

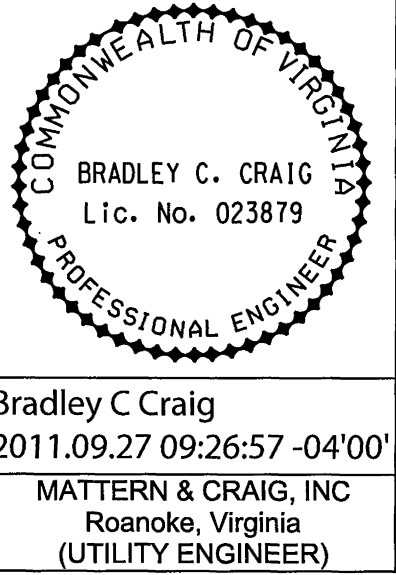
MATERIAL NOTES

- [1] DUCTILE IRON WATER MAIN OR OFFSETS OF EXISTING MAINS SHALL CONFORM TO AWWA C151. CLASS OF PIPE SHALL BE PRESSURE CLASS 350 DIP THROUGH THE 12" SIZE. FOR BURIAL DEPTHS EXCEEDING THOSE ALLOWED BY THE CLASS, PIPE AND FITTINGS OF SUFFICIENT WALL THICKNESS SHALL BE PROVIDED. DUCTILE IRON FITTINGS SHALL CONFORM WITH AWWA C110 OR AWWA C153. THE MINIMUM ACCEPTABLE PRESSURE RATING SHALL BE 250 PSI. IF COMPACT FITTINGS ARE USED THEN THE MINIMUM ACCEPTABLE PRESSURE RATING SHALL BE 350 PSI THROUGH THE 12" SIZE. DUCTILE IRON PIPE SHALL BE AS MANUFACTURED BY:
1. AMERICAN CAST IRON PIPE COMPANY
  2. U.S. PIPE AND FOUNDRY COMPANY
  3. GRIFFIN PIPE PRODUCTS
  4. McWANE PIPE
- A. JOINTS: USE PUSH-ON OR MECHANICAL JOINTS CONFORMING WITH ALL APPLICABLE PROVISIONS OF AWWA C111 OR RESTRAINED JOINTS AS SPECIFIED BELOW. WHERE FLANGED JOINT PIPE OR FLANGED FITTINGS ARE REQUIRED FOR CONNECTIONS, VERIFY AND COORDINATE BOLT HOLE DRILLING WITH MANUFACTURER. USE ANSICLASS 125 BOLT PATTERN. FLANGED JOINTS SHALL NOT BE USED FOR BURIED PIPE.
- B. DEFLECTION: ALLOWABLE DEFLECTION SHALL BE 80% OF THE MAXIMUM DEFLECTION ALLOWED BY AWWA C600 TABLE 4 AND 5. MECHANICAL JOINTS WITH METAL TIE RODS WILL BE PROHIBITED IN AREAS WHERE PIPE IS DEFLECTED.
- C. EXTERIOR COATING OF ALL DUCTILE IRON PIPE, JOINTS AND FITTINGS SHALL BE PROVIDED AS REQUIRED BY AWWA C110, C111, C115, C151 OR C153 AS APPLICABLE. ALL PIPES, JOINTS AND FITTINGS SHALL BE EXAMINED AFTER LAYING TO DETERMINE IF THE COATING HAS BEEN DAMAGED DURING INSTALLATION. ANY DAMAGED AREAS AND ALL JOINTS SHALL BE COATED WITH APPROX. 1 MIL. OF A BITUMINOUS COATING.
- D. INTERIOR LINING FOR WATER MAINS SHALL BE CEMENT MORTAR LINED IN ACCORDANCE WITH AWWA C104 AND ANSISPECIFICATION A21.4 STANDARD THICKNESS INCLUDING ASPHALTIC SEAL. LININGS EQUAL TO "ENAMELINE" WITH TAR COATING IN THE EXTERIOR WILL BE CONSIDERED AS A SATISFACTORY LINING FOR WATER PIPE.
- E. PIPE RESTRAINING LENGTH SHALL BE IN ACCORDANCE WITH THE SCHEDULE ON SHEET 10(6). RESTRAINED PIPE SHALL MEET THE FOLLOWING CRITERIA:
1. MECHANICAL JOINT PIPE WITH RETAINER GLANDS:  
ALL PIPE WHERE RETAINER GLANDS ARE INSTALLED SHALL HAVE A BRINELL HARDNESS NUMBER (BHN) OF 140-200 TO ALLOW PROPER ACTIVATION OF GLAND. RETAINER GLAND SHALL BE U.L. LISTED AS MANUFACTURED BY: EBAA IRON INC., SERIES 1100 "MEGALUG," FORD "UNI-FLANGE", ROMAC INDUSTRIES "GRIP RING", OR APPROVED EQUAL.
- F. CONNECTIONS: UNLESS OTHERWISE NOTED, CONNECTIONS TO EXISTING MAINS SHALL BE MADE USING MJ SOLID SLEEVE FITTINGS. SLEEVES SHALL BE LONG PATTERN, SOLID TYPE MADE OF GRAY - IRON OR DUCTILE IRON WITH A MINIMUM PRESSURE RATING OF 250 PSI. SLEEVES SHALL HAVE MECHANICAL JOINT ENDS SUITABLE FOR USE WITH APPROVED RESTRAINING RETAINER GLANDS. SLEEVES SHALL BE MANUFACTURED BY THE DUCTILE IRON PIPE MANUFACTURER. THE CONTRACTOR IS REQUIRED TO VERIFY THE OUTSIDE DIAMETER OF THE EXISTING WATER AND SEWER MAINS AND COORDINATE REQUIRED MODIFICATIONS, IF ANY, TO THE SLEEVE AND GLAND (MACHINING AND OTHERWISE) WITH THE MANUFACTURER. CONTRACTOR SHALL HAVE ALL MATERIALS NEEDED TO MAKE CONNECTION ON SITE PRIOR TO COMMENCING WITH THE CONNECTION.
- G. BEDDING AND BACKFILL SHALL BE IN ACCORDANCE WITH VDOT STANDARD UB-1, TYPE 1.

- [2] GATE VALVES AND BOXES FOR WATER MAINS SHALL CONFORM TO AWWA C515 - LATEST REVISION. GATE VALVES SHALL BE RESILIENT SEATED HAVING AN ENCAPSULATED DISC RATED FOR 250 PSI WORKING PRESSURE FOR ALL VALVES. VALVES SHALL BE EQUIPPED WITH O-RING SEALS, MECHANICAL JOINTS, IRON BODY, AND SUITABLE FOR BURIED SERVICE. GATE VALVES SHALL BE VERTICAL WRENCH NUT- OPERATED, NON-RISING STEM TYPE GATE VALVES SHALL BE:
1. AMERICAN FLOW CONTROL SERIES 500 AND 2500
  2. DRESSER "M & H" MODEL 3067/68
  3. MUELLER COMPANY MODEL A-2360
- ALL GATE VALVES FOR WATER MAINS SHALL OPEN LEFT (COUNTER CLOCKWISE).
- ALL MAIN LINE WATER VALVES SHALL BE CONTAINED WITHIN A WATER VALVE MANHOLE. VALVE MANHOLE SHALL CONSIST OF PRECASE MANHOLE CONE SECTIONS WITH WATER MANHOLE COVERS.
- WATER VALVE BOXES SHALL BE IN ACCORDANCE WITH VDOT STANDARD VB-1 "TYPE A." VALVE BOX INSTALLATION/ADJUSTMENT SHALL BE IN ACCORDANCE WITH VDOT STANDARD VB-1 "TYPE A." VALVE BOX CASTINGS SHALL RECEIVE AN ASPHALTIC COATING. VALVE BOXES SHALL BE MUELLER COMPANY 10364, OR APPROVED EQUAL. WATER VALVE BOXES SHALL ONLY BE USED ON FIRE HYDRANT VALVES.

- [3] BUTTERFLY VALVES SHALL HAVE A MINIMUM WORKING PRESSURE OF 250 PSIG CONFORMING TO AWWA STANDARD C504, CLASS 250B, LATEST REVISION. VALVES SHALL BE OF ONE PIECE, POSITIVE DRIVE TYPE WITH MECHANICAL JOINT ENDS, RUBBER VALVE SEATS, AN IRON BODY, AND PERMANENT LUBRICATION. THERE SHALL BE MOUNTED ON EACH BUTTERFLY VALVE A SIDE MOUNTED MANUAL OPERATOR WITH TOTALLY ENCLOSED, PERMANENTLY LUBRICATED GEARING CONSTRUCTED SUCH THAT A MAXIMUM TORQUE OF 80 FT. - LB. IS REQUIRED ON THE OPERATOR TO DEVELOP THE SEATING AND UNSEATING TORQUES OF THE VALVE. THE VALVES SHALL OPEN LEFT (COUNTER-CLOCKWISE) BY A 2" SQUARE OPERATING NUT. BUTTERFLY VALVES SHALL BE GROUNDHOG BY PRATT, AMERICAN-BFV BY VAL-MATIC, LINESEAL III BY MUELLER, OR EQUAL.

- [4] CONDUIT SHALL BE SCHEDULE 80 PVC WITH TRACER WIRE FOR LOCATING PURPOSES.
- [5] SANTARY SEWER PIPE SHALL BE SDR 35 PVC PIPE CONFORMING TO ASTM D3034-77, OR SHALL BE DUCTILE IRON PIPE IN ACCORDANCE WITH MATERIAL NOTE NO. 8.
- [6] SANITARY SEWER LATERALS SHALL BE CONSTRUCTED OF SDR-35 PVC PIPE CONFORMING TO ATSM D3034-77, OR DUCTILE IRON CONFORMING TO MATERIAL NOTE 8.
- [7] ADJUST EXISTING SANITARY SEWER MANHOLE FRAME & COVER IN ACCORDANCE WITH SECTION 510 AND 520 OF THE ROAD AND BRIDGE SPECIFICATIONS. FRAME AND COVER SHALL BE SET FLUSH WITH THE PROPOSED GRADE INCLUDING CROSS SLOPES OF PAVEMENTS.
- [8] DUCTILE IRON SANITARY SEWER PIPE, SANITARY SEWER LATERAL CONNECTIONS AND FITTINGS SHALL BE IN ACCORDANCE WITH MATERIAL NOTE NO. 1 FOR DUCTILE IRON WATER MAIN EXCEPT THAT THICKNESS CLASS 51 PIPE SHALL BE THE MINIMUM STRENGTH USED IN ALL SEWER APPLICATIONS. ALL DUCTILE IRON PIPE AND FITTINGS SHALL BE LINED WITH PROTECTO 401 EPOXY, OR APPROVED EQUAL.
- [9] SANITARY SEWER MANHOLES SHALL BE IN ACCORDANCE WITH VDOT STANDARD SMH-1. MANHOLE FRAME & COVER SHALL BE IN ACCORDANCE WITH VDOT STANDARD F&C-1. FRAME AND COVER SHALL BE SET FLUSH WITH PROPOSED GRADE INCLUDING CROSS SLOPES OF PAVEMENTS. WATERTIGHT MANHOLE FRAME & COVER SHALL BE IN ACCORDANCE WITH VDOT STANDARD WF&C-1.
- [10] SEWER CLEANOUTS SHALL BE IN ACCORDANCE WITH VDOT STANDARD SCO-1, TYPE B.
- [11] WATER VAULT SHALL BE IN ACCORDANCE WITH THE DETAIL ON SHEET 10(6A). PAY ITEM SHALL INCLUDE NEW PRECAST CONCRETE VAULT WITH ACCESS HATCH, COMPOUND METER (WITH RADIO READ CAPABILITIES), INTERIOR PIPING FOR VAULT, PIPE SUPPORTS, FLOOR DRAIN, DRAIN PIPE TO DAYLIGHT (OR FRENCH DRAIN), VALVES, MISCELLANEOUS FITTINGS, EXCAVATION AND BACKFILL FOR VAULT, AND ALL OTHER ITEMS NECESSARY FOR A COMPLETE, WORKING INSTALLATION.
- [12] WATER MAINS 3" AND SMALLER SHALL BE TYPE K COPPER CONFORMING TO AWWA C800 AND ASTM B88, AND SHALL BE SUITABLE FOR A 200 PSI WORKING PRESSURE.



REVISED	STATE	FEDERAL AID PROJECT	ROUTE	STATE PROJECT	SHEET NO.
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DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

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