

WATER LINE SERVICES

- A) SERVICES FROM THE CURB STOP TO THE WATER METER SHALL BE ONE OF THE FOLLOWING MATERIALS:
- 1) SOFT COPPER, TYPE "K"
 - 2) CROSSLINKED POLYETHYLENE(PEX_o) MEETING THE FOLLOWING STANDARDS: ASTM F 876, ASTM F 2657, ASTM F 2080, ASTM F 2023 AND AWWA C904 AND AWWA C800 (FITTINGS) AS MANUFACTURED BY REHAU "MUNICIPEX" OR APPROVED EQUAL. SDR-9, PC200@73°F. SHALL BE USED AT THE APPROVAL OF THE AVON UTILITY DEPARTMENT.
 - 3) HDPE PE340B, C-3, SDR-9 PC200@73°F, ASTM D2737-05 AWWA C-901. SHALL BE USED AT THE APPROVAL OF THE AVON UTILITY DEPARTMENT.

ALL PIPE OVER 2" SHALL BE (DUCTILE IRON CLASS 52) OR C909. (METER PITS MAY BE REQUIRED AT THE CITY OF AVON UTILITIES SUPERINTENDENT'S DISCRETION. SDR-9 PIPING SHALL BE BACK FILLED WITH CLEAN SAND. PLASTIC WATER SERVICES SHALL INCLUDE STAINLESS STEEL INSERT STIFFENERS THAT ARE CAPABLE OF A WORKING PRESSURE OF 150 PSI AND A BURST PRESSURE OF 450 PSI.

- B) ALL SERVICES SHALL BE A MINIMUM OF ONE (1") INCH FOR ALL NEW CONSTRUCTION.
- C) WHERE CURRENT 3/4" SERVICES ARE INSTALLED AT RIGHT OF WAY IN PREVIOUSLY APPROVED SUBDIVISIONS ADDITIONAL 3/4" SERVICE WILL BE ALLOWED, ONE INCH FROM STREET TO HOUSE PREFERRED.
- D) METER SIZE SHALL MATCH THE SERVICE LINE SIZE.
- E) WHEN METERS SHALL BE MOUNTED IN PITS/VAULTS AS CLOSE TO THE CURB BOX AS POSSIBLE. METER PIT LIDS SHALL BE SET TO FINISH GRADE.
- F) SERVICE LINES SHALL BE A MINIMUM DEPTH OF 48". SERVICE LINE SHALL BE MINIMUM OF 10' SEPARATION FROM SANITARY SEWER LATERALS & 10' FROM STORM LATERALS.
- G) SERVICE LINE INSTALLATION MAY NOT BE ACCOMPLISHED BY "SHELIVING" TRENCH WITH STORM OR SANITARY.
- H) SERVICE LINE MAY ENTER BUILDING UNDER FOOTER PROVIDED PROPER CLEARANCE AND SEPARATION IS MET. OTHERWISE, SERVICES TO BE STUBBED THROUGH WALL. WALL SLEEVES SHALL BE PROVIDED AS PER BUILDING DEPARTMENT REQUIREMENTS. SERVICES THAT ENTER THROUGH BASEMENT FLOOR OR SLAB SHALL BE PROTECTED WITH A NON-KINK MATERIAL SUCH AS ARMAFLEX OR APPROVED EQUAL.
- I) IT IS PREFERRED THAT WATER SHUT OFF BOX ARE NOT INSTALLED WITHIN THE DRIVEWAY AREA.
- * WATER SHUT OFF BOXED THAT ARE PLACED WITHIN DRIVEWAYS SHALL BE ADJUSTED TO GRADE AND APPROVED BY THE AVON CITY UTILITY DEPARTMENT PRIOR TO PLACEMENT OF CONCRETE.
 - * ALL CLEANOUTS & WATER BOXES LOCATED INSIDE OF CONCRETE AREAS THAT CANNOT BE RELOCATED, SHALL REQUIRE AN EXPANSION JOINT OR PIPE SLEEVE.
- J) REFER TO SHEETS OP-5 TO OP-8 FOR ADDITIONAL DETAIL.
- K) PLASTIC SERVICE LINES SHALL HAVE A TRACER WIRE SYSTEM AS PER REHAU SPECIFICATION OR APPROVED EQUAL INCLUDING 10 GAUGE(AWG) SINGLE STRANDED INSULATED COPPER WIRE WITH SPLICES, IF REQUIRED, BY "DRY CONN" DIRECT BURY LUG AQUA CONNECTORS BY KING INNOVATION OR APPROVED EQUAL.

REGULATIONS COVERING WATER SERVICE LINES
BETWEEN THE CURB STOP AND THE WATER METER

- A) *SERVICE LINES WILL BE THE SAME SIZE AS THE METER SUCH AS 3/4", 1", 2".
*SHOULD A UNION BE USED TO JOIN TWO OR MORE PIECES OF COPPER OR PLASTIC TOGETHER TO MAKE A SERVICE LINE, SUCH UNIONS SHALL BE FLARE OR COMPRESSION TYPE MANUFACTURED BY MUELLER.
*UNDER NO CIRCUMSTANCES WILL A SWEAT CONNECTION BE PERMITTED IN A SERVICE LINE. (ANY LINE PRIOR TO MASTER METER)

INSIDE METER SET REQUIREMENTS

- A) ALL SERVICE LINES WILL RUN FROM THE CURB STOP TO NO MORE THAN ONE (1) FT. INSIDE THE BUILDING WHERE THE METER IS TO BE SET. ALL SERVICE LINES MUST BE LAID AT A DEPTH OF (48) INCHES. THIS LINE MUST BE INSPECTED BY THE WATER DEPARTMENT BEFORE IT IS COVERED.
- B) BOTH COMMERCIAL & INDUSTRIAL PROJECTS SHALL CONFORM TO BOTH THE "OUT-PARCEL" & "STANDARD CONSTRUCTION" DETAILS.
- C) NO SUPPLEMENTAL FITTINGS WILL BE ALLOWED BETWEEN THE CURB STOP AND THE METER SETTING.
- D) UPON ISSUANCE OF A WATER TAP, THE PROPERTY OWNER GIVES THE WATER DEPARTMENT THE RIGHT TO INSTALL A METERING DEVICE IN THE BUILDING TO BE SERVICED, AND TO INSTALL A REGISTERING DEVICE AND CONNECTING WIRES. THE METERING DEVICE SHALL BE MOUNTED ON A JOIST AND REMAIN ACCESSIBLE VIA AN ACCESS COVER OR PANEL OF MINIMUM 6"x6" SIZE.

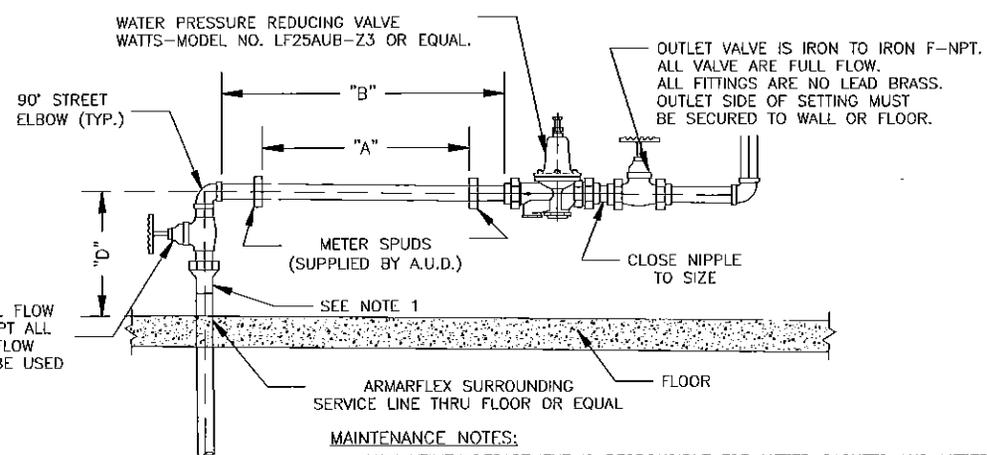
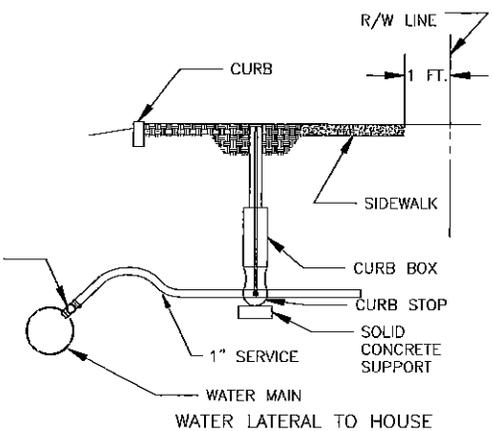
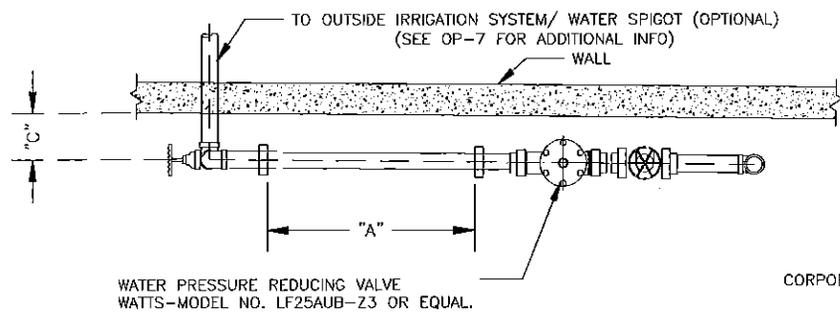
OHIO EPA WATERLINE CONSTRUCTION NOTES

- A) A MINIMUM OF 35 PSI SHALL BE MAINTAINED TO THE CURB STOP DURING NORMAL OPERATING CONDITIONS.
- B) BOOSTER PUMPS ARE NOT PERMITTED ON RESIDENTIAL SERVICE CONNECTIONS.
- C) A MINIMUM 10-FOOT HORIZONTAL SEPARATION (MEASURED OUT-TO-OUT CLEAR) BETWEEN WATER LINES AND STORM/SANITARY SEWERS WILL BE MAINTAINED.
- D) A MINIMUM 18-INCH VERTICAL CLEARANCE (MEASURED OUT-TO-OUT CLEAR) BETWEEN WATER LINES AND STORM SEWERS WILL BE MAINTAINED AND BETWEEN WATERLINES AND SANITARY SEWERS.

CITY OF AVON OUT-PARCEL CONSTRUCTION STANDARDS		
WATERLINE DETAILS & SPECIFICATIONS		DATE 1/30/05 11/2009 5/2014
STANDARD CONSTRUCTION DRAWING	OP-4	

1. NO PERSON SHALL TAKE WATER FROM ANY FIRE HYDRANT EXCEPT FOR FIRE PURPOSES, UNLESS A PERMIT IS FIRST OBTAINED AND ARRANGEMENTS MADE FOR METERING OF THE WATER.
2. IN ALL CASES WHERE SERVICE IS CONNECTED DIRECT TO BOILERS OR OTHER HOT WATER FIXTURES THAT ARE LIKELY TO CAUSE A BACK WATER PRESSURE, A CHECK VALVE MUST BE INSTALLED AT THE EXPENSE OF THE CUSTOMER, ON THE SERVICE PIPE TO PREVENT DAMAGE TO METERS. ALL DAMAGES CAUSED TO METERS BY BACKWATER PRESSURE SHALL BE PAID FOR BY THE CONSUMER WHERE SUCH DAMAGES OCCUR.
3. ALL PERSONS ARE FORBIDDEN TO COVER UP OR INTERFERE WITH ANY METER-BOX, VALVE-BOX, HYDRANT OR OTHER WATER INFRASTRUCTURE APPURTENANCE.
4. IN NO CASE WILL SERVICE PIPES BE ALLOWED TO RUN ACROSS LOTS, FROM ONE LOT TO ANOTHER, UNLESS APPROVED BY THE AVON UTILITY DEPARTMENT WITH APPROPRIATE EASEMENTS IN PLACE.
5. NO TWO (2) SEPARATE PREMISES SHALL BE SUPPLIED FROM ONE (1) SERVICE, EXCEPTING IN THE UTILITY EASEMENT AREA. A SEPARATE SERVICE SHALL BE INSTALLED FOR EACH SUCH SEPARATE PREMISE; WITH THE EXCEPTION OF APARTMENT HOUSES, DUPLEX FLATS AND DOUBLE HOUSES.
6. ALL SERVICES SHALL BE METERED.
7. ALL CHANGES IN SERVICE PIPES AND FIXTURES THAT MAY BE NECESSARY TO SET THE METER PROPERLY TO AVOID FREEZING AND TO MAKE ALL WATER USED ON ANY PREMISES PASS THROUGH THE METER SHALL BE MADE AT THE EXPENSE OF THE PROPERTY OWNER AND CONSUMER, AND THE COST THEREOF SHALL BE PAID BEFORE THE WATER IS TURNED ON. ANY DAMAGE TO SERVICE PIPE ON THE PERSONAL PROPERTY OF THE CUSTOMER, FROM FREEZING OR OTHER CAUSES, SHALL BE REPAIRED AT THE EXPENSE OF THE CUSTOMER.
8. PROPERTY OWNER IS ULTIMATELY RESPONSIBLE FOR PAYING WATER BILLS.

CITY OF AVON OUT-PARCEL CONSTRUCTION STANDARDS	
WATERLINE SPECIFICATIONS	DATE 9/30/03 11/2009 4/2014
STANDARD CONSTRUCTION DRAWING	OP-5



- MAIN VALVE IS FULL FLOW IRON TO IRON F-NPT ALL VALVES ARE FULL FLOW
- BALL VALVES MAY BE USED

MAINTENANCE NOTES:

- AVON UTILITY DEPARTMENT IS RESPONSIBLE FOR METER GASKETS AND METER MAINTENANCE, HOME OWNER IS RESPONSIBLE FOR ALL OTHER APPURTENANCES.

NOTES:

1. FOR COPPER SERVICE:
USE COPPER TO IRON FLARE TO M-NPT.
FOR PLASTIC SERVICE:
FOLLOW MANUFACTURES GUIDE TO TRANSITION FROM PLASTIC WITH A BRASS COMPRESSION FITTING (F208D) WITH STAINLESS STEEL INSERT.

WATER MAIN
WATER LATERAL TO HOUSE
CORPORATION STOP
CURB STOP; MUELLER #15200 OR EQUAL
CURB BOX AND COVER; HAYES #5800 OR #5803 OR EQUAL
CORP. STOP; MUELLER #H-1500 OR EQUAL

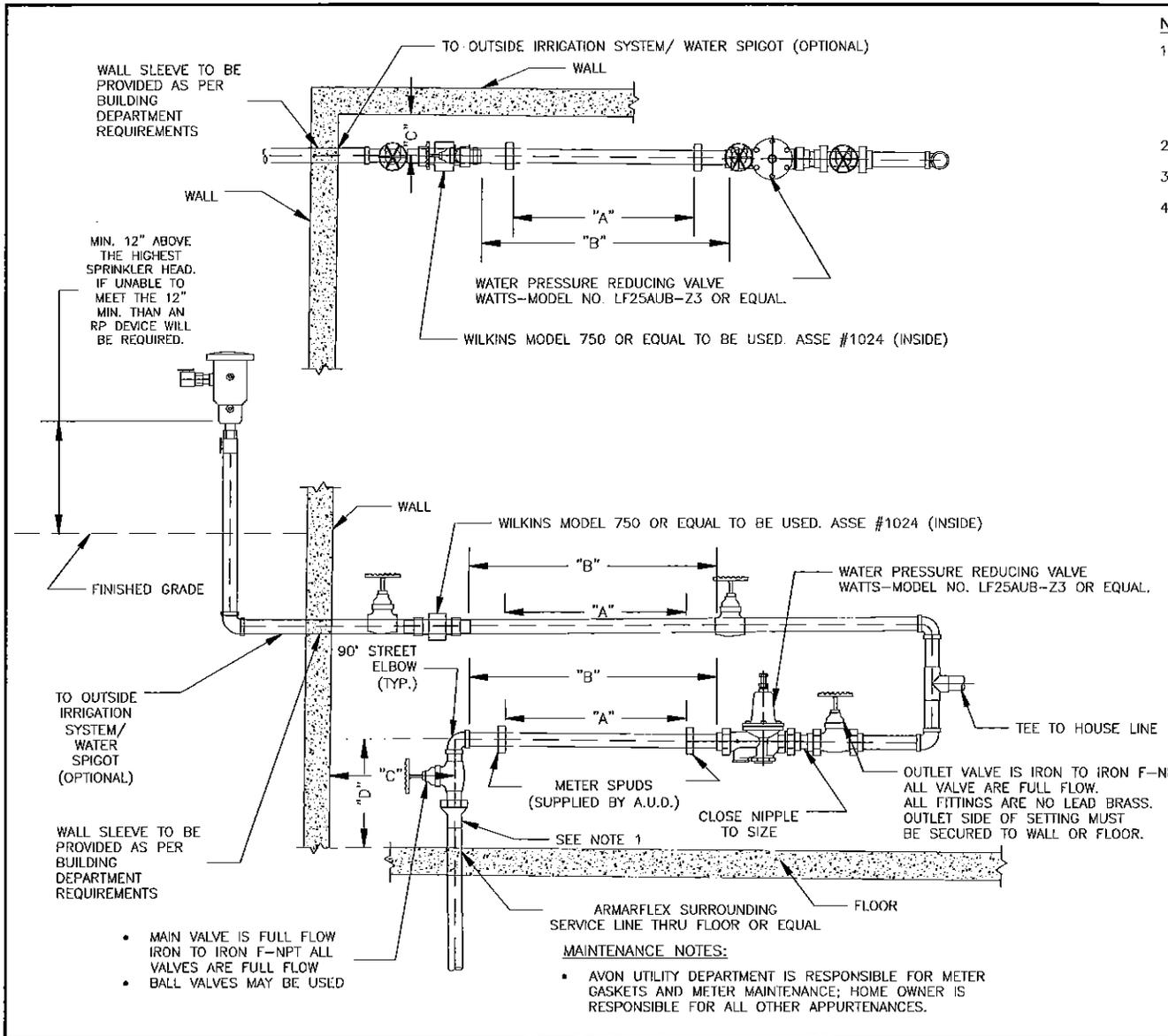
NOTES:

CITY APPROVAL SHALL BE REQUIRED FOR ALL PROPOSED CURB STOP LOCATIONS, OTHER THAN AS SHOWN ABOVE.

INSIDE METER ASSEMBLY TO BE ACCESSIBLE AT ALL TIMES.

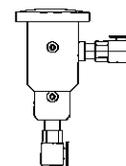
METER SIZE	A	B	C	D
3/4"	7-3/4"	12-1/2"	6" MIN 12" MAX	24" MIN 36" MAX
1"	10-3/4"	16"	6" MIN 12" MAX	24" MIN 36" MAX

CITY OF AVON OUT-PARCEL CONSTRUCTION STANDARDS	
INSIDE METER INSTALLATION	DATE REVISED 5/10/05 11/2009 4/2014
STANDARD CONSTRUCTION DRAWING	OP-6



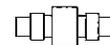
NOTES:

- FOR COPPER SERVICE: USE COPPER TO IRON FLARE TO M-NPT. FOR PLASTIC SERVICE: FOLLOW MANUFACTURES GUIDE TO TRANSITION FROM PLASTIC WITH A BRASS COMPRESSION FITTING (F2080) WITH STAINLESS STEEL INSERT.
- ALL INSTALLATIONS MUST COMPLY WITH PUBLISHED RULES AND REGULATIONS
- NO SEWER CHARGE FOR SECOND METER; WATER CHARGE ONLY.
- INSIDE METER ASSEMBLY TO BE ACCESSIBLE AT ALL TIMES



THE PRESSURE VACUUM BREAKER IS DESIGNED TO PREVENT BACK SIPHONAGE INTO THE POTABLE WATER SUPPLY. CONTAINS A SPRING LOADED CHECK VALVE TO PREVENT A BACKFLOW OF NON-POTABLE WATER AND FLOAT VALVE WHICH OPENS TO ADMIT AIR WHEN BACK SIPHONAGE CONDITIONS EXIST. IT IS INTENDED FOR CONTINUOUS LINE PRESSURE APPLICATIONS WHICH MAY INCORPORATE DOWNSTREAM SHUT-OFF VALVES, BUT SHOULD NOT BE INSTALLED WHERE IT WOULD BE SUBJECT TO BACKPRESSURE. THE CORROSION RESISTANT CAST BRONZE BODY PLUS STAINLESS STEEL SPRINGS, SCREWS, AND PATENTED SILICONE RUBBER UPPER DISC, ASSURES CONTINUED PERFORMANCE UNDER PRESSURE.

WILKINS MODEL 720A OR EQUAL TO BE USED. ASSE #1020 (OUTSIDE)



THE DUAL CHECK AFFORDS A SIMPLE, ECONOMICAL SOLUTION TO BACKFLOW ELIMINATION FOR RESIDENTIAL AND LIGHT INDUSTRIAL SERVICE LINES. IN ADDITION, IT OFFERS DUAL CHECK RELIABILITY COUPLED WITH AN ATMOSPHERIC VENT BETWEEN TWO CHECK VALVES. IF A BACKFLOW CONDITION OCCURS AND THE SECOND CHECK VALVE DOES NOT SEAT, LEAKAGE WOULD BE DISABLED. DUAL CHECK REQUIRED IF A DEDUCT METER IS INSTALLED.

WILKINS MODEL 750 OR EQUAL TO BE USED. ASSE #1024 (INSIDE)

METER SIZE	A	B	C	D
3/4"	7-3/4"	12-1/2"	6" MIN 12" MAX	24" MIN 36" MAX
1"	10-3/4"	16"	6" MIN 12" MAX	24" MIN 36" MAX

**CITY OF AVON
OUT-PARCEL CONSTRUCTION STANDARDS**

SEWER DEDUCT METERS DETAILS & SPECIFICATIONS	DATE 9/30/03 11/2009 5/2014
STANDARD CONSTRUCTION DRAWING	OP-7

SEWER DEDUCT METERS (SECOND METER)

SEWER DEDUCT METERS CAN BE INSTALLED IN CONJUNCTION WITH THE INSTALLATION OF IRRIGATION SYSTEMS AND/OR OUTSIDE SPIGOTS. THIS METER INSTALLATION SHALL BE INSTALLED AT THE TIME OF BUILDING PLUMBING (NEW) OR RETRO FIT AS APPROVED PER THE FOLLOWING REQUIREMENTS:

- A) THERE SHALL BE INSTALLED A MINIMUM OF A DUAL CHECK BACKFLOW DEVICE DIRECTLY AFTER THE SECOND METER.
- B) A PRESSURE VACUUM BREAKER DEVICE WILKINS MODEL 720A OR APPROVED EQUAL AS PER SPECIFICATION ASSE #1020 IS REQUIRED ON OUTSIDE SPRINKLER SYSTEMS. NOTE: IN LIEU OF TWO (2) DEVICES A REDUCED PRESSURE BACKFLOW DEVICE MAY BE INSTALLED INSIDE AFTER THE METER.
- C) THERE SHALL BE PAID A PERMIT FEE TO BOTH THE UTILITIES AND BUILDING DEPARTMENTS FOR SUCH APPLICATION.
- D) ALL SECONDARY METERS SHALL BE PROVIDED AT 2ND ROUGH PLUMBING INSPECTION. THE METER (FURNISHED BY THE WATER DEPARTMENT) WILL THEN BE INSTALLED BY THE WATER DEPT.
- E) METERS WILL NOT BE INSTALLED UNDER SINKS, IN CLOSETS, IN CEILING SET FOR INDIVIDUAL LINES TO FAUCETS. SECONDARY METERS MUST BE INSTALLED AT THE MASTER METER LOCATION OR AS PREVIOUSLY NOTED. ALL METERS, VALVES AND APPURTENANCES SHALL BE ACCESSIBLE. IF A CHASEWAY OR ENCLOSED PANEL IS CONSTRUCTED, THE PANELS SHALL HAVE REMOVABLE PANELS. REMOTE METER DEVICES SHALL BE LOCATED ON A FLOOR JOIST AND REMAIN ACCESSIBLE VIA 6" WIDE X 6" DEEP REMOVABLE PANEL.

PROCEDURES/GUIDELINES FOR SANITARY SEWER DEDUCT METER INSTALLATION

- 1) SANITARY SEWER DEDUCT METERS SHALL BE INSTALLED FOR USE WITH IRRIGATION SYSTEMS AND OUTSIDE SPIGOTS.
- 2) SUCH COMMON AREAS SHALL HAVE INDIVIDUAL IRRIGATION TAPS/SYSTEMS SEPARATE FROM HOMES.
- 3) ALL RESIDENTIAL DEDUCT METERS SHALL BE SIZED ACCORDING TO THE SERVICE AND INSTALLED AS PER CITY OF AVON STANDARDS.
- 4) THE PREFERRED METHOD FOR NEW HOME CONSTRUCTION IS WITH INSIDE METERING. EXTERIOR METER PITS SHALL BE ALLOWED ON A CASE BY CASE BASIS IF THE SERVICE LINE IS GREATER THAN 100 FT.
- 5) IRRIGATION SYSTEMS THAT ARE TO BE INSTALLED ON HOMES/PROPERTIES THAT ARE OF A SLAB TYPE CONSTRUCTION SHALL BE REQUIRED TO INSTALL AN INDIVIDUAL/SEPARATE LINE FROM THE "MASTER METER" TO A POINT AT WHICH THE IRRIGATION SYSTEM EXITS THE HOME COORDINATED WITH AVON UTILITIES DEPARTMENT WHEN THE STANDARD CAN NOT BE MET. THE SANITARY SEWER DEDUCT METER AND BACKFLOW DEVICE SHALL BE INSTALLED AT THE POINT TO WHICH THE NEW SERVICE EXITS THE BUILDING. CROSS CONNECTIONS BETWEEN DOMESTIC USE AND SECONDARY METER USE ARE PROHIBITED.
- 6) THE CITY OF AVON UTILITIES DEPARTMENT SHALL RESERVE THE RIGHT TO DENY ANY AND ALL DEDUCT METER INSTALLATIONS DUE TO IMPROPER INSTALLATION.
- 7) ANY AND ALL COST SHALL BE AT THE EXPENSE OF THE HOMEOWNER AND/OR THEIR AGENTS.
- 8) IT SHALL BE THE RESPONSIBILITY OF THE HOMEOWNER TO CONTACT THE CITY FOR INSPECTIONS AND METER INSTALLS FOURTY-EIGHT (48) HOURS IN ADVANCE.
- 9) COMMERCIAL/INDUSTRIAL/SLAB HOMES IRRIGATION SYSTEMS SHALL BE REVIEWED AND APPROVED ON AN INDIVIDUAL BASIS.

CITY OF AVON OUT-PARCEL CONSTRUCTION STANDARDS	
SEWER DEDUCT METER SPECIFICATIONS CONT	DATE 5/31/03 11/2009 4/2014
STANDARD CONSTRUCTION DRAWING	OP-8

CONSTRUCTION NOTES AND STANDARDS FOR WATER MAIN INSTALLATIONS

1. WATER MAIN SHALL BE MINIMUM CLASS 52 DUCTILE IRON CEMENT LINED AND HAVE SOCKET BY PLAIN END RUBBER GASKET PUSH-ON JOINTS WITH RADially COMPRESSED LOCKED IN PLACE RUBBER RING GASKET. AWWA C-909 (DR-14, PRESSURE CLASS 235 PSI) WILL ALSO BE ALLOWED FOR WATERMAINS WITH THE APPROVAL OF THE AVON UTILITY DEPARTMENT. PIPE MATERIALS USED WILL BE IN ACCORDANCE WITH AWWA/NSF STANDARDS. ALL FITTINGS SHALL HAVE BELL OR PLAIN END JOINTS OF THE MECHANICAL BOLTED STUFFING-BOX TYPE WITH PIPE OR FITTING PLAIN END SEALING GASKET AN BOLTED FOLLOWER GLAND. ALL JOINTS ON BENDS, TEES, CROSSES, VALVES, SPECIAL FITTINGS AND PIPE BETWEEN OFFSETS OR BENDS, SHALL HAVE RETAINED MECHANICAL JOINTS. ALL VALVES AND TEES SHALL HAVE BELL JOINTS OF THE MECHANICAL BOLTED STUFFING-BOX TYPE. ALL JOINTS ON HYDRANT BRANCHES, INCLUDING TEE OUTLETS, HYDRANT ELBOWS, AND BRANCH VALVES SHALL HAVE RETAINED MECHANICAL JOINTS. ALL BOLTS AND NUTS USED ON ALL MECHANICAL JOINTS, SHALL BE COATED WITH A FIELD APPLIED BITUMASTIC PAINT AND POLYETHYLENE WRAPPED. WHERE SHOWN ON THE PLANS OR DIRECTLY SPECIFIED. NOTE: POLYETHYLENE WRAPPING WILL BE USED ONLY IN AREAS SPECIFIED BY THE CITY BASED ON EXISTING SOIL CONDITIONS. C909 PIPE SHALL REQUIRE BRONZE TAP SADDLES FOR RESIDENTIAL SERVICES.
2. PIPE AND FITTINGS HAVING APPROVED BOLTLESS RESTRAINED SLIP-ON JOINTS SHALL BE FURNISHED TO THE LIMITS INDICATED. ALL MECHANICAL JOINTS SHALL BE MEGA LUG TYPE SPECIFIC FOR USE ON DUCTILE IRON OR AWWA C909. ALL MEGALUG TEE BOLTS SHALL BE STAINLESS STEEL.
3. THREE INCH (3") AND LARGER VALVES SHALL BE IRON BODY WITH BRONZE MOUNTED RSV VALVES W/ 2" NUTS OPENING LEFT WITH WITH A NON-RISING STEM. ALL VALVES SHALL BE MECHANICAL JOINT. PREFERRED MANUFACTURER AND MODEL NUMBER IS MUELLER # A2360-20. ALL VALVE BODY BOLTS ARE TO BE STAINLESS STEEL.
4. HYDRANTS SHALL BE MUELLER CENTURION MODEL A421, COUNTERCLOCKWISE OPENING; 6" "O" RING CONNECTION; 5' BURY; 4.5" SEAT OPENING WITH TWO (2) 2 1/2" HOSE CONNECTIONS AND ONE (1) 4" PUMPER CONNECTION. THE THREADS SHALL HAVE AN O.D. OF 3.07" AND 4.85" RESPECTFULLY, AND SHALL CONFORM TO NATIONAL STANDARD DIMENSIONS. OPERATING NUT SHALL BE TAMPER PROOF. THE TOP OR BONNET IS TO BE PRIMED W/ REFLECTIVE SILVER-WHITE PAINT, REMAINDER OF HYDRANT TO BE PAINTED "FIRE HYDRANT RED". HEAD AND HOSE CONNECTIONS SHALL BE CONSTRUCTED TO BE ROTATED. WRENCH CONNECTION SHALL BE A 1 1/8" PENTAGON THE STUFFING BOX SHALL HAVE TWO "O" RING SEALS. PROVIDE ONE HYDRANT WRENCH FOR EVERY PROJECT. HYDRANTS SHALL BE REPAINTED AT THE DIRECTION OF THE CITY, WHEN NEEDED.
5. ALL HYDRANT ASSEMBLIES INCLUDING VALVE, BRANCH TEE OUTLET, PIPE, ANY NECESSARY OFFSETS AND APPROVED HYDRANT SHALL BE NOMINAL SIX (6) INCH SIZE WITH MECHANICAL JOINTS. HYDRANTS ARE TO BE A MINIMUM OF 3 FT. FROM ALL CONCRETE WORK - PAVEMENT & DRIVEWAYS.
6. 3 JOINTS FROM "DEAD-ENDED" ACTIVE WATERMAIN, "FIELD-LOCK GASKETS" SHALL BE REQUIRED
7. MINIMUM DEPTH OF WATER MAIN COVER SHALL BE FOUR (4) FEET BELOW FINISH GRADE. MAXIMUM COVER DEPTH SHALL BE NO GREATER THAN 7 (SEVEN) FEET. OFFSETS SHALL BE MADE TO ENSURE MINIMUM COVER. WITH THE APPROVAL OF THE CITY ENGINEER THE WATER MAIN MAY BE PERMITTED AT A DEPTH OF LESS THAN (4) FEET BELOW GRADE. A (1) FOOT FROST PROOFING INSULATION ENVELOPE SHALL BE REQUIRED. INSULATION SHALL BE COMPACTED 'WITCOLITE' OR 'GILSULATE 500 XL' OR EQUAL. IN NO CASE SHALL THE MAIN BE LAID LESS THAN (3) FEET BELOW GRADE. THIS SAME REQUIREMENT SHALL APPLY IN INSTANCES WHERE A WATER MAIN CROSSES OVER AN OPEN END CULVERT OR BRIDGE.
8. ALL WATER MAIN TRENCHES AND EXCAVATIONS UNDER EXISTING OR FUTURE PAVEMENT OR SIDEWALKS OR DRIVES SHALL BE BACKFILLED WITH COMPACTED 304 LIMESTONE AGGREGATE. WATER LINE BEDDING & COVER SHALL BE CLEAN SAND.
9. THE CONTRACTOR WILL BE RESPONSIBLE FOR HYDROSTATIC PRESSURE TESTING PER AWWA C600 STANDARD OF THE WATER MAIN(S), BEGINNING AT THE TIE-IN LOCATION TO AN EXISTING MAIN, IN ACCORDANCE TO THE CITY OF AVON'S STANDARDS. FAILURE OF TEST OR ANY DAMAGE TO EXISTING WATER MAIN FACILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. ALL VALVES ARE TO BE BACK CHECKED.
10. THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE PROVISIONS RELATED TO PUBLIC IMPROVEMENTS IN SECTION 163.64 OF THE OHIO REVISED CODE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING OHIO UTILITIES PROTECTION SERVICE (O.U.P.S.) AT 1-800-362-2764 AND THOSE OWNERS OF UNDERGROUND UTILITIES IN THE VICINITY OF ANY WORK TO BE PERFORMED.
11. THE CONTRACTOR SHALL PROVIDE TAPS FOR DISINFECTION BY CHLORINATION PER AWWA C651. THE CITY OF AVON'S UTILITY DIRECTOR SHALL DETERMINE THE LOCATION AND NUMBER OF TAPS.
12. SIZE ON SIZE TAPPING SLEEVES WILL NOT BE PERMITTED.
13. PROPOSED FACILITIES MUST MAINTAIN A MINIMUM PRESSURE OF 35 PSI DELIVERED TO THE CURB STOP DURING NORMAL OPERATING CONDITIONS.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS	
WATER MAIN CONSTRUCTION NOTES & STANDARDS	DATE REVISION 9/2006 5/2014
STANDARD CONSTRUCTION DRAWING	W-1

CONSTRUCTION NOTES AND STANDARDS FOR WATER MAIN INSTALLATIONS (CONT.)

12. ALL WATER SERVICE CONNECTIONS SHALL BE LAID NOT LESS THAN FOUR (4) FEET BELOW ESTABLISHED STREET GRADE, NOT LESS THAN FOUR (4) FEET BELOW GROUND SURFACE, AND A MINIMUM OF 10 FEET HORIZONTAL DISTANCE FROM THE SANITARY AND STORM LATERAL.
13. THE CONTRACTOR IS RESPONSIBLE TO FACE ALL HYDRANT STEAMER NOZZLES TOWARD THE PAVEMENT, PRIOR TO TESTING AND CHLORINATION OF WATER MAINS.
14. THE CITY OF AVON SHALL REQUIRE A QUALIFIED REPRESENTATIVE TO TAKE FIELD MEASUREMENTS OF THE MAIN DURING INSTALLATION AND SHALL FURNISH THE CITY WITH RECORD PRINTS OF SAME. THE CITY OF AVON WILL REQUIRE THE SUBMISSION OF THE "AS-BUILT" PRINTS TO THE CITY UTILITY DEPARTMENT BEFORE ACCEPTANCE OF THE PROJECT, IN ACCORDANCE WITH SHEET G-7.
15. AS PER THE CITY OF AVON, IT IS STIPULATED THAT OPERATION OF ANY VALVE OR ALTERATION OF ANY PART OF THE SYSTEM BY CONTRACTORS OR THEIR EMPLOYEES IS PROHIBITED. CALL THE CITY OF AVON UTILITIES DEPARTMENT (440) 937-5740 TO HAVE VALVES ACTUATED.
16. ALL WATER SERVICE CURB STOP BOXES, METER VAULTS, ETC. WILL BE INSTALLED IN GRASS AREAS. THE WATER SERVICE SHALL BE 1" DIAM. FROM THE CORPORATION AND THE CURB BOX SHALL BE LOCATED BETWEEN THE CURB AND SIDEWALK (ONE FOOT OF EACH EDGE) WITHIN THE RIGHT-OF-WAY. THIS SHALL BE DONE IN ALL CASES WHERE POSSIBLE. CITY APPROVAL WILL BE REQUIRED FOR ALL OTHER PROPOSED LOCATIONS.
17. IN THOSE AREAS WHERE IT IS REQUIRED TO LOWER THE WATER MAIN TO CLEAR AN OBSTACLE AND THE DEFLECTION WILL BE GREATER THAN 18", THE USE OF BENDS WILL BE REQUIRED TO CLEAR THE OBSTACLE AND BRING THE WATER MAIN UP TO THE STANDARD FOUR (4) FEET OF COVER.
18. WHEN A WATER SERVICE CONNECTION AND/OR GAS SERVICE CONNECTION IS DISTURBED OR DISCONNECTED DURING TRENCH OR SHEETING EXCAVATION, THE CONTRACTOR WILL REPLACE THE WATER CONNECTION WITH ALL NEW MATERIAL FROM THE CORPORATION SHUT-OFF TO THE CURB SHUTOFF VALVE. SUCH SERVICES SHALL BE PLANKED USING 2"x8" HARDWOOD MINIMUM, 18" INTO VIRGIN SOIL, EACH END.
19. USE SUITABLE BACKFILL MATERIAL AND COMPACT SUFFICIENTLY IN THOSE AREAS WHERE MAINS AND WATER SERVICE CONNECTIONS ARE EXPOSED.
20. ALL WATER WORK REQUIRED WILL BE AT THE EXPENSE OF THE PROJECT AND SHALL CONFORM TO THE CITY OF AVON CONSTRUCTION DETAILS.
21. A THREE YEAR WARRANTY ON ALL SERVICE CONNECTIONS IN THE EXCAVATION AREAS WILL BE THE RESPONSIBILITY OF THE CONTRACTOR SHOULD ANY LEAKS DEVELOP AND/OR REPAIRS BE REQUIRED.
22. PREMIXED BAGMIX 4,000 PSI CONCRETE THRUST BLOCKS (CONCRETE PIERS) MAY BE USED BEHIND ALL TEES AND HORIZONTAL BENDS. HOWEVER, HARD WOOD BLOCKING IS PREFERRED. THE CONTRACTOR SHALL INSTALL A CONCRETE THRUST BLOCK BEHIND ALL BRANCH SLEEVES IN WHICH THE NOMINAL TAP SIZE IS ONE-HALF OR GREATER THAN THE NOMINAL DIAMETER OF THE PIPE TO BE TAPPED. THE CONCRETE PIER SHALL BE IN PLACE AND CURED PRIOR TO THE HYDROSTATIC TESTING OF THE CONNECTING MAINS. THRUST BLOCKING SHALL ADHERE TO SHEET W-7.
23. IN THE CASE OF VALVE BOXES IN EXISTING ROADWAYS, THE CITY MAY PERMIT THE USE OF CAST RISERS FOR ELEVATIONAL ADJUSTMENT OF CASTINGS. IN SUCH CASES, A (3) THREE POINT WELD SHALL BE REQUIRED FOR ROUND CASTINGS AND A (4) FOUR POINT WELD FOR SQUARE CASTINGS.
24. THE CONTRACTOR IS REQUIRED TO CONTACT THE CITY OF AVON UTILITIES DEPARTMENT PRIOR TO STARTING THE PROJECT.
25. WATERLINE EASEMENTS SHALL BE PROVIDED FOR CITY ACCESS FOR THE PURPOSE OF MAINTENANCE. SUCH EASEMENTS SHALL BE A HARDENED SURFACE. I.E.: AGGREGATE, ASPHALT, CONCRETE BLOCKS WITH GRASS GROWTH.

EXAMPLE FOR ALLOWABLE LOSS

$$150 \text{ PSI: LENGTH X PIPE DIAMETER} \quad \times 12.50 / 133,200$$

$$= \text{GAL/HR ALLOWABLE LOSS X 2} = \text{TOTAL ALLOWABLE LOSS}$$

IN INCHES

$$200 \text{ PSI: LENGTH X PIPE DIAMETER} \quad \times 14.20 / 133,200$$

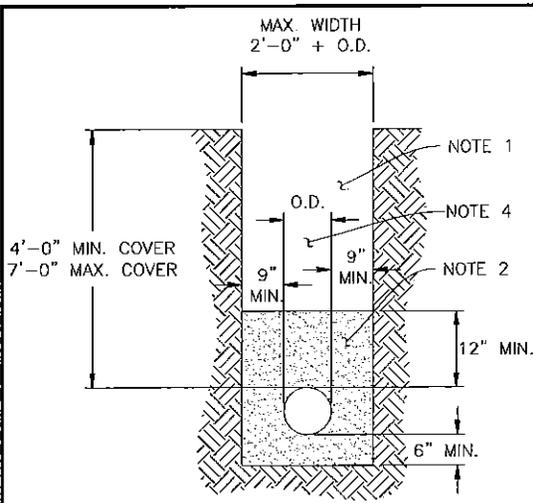
$$= \text{GAL/HR ALLOWABLE LOSS X 2} = \text{TOTAL ALLOWABLE LOSS}$$

IN INCHES

TESTING IS TO BE AS FOLLOWS:

NOTE: AWWA STANDARDS APPLY @ 150% OF NORMAL OPERATING PRESSURE
 MIN. TEST PRESSURE 150 PSI
 DURATION 2 HRS.

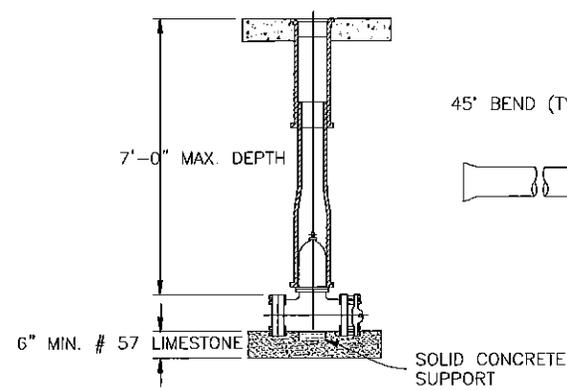
CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS	
WATER MAIN CONSTRUCTION NOTES & STANDARDS	DATE 1/2010 4/2014
STANDARD CONSTRUCTION DRAWING	W-2



WATER MAIN TRENCH DETAIL

TRENCH NOTES:

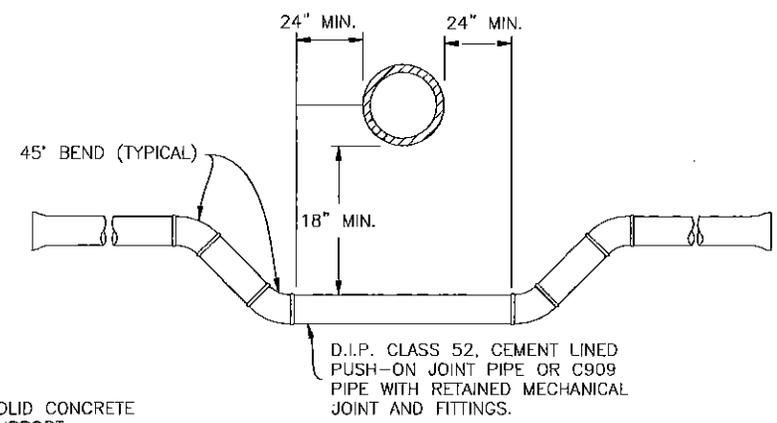
1. 304 LIMESTONE PREMIUM BACKFILL IS REQUIRED UNDER EXISTING AND FUTURE PAVEMENTS, WALKWAYS, OR DRIVES. EXCAVATED SPOILS ARE SUITABLE ELSEWHERE.
2. BEDDING AND BACKFILL TO BE CLEAN SAND. FOR MORE INFO ON BACKFILL SEE G-8 AND G-10.
3. ANY WATER MAIN RELATED BORES REQUIRED SHALL CONFORM TO SHEET W-11, "PIPE BORE DETAIL".
4. DETECTABLE TRACER TAPE AND TRACER WIRE SHALL BE INSTALLED OVER AND ON CENTER OF PVC WATERMAINS FOR ITS ENTIRE LENGTH.
 1. DETECTOR TAPE (MATERIAL TO BE APPROVED BY CITY OF AVON UTILITIES DEPARTMENT)
 - * SHALL READ "BURIED WATERLINE BELOW"
 - * SHALL BE BURIED 18" DEEP FROM SURFACE OF GROUND
 2. TRACER WIRE (MATERIAL TO BE APPROVED BY CITY OF AVON UTILITIES DEPARTMENT)
 - A. OPEN TRENCH INSTALLATION METHOD
 - * EACH COPPER WIRE 1-W/RED COLORED INSULATION 1-W/BLUE COLORED INSULATION
 - * #12 AWG THHN/THWN
 - B. DIRECTIONALLY DRILLED/BORED INSTALLATION METHOD
 - * WIRE SIZE SHALL BE #6 AWG THHN/THWN (2-WIRES)
 - * INSTALLED ALONG TOP OF AND CONTINUOUSLY ALONG PIPE.
 - * SHALL BE TERMINATED INSIDE OF ALL VALVE BOXES.



GATE VALVE DETAIL

GATE VALVE NOTES:

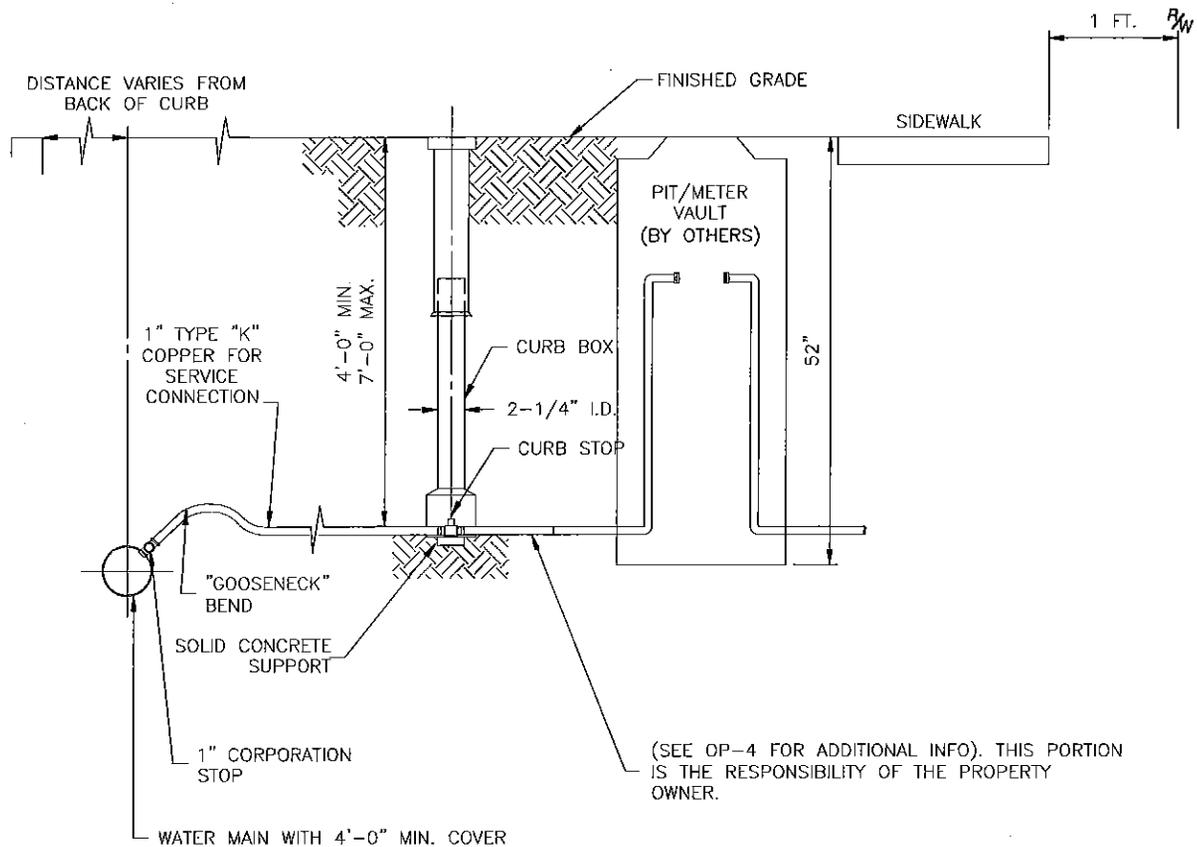
1. GATE VALVES SHALL HAVE STANDARD M.J. X M.J. ENDS.
2. VALVE PREFERRED MANUFACTURE AND MODEL NO. IS MUELLER #A2380-20.
3. ALL VALVE BODY BOLTS ARE TO BE STAINLESS STEEL.
4. VALVE BOXES SHALL BE TWO PIECE CAST IRON WITH 5-1/4" SHAFT, CENTURY FOUNDRY NO. 22 OR EQUAL.



WATER MAIN LOWERING DETAIL

1. WATER MAINS MAY BE DEFLECTED TO A MAXIMUM OF 18" ELEVATIONAL DIFFERENCE FROM MINIMUM COVER DEPTH. ANY LOWERING IN EXCESS OF 18" WILL REQUIRE THE USE OF BENDS.
2. LINE VALVES WILL NOT BE PERMITTED ON THESE SECTIONS OF LOWERINGS.
3. SEE SHEET G-10 FOR ADDITIONAL INFORMATION

CITY OF AVON	
CONSTRUCTION STANDARDS AND SPECIFICATIONS	
WATER MAIN DETAILS	DATE 1/2010 4/2014
STANDARD CONSTRUCTION DRAWING	W-3



SERVICE CONNECTION DETAIL IN RIGHT-OF-WAY

NOTES

1. CURB STOP: MUELLER #15200 OR EQUAL CURB BOX & COVER: HAYES #5800 OR #5803 OR EQUAL CORPORATION STOP: MUELLER #H-1500 OR EQUAL
2. SHOULD A UNION BE USED TO JOIN TWO OR MORE PIECES OF COPPER OR PLASTIC TOGETHER TO MAKE A SERVICE LINE, SUCH UNIONS SHALL BE FLARE OR COMPRESSION TYPE MANUFACTURED BY MUELLER.
3. WHERE POSSIBLE, DO NOT INSTALL CURB BOX IN PAVEMENT, SIDEWALKS, DRIVEWAYS, OR APRONS.
4. CURB STOP & BOX ARE TO BE LOCATED BETWEEN THE CURB AND SIDEWALK WITHIN THE RIGHT-OF-WAY. THIS SHALL BE DONE IN ALL CASES WHERE POSSIBLE. CITY APPROVAL WILL BE REQUIRED FOR ALL OTHER PROPOSED LOCATIONS.
5. ANY METER TAPS OVER (1") & UNDER (3") ARE TO BE SADDLE TAPS AS APPROVED BY THE CITY UTILITY DEPT. BRONZE SERVICE SADDLES SHALL BE REQUIRED WHEN TAPPING ANY C909 PVC WATERMAIN.
6. CURB BOXES FOR THE 2" CURB STOPS SHALL BE R-144 OR EQUAL, WITH A 3-1/2" I.D.
 - A. METER PITS MAYBE REQUIRED AT THE CITY OF AVON UTILITIES SUPERINTENDENTS' DISCRETION.
 - B. METER PITS SHALL BE PLACED WITHIN THE RIGHT OF WAY AS CLOSE TO THE CURB BOX AS POSSIBLE. (BY PROPERTY OWNERS)
 - C. METER PITS & LIDS SHALL BE INSTALLED SO AS TO BE FLUSH WITH FINISHED GRADE. (BY PROPERTY OWNERS)
 - D. ALL METER PITS SHALL BE INSTALLED IN ACCORDANCE WITH THE CITY UTILITY DEPARTMENT REQUIREMENTS. (BY PROPERTY OWNERS)
 - E. IT IS THE BUILDER'S RESPONSIBILITY TO PROTECT THE METER PIT. HOWEVER, IN THE CASE OF DAMAGE, ANY COST INCURRED BY THE CITY SHALL BE PASSED ON TO THE BUILDER.
7. BOOSTER PUMPS ARE NOT PERMITTED ON SERVICE CONNECTIONS.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS	
CURB BOX & METER PIT DETAIL	DATE 1/2010 4/2014
STANDARD CONSTRUCTION DRAWING	W-4