ANDERSON AND ASSOCIATES, Inc.
Engineers Surveyors Planners
Blacksburg, VA
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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	STATE ROUTE	STATE PROJECT	SHEET NO
	3	VA.		117	0117-128-101, RW-201 C-502	20(2)

SANITARY SEWER FACILITIES COST RESPONSIBILITY

57.8% PROJECT COST

42.2% CITY OF ROANOKE COST

WATER FACILITIES COST RESPONSIBILITY

87.7% PROJECT COST

12.3% CITY OF ROANOKE COST

SUMMARY OF SANITARY SEWER FACILITIES

	SHEET NO.	4" SANITARY SERVICE LATERAL CONNECTION L.F. [17]	6" DI SANITARY SEWER PIPE L.F. [18]	8" DI SANITARY SEWER PIPE L.F. [18]	10" DI SANITARY SEWER PIPE L.F. [18]	30" DI SANITARY SEWER PIPE L.F. [18]	6" SANITARY DROP CONNECTION L.F. [19]	8" SANITARY DROP CONNECTION L.F. [19]	SANITARY SEWER MANHOLE L.F. [20]	MANHOLE FRAME & COVER F&C-1 EA. [21]	MANHOLE FRAME & COVER WF&C-1 EA. [21]	ADJUST EXIST. FRAME & COVER EA. [22]	RECONSTRUCT EXISTING SANITARY MANHOLE L.F. [23]	4" SEWER CLEANOUT EA. [24]	CONNECT TO EXIST. SEPTIC EA. [25]
0117-128-101, RW-201, C-501	3			439					21	3					
	4	139		477					37	4				1	2
	5			533				6	43	4					
	6			88									4		
	7											1			
	8				365				41	3					
	9				357	144			36	4					
	10	20	31		128		4		13	2				1	
	11					137			25	2		2			
	12			424					39	4	1				
	13					376			24	2					
	14												4		
	15					458			30		2				
	16				528	542			85	9					
	17	13											5	1	
	18											1			
	TOTAL	172	31	1961	1378	1657	4	6	394	37	3	4	13	3	2

MATERIAL NOTES

WATER ITEMS

[1] 3/4" & 1" WATER SERVICE LINES SHALL BE TYPE "K" COPPER. TAPPING SADDLES SHALL BE USED FOR ALL SERVICE CONNECTIONS.

[2] WATER MAIN FITTINGS SHALL BE DUCTILE IRON COMPACT FITTINGS IN ACCORDANCE WITH AWWA C153 WITH A MINIMUM PRESSURE RATING OF 350 PSI. WATER MAIN TEST PRESSURE SHALL BE 150 PSI. ALL SIZES OF DUCTILE IRON WATER MAIN SHALL BE PRESSURE CLASS 350 IN ACCORDNCE WITH AWWA C151. PIPE SHALL BE CEMENT-MORTAR LINED, SEAL COATED, AND MECHANICAL JOINT OR PUSH-ON JOINT. BEDDING SHALL BE VDOT STANDARD UB-1, TYPE 1. ALL BENDS, VALVES, SLEEVES, REDUCERS, TEES, PIPE, AND FITTINGS SHALL BE ANCHORED WITH REACTION BACKING IN ACCORDANCE WITH VDOT STANDARD RB-1 OR SHALL BE FULLY RESTAINED WITH A MECHANICAL JOINT RESTAINING MECHANISM WHICH, WHEN ACTUATED, IMPARTS MULTIPLE WEDGING ACTION AGAINST THE PIPE. MECHANICAL JOINT RESTRAINING MECHANISMS SHALL BE USED AT THE TIE-INS TO THE EXISTING WATER MAINS WHERE POSSIBLE TO PROVIDE A MINIMUM AMOUNT OF DOWNTIME FOR THE WATER MAIN. MECHANICAL JOINT PIPE SHALL BE USED WITH MECHANICAL JOINT RESTRAINING MECHANISMS. SEE SHEET (28) FOR LENGTHS OF PIPE (EXISTING AND PROPOSED) TO BE RESTRAINED. FOR CONNECTIONS TO EXISTING MAINS WHERE MECHANICAL JOINT RESTRAINING MECHANISMS CANNOT BE USED, SEE WATER MAIN CONNECTION DETAIL ON SHEET (28). TAPPING SADDLE SHALL BE USED FOR ALL SERVICE CONNECTIONS.

[3] GATE VALVES 4" AND LARGER SHALL BE RESILIENT SEAT WITH MECHANICAL JOINT ENDS AND SHALL OPEN LEFT (COUNTER CLOCKWISE) WITH A 2" OPERATING NUT AND SHALL HAVE A NONRISING STEM AND A DOUBLE O-RING SEAL AND SHALL BE IN ACCORDANCE WITH AWWA C509. GATE VALVES SHALL HAVE A WORKING PRESSURE OF AT LEAST 200 PSI. VALVE BOXES SHALL BE IN ACCORDANCE WITH VALVE VAULT DETAIL ON SHEET (28). GATE VALVES SMALLER THAN 4" SHALL BE INSIDE SCREW, SOLID BRONZE, TAPERED SEAT, DOUBLE-DISC CONSTRUCTION AWWA C500, RATED FOR 200 P.S.I. WORKING PRESSURE WITH SCREWED ENDS OR TO MATCH PIPE, (SLIP-ON JOINTS NOT ACCEPTABLE). BOXES FOR GATE VALVES SMALLER THAN 4" SHALL BE WATER METER BOXES IN ACCORDANCE WITH VDOT STANDARD WM-1. GATE VALVES SHALL BE MANUFACTORED BY MUELLER OR AMERICAN DARLING.

[4] BUTTERFLY VALVES SHALL BE IN ACCORDANCE WITH AWWA C504 (CLASS 150B). VALVE ACTUATORS SHALL BE IN ACCORDANCE WITH AWWA C504 (DIRECT BURY TYPE). VALVE ACTUATORS SHALL BE SIZED FOR PRESSURE GREATER THAN OR EQUAL TO THAT OF THE VALVE. VALVE BOXES SHALL BE IN ACCORDANCE WITH VALVE VAULT DETAIL ON SHEET (28). BUTTERFLY VALVES SHALL BE MANUFACTURED BY MUELLER OR AMERICAN DARLING.

[5] ADJUST EXIST. VALVE BOX SHALL BE IN ACCORDANCE WITH SECTION 510 OF THE VDOT ROAD. AND BRIDGE SPECIFICATIONS AND VALVE VAULT DETAIL ON SHEET (28).

[6] ADJUST EXIST. WATER METER MANHOLE SHALL BE IN ACCORDANCE WITH SECTION 510 OF THE VDOT ROAD AND BRIDGE SPECIFICATIONS AND VALVE VAULT DETAIL ON SHEET (28).

[7] TAPPING SLEEVES SHALL BE MECHANICAL JOINT, FURNISHED COMPLETE WITH PLAIN RUBBER GASKETS, MECHANICAL JOINT ACCESSORIES, AND DUCKBACK GASKETS. CONNECTING FLANGE BETWEEN SLEEVE AND VALVE SHALL CONFORM TO MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVES AND FITTINGS INDUSTRY STANDARD SP60. TAPPING SLEEVES SHALL BE ALL STAINLESS, JCM MODEL 432 OR EQUIVALENT AS APPROVED BY AWWA. TAPPING VALVES SHALL MEET THE SAME SPECIFICATIONS AS GATE VALVES, EXCEPT THEY SHALL HAVE A FULLY UNOBSTRUCTED OPENING TO RECEIVE A FULL SIZE SHELL CUTTER. TAPPING VALVES SHALL OPEN BY TURNING TO THE RIGHT. TAPPING VALVES SHALL BE MANUFACTURED BY MUELLER OR AMERICAN DARLING.

[8] BLOW OFF VALVE SHALL BE IN ACCORDANCE WITH VDOT STANDARD BOV-1, TYPE A.

[9] FIRE HYDRANT SHALL HAVE FULL 360 DEGREE REVOLVING HEAD AND BE OF THE SAFETY FLANGE, BREAKAWAY TOP TYPE, AND BE IN ACCORDANCE WITH AWWA C502. FIRE HYDRANT SHALL HAVE A BARREL DIAMETER NO SMALLER THAN 6", A HYDRANT VALVE DIAMETER NO SMALLER THAN 5 1/4", AND SHALL BE EQUIPPED WITH TWO 2 1/2" HOSE NOZZLES, AND ONE 4" PUMPER NOZZLE. THREADS SHALL BE NATIONAL STANDARD THREADS. THE DIRECTION OF OPENING SHALL BE CAST ON THE HEAD OF THE HYDRANT AND SHALL BE COUNTER-CLOCKWISE. HYDRANT SHALL BE PAINTED WITH ONE COAT OF PRIMER AND TWO COATS OF RED PAINT. HYDRANT SHALL BE MUELLER OR AMERICAN DARING WITH A MINIMUM BURY DEPTH OF 3 1/2 FEET. FIRE HYDRANT SHALL BE IN ACCORDANCE WITH VDOT STANDARD FH-1, TYPE 1.

[10] CONCRETE ENCASEMENT SHALL BE IN ACCORDANCE WITH VDOT STANDARD UB-1.

[11] INSTALL 3/4" WATER METER SHALL BE IN ACCORDANCE VDOT STANDARD WM-1. INSTALL 1 1/2" AND 2" WATER METER SHALL BE IN ACCORDANCE WITH DETAIL ON SHEET (28). ALL METERS SHALL BE SUPPLIED BY CITY OF ROANOKE.

[12] INSTALL 6" WATER METER & BOX SHALL BE IN ACCORDANCE WITH DETAIL ON SHEET (28). THE CITY OF ROANOKE SHALL SUPPLY THE 6" WATER METER TO BE INSTALLED BY THE CONTRACTOR. ALL OTHER ITEMS SHOWN ON THE DETAIL ON SHEET (28), INCLUDING BUT NOT LIMITED TO VALVES, TEES, BENDS, FITTINGS, AND VALVE VAULT SHALL BE INCLUEDE IN THE BID PRICE FOR INSTALL 6" WATER METER & BOX.

[13] METER BOX & YOKE SHALL BE IN ACCORDANCE WITH DETAIL ON SHEET (28).

[14] ADJUSTMENT OF EXISTING WATER METERS AND BOXES SHALL BE IN ACCORDANCE WITH SECTION 510 OF THE VDOT ROAD AND BRIDGE SPECIFICATIONS AND VALVE VAULT DETAIL ON SHEET (28).

[15] SAMPLE TAP WILL BE MEASURED IN UNITS OF EACH COMPLETE IN PLACE AND SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE PER EACH. PRICE SHALL BE FULL COMPENSATION FOR ALL LABOR, EXCAVATION, BACKFILL, MATERIALS INCLUDING SERVICE LINE, CORPORATION STOP, GATE VALVE & BOX, BRICKS AND MORTAR, STONE DRAIN, WATER SAMPLING STATION, CONNECTION TO EXISTING MAIN AND ALL INCIDENTALS NECESSARY TO COMPLETE THE WORK. SAMPLE TAP SHALL BE IN ACCORDANCE WITH DETAIL ON SHEET (27).

[16] REMOVE EXIST. FIRE HYDRANT SHALL 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 HYDRANT, STOCKPILING THE HYDRANT ON SITE, AND CONTACTING THE TOWN. THE CONTRACTOR SHALL CONTACT ED TRENT (TELE 703-981-2513) SO THE CITY CAN ARRANGE FOR PICKUP OF THE HYDRANT.

SANITARY SEWER ITEMS

[17] SANITARY SERVICE LATERAL CONNECTION 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. BEDDING SHALL BE VDOT STANDARD UB-1, TYPE 2.

[18] DUCTILE IRON SANITARY SEWER PIPE 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 VDOT STANDARD UB-1, TYPE 2.

[19] SANITARY DROP CONNECTION SHALL BE IN ACCORDANCE WITH VDOT STANDARD SMH-1.

[20] SANITARY SEWER MANHOLE SHALL BE IN ACCORDANCE WITH VDOT STANDARD SMH-1. MANHOLES WITH HEIGHT GREATER THAN 15' SHALL HAVE SAFETY SLAB(S) IN ACCORDANCE WITH DETAIL ON SHEET (27). PAYMENT FOR SAFETY SLAB SHALL BE INCLUDED IN BID PRICE OF MANHOLE.

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

[22] ADJUST EXIST. FRAME AND 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 SECTION 510 OF THE 1991 EDITION OF THE VDOT ROAD AND BRIDGE SPECIFICATIONS.

[24] SEWER CLEANOUT SHALL BE IN ACCORDANCE WITH VDOT STANDARDS CO-1, WITH BENDS AND FITTINGS NECESSARY TO MAKE THE CONNECTION.

[25] CONNECT TO EXIST. SEPTIC TANK SHALL BE IN ACCORDANCE WITH DETAIL ON SHEET (27).

SUGGESTED SEQUENCE OF CONSTRUCTION

THE RELOCATION AND ADJUSTMENT OF UTILITIES, AND THE INSTALLATION OF PROPOSED UTILITIES SHALL BE PERFORMED PRIOR TO, OR CONCURRENT WITH THE ROADWAY CONSTRUCTION. SEE GENERAL NOTES FOR RESTRICTIONS.

GENERAL NOTES

1. THE CONTRACTOR SHALL MAINTAIN THE INTEGRITY OF THE EXISTING WATER AND SANITARY SEWER FACILITIES WITHIN THE PROJECT UNTIL THE PROPOSED WATER AND SANITARY SEWER FACILITIES ARE INSTALLED AND PLACED INTO OPERATION, AND EXISTING WATER AND SANITARY SEWER FACILITIES ARE ABANDONED. ANY VARIANCE MUST BE APPROVED BY THE ENGINEER. TEMPORARY WATER CONNECTIONS AND LINES MAY BE NECESSARY DEPENDING ON THE CONTRACTORS SEGUENCEIY OF CONSTRUCTION. ANY COST FOR THESE ITEMS SHALL BE INCLUDED IN THE BID PRICE FOR WATER MAIN. PUMPING AND ANY OTHER TEMPORARY MEASURES MAY BE REQUIRED DURING CONSTRUCTION OF SANITARY SEWER FACILITIES. COST FOR THESE ITEMS SHALL BE INCLUDED IN THE BID PRICE FOR SANITARY SEWER PIPE,
2. CONNECTIONS TO EXISTING WATER LINES SHALL BE MADE ONLY AFTER THE PROPOSED LINES ARE COMPLETED AND APPROVED BY THE ENGINEER. THE CONTRACTOR SHALL COORDINATE THE CHANGEOVER OF WATER FACILITIES WITH ED TRENT, SUPERINTENDENT FOR THE WATER AND SEWER SERVICES, CITY OF ROANOKE, AND SHALL NOTIFY HIM (TELE. 703-981-2513) FIVE DAYS PRIOR TO ANTICIPATED DATE OF CHANGEOVER. A REPRESENTATIVE OF THE CITY OF ROANOKE SHALL BE PRESENT DURING THE OPERATION OF ALL VALVES IN CONNECTION WITH CHANGEOVER OF WATER FACILITIES. SHUT DOWN TIMES FOR WATER MAINS SHALL BE LIMITED TO 3 HOURS PER DAY.
3. THE CONTRACTOR SHALL INFORM THE LOCAL FIRE DEPARTMENT PRIOR TO ANY WORK ON FIRE HYDRANTS WITHIN THE PROJECT. THE CONTRACTOR SHALL NOTIFY THE CITY OF ROANOKE FIRE DISPATCHER'S OFFICE, (TELE. 703-981-2829), WITH THE LOCATION OF HYDRANTS BEING WORKED ON AND A DOWNTIME SCHEDULE FOR EACH HYDRANT.
4. STANDARD FH-1 MAY BE MODIFIED TO ELIMINATE THE RODS WHEN THE DISTANCE BETWEEN THE VALVE AND HYDRANT IS GREATER THAN 10 FEET. IN SUCH CASES, VDOT STD. RB-1 SHALL BE USED BEHIND THE HYDRANT AND BEHIND THE TEE.
5. THE CONTRACTOR SHALL SCHEDULE HIS HYDRANT INSTALLATION SO THAT NO TWO HYDRANTS IN LINE WILL BE OUT OF SERVICE AT THE SAME TIME. THE CONTRACTOR SHALL ALSO SEQUENCE EACH HYDRANT SET-UP FOR A MINIMAL AMOUNT OF DOWNTIME. ALL POSSIBLE TRENCHING AND ASSEMBLY REQUIRED FOR THE NEW HYDRANT SHALL BE DONE PRIOR TO TAKING THE OLD HYDRANT OFF LINE.
6. WATER MAINS AND SANITARY SEWER LINES ARE OWNED BY THE CITY OF ROANOKE.
7. THE LOCATIONS AND ELEVATIONS OF EXISTING WATER MAINS, WATER SERVICE LINES, SANITARY SEWER LINES AND LATERALS, AND UNDERGROUND TELEPHONE, POWER, GAS, AND CABLE TELEVISION LINES ARE APPROXIMATE ONLY AND SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO EXCAVATION. THE CONTRACTOR SHALL ADJUST ALL SANITARY SEWER SERVICE LATERALS AND WATER SERVICE LINES FOUND TO BE IN CONFLICT WITH PROPOSED CONSTRUCTION. QUANTITIES OF LATERAL MATERIALS AND SERVICE LINE MATERIALS SHOWN ON THE PLANS ARE ESTIMATED. ACTUAL MATERIAL NEEDED MAY VARY DEPENDING ON FIELD CONDITIONS.
8. THE SHEET REFERENCES MADE WITHIN THESE PLANS USING PARENTHESIS REFER TO THE CORRESPONDING SHEET OF THE UTILITY ADJUSTMENT PLANS. EXAMPLE: SHEET (2) – REFERS TO SHEET 20(2)
9. ALL VALVES NOT USED IN THE COMPLETED SYSTEM SHALL HAVE THEIR VALVE BOXES REMOVED COMPLETELY OR REMOVED TO A POINT ONE FOOT BELOW FINISHED GRADE OR NORMAL GROUND LINE AND FILLED WITH CLASS A3 CONCRETE.
10. ITEMS DESIGNATED AS "TBA" AND/OR ////// ARE TO BE ABANDONED.

COMMONWEALTH OF VIRGINIA
MICHAEL A. RUSSELL
10/26/94
No. 24814
PROFESSIONAL ENGINEER

SUPERVISED BY I. STONE
DESIGNED BY M. RUSSELL
CADD OPERATOR I. PETERSON
REVISED BY:
PLAN DATE 26 OCT 94

PLAN	NOTE BOOK	NO
	SCANNED	
	PLOTTED	
	ALIGNMENT CHECKED	
	RIGHT OF WAY CHECKED	

BY	DATE

PLAN NO	PROJECT	FILE NO.	SHEET NO
A	0117-128-101		20(2)