

2.04 **VALVE BOXES** All valves shall be provided with valve boxes. Valve boxes shall be of standard, adjustable, heavy duty cast iron extension type, two piece, 5 1/4 inch shaft, screw type, and of such length as necessary to extend from valve to finished grade, Tyler #562-S, Tyler #564-S or approved equal. Valve box cover shall be stamped "Water". Tops shall be set at final established grade. If valve boxes are not of sufficient height to bring the top of the box to final grade, a section of 6" ductile iron pipe for pavement areas and 6" PVC for non-pavement areas may be used to extend the valve box to final grade with prior approval from the District. The length of pipe shall permit the valve box to be adjusted up and down. All valves will be installed with a box-lok type valve box centering ring or approved equal.

2.05 **FIRE HYDRANTS** All fire hydrants shall have auxiliary valves for isolating water flow to the hydrant. All fire hydrants and auxiliary valves shall be positively locked to the water main by restrained joints, hydrant adapters, or other approved method. Hydrants shall be designed to 200 psi working pressure and shall be shop tested to 300 psi hydrostatic pressure with the main valve both open and closed. High pressure fire hydrants will be required when pressures exceed 150 psi.

The barrel shall have a breakable safety section and/or base bolts just above the ground line. Hydrants shall have a main valve opening of 5 1/4 inches, a 6 inch mechanical joint inlet to be suitable for setting in a trench 3' 6" deep minimum, and shall be the traffic style hydrant so that the main valve remains closed when the barrel is broken off. Hydrants shall have a dry top and shall be self draining, when the main valve is closed. Self draining hydrants shall drain to dry wells provided exclusively for that purpose. Hydrant drains shall not be connected to storm or sanitary sewers. Hydrants located generally in the Covington System and other areas determined by the District (flood zones) shall have all drain holes plugged prior to installation. Hydrants shall be rotatable in a minimum of eight (8) position in 360 degrees.

All hydrants shall have two (2) - two and one half (2 1/2) inch hose nozzles and one (1) steamer or pumper connection threaded to conform to Northern Ky. Water District's Standards: steamer nozzle shall be National Standard Thread and 2 1/2" outlets shall be Old Cincinnati Thread. The operating nut and the nuts of the nozzle caps shall be square in shape, measuring one (1) inch from side to side. Hydrant body shall be painted yellow for areas designed for 150 psi working pressure and red for areas in excess of 150 psi.

All hydrants shall be right hand open, clockwise. The following fire hydrants are approved for installation in the District's system: Mueller, Waterous, U.S. Pipe, M & H, Kennedy and American Darling.

2.06 **PRESSURE REDUCING VALVES** Pressure reducing valves will be installed by the District in regular 2" and smaller meter settings when the static system pressure is at or above 125 psi for new and old services when deemed necessary by the District. Pressure reducing valves are only installed to protect the meter. The District will not be liable for any damage due to pressure conditions caused by or arising out of the failure or defective condition of such pressure regulator or for damage that may occur through the installation, maintenance, or use of such equipment.

2.07 **AIR RELEASE VALVES AND/OR TAPS** Air release valves shall be installed in the high points of the water mains where hydrants are not installed and as required by the District and in accordance with Standard Drawing No. 106. 8" and smaller water mains, tap size and piping shall be 3/4", 12" water main-1", & 16" and larger water main-2". Temporary taps of suitable size may be required at certain points on the water main for the release of air for filling and/or flushing purposes. Temporary taps will be removed and plugged after use. Automatic air relief valves shall not be used in situations where manhole or chamber flooding may occur. The open end of an air relief pipe from automatic valves shall be extended a distance of greater than or equal to (≥) one foot (1') above grade and shall be provided with a screened, downward facing elbow or an equivalent standard as determined by the best professional judgment of the District. Manually operated air release valves shall include a camlock-type coupling and waste valve. The pipe from a manually operated air release valve shall be extended to the top of the pit.

2.08 **STEEL CASING PIPE** Casing pipe shall be steel pipe with a minimum yield strength of 35,000 psi with a minimum wall thickness as listed below:

Nominal Diameter Casing Pipe	Normal Wall Thickness	Nominal Diameter Casing Pipe	Normal Wall Thickness
Under 14"	0.251"	26"	0.438"
14" & 16"	0.282"	28" & 30"	0.469"
18"	0.313"	32"	0.501"
20"	0.344"	34" & 36"	0.532"
22"	0.375"	38", 40", & 42"	0.563"
24"	0.407"	48"	0.626"

The inside diameter of the casing pipe shall be at least four (4) inches greater than the outside diameter of the carrier pipe joints. Steel casing sections shall be connected by welding, conforming to AWWA C206. All carrier pipe placed in steel casing pipe shall be minimum class 50 ductile iron pipe and conform to the latest edition of AWWA C151. Carrier pipe gaskets shall develop a wedging action between pairs of high-strength stainless steel elements spaced around the gasket (FIELD LOK, FASTGRIP or approved equal gaskets). Adequate pipe spacers shall be installed to ensure that the carrier pipe is adequately supported in the center of the casing pipe throughout its length, particularly at the ends to offset settling and possible electrical shorting. Manufactured pipe spacers shall be installed per manufacturer's installation requirements. There shall not be any metallic contact between the casing and carrier pipe. Casings shall have both ends sealed up in such a way as to prevent the entrance of foreign material. See Standard Drawing #114 for installation details.

PART III - INSTALLATION OF WATER MAINS AND APPURTENANCES

3.01 **GENERAL** Water mains and appurtenances shall be installed in compliance with AWWA standards (C600 for D.I.P., C605 for P.V.C. type pipe and C901 for P.E.) and/or manufacturer recommendations. Water main pipe and fittings shall be laid on a good level foundation with no gaps or humps under the pipe or fittings. Excavation shall be done by hand at joints to prevent the pipe and fittings from being supported by the mechanical joint or slip joint bell. Transition between D.I.P. and P.V.C. type pipe shall be made with some type of ductile iron fitting. Manufacturer approved transition joints shall be used between dissimilar piping materials. Repairs to or section replacement of D.I.P. shall not be made using P.V.C. materials. Pipe shall be laid with the bell ends facing in the direction of laying.

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