

NORWOOD WATER COMMISSION MATERIAL AND INSTALLATION SPECIFICATIONS

The materials and installation specifications of the Norwood Water Commission, shall be that certain document entitled "Plans and Specification Improvements to Water Collection and Distribution System, Town of Norwood Water Commission, Norwood, Colorado," as they may be amended from time to time. ("Commission Specifications"), are incorporated herein by reference. The following is a summary of the referenced document:

1. All Commission main and distribution lines and appurtenances shall be owned by the Commission and shall be installed to the Commission Specifications at the Developers expense. All materials proposed to be used by a customer shall have the prior written approval by the Commission.

Any deviations from these materials and installations specifications **must** be approved in advance and in writing by the Norwood Water Commission or its representative.

2. The Customer shall reimburse the Commission for the service of an Inspector and/or Engineer, if needed. The Commission shall be given **48-hours'** notice prior to any construction.

3. All construction shall conform to 24" x 36" construction drawings submitted to and approved by the Commission or representative prior to any construction. When a main or distribution line is located within the road right-of-way, it shall be constructed parallel to and a minimum of five feet off the property line. When located in other easements, the location shall be designated by the Commission. The Developer shall perform all clearing and grading to provide for this alignment.

4. All work shall be done in accordance with good construction practice. Water line installations shall comply with all applicable local, state and federal regulations. The developer shall warrant and repair all defects in the pipeline for **1 year** after acceptance by the Commission.

5. All contracts for service and plans and specifications by the Customer shall be reviewed and approved by the Commission or representative prior to the start of construction. Utilities shall be installed in a manner to ensure all separations and/or encasement requirements are met.

6. In new subdivisions or along new roadways the rough grading of the right-of-way shall be completed and approved by the respective County or Town representative prior to any pipeline construction. Survey pins for the right-of-way shall be in place by a licensed surveyor.

7. If the developer does not have sufficient equipment, labor and materials to properly construct a quality pipeline, work shall be discontinued until the developer remedies the deficiencies.

8. Road Crossings.

(a) Road crossings by main lines shall be HDPE-DR11 continuous seamless pipe or C-900 pvc pipe with joint restraints from right-of-way line to right-of-way line and encasing pipe shall extend to within 4 feet of right-of-way line on both sides.

(b) Single service road crossings shall be a minimum of 1" polyethylene 200 psi encased the full width of the roadway to a point within 4' feet of the right-of-way line in a 4" pipe. These service crossings shall be connected to the mainline through a 1" corporation stop with flare pipe thread fitting to brass tapping saddle (see "Construction Specifications" for more detail).

(c) Any main line canal and miscellaneous crossings requiring encasing (depending on scenario) shall be concrete or constructed of C-900 pvc, HDPE pipe or other seamless with restraints extending minimum of 10' feet beyond the end of the casing.

9. Pipe shall be PVC 1120 conforming to ASTM 2241. Sizes 3/4" through 1" shall be minimum of polyethylene 200 psi. Sizes 1 1/2" inch and larger shall be a minimum of class 200 psi and have "O" ring joints. Pipe of higher class may be required when conditions dictate the need.
10. Class pipe shall have ring-tite type joints. Polyethylene and copper pipe shall have flare fittings or approved compression fittings.
11. All bends, tees and fittings shall have concrete thrust blocks and joint restraints as recommended by the manufacturers. All metal components shall be wrapped with 2 layers of 4 mil. plastic sheeting and attached to the pipeline.
12. Valves shall meet AWWA specifications, have ring-tite ends, non-rising stem, and 2-inch square wrench nut. Stem shall have an "O" ring seal and have a resilient wedge. All valves shall be epoxy coated inside and out. All valves and metal fittings shall be wrapped in plastic of 4 mil. minimum thickness that there is no direct contact with the soil. All bolts on valves and fittings shall be stainless steel or coreblue.
13. Valve boxes shall be cast iron, 2 piece, 5 1/4" shaft, slip type, Tyler pipe 6855 series.
14. Trench excavation shall be straight along the designed alignment and provide for 54 inches of cover over a main line and 48" inches of cover over a service line. 6" inch wide bury warning tape shall be installed 12" inches above pipe and tracer wire taped to line all the way through the curb stop to residence. The pipe shall normally be installed 5' feet from the property line in the road right-of-way.
15. When sharing a trench or otherwise, the separation from any other utility or service will at a minimum follow CDPHE requirements. The pipeline shall have separation of at least 5' from any other utility or service unless approved. If sewer crosses above water line, encasement is required.
16. Place Main Line with 4'6" bury, placed on 1/4" chips material. Bedding shall at minimum encase 6" all around pipe. Compaction shall be in manner as to allow material to surround the pipe entirely. The customer must place tracer wire taped to pipe with bury tape 1 foot above main line and service lines.
17. The pipeline shall be disinfected with a chlorine solution having a residual of 50 PPM and pressure tested for 24 hours prior to flushing and being put into service. The pressure test should have maximum differential pressure after 24 hours of 2% before acceptance of the Commission.
18. The connection to the Commission's system shall be done by an approved Contractor, with proof of up-to-date insurance, on file at Town Hall and Norwood Water Commission staff perform an inspection prior to the connection being buried. This normally requires three valves and a tee provided by the developer.
19. Fire hydrants shall have a minimum of 4 1/2 feet of bury and shall be equipped with core blue or stainless steel bolts when bolts are underground. Fire hydrants shall be installed and thrust and shall be of uniform specifications to the rest of the system unless approved in writing by the Public Works Director. Each fire hydrant shall be equipped with security locks.
20. Flushing hydrants shall be a Mainguard Model #77.
21. Airvacs shall be a Val-Matic Model #22.
22. Airvacs shall be placed in a 5 foot diameter manhole with accessible manhole and cover.

MAIN LINE MATERIALS

1. Pipeline, 2"-4" PVC pipe and fittings shall be schedule 40 meeting the requirements of ASTM D 1785 and NSF/ANSI 61.
Pipeline 6"-12" PVC pipe shall be manufactured in accordance with AWWA C900 and NSF/ANSI 61 and be a minimum pressure class of DR18. Tracer wire taped to pipe and bury tape 12" above water line.
No random lengths of pipe.
2. Gate Valve, 4" thru 12"; resilient wedge-type, MJxMJ, Mueller A-2360
3. Valve Box, for 4" thru 12" valves; cast iron, 2 piece, 5/4" shaft, slip type, Tyler Pipe 6855 _____
Series.
4. Pipe Fittings, 6" thru 24": Ductile Iron, M.J., SSB, Cl. 350.
5. Air Vac, Combination air and Vacuum valve with service shut off valve, Model 201C Val- _____
Matic.

SERVICE LINE MATERIALS

1. Pipeline, 3/4" thru 2": Polyethylene, 200 psi, SDR-9 meets ASTM D-2239, premium grade, NSF listed, Pure Core PE3408. The service line must be a continuous and free of connections from curb stop to residence whenever possible. Any deviations of approved materials must be approved by the Norwood Water Commission or representative.
2. Tapping Saddle for tap sizes 3/4" thru 2" brass, fits pvc pipe, Power Seal, Twin Seal, Style 3401
3. Corporation Stop 3/4"-1", brass, fits pvc pipe, Power Seal, Twin Seal, Style 3401.
4. Curb Stop 3/4"-1" Compression by Compression H-15209 McDonald.
5. Compression or Flare Connection for polyethylene, Mueller 110 .
6. All materials shall be the same as tap size through the curb stop.
7. Appendix D "Meter Installations and backflow preventors" Shall be installed in-doors, or a Norwood Water Commission approved shelter.
 - (a) Must be accessible and located in the same structure they serve.
 - (b) No device may be installed in a location where it may become submerged or freeze.
 - (c) Backflow preventers shall be tested by certified professional before acceptance.
 - (d) All material and work to be inspected before burial and acceptance.

METER INSTALLATIONS

- 1. Meter, 5/8" x 3/4", 3/4", 1", 1 1/2" and 2" Neptune E-10 E-Coder E-Coder R900i.
- 2. Neptune R900 Wall or Pit Meter Interface Unit (MIU) radio read system.

APPROVED BACK FLOW PREVENTORS (to be installed by a Licensed Plumber)

- 1. Low Hazard
 - a) Watts Series 7 Residential Dual Check Valve.
 - b) Zurn/Wilkens model 700 or 705 Dual Check valve.
- 2. Medium Hazard
 - b) Watts Series 007 Double check
- 3. High Hazard
 - a) Watts Series 009 RPZ Backflow Preventer
 - b) Watts Series 909 RPZ Backflow Preventer

MISCELLANEOUS FITTINGS

- 1. Flushing Hydrant, Kupferle Main Guard, 2" Locking Hydrant.

All substituted materials must be interchangeable with existing system and all manufactures information must be submitted with all pre-construction permits required by the Norwood Water Commission.

Hydrants or like materials may be acceptable but require (1) One repair kit with each hydrant or material installed plus repair manuals and all necessary tools.

Stop and Waste Valves and Frost Free Hydrants are prohibited within our water system.

Acknowledged:

Developer/Customer

Contractor

Date