

UTILITY ADJUSTMENT QUANTITIES & NOTES

DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

REVISED	FHWA REGION	STATE	FEDERAL AID PROJECT	ROUTE	STATE PROJECT	SHEET NO.
10/8/93 1/27/94	3	VA.		11	0011-080-105, PE-102 RW-202 0011-080-F&S C-502	15(1)

SUMMARY OF WATER FACILITIES

SHEET NO.	3/4" WATER SERVICE LINE	2" WATER SERVICE LINE	6" DI WATER MAIN	8" DI WATER MAIN	12" DI WATER MAIN	36" DI WATER MAIN	36" BEND	36" PLUG OR CAP	6" GATE VALVE & BOX	8" GATE VALVE & BOX	12" GATE VALVE & BOX	36" BUTTERFLY VALVE & BOX	ADJUST EXIST. VALVE BOX	12"x6" TAPPING SLEEVE, VALVE & BOX	8" BLOWOFF VALVE & BOX	FIRE HYDRANT	REMOVE EXIST. FIRE HYDRANT	6" AIR RELEASE VALVE & MANHOLE	RELOC. EXIST. WATER METER & BOX	RELOC. EXIST. METER ASSEMBLY & BOX
	L.F. 1	L.F. 1	L.F. 2	L.F. 2	L.F. 2	L.F. 3	EA. 4	EA. 4	EA. 5	EA. 5	EA. 5	EA. 6	EA. 7	EA. 8		EA. 10	EA. 11	EA. 12	EA. 13	EA. 13
(3)	129	15	30			469	2	1				1	2		1	1	1		3	
(4)	168	65	228		26	802			3				1	2		1	1	1	5	2
(5)	148		25			895	3	1				1	1		1	1			7	
(6)	15			30	572				1	1	3					1			1	
(7)	410		11		800				1		1					1			4	
(8)				106	800					1										
(9)	35		11		800				2							2				
(10)					148															
TOTAL	905	80	305	136	3146	2166	5	2	7	2	5	2	4	2	2	7	3	1	20	2

SUMMARY OF WATER FACILITIES (CONTINUED)

SHEET NO.	RELOC. EXIST. LARGE METER & BOX	CONCRETE ENCASEMENT
	L.F. 13	L.F. 14
(3)	2	
(4)	3	
(5)	1	
(6)		35
(7)		
(8)		
(9)		
(10)		
TOTAL	6	35

MATERIAL NOTES FOR WATER FACILITIES

- 1 2" WATER SERVICE LINES SHALL BE TYPE 'K' RIGID COPPER PIPE.
3/4" WATER SERVICE LINES SHALL BE TYPE 'K' FLEXIBLE COPPER TUBING.

- 2 WATER MAIN FITTINGS SHALL BE DUCTILE IRON COMPACT FITTINGS IN ACCORDANCE WITH AWWA C153, MECHANICAL JOINT WITH SINGLE THICKNESS CEMENT-MORTAR LINING AND SINGLE THICKNESS ASPHALTIC COATING AND SHALL HAVE A PRESSURE RATING OF AT LEAST 350 PSI. DUCTILE IRON WATER MAINS 12 INCH AND SMALLER SHALL BE PRESSURE CLASS 350 IN ACCORDANCE WITH AWWA C151. PIPE SHALL BE PUSH-ON JOINT WITH SINGLE THICKNESS CEMENT-MORTAR LINING AND SINGLE THICKNESS ASPHALTIC COATING. BEDDING SHALL BE IN ACCORDANCE WITH VDOT STANDARD UB-1, TYPE 1. ALL BENDS, VALVES, SLEEVES, REDUCERS, TEES, PIPE, AND FITTINGS SHALL BE ANCHORED WITH REACTION BLOCKING IN ACCORDANCE WITH VDOT STANDARD RB-1, OR SHALL BE FULLY RESTRAINED WITH A MECHANICAL JOINT RESTRAINING MECHANISM IN ACCORDANCE WITH DETAIL ON SHEET (17). MECHANICAL JOINT RESTRAINING MECHANISMS SHALL BE USED AT THE TIE-INS TO THE EXISTING WATER MAINS WHERE POSSIBLE TO PROVIDE A MINIMAL AMOUNT OF DOWN TIME FOR THE WATER MAIN.

- 3 36 INCH DI WATER MAIN SHALL BE SPECIAL CLASS 51, PUSH-ON JOINT, IN ACCORDANCE WITH AWWA C151 EXCEPT FOR PIPE IN VALVE VAULTS WHICH SHALL BE CLASS 53 FLANGED PIPE IN ACCORDANCE WITH AWWA C115. ALL PIPE SHALL HAVE A SINGLE THICKNESS CEMENT-MORTAR LINING AND A SINGLE THICKNESS ASPHALTIC COATING. BEDDING SHALL BE IN ACCORDANCE WITH DETAIL ON SHEET (2). DEFLECTION AT JOINTS SHALL NOT EXCEED 2 DEGREES. ALL PLUGS, CAPS AND BENDS SHALL BE ANCHORED WITH THRUST BLOCKS IN ACCORDANCE WITH DETAIL ON SHEET (2) OR SHALL BE FULLY RESTRAINED WITH A MECHANICAL JOINT RESTRAINING MECHANISM IN ACCORDANCE WITH DETAIL ON SHEET (17). WATER MAIN TEST PRESSURE SHALL BE 240 PSI.

- 4 36 INCH FITTINGS SHALL BE IN ACCORDANCE AWWA C110, MECHANICAL JOINT WITH A PRESSURE RATING OF 250 PSI. FITTINGS SHALL HAVE A SINGLE THICKNESS CEMENT-MORTAR LINING AND A SINGLE THICKNESS ASPHALTIC COATING.

SUMMARY OF SANITARY SEWER FACILITIES

SHEET NO.	2" SANITARY SEWER FORCE MAIN	4" SANITARY SERVICE LATERAL CONNECTION	6" SANITARY SERVICE LATERAL CONNECTION	8" SAN. SEWER PIPE	18" SAN. SEWER PIPE	8" DI SAN. SEWER PIPE	18" DI SANITARY SEWER PIPE	SANITARY SEWER MANHOLE	MANHOLE FRAME & COVER WF&C-1	MANHOLE FRAME & COVER F&C-1	ADJUST EXIST. FRAME & COVER	RECONSTRUCT EXISTING SANITARY MANHOLE	4" SEWER CLEANOUT	6" SEWER CLEANOUT	CONCRETE ENCASEMENT	COFFER DAM
	L.F. 15	L.F. 16	L.F. 16	L.F. 17	L.F. 17	L.F. 18	L.F. 18	L.F. 19	EA. 20	EA. 21	EA. 22	L.F. 23	EA. 24	EA. 24	L.F. 25	EA. 25
(3)											1	4				
(4)		92	20	145				23	1	2	1	4	3	2		
(5)			54	441		20		10		2		22		3	10	
(6)	125				142		48	25	2	1		7			50	4
TOTAL	125	92	74	586	142	20	48	58	3	5	2	37	3	5	60	4

- 5 GATE VALVES SHALL BE IRON-BODY, BRONZE-MOUNTED, DOUBLE DISC, PARALLEL-SEAL, O-RING SEALED, INSIDE-SCREW, NON-RISING STEM, WITH 2-INCH SQUARE OPERATING NUT FOR VALVE VAULT SERVICE, ALL IN ACCORDANCE WITH AWWA STANDARD C500 (LATEST REVISION). THE NUT SHALL BE MARKED WITH AN ARROW AND THE WORD "OPEN" AND SHALL OPEN BY TURNING TO THE RIGHT (CLOCKWISE). CONNECTIONS SHALL BE BE SUITABLE FOR THE PIPE WITH WHICH IT IS USED. THE VALVES SHALL BE SUITABLE FOR 200 PSI WATER WORKING PRESSURE AND SHALL BE TESTED AT TWICE THE RATED WORKING PRESSURE. VALVE BOXES SHALL BE IN ACCORDANCE WITH CITY OF ROANOKE VALVE VAULT DETAIL AND CITY OF ROANOKE FRAME AND COVER DETAILS ON SHEET (16). VALVES SHALL BE MUELLER #A-2380-22 IMPROVED GATE VALVES OR AMERICAN DARLING #55.

- 6 36 INCH BUTTERFLY VALVES SHALL BE SHORT-BODY, FLANGED END VALVES, CLASS 150B IN ACCORDANCE WITH AWWA C504. VALVE DISC SHALL BE DUCTILE IRON WITH A RESILIENT SEAT OF SYNTHETIC RUBBER LOCATED ON THE VALVE DISC. FLOW THROUGH OR TRUSS TYPE DISC WILL NOT BE ACCEPTABLE. THERE SHALL BE NO TRAVEL STOPS FOR THE DISC ON THE INTERIOR OF THE BODY. VALVE SHAFTS SHALL BE TYPE 304 STAINLESS STEEL AND SHALL BE OF THE STUB-SHAFT TYPE. METAL SEAT MATING SURFACES IN THE BODY SHALL BE SMOOTHLY CONTOURED AND POLISHED TYPE 304 STAINLESS STEEL. THE DISC TO SHAFT CONNECTION SHALL BE RIGID AND SHALL BE MADE WITH FLAT MILLED TAPER KEYS TO PROVIDE A POSITIVE TANGENTIAL WEDGING ACTION BETWEEN DISC AND SHAFT. TAPER KEYS SHALL BE LOCKED IN PLACE BY TYPE 304 STAINLESS STEEL NUTS. TAPER KEYS SHALL BE HEAT TREATED 416 STAINLESS STEEL. SHAFT SEALS SHALL BE SELF-ADJUSTING V-RING PACKING. VALVE OPERATORS SHALL BE THE TRAVELING NUT TYPE AND SHALL OPEN TO THE RIGHT. VALVE ACTUATORS SHALL BE CAPABLE OF WITHSTANDING A MINIMUM OF 450 FOOT-POUNDS OF INPUT TORQUE IN EITHER THE OPEN OR CLOSED POSITION WITHOUT DAMAGE. INTERIOR VALVE SURFACES SHALL HAVE AN EPOXY COATING IN ACCORDANCE WITH AWWA C550. BUTTERFLY VALVES SHALL BE MANUFACTURED BY AMERICAN DARLING, CLOW, OR MUELLER. VALVE BOXES FOR 36 INCH BUTTERFLY VALVES SHALL BE VALVE VAULTS IN ACCORDANCE WITH DETAIL ON SHEET (2).

- 7 ADJUST EXISTING VALVE BOX SHALL CONSIST OF ADJUSTING THE TOP OF THE EXISTING VALVE VAULT TO FINISHED GRADE USING ADJUSTING RINGS OR RECONSTRUCTION/REPLACEMENT OF THE VALVE VAULT IF NECESSARY. VALVE VAULTS SHALL BE IN ACCORDANCE WITH ROANOKE CITY STANDARD DETAILS SHEET (16).

- 8 TAPPING SLEEVES SHALL BE DUCTILE IRON, MECHANICAL JOINT, WITH RUBBER END GASKETS AND SHALL HAVE A WORKING PRESSURE OF AT LEAST 200 PSI. TAPPING VALVES SHALL MEET THE SAME SPECIFICATIONS AS GATE VALVES EXCEPT THEY SHALL HAVE A FULL UNOBSTRUCTED OPENING TO RECEIVE A FULL SIZE SHELL CUTTER. TAPPING SLEEVES AND VALVES SHALL BE FURNISHED AS A COMPLETE COMPATIBLE UNIT AND SHALL BE FURNISHED BY THE SAME MANUFACTURER. TAPPING SLEEVES AND VALVES SHALL BE MANUFACTURED BY MUELLER, KENNEDY OR AMERICAN DARLING. VALVE VAULTS AND FRAMES AND COVERS SHALL BE IN ACCORDANCE WITH ROANOKE CITY DETAILS SHEET (16).

- 9 8 INCH BLOW-OFF VALVE & BOX SHALL BE IN ACCORDANCE WITH DETAIL ON SHEET (17).

- 10 FIRE HYDRANTS SHALL BE DRY TOP, DRY BARREL, COMPRESSION TYPE WITH A 6-INCH BASE AND WITH DOUBLE O-RING SEALS, AND SHALL CONFORM TO AWWA STANDARD C502 (LATEST REVISION). HYDRANTS SHALL BE EQUIPPED WITH TWO 2 1/2 INCH HOSE NOZZLES AND ONE 4 1/2 INCH PUMPER NOZZLE. HYDRANTS SHALL BE 150 PSI WORKING PRESSURE AND 300 PSI TEST PRESSURE. FIRE HYDRANTS SHALL BE MUELLER A24113, AMERICAN DARLING B50B, OR KENNEDY K10B.

- 11 REMOVE EXIST. FIRE HYDRANT WILL BE MEASURED IN UNITS OF EACH AND WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER EACH. THIS PRICE SHALL INCLUDE REMOVAL OF THE FIRE HYDRANT, STOCKPILING THE HYDRANT ON SITE, AND NOTIFYING THE CITY OF ROANOKE WATER DEPARTMENT. THE CONTRACTOR SHALL NOTIFY THE ROANOKE WATER DEPARTMENT (TELE(703)-981-2601) SO THE CITY CAN ARRANGE FOR PICK-UP OF THE FIRE HYDRANT.

- 12 6 INCH AIR RELEASE VALVE AND MANHOLE SHALL BE IN ACCORDANCE WITH "COMBINATION AIR RELEASE/VACUUM VALVE DETAIL" ON SHEET (2). COMBINATION AIR VALVE SHALL ALLOW LARGE VOLUMES OF AIR TO ESCAPE OUT THE LARGE ORIFICE WHEN FILLING A PIPELINE AND SHALL CLOSE WHEN LIQUID ENTERS THE VALVE. DURING LARGE ORIFICE CLOSURE, THE SMALL AIR RELEASE ORIFICE SHALL OPEN TO ALLOW SMALL POCKETS OF AIR TO ESCAPE AUTOMATICALLY AND INDEPENDENTLY OF THE LARGE ORIFICE. THE LARGE ORIFICE SHALL ALSO ALLOW LARGE VOLUMES OF AIR TO ENTER DURING PIPELINE DRAINAGE TO BREAK THE VACUUM. THE BODY INLET SHALL BE BAFFLED TO PROTECT THE LOWER FLOAT FROM DIRECT FORCES OF RUSHING AIR AND WATER TO PREVENT PREMATURE VALVE SHUT-OFF. THE TOP LARGE ORIFICE PLUG OR FLOAT SHALL BE PROTECTED IN SIMILAR MANNER FOR THE SAME PURPOSE. THE BUNA-N SEAT SHALL BE FASTENED TO THE VALVE COVER, WITHOUT DISTORTION, FOR DROP TIGHT SHUT-OFF. THE FLOATS SHALL BE HEAVY STAINLESS STEEL, HERMETICALLY SEALED; DESIGNED TO WITHSTAND 100 PSI. THE TOP PLUG OR FLOAT SHALL BE CENTER GUIDED THROUGH HEX BUSHINGS FOR POSITIVE SHUT-OFF. VALVE EXTERIOR TO BE PAINTED WITH RED OXIDE PHENOLIC PRIMER PAINT AS ACCEPTED BY THE FDA FOR USE IN CONTACT WITH POTABLE WATER. ALL MATERIALS SHALL CONFORM TO THE FOLLOWING SPECIFICATIONS:

BODY & COVER	CAST IRON	ASTM A126 GR.B
FLOAT	STAINLESS STEEL	ASTM A240
NEEDLE & SEAT	BUNA-N	
PLUG	BRONZE	ASTM B124
LEVERAGE FRAME	DELFIN/CAST IRON	ASTM D2133/ASTM A126 GR.B

THE VALVE SHALL BE 100C SERIES BY APCO.

- 13 RELOCATE EXISTING WATER METER & BOX, RELOCATE EXISTING METER ASSEMBLY & BOX, AND RELOCATE EXISTING LARGE METER & BOX SHALL CONSIST OF RELOCATING THE EXISTING METERS, VALVES, BYPASSES AND OTHER APPURTENANCES TO THE NEW LOCATION AS SHOWN ON THE PLANS. WATER METER SIZES UP TO 1 1/2 INCH SHALL BE RELOCATED IN A ROANOKE CITY STANDARD METER BOX COMPLETE WITH LID (SHEET (16). WATER METERS LARGER THAN 1 1/2 INCH AND SMALLER THAN 6 INCH SHALL BE RELOCATED IN A ROANOKE CITY STANDARD VALVE VAULT COMPLETE WITH FRAME AND COVER (SHEET 16)). WATER METERS 6 INCHES AND LARGER OR METER ASSEMBLIES (WITH BYPASSES, DETECTOR CHECKS, ETC.) THAT WILL NOT FIT IN THE ABOVE VAULTS SHALL BE RELOCATED IN A VDOT STANDARD MH-1 OR JB-1 COMPLETE WITH FRAME AND COVER.

- 14 CONCRETE ENCASEMENT SHALL BE IN ACCORDANCE WITH VDOT STANDARD UB-1.

MATERIAL NOTES FOR SANITARY SEWER FACILITIES

- 15 2" SANITARY SEWER FORCE MAIN SHALL BE EITHER CLASS 200 "YELOMINE" POLYVINYLCHLORIDE (CLASS 12454B PVC IN ACCORDANCE WITH ASTM D-1784) AS MANUFACTURED BY CERTAINTED OR CLASS 200 "AQUAMINE" POLYVINYLCHLORIDE (CLASS 12454B PVC IN ACCORDANCE WITH ASTM D-1784) AS MANUFACTURED BY JOHN BOYLE & COMPANY, INC. CONNECTIONS SHALL BE IN ACCORDANCE WITH VDOT STANDARD SMH-1. REACTION BLOCKING SHALL BE INSTALLED AT ALL BENDS IN ACCORDANCE WITH VDOT STANDARD RB-1.

- 16 SANITARY SERVICE LATERAL CONNECTIONS SHALL BE POLYVINYLCHLORIDE (PVC) SDR-35, PUSH-ON JOINT IN ACCORDANCE WITH ASTM D-3034 AND SHALL HAVE FLEXIBLE ELASTOMERIC SEALS IN ACCORDANCE WITH ASTM D-3139 (SOLVENT-WELD JOINTS NOT ACCEPTABLE). BEDDING SHALL BE VDOT STANDARD UB-1, TYPE 2.

- 17 SANITARY SEWER PIPE SHALL BE POLYVINYLCHLORIDE (PVC) SDR-35, PUSH-ON JOINT IN ACCORDANCE WITH ASTM D-3034 AND SHALL HAVE FLEXIBLE ELASTOMERIC SEALS IN ACCORDANCE WITH ASTM D-3139 (SOLVENT-WELD JOINTS NOT ACCEPTABLE). BEDDING SHALL BE VDOT STANDARD UB-1, TYPE 2. WHERE NOTED ON THE PLANS AND PROFILES, THE SEWER PIPE SHALL BE AWWA APPROVED WATER PIPE, PRESSURE TESTED IN PLACE WITHOUT LEAKAGE PRIOR TO BACKFILLING. PRESSURE TEST SHALL BE 30 PSI.

- 18 DUCTILE IRON SANITARY SEWER PIPE SHALL BE PRESSURE CLASS 350 IN ACCORDANCE WITH AWWA C151, PUSH-ON JOINT WITH SINGLE THICKNESS CEMENT-MORTAR LINING AND SINGLE THICKNESS ASPHALTIC COATING. BEDDING SHALL BE VDOT STANDARD UB-1, TYPE 2.

- 19 SANITARY SEWER MANHOLE SHALL BE IN ACCORDANCE WITH VDOT STANDARD SMH-1.

- 20 MANHOLE FRAME & COVER WF&C-1 SHALL BE IN ACCORDANCE WITH VDOT STANDARD WF&C-1.

- 21 MANHOLE FRAME & COVER F&C-1 SHALL BE IN ACCORDANCE WITH VDOT STANDARD F&C-1.

- 22 ADJUST EXISTING FRAME & COVER SHALL BE IN ACCORDANCE WITH SECTION 510 OF THE VDOT ROAD AND BRIDGE SPECIFICATIONS.

- 23 RECONSTRUCT EXISTING SANITARY MANHOLE SHALL BE IN ACCORDANCE WITH DETAIL ON SHEET (17) AND SECTION 510 OF THE VDOT ROAD AND BRIDGE SPECIFICATIONS.

- 24 SEWER CLEANOUTS SHALL BE IN ACCORDANCE WITH VDOT STANDARD SCO-1, TYPE "B".

- 25 CONCRETE ENCASEMENT SHALL BE IN ACCORDANCE WITH VDOT STANDARD UB-1.