

Specification

Materials

Consolidated Water District No.13

P.O. Box 1921
1-225-635-3864
1-225-635-3705

URL

3/7/2002 Revision 0

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1.0 General Requirements

Only the materials specified in this section shall be used in the construction of water lines for Consolidated Water District No.13. Deviations will be granted on a case-by-case basis and will be documented and approved prior to the work being started.

1.1 POLYVINYL CHLORIDE (PVC) PIPE

A. PVC Pipe shall meet or exceed AWWA SCH 160, ASTM D2241, 160PSI, Municipal Water Pipe Sizes Four (4) inches through Sixteen (16) inches. PVC water pipe shall be listed and bear the seal of Underwriters Laboratories.

B. PVC pipe shall be made from Class 1245-A or 12454-B Virgin Compounds.

C. All pipes shall be furnished in twenty (20) foot lengths unless otherwise authorized by the Consolidated Water District No.13.

D. Pipe shall be made in nominal sizes of 4,6,8,10, and 12 inch sizes. All pipe shall be made with approved inside and outside diameter to AWWA standards.

E. Joints for PVC pipe shall have factory installed rubber gasket seals to ASTM -F477 requirements. Solvent cement type joints are not acceptable. Pipe and fittings shall be assembled with a non-toxic lubricant NSF tested, and certified for potable water distribution products. Provisions shall be made for contraction and expansion at each joint. Integral bell or affixed couplings shall be installed and be tested with the pipe.

1.2 SERVICE LINES

A. All service lines shall be PE pipe SDR-9 ASTM 2241 or equal in trade sizes 3/4 inch, 1 inch, and 2 inch.

B. Splices are not allowed between Corporation Stop and Corb Stop under roads or paved areas. Under no conditions will compression connection be allowed under roads or paved areas. Connections allowed

under roads or paved areas will only be welded connections.

C. Service lines larger than 2 inches will be directed by Consolidated Water District No.13 as to material and installation on a case-by-case basis.

1.3 FITTINGS

A. All Stops, Saddles, Risers, and Check Valves used to connect to services shall be Cast Brass in accordance with ASTM-B62 and have threads meeting AWWA C-800 or other applicable standard as specified by Consolidated Water District No.13.

B. All Castings shall be smooth, free from burs, scales, blisters, sand holes and defects of any nature, which render them unfit for their intended purpose.

C. Nuts shall be smooth cast, with symmetrical hexagonal wrench flats.

D. Service Saddled shall be single strap style for 4 inch thru 12 inch with the exception of PE Service Saddles.

E. Corporation Stops shall be McDonald 4700 series.

F. Curb Stop shall be McDonald 6100 series.

G. Service saddles shall be McDonald 3891 series for Class 160 pipe.

H. Service saddles shall be McDonald 3895 series for class C-900 pipe.

I. Service saddles shall be Romax101-NH for 2 inch PE pipe and JCM 404 or 406 for 12 inch pipe.

J. All Bolts for bolted connections shall be carbon steel unless otherwise approved in writing.

1.4 WATER METERS

A. All water meters shall be of the compound type and be Hersey with electronic registers.

B. All water meters will be installed with a Ramar Transmitter/Transponder.

C. All water meters 2 inches and larger shall be flanged on both ends to facilitate replacement. Non flanged ends will be only authorized by Consolidated Water District No.13 on a case-by-case basis prior to installation.

1.5 CHECK VALVES

A. Service line Check Valves shall be 710-U2 series Double Check for 3/4 inch and 1 inch sizes.

B. Service line Check Valves for 2 inch and larger will be flanged on both ends, to provide ease of replacement. Under a special customer request the customer side connection may be either male or female N.P.T. threads. Noting that in the 2 inch and larger size Consolidated Water District No.13 only will install a single check valve to protect the water system. However it will remain the obligation of the customer to provide additional downstream check valves and or air gaps as required by DHH Rules.

1.6 Gate Valves

A. Gate valves shall conform to AWWA C500, latest edition. Valves shall be designed for a minimum of 150 pounds per square inch. All Gate valves shall have a clear waterway equal to the full nominal diameter of the valve and shall have the makers initials, pressure rating, and the year of manufacture cast in the body.

B. Unless other wise specified all gate valves shall be iron body, bronze mounted, double disc, parallel seat, non-rising system internal wedging type with "O" ring seals and mechanical joints and shall be nut operated. Gate valves attached to flanged outlets shall have combination of flanged and mechanical joint ends.

C. Flanges shall be cast solid and faced accurately at right angles to the axis of the casting. Dimensions and drilling shall be in accordance with American Standards Association for a working pressure of 125 pounds per square inch. Special drilling shall be provided where necessary.

1.7 Valve Boxes and Extensions

A. Valve boxes installed under this specification shall be those furnished by Tyler Pipe, Utilities Division, Tyler Texas 6850 Series, Item 664-S or approved equal. Valve box lids shall be marked water and be non-locking.

B. Valve boxes shall be of sufficient length to permit access to the valve at grade with a maximum depth of 48 inches to the top of the valve operator.

1.8 Vertical Valves

A. All vertical valves shall come with a adjustable valve box, for vertical valves, except for valves larger than 24 inches and larger which shall be installed with a manhole as per the contract drawings.

1.9 Air Valves or Vacuum Valves

A. An Air Valve called for on the plans shall mean an Air and Vacuum Valve of the ball type design to permit the escape of air from a pipeline when the line is being filled and to permit air to enter the pipeline when it is being emptied. .

B. The valve shall be iron body with bronze fulcrum levers and links, stainless steel ball floats and pins, steel flange bolts and nuts, and Buna-N synthetic rubber seats against bronze or stainless steel. All other metal parts shall be bronze including the piping. Inlets shall be threaded for 2 inch and smaller.

C. The valves shall be designed to operate under a operating pressure of

150 psi. They shall be certified and tested at twice that pressure.

2.0 Tapping Valves

A. Tapping valves shall conform to the requirements of AWWA Standard C-500 with the following exceptions.

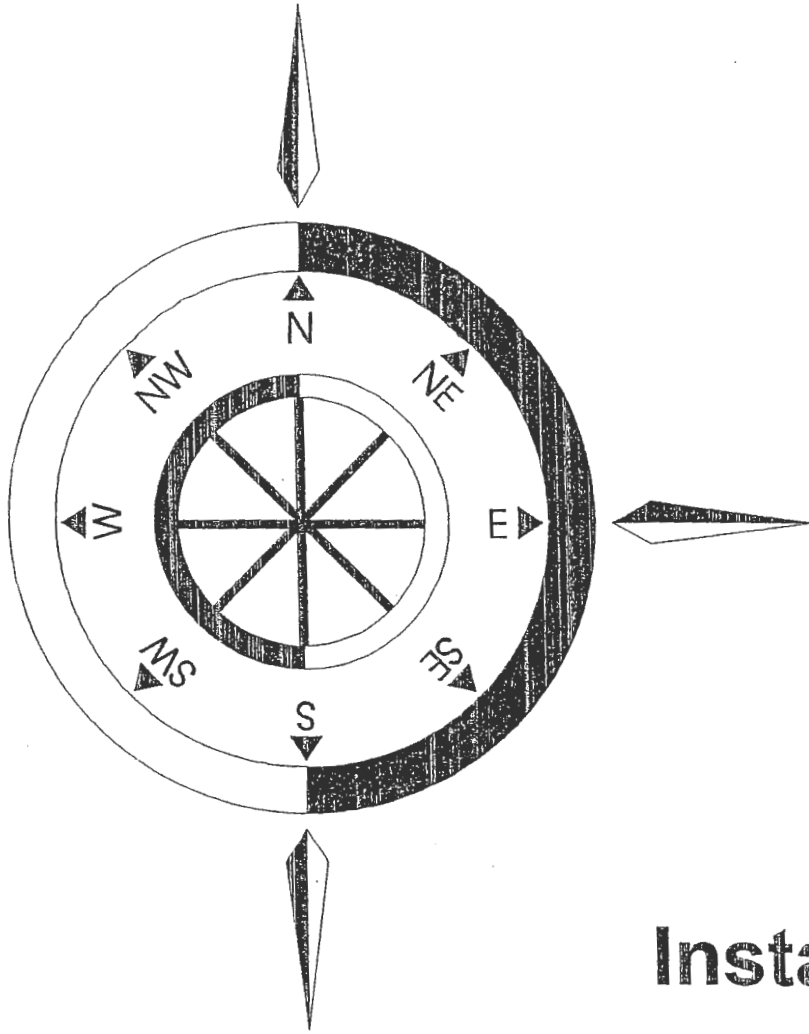
1. Tapping valves shall have oversize seat rings to permit the entry of a standard tapping machine cutter. In the open position, valve gates shall be clear of the ports so the cutter will pass through without making contact with the gates.
2. Valves shall have an inlet flange conforming to ASA B 16.1, Class 125 with a machined recess to mate the Tapping sleeve outlet flange to assure correct alignment.
3. Valves shall have a standard mechanical joint outlet end and shall fit any tapping standard tapping machine.

2.1 Tapping Sleeves

A. All Tapping Sleeves shall be Stainless steel and be full circle construction made completely from 18-8 stainless steel. All bolts and nuts shall be stainless steel. The flange shall be gasketed to accept a standard tapping valve. All gasket material for the flange gasket and circle seal shall be compounded to resist water, oil, hydrocarbon fluids, temperatures up to 212 degrees Fahrenheit and designed for water service.

2.2 Connections and M&J Fittings

A. All connections shall be M&J with Grip Rings unless otherwise authorized by Consolidated Water District No.13. Exceptions will be granted on a case-by-case basis and will be in writing prior to the parts being used.



SPECIFICATION

Installation

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1.0 General Requirements

As a general rule water mains for Consolidated Water District No.13 are sized 2 inches to 12 inches in diameter. Service lines are from 3/4 inch to 2 inches in diameter and in some cases for special applications larger than 2 inches instructions will be provided by the parish on a case-by-case basis for installation. Instructions within this specification will be followed for all installation and construction unless deviations are granted by Consolidated Water District No.13 on a case-by-case basis in writing prior to the work being started.

1.1 Delivery and Inspection

All pipe, fittings and accessories delivered to the job site shall be inspected for damage by both the Contractor and the Engineer/Water District. All materials found to have cracks flaws or other defects whether before or after installation will be rejected by the Engineer/Water District and will be repaired or replaced by the Contractor as directed by the Engineer/Water District, at no additional cost. This inspection does not provide any exemption or exception to the Contractor from providing the materials specified in the contract.

1.2 Installation and Trenching

A. Excavated trenches shall be of sufficient width to allow proper handling of the pipe and provide sufficient space for backfill compaction around the pipe.

B. The subgrade shall be accurately shaped and trimmed to support the pipe barrel. Each section, when in place shall have a uniform bearing on the subgrade for the full length of the pipe barrel. Pipe bends of installed pipe shall not exceed the maximum bend allowed by the pipe being installed. Consult the Engineer/Water District should bends be required prior to installation for approval on a case-by-basis.

C. Water main bedding requirements will vary for the type of water main being installed, (Rigid or Flexible). Bedding materials shall be installed as per the Contract Drawing. All pipe and fittings shall be installed to the line and grade as detailed on the plans. Subject to the approval of the Engineer/Water District other fittings may be added in addition to those shown on the plans, should the need arise during construction. The Contractor is fully responsible for furnishing and installing all fittings required for a complete and proper installation of the mains and services as detailed on the plans.

D. Unless otherwise indicated or authorized by the Engineer/Water District, shall be installed clear of all utility lines and shall have a minimum of 30 inches cover above the top of the pipe.

E. Proper equipment shall be used when lowering section of pipe into trenches. Under no circumstances shall pipe be laid in water or when trench conditions or weather are unsuitable for such work. Full responsibility for the diversion of drainage and for dewatering trenches during construction shall be borne by the Contractor.

F. All dirt and foreign matter shall be removed from the inside of pipe and fittings before they are lowered into the trench. Pipe and fittings shall be kept clean during and after laying. Care shall be taken when jointing pipe to keep foreign material out of each joint, and jointing space.

G. Unless otherwise directed by the Engineer/Water District, pipe shall be laid with bell ends facing the direction of laying. For lines of appreciable slope, bells shall, at the direction of the Engineer/Water District shall face upgrade. Whenever necessary to deflect pipe from a straight line in either the horizontal or vertical plane, to avoid obstructions, or for other acceptable reasons, the degree of deflection at any joint shall not exceed or be greater than that recommended by the pipe manufacturer.

H. Pipe shall be supported to proper line and grade and be secured against upheaval or floating during the placement of bedding.

I. All bends and tie-in assemblies shall require additional restraint by installing mechanical glands in addition to concrete thrust blocking. Mechanical glands other than flanged shall be Grip Rings installed in accordance with approved manufacturers instructions. All mechanical joints shall be lubricated and by using a torque wrench tighten the nuts to the approved value as prescribed by the Gland manufacturer.

J. At the end of each days work, and when pipe laying is discontinued for

any appreciable period, the open ends of pipe shall be closed with a cast plug or cap securely placed in all openings and at the end of the line.

K. Cutting of the pipe shall be done in a workman like manner without damage to the pipe.

L. All pipe and fittings shall be carefully lowered into the trench in a manner to prevent damage to the pipe or fittings. Neither pipe nor fittings shall be dropped or dumped into the trench.

1.3 Trace Wire

A. Trace wire, that permits easy detection of underground pipe shall be installed directly above nonmetallic water pipe as shown on the Contract Drawing. Trace wire shall be fourteen (14) gauge copper wire coated with 30 to 45 mils of polyethylene.

1.4 Concrete Blocking

A. Class A concrete shall be placed as shown on the construction plans or as otherwise directed by the Engineer/Water District, for restraining tie-ins, fittings, and at each change of direction in the pipeline in such a manner as will substantially brace the pipe against undisturbed trench walls. Concrete blocking shall have been in place four (4) days prior to testing the pipeline.

1.5 Water Main Tapping

A. Taps on existing water mains larger than 2 inches shall be done by Consolidated Water District No.13 and the cost will be at the Contractor's expense. The Contractor shall provide all materials and excavation as required to complete the work. Materials and method will be shown on construction drawings.

B. Isolation valves shall be installed after each tap and will be approved as described in Consolidated Water District No.13 Materials Specification.

1.6 Service Line Taps

A. All service taps to PVC water mains shall require a service saddle as described in Consolidated Water District No.13 Materials Specification.

B. Tap installations shall be made by clamping a circumferential service clamp (saddle) equipped with a gasket sealed threaded port (AWWA threads) installation of a curb stop (as described in Consolidated Water District No.13 Materials Specification), then drilling thru the pipe wall to complete each service tap.

C. Service tap's will not be permitted until the main has been approved and placed in service.

D. Services will only be provided from dedicated easements and right-of-ways.

F. There shall be no joints between the curb stop and the service meter

under any load bearing areas. Service lines shall be (as described in Consolidated Water District No.13 Materials Specification) of the proper material as referenced. The trench bottom shall be free from rocks and other sharp objects. The service trench shall be 36 inches as a minimum from the proposed street grades shown on the plans. Care shall be exercised at all times to maintain the line free from dirt and foreign matter at all times.

1.7 Water Meter Service Installation

A. Water meters shall be located on the public right-of-way and be placed such that traffic patterns will not cause damage to the meter and or supporting equipment. Special cases such as commercial water meter installation may require that installation be drawn up as to how and what equipment will be installed approved by Engineer/Water District prior to installation.

B. Water meter installations shall include as a minimum Meter Stop, Water Meter, and Back-flow prevention device. These devices shall be located in the meter box at the required site with the Meter Stop and Water Meter inside the meter box. These devices shall be (as described in Consolidated Water District No.13 Materials Specification) of the proper material as referenced.

C. Meter boxes shall be installed at grade and even with the surrounding terrain. In no cases will the meter box be located such that it will not be accessible to Consolidated Water District No.13 maintenance.

1.8 Buried Valve Installation

A. Valves buried in the ground shall be provided with cast-iron valve boxes of the proper dimensions to fit over the valve bonnets and to extend to such elevation at or slightly above the finished grade as directed by the Engineer/Water District. Tops shall be complete with covers and shall be adjustable. Valve boxes shall be set vertical and concentric with the valve stem. A 200 PSI concrete pad shall be poured of the dimensions shown on the Contract Drawings, around all valve boxes. Additional concrete in the form of a premixed dry in a bag shall be placed directly underneath the valve prior to covering with backfill.

1.9 Wet Connections

A. All wet connections shall be done at the direct cost to the contractor. The contractor shall provide a safe open hole and the proper tapping sleeve and valve. Consolidated Water District No.13 will install the fittings and make the tap. Consolidated Water District No.13 is responsible for any leaks around the sleeve due to improper installation while the contractor maintains the responsibility for the material supplied.

B. The Contractor is required to provide 48 hours advanced notice to Consolidated Water District No.13 so that the Parish Staff can be scheduled to operate the valves to limit the outage to the least number of customers as possible. Connections that will be made to existing water mains by the contractor as shown on the plans or as directed by the Engineer/Water District. Such connections shall be made at such times and order as will be agreeable to Consolidated Water District No.13. In each case the connection to be made when the work is started shall be made at such times and in the order as will be agreeable to Consolidated Water District No.13. In each case Consolidated Water District No.13 will inspect and verify that all required materials to effect the modification are on site prior to removing any customer 's water from service. All work when started will be without breaks until complete to minimize to impact to

Installation • March 7,2002 •

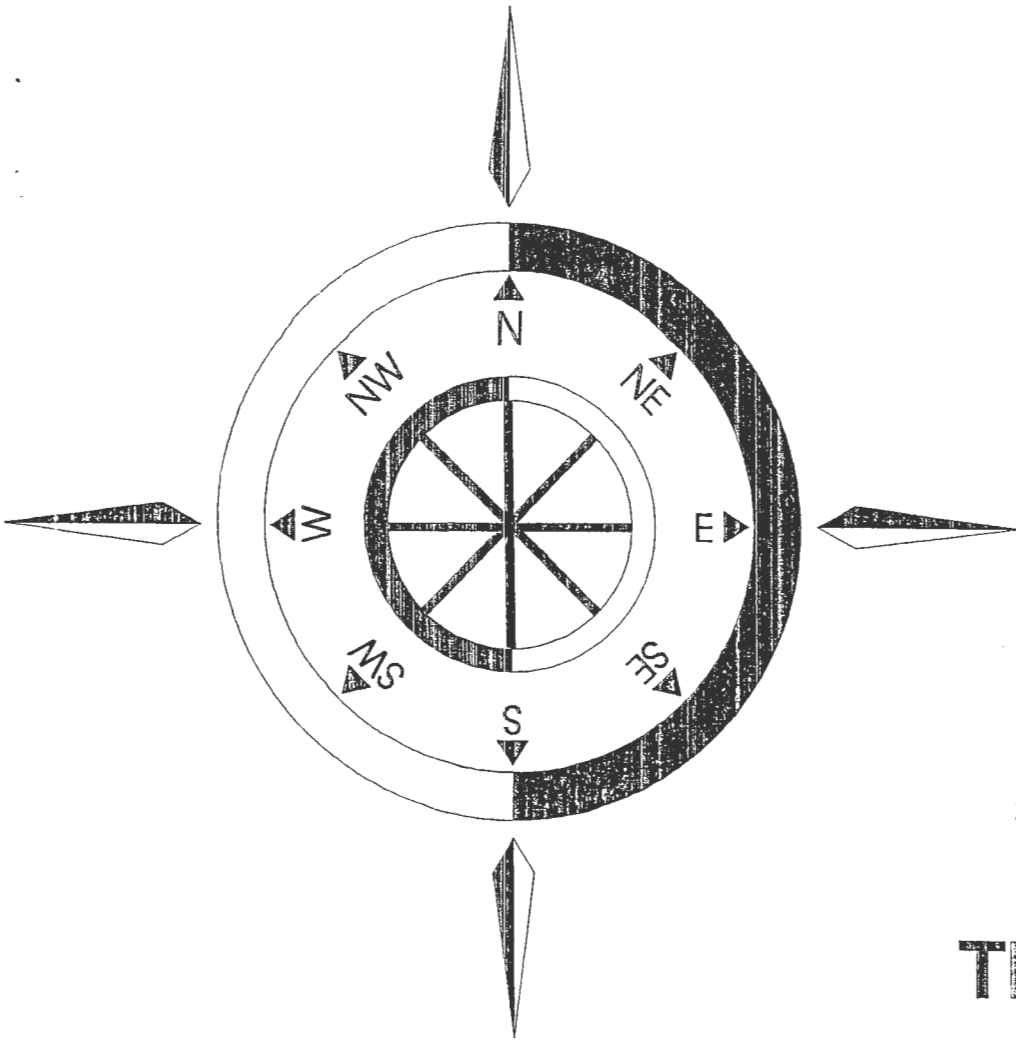
water customers of Consolidated Water District No.13.

2.0 Backfill For Trenches and Valves

A. Backfilling in trenches shall be in accordance with approved drawings.

B. Typical details as follows:

1. Pipe bedding shall be as the pipe manufacturer's recommendations.
2. Tamped backfill shall be installed until the pipe is covered with 12 inches of backfill.
3. Balance of the backfill shall be earth (machine backfill) with tracer wire located 18 inches above the top of the pipe.
4. Deviations from the above shall be in writing from the Engineer/Water District on a case-by-case basis.



SPECIFICATION

TESTING

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1.0 GENERAL REQUIREMENTS

This specification details the methods for testing, flushing and sterilization of water mains for Consolidated Water District No.13. Water mains may be cleaned as a single segment or in multiple segments, depending on the total length of the line to be cleaned, the number of different pipe sizes to be cleaned and restrictions in the line.

1.1 MATERIALS

All materials shall be furnished and used in accordance with the latest AWWA standard procedures and this specification for testing pipe, pipe joints, and other appurtenances. All pipe and fittings shall be subject to sterilization and hydrostatic pressure testing. Only chemicals approved under applicable state and federal "Safe Drinking Water" and EPA laws, and the ANSI/AWWA Standard, C651-86, as amended, shall be used for sterilizing water pipe and for dechlorinating flush water. Swabbing pigs may be required and shall be furnished as specified by the piping manufacturer and or Engineer/Water District No.13. Several swabbing pigs may be required. Depending on the number and diameter size of line segments to be cleaned. Pigs shall be used only once. The contractor shall be responsible for furnishing any special fitting and adapters that may be required for cleaning the pipe.

1.2 TEST PREPARATION

Upon completion of the new water system the contractor shall proceed immediately to test, flush, and sterilize it. The Contractor shall furnish all labor, materials, tools, and equipment necessary to accomplish these tasks. Consolidated Water District No.13 shall verify that the Contractor has a reliable supply of flush and test water with which to work. Consolidated Water District No.13 shall furnish all the water necessary to obtain the first test sample from the new line and Louisiana Department of Health and Hospitals (DHH) will test the sample. Should the first sample fail the test , all subsequent water used by the Contractor to obtain a good water test and all subsequent testing shall be at the Contractors expense. The quantity of water used for subsequent testing shall be billed at prevailing rates for the amounts used for the testing.

1.3 HYDROSTATIC PRESSURE TEST

A. All hydrostatic testing will be done in accordance with the manufacturer's specifications, or in accordance with the latest AWWA Standard procedures for the respective type and size of the pipe being tested, and in accordance with this specification, which ever is more stringent.

B. The pipeline shall be tested with a pressure of one hundred fifty (150) pounds per square inch, maintained over a continuous four (4) hour period. After a successful four (4) hour pressure has been achieved, a two (2) hour leak test shall be run at the same 150-pound pressure. If the test indicates a leakage in excess of ten (10) gallons per inch of the internal pipe diameter per mile of pipeline per twenty-four (24) hours, the Contractor will be required to find and fix the leak. All known leaks shall be stopped, regardless of this test requirement. The cost of finding and repairing any leak shall be at the Contractor's expense.

C. The Contractor may elect to pressure test against existing valves. However Consolidated Water District No.13 will not guaranty the water tightness of existing valves. Should a new water main be tested against an existing valve and the test fails, The Contractor must install proper blocking and retest the system at his own expense.

1.4 STERILIZATION AND FLUSHING

A. Sterilization of water lines shall be done in accordance with ANSI/AWWA C651-86, as revised and this specification. Prior to sterilizing, each and every valve in the new pipeline shall be pressure tested and flushed, in the full open position, with clear water from the Consolidated Water District No.13 system to remove all visible evidence of dust, soil, and fine debris which may have entered the line during construction and testing.

B. Chlorine Shall be used to sterilize the pipeline. The amount of chlorine applied shall be such as to provide a dosage of not less than fifty-(50) parts per million. The chlorinating material shall be introduced into the water lines and distribution system in a manner approved by the Engineer/Water District. After a contact period of not less than twenty four (24) hours, the Contractor is to cycle each and every valve in the system (main valves, fire hydrant valves, and any others) two to four cycles to assure that all surfaces and area are in contact with the high concentration chlorine water in order to kill bacteria and other harmful microbes.

C. The Contractor shall next flush the high chlorine water from the line with clean water until the residual chlorine content is not less than 0.2 part per million (PPM) and not greater than 3.0 parts per million (PPM). At this time a valve at the highest point of the line shall be opened in order to assure that the flush water remains in contact with all the inside surfaces of the pipe and that the sterilization process continues through the flushing phase.

D. Following the flushing phase, the Contractor will contact the Parish DHH representative and arrange to have a final water sample taken from the flushed line. Based on the test results passing from DHH the line will be released for service and domestic consumption. Should the water sample fail the test then the Contractor will repeat Section 1.4, A, B, C, and D until an acceptable test result is obtained at the Contractors expense.

E. Upon correct completion of the above steps the line will be accepted for service by Consolidated Water District No.13.

1.5 NEUTRALIZATION & DISPOSAL OF FLUSH WATER

A. Chlorinated water that is flushed from the system and exceeds seven (7) parts per million (PPM), must be neutralized before discharging it to the parish municipal water drainage system in accordance with EPA, DEQ and Parish storm Water regulations. The Contractor is responsible for the methods, dosage, and the monitoring of chemicals used in neutralization. Early in the project planning stage the Contractor should determine his flushing and neutralization requirements. He should then plan and budget accordingly for these activities. As appropriate, the contractor shall notify all applicable regulatory agencies (EPA and DEQ) of his flushing and discharge schedule. The Contractor shall submit disposal and neutralization plans, as required, or when otherwise requested. The Contractor shall supply duplicate copies of the schedules and plans to the Engineer/Water District. When and if required or requested by regulatory agencies, the Engineer/Water District will monitor and report on the Contractors compliance with respect to his neutralization process.