

DEL-CO WATER COMPANY
GENERAL NOTES FOR WATER LINE CONSTRUCTION

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1. General Notes as modified by Del-Co and shown on the approved Construction Drawings shall supersede the requirements of the *Del-Co Water Company Construction Standards Manual* wherever discrepancies occur.
2. Standard General Notes:
 - a. Water line design, materials, and installation methods shall conform to applicable sections of Recommended Standards for Water Works (Ten States Standards), American Water Works Association (AWWA) Standards, and the *Del-Co Water Company Construction Standards Manual*. Contractor shall obtain a copy of the standards and have in their possession at all times during construction. Coordinate work with Del-Co Water (740) 548-7746.
 - b. Del-Co.'s signature on this plan signifies only concurrence with the general purpose and location of the proposed water line improvements. All technical details remain the responsibility of the professional engineer who prepared and certified these plans. Del-Co Water Company takes no responsibility, financial or otherwise, regarding errors in this plan.
 - c. Correction of errors shall be to the applicable Del-Co Water Company standard, and the sole responsibility of the developer. All corrections, or revisions that affect Del-Co.'s Water Line plans, directly or indirectly shall be submitted to, and approved by Del-Co Water Company prior to revisions being issued.
 - d. GPS coordinates shall be provided to Del-Co Water at the completion of the waterline installation. These coordinates shall include all materials, equipment and labor necessary to obtain horizontal and vertical (northing, easting and elevation) survey coordinates for the water main improvements. The survey coordinates shall be obtained at the completion of the water main installation and shall include all valves, tees, fire hydrants, bends, plugs, reducers, tapped tees, curb stops, air releases, 2" end of line fire hydrants, ends of casing pipe, service saddles and corporations. Additional GPS coordinates are required on the water main every 200' where no fittings or service saddles are to be installed.
 - i. GPS coordinates shall be referenced to the applicable County Engineer's Monuments and shall be based on the North American Datum of 1983 (NAD 83) with the NSRS2007 adjustment, with further reference made to the Ohio State Plane North Coordinate System, North Zone, with elevations based on NAVD 88 datum. All coordinates (Northing, Easting and Elevation) shall be referenced to the nearest hundredth. All survey coordinates shall be accurate to within 0.6 foot or less horizontal and vertical.
 - ii. The GPS coordinates shall be submitted to the Del-Co Water Engineering Department in digital spreadsheet form and shall include the applicable item, station, northing, easting and elevation coordinates. The above listed GPS coordinate information shall be submitted to the Del-Co Water Engineering Department as part of the As-Built Drawing submittal.
 - e. As-Built drawings are required following the completion of construction. One set of drawings marked "As-Built" shall be submitted by the developer to Del-Co's Inspection Department for review and approval. Water mains cannot receive a Final Acceptance until as-built drawings have been approved. *Please note: taps may not be purchased nor installed until water lines have received a Final Acceptance*
 - f. Water mains shall become the ownership of Del-Co Water upon final acceptance.

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- g. Water line construction plans are approved for a period of one year from the date of the approval letter or signed plans. If construction has not started within one year of the date of approval, plans shall be resubmitted to Del-Co Water Company for approval.

3. Water Line Construction:

- a. Water lines shall be NSF 61 approved, and compliant with ASTM D2241 & Ohio EPA ENG-08-002 standards.
- b. Use the following type and class of pipe unless otherwise indicated on the drawings:
 - i. 2-inch water line pipe: Class 200 SDR 21 Yelomine PVC (restrained joint).
 - ii. 4-inch water line pipe: Class 200 SDR 21 PVC.
 - iii. 6-inch water line pipe: Class 200 SDR 21 PVC.
 - iv. 8-inch to 12-inch water line pipe: Class 160 SDR 26 PVC.
 - v. 16-inch and larger water line pipe: AWWA C151 Class 52 DIP.
 - vi. 4-inch pipe and larger used for fire service: AWWA C900 DR 18 (150 PSI) PVC.
 - vii. All sizes of Del-Co-owned water lines used on master meter projects: Class 200 SDR 21 PVC.
- c. All sizes of Ductile Iron pipe shall be installed with Polyethylene Encasement
- d. All fittings shall be mechanical joint conforming to AWWA C153.
- e. Crosses shall not be used without approval of Del-Co Water Company.
- f. All valves shall be mechanical joint conforming to AWWA with AISI 304 stainless steel external hardware. Valves 12-inch and smaller shall be Resilient-Seated Gate valves per AWWA C509 and valves 16-inch and larger shall be Pratt Groundhog butterfly valves per AWWA C504.
- g. Provide heavy-duty valve boxes on all hot-taps and at valves located under gravel or pavement surfaces.
- h. Top of valve box shall be flush with finished grade in paved areas, and 4 inches above finished grade in non-paved areas.
- i. Maintain a minimum 10-foot horizontal and 1.5-foot vertical separation between water lines and sanitary and storm sewers.
- j. All other buried utilities shall maintain a minimum 5-foot horizontal separation, and 2-foot vertical separation from the centerline of water lines as finally laid and constructed.
- k. Provide concrete thrust blocking for all fittings, valves, anchor tees, and hydrants.
- l. Bury water lines a minimum depth of 48-inches to the top of pipe.
- m. All engineered fill to be placed over or under Del-Co Water Lines shall be in place prior to the construction of the water lines.
- n. Place a 5-foot steel fence post or 4"x4" wood post at valves and the ends of lines. Paint blue.
- o. Tracer Wire:
 - i. Install Copperhead® or equal 12-gauge high strength 452lb break strength 30 mil HDPE jacket, copper-clad, steel reinforced tracer wire on all water mains and service lines installed by trenching methods.
 - ii. Install Copperhead® or equal 12-gauge extra high strength 1150lb break strength 45 mil HDPE jacket, copper-clad, steel reinforced tracer wire on all water mains and service lines installed by boring methods.

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- iii. Fasten wire to pipe in two places per pipe section. Extend tracer wire to ground surface at all valves and hydrants as shown in the Del-Co standard detail. Splice wires using Burndy Copper Split Bolt KS-15. Thoroughly wrap the connector and bare wires with 3M Temflex 2155 Rubber Splicing Tape, cover entire connection with Scotch Super 88 Heavy Duty Grade Electrical Tape.
 - iv. Connect all service line wires to main line wires using Burndy Copper Split Bolt KS-15. Thoroughly wrap the connector and bare wires with 3M Temflex 2155 Rubber Splicing Tape, cover entire connection with Scotch Super 88 Heavy Duty Grade Electrical Tape.
 - v. Contractor Shall Test the continuity of all wire using a third-party tester.
 - 1. Contractor shall contact Del-Co.'s Inspection Department a minimum of 24 hours prior to test.
 - 2. Tester shall send a signed report to Del-Co Water Inspection Department affirming all wire has continuity.
 - 3. Contractor shall repair all deficiencies.
4. Water Service Construction (between main line and meter pit):
- a. All water services shall be constructed and installed per AWWA C800.
 - b. For meters 1-inch and smaller, use 1-inch Class 200 SDR 7 iron pipe size (IPS) polyethylene pipe.
 - c. Connections to PVC pipe shall be made with approved tapping saddle and corporation stop per Del-Co Subdivision Construction Standards Manual.
 - d. Connections to DIP shall be by direct tap or saddle and approved corporation stop per Del-Co Subdivision Construction Standards Manual.
 - e. Provide a curb stop with 1-inch female iron pipe threads on the customer side at the end of service lines. Locate at ROW, but a minimum of five feet from edge of sidewalk unless otherwise approved or directed by Del-Co.
 - f. All service line valves 1½-inch and larger shall be mechanical joint gate valves, restrained with Duct-Lugs and galvanized all thread rod, or anchor tees where applicable.
 - g. Minimum depth of cover shall be 48 inches.
 - h. Place a 5-foot steel fence post or 4"x4" wood post at the ends of all service lines, paint blue.
 - i. Contractor shall be responsible for providing special backfill material for all lines, including those installed by Del-Co Water Company, where required by the County or City Engineer.
5. Fire Hydrants:
- a. Fire hydrants shall conform to AWWA C502 for dry barrel hydrants.
 - b. Main valve: 5.25-inch compression.
 - c. Nozzles:
 - i. Threading: Conform to NFPA National Standard fire hose threads.
 - ii. 4.5-inch steamer, except in the following locations provide an integral storz connection; Harrington HIHS50 or equal: Berkshire, Berlin, Concord, Genoa, Kingston, Liberty, Orange, Porter, Trenton, and Scioto Townships; City of Powell; and the Villages of Sunbury and Galena.
 - iii. Two 2.5-inch hose connections.

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- d. Inlet Connection: 6-inch mechanical joint.
 - e. Operating Nut: 1.5-inch pentagon, turn counterclockwise to open.
 - f. Placement of Hydrant: 2 feet from the back of curb or 8 feet from the edge of pavement on non-curbed streets
 - g. Extensions and parts: Shall be manufactured by the original equipment manufacturer.
 - h. Approved Manufacturers: Mueller Super Centurion 200, American Flow Control B-84-B, Clow Medallion, M&H Model 129M, AVK Nostalgic 2780, or Kennedy Guardian K81D.
 - i. Painting: Repaint all hydrants after installation per Del-Co Subdivision Construction Standards Manual Section 02731, Part 2.06.
 - i. Liberty Township, Powell, and Village of Sunbury: Safety Red.
 - ii. Other Townships: Safety Yellow
 - iii. Fire hydrants located on private water lines shall be painted Industrial Green.
6. Disinfect all water lines in accordance with AWWA C651 and Del-Co specifications.
7. All pipe installation and pressure testing shall be in accordance with AWWA C600 for ductile iron pipe and C605 for plastic pipe, and Del-Co Specifications.
 - a. Contractor shall provide all equipment necessary to perform pressure test.
 - b. Schedule test between 8:00 AM and 2:00 PM weekdays. Notify Del-Co 24 hours prior to test.
8. Obtain written approval of material and manufacturers list from Del-Co Water prior to beginning construction.
9. Provide casing pipe for all road crossings unless otherwise approved by Del-Co. Casing pipe shall be steel pipe with 0.375-inch wall thickness, or PVC C900 for water lines 12-inch Dia. or less. Casings for water lines larger than 12-inch Dia. may be AWWA C905.
10. Easements shall be provided to Del-Co Water before permission will be given to make new service line connections.
11. Connections to existing water lines will be made by Del-Co Water at the contractor's expense or performed by contractors who are approved for making connections. Notify all property owners, and Del-Co Water, in writing 48 hours before starting construction.
12. Contractor shall excavate to determine the location and depth of existing water lines wherever cover over the water lines is being reduced. If the final depth of the waterline will be below Del-Co Water standards, Contractor shall submit a relocation plan for approval by Del-Co Water, and relocate the water line at their expense.
13. Contractor shall be responsible for locating and protecting the water line prior to final acceptance by Del-Co Water, and repairing all damages from construction activity.
14. Do not fill new water lines until approved by Del-Co Water Co.

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15. Booster pumps are not allowed on individual services.
16. All water mains, including those not designed to provide fire protection, shall be sized following an analysis based on flow demands, 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 designed flow conditions. Normal working pressure in the distribution system shall not be less than 35 psi.