

# CLTWater STANDARD DETAILS

**1" OR 3/4" SERVICE CONNECTION (LONG SIDE - PLAN VIEW)**

**1" OR 3/4" SERVICE CONNECTION (LONG SIDE - PROFILE VIEW)**

**1" OR 3/4" SERVICE CONNECTION (SHORT SIDE)**

**DETAIL AT MAIN (LONG SIDE)**

**DETAIL AT MAIN (SHORT SIDE)**

**ROAD WITH SIDE DITCH**

**NO. DESCRIPTION**

- 1 WATER MAIN
- 2 DOUBLE STRAP SERVICE SADDLE - CC (TAPER) THREAD OUTLET
- 3 BALL CORPORATION STOP - CC (TAPER) THREAD x CTS COMPRESSION
- 4 TYPE K COPPER TUBING OR SDR9 HDPE (POLY) TUBING WITH INSERT STIFFENERS
- 5 5/8" x 3/4" ANGLE BALL VALVE WITH LOCK WINGS - CTS COMPRESSION x YOKE STAR NUT
- 6 5/8" DUCTILE IRON YOKE BAR
- 7 5/8" METER ASSEMBLY (BY CMUD) WITH AMR TRANSMITTER
- 8 5/8" x 3/4" BRASS 90° YOKE STAR NUT x CTS COMPRESSION CONNECTOR
- 9 CONCRETE METER BOX - SEE STD. DETAILS
- 10 HDPE METER BOX LID WITH AMR TRANSMITTER BRACKET
- 11 AWG #12 GAUGE COPPER TRACER WIRE (THWN) - WITH BLUE INSULATION - TERMINATE IN METER BOX WITH 24" EXCESS WIRE (COILED)
- 12 SOLID STANDARD CONCRETE BRICKS - DIAGONAL AT CORNERS - 4 EACH.

**NO SCALE**  
STANDARD NO. K-1  
DATE 11/10/2010  
BY J.S.B./J.L.

**3/4" AND 1" DOMESTIC WATER SERVICE CONNECTION**

CHARLOTTE-MECKLENBURG UTILITIES STANDARD DETAILS WATER

**1" OR 3/4" SERVICE CONNECTION (SHORT SIDE - IN PAVEMENT)**

**METER BOX IN SIDEWALK (REQUIRES PRIOR CMU APPROVAL)**

**METER DETAIL (SIDE)**

**METER DETAIL (END)**

**METER BOX IN SIDEWALK DETAIL (BOX SHALL BE SUPPORTED BY CONCRETE SIDEWALK - AS SHOWN)**

**NO. DESCRIPTION**

- 1 WATER MAIN
- 2 DOUBLE STRAP SERVICE SADDLE - CC (TAPER) THREAD OUTLET
- 3 BALL CORPORATION STOP - CC (TAPER) THREAD x CTS COMPRESSION
- 4 TYPE K COPPER TUBING OR SDR9 HDPE (POLY) TUBING WITH INSERT STIFFENERS
- 5 5/8" x 3/4" ANGLE BALL VALVE WITH LOCK WINGS - CTS COMPRESSION x YOKE STAR NUT
- 6 5/8" DUCTILE IRON YOKE BAR
- 7 5/8" METER ASSEMBLY (BY CMUD) WITH AMR TRANSMITTER
- 8 5/8" x 3/4" BRASS 90° YOKE STAR NUT x CTS COMPRESSION CONNECTOR
- 9 CONCRETE METER BOX - SEE STD. DETAILS
- 10 HDPE METER BOX LID WITH AMR TRANSMITTER BRACKET
- 11 AWG #12 GAUGE COPPER TRACER WIRE (THWN) - WITH BLUE INSULATION - TERMINATE IN METER BOX WITH 24" EXCESS WIRE (COILED)
- 12 SOLID STANDARD CONCRETE BRICKS - DIAGONAL AT CORNERS - 4 EACH.

**NO SCALE**  
STANDARD NO. K-2  
DATE 11/10/2010  
BY J.S.B./J.L.

**3/4" AND 1" DOMESTIC WATER SERVICE CONNECTION**

CHARLOTTE-MECKLENBURG UTILITIES STANDARD DETAILS WATER

**NOTES:**

- ALL FLANGE HARDWARE (BOLT/WASHER/NUT) SHALL BE STAINLESS STEEL - TYPE 304 WITH ANTI-SEIZE COMPOUND.
- ALL PIPE SHALL BE RESTRAINED FROM TAP TO PROPERTY LINE VALVE.
- VALVE SHALL BE RATED FOR NCDOT HS-20 LOADING - SUBMIT SHOP DRAWINGS (P.E. SEALED FOR REVIEW).
- ALL CONCRETE SHALL BE MINIMUM 4000 PSI COMPRESSIVE STRENGTH.
- DESIGN SHALL CONFORM TO ASTM C888 - SPECIFICATIONS FOR UNDERGROUND PRECAST CONCRETE UTILITY STRUCTURE.
- STEEL REINFORCING DESIGN SHALL CONFORM TO ASTM C887.
- REBARS SHALL BE GRADE 60 PER ASTM A615.
- WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185.
- DIAGONAL REINFORCING SHALL BE ADDED AT ALL OPENINGS.
- PIPE PENETRATIONS SHALL BE SEALED WITH FLEXIBLE CONNECTORS (MANHOLE BOOT) OR WITH 4-INCHES OF BRICK & MORTAR (AND 1/2 INCH THICK CONSTRUCTION EXPANSION MATERIAL).
- FRAME TO BE FLUSH WITH GROUND OR CONCRETE SIDEWALK, GROUND SHALL SLOPE AWAY FROM VAULT.
- ALL JOINTS SHALL BE MADE WATER TIGHT USING 2 RINGS OF BUTYL RUBBER JOINT MASTIC.

**NO. ALTERNATE DESCRIPTION**

WHEN USING SDR9 HDPE (IPS) WITH STAINLESS STEEL, BRASS, OR BRONZE MNPT ENDS, USE THE FOLLOWING PRODUCTS:

- 1 1/2" BALL CORPORATION STOP (CC TAPER THREAD x FNPT)
- 1 1/2" SDR9 HDPE (POLY) - IPS PIPE (MNPT x MNPT)
- 1 1/2" BALL VALVE (FNPT x FNPT)
- 1 1/2" SDR9 HDPE (POLY) - IPS PIPE (MNPT x MNPT) - CAP END

**NO. DESCRIPTION**

- 1 EXISTING OR PROPOSED WATER MAIN
- 2 TAPPING SADDLE AND 1 1/2" BALL CORPORATION STOP (CC TAPER THREAD x CTS COMPRESSION)
- 3 STANDARD VALVE BOX ASSEMBLY (TYPI) - ALL VALVES (OMIT AT CORPORATION STOP ON SHORT SIDE SERVICE)
- 4 1 1/2" TYPE K COPPER TUBING
- 5 1 1/2" BALL VALVE (CTS COMPRESSION x FNPT)
- 6 1 1/2" RED BRASS PIPE NIPPLE (L x 20" OR 30")
- 7 1 1/2" BRASS METER SETTER ASSEMBLY - FORD #V76-85311-05, MUELLER #0988 242343, CAMBRIDGE #0020-718P86JUBS OR MCDONALD #726818WTFP. NO SOLDER JOINTS PERMITTED
- 8 3/4" SCH 40 RED BRASS PIPE (L=18") x 2 EACH
- 9 1 1/2" WATER METER ASSEMBLY WITH AMR ERT TRANSMITTER (BY CONTRACTOR)
- 10 8" PASS BALL VALVE WITH LOCK WINGS - LOCK VALVE IN CLOSED POSITION (SERIAL NUMBERED STD. LOCK - FURNISHED BY CMUD)
- 11 1 1/2" TYPE K COPPER TUBING TAIL PIECE - L = 24" MIN. - CAP END
- 12 PRECAST CONCRETE SERVICE VAULT (36" x 24" x 31")
- 13 6" DIAMETER SUMP HOLE
- 14 6" COMPACTED #57 OR #67 WASHED STONE
- 15 MINIMUM OF (3) STANDARD SOLID CONCRETE BRICK COURSES UNDER ACCESS DOOR FRAME, MAXIMUM 2 FT.
- 16 24" x 36" ACCESS DOOR - SEE STANDARD DETAIL
- 17 AMR (ERT) TRANSMITTER
- 18 3/8" DIAMETER GALV. STEEL EYE BOLT (ADHESIVE ANCHOR) - TYPICAL
- 19 AWG #12 GAUGE COPPER TRACER WIRE (THWN) - WITH BLUE INSULATION TERMINATE WITH 24" EXCESS WIRE (COILED) AT EYE BOLT AND VALVE BOX (TYPI)
- 20 CAST IN PLACE CONCRETE SIDEWALK - BRICK WORK SHALL NOT EXTEND TO SURFACE, ACCESS DOOR SHALL REST ON SIDEWALK

**TYPICAL PLAN**

**TYPICAL ELEVATION**

**SECTION VIEW**

**ALTERNATE IN CONCRETE SIDEWALK**

**NO SCALE**  
STANDARD NO. M  
DATE 11/10/2010  
BY J.S.B./J.L.

**1 1/2 INCH WATER METER SERVICE CONNECTION AND VAULT**

CHARLOTTE-MECKLENBURG UTILITIES STANDARD DETAILS WATER

**TYPE A - GRADE RING (PRECAST ONLY)**

**TYPE B - GRADE RING (PRECAST OR CAST IN PLACE)**

**TYPE I - FOOTING - TOP SECTION (PRECAST ONLY)**

**TYPE II - FOOTING - BOTTOM SECTION (PRECAST ONLY)**

**INSTALLATION DETAIL TWO SECTION VIEW**

**INSTALLATION DETAIL ONE SECTION VIEW**

**NO. DESCRIPTION**

- 1 CONCRETE GRADE RING.
- 2 CONCRETE FOOTING.
- NON WOVEN GEOTEXTILE FABRIC X 2 EACH.
- SPLIT IN FABRIC - 8 INCHES LONG, ROTATE 90 DEGREES IN SECOND LAYER OF FABRIC.
- #4 REBAR - 17-INCH DIAMETER.
- #4 REBAR - LENGTH = 56 INCHES, OR (ALTERNATE - 14-INCH DIAMETERS).
- #4 REBAR - 12-INCH DIAMETER.
- #4 REBAR - 8-INCH DIAMETER.
- VALVE BOX ASSEMBLY - (SHOWN LEFT TO RIGHT) - VALVE BOX BOTTOM SECTION, OR 8-INCH DIAMETER C500 PVC PIPE, OR 8-INCH DIAMETER SDR 26 PVC PIPE.
- VALVE - 12-INCH OR SMALLER.
- TOP SECTION OF VALVE BOX.

**DESIGN REQUIREMENTS**

- CONCRETE -  $f_c = 4000$  PSI (PRECAST), OR 3600 PSI (CAST-IN-PLACE).
- STEEL REINFORCEMENT - REBARS - GRADE 60 (60,000 PSI) - ASTM A-615, OR WELDED WIRE FABRIC - ASTM A-185.
- NON WOVEN GEOTEXTILE FABRIC - CARTRIDGE MILLS #FX-40HS, MIRAFI #140N, OR APPROVED EQUAL.

**NOTES:**

- FOR PRECAST GRADE RINGS - FILL VOID BETWEEN GRADE RING AND CAST IRON VALVE BOX TOP SECTION WITH NON-SHRINK GROUT.
- FOR CAST-IN-PLACE GRADE RINGS - TOP SECTION OF CAST IRON VALVE BOX SHALL BE CAST IN THE CONCRETE.
- TYPE A GRADE RINGS SHALL BE REQUIRED ON ROAD SHOULDERS WITHOUT CURB.
- TYPE I FOOTINGS SHALL BE REQUIRED IN NEW CONSTRUCTION WHEN THE CAST IRON VALVE BOX IS LOCATED DIRECTLY IN THE ASPHALT.
- TYPE II FOOTINGS SHALL BE REQUIRED AT ALL VALVE INSTALLATIONS.
- FOR INSTALLATION DETAIL TWO - ONLY ONE VALVE BOX ASSEMBLY (PART #9) SHALL BE REQUIRED. FOOTINGS SHALL NOT REST ON THE VALVE, AND SHALL BE CENTERED ON THE VALVE OPERATING NUT AS SHOWN.

**NO SCALE**  
STANDARD NO. N  
DATE 11/23/10  
BY J.S.B./J.L.

**VALVE BOX - CONCRETE GRADE RINGS AND FOOTINGS (12" AND SMALLER VALVES - ONLY)**

CHARLOTTE-MECKLENBURG UTILITIES STANDARD DETAILS WATER

2/6/2015  
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