


- 1.09 **MINIMUM WATER FLOW REQUIREMENTS** The water main extension at the most remote location shall be able to provide a minimum fire flow of 250 gpm for the installation of fire hydrants and the water system supporting this flow has the capability of providing this flow for a period of not less than two (2) hours plus consumption at the maximum daily rate. A minimum of 30 psi must be available on the discharge side of all meters. All water mains, including those not designed to provide fire protection, shall be sized after a hydraulic analysis based on flow demands and pressure requirements. If the water system cannot support the installation of fire hydrants, anchoring tees and valves shall be installed to allow for future fire hydrant installation when adequate water is available. If the water system extension is part of a subdivision development, the developer will be responsible for installing the anchoring tees and valves as described above and providing the District with a fire hydrant for each tee and valve installed as part of the subdivision. These fire hydrants will be installed by the District after water main improvements are made in the area which support the installation of fire hydrants.
- 1.10 **HIGH PRESSURE AREAS** Additional requirements may be necessary for high-pressure areas (125 psi static pressure or higher) as determined by the District.
- 1.11 **VALVES** Sufficient valves as determined by the District shall be provided on water mains so inconvenience and public health hazards are minimized during repairs, and their location shall be approved by the District. All valves shall be operated by or under the direction of District personnel only. Valves shall be installed at each end of cross-country water mains, and at separation of no greater than 1000 feet in urban residential areas; 500 feet in commercial areas; 1 mile in rural areas with few residents. Valves should be located at roadway intersections where practical.
- 1.12 **FIRE HYDRANTS** Fire hydrants shall be connected only to water mains adequately sized to carry fire flows and in no case to lines smaller than six (6) inches. An auxiliary valve shall be installed in all hydrant supply pipes. Fire hydrant drains shall not be connected to any sanitary sewer, combined sewer, septic tank or subsoil treatment system (hereinafter "non-storm sewer") or any storm sewer or storm drain, and shall be located at a distance greater than ten feet (10') from any non-storm sewer. Fire hydrant spacing shall be as recommended by the Planning and Development Services and the local fire department. Fire hydrants shall be located on or as close to side property lot lines as possible. Fire hydrants installed as part of a water main replacement project are to be replaced in approximately the same location as the existing one. Additional hydrants may be added when they are required for air release or flushing purposes as determined by the District.
- 1.13 **PARALLEL INSTALLATION OF WATER AND SEWER LINES**  
Water mains shall be laid a distance of greater than or equal ( $\geq$ ) to ten feet (10') horizontally from any existing or proposed sanitary sewer, combined sewer, septic tank or subsoil treatment system (hereinafter "non-storm sewer"). The horizontal distance shall be measured from outside diameter of the water main to outside diameter of the non-storm sewer. In cases where the District determines it is not practical to maintain a ten foot (10') separation, water mains may be installed closer to a non-storm sewer provided that the water main is laid in a separate trench or on an undisturbed earth shelf located on one side of the sewer at such an elevation that the bottom of the water main is at least eighteen inches (18") above the top of the gravity sewer. Documentation of this variance, including where the variance was required and how variance conditions were met, shall be maintained with the project records. If these conditions are unable to be met, plans and specifications shall be submitted to the Division of Water for review and approval. No deviation from the horizontal ten foot (10') separation shall be allowed if the non-storm sewer is a force main (sewer under pressure).

- 1.14 **CROSSING OF WATER AND SEWER LINES**  
When water mains and sewers cross:
- Water mains shall be laid such that there shall be a vertical distance of greater than or equal to ( $\geq$ ) eighteen inches ( 18" ) between the water main and sewer. The vertical distance shall be measured from the outside diameter of the water main to the outside diameter of the sewer line.
  - One ( 1 ) full length of the water pipe shall be located so that both joints of the water pipe shall be as far from the sewer as practical as determined by the Utility.
  - Where necessary, special structural support for the water and sewer pipes shall be required. No water pipe shall pass through or come in contact with any part of a non-storm sewer manhole.
- 1.15 **PARALLEL INSTALLATION WITH OTHER UNDERGROUND UTILITIES-**  
Water mains should maintain a minimum lateral separation of 3 feet from all other underground utilities whenever possible, with the exception of sewers as stated elsewhere in these specifications.
- 1.16 **WATER CROSSINGS** Surface water crossings, both over and under water, present special issues which should be discussed with the District before improvement plans are prepared. Over water crossings, the pipe shall be adequately supported, protected from damage, freezing, and accessible for repair or replacement. The pipe shall be of special construction having flexible, restrained, or welded watertight joints. Valves shall be provided at both ends of water crossings so that the section can be isolated for test or repair. Where the water main is constructed under a blue line stream, the pipe shall be protected with concrete encasement. This encasement shall extend a distance equal to the width of the channel measured from top of bank to top of bank. The encasement shall be per Standard Drawing No. 110. Valves shall be installed on each side of the water crossing in areas not subject to flooding when crossing water courses greater than 15 feet in width (bank to bank). Permanent taps shall be installed on each side of the valve closest to the supply source to allow insertion of a small meter to determine leakage and obtain water samples. The Developer will be responsible for meeting the requirements of 401 KAR 4:050 and KRS 151.250 for sub-fluvial pipe line crossings. For subfluvial pipe crossings, a floodplain construction permit will not be required pursuant to KRS 151.250 if the following requirements of 401 KAR 4:050 Section 2 are met:
- No material may be placed in the stream or in the flood plain of the stream to form construction pads, coffer dams, access roads, etc. during construction of pipe crossings.
  - Crossing trenches shall be backfilled as closely as possible to the original contour.
  - All excess material resulting from construction displacement in a crossing trench shall be disposed of outside the flood plain.
  - For erodible channels, there shall be at least thirty inches ( 36" ) of backfill on top of all pipe or conduit points in the crossing.
  - For nonerodible channels, pipes or conduits in the crossing shall be encased on all sides by at least six inches ( 12" ) of concrete with all pipe or conduit points in the crossing at least six inches ( 12" ) below the original contour of the channel.
  - The weight of a pipe and its contents must exceed that of an equal volume of water at all points during normal operating conditions, or the applicant shall provide the Division with sufficient information to show that the pipe and joints have sufficient strength.
- 1.17 **SAFETY** The "Manual of Accident Prevention In Construction" published by the Associated General Contractors of America, O.S.H.A Regulations and other state and local safety regulations shall be followed.

REVISION				
BY DATE				
N. KY. WATER DISTRICT				
SPECIFICATIONS				
DRAWN BY: SAR				
APPROVED: 				
DATE: 2/1/2021				
STANDARD DRAWING NO: 100-B				