

WATERWORK NOTES

F.W.R.A. REGION	STATE	PROJECT	
5	OHIO		

72
86

LAKE COUNTY
LAK-20-17.14

OPERATORS:

THE VALVE OPERING MECHANISMS SHALL BE DESIGNED FOR CLOCKWISE (RIGHT) OPENING, WHEN INSTALLED WITHIN CITY CORPORATION LIMITS.

INPUT SHAFT IS TO BE OPERATED BY A 2 INCH SQUARE OPERATING NUT.

GATE VALVES:

~~THE VALVES SHALL CONFORM TO AWWA C500 SPECIFICATIONS FOR WATER VALVES. THEY SHALL BE OF A DESIGN TO SHUT OFF AGAINST WORKING PRESSURES OF 150 PSI AND TEST PRESSURES OF 300 PSI.~~

BODY:

~~VALVE BODIES AND APPURTENANCES SHALL BE CONSTRUCTED OF CAST IRON AND SHALL BE SUITABLE FOR BURIED SERVICE.~~

ENDS:

~~VALVES SHALL BE REQUIRED TO ACCOMMODATE THE PARTICULAR PIPE MATERIAL BEING SPECIFIED ON THE PLANS.~~

DISCS AND SEATS:

~~ALL MANUALLY OPERATED GATE VALVES 3" AND LARGER SHALL BE DOUBLE DISC, BRONZE MOUNTED, PARALLEL SEATED, DESIGNED TO FORCIBLY SEAT THE DISCS AFTER THEY HAVE BEEN POSITIONED.~~

SHAFT SEALS:

~~VALVES SHALL BE DESIGNED WITH NON-RISING STEMS WITH RUBBER "O" RING PACKING SEALS.~~

OPERATORS:

~~THE VALVE OPERATING MECHANISMS SHALL BE DESIGNED FOR CLOCKWISE (RIGHT) OPENING WHEN INSTALLED WITHIN CITY CORPORATION LIMITS. INPUT SHAFT IS TO BE OPERATED BY A 2 INCH SQUARE OPERATING NUT.~~

TAPPING SLEEVES AND VALVES:

ALL TAPPING SLEEVES SHALL BE CAST IRON AND SHALL CONFORM TO THE LATEST AWWA SPECIFICATIONS. THE TAPPING SLEEVE, TOGETHER WITH THE TAPPING VALVE, SHALL BE TESTED AT 150 PSI FOR VISIBLE LEAKAGE BEFORE THE MAIN IS TAPPED (A CAST IRON PIPE PLUG IN THE VALVE BONNET SHALL BE FURNISHED FOR THIS PURPOSE).

TAPPING SLEEVES SHALL BE TWO PIECE WITH MECHANICAL JOINT ENDS, SO DESIGNED TO ASSURE UNIFORM GASKET PRESSURE AND PERMIT CENTERING OF THE SLEEVE ON THE MAIN.

TAPPING VALVES SHALL HAVE A FLANGE ON ONE END FOR BOLTING TO THE TAPPING SLEEVE AND A MECHANICAL JOINT TYPE END CONNECTION ON THE OUTLET WITH STANDARD SLOTTED FLANGE FOR CONNECTION TO THE TAPPING MACHINE. THE VALVE OPERATING MECHANISMS SHALL BE DESIGNED FOR CLOCKWISE (RIGHT) OPENING WHEN INSTALLED WITHIN CITY CORPORATION LIMITS.

VALVE BOXES:

ALL VALVES SHALL BE PROVIDED WITH AN APPROPRIATE SIZE VALVE BOX. VALVE BOXES SHALL BE THREE PIECE, HEAVY PATTERN CAST IRON ADJUSTABLE LENGTH SCREW TYPE AND OF A LENGTH TO EXTEND FROM THE VALVE TO FINISH GRADE. VALVE BOXES LOCATED IN TRAFFIC AREAS SHALL BE SUPPORTED TO AVOID ANY LOAD TRANSFER TO THE VALVE BODY. TOPS SHALL BE SET AT ESTABLISHED GRADE AND SHALL BE MARKED "WATER".

VALVE BASE	BASE
4" AND SMALLER	ROUND, 8" IN HEIGHT, 10 7/8" BOTTOM DIAMETER
6" AND 8"	ROUND, 11" IN HEIGHT, 14 7/8" BOTTOM DIAMETER
10" THROUGH 16"	OVAL, 9 1/2" IN HEIGHT, 21" BY 12 1/2" BOTTOM DIAMETER
18" THROUGH 20"	OVAL, 10" IN HEIGHT, 25 1/2" BY 16" BOTTOM DIAMETER
24" AND LARGER	DOME, 5" IN HEIGHT, 15" DIAMETER AND 17" SQUARE FLANGE AT BOTTOM

~~ALL GATE VALVES 16" AND LARGER SHALL BE PROVIDED WITH A BY-PASS VALVE OF A SIZE APPROVED BY THE CITY ENGINEER AND THE SUPERINTENDENT OF THE WATER DEPARTMENT.~~

ITEM SPECIAL - RELOCATED WATER MAIN

DUCTILE IRON PIPE AND FITTINGS

~~(A) ALL DUCTILE IRON PIPE SHALL BE MANUFACTURED IN ACCORDANCE WITH ANSI A21.50 AND ANSI A21.51-65 AWWA C150 AND C151 RESPECTIVELY. ALL DUCTILE IRON FITTINGS SHALL BE MANUFACTURED IN ACCORDANCE WITH ANSI A21.10 OR AWWA C110-55. DUCTILE IRON SHALL HAVE A MINIMUM OF 60,000 PSI ULTIMATE TENSILE STRENGTH. 42,000 PSI YIELD STRENGTH AND 10% ELONGATION. THE CHEMICAL ANALYSIS SHALL BE AS FOLLOWS: CARBON 3% MINIMUM; PHOSPHOROUS 0.08% MAXIMUM; AND SILICON 2.75% MAXIMUM. THE THICKNESS OF THE CENTRIFUGALLY CAST DUCTILE IRON PIPE SHALL CONFORM TO THE FOLLOWING:~~

<u>SIZE</u>	<u>WORKING PRESSURE</u>	<u>STANDARD THICKNESS</u>	<u>CLASS</u>
12"	350 PSI	0.52	57 WITH ZERO MINUS TOLERANCE

~~(B) ALL FITTINGS, SUCH AS BENDS, TEES, ETC. SHALL HAVE BELL AND BELL OR BELL AND SPIGOT ENDS WITH BOLTLESS RESTRAINED SLIP-ON TYPE JOINT WITH COMPRESSED RUBBER RING INSERTS.~~

~~(C) ALL PIPE SHALL HAVE BELL AND SPIGOT ENDS FOR BOLTLESS RESTRAINED SLIP-ON TYPE JOINT WITH COMPRESSED RUBBER RING INSERTS UNLESS OTHERWISE SHOWN. ALL PIPE AND FITTINGS SHALL BE CEMENT LINED.~~

~~(D) GASKETS SHALL BE OF RUBBER OR OTHER EQUALLY EFFECTIVE PROTECTION AGAINST UNEVEN DISTORTION OF THE GASKET.~~

~~(E) WHERE FITTINGS ARE SHOWN WHICH ARE NOT COVERED BY THE ABOVE SPECIFICATIONS, THEY IN SUCH PARTICULAR AS ARE LACKING THEREON SHALL CONFORM TO THE DIMENSIONS AND OTHERWISE MEET THE SPECIFICATIONS FOR THE RESPECTIVE TYPE WHICH ARE CARRIED IN THE LATEST REVISIONS TO THE CURRENT EDITION OF THE "HANDBOOK OF CAST IRON PIPE" BY THE CAST IRON PIPE RESEARCH ASSOCIATION OR WHICH ARE OTHERWISE SHOWN ON THE CONTRACT DRAWINGS.~~

~~(F) WHEREVER CHANGES IN LINE AND GRADES OF THE MAIN AS SHOWN ON THE DRAWINGS ARE NOT STANDARD FITTING DEFLECTIONS, THE CONTRACTOR WILL BE PERMITTED TO SUBMIT DETAILS USING COMBINATIONS OF STANDARD FITTINGS AND SMALL DEFLECTIONS (NOT TO EXCEED A MAXIMUM OF ONE-HALF (1/2) INCH JOINT OPENING) IN THE ADJOINING LENGTHS OF PIPE. PIPE TO BE INSTALLED WITH AIR RELIEF VALVES OR DRAINS SHALL BE CAST WITH BOSSES THEREON, AND DRILLED AND TAPPED FOR TWO (2) INCH CONNECTIONS, AND PLUGGED IN THE SHOP WITH CAST IRON THREADED PLUGS, BEFORE SHIPMENT.~~

~~(G) PLUGS FOR BELL AND SPIGOT PIPE AND CAPS FOR LUGGED PIPE SHALL BE FURNISHED WITH TWO (2) PLUGGED TWO (2") INCH TAPS FOR DRAIN AND AIR RELIEF VALVE CONNECTIONS.~~

~~(H) CLOSURE PIECES SHALL BE ACCURATELY MEASURED AND CUT IN THE FIELD AND INSTALLED USING SOLID TYPE PATTERN SLEEVES AS SHOWN OR AS REQUIRED, WITH MINIMAL SPACE AT ENDS TO PERMIT CLOSURE PIECE INSERTION ONLY.~~

~~(I) TESTS, INSPECTION, REPORTS AND ANALYSES OF TESTS OF SAMPLES FOR ALL MATERIALS SHALL BE FURNISHED AS SET FORTH ELSEWHERE IN THESE SPECIFICATIONS.~~

~~(J) BITUMASTIC COATING SHALL BE APPLIED ON THE EXTERIOR OF ALL DUCTILE IRON PIPE AND FITTINGS IN ACCORDANCE WITH AWWA SPECIFICATIONS. ALL DUCTILE IRON WATER MAIN PIPE AND FITTINGS SHALL BE GIVEN, IN ADDITION TO THAT SPECIFIED, A COATING OF FOUR (4) MILS ADDITIONAL THICKNESS, OR PROTECTION WITH POLYETHYLENE ENCASEMENT IN ACCORDANCE WITH ANSI A-21.5-72 (AWWAC 105-72), CLASS "C" INSTALLATION METHOD "B". ALL FITTING SHALL HAVE ANSI A21.5-72 PROTECTION.~~

CEMENT LINING

~~(A) ALL DUCTILE IRON PIPE AND FITTINGS, SHALL BE GIVEN A CEMENT MORTAR LINING AT THE POINT OF MANUFACTURE. THE LINING SHALL CONFORM TO THE AMERICAN NATIONAL STANDARD ANSI A21.4 (AWWA C104) AND ALL SUBSEQUENT AMENDMENTS THERETO.~~

SCALE _____
 MADE PER DATE 1.25
 TRCB DATE 1.25
 CEB DATE 1.25

WOODRUFF, INC.

CONSULTING ENGINEERS
CLEVELAND OHIO