flushing hydrant at the end of each pipe.
6. Contractor must bury lines a minimum of 3 feet.
7. Contractor shall use 200 lb pressure pipe for main lines, must be o-ring type.
8. Recommended:
 - a. 6" line recommended - 4" minimum.
 - b. Fire hydrant as required by Oktibbeha County Subdivision Regulations.
 - c. Minimum depth of 18 in. on meter set.
9. It is recommended that the Developer maintain, and share as requested, photographic documentation of all connections, valves, and other pertinent items before burial.
10. The Association will locate the main line for the contractor.
11. Subdivision developer is responsible for repairs for three (3) years after water is turned on. After (3) years the Association will take responsibility. A letter from the developer noting the warranty period and start date is required.

Refer to Sections 300-360 for additional requirement information.

The Board of Directors of Oktoc Water Association reserves the right to make any and all required decisions for subdivision distribution systems. The Developer agrees that all requirements, fees, etc. listed above and provided within this document must be met before the Association accepts the work and provides water service.

X

Developer

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Oktoc Water Association

This form must be signed and returned to OWA before proceeding.

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SECTION 300 - GENERAL REQUIREMENTS FOR WATER DISTRIBUTION IMPROVEMENTS

The water distribution system shall meet the requirements of the BUREAU OF ENVIRONMENTAL HEALTH, MISSISSIPPI STATE DEPARTMENT OF HEALTH, DIVISION OF WATER SUPPLY and conform to these CONSTRUCTION STANDARDS.

A. PLANS AND SPECIFICATIONS APPROVAL

The Mississippi State Department of Health requires:

“Prior to advertising for bids, or prior to beginning construction where bids are not received on a new public water system, or for extensions or modifications to an existing public water system, plans and specifications shall be approved in writing by the Division of Water Supply”.

“Plans and specifications must be prepared, sealed, and signed by a professional engineer registered to practice in Mississippi in accordance with the requirements of the Mississippi State Board of Registration for Professional Engineers and Land Surveyors.”

A. SYSTEM DESIGN

The distribution system shall be so designed as to maintain a minimum dynamic pressure of 20 psi. Maximum static pressure should not exceed 80 psi.

Water mains should be designed based on hydraulic analysis using an appropriate friction coefficient, but shall not be less than 6 inches diameter. The maximum Hazen-Williams C value to be used is 120.

The minimum main size supplying fire hydrants with pumper connections shall be as determined by hydraulic analysis using anticipated fire flows.

All materials not specifically referenced herein shall be non-toxic and approved for use in potable water systems by American Water Works Association (AWWA), U.S. Environmental Protection Agency (EPA), Underwriters Laboratory (UL), National Sanitation Foundation (NSF), or other appropriate organization.

Ductile iron pipe and fittings shall comply with the latest application standards issued by the AWWA.

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PVC pipe shall bear the NSF seal for potable water and meet the requirements of ASTM D 1748 for Class 12454 compounds. The pipe shall meet the latest revisions of the applicable AWWA Standards.

B. INSTALLATION

Pipe installation shall comply with generally accepted standards of good workmanship, including applicable AWWA and industry standards, along with, but not limited to the following:

1. A continuous uniform bedding shall be provided, free of injurious stones or debris within six inches of the pipe in the bedding and cover material. Bedding may be excavated material if suitable.
2. There shall be a minimum of 36 inches of cover.
3. Except for street and driveway crossings, water lines shall be located outside of paved areas on easements off of street and road right of way. Exceptions will be considered on a case by case basis. Water lines shall be installed a minimum of 3' behind the back of the curb.
4. While under construction, unattended exposed pipelines must have the ends capped.
5. Adequate separation from other utilities for maintenance and/or repair should be provided.
6. Water mains shall be laid at least 10 feet horizontally from any sanitary sewer or manhole. Where local conditions prevent ten feet horizontal separation, the Association may allow the water line to be laid closer to the sewer line if the following requirements are met:
 - a. If local conditions prevent 10 feet horizontal separation, the water main may be laid closer to the sewer line provided they are in a separate trench and the bottom of the water line is 18 inches above the top of the sewer line.
 - b. Where this 10 foot horizontal separation cannot be maintained, the water line should be ductile iron with water line joints located at the maximum distance possible from sewer line joints. PVC pipe may be used if it is protected by a steel casing.

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- c. Where water lines cross sewer lines, the pipe segments should be centered to provide maximum spacing of joints of both water and sewer lines. A vertical separation of at least 18 inches should be maintained (water over sewer).
7. Water lines crossing ditches where less than 36 inches of cover is maintained or crossing streams should be ductile iron pipe, or PVC protected by a steel casing. Adequate support and anchorage should be provided on both sides of the ditch. Streams may be crossed by directional drilling with HDPE pipe provided the pipe is installed 10 feet below the stream bed.
8. Pipe lines including main and service lines that cross roadways shall be protected by a casing meeting the requirements of the agency involved. Casings for service lines under collector and local streets installed by open cut may be PVC pipe, HDPE pipe, or steel pipe. Encasements for all main lines shall be steel.
9. Pipe lines crossing railroads shall be protected by a steel casing. A copy of the Railroad permit for the crossing shall be furnished to the Association.
10. Each water user shall be supplied individually with a service line extended directly from the main line.
11. A sufficient number of valves shall be provided to limit the number of meters isolated during line maintenance and repairs. Valves shall be located and lines looped so that not more than twenty-five meters will be isolated at a time. Valve location spacing shall not exceed 1,000 feet along any segment. Valves shall be provided at each fire/flushing hydrant.
12. Pressure and leakage tests should be completed and conform to the current AWWA Standard, C 600 Section 5. Provide records of test results indicating witness.
13. There shall be no physical connection (cross connections) between the distribution system and any pipes, pumps, hydrants, or tanks whereby unsafe water or any contaminants may be caused to enter the water system.

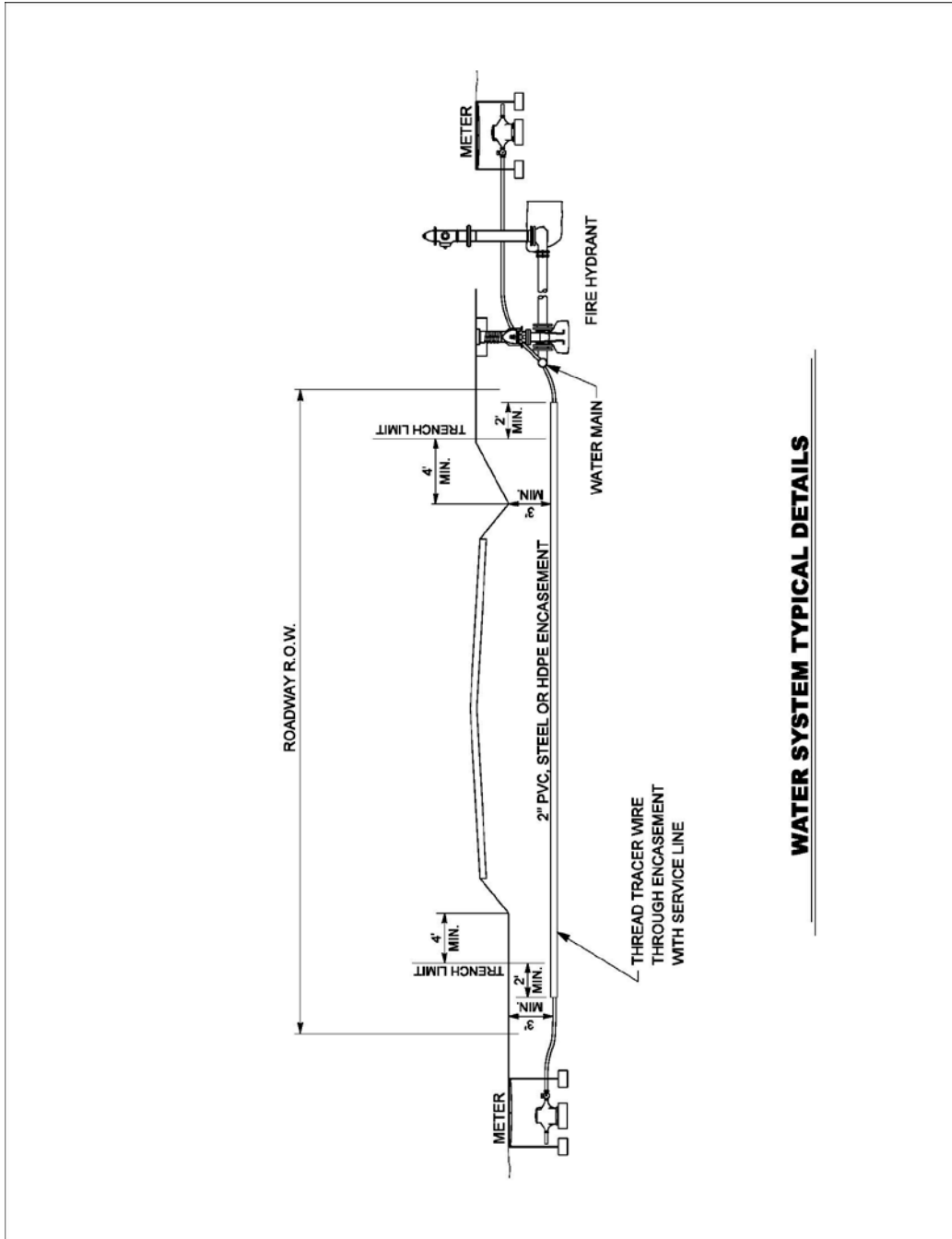
An appropriate backflow prevention device shall be installed on each service extension where an existing or potential health hazard exists or where a hazardous hydraulic condition may be allowed to exist.

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Prior to service being connected to a public water system, all wells or water sources owned or used previously by the potential customer shall be physically disconnected from the plumbing to be supplied by the public water system.

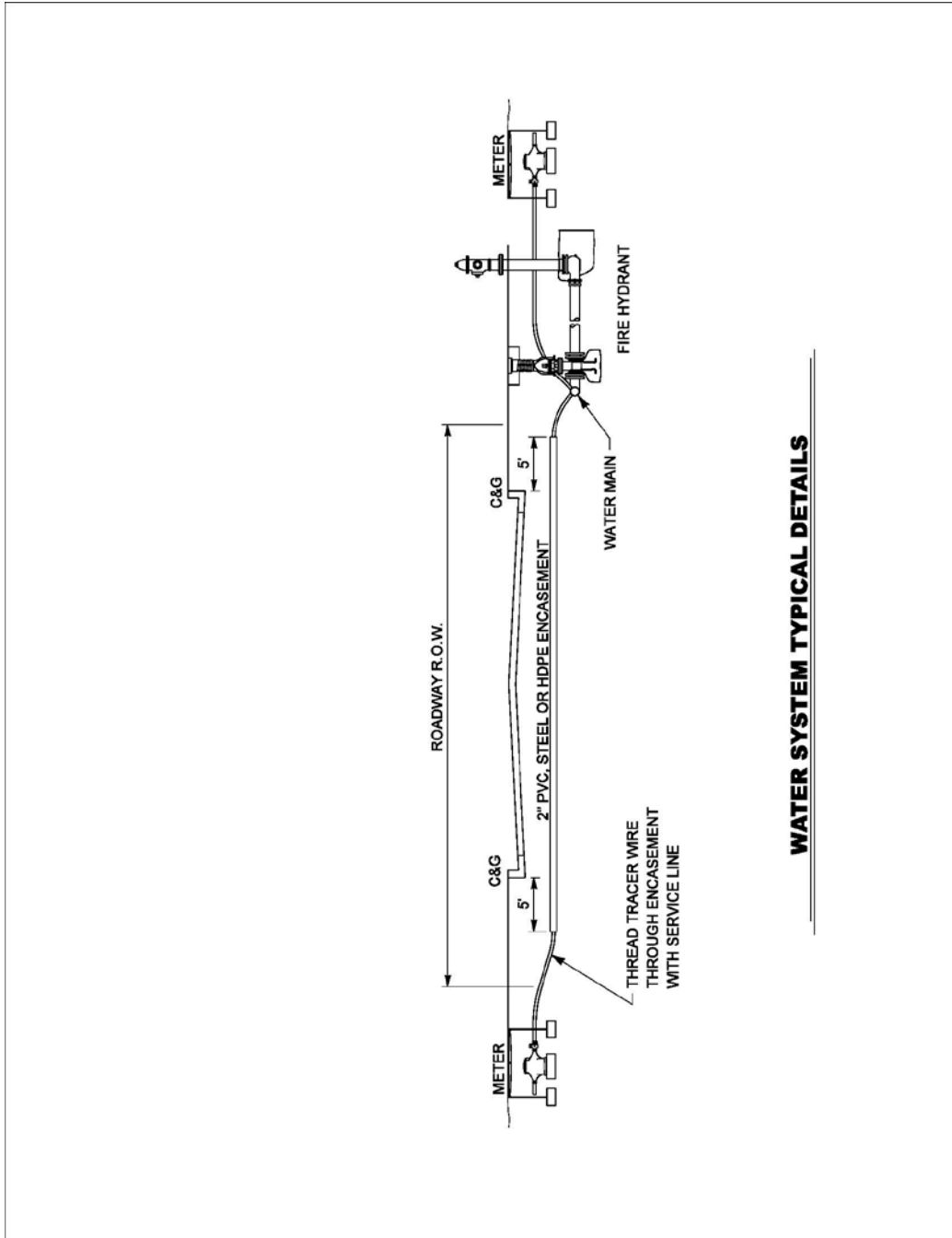
14. All service connections shall be made by the developer and extended from the main to the meter location.
15. The meter will be provided by and installed by the water association. The meter box and meter valve shall be provided by and installed by the developer before the meter will be installed.

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WATER SYSTEM TYPICAL DETAILS

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WATER SYSTEM TYPICAL DETAILS

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SECTION 310 - WATER PIPE LINES

1. GENERAL

Except as otherwise provided, water mains shall be 6" minimum, PVC or ductile iron pipe.

2. MATERIALS

Ductile Iron Pipe for water pipe lines where required shall be in accordance with ANSI/A21.50 and ANSI/A 21.51 mechanical or push-on jointed and shall be cement lined in accordance with ANSI/A 21.4. Rubber gasket joints shall be in accordance with ANSI 21.11. The pressure classes for ductile iron pipe shall be: PC 350 for 8"-12" pipe.

Flanged Joint pipe shall be in accordance with ANSI/A21.10 and ANSI/A21.15. Bolts used on underground flanges shall be a corrosion resistant type such as Corten, U.S. Alloy, silicon bronze or others with prior approval of the City.

Restrained Joint Pipe shall be rated for 250 PSI minimum. The joints, gaskets and accessories for restrained joints shall meet applicable requirements of ANSI/A21.11. Retainer glands for mechanical joint pipe shall be Megalug by EBAA Iron, Ford Uni-Flange Series 1400(DIP)/Series 1500(PVC) restrained joint devices.

Polyethylene Encasement material for ductile iron pipe shall be in accordance with ANSI/AWWA C105/21.5.

Plastic Pipe shall be rigid polyvinyl chloride pipe in accordance with ASTM Specification D-1784, cell classification 12454. Additives and fillers including, but not limited to, stabilizers, antioxidants, lubricants and colorants shall not exceed 10 parts by weight per 100 of PVC resin in the compound. Pipe shall be Class 200 (SDR 21) per ASTM D-2241 with integral bell for gasketed slip joints or AWWA C-900 Class 165 (DR25) with integral bell for gasketed slip joints. "O"-ring joints will not be accepted. Gasket joints shall be in accordance with ASTM D-3139. All plastic pipe shall be installed within one year of the date of manufacture indicated on the pipe.

Polyethylene (PE) Pipe for water line directional bores shall be high density polyethylene (HDPE) which meets or exceeds ASTM D3350 and shall have a minimum cell classification of PE445574C. The pipe material designation code shall be PE4710 or higher, and shall be listed as meeting ANSI/NSF 61. PE pipe shall meet the requirements of AWWA C906 (4" and larger), Ductile Iron Pipe Size (DIPS), DR13.5 PC160 or DR11 PC200. PE pipe for water lines shall be blue or black with blue stripes. Colors shall be extruded into the

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outside surface of the pipe and not printed on the surface. PE pipe shall be marked in accordance with the standards to which it is manufactured. All pipe furnished shall be accompanied by the manufacturer's certification of conformance to the referenced specifications.

Ductile Iron Fittings Fittings for ductile iron and PVC pipe shall be ductile iron mechanical joint fittings, ANSI/AWWA C153/A21.53. Fittings shall be rated for a working water pressure of 350 psi. Ductile iron fittings shall be uniformly coated on the inside with cement-mortar lining conforming to ANSI Specifications A21.4.

EBAE Iron Megalug glands and gaskets or Ford Uni-Flange Series 1400(DIP)/Series 1500(PVC) restrained joint devices shall be used on all mechanical joint fittings.

Pipe Fittings for Flanged Connections shall be ANSI Specifications A21.10, Class 125, ductile iron fittings.

Thrust Blocks Concrete thrust blocks shall be installed around fittings at the locations and of the volume and strength required to withstand thrust reactions at the test pressure. Where directional changes occur in a vertical plane, approved mechanical retainers shall be used.

3. JOINTING

Ductile Iron Pipe - In general, all joints shall be in accordance with the manufacturer's instructions exercising extreme care to clean all parts before assembly. Joints shall be made under dry conditions. Underground flanges shall be wrapped with 8 mil black polyethylene material conforming to ANSI A21.5 and taped in place before backfilling.

Plastic Pipe - Joints in plastic pipe shall be rubber gasket push-on type. Push-on joints shall be made in accordance with the manufacturer's instructions. The resulting joints shall be clean and watertight.

Polyethylene (PE) Pipe joints shall be joined by fusion welding in accordance with industry standards.

PE pipe shall be joined to PVC or ductile iron pipe with mechanical joint adapters with stainless steel stiffeners. Polyethylene (PE) pipe fittings shall be PE4710 high density polyethylene meeting ASTM D3350 with a minimum cell classification of PE445574C. All fittings and custom fabrications shall be pressure rated for the same internal pressure rating as the mating pipe.

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4. ENCASEMENTS

Encasement for water lines at roadway crossings shall be new black steel pipe per ASTM A252, Grade 2, ASTM A53, Grade B or better. Minimum wall thickness shall be 0.188" for sizes 12" and less and 0.250" for 14" and above or as required by the agency involved. Joints shall be welded. Trenching and backfilling shall be performed in conformity with the Water Pipe Lines standard.

Casing spacers shall be used to support and protect the carrier pipe. Casing spacers for PVC carrier pipe shall be polyethylene, Advanced Products Model CI or CCI Model CSP. Casing spacer for ductile iron carrier pipe shall be epoxy coated steel with polymer runners, Advanced Products Model SI or CCI Model CSC. Casing spacers shall be installed according to the manufacturer's instructions.

The ends of the encasement shall be sealed with wrap-around neoprene rubber end seals, Advanced Products Model AW or CCI Model ESW.

5. PIPE LAYING

The pipe shall be lowered into the trench in such a manner as to prevent damage to the pipe or pipe coating. It shall not be dropped or dumped during unloading or laying. Foreign matter and dirt shall be prevented from entering the pipe. A minimum cover of 36 inches, measured from the top of the pipe shall be provided. Plastic pipes not encased and under vehicular traffic areas shall be covered at least 48".

Encase ductile iron pipe, fittings, valves, and appurtenances with polyethylene encasement in accordance with the requirements of AWWA Standard C105.

6. TRACER WIRE AND MARKING TAPE

Tracer Wire for Open Trench applications and for directional bores under 200' long shall be #12 AWG copper clad steel, high strength with a minimum 445 lb. break load, with minimum 30 mil thick HDPE or high molecular weight polyethylene insulation, Copperhead 1230-HS.

Tracer Wire for Directional Bores 200' or longer shall be two (2) #12 AWG copper clad steel, extra high strength with minimum 1,150 lb. break load with minimum 45 mil thick HDPE or high molecular weight polyethylene insulation, Copperhead 1245-EHS.

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For sections of HDPE or other plastic pipe installed in bores in main runs of ductile iron pipe tracer wire shall be #8 AWG, hard copper with minimum 820 lb. break load, with minimum 45 mil thickness HDPE or high molecular weight polyethylene insulation, Pro-Line Safety Products Type CU HDPE 45 MIL.

Tracer wire insulation shall be blue.

Direct Bury Wire Connectors shall be three-way lockable connectors and mainline to lateral lug connectors specifically manufactured for use in underground tracer wire installations. Connectors shall be pre-filled with dielectric silicone.

Non-locking friction fit, twist-on, or taped connectors are prohibited.

Connectors shall be Copperhead SnakeBite Locking Connector or Copperhead 3WB-01 Mainline-to-Service Connector.

Install tracer wire along all mains and service lines to facilitate location with a pipe locator. Lay the tracer wire in the trench with the pipe. At creek crossings, tape the tracer wire to the pipe. At roadway and railroad bores, place the tracer wire through the encasement with the pipe to provide a continuous circuit. Make splices with connectors noted above. Remove sufficient insulation to provide copper-to-copper contact in the splices. Terminate tracer wire in valve boxes, meter boxes and at other points as required for ease of future access.

Install 3" wide blue detectable tape one foot below the ground surface directly over the pipe line. The tape shall be "Terra Tape Sentry Line", Reef Industries or equal. "CAUTION - WATER LINE BELOW" shall be imprinted on the tape.

7. BACKFILLING

Trenching and excavation shall be backfilled immediately after the pipes are laid. The initial backfill shall extend to 12" above the pipe. The initial backfill shall be thoroughly and carefully tamped before the next layer is placed. The remainder of the backfill shall be as follows:

In areas not to be paved, the backfill may be fine, loose soil, free from large clods, stones, frozen earth, debris, or any material with an exceptionally high void content. The backfill may be accomplished by dozing in layers of approximately one foot each. A windrow shall be left over the trench and bladed and shifted as necessary as settling

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occurs. For graveled areas, after maximum settlement has been reached, excess material shall be hauled away and washed gravel or crushed stone added as necessary.

In areas to be paved, the trench soils shall be tested by the design Engineer to determine their suitability for use as backfill material. If the trench soils are found to be unsuitable, they shall be replaced with suitable materials. Backfill in areas to be paved shall be placed in 12" lifts and each lift compacted to 95% Standard Proctor density. Backfill shall extend to the top of the subgrade.

8. BACKFILL TESTING

The location of density tests shall be at the discretion of the design Engineer. Generally, one sample will be taken mid-trench depth and one on top of the material each 200' \pm along the trench. In the event of failed density tests, the compaction shall be continued and water added until the optimum moisture content is reached and the samples meet or exceed the specified minimum density.

9. PRESSURE TESTING

After the pipe has been laid, all newly laid pipe and selected valved sections shall be subjected to a hydrostatic pressure of at least 90% of the rated working pressure of the pipe but not to exceed 180 psi.

Test Pressures shall:

1. Not exceed pipe or thrust-restraint design pressures (Backfill pipe trenches sufficiently and provide reaction blocking during hydrostatic testing).
2. Be of at least 2-hour duration.
3. Not vary by more than \pm 5 psi for the duration of the test.
4. Not exceed the rated pressure of the valves when the pressure boundary of the test section includes closed, resilient-seated gate valves or butterfly valves.

Each valved section of pipe shall be slowly filled with water. The specified test pressure shall be applied by means of a pump connected to the pipe in a satisfactory manner. Valves shall not be operated in either the opening or closing direction at differential pressures above the rated pressure. The system shall be allowed to stabilize at the test pressure before the leakage test is conducted.

Before applying the specified test pressure, air shall be expelled completely from the

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section of pipe under test. If permanent air vents are not located at all high points, corporation cocks shall be installed at such points so that the air can be expelled as the line is filled with water. After all the air has been expelled, the corporation cocks shall be closed and the test pressure applied. At the conclusion of the pressure test, the corporation cocks shall be left in place and record of their location provided.

Damaged or defective pipe, fittings, valves, or hydrants that are discovered following the pressure test shall be repaired or replaced and the test shall be repeated until satisfactory results are obtained.

A leakage test shall be conducted concurrently with the pressure test. Leakage shall be defined as the quantity of water that must be supplied into pipe to maintain pressure within 5 psi of the specified test pressure after the pipe has been filled with water and the air has been expelled. Leakage shall not be measured by a drop in pressure in a test section over a period of time.

No pipe installation will be accepted if the leakage is greater than the allowable leakage at various pressure as shown in Table 1.

TABLE 1
Allowable Leakage per 1000 ft of Pipeline*-----gph

Avg. Test Pressure psi	Nominal Pipe Diameter - in.									
	3	4	6	8	10	12	14	16	18	24
180	0.31	0.41	0.61	0.81	1.01	1.21	1.41	1.61	1.82	2.42
175	0.30	0.40	0.59	0.80	0.99	1.19	1.39	1.59	1.79	2.38
150	0.28	0.37	0.55	0.74	0.92	1.10	1.29	1.47	1.66	2.21
125	0.25	0.34	0.50	0.67	0.84	1.01	1.18	1.34	1.51	2.01
100	0.23	0.30	0.45	0.60	0.75	0.90	1.05	1.20	1.35	1.80

*If the pipeline under test contains sections of various diameters, the allowable leakage will be the sum of the computed leakage for each size.

When testing against closed metal-seated valves, an additional leakage per closed valve of 0.0078 gal/h/in. of nominal valve size shall be allowed. Acceptance shall be determined on the basis of allowable leakage. If any test of pipe laid discloses leakage greater than that specified, repairs shall be

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made as necessary until the leakage is within the specified allowance.

All visible leaks are to be repaired regardless of the amount of leakage. Tests must be observed by appropriate Association Officials and certification of such observance must appear on the test record.

10. DISINFECTION AND BACTERIOLOGICAL TESTING

Disinfection shall be in valved sections and may be done concurrently with pressure testing. Flushing and disinfection shall be in accordance with AWWA Specification C651.

AWWA C651 lists four methods of chlorination which are listed below with general information. **REFER TO AWWA C651 FOR MORE DETAILS.**

1. Tablet/Granule method of chlorination uses calcium hypochlorite granules or tablets during construction. AWWA C651 has tables that detail the dosage rates for calcium hypochlorite granules and tablets based on the size of the pipeline. This chlorination process uses the water that is used to initially fill the line. **DO NOT USE CALCIUM HYPOCHLORITE INTENDED FOR SWIMMING POOLS.**
2. The Continuous-Feed method of chlorination can be used if the new pipeline is flushed prior to chlorination. AWWA C651 requires the chlorine to be fed at a constant rate such that the water will have not less than 25 mg/L free chlorine. Chlorine may be gas or a 1% solution made with either sodium hypochlorite or calcium hypochlorite.
3. The other two methods basically only apply to very large mains.
4. Heavily chlorinated water shall be disposed of according to Mississippi Department of Environmental Quality regulations.

After completion of the disinfection, arrangements shall be made to collect a least one sample from every dead-end line and every major looped line for bacteriological examination. The sample shall be collected by a representative of the Mississippi State Department of Health or the registered professional Engineer in charge of the project or the certified operator of the public water supply. Water being collected for testing shall not have a chlorine residual higher than is normally maintained in other parts of the distribution system.

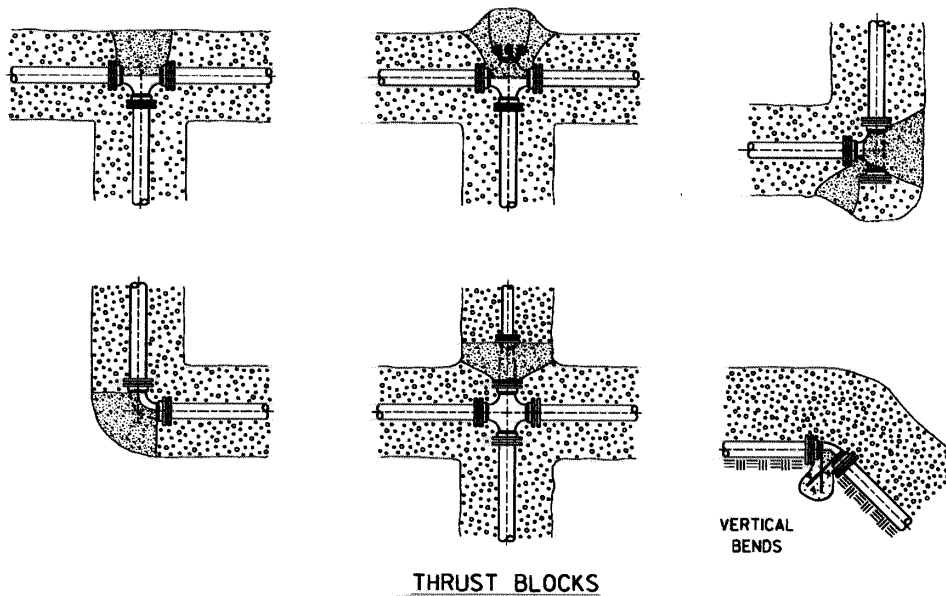
NO COLIFORM BACTERIA AND NO CONFLUENT GROWTH INDICATION SHALL

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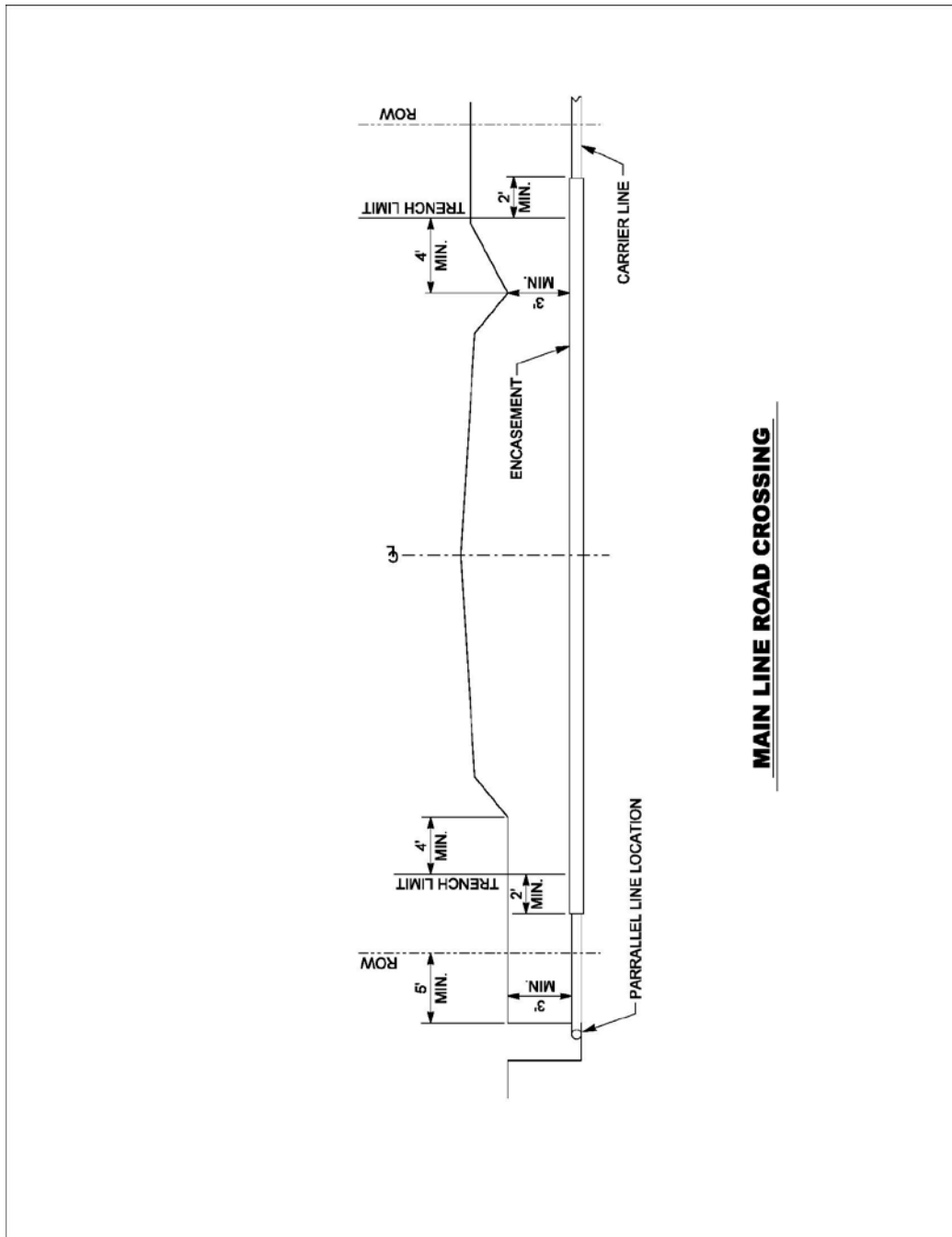
CONSTITUTE A SATISFACTORY SAMPLE WHEN ANALYZED BY THE MISSISSIPPI STATE DEPARTMENT OF HEALTH OR A LABORATORY CERTIFIED BY THE STATE. A COPY OF THE TEST RESULTS SHALL BE FURNISHED TO THE ASSOCIATION.

11. SEPARATION OF WATER MAINS AND SEWER Water mains shall be laid at least 10 feet horizontally from any parallel sanitary sewer or storm sewer; the distance shall be measured edge-to-edge. When local conditions prevent a horizontal separation of 10 feet, the bottom of the water main shall be ductile iron pipe and shall be laid at least 18 inches above the top of the sewer. Water mains crossing sanitary sewers shall be laid to provide a separation of at least 18 inches between the bottom of the water main and the top of the sewer. No water pipe shall pass through or come into contact with any part of a sewer manhole. In places where the water line passes underneath a sanitary sewer line, the water line shall be installed so the midpoint of a full pipe length of water line is centered on the sanitary sewer.

Deviations must be approved by the Association on a case by case basis.



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MAIN LINE ROAD CROSSING

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SECTION 316 - PIPELINE AND VALVE IDENTIFICATION MARKERS

1. GENERAL

Unless otherwise directed by the Association, pipeline and valve identification markers shall be installed at approximately 500 foot intervals along the pipeline, at roadway intersections, at turns in the line, at ditch or creek crossings, at the peaks of ridges, at tracer wire test stations, and at valves.

2. MATERIALS

Pipeline and Valve Identification Markers shall be triangular or flat and manufactured of flexible UV stabilized material. The markers shall be 66" long.

Decals shall be UV stable and feature the international "No-Dig" symbol and have a highly visible color-coded warning that identifies the water pipeline. The decal shall include the "811" symbol, the Owner's name (Oktoc Water Association), and emergency telephone number (662-312-7377).

Color of markers and decals shall be blue.

Pipeline and Valve Identification Markers shall be Rhino TriView Flex #TVF66UB, Rhino 3-Rail Marker #FR66-B, or Carsonite 3-Rail Marker #CRM3-066-08.

2. INSTALLATION

The Pipeline and Valve Identification Markers shall be installed into the ground 18 inches deep in order to leave 48 inches visible above ground.

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SECTION 320 - VALVES & BOXES

1. MATERIALS

Gate Valves shall be resilient seated gate valves conforming to AWWA Standard C509/C515, iron body, bronze mounted, non-rising stem with O-ring seals, opening counterclockwise. All cast iron parts, inside and out except contact or bearing surfaces of resilient seated valves, shall be coated with an approved surface tolerant hi-solids catalyzed epoxy coating. Buried valves shall have an AWWA wrench nut and mechanical joint ends, but may have flanged ends (ANSI B16.1) - (125 lb.) where necessary. Gate valves shall be Mueller A-2361 or M & H Style 7000.

Joint Restraints shall be used on all mechanical joint valves. Joint restraints for mechanical joints shall be Megalug by EBAA Iron, Ford Uni-Flange Series 1400(DIP)/Series 1500(PVC) restrained joint devices.

Valve Boxes for underground installation of valves shall be fine grain gray iron castings, 5-1/4 inch shaft, screw type, adjustable height, round base, Vulcan V8460, Fastech or equal per ASTM Specification A48 Class 30B. Shaft extension pieces shall be installed where necessary. Valve boxes shall have the word "WATER" cast into the top of the cover. Valve boxes shall not be painted.

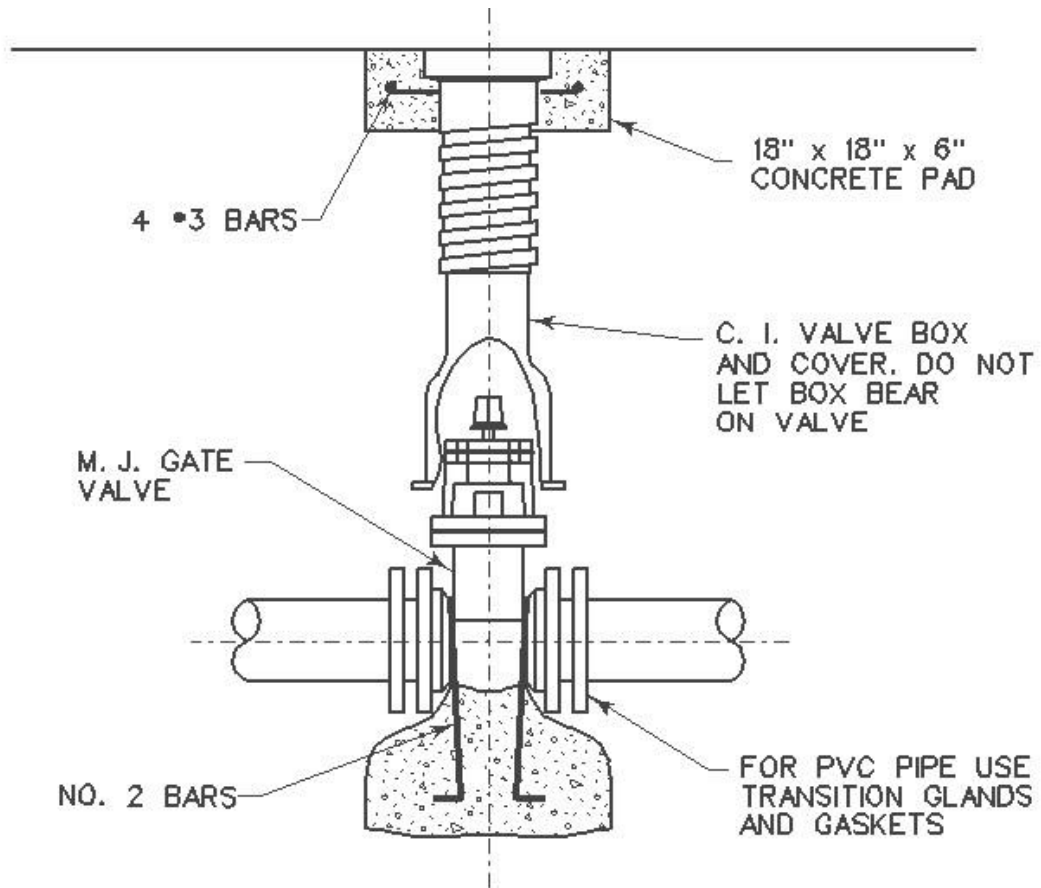
2. INSTALLATION

Valves and boxes shall be installed truly vertical. Joints and leakage shall be as specified under the Water Pipe Lines standard. The valve box shall not transmit shock or stress to the valve and shall be centered and plumb over the wrench nut of the valve.

In unpaved areas, an 18"x18"x6" reinforced, formed concrete pad shall be provided at the finished grade around the top of the box. Precast concrete valve box pads may be used. Precast concrete valve box pads shall be round measuring 24" in diameter with a 10" diameter hole in the center, 4" thick in the center, and 2" thick at the edge. The precast concrete valve box pad shall have two rings of #3 rebar reinforcement. When precast concrete valve box pads are used, valve boxes shall be secured by grouting the space between the box and the pad.

Valves shall be tied with steel rods to concrete thrust blocks.

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VALVE INSTALLATION
(DIP AND 4" DIA. PVC AND LARGER)

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SECTION 330 - FIRE HYDRANTS

1. GENERAL

Fire hydrants shall be installed in residential developments served by water lines 6 inches in diameter or greater.

2. DESCRIPTION

Fire hydrants shall conform to AWWA Standard C-502. Hydrants shall be Mueller "Super Centurion - 250 A423" or M & H "Style 129" rated for a minimum 250 psi working pressure. Hydrants shall have a 5-1/4" valve for connections to mains with 6" mechanical joint connections, with 42" minimum cover and shall be fitted with 2-1/2" hose connections and one 4-1/2" steamer connection with National Standard threads. Stems shall be provided with "O"-ring seals. The above ground part of the hydrant shall be given a prime coat then two coats of an approved, weather-proof Fire Hydrant Red paint. Hydrants shall be of the traffic model type. The riser shall be designed so that if breakage occurs, the breakage flange, ring or bolts and the stem will break before damage is done to the riser and the hydrant can be restored to service by replacing the breakage parts.

3. INSTALLATION

Hydrants shall be set perpendicular and the base braced against the water pressure at the shoe with concrete blocking. Three cubic feet of washed gravel shall be placed around the drain port to provide for water absorption to prevent freezing. Concrete blocking shall not interfere with hydrant drainage.

Hydrants shall be set so that the steamer connection faces the main road.

Hydrants shall be spaced at not more than 500 feet in residential developments and at not more than 300 feet in commercial developments. A clear space shall be provided around all fire hydrants defined by a circle with a minimum radius of 4 feet.

The collision ring of hydrants shall be set flush with (not below) the finished grade surface or not more than 6" above the finished surface. Barrel extension sections shall be installed where necessary.

A valve shall be provided to isolate each hydrant from the main line. The valve shall be furnished and installed in accordance with the VALVES AND BOXES section.

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SECTION 331 - FLUSHING HYDRANTS

1. GENERAL

Flushing hydrants shall be installed on dead-end lines that are smaller than 6 inches in diameter.

2. DESCRIPTION

Flushing hydrants shall be of the post type dry barrel design. Stems shall be provided with "O" ring seals. Flushing hydrants shall be Mueller A-411 or M & H Style 33. Flushing hydrants shall have a minimum 2-1/8" main valve size with 2" mechanical joint for connection to mains, with 36-inch cover, and shall be fitted with one 2-1/2" hose connection with National Standard threads, brass ferrules, and shall open counter-clockwise. Each hydrant shall be provided with a cast-iron nozzle cap chained to the barrel. The above ground part of the hydrant shall be given a prime coat then two coats of an approved, weather-proof Fire Hydrant Red paint.

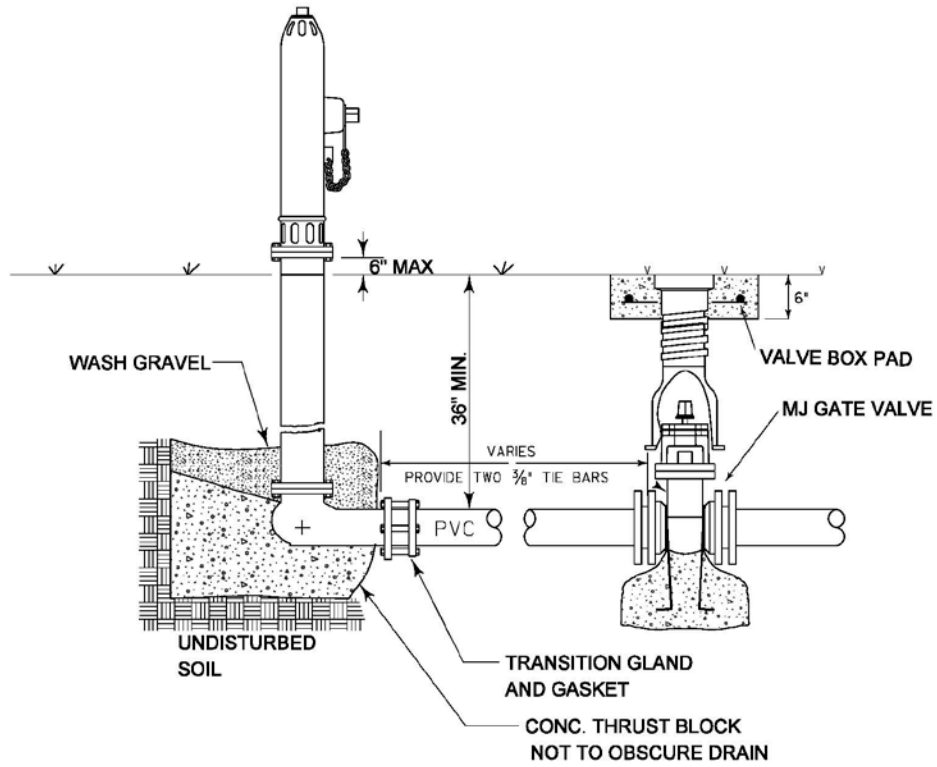
3. INSTALLATION

Set flushing hydrants perpendicular, and brace the base against the water pressure at the shoe by concrete thrust blocking. Place 2 cubic feet of washed gravel around the drain port to provide for water absorption to prevent freezing. Concrete blocking shall not interfere with hydrant drainage. Set the barrel flange of hydrants flush with (not below) the finished surface to 6" above the finished surface.

Install flushing hydrants so as to have the hose connection facing the main road.

A valve shall be provided to isolate each flushing hydrant from the main line. The valve shall be furnished and installed in accordance with the VALVES AND BOXES section of the Standards.

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TYPICAL FLUSHING HYDRANT INSTALLATION

NOT TO SCALE

SECTION 340 - WATER SERVICE CONNECTIONS

1. GENERAL

This standard covers the installation of a corporation stop in the water main, the water service line extending from the water main outward towards the road right-of-way line and the meter valve at the line terminus.

2. CONNECTIONS TO MAINS

Connection to water mains shall be made with the service line horizontal and watertight using an approved sealer on all screwed joints. Corporation stops shall be set in an up-45 degree position. Two inch service lines shall be connected using a PVC Schedule 80 female adapter (IPT/Socket).

To Ductile Iron Mains For 3/4" and 1" services, a bronze corporation stop with AWWA/CC x Pack Joint connection, Mueller P-25008N or Ford FB1000 shall be installed in the main using a dry tap.

To PVC Mains For 3/4" and 1" services, a properly sized, single strap, bronze service saddle with AWWA/CC taper threads, Mueller H-13420/30/40 series or Ford S70A/S90A shall be installed with a bronze corporation stop with AWWA/CC x Pack Joint connection, Mueller P-25008N or Ford FB1000.

3. SERVICE LINES

Service lines shall be blue flexible polyethylene tubing, CTS, SDR 9, 250 psi, per ASTM D2737 (PE4710) 3/4" and 1". All tubing and pipe shall have the manufacturer's name and NSF logo identification number. Generally, service lines shall be installed with a minimum bury of 24" and shall be laid to conform roughly to the topography of the ground. Under ditches, the minimum bury shall be 36" (measured from the bottom of the ditch). Trenching, backfilling and pipe laying shall be performed in conformity with the Water Pipe Lines standard.

4. ENCASEMENTS

Encasement for service lines at roadway crossings shall be 2" Schedule 40 PVC with solvent weld couplings, Sch40 steel, or DR 17 HDPE. Trenching and backfilling shall be performed in conformity with the Water Pipe Lines standard.

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5. SERVICE LINE TERMINALS

Each 3/4" and 1" service shall terminate with a bronze meter valve with Pack Joint connection x meter coupling and lock wing, Mueller P24350N or Ford B43-332W-NL set in a meter box near the right-of-way line. All joints shall be watertight.

A teaspoon or 1 tablet of calcium hypochlorite granules shall be placed in each service connection before setting.

Meter boxes shall be plastic, 12"x17"x12", with drop-in cover with cast iron reader door, NDS D1200-DICIR, USA BlueBook D-1200, or equal. Set a t-post guard at each meter box.

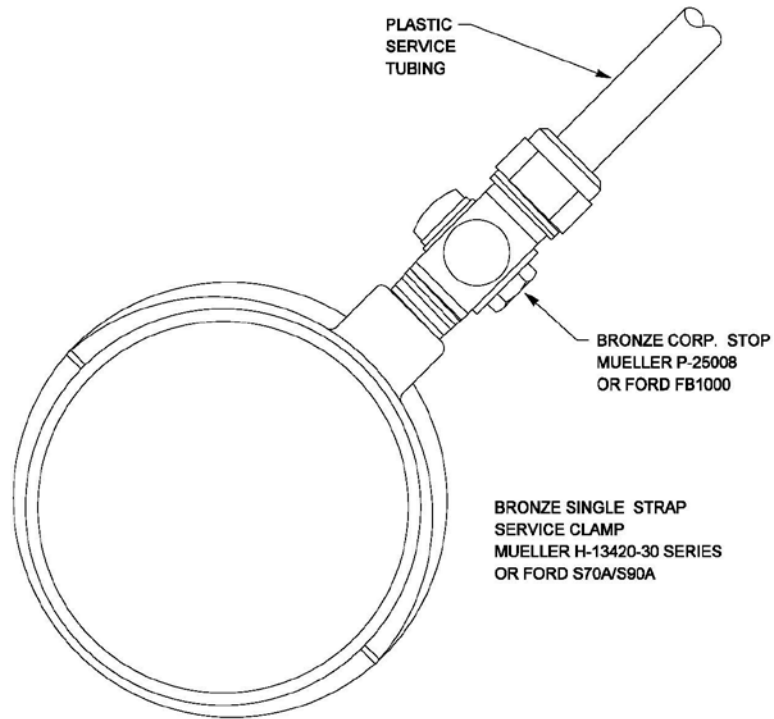
6. TRACER WIRE

Tracer wire shall be installed with all service lines according to the Water Pipe Lines section standard.

7. FLUSHING

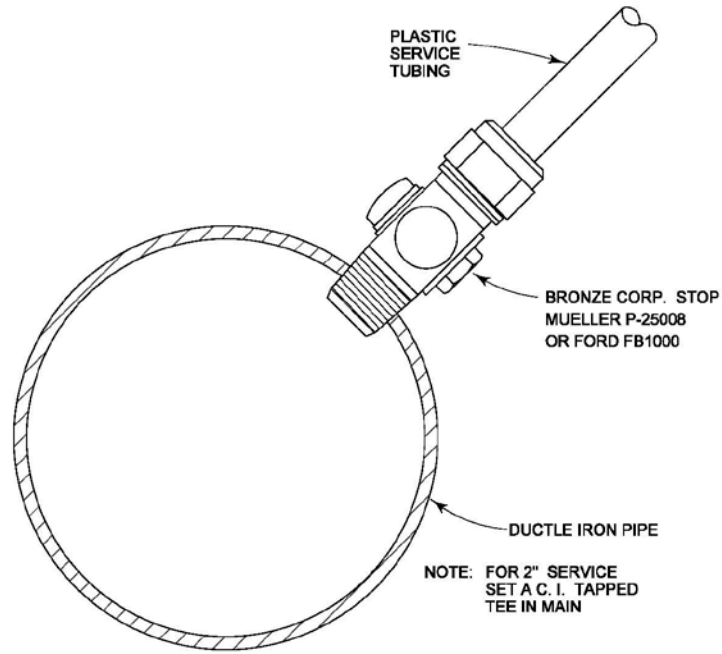
After completion of the service assembly installation, each service shall be thoroughly flushed. During sterilization of the mains, the meter valve shall be opened to allow chlorinated water to pass through each service. Samples for MSDH bacteria tests may be taken from services, in which case, the service shall be thoroughly flushed with fresh water after permitting the chlorine solution to stand as required for disinfection.

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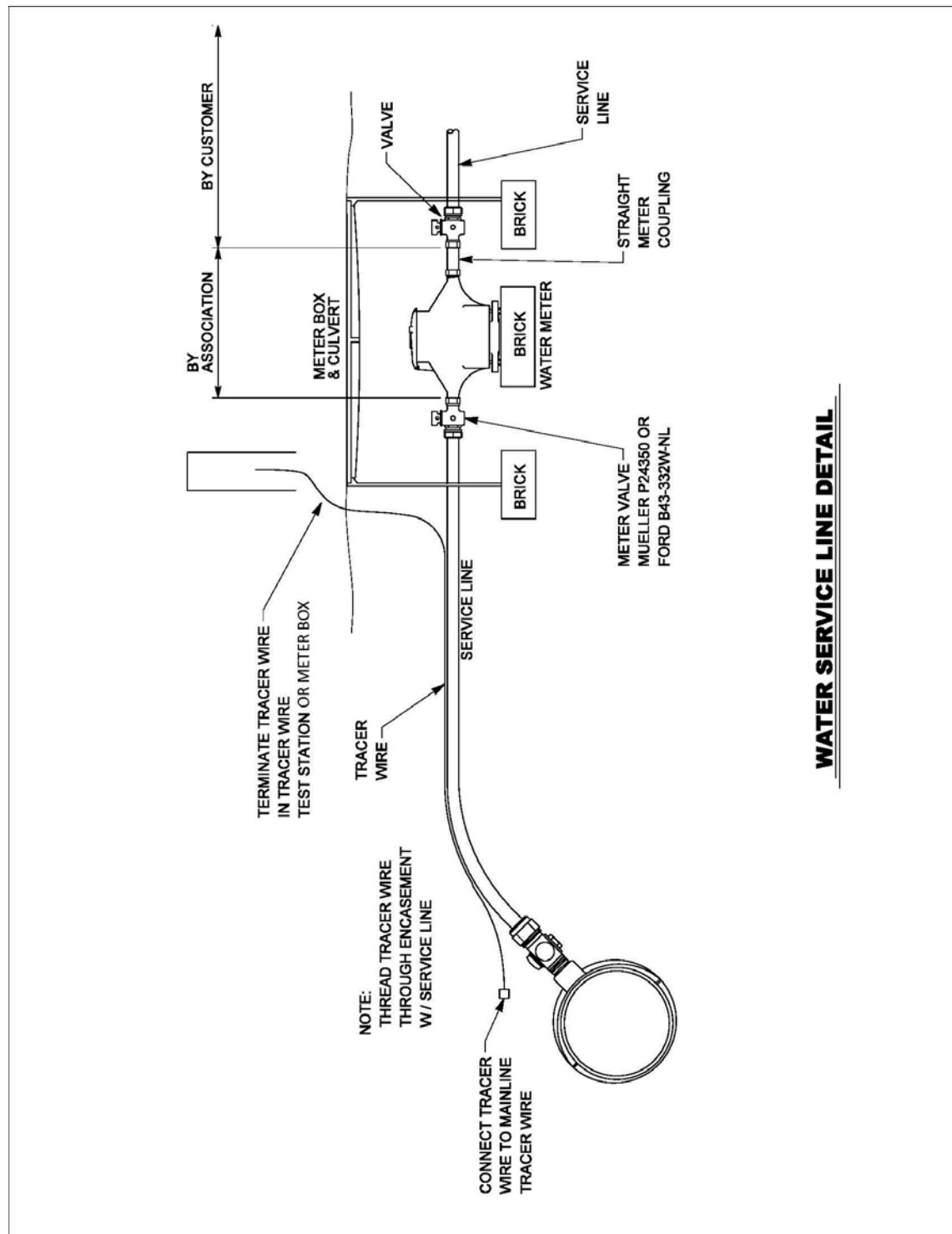
**3/4" & 1" SERVICE CONNECTION
TO PVC MAIN**

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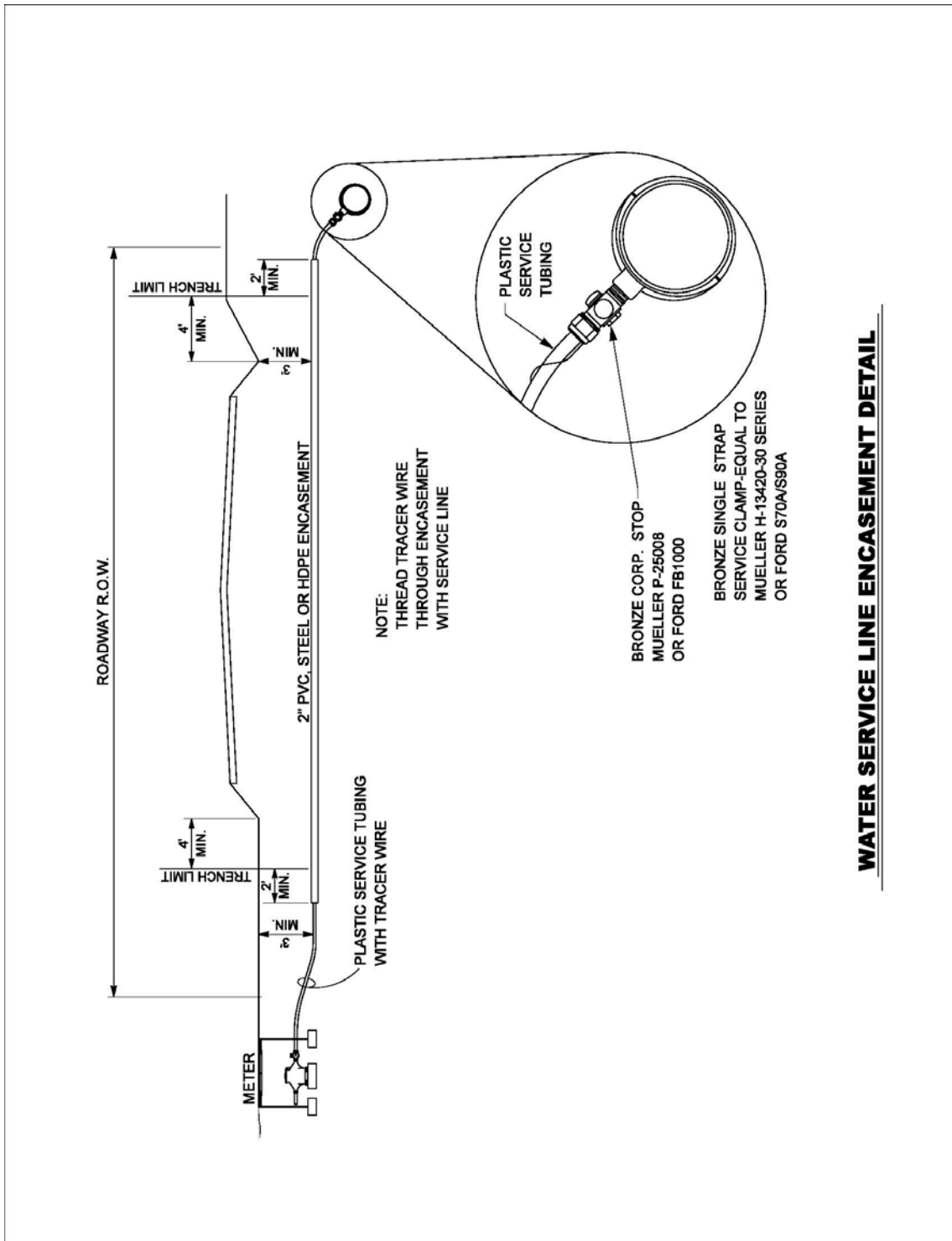


SERVICE CONNECTION
TO DIP MAIN

OKTOC WATER ASSOCIATION
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WATER SERVICE LINE DETAIL



WATER SERVICE LINE ENCASEMENT DETAIL

SECTION 350 - CONNECTIONS TO EXISTING MAINS

1. GENERAL

Connections to existing water mains shall be made as directed and in cooperation with the Association water operator. Schedule taps so as to interfere as little as possible with the operation of the system.

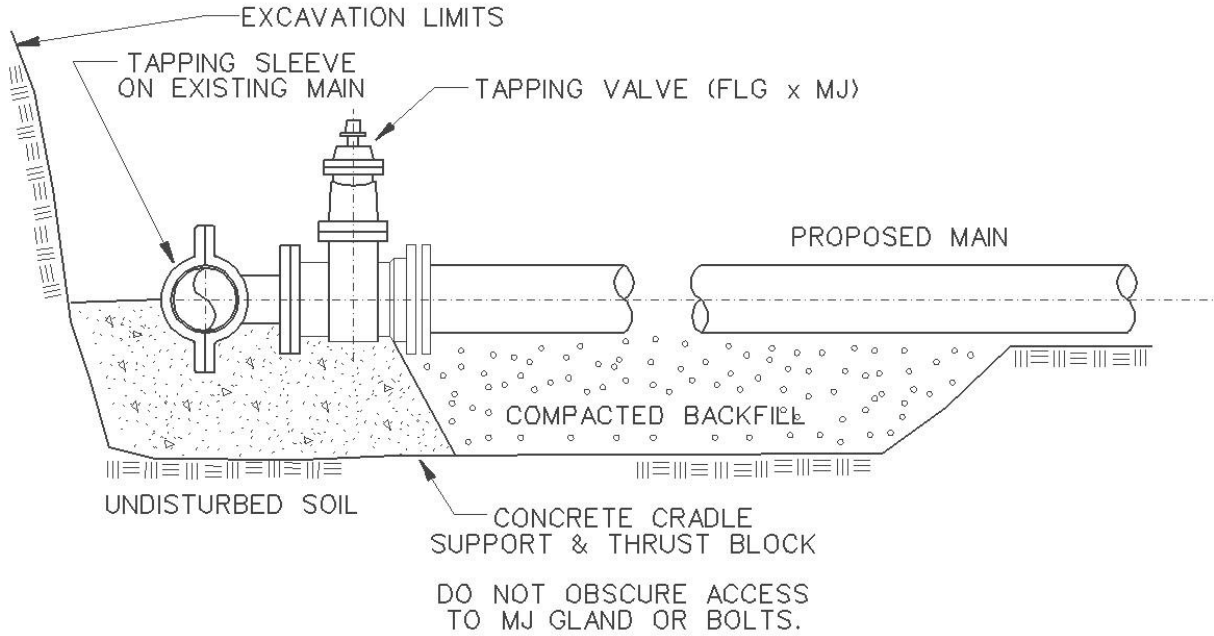
2. MACHINE TAPS

Where the water cannot be cut off on a line to be tapped, make the tap under pressure using a tapping sleeve and a tapping valve in accordance with the tapping machine manufacturer's instructions. Furnish the tapping machine required for a machine tap under pressure. Tapping sleeves for machine taps to ductile iron mains shall be ductile iron body, Mueller H-615. Tapping sleeves for machine taps to PVC mains shall be solid stainless steel body and flange, Mueller H-304SS, JCM432, or Ford FAST.

Valves for machine taps shall be resilient wedge tapping valves conforming to AWWA C509/C515 with stainless steel nuts and bolts on the stuffing box and valve bonnet. Mueller T-2361 MJ x FL, or M & H Style 7950 Tap x MJ.

1. Connections to existing water mains shall be made by machine taps except as directed otherwise.
2. The tap shall be made in the presence of an Association employee after MSDH approval is provided. No work will be permitted without an Association employee present.
3. All work shall conform to applicable requirements of The Oktoc Water Association.
4. Surfaces shall be restored in accordance with Association Standards.
5. Damages shall be repaired at no cost to the Association.
6. The installer shall be liable for the cost of the removal of contaminants introduced into the system as a result of the work.

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MACHINE TAP DETAIL

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SECTION 360 - WATER SYSTEM CONSTRUCTION RECORDS

The Developer shall furnish the Oktoc Water Association the following information at the end of construction of the water system improvements project before customers can be connected.

1. A copy of the Mississippi State Department of Health's final approval letter.
2. A copy of the Engineers certification that the improvements were constructed in substantial conformance with the approved construction plans and specifications.
3. RECORD DRAWINGS shall accurately represent the completed construction including locations of service stubouts and appurtenances.

RECORD DRAWINGS of the completed construction shall be provided in both hard copy and electronic formats. Provide four (4) printed sets and two (2) sets on CD or other media in PDF or other acceptable machine readable file format.

4. Copies of the manufacturer's literature necessary for reference in operating and maintaining the facilities including but not limited to manufacturer's product descriptive literature for materials incorporated into the work, operation and maintenance manuals for equipment, copies of basic warranty information, etc.
5. Contact information for the sources of supply of materials.
6. Copies of Mississippi State Department of Health bacteriological test results.
7. Other information as may be requested by the Association.

Item No.	Location	Description	Nominal Size	Basic Material	Specification Reference	Rating	Manufacturer #1	Manufacturer #2	Notes
1	Main	Main Line Tapping Saddles	All	Ductile Iron	NSF 61	250 PSI	Mueller H-615		Flanged Outlet
2	Main	Main Line Tapping Saddles	All	Stainless Steel	NSF 61	250 PSI	Mueller H-304SS	Ford FAST or JCM432	Flanged Outlet
3	Main	Tapping Valves	All	Ductile Iron	AWWA C509/C515	350 PSI	Mueller T-2361	M&H 7950	Resilient Seat, Mechanical Joint x Flange
4	Main	Line Valves	All	Ductile Iron	AWWA C509/C515	350 PSI	Mueller A-2361	M&H 7000	Resilient Seat Gate Valve, Mechanical Joints
5	Main	DIP Water Lines	4"-12"	Ductile Iron	AWWA	PC 350	-	-	Push On Rubber Gasket Joints
6	Main	Polyethylene Encasement for Ductile Iron Pipe	All	Polyethylene	AWWA C105	-	-	-	Wrap All Ductile Iron Pipe
7	Main	PVC Water Lines	4"-12"	PVC	ASTM D2241	PR 200	-	-	ASTM D3139 Push On Rubber Gasket Joints
8	Main	PVC Water Lines	4"-12"	PVC	AWWA C900	DR25, PC165	-	-	Push On Rubber Gasket Joints
9	Main	Valve Boxes	All	Cast Iron	-	-	-	-	Screw Adjust with "WATER" cast on cover
10	Main	Valve Box Extension	All	Cast Iron	-	-	-	-	Screw Adjust
11	Main	Tracer Wire	#12 AWG	Copper Clad Steel	-	-	Copperhead 1230-HS (Blue)	-	Main Lines
12	Main	Trace Wire for Directional Bores =/>200'	#12 AWG	Copper Clad Steel	-	-	Copperhead 145-EHS	-	Mainl Lines
13	Main	Tracer Wire Locking Connectors	#12 AWG	Plastic	-	-	Copperhead Snakebite Locking Connector	-	
14	Main	Tracer Wire Branch Connectors	#12 AWG	Plastic	-	-	Copperhead 3WB-01	-	Mainline-to-Service Connector
15	Main	Pipeline and Valve Markers	66"	Plastic	-	-	Rhino TriView TVF66UB or 3-Rail FR66-B	Carsonite 3-Rail CRM3-066-08	Blue with Warning Labels
16	Main	Fittings for Main Lines	3"-12"	Ductile Iron	AWWA C153	-	-	-	Mechanical Joints
17	Main	Mechanical Joint Restraint Devices	3"-12"	Ductile Iron	AWWA C153	-	EBAE Iron Megalug	Ford Uni-Flange Series 1400/1500	
18	Main	Encasements		Steel	ASTM A53 or A252	-	-	-	Astm A53 Grade B, ASTM A252 Grade 2 or Better
19	Main	Casing Spacers for PVC Pipe	All	Polyethylene	-	-	Advanced Products Model CI	CCI Model CSP	
20	Main	Casing Spacers for Ductile Iron Pipe	All	Epoxy Coated Steel	-	-	Advanced Products Model SI	CCI Model CSC	
21	Main	Encasement End Seals	All	Neoprene Rubber	-	-	Advanced Products Model AW	CCI Model ESW	Wrap Around
22	Main	Fire Hydrants, 3-Way	6"-12"	Cast Iron	AWWA C502	-	Mueller A-423	M&H Style 129	5-1/4" main valve, Mechanical Joints
23	Main	Flushing Hydrants, 1-Way	2"	Cast Iron	AWWA C502	-	Mueller A-411	M&H Style 33	2-1/8" or 2-1/4" main valve, Mechanical Joints
24	Service	Service Saddles on 4"-12" IPS PVC Mains	3/4"- 1"	Bronze	AWWA C800	-	Mueller H-13000 Series	Ford S70A/S90A	Single Strap, hinged
25	Service	Service Saddles on 4"-12" CIOD PVC Mains	3/4"- 1"	Bronze	AWWA C800	-	Mueller H-13000 Series	Ford S70A/S90A	Single Strap, hinged
26	Service	Corporation Stop	3/4"- 1"	Bronze	AWWA C800	-	Mueller P-25008N	Ford FB1000	AWWA/CC x Pack Joint Connection
27	Service	Service Tubing	3/4"- 1"	HDPE	AWWA	-	CTS DR 9	-	Blue, PE4710

Item No.	Location	Description	Nominal Size	Basic Material	Specification Reference	Rating	Manufacturer #1	Manufacturer #2	Notes
28	Service	Service Line Encasement	2"-4"	Steel	ASTM	SCH 40	-	-	Open Trench or Bore
29	Service	Service Line Encasement	2"-4"	HDPE	AWWA	DR 17	-	-	Open Trench or Bore
30	Service	Service Line Encasement	2"-4"	PVC	ASTM	SCH 40	-	-	Open Trench or Bore
31	Service	Tracer Wire	#12 AWG	Copper Clad Steel	-	-	Copperhead 1230-HS (Blue)	-	Connected to Main Line Tracer Wire, Terminate in Meter Box
32	Service	Tracer Wire Test Stations, Light Duty	-	Plastic	-	-	Copperhead SnakePit LD14B2T	-	
33	Service	Tracer Wire Grounding Anodes	1.5 Lb.	Magnesium	-	-	Copperhead ANO-12		
34	Service	Tracer Wire Branch Connectors	#12 AWG	Plastic	-	-	Copperhead 3WB-01		Mainline-to-Service Connector
35	Service	Meter Valves	3/4"- 1"	Bronze	AWWA C800	-	Mueller P24350N	Ford B43-332W-NL	Pack Joint Connection x Meter Coupling with Lock Wing
36	Service	Meter Boxes	12"x17"x12"	Plastic	-	-	NDS D1200-DICIR	DFW Series D-1200	Drop-In Cover with Cast Iron Reader Door
37	Service	Water Service Meters	3/4"- 1"	Bronze	AWWA C700	-	-	-	Furnished by OWA