Department of Utilities
General Specifications

City of Lima
Utility Field Services
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Revised 10/25/2010
UTILITY FIELD SERVICES
GENERAL SPECIFICATIONS

The following specifications are for areas served by the City of Lima, including the Fort Shawnee Service Area. Construction within the Allen Water District shall comply with the District's specifications which also require approval by the City of Lima.

WATERLINE MATERIAL
NOTE: All American National Standard Institute (ANSI) or American Water Works Association (AWWA), specifications shall be the latest revisions. All materials shall be of American manufacture.

Materials:

Ductile Iron Pipe:

All pipe used shall be manufactured of ductile iron in conformance with ANSI A21.51 (AWWA C151) Ductile Iron Pipe, centrifugally cast in metal molds or sand lined molds, for water or other liquids and ANSI A21.50 (AWWA C150) thickness design of iron pipe. The pipe shall be lined with a cement mortar in accordance with ANSI A21.4 (AWWA C104) "Cement-Mortar lining For Cast Iron And Ductile Iron Pipe And Fittings For Water." Ductile iron pipe shall be with "push-on" rubber gasket joints in accordance with specifications meeting ANSI A21.11 (AWWA C111) and ANSI A21.51 (AWWA C151).

Diameters of ductile iron pipe 4 inch through 16 inch shall be in Pressure Class 350. Other pressure classes (wall thickness) may be required in such areas as highway crossings, stream crossings, extra depth or for other pipe sizes and unusual installations.

Fittings:

Fittings shall be ductile iron and designed for working pressures of at least 350 pounds per square inch working pressure in conformance with ANSI A21.10 (AWWA C110) "Gray-Iron And Ductile- Iron Fittings, 3 inches Through 48 Inches, For Water and Other Liquids" and ANSI A21.53-88 (AWWA C153) Ductile Iron Compact Fittings 3 Inches Through 16 Inches.

Valves:

Valves 4 inches through 16 inches shall be of resilient-seated gate valve design. The valves shall be constructed with iron body, fusion bonded epoxy coating on all interior and exterior surfaces, non-rising valve stem, the valve wedge shall be ductile iron completely enclosed in rubber. The valve shall open when the stem with 2 inch square nut is turned counter clockwise. Valves shall be designed for a working pressure of 200 PSI when used in non-shock cold water. Service stem seal to be rubber-O-ring. Valves shall conform to ANSI/AWWA Standard C509.

Valve Boxes:

Valve boxes shall be Buffalo type, with base, 5 1/4 inch shaft, size "B", screw type, extendable 36 - 48 inches, lid to marked "WATER". Note: Valves more than 5 foot deep shall be equipped with an extension rod with operating nut at a depth to top of nut not more than 36 inches. See valve details on Detail page no.6.
Fire Hydrants

Fire hydrants must be of the dry barrel design. They must be non-draining, with a 5 1/4 inch main valve. Hydrants must meet or exceed the American Water Works Association's C-502 specification.

Hydrants must consist of a one piece lower barrel and one piece upper barrel. Hydrant shoes will be 6" mechanical joint with accessories.

The hydrant must employ a traffic design and allow for a 360 degree facing of nozzles. The nozzles should be at least 18" from the ground (traffic break-away) line.

Hydrants are to have 1 ½" pentagon nuts and be open left in design. There will be two (2)- 2 ½" NST hose nozzles and one (1)- 5” Storz connection. Fire Hydrants will be painted safety yellow.

The only hydrants the City of Lima will accept are Clow Eddy Model F-2641, and Mueller Super Centurion.

For fire hydrant installation see Detail pages number 1 and 2.

NOTE: These hydrant specifications are for installations within the limits of the City of Lima, for hydrant installations outside the city, consult with the trustees and the fire chief in the township involved for their specifications.
DISTRIBUTION SYSTEM STANDARDS

Design

The distribution system should be laid out in a grid system where possible. Water mains shall be located 2 feet behind curb and with a minimum of 4 feet of cover. The water lines shall have a minimum 1 foot clearance from all structures. The construction drawings shall show the above specifications.

Pressure

All water mains, including those not designated to provide fire protection, shall be sized after a hydraulic analysis based on flow demand and pressure requirements. The system shall be designed to maintain a minimum pressure of 20 PSI at ground level at all points in the distribution system under all conditions of flow.

Diameters of Pipe

The minimum size of water main for providing fire protection and serving fire hydrants shall be 6 inch diameter.

In residential districts, mains shall be no less than 6 inches in diameter. 6 inch mains may not exceed 600 feet in length between major intersecting mains.

In commercial districts, the minimum size water main shall be 8 inch diameter, with intersecting mains on each street and 12 inch mains on all principal streets.

Any departure from the minimum requirements shall be approved by the Utilities Department. Only in special looping requirements will a 4 inch pipe be allowed in the distribution system.

The overall master development plan for future water use may require larger sized mains than are needed to serve a specific area, based on the current Water Distribution node map.

Dead Ends

Distribution mains connecting with arterial mains, looped around the area served, shall contain no dead ends. Where dead end mains occur, due to phased development, they shall be provided with a fire hydrant if flow and pressure are sufficient, or with an approved flushing hydrant or blow-off for flushing purposes. No flushing device shall be directly connected to any sewer.

Valves

Sufficient valves shall be provided on water mains so that inconvenience and sanitary hazards will be minimized during repairs.
DISTRIBUTION SYSTEM STANDARDS CONT’D.

Valves shall be located at not more than 500 foot intervals in commercial districts and at not more than one block or 700 foot intervals in residential districts. Valves located in the center of blocks shall be located at property boundary lines.

Valves are to be located out of the surfaced street area, where possible. Top of valve boxes shall be brought to grade level.

The location of valves at tees and crosses shall be in accordance with the approved plans and shall provide full control of the flow in each branch line.

A valve shall be required at locations where a main enters an easement onto private property.

The interface of a subdivision, which is being sectionally developed, shall have the mains valved at such interface. The sectional development is to be indicated on the overall plan of the subdivision.

**Hydrants**

In commercial, industrial, institutional and apartment districts, the maximum spacing for fire hydrants shall be 300 feet. (In congested areas with blocks completely built upon and with 3 story or higher buildings, maximum spacing shall be 150 feet). In 1 and 2 family residential areas, the maximum spacing shall be 500 feet.

The installation of fire hydrants shall be located at property boundary lines, where possible, and be positioned so that the pumper nozzle is toward the street. For typical fire hydrant and blocking details, see Detail pages number 1 and 2.

**Installation of Mains**

A continuous and uniform bedding shall be provided in the trench for all buried pipe in accordance to the Utilities Department specifications. See trench detail on Detail pages number 3 and 4.

Backfill material, 1 foot clean earth minimum, shall be tamped around the pipe and to a sufficient height above pipe to adequately support and protect pipe. Stones found in the trench shall be removed for depth of at least six inches below the bottom of pipe.

All tees, bends, plugs and hydrants shall be provided with concrete reaction blocking, supports and/or buttresses. See concrete thrust restraint detail on Detail pages number 1, 2, 5 and 6. Restraining mechanisms and anchoring systems, upon approval from the Utilities Department may be used in lieu of concrete blocking and may be required in certain applications.
Separation of Water Mains and Sewers

If possible, sanitary sewers and sewage force mains should be laid with at least a 10 foot horizontal separation from any water main. Sewers (or sewage force mains) may be laid closer than 10 feet to a water main, if it is laid in a separate trench and elevation of the crown of the sewer (or sewage force main) is at least 18 inches below the bottom of the water main. If it is impossible to maintain the 18 inch vertical separation when the sewer is laid closer that 10 feet to the water main, the sanitary sewer should be constructed of (or encased in) water main type materials which will withstand a 50 PSI water pressure test.

If a sewage force main is laid closer than 10 feet to a water main, in no case should the sewage force main be laid such that the crown of the sewage force main is less than 18 inches below the water main.

Whenever a sanitary sewer and water main must cross, the sewer shall be laid at such an elevation that the crown of the sewer is at least 18 inches below the bottom of the water main. If it is absolutely impossible to maintain the 18 inch vertical separation, the sanitary sewer should be constructed of (or encased in) water main type materials which will withstand a 50 PSI pressure test for a distance of 10 feet on both sides of the water main.

Whenever a sewage force main and water main must cross, the sewage force main shall be laid at such an elevation that the crown of sewage force main is at least 18 inches below the bottom of the water main.

Surface Water Crossings

Surface water crossings, whether over or under water, present special problems. The construction plans shall be reviewed in accordance to the Ten State Standards.

Cross Connections

There shall be no connections between the distribution system and any pipes, pumps, hydrants or tanks whereby unsafe water or other contaminating materials may be discharged or drawn into the system.

Service Connections

Each service connection shall be individually metered, including fire protection services. Fire service detector checks shall require a side meter, check valve and gate valve. See detector check details on Detail page number 10 and 11.

For a meter location inside the building, prior approval must be given the system by the Utilities Department.
Regulations governing water service requires the following:

1. Any damage or malfunction of the meter shall be reported to the Utilities Department.

2. The unauthorized tampering with any by-pass valves, service valves, meters or fixtures shall be considered an illegal use of water.

3. The Utilities Department shall approve the use of water and shall retain the right to conduct sanitary and usage surveys for compliance to the Rules And Regulations of the Department.
CONSTRUCTION METHODS

Pipe interiors will be kept free of all dirt and foreign matter prior to laying and, in the event that dirt or foreign matter should appear on the interior, the pipe shall be thoroughly cleaned by brushing or swabbing before laying. Means shall be provided to prevent the entry of dirt during the process of installation, especially during interruption of construction. Open ends shall be securely protected at the close of each day’s work to prevent the entrance of any foreign object.

Minimum cover shall be four feet except at such locations as the Utilities Department representative may consider a lesser cover permissible. In locations where a lesser cover is to be provided, approval shall be made in writing by the representative of the Utilities Dept., clearly describing the location and stating the lesser amount of cover to be provided.

The general proposed location of the water line, valves and fittings as well as connections to the existing water lines shall be as shown on the approved construction drawing. If, during the course of the work, unforeseen conditions arise, the location of the water line may be changed as directed by the Utilities Dept. representative.

The contractor or developer shall place field stakes at 10 foot offset showing center line and grade of waterline. Inspectors will require the contractor to adhere to approved plans and field staking in all cases unless changes are approved by the Utilities Director or his designated representative. Staking distance - 25 foot curve, 50 foot developed areas, 100 foot rural areas. When requesting service taps, all lots must be properly identified by permanent lot number or address.

If construction is by Utilities Department forces, street must be sub-graded by contractor prior to water line construction.

The water line pipe shall be laid, bedded and backfilled in the excavated trench in accordance with AWWA Standard C600. See trench details on Detail pages number 3. Granular backfill is to be used in all areas of existing and future paving. For construction in paved areas, see pavement replacement details on Detail page number 4.

Pipe in Poly Wrap - 8 mil Blue polyethylene wrap shall be used on all ductile iron pipe, valves and fittings. Additional protection may be required in areas of potentially corrosive conditions. Poly Wrap and methods used shall conform to AWWA Standard C105. See poly wrap details on Detail page 7.

Concrete blocking, supports and/or buttresses shall be provided at all tees, bends and valves and other locations as shown on approved construction drawings or as directed by the Utilities Department. See concrete thrust restraint details on Detail pages number 1, 2, 5 and 6. Restraining mechanisms and anchoring systems, upon approval by the Utilities Department may be used in lieu of concrete blocking. Loose or sandy soil conditions will require the use of restraining mechanisms or anchoring systems.

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GENERAL SPECIFICATIONS

CONSTRUCTION METHODS CONT’D
**BORINGS/ROADWAY CROSSINGS** - All State of Ohio highways shall be bored and cased. Crossings of any Allen County, Township or City of Lima roadway **MUST** have prior approval for method of crossing. All borings shall comply with current ODOT standards. Stainless steel casing spacers like those manufactured by Cascade Waterworks Mfg. or an approved equal shall be used. The spacers are to be placed at 10 ft. intervals. The ends of the casing shall be sealed with 8 inch bricks and mortar or approved rubber end seals. The following casing sizes shall be used: 6" pipe - 16" casing, 8" pipe - 18" casing, 10" pipe - 22" casing, 12" pipe - 24" casing, 16" pipe - 30" casing. See boring detail on Detail page 8.

**Special Instructions**

The contractor will be responsible for contacting the Utilities Department of the City of Lima 48 hours prior to the start of any work. If any disruption of water service is planned in the project the contractor must notify all people involved at least 24 hours in advance of the disruption of service. The contractor shall contact Ohio Utilities Protection Service 1-(800)-362-2764 at least two working days before beginning work, and notify any other utilities not members of OUPS.

The contractor shall make all connections shown on approved construction drawings. If field conditions require adjustments or deviations, all such changes shall be approved by the Utilities Department representative.

Pipe and fittings shall be handled and unloaded carefully. **Rolling pipe from trucks is prohibited** and shall be cause for rejection.

**Inspection**

All waterline construction projects **must** have continuous inspection by a technically qualified representative of the consulting engineer or the City of Lima. The City of Lima reserves the right to charge the project developer for inspection services provided by a City of Lima representative if no inspector is provided by the consulting engineer. The City of Lima also reserves the right to furnish a representative to observe the project to ensure that all specifications are being followed.

Water main projects and inspection must include the following:

1. Prior to the construction of any water main project, 2 sets of approved construction drawings, complete with all material and construction specifications shall be delivered to the Utilities Dept.

2. The City of Lima Dept of Utilities must be notified 48 hours prior to start of any water line project. Failure to notify may require excavating installed materials or refusal by the City of Lima to provide water to the project.

3. All materials and installation practices meet the City of Lima specifications.

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**GENERAL SPECIFICATIONS**

**CONSTRUCTION METHODS CONT'D**
4. The manufacturer's name of all water main, fire hydrants and valves shall be recorded, as well as the number of turns necessary to operate each size of valve. This data must be provided to the Dept. Utilities upon completion of the project.

5. All valve locations shall be measured from fire hydrants and the centerline of the roadway.

6. Any change of location or depths from construction drawings must be noted and referenced to an existing landmark.

7. All valve and service boxes are required to be "to grade" with the operating nut centered, and operating nut extensions installed on valves if required per specifications.

8. Pressure testing shall be supervised and shall be conducted in accordance with AWWA C600 and City of Lima specifications.

9. All valve and service boxes must be to grade with no damage after grading and seeding.

Upon completion of all waterline construction projects, the City of Lima Utilities Department or its' representative shall conduct a final inspection of the project before a final approval is given.

"AS-BUILT" drawings and the Dedicated Final Plat, showing lot numbers shall be furnished to the Utilities Department on reproducible media. If drawings are produced on AUTOCAD software, drawing files on diskette shall be furnished. As-built drawings must be submitted in order to receive final project approval.

Hydrostatic Tests

After completion of the line construction, the contractor shall under the supervision of the City of Lima or the authorized inspector, subject the line to a pressure test (in conformance with ANSI/AWWA Standard C600).

Each valved section of water main shall be tested independently of one another unless otherwise approved by the City of Lima. In no case shall the valved section exceed 2000 feet. Any testing against existing valves shall be at the Contractor's risk and in strict compliance with the City of Lima. If satisfactory results cannot be obtained against an existing valve, the new line shall be disconnected from the existing, plugged and retested. Any damage caused to existing lines, valves and service connections shall be repaired by the contractor at the contractor's expense.

The contractor shall furnish the pump, gauges and other apparatus for the above test including measurable water container. Such water container shall be free of foreign matter and disinfected.

The line shall not be tested before concrete used as thrust blocking shall have taken a permanent set.

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GENERAL SPECIFICATIONS

CONSTRUCTION METHODS CONT'D.

The following testing procedure shall be followed:
The line shall be SLOWLY filled with water allowing air to be expelled thru hydrants and/or corporation stops, installed at all high points on the main. All hydrant watch valves within the section being tested shall be in the open position. Hydrostatic pressure shall be applied by means of a pump, taking water from a clean auxiliary supply. The test pressure shall be at least **150 PSI or 1.5 times** the working pressure at the point of testing and the duration of the test shall be not less than **2 hours**. Allowable leakage shall not exceed the amount shown on the enclosed table. (taken from ANSI/AWWA Standard C600-87 page 19)

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

<table>
<thead>
<tr>
<th>Avg. Test Pressure PSI</th>
<th>Nominal Pipe Diameter - in.</th>
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<tbody>
<tr>
<td></td>
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<tr>
<td>250</td>
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<tr>
<td>175</td>
<td>0.20</td>
</tr>
<tr>
<td>150</td>
<td>0.19</td>
</tr>
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</table>

*For pipe with 18 ft. lengths.

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**GENERAL SPECIFICATIONS**

**CONSTRUCTION METHODS CONT'D.**

**Disinfection**
After the line has been flushed and has passed the pressure test, the line shall be disinfected in accordance with AWWA Standard C651. A chlorine solution shall be introduced in sufficient strength so as to achieve a minimum 50 mg/l(ppm) available chlorine in the pipe section to be tested, as determined by the Utilities Dept.

The chlorinated water shall be retained in the main for at least 24 hours, during which time all valves and hydrants in the section to be tested shall be operated in order to disinfect the appurtenances. At the end of this 24 hour period, the treated water shall contain no less than 25 mg/l(ppm) residual chlorine throughout the length of the main.

After determining that the main to be tested has a chlorine residual of 25 mg/l(ppm), the main shall be flushed until the concentration of chlorine has been reduced to that in the mains in service in the area. After this has been accomplished, bacteria tests shall be collected from every 1200 ft. of new main, from the end of the line, at all "dead ends" and sections isolated by valves. Tests shall be taken on copper services installed for the purpose of chlorination and bacteria testing. The test points will be installed past valves used for "dead ends" and isolating sections or as directed by the Utilities Dept. At no time shall fire hydrants be used for bacteria tests.

All valves on active mains shall be operated only by Utilities Dept. personnel to ensure a positive flow and to prevent contamination of active mains. A second set of bacteria tests shall be taken in 24 hours at the same test points. The actual testing (as mentioned above) shall be done by the Utilities Dept. at no cost to the contractor. The contractor shall be responsible to operate valves, hydrants and to supply and use a propane torch to heat the copper test points at time of testing. If bacteria tests indicate that water from the line is not of satisfactory sanitary quality, the above procedures shall be repeated until satisfactory results are obtained. This additional testing shall be at the expense of the contractor.

After completion of bacteria testing, all test copper must be removed and excavations filled before water main is put in service.

GENERAL SPECIFICATIONS

CONSTRUCTION METHODS CONT'D.

SERVICE & METER REQUIREMENTS
The items indicated below are a partial listing of service requirements. For a complete explanation of the Rules and Regulations and policies, the Department of Utilities should be contacted.

1. Taps and Services shall be installed only by authorized agents of the City. Applications shall be made at the Department of Utilities. Prior to installation, the owner or applicant shall place a stake at the desired water service location and identify the house and/or lot number of the property.

2. Only authorized agents of the City shall operate any valve, stop cock, corporation stop or hydrant operator.

3. No addition or alteration in any pipe between the water main and the meter or change of any meter shall be made without written permission of the Utilities Department.

4. All service lines on the water main side of all meters of 2 inch and less inside diameter shall be of Type "K" Copper. Flared, approved compression or silver solder fittings shall be utilized for copper pipe.

Service lines larger than 2 in. shall be manufactured of ductile iron.

Plastic pipe and other materials, all meeting the State Plumbing Code specifications for distribution of potable water, may be used only on the property side of the meter. All pipe on the City side of the meter, including the pipe from the curb stop to a City meter located inside a facility, shall be Type "K" Copper for pipe sizes 2 in. and less.

Where a service vault is installed, ductile iron pipe shall be used from the mainline through the vault for pipe sizes larger than 2 in. Sizes 2 in and less shall use Type "K" Copper. Service vaults shall be installed in accordance with Department specifications. See meter pit details on Detail pages number 9, 10, 11 and 12.

No service line should be installed nearer than 10 feet of any sewer line, if this is impractical, the installation shall be in accordance with the Ohio Environmental Protection Agency (OEPA) specifications.

Fire service installations shall be approved by the Utilities Department.

GENERAL SPECIFICATIONS

SERVICE & METER REQUIREMENTS CONT'D.
5. No person, firm or corporation shall establish and/or maintain a private, auxiliary or emergency water supply connection to the public system, any exception must meet the OEPA specifications with the installation of the proper backflow prevention device and written approval by the Director of Utilities. Such connections include, but not limited to, private well supplies used for drinking, lawn watering, fire fighting and/or production water.

6. **Meters**

All meter installations shall receive approval from the Department. See meter installation Detail pages 9, 10, 11 & 12. Inside meters should be installed such that sufficient clearance of the outside wall is provided to complete the meter connections, but limited to the space required for the meter and valving, immediately adjacent to the outside wall where the service enters.

No customer distribution lines shall be allowed prior to the metering of the water.

Meters 2 inch and larger; installed 1 foot above floor level.

Meters 1 1/2 inch and smaller, installed no higher than 3 feet above floor level.

One (1) inch and smaller installations; requires a shut off valve ahead of and behind the meter.

One and one-half (1 1/2) inch and larger installations; requires shut-off valves ahead and behind meter. All compound meters shall have a spool piece or equivalent of at least 10 inches between the meter and the outlet valve.

All meters shall have straight pipe on the inlet side of the meter equal to eight (8) times the diameter of the pipe and two (2) times the pipe diameter on the outlet side.

Prior to release of meters for installation by private contractors, the site of installation shall be inspected for compliance to Department specifications.

The City of Lima shall provide all meters utilized for metering of domestic water.

Detector checks with the side by-pass meter shall be the responsibility of the owner applicant. The by-pass meter installation shall be of the standard size, based on the diameter of the threaded boss provided on the detector checks.
Valves  1
Valve Boxes  1
Fire Hydrants  2

**DISTRIBUTION SYSTEM STANDARDS**

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**DETAIL DRAWINGS**

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NOTE: FOR HYDRANT, VALVE AND VALVE BOX SEE MATERIAL SPECIFICATIONS.

HYDRANT TO BE PLACED WITH STEAMER NOZZLE FACING STREET

DISTANCE FROM TOP OF LOWER BARREL TO GROUND LEVEL TO BE MINIMUM OF 2" OR MAXIMUM OF 6"

5'-0" FROM C' OF MAIN TO TOP OF LOWER BARREL

MJ ANCHORING TEE (CLOW FIG. 1217 OR EQUAL) OR MJ ANCHORING COUPLING (CLOW FIG. 1211 OR EQUAL)

CONCRETE BLOCKING

NOTE: ALL EXPOSED BOLTS AND FITTINGS INCLUDING LOWER BARREL OF HYDRANT TO BE WRAPPED IN 8 MIL BLUE POLYETHYLENE.
HYDRANT TO BE PLACED WITH STEAMER NOZZLE FACING STREET

DISTANCE FROM TOP OF LOWER BARREL TO GROUND LEVEL TO BE MINIMUM OF 2\"; MAXIMUM OF 6\"

NOTE: FOR HYDRANT, VALVE AND VALVE BOX SEE MATERIAL SPECIFICATIONS.

5'-0" FROM COF MAIN TO TOP OF LOWER BARREL

MJ ANCHORING HYDRANT TEE (CLOW FIG. 1224 OR EQUAL)

CONCRETE BLOCKING

MJ ANCHORING COUPLING (CLOW FIG. 1211 OR EQUAL)

NOTE: ALL EXPOSED BOLTS AND FITTINGS INCLUDING LOWER BARREL OF HYDRANT TO BE WRAPPED IN 8 MIL BLUE POLYETHYLENE.
WATER LINE TRENCH DETAILS

NOTE: All water lines shall have a minimum of 4'-0" of cover and shall be laid 2 FT. behind the curb unless a waiver is given by the Department of Utilities. A minimum of 1 FT. clearance shall be required from any structure.

Contractor or developer shall place field stakes at 10 FT. offset showing center line and grade of water line. Inspectors will require contractor to adhere to approved plans and field staking in all cases unless changes are approved by Utilities Director or designated representative.

If construction is by Utilities Department personnel, street must be subgraded by contractor prior to water line construction.

All pipe, valves and fittings shall have blue polyethylene wrap applied prior to backfilling trench with either granular material or select soil.

LAWN AREA

SELECT SOIL

4 FT. MIN. COVER

UNDER PAVEMENT

FOR PAVEMENT REPLACEMENT DETAILS
SEE DETAIL PAGE NUMBER 4

BEDDING OF PIPE

COUPLINGS – NEVER ALLOW COUPLINGS TO REST ON OR TO SETTLE DOWN TO ORIGINAL TRENCH BOTTOM
PIPE – MAKE CERTAIN THAT PIPE BARREL IS GIVEN AN EVEN BEARING FOR ITS FULL LENGTH

Laying conditions: In accordance with AWWA C600
Lawn area – Type 1 (flat bottom trench – select soil backfill)
Pavement area – Type 1 (flat bottom trench – 1ft. minimum granular with poly wrap and controlled density fill)
Rock area – Type 5 (pipe bedded in compacted granular to 1 ft. above pipe with blue poly wrap)
NOTE: All backfill shall be compacted in 6" lifts to the top of the pipe by tamping. Above pipe compaction may be completed by same method or by jetting trench by acceptable method.
NOTE:
THESE ILLUSTRATIONS FOR REFERENCE ONLY
ACTUAL DIMENSIONS OF THRUST RESTRAINT
TO BE DETERMINED BY ENGINEER OR DEPT.
OF UTILITIES REPRESENTATIVE
TYPICAL VALVE AND DEAD END INSTALLATION

NOTE: FOR VALVE AND VALVE BOX
SEE MATERIAL SPECIFICATIONS

SEPARATE PLUG/CAP AND
POURED CONCRETE BLOCKING
WITH SLAB OF HARDWOOD TIMBER

INSTALL CORPORATION STOP
10" AHEAD OF PLUG/CAP
TO BE USED FOR BLOW-OFF

CONCRETE
BLOCKING

LID
FINISH GRADE
36" MAXIMUM DEPTH
TO TOP OF OPERATING NUT
ON VALVES
DEEPER THAN
5 FOOT

EXTENSION STEM
MUELLER A-26446
OR EQUAL

MIDDLE
SECTION(S)

BONNET

WATER MAIN

MJ ANCHORING TEE
(CLOW FIG. 1217 OR EQUAL)
OR MJ ANCHORING COUPLING
(CLOW FIG. 1211 OR EQUAL)

NOTE: ALL PIPE, BOLTS AND FITTINGS
INCLUDING PLUG/CAP AND BLOW-OFF
CORPORATION STOP TO BE WRAPPED IN
8 MIL BLUE POLYETHYLENE.

A MINIMUM OF ONE JOINT OF PIPE MUST
EXTEND OUT OF VALVE, (EXACT LENGTH
TO BE DETERMINED BY CITY OF LIMA, DEPT. OF
UTILITIES). THE PIPE SHALL BE CAPPED OR
PLUGGED AT END AND A THRUST BLOCK OF
CONCRETE PLACED AT PIPE END AGAINST UNDISTURBED
EARTH. IF SOIL IS INSUFFICIENT TO BLOCK DEAD END
A RESTRAINT SYSTEM ON THE PIPE, VALVE, FITTING
ETC. MUST BE EMPLOYED, WITH APPROVAL FROM
CITY OF LIMA, DEPT. OF UTILITIES.

FILE NAME: DPN6

CITY of LIMA, DEPT. of UTILITIES
WATERLINE GENERAL SPECIFICATIONS

VALVE AND PLUGGED/CAPPED DEAD END

DRAWN: K.SHOEMAKER
DATE: 10/26/10
DETAIL PAGE NUMBER 6
ALL PIPE, VALVES AND FITTINGS SHALL BE WRAPPED IN 8 MIL BLUE POLYETHYLENE FILM AS PER AWWA STANDARD C-105.

POLY WRAP TO EXTEND UP TO UPPER BARREL OF HYDRANT

ALL WRAP TO BE TAPED AT PIPE END 12" FROM END OF FITTING

POLY WRAP TO INCLUDE SERVICE CLAMPS & CORPORATION STOP

TAPE (TYP.)
**Schlumberger NEPTUNE TRU/FLO COMPOUND**

<table>
<thead>
<tr>
<th>METER SIZE</th>
<th>&quot;A&quot;</th>
<th>&quot;B&quot;</th>
<th>&quot;C&quot;</th>
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<tr>
<td>2&quot;</td>
<td>15.25&quot;</td>
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<td>6&quot;</td>
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<tr>
<td>3&quot;</td>
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<td>3.75&quot;</td>
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<td>4.5&quot;</td>
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<td>6&quot;</td>
<td>24&quot;</td>
<td>5.5&quot;</td>
<td>12.75&quot;</td>
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</tbody>
</table>

All meters shall have straight pipe equal to eight (8) times the diameter of the pipe on the inlet side, and straight pipe equal to two (2) times the diameter of the pipe on the outlet side of the meter.

Cover shall be of reinforced concrete (6" min.) or of steel capable of bearing any weight subjected.

Pit shall have a double door lid and be able to accommodate removal of meter and be able to withstand the weight of traffic. Please contact Dept. of Utilities for approval.

Valves, piping & dresser coupling furnished by consumer.

See additional information in general specifications page 12 & 13.

**CITY of LIMA, DEPT. of UTILITIES**

**WATERLINE GENERAL SPECIFICATIONS**

**DOMESTIC COMPOUND METER PIT**

**DRAWN:** K.SHOEMAKER  **DATE:** 10/26/10  **DETAIL PAGE NUMBER:** 9
ALL METERS SHALL HAVE STRAIGHT PIPE EQUAL TO EIGHT (8) TIMES THE DIAMETER OF THE PIPE ON THE INLET SIDE, AND STRAIGHT PIPE EQUAL TO TWO (2) TIMES THE DIAMETER OF THE PIPE ON THE OUTLET SIDE OF THE METER.

COVER SHALL BE OF REINFORCED CONCRETE (6" MIN.) OR OF STEEL CAPABLE OF BEARING ANY WEIGHT SUBJECTED.

PIT SHALL HAVE A DOUBLE DOOR LID AND BE ABLE TO ACCOMMODATE REMOVAL OF METER AND BE ABLE TO WITHSTAND THE WEIGHT OF TRAFFIC. PLEASE CONTACT DEPT. OF UTILITIES FOR APPROVAL.

VALVES, PIPING & DRESSER COUPLING FURNISHED BY CONSUMER.

SEE ADDITIONAL INFORMATION IN GENERAL SPECIFICATIONS PAGE 12 & 13
ALL METERS SHALL HAVE STRAIGHT PIPE EQUAL TO EIGHT (8) TIMES THE DIAMETER OF THE PIPE ON THE INLET SIDE, AND STRAIGHT PIPE EQUAL TO TWO (2) TIMES THE DIAMETER OF THE PIPE ON THE OUTLET SIDE OF THE METER.

COVER SHALL BE OF REINFORCED CONCRETE (6" MIN.) OR OF STEEL CAPABLE OF BEARING ANY WEIGHT SUBJECTED.

PIT SHALL HAVE A DOUBLE DOOR LID AND BE ABLE TO ACCOMMODATE REMOVAL OF METER AND BE ABLE TO WITHSTAND THE WEIGHT OF TRAFFIC. PLEASE CONTACT DEPT. OF UTILITIES FOR APPROVAL.

VALVES, PIPING & DRESSER COUPLING FURNISHED BY CONSUMER.

SEE ADDITIONAL INFORMATION IN GENERAL SPECIFICATIONS PAGE 12 & 13
### Meter Dimensions

<table>
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<tr>
<th>Size</th>
<th>&quot;A&quot;</th>
<th>&quot;B&quot;</th>
<th>&quot;C&quot;</th>
<th>&quot;D&quot;</th>
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<td>22.5&quot;</td>
<td>36.25&quot;</td>
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</table>

All meters shall have straight pipe equal to eight (8) times the diameter of the pipe on the inlet side, and straight pipe equal to two (2) times the diameter of the pipe on the outlet side of the meter.

Flanged pipe and fittings shall be used for meter setting and bypass.

Cover shall be of reinforced concrete (6" min.) or of steel capable of bearing any weight subjected.

Pit shall have a double door lid and be able to accommodate removal of meter and be able to withstand the weight of traffic. Please contact dept. of utilities for approval.

Valves, piping & dresser coupling furnished by consumer.

See additional information in general specifications page 12 & 13.
CITY of LIMA, DEPT. of UTILITIES
WATERLINE GENERAL SPECIFICATIONS

STANDARD CURB BOX INSTALLATION

NOTE:
SEE ADDITIONAL INFORMATION IN GENERAL SPECIFICATIONS PAGE 12 & 13.

FILE NAME: DPN13

DATE:
10/26/10

DETAIL PAGE NUMBER 13
MOUNTING DIAGRAM FOR:
5/8” METER
3/4” METER
1” METER
DOMESTIC USE & LAWN SPRINKLER USE.
CENTER LINE OF METER & TAIL PIECES TO BE A MINIMUM OF 4” FROM OUTSIDE WALL.
CENTER LINE OF METER & TAIL PIECES TO BE A MIN. OF 24” AND A MAX. 48” ABOVE FLOOR.
ALL INSIDE METERS REQUIRE REMOTE RADIO READ RECEPTACLE. TO BE INSTALLED BY UTILITY FIELD SERVICES PERSONNEL.

NOTE:
FOR METER LAYING LENGTH OF 1 1/2” & 2” METERS CONTACT CITY OF LIMA UTILITY FIELD SERVICES 1405 RESERVOIR RD. LIMA, OHIO 45804 PH: (419) 221-5175

SIDE VIEW
BASEMENT WALL
FLOOR
MIN.
24” MIN. 48” MAX.

OVERHEAD VIEW
BASEMENT WALL
INLET PIPING TO BE TYPE (K) OR TYPE (L) COPPER
"X” METER LAYING LENGTH
5/8” METER—7 1/2”
3/4” METER—9”
1” METER—10 3/4”

FRONT VIEW
METER
REMOTE RADIO READ RECEPTACLE
SHUT OFF
FROM CITY WATER SUPPLY TO DOMESTIC SERVICE
TAIL PIECES (2) SUPPLIED BY CITY OF LIMA UTILITY FIELD SERVICES
MOUNT METER HORIZONTAL WITH FACE UP
WALL

CITY of LIMA, DEPT. of UTILITIES
WATERLINE GENERAL SPECIFICATIONS
BASEMENT METER INSTALLATION

NOTE:
SEE ADDITIONAL INFORMATION IN GENERAL SPECIFICATIONS PAGE 12 & 13.
NOTE:
SEE ADDITIONAL INFORMATION IN GENERAL SPECIFICATIONS PAGE 12 & 13.

NOTE:
SOME TYPES & SIZES OF MAINLINE MATERIAL & TAPS MAY REQUIRE A DOUBLE STRAP SERVICE CLAMP
NOTE:  INLET AND OUTLET PIPING MAY REQUIRE SUPPORT.