

Review Comments for Case 14-15 Based on revisions to Section 610 Water Line Construction dated June 4, 2014.

Item	Location/Section	Revision	Comment
1.	610.3 Materials	Ductile iron - water pipe and fittings per: Section 750. Concrete pressure pipe-steel cylinder type per: Section 758. C900 PVC per: AWWA C900-07.	This change will define requirements for cast iron water pipe and fittings.
2.	610.4 Construction Methods	Hydrostatic testing shall be in accordance with this specification <u>Section 611</u> .	Hydrostatic testing is being moved into section 611.
3.	610.5 Blocking and Restraints	All pipe lines, valves and fittings 16 inches and smaller in diameter shall be blocked with concrete thrust blocks in accordance with standard details. Thrust block areas for pipe, valves and fittings larger than 16 inches in diameter shall be calculated for each size pipe, valve and fitting to be installed and per details shown on the plans.	Removing design requirements from this construction specification.
4.	610.5 Blocking and Restraints	Thrust block areas shall be calculated on the basis of 200 psi test pressure bearing against undisturbed 3,000 psf soil. If soil or pressure conditions other than those stated above are encountered, the thrust block areas shall be calculated and submitted for approval. The areas stipulated in the standard details are minimums and shall not be decreased.	This information is in Note 1 of Detail 380. These design requirements should be deleted from the construction specifications unless the Contractor is required to verify the soil bearing pressure.
5.	610.5 Blocking and Restraints	With the Engineers approval, restrained/welded joints may be used in lieu of thrust blocks to resist thrust forces .	Remove unnecessary text.
6.	610.5 Blocking and Restraints	Where restrained joints are specified on mains sixteen (16) inches in diameter and smaller, ductile iron pipe shall be used with an approved joint restraint method.	Detail 303 indicates pipe materials other than ductile iron pipe may be used where restrained joints are specified.
7.	610.5 Blocking and Restraints	Where restrained joints are specified on mains sixteen (16) inches in diameter and smaller, ductile iron pipe shall be used with an approved joint restraint method .	Detail 302 appears to be the only approved restraint method in MAG – Other restrained joint options are often preferred.

8. Keep 610.5 BLOCKING AND RESTRAINTS as a subsection of 610.4 CONSTRUCTION. The following are other potential subsections that could be used to reorganize Section 610.4 CONSTRUCTION to improve sequential flow. The proposed reorganization of section 610.4 is detailed in the file: *Coordination for MAG Cases 14-14 and 14-15 Comments 2014-07-24*.

- 610.4.1 Trenching/Cover
- 610.4.2 Laying Pipe
- 610.4.3 Blocking and Restraints
- 610.4.4 Maintain Pipe Cleanliness / Pipe Cleaning
- 610.4.5 Testing

9. Section 610.11 COUPLINGS, JOINTS, GASKETS AND FLANGES: This section has not been revised but the existing specification has problems.

- Each subsection needs to identify the type of pipe that the requirements apply to. Since fittings and joint requirements are usually part of the specifications for each type of pipe, it may be best to relocate specific pipe material requirements to the applicable pipe specifications.
- Paragraph designations (A), (B), and (C) are repeated causing confusion and making them useless for reference purposes.

10. Section 610.12 DISINFECTING WATER LINES: Relocate the disinfection test requirement to follow the hydrostatic test requirement found in Section 610.4. This provides proper sequencing and groups testing requirements together.

610.3 MATERIALS:

~~Only such packing materials as are included in the list of acceptable materials in AWWA C-600 for installation of cast iron water main shall be used. The packing materials shall be handled in such a manner as to avoid contamination, and shall be dry when placed in the joints. All such materials shall be free of oil, tar, or greasy substances, except that treated paper packing material, lute, cement, or sulphur compound caulking will not be permitted.~~

Comment [r1]: (RGodwin) – I agree this is the appropriate section for these materials.

610.4 CONSTRUCTION METHODS:

Comment [RTH2]: Moved from 611.2.4 into Section 610.3 MATERIALS.

610.4.1 Trenching/Cover: All water mains in major streets shall have a minimum cover of 48 inches over the top of the pipe. Water mains in other locations shall have a minimum cover over the top of the pipe as follows:

Comment [r3]: (RGodwin) – I really like how 610.4 is further broken down.

- (A) 36 inches for mains smaller than 12 inches.
- (B) 48 inches for mains 12 inches and larger.

Cover for water mains will be measured from existing or proposed finished grade of pavement or from natural ground, whichever is deeper.

~~Except as otherwise required in this specification, the special provisions, or by the Engineer, trench excavation, backfilling and compaction shall be in accordance with the requirements of Section 601. Backfilling may be accomplished as soon as the pipe line has been installed to the satisfaction of the Engineer, subject to the requirements for testing, as contained below.~~

610.4.2 Laying Pipe: No water main shall be deflected, either vertically or horizontally, in excess of that recommended by the manufacturer of the pipe or coupling, without the appropriate use of bends or offsets.

If adjustment of the position of a length of pipe is required after it has been laid, it shall be removed and rejoined as for a new pipe.

~~Every precaution shall be taken to prevent foreign material from entering the pipe. When on the project site, the ends of the pipe section shall be plugged, wrapped or tarped at all times when pipe laying is not in progress, which includes storage and staging at the site. The pipe shall be stored on a pallet, blocking or other means to prevent foreign materials from entering the pipe. The pipe line shall be protected by a water tight plug or other means approved by the Engineer when the pipe is in the trench if pipe laying is not in progress.~~

Where restrained joints are specified on ~~mains~~ mains smaller than sixteen (16) inches in diameter, and smaller, ductile iron pipe shall be used with an approved joint restraint method.

Comment [r4]: (RGodwin) – this existing statement was contradictory. It should either be 16" and larger, or 16" and smaller, but not both.

On mains sixteen (16) inches in diameter and larger ~~where plans specify welding joints and where ductile iron pipe is furnished,~~ joints shall be restrained by an approved joint restraint method ~~for the distance specified.~~

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~~Except as otherwise required in this specification, the special provisions, or by the Engineer, trench excavation, backfilling and compaction shall be in accordance with the requirements of Section 601. Backfilling may be accomplished as soon as the pipe line has been installed to the satisfaction of the Engineer, subject to the requirements for testing, as contained below.~~

Comment [RTH5]:
1. Plans should not require welding of ductile iron pipe.
2. MAG specifications should not change construction plans. This is in conflict with order of preference of documents as identified in Section 104.1.
3. Delete or revise sentence.

~~Hydrostatic testing shall be in accordance with this specification.~~

~~All corporation stops used for testing and chlorination shall be left in the pipe line with the stop closed and all connecting pipe removed.~~

Comment [r6]: (RGodwin) – I haven't had any experience with welded DIP. I'd recommend the Working Group discuss their experience with this, or delete per Bob's suggestion.

Curb stops with flushing pipes or fire hydrants shall be installed at the ends of dead-end mains according to standard details. Thrust blocks shall be installed in accordance with this specification.

Valve boxes and covers shall be according to standard details.

Ductile iron pipe shall be installed in accordance with this specification and pipe and fittings shall be in accordance with Section 750.

PVC C-900 pipe shall be installed in accordance with AWWA C900 and Section 601.

~~611.0.4.3.2.1~~ **Cleaning and Treating Pipe:**

The interior of all pipe and fittings shall be kept as free as possible of all dirt and foreign material at all times, until the pipe is placed in the new line.

Every precaution shall be taken to prevent foreign material from entering the pipe. When on the project site, the ends of the pipe section shall be plugged, wrapped or tarped at all times when pipe laying is not in progress, which includes storage and staging at the site. The pipe shall be stored on a pallet, blocking or other means to prevent foreign materials from entering the pipe. The pipe line shall be protected by a water-tight plug or other means approved by the Engineer when the pipe is in the trench if pipe laying is not in progress.

If in the opinion of the Engineer, the pipe contains dirt that will not be removed during the flushing operation, the interior of the pipe shall be cleaned and swabbed, as necessary, with a .005 to .010 percent chlorine solution.

~~611.2.2~~ **LAYING PIPE:**

If the Contractor or pipe-laying crew cannot install the pipe in the trench without getting earth into it, the Engineer may require that, before lowering the pipe into the trench, a heavy, tightly woven canvas bag of suitable size be placed over each end of the pipe and left there until the connection is to be made to the adjacent pipe.

At the close of each day's work, the end of the last laid section of pipe shall be plugged, capped, or otherwise tightly closed to prevent the entry of foreign material of any nature.

~~610.1.4.2.3.4~~ **Preventing Trench Water from Entering Pipe:**

At times when pipe laying is not in progress, the open ends of the pipe shall be closed by a watertight plug or other means approved by the Engineer. Joints of all pipe in the trench shall be completed before the work is stopped. If water is in the trench, the seal shall remain in place until the trench is pumped dry.

~~610.4.5~~ **Testing:** Hydrostatic testing shall be in accordance with this specification Section 611.1.

Disinfection of water lines shall be in accordance with Section 611.2.

All corporation stops used for testing and chlorination shall be left in the pipe line with the stop closed and all connecting pipe removed.

610.5 SEPARATION:

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611.2 ~~DISINFECTING-DISINFECTING~~ WATER MAINS

~~611.2.1~~ **CLEANING AND TREATING PIPE:**

The interior of all pipe and fittings shall be kept as free as possible of all dirt and foreign material at all times, until the pipe is placed in the new line.

If in the opinion of the Engineer, the pipe contains dirt that will not be removed during the flushing operation, the interior of the pipe shall be cleaned and swabbed, as necessary, with a .005 to .010 percent chlorine solution.

~~611.2.2~~ **LAYING PIPE:**

Comment [r7]: (RGodwin) – I agree that all statements regarding keeping pipe clean should be kept together, and perhaps referenced in 611 as well.

~~If the Contractor or pipe laying crew cannot install the pipe in the trench without getting earth into it, the Engineer may require that, before lowering the pipe into the trench, a heavy, tightly woven canvas bag of suitable size be placed over each end of the pipe and left there until the connection is to be made to the adjacent pipe.~~

~~At the close of each day's work, the end of the last laid section of pipe shall be plugged, capped, or otherwise tightly closed to prevent the entry of foreign material of any nature.~~

~~611.2.2 PREVENTING TRENCH WATER FROM ENTERING PIPE:~~

~~At times when pipe laying is not in progress, the open ends of the pipe shall be closed by a watertight plug or other means approved by the Engineer. Joints of all pipe in the trench shall be completed before the work is stopped. If water is in the trench, the seal shall remain in place until the trench is pumped dry.~~

~~611.2.4 PACKING MATERIAL:~~

~~Only such packing materials as are included in the list of acceptable materials in AWWA C 600 for installation of cast iron water main, shall be used. The packing materials shall be handled in such a manner as to avoid contamination, and shall be dry when placed in the joints. All such materials shall be free of oil, tar, or greasy substances, except that treated paper packing material, jute, cement, or sulphur compound caulking will not be permitted.~~

~~611.2.5-1 FLUSHING COMPLETED PIPE LINES:~~

~~(A) Preliminary Flushing: After initial loading of mains and venting of air, a All mains 12 inches and smaller shall be flushed and scoured of any foreign debris, prior to chlorination, as thoroughly as possible with the water pressure and outlets available, prior to pressure testing. Flushing shall be done after the pressure test has been made. It must be understood that flushing removes only the lighter solids and cannot be relied upon to remove heavy material allowed to get into the main during laying. It is difficult to flush mains over 12 inches in diameter, so in such instances the requirements above, must be rigidly adhered to. Chlorination and disinfection shall be done per Section 611 after the main has been loaded, vented, flushed and scoured, and successfully pressure tested with the agency.~~

Heavy duty, factory bushed, tapped couplings, with corporation stops shall be located at all high points in the lines to allow the air to be removed prior to testing the water lines and at disinfection points as may be required. Field taps will not be permitted.

The couplings, at high points and disinfection points, shall be left exposed during backfilling until the testing is complete. Couplings and corporation stops shall be left on the mains upon completion of water mains.

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Comment [RTH8]: Moved to Section 610.3 CONSTRUCTION.

Comment [RTH9]: Move to Section 610.3 MATERIALS.

Comment [RTH10]: Adjust numbering.

Comment [r11]: (RGodwin) – This change may be considered for next year, addressed referencing AWWA C651 "Disinfecting Water Mains". The contractor really needs to vent the air, then scour the pipe before performing any pressure testing or chlorination (otherwise dirt can form a cake on the pipe lining). A quick recap of the sequencing may help.