THIS SHEET FOR UTILITY RELOCATION/ADJUSTMENT/BETTERMENT FOR WATER AND SEWER ONLY

MATERIALS 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.		720	0720-080-299,C-501	10(2)

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

   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 ANSI CLASS 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 APPROXIMATELY 1 MIL. OF A BITUMINOUS COATING.

   D. INTERIOR LINING FOR WATER MAINS SHALL BE CEMENT MORTAR LINED IN ACCORDANCE WITH AWWA C104 AND ANSI SPECIFICATION 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(8). 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," OR 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 FROM 3" UP TO AND INCLUDING 20" IN DIAMETER 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. ON VALVES LARGER THAN 14", BUTTERFLY VALVES CONFORMING TO AWWA C504 MAY BE USED. 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 UNLESS AUTHORIZED APPROVED BY THE WVWA. VALVE MANHOLE SHALL CONSIST OF PRECAST 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. FIRE HYDRANTS SHALL BE DRY BARREL TYPE AND SHALL BE MANUFACTURED IN COMPLETE ACCORDANCE WITH AWWA C502 - LATEST REVISION. HYDRANTS SHALL HAVE FULL 360 DEGREE REVOLVING HEADS AND SHALL OPEN BY TURNING THE OPERATING NUT TO THE LEFT (COUNTER CLOCKWISE). HYDRANTS SHALL HAVE A MAIN VALVE OPENING OF NOT LESS THAN 4½" IN DIAMETER. HYDRANTS SHALL BE:

   HYDRANTS SHALL BE:

   1. AFC MODEL B-84-B
   2. MUELLER CENTURION A-423
   3. AVK MODEL 2780
   4. KENNEDY K81D

   OR APPROVED EQUAL

   HYDRANTS SHALL BE INSTALLED IN ACCORDANCE WITH VDOT STANDARD FH-1 TYPE 1 RESTRAINT REQUIRED. HYDRANT NOZZLES, THREADS, AND OPERATING NUTS SHALL CONFORM TO LOCAL FIRE DEPARTMENT STANDARDS. HYDRANTS SHALL HAVE ONE 4½" PUMPER NOZZLE AND TWO 2½" HOSE NOZZLES. HYDRANTS SHALL BE PAINTED ACCORDING TO OWNERS COLOR SCHEME AND SPECIFICATIONS. HYDRANT ASSEMBLY SHALL BE RESTRAINED FROM CONNECTION TO DISTRIBUTION MAIN TO HYDRANT. APPROVED RESTRAINT METHODS INCLUDE THREADED "CORTEN" RODDING BETWEEN HYDRANT, HYDRANT VALVE AND CONNECTION TO WATER DISTRIBUTION MAIN WITH CONCRETE RESTRAINT ("MEGA-LUG", "GRIP RING", OR "UNI-FLANGE") MAY BE USED IN LIEU OF CONCRETE THRUST BLOCKING. INFACT CORPORATION'S "FOSTER ADAPTOR" MAY BE USED TO CONNECT BETWEEN MECHANICAL JOINT VALVES, FITTINGS AND HYDRANT CONNECTIONS.

4. WATER SERVICE LINES SHALL BE TYPE "K" COPPER WITH MINIMUM 1" DIAMETER, AND SHALL BE INSTALLED IN ACCORDANCE WITH VDOT STANDARD WM-1 AND AWWA C800. CRIMP AND CLAMP EXISTING WATER SERVICE LINES ON ABANDONED WATER MAINS. CORPORATION STOPS SHALL BE BRONZE FITTINGS AND SHALL CONFORM TO AWWA C800. CORPORATION STOP WILL BE FORD F1000-4-G OR APPROVED EQUAL.

   A. TAPS FOR PROPOSED WATER MAINS SHALL INCLUDE:
      1. FOR SERVICE LINES GREATER THAN OR EQUAL TO 1" DIAMETER AND EQUAL TO OR LESS THAN 3" DIAMETER - CORPORATION STOP WITH CTS COMPRESSION CONNECTION REQUIRED. SADDLE REQUIRED FOR CONNECTIONS TO ALL CLASS 50 DUCTILE IRON PIPE. APPROVED SADDLES INCLUDE POWERSEAL 3413, 3417, OR 3412AS; ROMAC 202, 202S, OR 306; OR FORD METER F202, FS202, OR FS303.

5. WATER METERS WILL BE INSTALLED BY WESTERN VIRGINIA WATER AUTHORITY. THE INSTALLATION OF THE WATER SERVICE LINE, BOX AND YOKE SHALL BE LOCATED AS SHOWN ON THE PLANS AND IN ACCORDANCE WITH VDOT STANDARD WM-1. ON WATER SERVICES WHERE THE WATER MAIN PRESSURE IS 80 PSI OR LESS, THE METER BOX IS TO BE CARSON/MID-STATES PLASTICS, INC PLASTIC BOX WITH FORD A32-T ELECTRONIC READ LID OR A.Y. MCDONALD MODEL 74M32C-TC CAST IRON BASE AND COVER OR APPROVED EQUAL. USE OF TRAFFIC BEARING BOX SHALL BE APPROVED BY THE AUTHORITY. TRAFFIC BEARING BOX SHALL BE APPROVED BY THE AUTHORITY. TRAFFIC BEARING BOX SHALL BE CARSON/MID-STATES PLASTICS H20 OR EQUIVALENT AND LID SHALL BE FORD METER BOX C32H OR EQUIVALENT. SETTERS TO BE A.Y. MCDONALD •20-215 WDDD33, FORD VBHH72-15W-1133 OR APPROVED EQUAL. ALL SETTERS SHALL BE EQUIPPED WITH INTEGRAL LOCKABLE VALVE AND CHECK VALVE.

   ON WATER SERVICES WHERE THE WATER MAIN PRESSURE IS BETWEEN 80 PSI AND 120 PSI, A ¾" PRESSURE REDUCING VALVE TO BE INSTALLED IN A STANDARD METER SETTER AND BOX. THE PRV VALVE AND BOX SHALL BE PLACED ON THE CUSTOMER SIDE OF THE METER. WATER METER BOX AND SETTER TO BE THE SAME AS THAT SPECIFIED FOR WATER MAINS WITH PRESSURE OF 80 PSI OR LESS.

   ON WATER SERVICES WHERE WATER MAIN PRESSURE IS GREATER THAN 120 PSI, METER BOX TO BE CARSON/MID-STATES PLASTICS, INC PLASTIC BOX WITH FORD A32-T ELECTRONIC READ LID OR A.Y. MCDONALD MODEL 74M32C-TC CAST IRON BASE AND COVER OR APPROVED EQUAL. METER BOX ASSEMBLY TO BE STANDARD DOUBLE METER SETTER AND BOX. A ¾" PRESSURE REDUCING VALVE WITH PRESSURE RELIEF VALVE TO BE INSTALLED. DOUBLE SETTER TO BE A.Y. MCDONALD •50-215 WDDD33, FORD TVBHH92-15W 1133 OR APPROVED EQUAL. ALL SETTERS SHALL BE EQUIPPED WITH INTEGRAL LOCKABLE VALVE AND CHECK VALVE.

6. 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.

7. 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. ALL DUCTILE IRON PIPE AND FITTINGS SHALL BE LINED WITH PROTECTO 401 EPOXY, OR APPROVED EQUAL.

8. 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.

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

10. NOT USED

11. AIR RELEASE VALVE SHALL BE MODEL NO. 143-C BY APCO, OR APPROVED EQUAL BY CRISPIN OR VAL-MATIC

12. PRESSURE REDUCING VALVE VAULT SHALL BE IN ACCORDANCE WITH PLAN DETAIL SHOWN ON SHEET 10(8). VAULT WILL BE MEASURED AND PAID FOR AT THE LUMP SUM PRICE. THIS PRICE SHALL INCLUDE ALL MATERIALS, EQUIPMENT AND LABOR REQUIRED FOR A COMPLETE, WORKING INSTALLATION. THIS WORK SHALL INCLUDE, BUT NOT BE LIMITED TO, THE PRECAST CONCRETE VAULT WITH STEPS, ACCESS HATCHES, FLOOR DRAIN (INCLUDING PIPING & FRENCH DRAIN), INTERIOR PIPING PENETRATION SEALS, PIPE SUPPORTS, CONNECTIONS TO EXISTING PIPING (INCLUDING REDUCERS), PRESSURE REDUCING VALVES, BYPASSES, GATE VALVES, BENDS, FITTINGS, SHUTDOWNS OF WATER MAINS, EXCAVATIONS, STONE BEDDING, BACKFILL, AND COORDINATION WITH POWER COMPANY TO EXTEND ELECTRICAL SERVICE TO PANELS, ELECTRICAL CONDUIT FROM PANEL TO VAULT, WORK SHALL ALSO INCLUDE INITIAL SETTING AND ADJUSTMENT OF VALVES AND COORDINATION WITH WVWA FOR OPERATION.

13. WATER SERVICE VAULT SHALL BE IN ACCORDANCE WITH PLAN DETAIL ON SHEET 10(8). VAULT WILL BE MEASURED AND PAID FOR AT THE LUMP SUM PRICE. THIS PRICE SHALL INCLUDE ALL MATERIALS, EQUIPMENT AND LABOR REQUIRED FOR A COMPLETE, WORKING INSTALLATION. THIS WORK SHALL INCLUDE, BUT NOT BE LIMITED TO, THE PRECAST CONCRETE VAULT WITH STEPS, ACCESS HATCH, FLOOR DRAIN (INCLUDING PIPING AND FRENCH DRAIN), INTERIOR PIPING PENETRATION SEALS, PIPE SUPPORTS, CONNECTIONS TO EXISTING PIPING (INCLUDING REDUCERS), WATER SERVICE METER, GATE VALVES WITH HAND WHEELS, BENDS, FITTINGS, SHUTDOWNS OF WATER MAIN, EXCAVATIONS, STONE BEDDING AND BACK FILL.

14. FIRE SERVICE VAULT SHALL BE IN ACCORDANCE WITH PLAN DETAIL ON SHEET 10(8). VAULT SHALL BE MEASURED AND PAID FOR AT THE LUMP SUM PRICE. THIS PRICE SHALL INCLUDE ALL MATERIALS, EQUIPMENT AND LABOR REQUIRED FOR A COMPLETE, WORKING INSTALLATION. THIS WORK SHALL INCLUDE, BUT NOT BE LIMITED TO, THE PRECAST CONCRETE VAULT WITH STEPS, ACCESS HATCH, FLOOR DRAIN (INCLUDING PIPING AND FRENCH DRAIN), INTERIOR PIPING PENETRATION SEALS, PIPE SUPPORTS, CONNECTIONS TO EXISTING PIPING, CHECK VALVES, BENDS, FITTINGS, STAND PIPE WITH SIAMESE CONNECTION, POST INDICATOR VALVE, SHUTDOWNS OF WATER MAIN, EXCAVATIONS, STONE BEDDING AND BACK FILL.

15. REMOVAL OF ASBESTOS CEMENT PIPE AND CONNECTIONS TO ASBESTOS CEMENT PIPE SHALL BE IN ACCORDANCE WITH VDOT SPECIAL PROVISIONS.

16. CONDUIT SHALL BE SCHEDULE 80 PVC WITH TRACER WIRE FOR LOCATING PURPOSES.

Power to dig trench from panel to vault, will install conduit. Set up with Travis. Put close to power pole

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A	0720-080-299		10(2)