

1.05 WATER MAINS ON PRIVATE PROPERTY Water mains installed on private property which are going to be maintained by the Water District, shall have a twenty-(20) foot wide easement with the water main centered in the easement area and shall have a justifiable benefit to the District (serving more than one property owner, hydraulic benefits, etc.) A four-(4) foot area over the water main shall be a non-paved, strip totally unobstructed with the exceptions as outlined in DESIGN GUIDELINES. With appropriate justification, paving may be approved within the four-(4) foot area over cross-country water mains. Outside the ten-(10) foot area over the water main, 5' either side but within the overall easement area, other utilities may be placed in this area. Proper documentation shall be provided for all easement areas. For areas that are on recorded subdivision plats, the following statement may be used in lieu of the grant of easement forms:

WATER MAIN EASE

The Water Main Easement(s) as shown on this plat are subject to the DECLARATION OF MASTER WATER FACILITY EASEMENT AGREEMENT as set forth in _____ (Document Location) of the _____ County Clerk's records at _____, Ky. (County Name) _____ (Court House)

Document Location at Various Court Houses:

Court House	Document Location	County
Alexandria	Easement Book 129, Page 145	Campbell
Boone County	Easement Book 54, Page 195	Boone
Covington	Miscellaneous Book 504, Page 311	Kenton
Independence	Miscellaneous Book 228, Page 73	Kenton
Newport	Easement Book 304, Page 466	Campbell

For other areas, the Design Engineer shall prepare an easement document suitable for recording with the County Clerk. Documents shall consist of a sketch (8 1/2" by 14"), a legal description of the twenty (20) foot easement with back references to Deed Book and Page number, and a signed Grant of Easement Form (Restoration agreement) provided by the District prior to filling the main for sterilization.

1.06 WATER MAIN SIZE Minimum public water main size shall be 8", unless it is determined by the District that a dead-end main has no potential for future development, or it is determined by the District that a smaller main is adequate. The District may allow the last 600 feet of water main to be constructed as 6" water main, if a fire hydrant is deemed necessary by the Authority having Jurisdiction; or a smaller diameter main if a blow-off is sufficient. The water main around a cul-de-sac may be reduced to 4" D.I. or 2" P.E., A flushing device may be required, as determined by the District, on 4" D.I. and 2" P.E. lines, if there is no potential for future development as determined by the District and proper fire hydrant spacing can be met. The District may consider the installation of conduits for cul-de-sac lots versus a main around the cul-de-sac. Conduits will need to be installed on the opposite lot lines of the electric service and at the proper depth with a tracing wire. Additional requirements may be required for the installation of conduits subject to the approved of the District. All water mains 16" and larger shall be min. class 50 D.I.P as determined by the District. The District does not allow water mains 10", 14" & 18" in size.

1.07 DEAD ENDS OF WATER MAINS Dead ends to water mains shall be prohibited unless approved by the District. Dead ends may be approved if one or more of the following conditions exists:

- A. The distance between the dead end and the other tie-in point is greater than 600 feet.
- B. Physical features exist between the dead end and the other tie- in point that in the opinion of the District make it impractical to tie them together.
- C. Slopes between the dead end and the other tie-in point is greater than 3 to 1.
- D. Slopes/terrain between the dead end and the other tie-in point is certified as geotechnically unstable by a qualified professional geotechnical engineer.
- E. It is necessary to purchase easements to run a water line through existing developed lots.

The District reserves the right to require certain dead ends to be connected even though they meet the above conditions. No services shall be permitted to be tapped on cross-country water mains. All dead end lines must be provided with a properly sized blow-off assembly, flush hydrant or fire hydrant. Flushing device should be sized to flow a velocity of at least 2.5 feet per second in the water main being flushed. No flushing device shall be directly connected to any sewer.

Cul-de-sacs streets of less than 300 feet long may be considered for the installation of a 4" D.I. looped water main for the elimination of the dead end. A fire hydrant shall be installed at the intersection of the cross street and a valve installed between the two tees for the 4" line.

1.08 MULTIPLE WATER MAIN FEEDS A minimum of two supply sources shall be required for subdivisions of one hundred (100) customers or more, more than one street, and/or there is potential development area that exceeds the number of customers or streets previously mentioned.

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.

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) inch. Fire hydrant spacing shall be as recommended by the Northern Kentucky Area Planning Commission 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 A 10' minimum lateral separation between water mains and sewers (defined as any sanitary/combined sewer, septic tank or subsoil treatment system) and sewer manholes, measured from the outside diameter to outside, must be maintained. When a 10' separation is not practical then a variance may be obtained from DOW to maintain an 18" vertical and 18" lateral separation. No variances will be permitted for force mains.

REVISION					
BY DATE					
N. KY. WATER DISTRICT SPECIFICATIONS					
DRAWN BY: SAR					
APPROVED: 					
DATE: 8/5/2014					
STANDARD DRAWING NO: 100-A					