

"AS-BUILT" REQUIREMENTS

AS-BUILTS SHALL BE PREPARED AND SUBMITTED IN ACCORDANCE WITH AVON CODIFIED ORDINANCES 1050. **AND 1244.**

AS-BUILT PLAN SET SHALL HAVE A PROFESSIONAL SURVEYOR'S CERTIFICATION STATEMENT, STAMP, AND DATE.

ADD STATEMENT A

THE FOLLOWING LISTED ITEMS ARE TO APPEAR ON A SET OF "AS-BUILT" PLANS SUBMITTED TO THE CITY.

SANITARY SYSTEM

1. SANITARY SYSTEM REVISIONS I.E., RIM, INVERTS, PIPE SLOPES AND MANHOLE LOCATIONS. PRESENT CORRECTED INFORMATION OR PLAN SET WITH A LINE THROUGH PROPOSED DATA.
2. SANITARY WYE LOCATIONS FROM DSM, RISERS WITH ELEVATIONS, LATERAL LENGTH AND DEPTH AT TERMINUS.

STORM SYSTEM

1. STORM SYSTEM REVISIONS, I.E. RIM, INVERTS, PIPE SLOPES AND MANHOLE AND CATCH BASIN LOCATIONS. PRESENT CORRECTED INFORMATION OR PLAN SET WITH A LINE THROUGH PROPOSED DATA.
2. STORM KOR-N-BOOT LOCATIONS FROM DSM, LATERAL LENGTH AND DEPTH AT TERMINUS.

WATER MAIN

1. LOCATION REVISION IN PLAN VIEW, DEPTH REVISIONS IN PROFILE.
2. LINE VALVE, HYDRANT AND BEND LOCATIONS AS INSTALLED.
3. SERVICE LINE CORPORATION LOCATIONS FROM A HYDRANT OR VALVE IN A STRAIGHT LINE DISTANCE, LENGTH TO CURB STOP, CURB STOP LOCATION, LENGTH FROM CURB STOP TO TERMINUS, WITH DEPTH AT TERMINUS.

STORM WATER MANAGEMENT SYSTEM

1. INVERT AND SIZES OF ALL OUTLET STRUCTURE PIPES/ORIFICES/WEIRS. INCLUDE RIM ELEVATION.
2. INVERTS, SIZES, SLOPES OF ALL INLET PIPES.
3. DETENTION VOLUME VERIFICATION COMPLETE WITH CONTOUR AREA TABLE AND SPOT GRADE ELEVATIONS.
4. OVERFLOW LOCATION, ELEVATION, AND WIDTH.
5. CALCULATIONS VERIFYING AS-BUILT DATA IS SUFFICIENT TO MEET STORM WATER MANAGEMENT REQUIREMENTS AS APPROVED BY THE CITY ENGINEER PRIOR TO CONSTRUCTION.

GENERAL

ADD STATEMENT B

1. SANITARY, STORM AND WATER SERVICE LOCATIONS IF DIFFERENT THAN PLAN PROPOSAL.

2. ALL PIPE CROSSING CLEARANCE INFORMATION.

3. LOCATE ANY AND ALL EXISTING ITEMS ENCOUNTERED DURING EXCAVATION I.E., GAS LINES/SERVICES. LATERALS, DRAIN LINES, M.H.'S, C.B.'S, WATER MAINS/SERVICES, INDICATING STATION DEPTH AND SIZE.

"AS-BUILT" SUBMISSION PROCEDURE

1. FIELD INSPECTORS MARKED-UP SET OF PLANS ARE TO BE PROVIDED TO THE CITY.
2. MARKED-UP PLANS ARE GIVEN TO THE PROJECT DESIGN ENGINEER TO REVISE PLANS BASED ON HIS SURVEY INFORMATION AND INSPECTION MARK-UPS, THUS BECOMING A SET OF "AS-BUILT" PLANS.
3. MARKED-UP PLANS AND A SET OF BLUE LINE ARE TO BE SUBMITTED TO THE CITY BY THE ENGINEER.
4. THE CITY WILL LOG-IN THE "AS-BUILTS" AND FORWARD THE MARKED-UP BLUE LINE PLANS TO THE CITY ENGINEER'S OFFICE FOR REVIEW. THE CITY ENGINEER'S OFFICE WILL ASSURE THAT ALL MARK-UP INFORMATION HAS BEEN TRANSFERRED TO THE "AS-BUILT" PLAN SET.
5. THE CITY ENGINEER'S OFFICE WILL PROVIDE THE CITY WITH REVIEW COMMENTS AND REVISION MARK-UPS. BOTH PLAN SETS ARE TO BE GIVEN TO THE CITY WITH THE COMMENTS.
6. THE CITY WILL FORWARD COMMENTS AND ADDITIONAL MARK-UPS TO THE DESIGN ENGINEER.
7. THE DESIGN ENGINEER WILL MAKE THE APPROPRIATE REVISIONS TO THE "AS-BUILTS" IF ANY ARE NEEDED.
8. IF REVISIONS ARE NEEDED THE DESIGN ENGINEER WILL RE-SUBMIT A REVISED "AS-BUILT" BLUE LINE TO THE CITY FOR CONFIRMATION.
9. UPON CONFIRMATION THE DESIGN ENGINEER WILL PROVIDE THE CITY WITH AN "AS-BUILT" DIGITAL COPY. IF NO REVISIONS ARE REQUIRED THE CITY WILL SO NOTIFY THE DESIGN ENGINEER. AN "AS-BUILT" DIGITAL COPY AND 1 HARD COPY WILL THEN BE PROVIDED TO THE CITY.
10. THE CITY WILL FORWARD THE DIGITAL COPY TO THE CITY ENGINEER'S OFFICE FOR A PERMANENT "AS-BUILT" RECORD OF THE PROJECT.

1. AS-BUILTS WILL BE PREPARED AND SUBMITTED PRIOR TO FINAL ACCEPTANCE.

A. IF AS-BUILT PLAN SET CONTAINS AN SCM AN AS-BUILT CERTIFICATION, INCLUDING AS-BUILT SURVEY AND INSPECTION MUST BE SEALED, SIGNED AND DATED BY A PROFESSIONAL ENGINEER AND SURVEYOR WITH A STATEMENT CERTIFYING THAT THE SCMS, AS DESIGNED AND INSTALLED MEET THE REQUIREMENTS OF THE COMPREHENSIVE STORMWATER MANAGEMENT PLAN APPROVED BY THE CITY ENGINEER.

B. ROADS - 1. CENTERLINE ELEVATIONS AT ALL POINTS OF INFLECTION. 2. CENTERLINE ELEVATIONS AT ALL INTERSECTIONS.

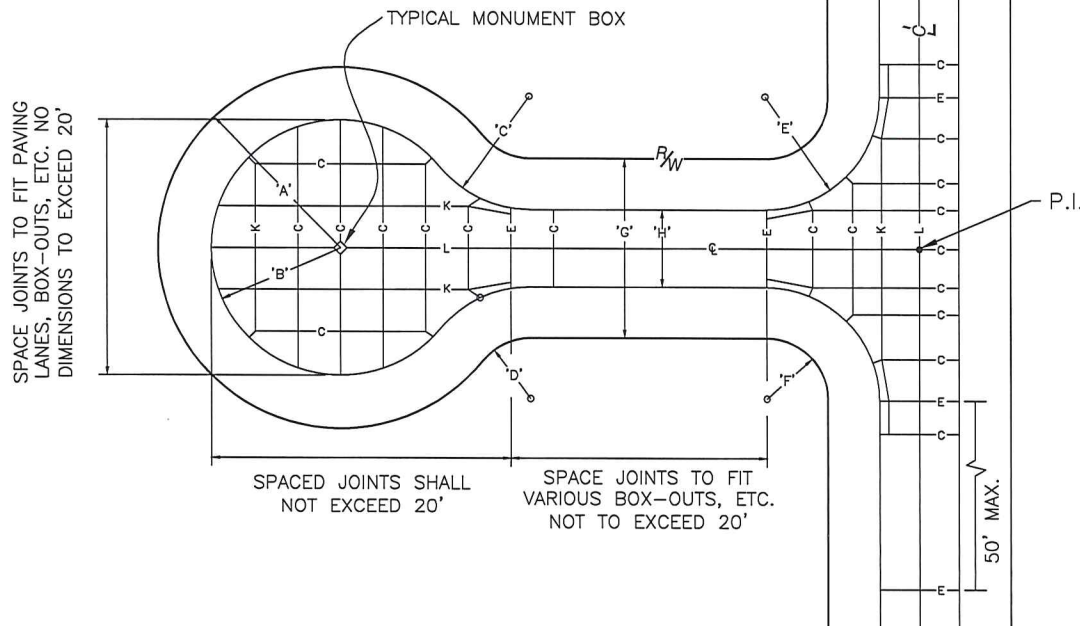
TRAFFIC - 1. ALL AT GRADE OR ABOVE GROUND TRAFFIC IMPROVEMENTS SHALL BE LOCATED, I.E., SIGNAL POLES, PEDESTRIAN POLES, CONTROLLERS, ETC.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
AS-BUILT REQUIREMENTS	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING	G-5	48-19
		SHEET 1 OF 2

JOINT LEGEND

C = CONTRACTION JOINT
E = EXPANSION JOINT
L = LONGITUDINAL JOINT
K = CONSTRUCTION JOINT

TYPICAL INTERSECTION AND CUL-DE-SAC PLAN



SCHEDULE OF MINIMUM DIMENSIONS

	INDUSTRIAL	RESIDENTIAL
A	86'	67'
B	60'	50'
C	44'	30'
D	26'	17'
E	44'	30' 40'
F	26'	17'
G	80'	60'
H	28'	26'

NOTES:

ALL CATCH BASINS AND MANHOLES SHALL BE SEPARATED FROM THE PAVEMENT AND CURB BY BOXING-OUT.

ALL PAVEMENT JOINTS TO RUN FROM BACK OF TO BACK OF CURB.

TO PERMIT JOINT ON CENTERLINE OF CATCH BASINS AND MANHOLES, ADJUST ONE OR MORE PANELS ON EITHER SIDE OF OPENINGS.

CONSTRUCT EXPANSION JOINTS AT ALL P.C.'S, P.T.'S, EXISTING CONSTRUCTION JOINTS AND AT CHANGES IN WIDTH OF PAVEMENT. HOWEVER, EXPANSION JOINTS IN CONFLICT WITH MONUMENT BOX LOCATIONS MAY BE SHIFTED A MINIMUM OF FIVE (5) FEET IN EITHER DIRECTION. SLEEPER SLABS MAY ALSO BE PERMITTED AT EXPANSION JOINT AREAS (SEE SHEET P-2)

TEMPORARY CUL-DE-SAC NOTES:

PAVED TEMPORARY CUL-DE-SACS, CONFORMING TO THE DIMENSIONAL REQUIREMENTS OF PAVED CUL-DE-SACS, SHALL BE PROVIDED IN CASES WHERE THE PROPOSED TEMPORARY TERMINUS OF A ROADWAY IS 150 FEET IN LENGTH OR LONGER.

TEMPORARY CUL-DE-SACS SHALL BE PLACED WITHIN THE DEDICATED RIGHT-OF-WAY. THE DIAMETER SHALL MATCH THE DEDICATED RIGHT-OF-WAY DIMENSION FOR CITY OF AVON CODIFIED ORDINANCE 1246.04 A-B.

PAVEMENT SECTIONS ARE AS FOLLOWS:

A) CASE #1 - TERMINUS LESS THAN 600 FT., AS MEASURED FROM THE P.I.
4" COMPACTED 304 LIMESTONE
2-1/2" OF 448 TYPE 1

B) CASE #2 - TERMINUS GREATER THAN 600 FT., AS MEASURED FROM THE P.I.
CONCRETE PAVEMENT STANDARDS TO BE FOLLOWED.
ASPHALT MAY BE USED IF AN APPROVED DEVELOPER'S AGREEMENT EXISTS FOR A SUBSEQUENT PHASE OF DEVELOPMENT THAT ENCOMPASSES THE LOCATION OF THE TEMPORARY CUL-DE-SAC.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS

INTERSECTION AND CUL-DE-SAC DETAIL	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING P-9	48-19	8/12/19

3. DEFLECTION TEST

ALL PLASTIC PIPE SHALL BE TESTED FOR PROPER INSTALLATION BY MEANS OF DEFLECTION ATTAINMENT. IN ADDITION TO MATERIAL TESTS, CONSTRUCTION COMPACTION AND LEAKAGE TESTS REQUIRED ELSEWHERE IN THESE REGULATIONS, THE CONTRACTOR IS REQUIRED TO INSTALL THE PIPE IN SUCH A MANNER THAT THE DIAMETRIC DEFLECTION SHALL NOT EXCEED FIVE PERCENT (5%). TO ATTAIN THIS REQUIREMENT, THE BACKFILL MATERIALS SURROUNDING THE PIPE SHALL BE COMPACTED TO THE REQUIRED STANDARD DENSITIES CALLED OUT IN ASTM D 2321. THE SECTORS REQUIRING COMPACTION SHALL INCLUDE THE BED AND SIDE FILL MATERIAL, AS WELL AS THE MATERIAL PLACED ABOVE THE PIPE FOR A DISTANCE OF EIGHTEEN (18) INCHES.

DEFLECTION TESTS SHALL BE PERFORMED NO SOONER THAN 30 DAYS FOLLOWING COMPLETION OF BACKFILL, AND AGAIN ONE YEAR AFTER ACCEPTANCE. DEFLECTION TESTS SHALL BE PERFORMED BY AN ACCREDITED, INDEPENDENT TESTING LABORATORY THAT SHALL SUBMIT VERIFICATION RECORDS OF RESULTS AND DATES TESTED. MAXIMUM RING DEFLECTION OF THE PIPE UNDER LOAD SHALL BE LIMITED TO 5% OF THE INSIDE DIAMETER.

DEFLECTION LIMITS TABLE
ASTM D3034

NOM. PIPE DIA. (IN.)	MANDRELL SIZE	
	SDR 35	SDR 26
6	5.45	5.33
8	7.28	7.12
10	9.08	8.87
12	10.79	10.54
15	13.20	12.90
18	16.13	15.76
21	19.01	18.57
24	21.36	20.87

ALL PIPE FAILING TO MAINTAIN THE MINIMUM DEFLECTION DIAMETER OR LARGER LISTED FOR THE APPLICABLE TYPE OF PIPE SHALL BE CONSIDERED TO HAVE BEEN IMPROPERLY INSTALLED AND SHALL BE RE-LAID OR REPLACED BY THE CONTRACTOR.

DEFLECTION TESTING SHALL BE ACCOMPLISHED BY USING AN ELECTRONIC DEFLECTOMETER WHICH PRODUCES A CONTINUOUS RECORD OF DIAMETER READINGS OR BY PULLING A SLED TYPE - FULL CIRCLE GAGE THROUGH THE PIPE. SLED TYPE - FULL CIRCLE GAGES SHALL BE A MANDREL TYPE. THE DIAMETER OR MINIMUM DIMENSION OF THE SLED TYPE - FULL CIRCLE GAGE SHALL BE AS LISTED IN THE DEFLECTION LIMITS TABLE FOR THE TYPE AND NOMINAL DIAMETER OF THE PIPE BEING TESTED.

4. SEWER PHOTOGRAPHY (CCTC)

ALL SEWERS SHALL BE PRESSURE JET AND VACUUMED BY THE CONTRACTOR BEFORE VIDEO PHOTOGRAPHY. ALL SEWER INTERIORS SHALL BE VIDEOTAPED BY AN APPROVED TESTING COMPANY AT THE DIRECTION OF THE UTILITY DEPT. AND TWO COPIES OF THE V.H.S. FORMAT VIDEO TAPE AND THE ACCOMPANYING REPORT SHALL BE DELIVERED TO THE UTILITY DEPT. PRIOR TO ACCEPTANCE OF THE SEWER.

A) ALL VIDEO TAPING SHALL BE FROM CENTER OF MANHOLE TO CENTER OF MANHOLE.

B) VIDEO TAPING SHALL BE MADE UPSTREAM ONLY.

C.) SEWER VIDEO SHALL BE SUBMITTED ON THUMB DRIVE. ONLY ONE COPY IS NEEDED.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
SANITARY SEWER ACCEPTANCE TESTING	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING	SAN-2 48-19	8/12/19
		SHEET 2 OF 2

CONSTRUCTION NOTES AND STANDARDS FOR PRECAST SANITARY MANHOLES

1. SECTIONS OF THE PRECAST MANHOLE SHALL BE CAST AND ASSEMBLED WITH EITHER ALL TONGUE AND ALL GROOVE ENDS UP. LIFT HOLES MAY BE PROVIDED IN EACH SECTION FOR HANDLING.
2. TOP AND TRANSITION (OR REDUCER) SECTIONS MAY BE EITHER ECCENTRIC CONE, CONCENTRIC CONE OR FLAT SLAB.
3. BASES FOR MANHOLES ARE SHOWN WITH MONOLITHIC FLOOR AND RISER WHICH MAY BE CAST IN ONE OR TWO OPERATIONS. OPENINGS FOR INLET AND OUTLET PIPES SHALL BE PRECAST FOR A NEW MANHOLE TO MEET PROJECT REQUIREMENTS. A FIELD CORE IS PERMISSIBLE ON AN EXISTING STRUCTURE. BOTTOM CHANNELS MAY BE FORMED OF CONCRETE PRECAST IN THE BASE OR BY FIELD CONSTRUCTION. FOR FIELD CONSTRUCTION THE CHANNEL MUST BE FORMED W/PIPE THRU AS THE FORM. SANITARY FLOOR AND BARREL SHALL BE A MONOLITHIC POUR TYPE.
4. FLEXIBLE CONNECTIONS SHALL BE PROVIDED FOR SANITARY SEWERS PER ASTM C-923.
5. JOINT SEAL BETWEEN PRECAST MANHOLE SECTIONS SHALL BE THE COMBINATION OF AN O-RING & ASPHALTIC STRIP. IN ADDITION, THE EXTERIOR JOINT AREA SHALL BE COATED WITH AN ASPHALTIC MASTIC TO A WIDTH OF 1 FT. ALL JOINT SEAL SHALL MEET ASTM C-443.
6. MATERIALS FOR BASES AND OTHER PRECAST SECTIONS, INCLUDING REINFORCEMENT NOT SPECIFIED HEREON, SHALL COMPLY WITH ODOT SPECIFICATIONS, SECTION 706.13.
7. PRECAST MANHOLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM C478.
8. SEAL LIFT HOLES WITH APPROVED WATER PLUG AND MORTAR, EXCEPTING WHERE THE LIFT HOLE INSERTS ARE PLASTISIZED.
9. PRECAST REINFORCED CONCRETE GRADE RINGS SHALL BE USED IN ALL CASES. BRICK FOR THIS PURPOSE WILL NOT BE PERMITTED. INTERIOR AND EXTERIOR TO BE SEALED WITH 1" THICK MINIMUM COMBINATION OF 10 LBS. WATER PLUG AND 80 LBS. MORTAR MIX. PROVIDE MINIMUM OF ONE GRADE RING. ASPHALTIC MASTIC STRIPS SHALL BE USED BETWEEN ALL GRADE RINGS AND CASTINGS, IN ADDITION TO THE PORRIDGING OF THE INTERIOR AND EXTERIOR AREAS WITH THE WATER PLUG MIX EXCEPT IN CONCRETE ROADWAYS.
10. ALL MANHOLE CASTINGS ARE TO BE E.J.I.W. 1040 A GS SERIES HEAVY DUTY CASTING OR EQUAL. SANITARY MANHOLE LIDS SHALL BE TYPE "A" GASKET SEAL, "WATERTITE" TYPE WITH 'O' RING GASKETTING, EXCEPTING THAT HEAVY DUTY BOLT DOWN CASTING AND COVER (E.J.I.W. 1040-WT) OR EQUAL SHALL BE USED WHENEVER A SANITARY OR STORM MANHOLE IS IN AN OFF-SITE EASEMENT OR NEAR A WATERWAY OR WITHIN ROADWAY AREAS. THE LID SHALL CLEARLY BE LABELED "SANITARY".
11. CASTING & GRADE RINGS SHALL BE SET WITH AN ASPHALTIC STRIP BETWEEN CONE, GRADE RING, AND CASTING IN A HYDROCRETE ~~OR REINFORCED FRAME~~ CASTING IN A 5' SQ. X 6" THICK CONCRETE PAD IN PAVED ASPHALT AREAS.
12. STEPS SHALL BE CO-POLYMER POLYPROPYLENE ASTM D-4101-82. THE RISER HOLE SHALL BE ALIGNED WITH THE STEPS.
13. BEDDING SHALL BE 6" MIN. #57 LIMESTONE. BACKFILL SHALL CONFORM TO PIPE TRENCH DETAIL.
14. MANHOLES SHALL NOT BE INSTALLED IN SIDEWALKS OR ROADWAY AREAS WHENEVER POSSIBLE. WHEN THEY ARE THEY MUST BE INSPECTED BY THE UTILITIES DEPARTMENT PRIOR TO PAVEMENT RESTORATION.
15. THE NEWLY INSTALLED SANITARY SYSTEM SHALL REMAIN INDEPENDENT FROM THE EXISTING SYSTEM AND PLUGGED BY THE CONTRACTOR UNTIL SUCH TIME AS THE CITY OF AVON HAS ACCEPTED THE SYSTEM. ALSO A FINE OF \$100 PER DAY WILL BE IMPOSED FOR INFLOW AND INFILTRATION.
16. "DOGHOUSE" TYPE INSTALLATION SHALL NOT BE PERMITTED IN SANITARY SYSTEMS.
17. FOR 60" MANHOLES, E.J.I.W. #2075 52" RING WITH 36" OPENING IS REQUIRED

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
CONSTRUCTION NOTES & STANDARDS FOR PRECAST SANITARY MANHOLE	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING SAN-7	48-19	8/12/19

CONSTRUCTION NOTES & STANDARDS FOR STORM SEWER INSTALLATION

1. STORM SEWER INSTALLED WITHIN THE CITY RIGHT-OF-WAY OR WHICH THE CITY IS TO MAINTAIN SHALL BE COMPRISED OF THE FOLLOWING KINDS OF PIPES:
 - a. CIRCULAR REINFORCED CONCRETE PIPE — ASTM C76 WITH PREMIUM JOINT PER ASTM C443.
 - b. ELLIPTICAL REINFORCED CONCRETE PIPE — ASTM C507 WITH PREMIUM JOINT PER ASTM C443.
 - c. PVC PIPE — ASTM D3034 (SDR 35 MINIMUM OR AS RECOMMENDED BY THE CITY ENGINEER), TWENTY-FOUR INCH DIAMETER MAXIMUM WITH PREMIUM JOINT PER ASTM D3212.
2. STORM SEWER LOCATED OUTSIDE THE CITY RIGHT-OF-WAY OR WHICH THE CITY WILL NOT MAINTAIN THE FOLLOWING PIPES MAY BE USED WITH THE APPROVAL OF THE CITY ENGINEER IN ADDITION TO THOSE PREVIOUSLY STATED IN ITEM 1:
 - a. ALUMINIZED TYPE-2 METAL PIPE WITH SMOOTH INTERIOR.
 - b. ADS N-12 CORRUGATED SMOOTH BORE PIPE.
3. RCP FOR 12" AND 15" SHALL BE A CLASS IV TYPE. CLASS III FOR 18" AND LARGER PIPE SHALL BE CLASS III WITH LOAD BEARING QUALIFICATION APPROVED BY THE CITY ENGINEER. CLASS IV PIPE SHALL BE USED IN CASES OF DEEP SEWERS OR HEAVY LOADS.
4. THE CITY MAY CONSIDER THE ON SITE USE OF CORRUGATED SMOOTH INTERIOR HDPE PIPE FOR STORM SEWERS AS SPECIFIED ON SHEET STM-3.
5. MANHOLE TO MANHOLE DISTANCE SHALL NOT EXCEED 400 FEET.
6. FLEXIBLE GASKETS ON ALL SEWER LINE CONNECTIONS AND ALL PRECAST MAHOLE COLLARS SHALL BE ASTM C-923
7. A MANHOLE SHALL ALSO BE INSTALLED AT ALL PIPE SIZE CHANGES AND DIRECTION CHANGES.
8. ALL ADJUSTMENTS TO CASTINGS SHALL BE MADE WITH PRECAST CONCRETE GRADE RINGS.

9. ALL PAVEMENT BASINS (i.e. CATCH & INLET) SHALL BE BROUGHT TO GRADE WITH PRECAST CITY WILL CONSIDER EQUAL TO PRECAST ONLY IN WRITING. BRICK WILL NOT BE ALLOWED.
10. FLOW LINES SHALL BE FORMED SO AS TO MATCH ALL PIPE PENETRATION INVERTS.
11. STORM SEWER MANHOLE CONNECTIONS SHALL BE THE ALOK OR ZLOK TYPE.
12. STORM LINE EASEMENTS SHALL BE PROVIDED WITH CITY ACCESS FOR THE PURPOSE OF MAINTENANCE OF UTILITIES. ACCESS DRIVE SHALL BE PER THE DETAIL ON G-8. OTHER MATERIALS MAY BE APPROVED BY THE CITY. SAID EASEMENTS SHALL BE DESIGNATED AS BLOCKS.
13. CLAY DAM IS TO BE PROVIDED 6 FT. FROM THE LATERAL TERMINUS PER G-10
14. CROSSING AS HEREIN DEFINED SHALL BE EITHER PERPENDICULAR TO ANY PART OF A SKEW OR ANGLE AT THE CROSSING.
15. WHERE MINIMUM CLEARANCES ARE NOT MAINTAINED PER DRAWING G-7 DIP CLASS 52 SHALL BE USED.
16. SHOULD EXCAVATION ENCOUNTER EXISTING DRAINLINES, REPAIR SHALL BE MADE VIA A MINIMUM (6") SIX INCH TEE OR KOR-N-TEE BOOT INTO THE STORM SYSTEM. (6") SIX INCH PVC SDR 35 PIPE TO RIGHT-OF-WAY LINE, USING A REDUCER AND/OR VARIOUS BENDS TO MAKE THE CONNECTION. FERNCOS MAY BE USED IN THIS APPLICATION. SEE SHEET STM-8 FOR INSTALLATION DETAIL.

D. CORRUGATED SMOOTH INTERIOR HDPE PIPE WITH APPROVED OVER AND BEDDING PER STM-3.

26. RECYCLED STONE IS NOT ALLOWABLE IN THE CITY OF AVON.

17. WHEN A WATER SERVICE AND/OR GAS SERVICE IS DISTURBED OR DISCONNECTED DURING TRENCH OR SHEETING EXCAVATION, SUCH SERVICE SHALL BE PLANKED USING 2"x8" HARDWOOD MINIMUM, 18" INTO VIRGIN SOIL, EACH END.
18. UPON REVIEW OF THE CITY ENGINEER, IF AN ATTRACTIVE NUISANCE OR ANY OTHER SAFETY HAZARD IS DEEMED TO EXIST, THE USE OF A STEEL SAFETY RACK OR "CHILD PROOF BARS" WILL BE REQUIRED. SUBMIT SPECIFICATIONS FOR CITY APPROVAL.
19. WHERE A STORM SYSTEM IS PROPOSED ALONG AN EXISTING ROADWAY, AREA DRAINS SHALL BE PROVIDED FOR EACH PROPERTY. LOCATION, SIZE AND MANNER OF CONNECTION TO THE STORM SYSTEM SHALL BE DETERMINED AT THE PLAN REVIEW STAGE.
- ~~20. IN NO CASE SHALL STORM LATERALS BE DIRECTLY CONNECTED AT THE PLAN REVIEW STAGE.~~
- ~~21.~~ EACH SUBLOT IS TO BE PROVIDED WITH ITS OWN STORM CONNECTIONS TO BE USED BY THAT SUBLOT ONLY. STORM CONNECTIONS SHALL NOT BE PERMITTED TO BE SHARED BY ADJACENT PROPERTIES.
- ~~22.~~ STORM SEWER PVC PIPE CONNECTIONS INTO RCP STORM SHALL BE THE KOR-N-TEE TYPE.
- ~~23.~~ RCP STORM SEWER CONNECTIONS INTO RCP STORM SHALL BE WITH AN INSTALLED TEE OR SOLID CONCRETE BRICK AND MORTAR.
- ~~24.~~ WHERE THE STORM LATERAL IS LESS THAN 3 FT. IN DEPTH D.I.P. CLASS 52 SHALL BE USED.
- ~~25.~~ PVC STORM SEWER REPAIRS SHALL BE MADE USING SOLID SLEEVE COUPLINGS OR FERNCO FITTINGS.
- ~~26.~~ DUAL BARREL CULVERTS SHALL NOT BE ALLOWED.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
CONSTRUCTION NOTES FOR STORM SEWER INSTALLATION	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING STM-1	48-19	8/12/19

CONSTRUCTION NOTES AND STANDARDS FOR WATER MAIN INSTALLATIONS

1. ALL WATER MAIN PIPE AND APPURTENANCES SHALL BE AMERICAN MADE.
2. ALL PIPE, UNLESS OTHERWISE CALLED FOR, 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 WATER MAINS WITH THE APPROVAL OF THE AVON UTILITY DEPARTMENT. C909 PIPE SHALL REQUIRE BRONZE OR STAINLESS STEEL TAP SADDLES FOR RESIDENTIAL SERVICES.

PIPE MATERIALS USED WILL BE IN ACCORDANCE WITH AWWA/NSF STANDARDS.

3. PIPE AND FITTINGS HAVING APPROVED BOLTESS RESTRAINED SLIP-ON JOINTS SHALL BE FURNISHED TO THE LIMITS INDICATED.
4. ALL FITTINGS SHALL BE DUCTILE IRON CLASS 350 CEMENT LINED PER C-110/A21.10 OR COMPACT PER C-153/A21.53. ALL FITTINGS SHALL HAVE BELL OR PLAIN END JOINTS OF THE MECHANICAL BOLTED STUFFING-BOX TYPE WITH PIPE OR FITTING PLAIN END SEALING GASKET AND BOLTED FOLLOWER GLAND.
5. 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. RETAINED MECHANICAL JOINTS SHALL BE MEGA-LUG OR EQUAL SECURED WITH STAINLESS STEEL BOLTS.

~~6. ALL BOLTS AND NUTS USED ON ALL MECHANICAL JOINTS SHALL BE POLYETHYLENE WRAPPED.~~
~~POLYETHYLENE WRAP WILL BE REQUIRED ON ALL WATER MAIN PIPE IN THE CITY.~~

~~7.~~ **6.** 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.

~~8.~~ **7.** 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 1/2" PUMPER CONNECTION TO A 5" HARRINGTON INTEGRAL HYDRANT STORZ. THE THREADS SHALL HAVE AN O.D. OF 3.07" AND 5.76" 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 OR SUBDIVISION/PHASE. HYDRANTS SHALL BE REPAINTED AT THE DIRECTION OF THE CITY, WHEN NEEDED.

~~9.~~ **8.** 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.

~~10.~~ **9.** MECHANICALLY RESTRAIN ALL OFFSETS AND DEFLECTIONS THREE JOINTS PRIOR, THREE JOINTS AFTER, AND THROUGH THE OFFSET. MECHANICALLY RESTRAIN ALL END OF LINE MAINS, THREE JOINTS PRIOR.

~~11.~~ **10.** 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. UTILITY DEPARTMENT MUST APPROVE IF MORE THAN 4 FEET OF COVER. 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.

~~12.~~ **11.** 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 WASHED #8 LIMESTONE.

~~13.~~ **12.** 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 WITHIN THE TEST AREA.

~~14.~~ **13.** 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.

~~15.~~ **14.** 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.

~~16.~~ **15.** SIZE ON SIZE TAPPING SLEEVES WILL NOT BE PERMITTED.

~~17.~~ **16.** TAPPING VALVE SHALL BE FLANGED OR MJ X MJ.

~~18.~~ **17.** PROPOSED FACILITIES MUST MAINTAIN A MINIMUM PRESSURE OF 35 PSI DELIVERED TO THE CURB STOP DURING NORMAL OPERATING CONDITIONS.

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CONSTRUCTION NOTES AND STANDARDS FOR WATER MAIN INSTALLATIONS (CON'T.)

- ~~18.~~ 18. 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.
- ~~19.~~ 19. THE CONTRACTOR IS RESPONSIBLE TO FACE ALL HYDRANT STEAMER STORZ TOWARD THE PAVEMENT, PRIOR TO TESTING AND CHLORINATION OF WATER MAINS.
- ~~20.~~ 20. 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.
- ~~21.~~ 21. 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.
- ~~22.~~ 22. ALL WATER SERVICE CURB STOP BOXES, METER VAULTS, ETC. WILL BE INSTALLED IN GRASS AREAS. THE WATER SERVICE SHALL BE A MINIMUM 1" DIAM. FROM THE CORPORATION AND THE CURB BOX SHALL BE LOCATED BETWEEN THE CURB AND SIDEWALK (ONE FOOT INSIDE THE RIGHT-OF-WAY LINE). THIS SHALL BE DONE IN ALL CASES WHERE POSSIBLE. CITY APPROVAL WILL BE REQUIRED FOR ALL OTHER PROPOSED LOCATIONS.
- ~~23.~~ 23. 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. CLASS 52 DUCTILE IRON PIPE SHALL BE USED. **FIELD LOCK GASKETS ARE REQUIRED.**

- ~~24.~~ 24. 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 AT THE UTILITY DEPARTMENTS DISCRETION. SUCH SERVICES SHALL BE PLANKED USING 2"x8" HARDWOOD MINIMUM, 18" INTO VIRGIN SOIL, EACH END.
- ~~25.~~ 25. BACKFILL MATERIAL SHALL BE PER THE TRENCH DETAIL ON W-2.
- ~~26.~~ 26. ALL WATER WORK REQUIRED WILL BE AT THE EXPENSE OF THE PROJECT AND SHALL CONFORM TO THE CITY OF AVON CONSTRUCTION DETAILS.
- ~~27.~~ 27. 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-8.
- ~~28.~~ 28. 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.
- ~~29.~~ 29. THE CONTRACTOR IS REQUIRED TO CONTACT THE CITY OF AVON UTILITIES DEPARTMENT PRIOR TO STARTING THE PROJECT.

- ~~30.~~ 30. WATERLINE BLOCKS SHALL BE PROVIDED FOR CITY ACCESS FOR THE PURPOSE OF MAINTENANCE. SUCH EASEMENTS SHALL HAVE A UTILITY ACCESS DRIVE PER G-8. ALTERNATIVE MATERIALS MAY BE ACCEPTABLE AT THE UTILITY DEPARTMENT'S DISCRETION.
- ~~31.~~ 31. A MINIMUM 10' HORIZONTAL DISTANCE SHALL BE MAINTAINED FROM EXISTING AND PROPOSED WATER AND SANITARY OR STORM SEWER.
- ~~32.~~ 32. A MINIMUM 18" VERTICAL DISTANCE SHALL BE MAINTAINED FROM EXISTING AND PROPOSED WATER AND SANITARY OR STORM SEWER.
- ~~33.~~ 33. BOOSTER PUMPS ARE NOT PERMITTED ON SERVICE CONNECTIONS.
- ~~34.~~ 34. CLAY DAM IS TO BE PROVIDED 6 FT. FROM THE LATERAL TERMINUS PER G-10.

EXAMPLE FOR ALLOWABLE LOSS

150 PSI: LENGTH X PIPE DIAMETER (IN) X 12.50 / 133,200
= GAL/HR ALLOWABLE LOSS X 2 = TOTAL ALLOWABLE LOSS
IN INCHES

200 PSI: LENGTH X PIPE DIAMETER (IN) X 14.20 / 133,200
= GAL/HR ALLOWABLE LOSS X 2 = TOTAL ALLOWABLE LOSS
IN INCHES

TESTING IS TO BE AS FOLLOWS:

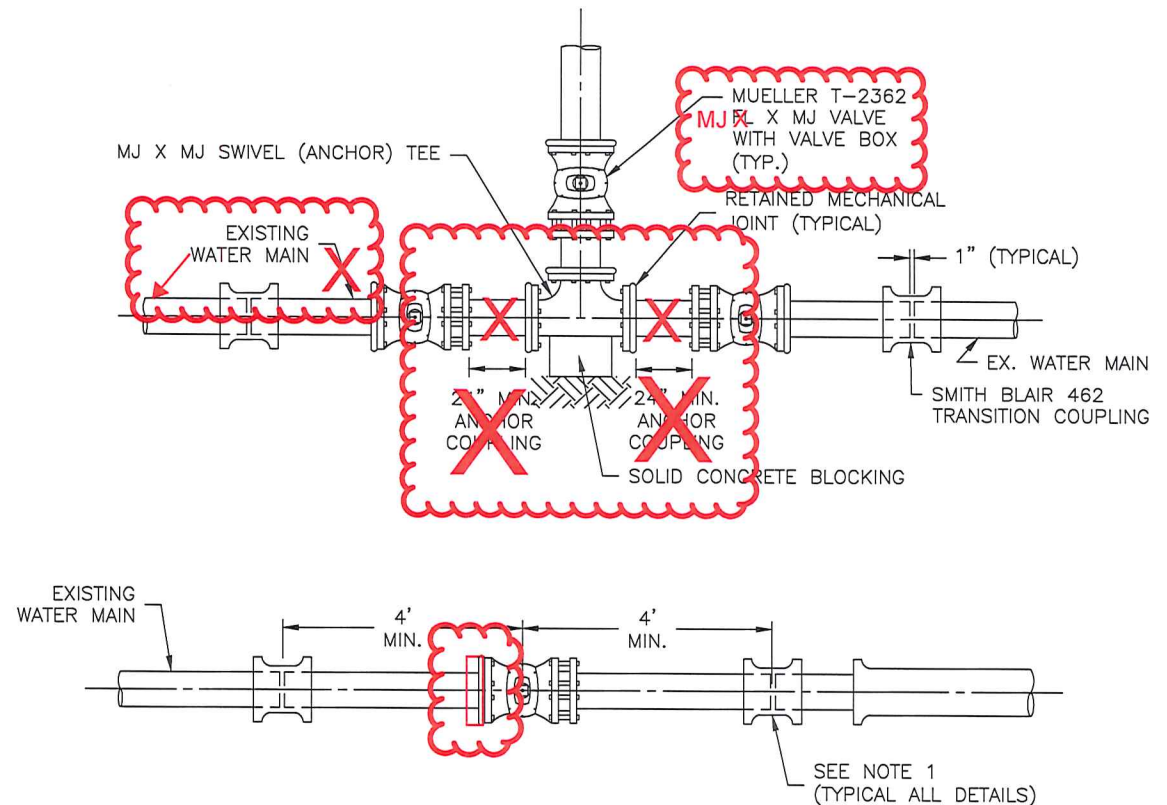
AWWA STANDARDS APPLY @ 150% OF NORMAL OPERATING PRESSURE MIN. TEST PRESSURE 150 PSIDURATION 2 HRS.

ANY TEST (150 & 200 PSI) THAT LOSES 5 PSI WILL BE AN AUTOMATIC FAIL REGARDLESS OF WATER LOST.

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NOTES:

1. CONNECTION SHALL BE MADE WITH RETAINED JOINT SOLID SLEEVES (SHORT OR LONG PATTERN) DUCTILE IRON CLASS 350 OR COMPRESSION COUPLINGS.
2. COMPRESSION COUPLINGS SHALL BE OF A GASKETED SLEEVE TYPE WITH DIAMETERS TO PROPERLY FIT PLAIN END IRON PIPE. EACH COUPLING SHALL CONSIST OF ONE (1) MIDDLE RING, WITHOUT STOPS, TWO (2) FOLLOWER GLANDS, TWO (2) RUBBER-COMPOUND BUNA-N BLEND, WEDGE SECTION GASKETS, AND SUFFICIENT TRACKHEAD STAINLESS STEEL BOLTS AND NUTS (ASTM A276/A193/A194, TYPE 304, EXTRA HEAVY HEX) TO PROPERLY COMPRESS THE GASKETS.
3. MIDDLE RING AND FOLLOWER GLANDS SHALL BE OF EITHER STEEL OR DUCTILE IRON (ASTM-A536).
4. THE COMPRESSION COUPLING SHALL BE WITHOUT STOPS AND BE RATED FOR A MINIMUM WORKING PRESSURE OF 250 PSI AND SHALL BE EQUAL TO THE DRESSER STYLE NO.S 38, 138, OR 162 (TRANSITION TYPE), OR SMITH-BLAIR 462 STRAIGHT AND TRANSITION COUPLINGS.
5. ALL BOLTS AND NUTS ON ALL MECHANICAL JOINTS, INCLUDING THOSE ON THE RETAINED TYPE, SHALL BE STAINLESS STEEL FOLLOWED BY AN ENCASEMENT OF POLYETHYLENE WRAPPING IN ACCORDANCE WITH ANSI/AWWA C 105/A21.5 88, CLASS "C", METHOD "B".
6. SOME MAIN LINE REPAIRS MAY BE DONE USING A REPAIR CLAMP, TYPE SMITH BLAIR 265 OR EQUAL, PROVIDED THIS METHOD IS APPROVED BY THE CITY OF AVON UTILITY DEPARTMENT.
7. ALL TAPPING SLEEVES SHALL BE SMITH BLAIR TYPE 663 (ALL STAINLESS).
8. SIZE ON SIZE TAPPING SLEEVES WILL NOT BE PERMITTED.
9. THE CITY MAY REQUIRE VALVE ASSEMBLIES ON EITHER OR EACH SIDE OF THE CUT IN SLEEVE, TO BE DETERMINED ON A CASE BY CASE BASIS.
10. EACH LEG OF THE TEE SHALL HAVE A VALVE ATTACHED TO SWIVEL.



CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
CUT-IN TEE & SLEEVE-IN DETAIL	ADOPTION ORDINANCE	DATE
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