

CITY OF AVON, OHIO

STANDARD CONSTRUCTION DRAWINGS

REVISED - JUNE 10, 2019

IN ACCORDANCE WITH CITY OF AVON ORDINANCE
XXX



CITY OF AVON
EST 1814

**PRELIMINARY FOR
CITY COUNCIL REVIEW
06/10/19
NOT FOR OFFICIAL USE
UNTIL ADOPTED**

**AVON CITY HALL
36080 CHESTER ROAD
AVON, OHIO 44011
(440) 937 7800**

**AVON BUILDING DEPARTMENT
36080 CHESTER ROAD
AVON, OHIO 44011
(440) 937 7811**

**AVON SERVICE DEPARTMENT
35400 SCHNEIDER COURT
AVON, OHIO 44011
(440) 937 5729**

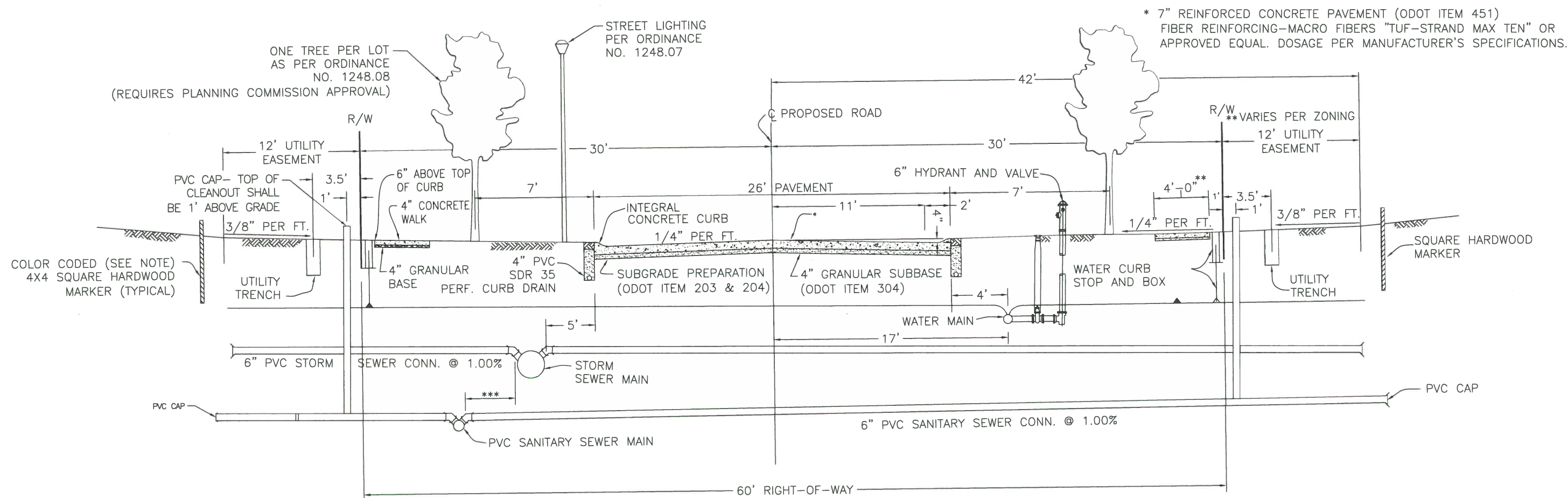
**AVON UTILITY BUILDING
35030 DETROIT ROAD
AVON, OHIO 44011
(440) 937 5714**

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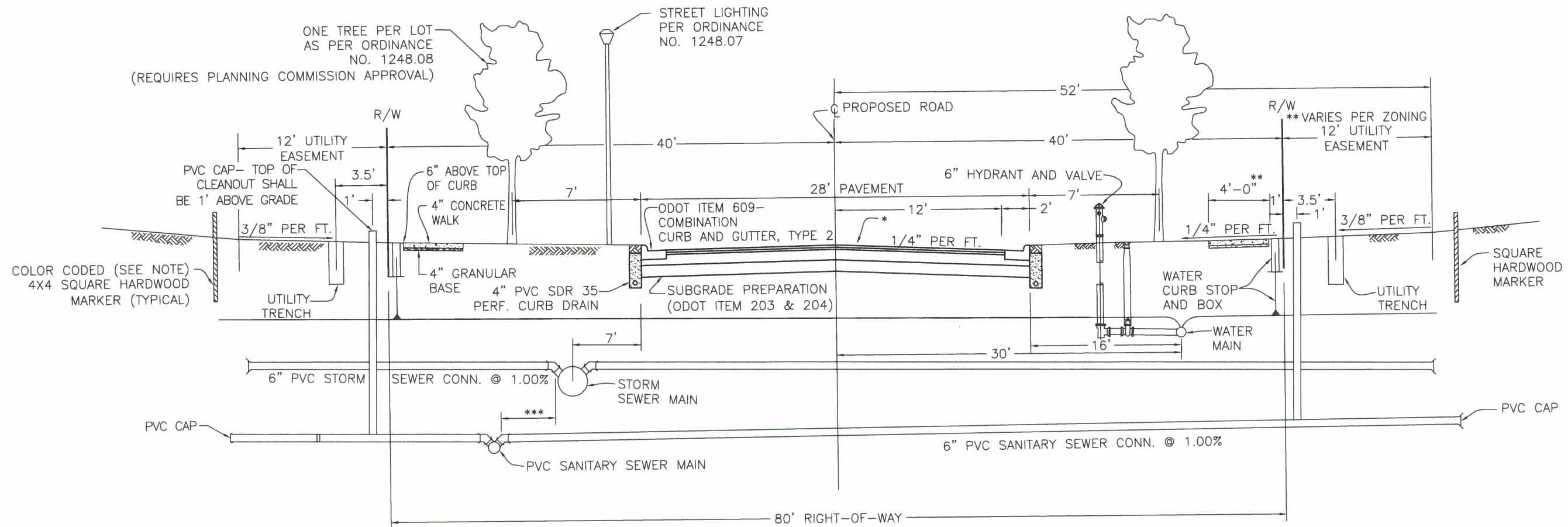
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GENERAL NOTES:

- CURB CUT MARKINGS ON THE STREET SIDE WILL BE USED REFLECTING THE FOLLOWING:
W = WATER, + = SAN, - = STORM
- 4x4 SQUARE FIELD MARKERS WILL BE USED AT THE SANITARY AND STORM LATERAL AND WATER CONNECTION TERMINI USING THE FOLLOWING HARDWOOD
COLOR CODE: BLUE = WATER, ORANGE/RED = SAN, GREEN = STORM
- 10 FT. BARREL TO BARREL SHALL BE MAINTAINED BETWEEN WATER & STORM SERVICES WITH A MINIMUM OF 10 FT. DISTANCE BARREL TO BARREL BETWEEN
SANITARY AND WATER SERVICES.
- CURB STOP & BOX ARE TO BE LOCATED ONE FOOT WITHIN THE RIGHT-OF-WAY.
METER PITS SHALL BE PLACED JUST OUTSIDE OF THE UTILITY EASEMENT ON THE PROPERTY SIDE AS CLOSE TO THE RIGHT-OF-WAY AS POSSIBLE.
METER PIT LIDS SHALL BE SET TO FINISH GRADE. THIS SHALL BE DONE IN ALL CASES WHERE POSSIBLE. CITY APPROVAL WILL BE REQUIRED FOR ALL OTHER
PROPOSED LOCATIONS.
- WATER SERVICE CONNECTION SHALL BE ONE CONTINUOUS PIECE OF 1" PIPE (AT A MINIMUM) FROM THE CURB STOP TO THE MAIN SHUT-OFF VALVE AT THE HOUSE.
CONTRACTOR SHALL SLEEVE THE UTILITY EASEMENT WITH 2" PVC PIPE.
- TYPICAL SECTION SHOWS THE PREFERRED CROSS SECTION, HOWEVER, THE ACTUAL MAY VARY SUBJECT TO THE APPROVAL OF THE CITY ENGINEER.
- THE GAS MAIN IS TO BE LOCATED ON THE OPPOSITE SIDE OF THE WATER MAIN, 36"-40" IN DEPTH FROM PROPOSED FINISHED GRADE AND LOCATED 6 FEET FROM
THE BACK OF CURB.
- PROPERTY LINE S/L MARKINGS ARE TO BE PLACED INTO THE CONC. CURBING. MARKINGS ARE TO BE A MINIMUM 1/4" DIAMETER DRILL HOLES, 1/2" IN DEPTH.
- ANY FILL PLACEMENT IN R/W AND BUILDING PAD AREAS ARE TO BE CONTROLLED FILL TO BE COMPACTION TESTED TO 98% COMPACTION BY A QUALIFIED TESTING
LABORATORY WITH THE TEST RESULTS SUBMITTED TO THE SERVICE DIRECTOR AND OR BLDG. INSPECTOR.
- AREAS BETWEEN THE R/W LINE AND PAVED ROADWAY SHALL BE SEED AND MULCHED PRIOR TO ACCEPTANCE BY THE CITY.
- CLAY DAM TO BE PROVIDED 6 FT. FROM THE LATERAL TERMINUS FOR SANITARY, STORM, AND WATER.
- SANITARY M.H.'S SHALL BE LOCATED A MAXIMUM OF 15 FT. FROM BACK OF CURB.
- THE PLACEMENT OF THE FIRE HYDRANTS SHALL BE AT 300 FEET INTERVALS, HOWEVER, IN NO CASE SHALL THEY BE SPACED GREATER THAN 350 FEET MEASURED
IN A STRAIGHT LINE DISTANCE.
- IN THE CASE OF EXISTING ROADWAYS WHERE WIDENING OF THE ROADWAY IS REQUIRED, UTILITIES SHALL BE RELOCATED IN ACCORDANCE WITH THE DIMENTIONAL
REQUIREMENT FOR A LOCAL ROADWAY.
- ADDITIONAL BASE STABILIZATION IF NEEDED SHALL BE PER THE GEOTECHNICAL ENGINEER AND APPROVED BY THE CITY ENGINEER.
- *** IF THE STORM SEWER SIZE IS LESS THAN OR EQUAL TO 24" THE OUT-TO-OUT SEPARATION SHALL BE 5'. IF THE STORM SEWER IS MORE THAN 24" THE
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- PAVEMENT GRANULAR SUBBASE SHALL BE ODOT 304 LIMESTONE. MODIFIED 304 LIMESTONE SHALL ALSO BE ACCEPTABLE AS FOLLOWS:
40% OR LESS PASSING THE #4 SIEVE
15% OR LESS PASSING THE #30 SIEVE
6% OR LESS PASSING THE #200 SIEVE
- CONCRETE PAVEMENT SHALL BE POURED FROM THE SIDE ON TEMPORARY HAUL ROADS. TRUCKS SHALL NOT BE PERMITTED ON THE NEW SUBBASE.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
TYPICAL LOCAL ROADWAY SECTION & GENERAL NOTES	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING G-1		2/2019



GENERAL NOTES:

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6% OR LESS PASSING THE #200 SIEVE

*ODOT ITEM 441 - 1-1/4" ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG 64-22

ODOT ITEM 407 - TACK COAT FOR SURFACE COURSE

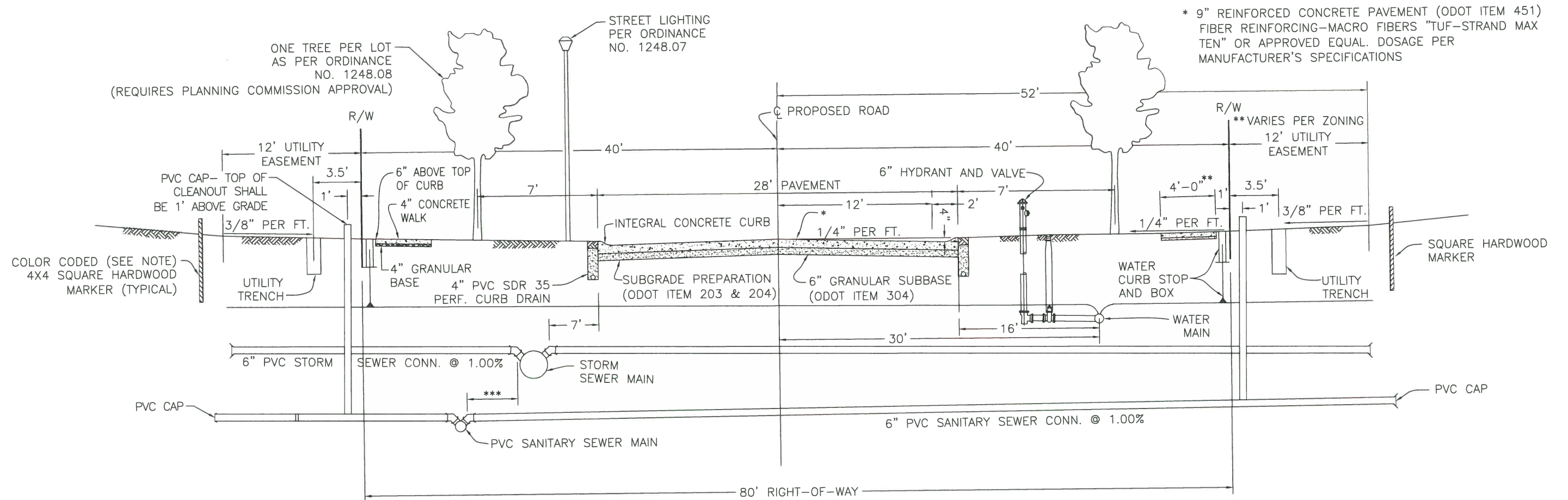
ODOT ITEM 441 - 1-3/4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, PG 64-22

ODOT ITEM 407 - TACK COAT FOR INTERMEDIATE COURSE

ODOT ITEM 301 - 6" ASPHALT CONCRETE BASE

ODOT ITEM 304 - 6" LIMESTONE AGGREGATE BASE

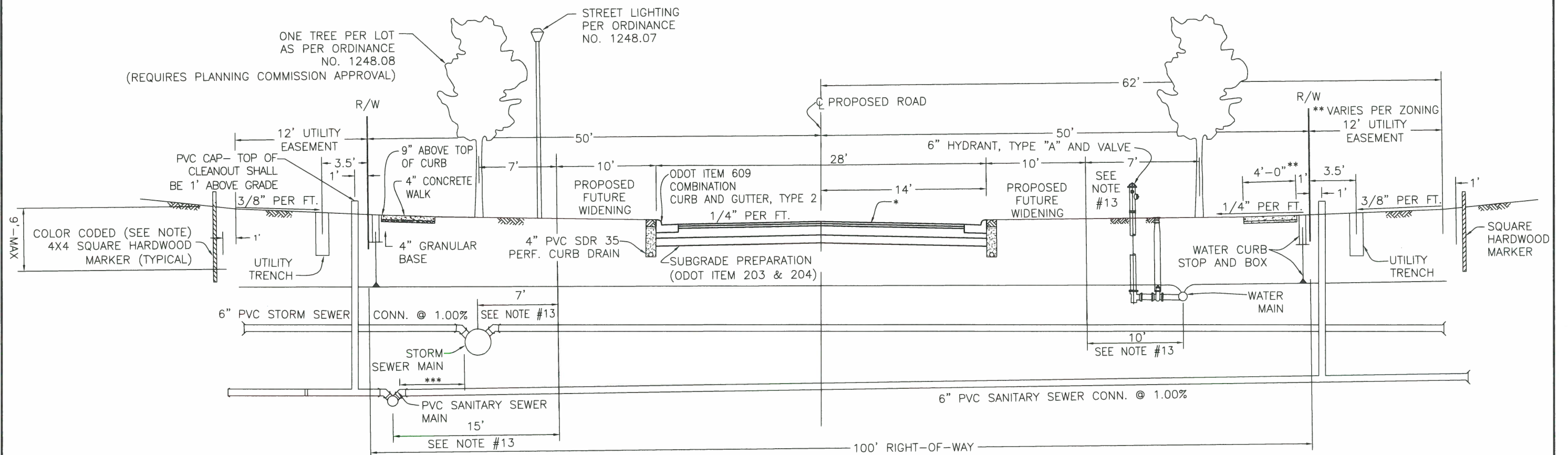
CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
TYPICAL COLLECTOR ROADWAY SECTION & GENERAL NOTES OPTION 1	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING G-2		2/2019



GENERAL NOTES:

- CURB CUT MARKINGS ON THE STREET SIDE WILL BE USED REFLECTING THE FOLLOWING:
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15% OR LESS PASSING THE #30 SIEVE
6% OR LESS PASSING THE #200 SIEVE
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CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
TYPICAL COLLECTOR ROADWAY SECTION & GENERAL NOTES OPTION 2	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING G-3		2/2019



*ODOT ITEM 441 - 1-1/4" ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG 64-22

ODOT ITEM 407 - TACK COAT FOR SURFACE COURSE

ODOT ITEM 441 - 1-3/4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, PG 64-22

ODOT ITEM 407 - TACK COAT FOR INTERMEDIATE COURSE

ODOT ITEM 301 - 8" ASPHALT CONCRETE BASE

ODOT ITEM 304 - 6" LIMESTONE AGGREGATE BASE

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- SANITARY M.H.'S SHALL BE LOCATED A MAXIMUM OF 15 FT. FROM BACK OF CURB.
- THE PLACEMENT OF THE FIRE HYDRANTS SHALL BE AT 300 FEET INTERVALS, HOWEVER, IN NO CASE SHALL THEY BE SPACED GREATER THAN 350 FEET MEASURED IN A STRAIGHT LINE DISTANCE.
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CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
TYPICAL ARTERIAL ROADWAY SECTION & GENERAL NOTES	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING G-4		2/2019

"AS-BUILT" REQUIREMENTS

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

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

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

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

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
AS-BUILT REQUIRMENTS	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING G-5		2/2019
		SHEET 1 OF 2

FINAL WALK-THROUGH ACCEPTANCE CHECKLIST

THE FOLLOWING ITEMS WILL BE INSPECTED AND VERIFIED TO BE IN COMPLIANCE PRIOR TO THE ACCEPTANCE OF A PROJECT BY THE CITY OF AVON.

SANITARY SEWER

- 1. INSTALL DSM PLUG
- 2. LATERALS MARKED AND COLORED. (RED)
- 3. MANHOLE CASTINGS ADJUSTED TO GRADE.
- 4. CASTING AND RISER PORRIDGED.
- 5. PIPE INVERTS MORTARED.
- 6. MANHOLES CLEANED.
- 7. LIFT HOLES MORTARED.
- 8. AIR TEST PERFORMED.
- 9. MANDREL TEST PERFORMED.
- 10. MANHOLE VACUUM TEST PERFORMED.
- 11. VIDEO AND FLUSHING PERFORMED.
- 12. REMOVE DSM PLUG.

STORM SEWER

- 1. LATERALS MARKED AND COLORED, (GREEN)
- 2. MANHOLE CASTINGS ADJUSTED TO GRADE.
- 3. CASTING AND RISER PORRIDGED.
- 4. CONDUITS BRICK/MORTARED, IN/OUT INTO STRUCTURES.
- 5. INVERTS POURED.
- 6. MANHOLES CLEANED OUT.
- 7. CATCH BASIN INSTALLED.
- 8. CATCH BASIN CONDUITS MORTARED IN/OUT.
- 9. CATCH BASIN INVERTS POURED.
- 10. CATCH BASIN BOX OUTS POURED.
- 11. CATCH BASIN GRATES FABRIC COVERED.
- 12. DETENTION BASIN CONFIRMED.
- 13. MANDREL TEST PERFORMED THRU 18” DIAMETER.
- 14. VIDEO AND FLUSHING PERFORMED ON ALL PIPES.

WATERLINES

- 1. LATERALS MARKED AND COLORED. (BLUE)
- 2. HYDROSTATIC PRESSURE TEST PERFORMED.
- 3. BACTERIA TEST APPROVED BY CITY.
- 4. LINE VALVES AND WATCH VALVES KEYED.
- 5. SERVICES BOXES CHECKED/KEYED.
- 6. HYDRANT OIL LEVEL CHECKED.
- 7. HYDRANT KEY PROVIDED TO SERVICE DEPARTMENT.
- 8. HYDRANTS ARE TO BE REPAINTED AT THE DIRECTION OF THE CITY WHEN NEEDED.

3-YEAR WALK-THROUGH

AT 2 YEARS AND 8 MONTHS THE CONTRACTOR AND A CITY REPRESENTATIVE SHALL WALK THE SITE AND VISUALLY INSPECT THE CONDITION OF THE CLEANOUTS. THE CONTRACTOR SHALL CLEAN AND TELEWISE ALL SEWERS. THE CONTRACTOR SHALL REMEDY ALL DEFICIENCIES TO THE SATISFACTION OF THE CITY.

PAVEMENT

- 1. ALL JOINTS TARRED.
- 2. BACK OF CURBS MORTARED.
- 3. HANDICAPPED RAMP DEPRESSIONS IN PLACE.
- 4. UNDERDRAINS INSTALLED AND CONNECTED TO C.B.
- 5. MONUMENT BOXES INSTALLED.
- 6. SURVEY PINS SET.
- 7. UTILITY CURB MARKINGS COMPLETED.
- 8. ROADWAY BROOM SWEEP AN CLEANED.
- 9. ALL REQUIRED SIGNAGE INSTALLED.
- 10. SUBLOT CURB DRILL HOLE MARKINGS COMPLETED.

RIGHT-OF-WAY

- 1. UTILITY CONDUITS CROSSING PAVEMENT INSTALLED.
- 2. GAS MAINS INSTALLED.
- 3. ELECTRIC CONDUIT/ TRANSFORMERS INSTALLED.
- 4. FINAL GRADING COMPLETED.
- 5. SEEDING AND MULCHING COMPLETED.
- 6. EROSION CONTROL IN PLACE.

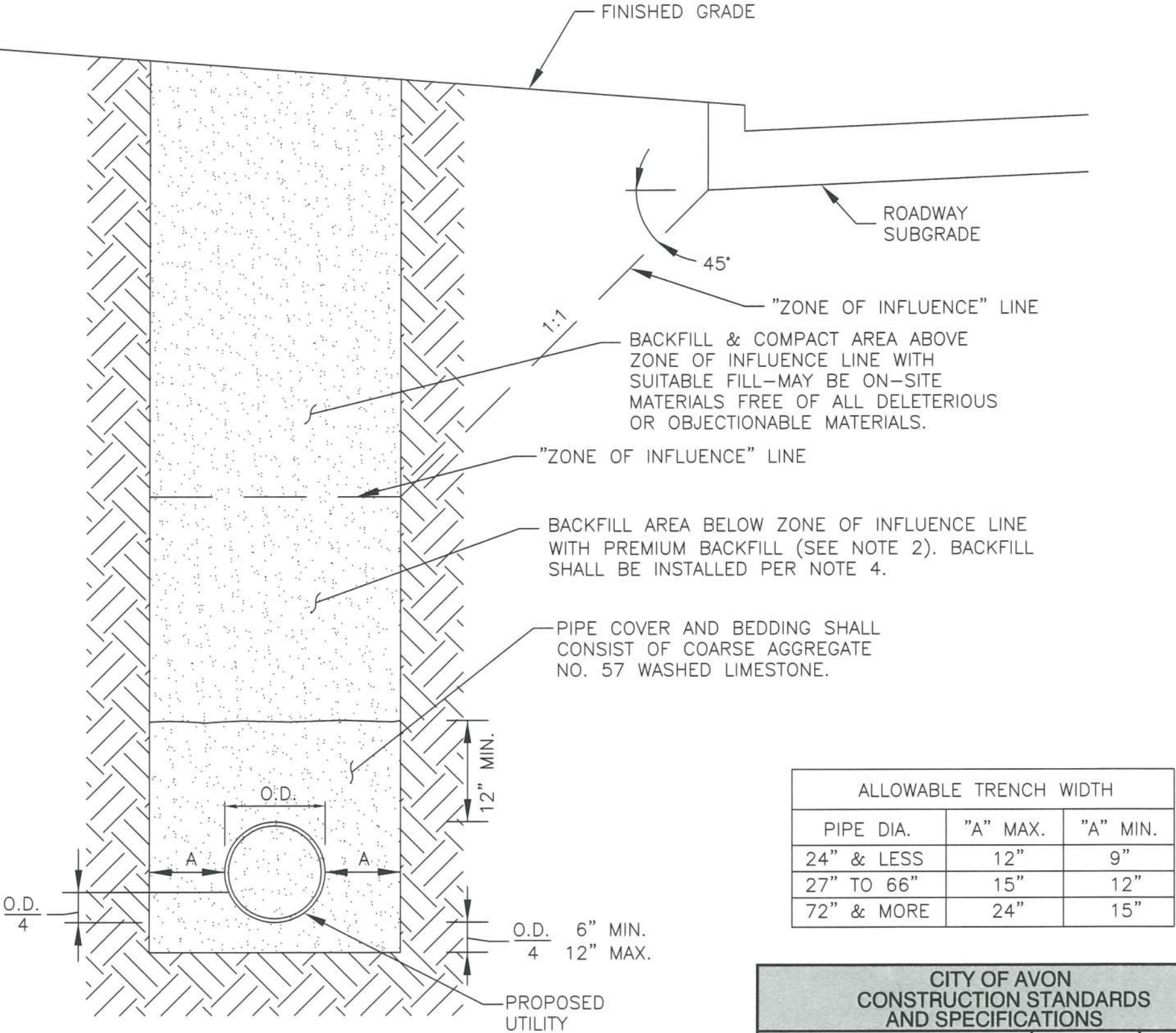
GENERAL

- 1. EPA WATER/SANITARY PERMIT TO INSTALL.
- 2. NPDES–STORM APPROVAL.
- 3. FINANCIAL SETTLEMENTS.
- 4. CLOMAR SUBMITTALS.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
AS-BUILT REQUIRMENTS	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING G-5		2/2019
		SHEET 2 OF 2

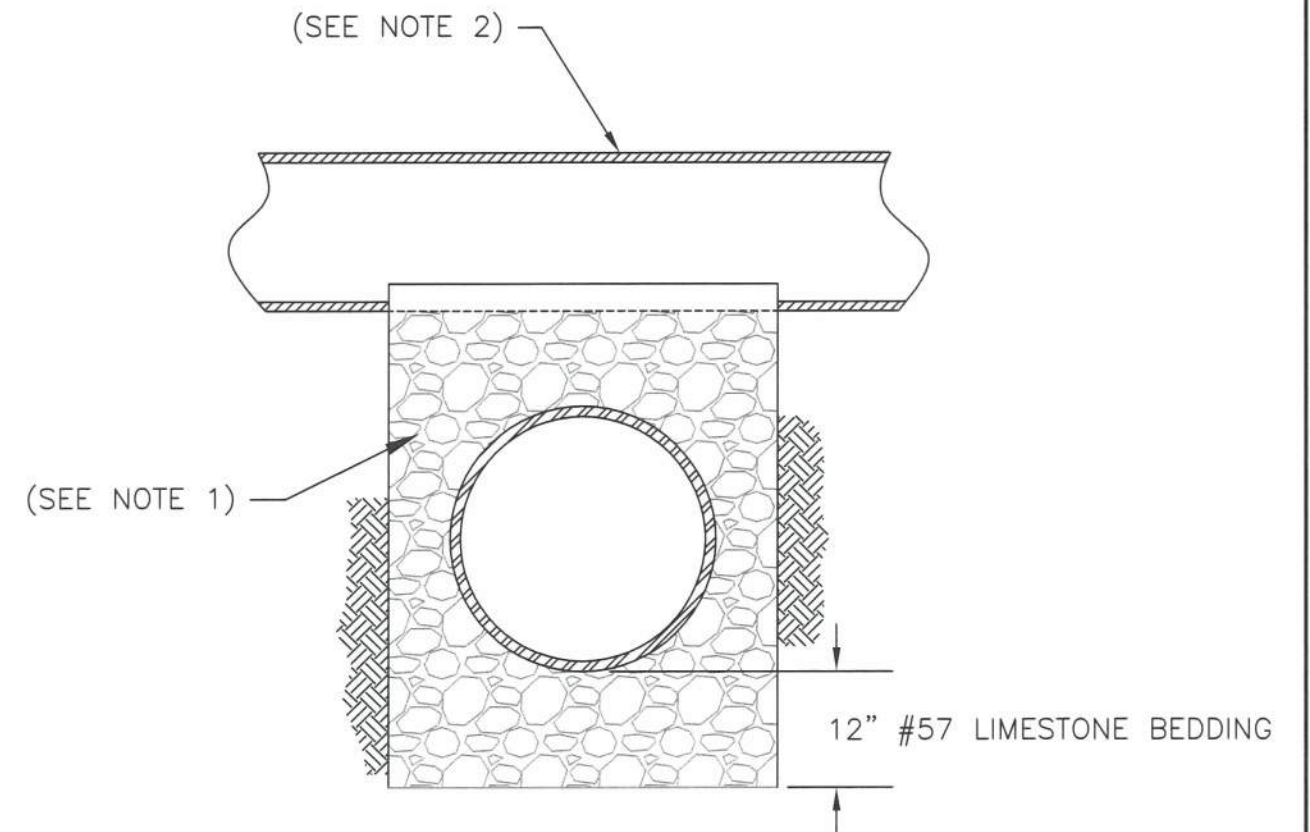
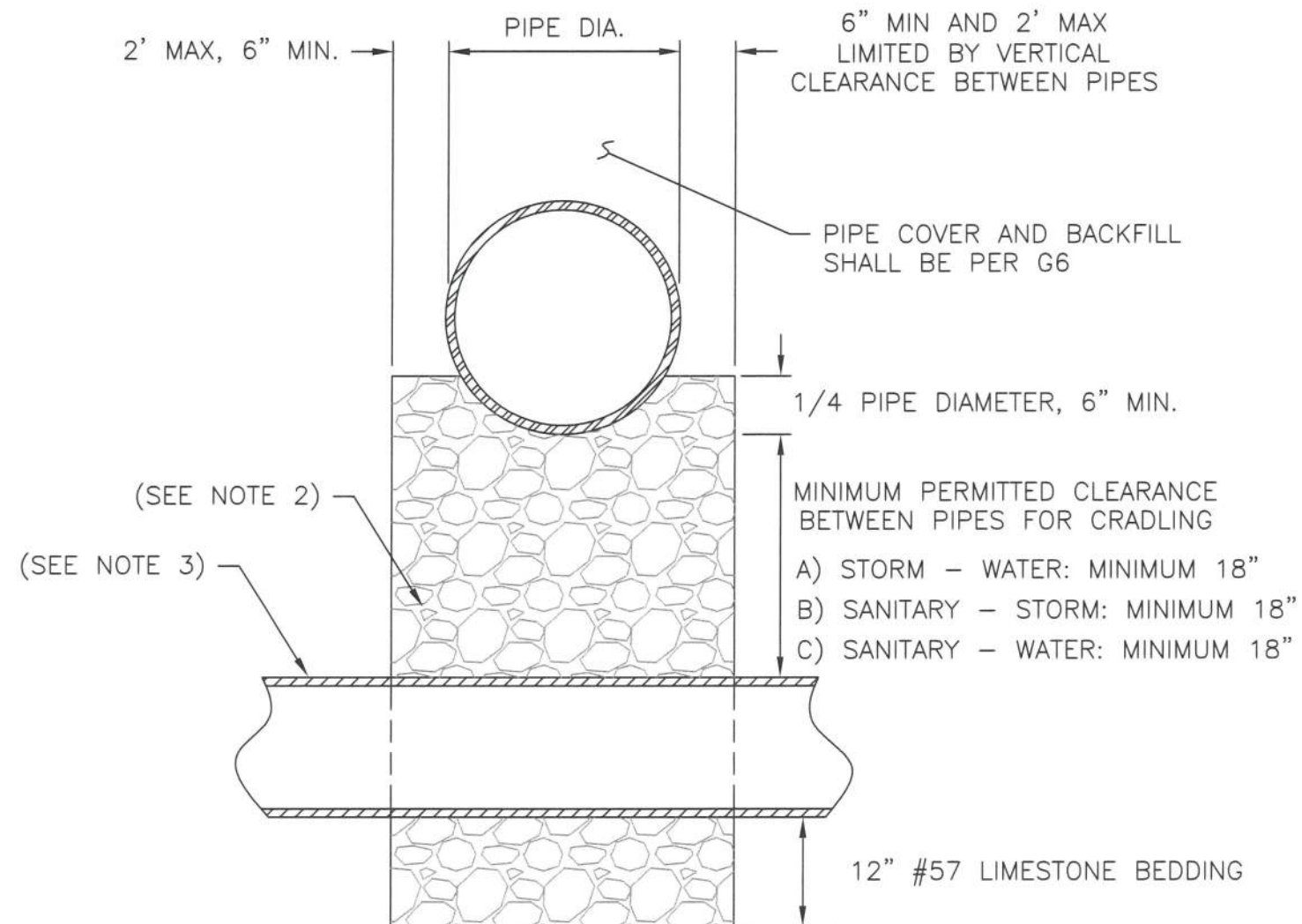
NOTES

- 1. CONTRACTOR SHALL PROVIDE GRADE STAKES OR OTHER REFERENCE POINTS AS DIRECTED BY THE CITY ENGINEER TO AID FIELD INSPECTION PERSONNEL IN THE DETERMINATION OF THE ZONE OF INFLUENCE LINE ELEVATION.
- 2. ACCEPTABLE PREMIUM BACKFILL MATERIALS SHALL CONSIST OF COURSE INTERLOCKING LIMESTONE AGGREGATE NO. 304. NO SLAG OR LIMESTONE SCREENINGS.
- 3. PREMIUM BACKFILL SHALL BE INSTALLED TO THE TOP OF SUBGRADE FOR TRENCHES UNDER WALKS, DRIVES, AND PAVEMENTS FOR CURRENT AND FUTURE PHASES.
- 4. BACKFILL MATERIALS UNDER EXISTING OR FUTURE PAVEMENT SHALL BE THOROUGHLY COMPACTED TO A MINIMUM OF 98% COMPACTION BY TAMPING IN LAYERS OF NOT MORE THAN 1 FOOT IN DEPTH.
- 5. THE SURFACE AT THE BOTTOM OF THE TRENCH SHALL BE FREE OF ANY PROTRUSIONS WHICH MAY CAUSE POINT LOADING OF ANY PORTION OF THE PIPE AND SHALL PROVIDE A FIRM, STABLE AND UNIFORM SUPPORT FOR THE PIPE.
- 6. INITIAL BACKFILL OVER THE TOP OF PIPE IN USING COMPACTION EQUIPMENT. AVOID CONTACT WITH THE PIPE AND DO NOT COMPACT DIRECTLY OVER THE PIPE UNTIL SUFFICIENT BACKFILL HAS BEEN PLACED OVER THE PIPE TO AVOID DAMAGES TO THE PIPE. LITTLE OR NO TAMPING OF THE INITIAL BACKFILL DIRECTLY OVER AND AROUND THE PIPE TO A POINT 12 INCHES ABOVE THE PIPE SHALL BE PERMITTED. FINAL BACKFILL SHALL BE COMPACTED TO AN APPROVED DENSITY EQUAL TO ADJOINING SOIL MATERIALS AND AS STATED ABOVE FOR TRENCHES UNDER EXISTING OR PROPOSED PAVEMENT.
- 7. SEE DETAIL W-2 FOR WATER MAIN TRENCH.



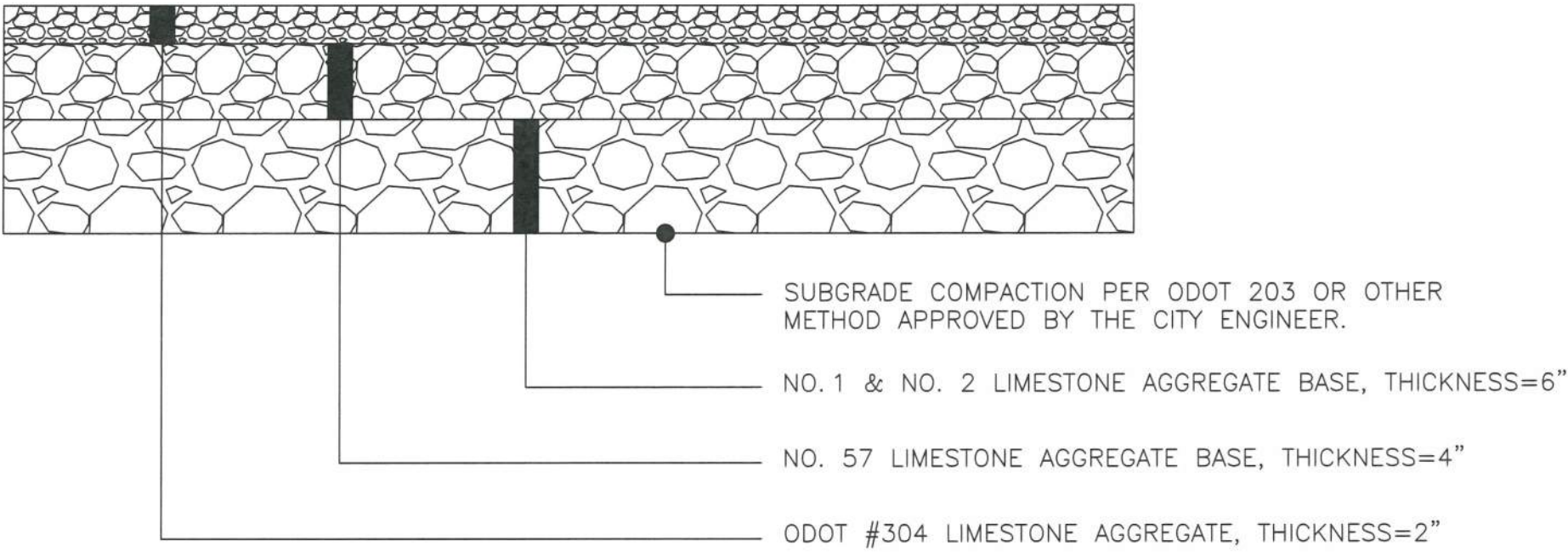
ALLOWABLE TRENCH WIDTH		
PIPE DIA.	"A" MAX.	"A" MIN.
24" & LESS	12"	9"
27" TO 66"	15"	12"
72" & MORE	24"	15"

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
STORM AND SANITARY TRENCH DETAILS	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING G-6		2/2019



- NOTE:
1. IN NO CASE SHALL THE CLEARANCE BE PERMITTED TO BE LESS THAN 6".
 2. CRADLING MAY BE PERMITTED BY THE CITY. HOWEVER, THE USE OF A CASING OR D.I.P. SHALL BE REQUIRED WHEN PIPE CLEARANCE IS LESS THAN THE MINIMUM PERMITTED CLEARANCE DETAILED ABOVE, THE CRADLING MATERIAL SHALL BE NO. 57 LIMESTONE, OR AS DIRECTED BY THE CITY ENGINEER.
 3. SEWER PIPE IS TO BE 20 FOOT MINIMUM LENGTH OF DUCTILE IRON PIPE CENTERED AT THE CROSSING. SEE SHEET SAN-1.

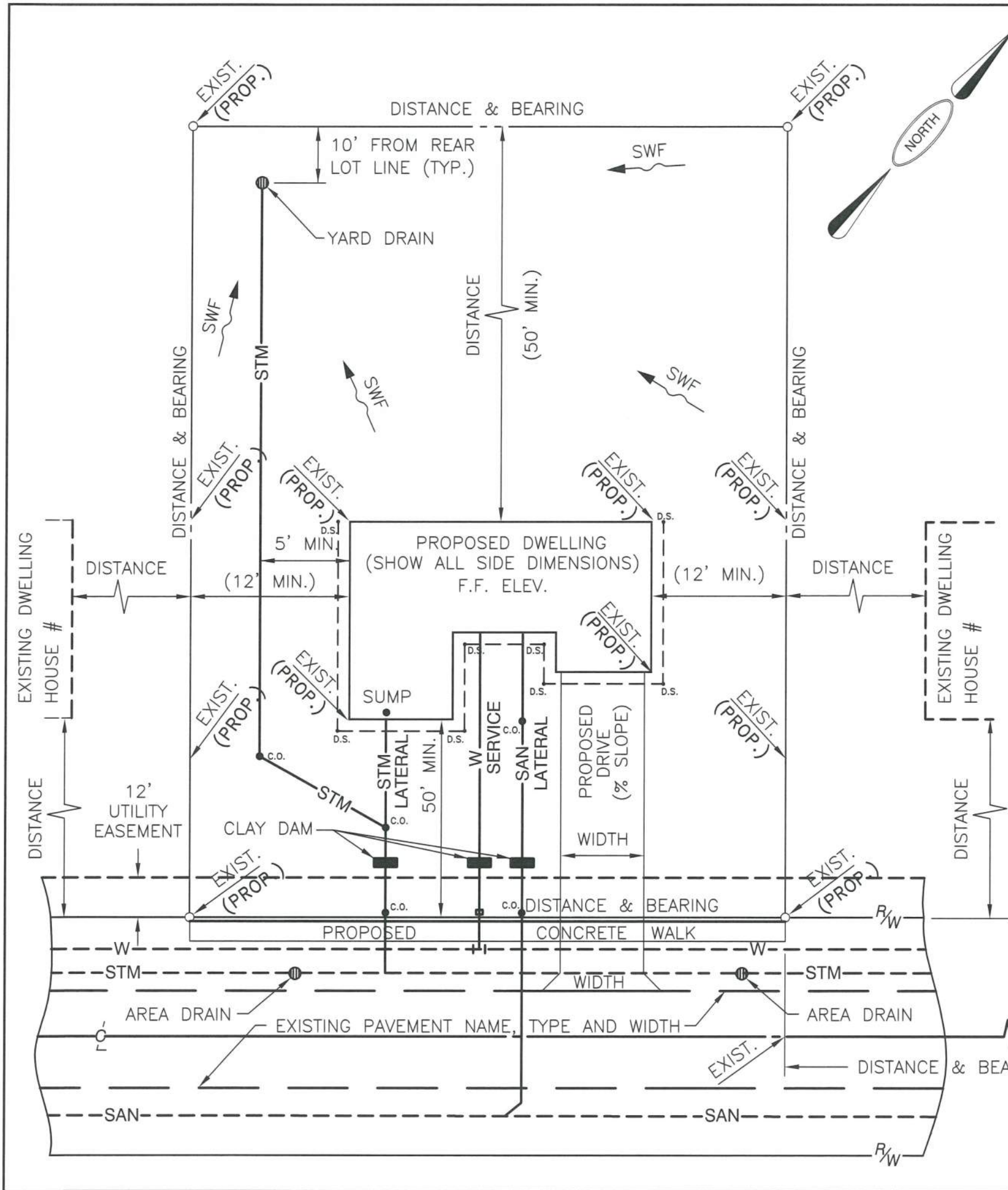
CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
MONOLITHIC CRADLING OF UPPER PIPE	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING G-7		2/2019



NOTES:

- 1. DRIVE SHALL BE A MINIMUM 12' WIDTH WITH AN APRON AT THE ROADWAY. ADDITIONAL WIDTH MAY BE REQUIRED BY THE UTILITY DEPARTMENT BASED ON SITE CONDITIONS OR UTILITY LOCATIONS
- 2. PLACEMENT LOCATION MUST BE APPROVED BY THE UTILITY DEPARTMENT.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
UTILITY ACCESS DRIVE	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING G-8		2/2019



P.P.N. _____
 SUBDIVISION _____
 S/L NO. _____
 HOUSE NO. _____
 DEVELOPER _____
 PHONE NO. _____

BUILDER _____
 PHONE NO. _____
 1ST FLOOR EL. _____
 TOP OF FOOTER EL. _____

GENERAL NOTES:

1. FINAL PROPOSED GRADE SHALL CONFORM TO THE APPROVED MASTER GRADING PLAN.
2. YARD GRADE AT BUILDING SHALL BE A MINIMUM OF 18" ABOVE TOP OF PAVEMENT OR CURB, IF CURBING EXISTS
3. DOWNSPOUT AND SUMP PUMP CONNECTION TO THE LATERAL ARE TO BE WITHIN FIVE FEET OF THE FOUNDATION.
4. BENCHMARK IS TO BE SHOWN ON THE PLAN AND REFERENCE TO THE CITY OF AVON BENCHMARK DATUM.
5. THE MONUMENT BOX NEAREST THE SUBLOT SHALL BE SHOWN AND IDENTIFIED.
6. FOR EXISTING UTILITY LATERAL CONNECTIONS, REFER TO SHEET STM-9.
7. FOR DRIVEWAY AND SIDEWALK CONSTRUCTION, REFER TO SHEET P-13.
8. STORM SYSTEM FOR THE REAR YARD DRAIN AND HOUSE ARE TO BE INSTALLED AS SHOWN WITH A CLEAN OUT EVERY 100' AND AT EACH BEND.
9. IDENTIFY ALL EXISTING UTILITIES BY DEPTH, GRADE, SIZE AND TYPE OF PIPE.
10. STORM SEWER LATERAL TO BE INSTALLED OUTSIDE THE BASEMENT DIG.
11. HORIZONTAL CLEARANCE:
 WATER AND SANITARY LATERALS=10'
 WATER AND STORM LATERALS=10'
 STORM AND SANITARY LATERALS=5'
12. PIPE TRENCH CLAY DAM TO BE INSTALLED OUTSIDE OF UTILITY EASEMENT AND PRIOR TO ANY BRANCHES ON THE STORM, SANITARY AND WATER CONNECTIONS PER DETAILS G-10.
13. UTILITY DEPARTMENT REPRESENTATIVE MUST BE PRESENT WHEN PHYSICAL CONNECTION TO HOME LATERALS ARE MADE. A MINIMUM OF 24 HOUR NOTICE MUST BE PROVIDED TO THE UTILITY DEPARTMENT PRIOR TO SUCH CONNECTION.

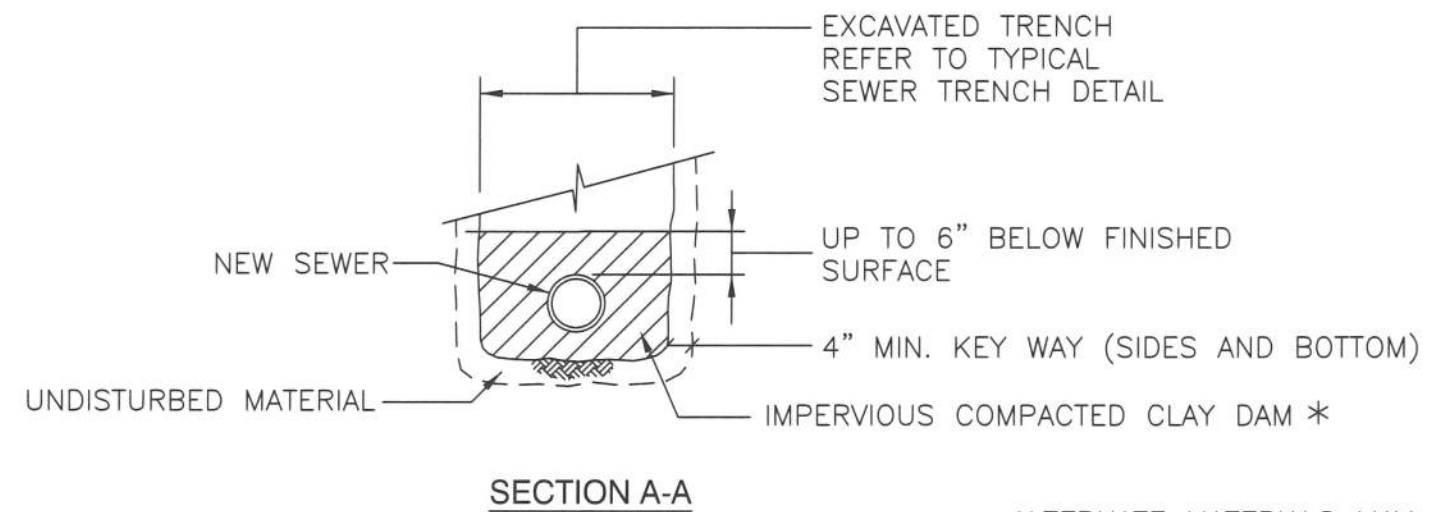
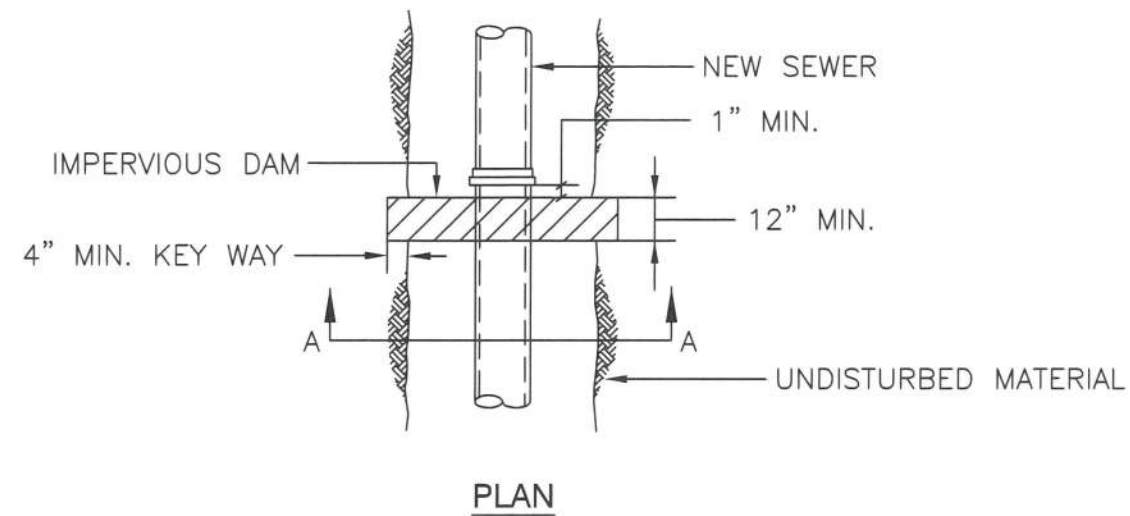
LEGEND

- EXIST. (PROP.) SPOT GRADE ELEVATION
- SAN— SAN. SEWER, SAN. LATERAL 6" MIN. @ 1% GRADE
- STM— STORM SEWER, STM. LATERAL 6" MIN. @ 1% GRADE
- W— WATER MAIN, WATER SERVICE LINE, 1" K COPPER MIN.
- C.O. CLEAN OUT
- SWF SURFACE WATER FLOW DIRECTION
- D.S. DOWNSPOUT
- ⊙ AREA DRAIN, IF REQUIRED
- ▣ CURB STOP

SURVEYORS
 SEAL OR
 ENGINEER
 SEAL

SURVEYOR OR ENGINEER
 SIGNATURE

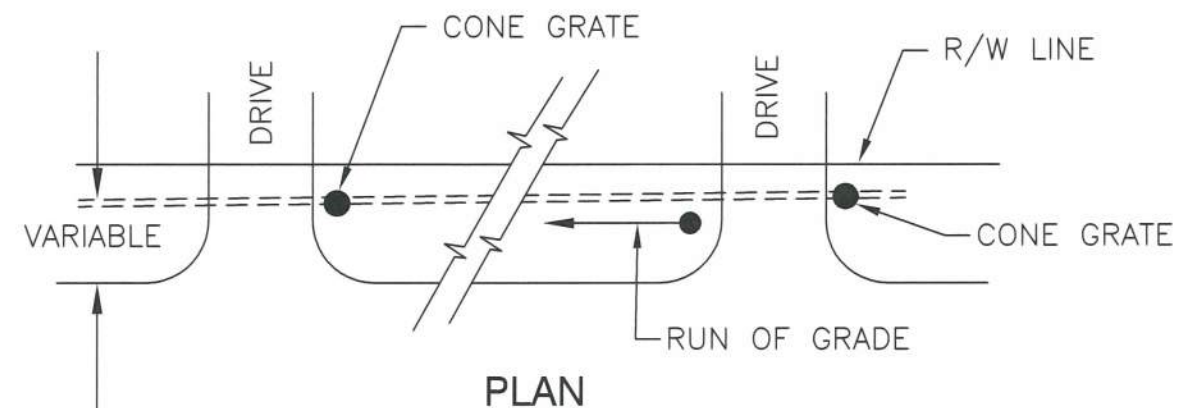
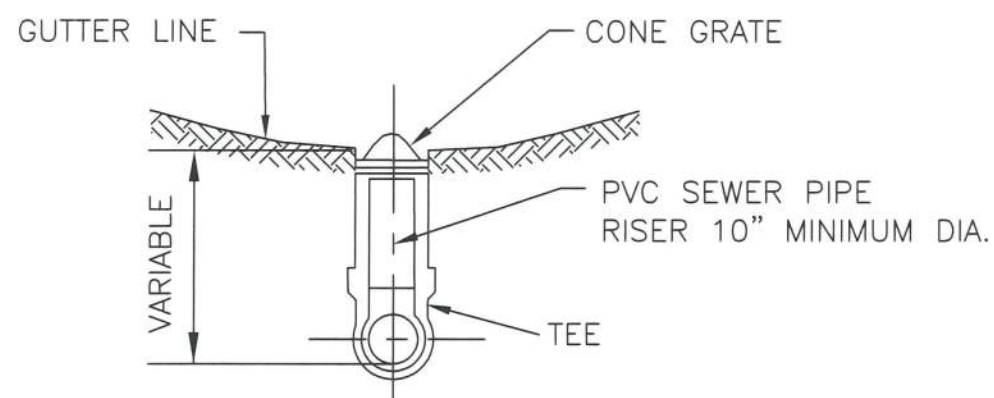
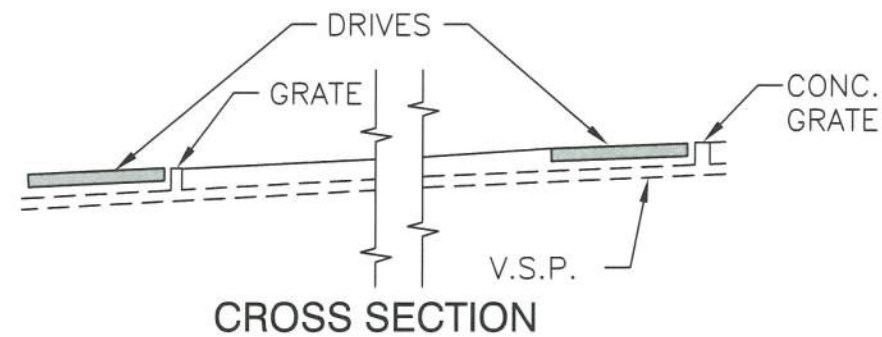
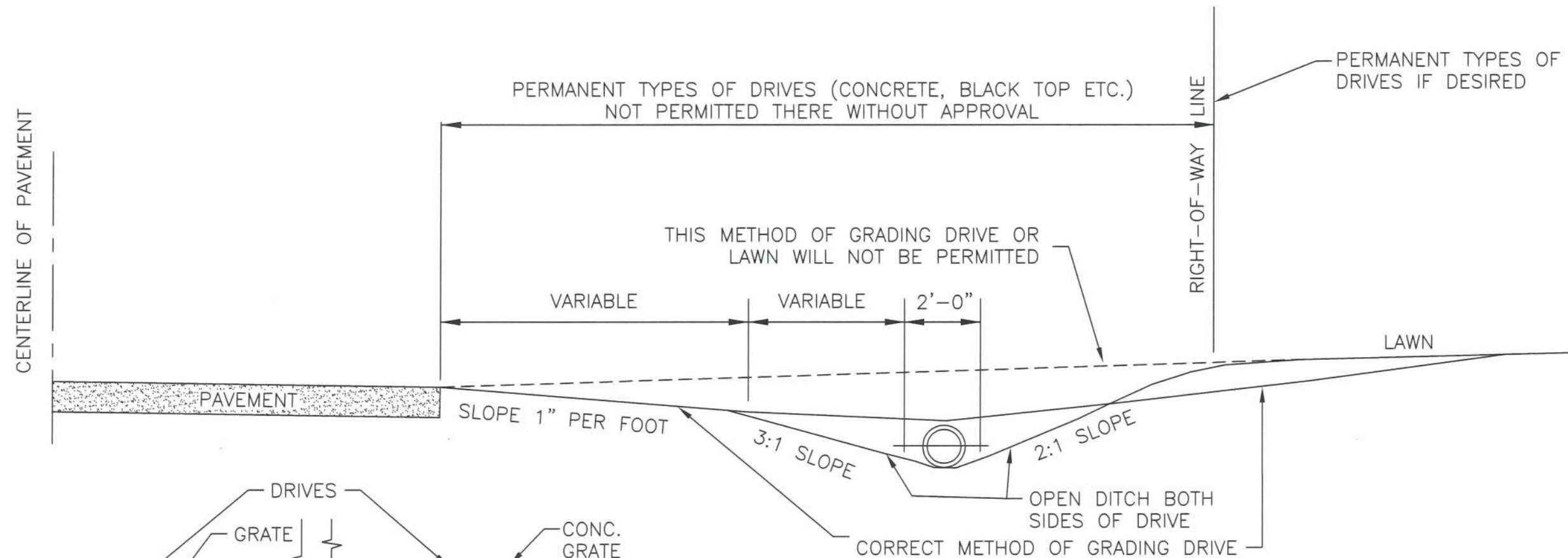
CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
TYPICAL PLOT PLAN LAYOUT DETAIL	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING G-9		2/2019



* ALTERNATE MATERIALS MAY BE
UTILIZED WITH PRIOR WRITTEN
APPROVAL OF THE CITY ENGINEER

PIPE TRENCH CLAY DAM DETAIL

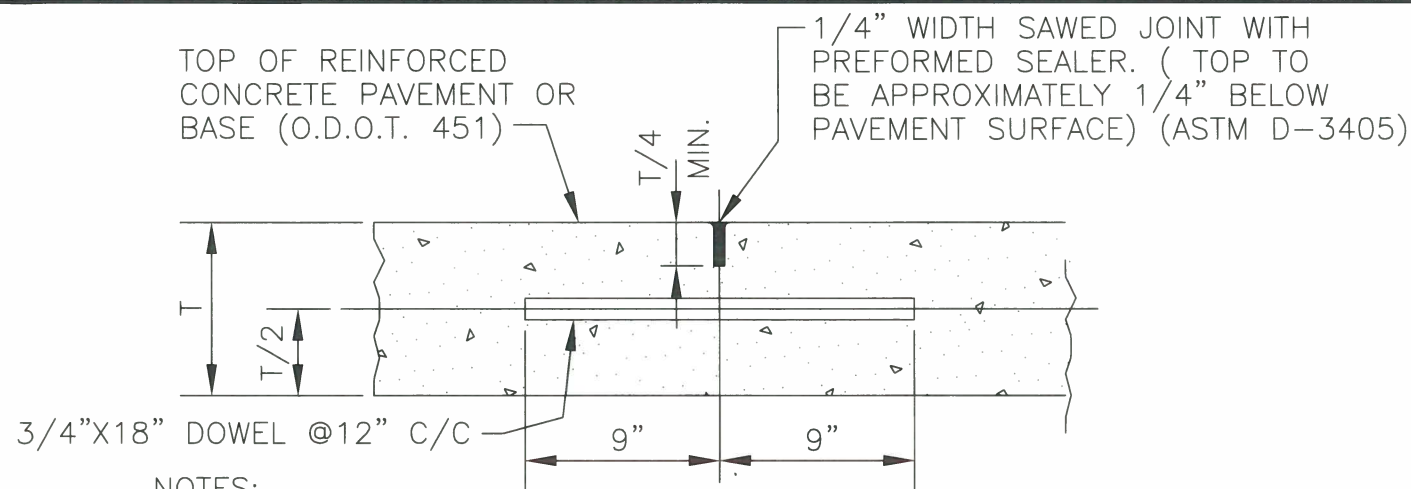
CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
PIPE TRENCH CLAY DAM DETAIL	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING G-10		2/2019



WHERE TILE EXISTS IN ROAD DITCH AN INLET IS TO BE PLACED ON UPSTREAM SIDE OF DRIVE.

BEFORE INSTALLING DRIVE PIPE OR TILE IN ROAD DITCH PERMISSION MUST BE SECURED FROM SUPERINTENDENT OF STREETS.

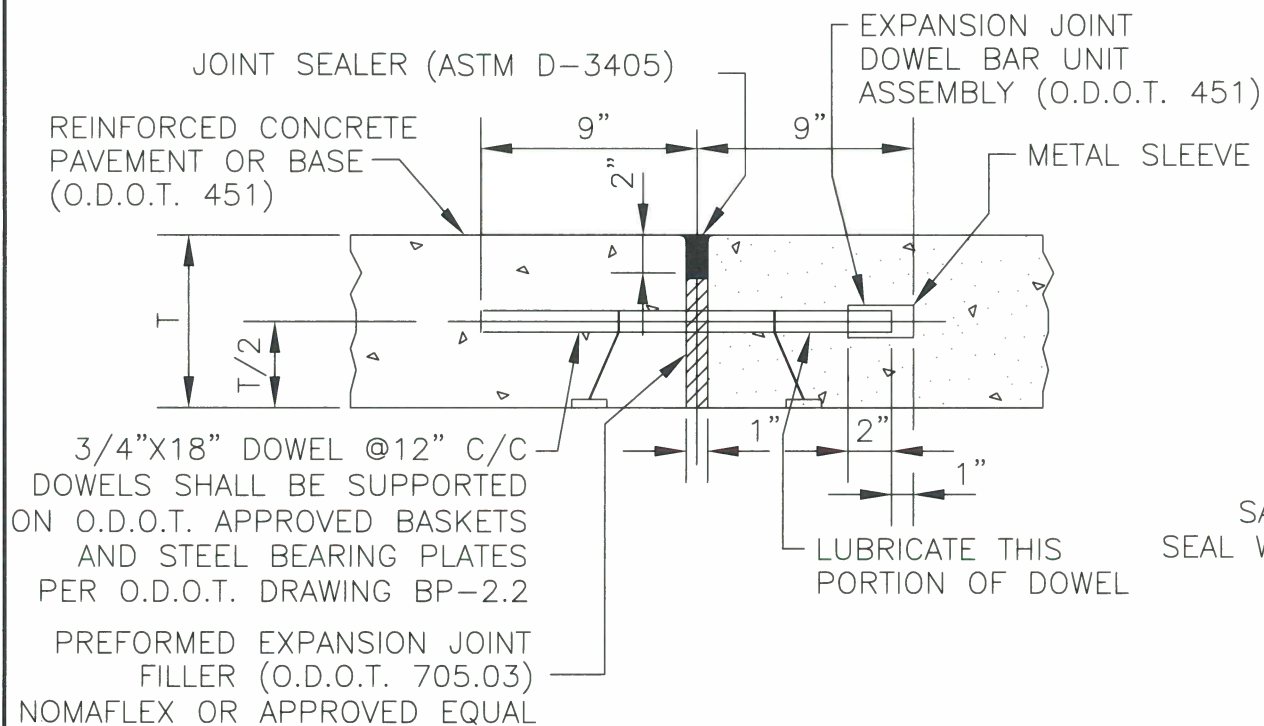
CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
APPROVED METHOD OF PRIVATE DRIVES & GRADING LAWNS	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING G-11		2/2019



NOTES:

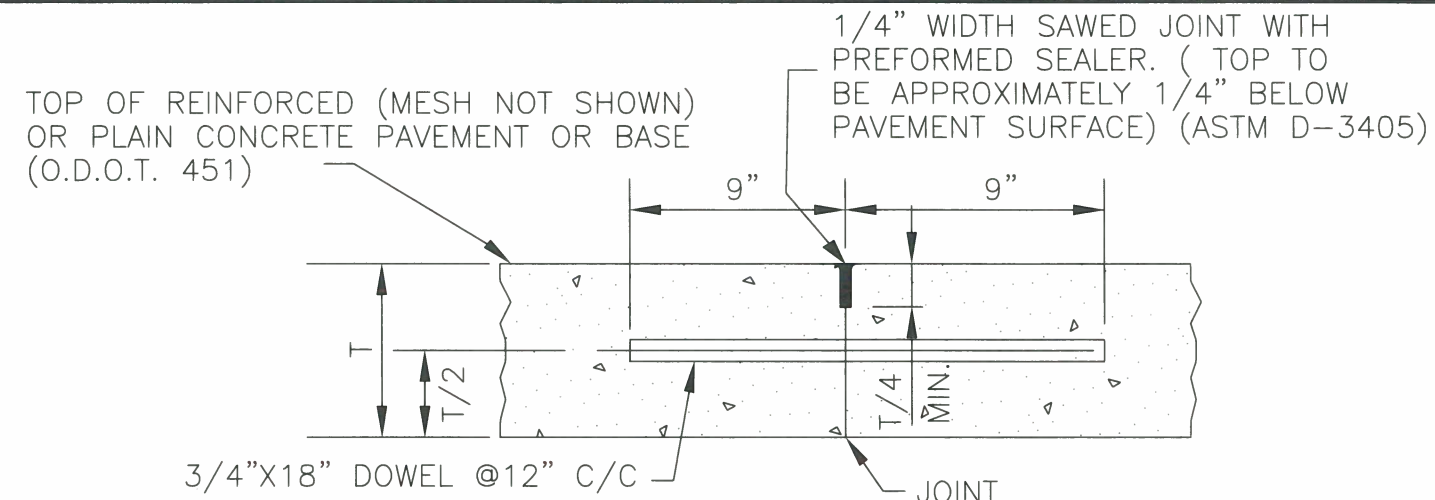
1. MAXIMUM JOINT SPACING SHALL BE 15 FT.
2. DOWELS USED IN CONTRACTION JOINTS IN REINFORCED CONCRETE PAVEMENT SHALL BE SMOOTH BARS AND FREE MOVEMENT SHALL BE PROVIDED BY APPLYING A COATING OF GREASE AS A BONDBREAKING MATERIAL JUST PRIOR TO PLACING THE CONCRETE.
3. DISCONTINUE REINFORCING MESH 12"± 2" ON EACH SIDE OF JOINT.

CONTRACTION JOINT FOR REINFORCED CONCRETE PAVEMENT OR BASE



NOTE: EXPANSION JOINTS TO BE PLACED AT 500 FT INTERVALS AND AT STREET INTERSECTIONS, P.C.'S, P.T.'S, AND CHANGES IN PAVEMENT WIDTHS.

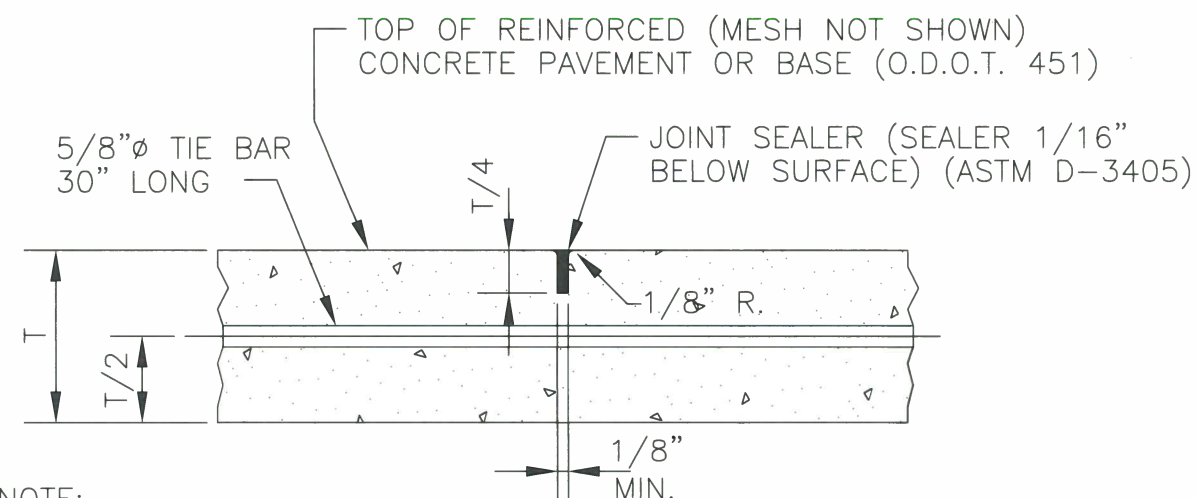
EXPANSION JOINT FOR CONCRETE PAVEMENT OR BASE



NOTE:

CONSTRUCTION JOINTS ARE NOT TO BE LOCATED CLOSER THAN 10'-0" TO ANOTHER PARALLEL JOINT

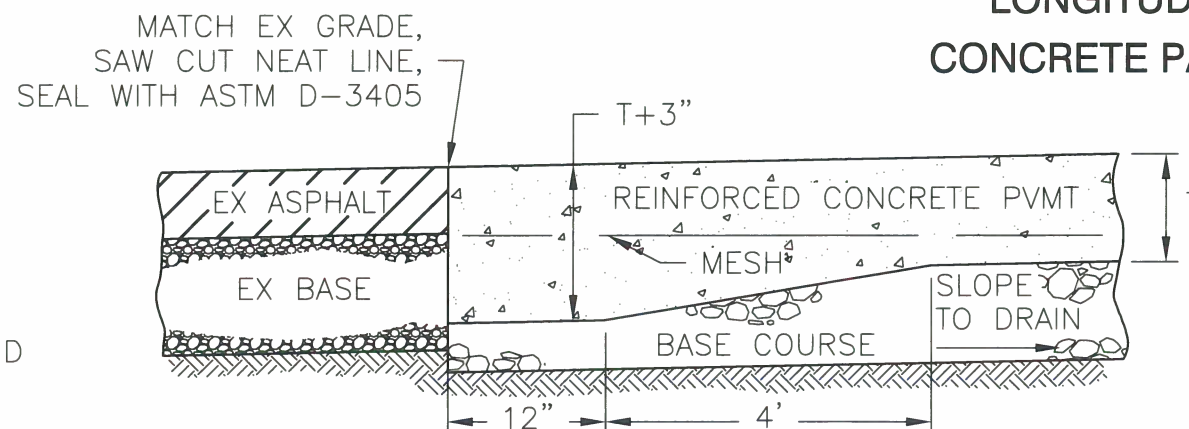
CONSTRUCTION JOINT FOR CONCRETE PAVEMENT OR BASE



NOTE:

1. LONGITUDINAL JOINTS TO BE USED FOR RESTORING EXISTING LONGITUDINAL JOINTS.
2. SEAL NOT REQUIRED FOR BASE.
3. DISCONTINUE REINFORCING MESH 2" ON EACH SIDE OF JOINT.

LONGITUDINAL JOINT FOR CONCRETE PAVEMENT OR BASE



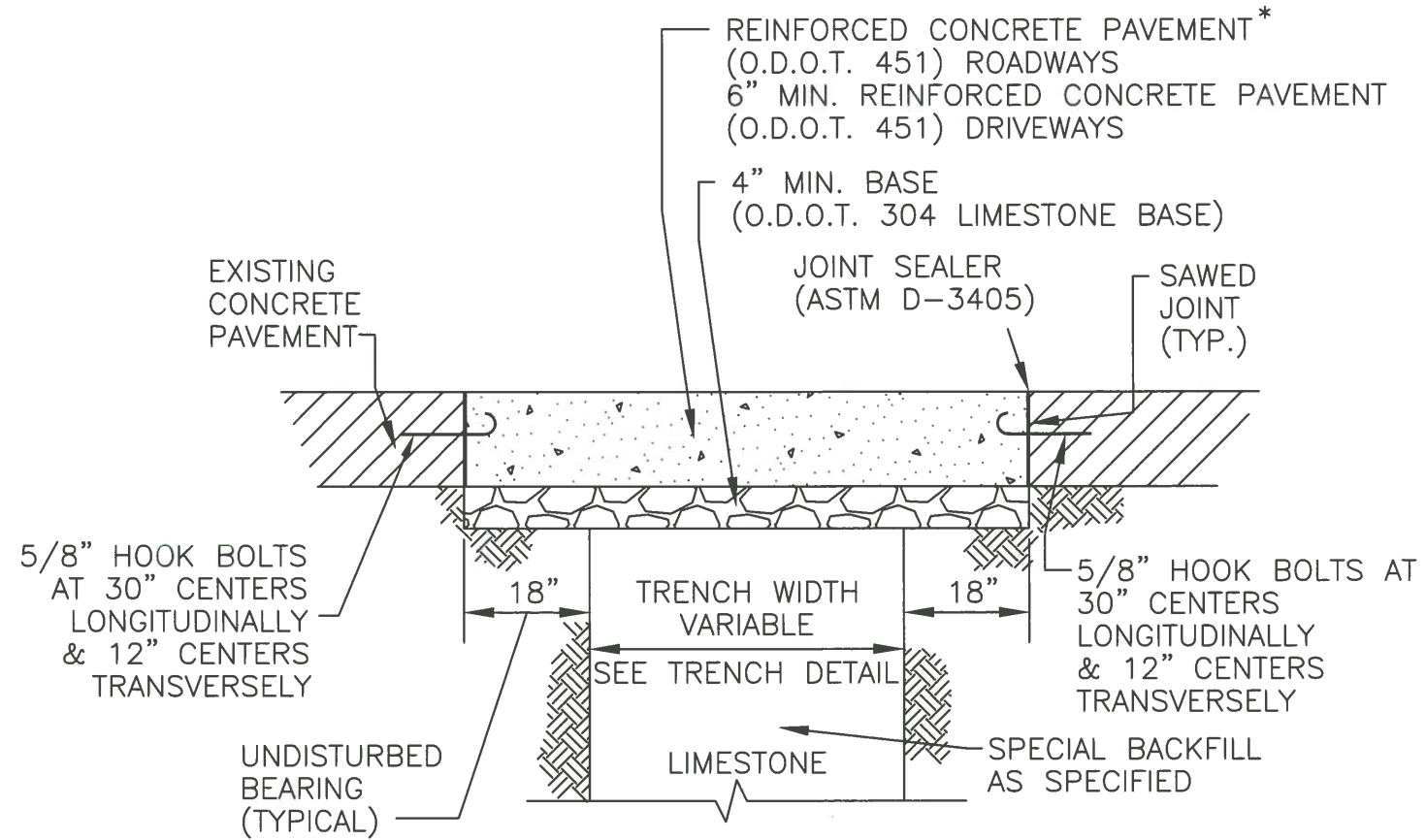
THICKENED EDGE JOINT

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
CONCRETE PAVEMENT JOINT DETAIL	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING P-1		2/2019



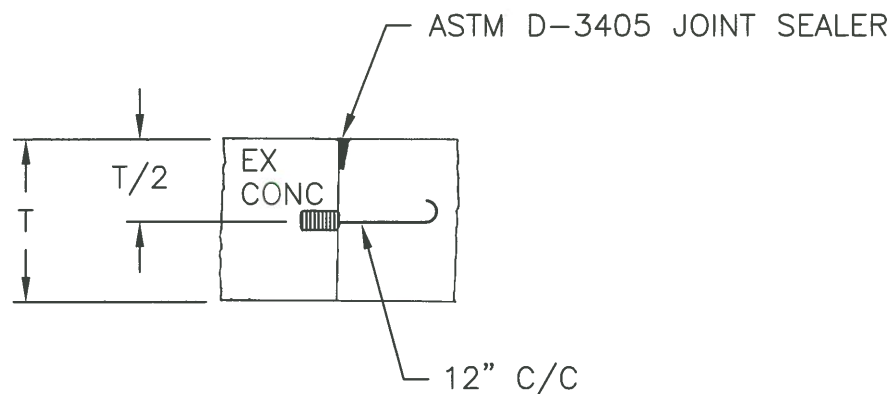
- 1) SLEEPER SLAB ASSEMBLIES MAY BE PERMITTED BY THE CITY IN LIEU OF AN EXPANSION JOINT ASSEMBLY FOR CONCRETE PAVEMENT, AS SHOWN ON SHEET P-1.
(AT 500 FEET INTERVALS, STREET INTERSECTIONS & P.C.'S & P.T.'S)
- 2) EXCAVATION OF SLEEPER SLABS SHALL BE AN EXACT 2 FT. WIDTH. HOWEVER, SHOULD AN OVER DIG OCCUR, THE ENTIRE EXCAVATION SHALL BE CONCRETE FILLED AND PROVIDED WITH A SMOOTH TROWELED FINISH.
- 3) JOINTS RESTING ON THE SLEEPER SLAB SHALL NOT EXCEED 1" IN WIDTH. A 1/4" WIDER WIDTH TOLERANCE MAY BE PERMITTED AT THE CITY'S DISCRETION.
- 4) CARE SHALL BE TAKEN TO FINISH THE SUBGRADE SURFACE UNDER AND AROUND THE SLEEPER SLAB IN A SMOOTH FIRMLY COMPACTED MANNER.
- 5) (2)TWO LAYERS OF 6 MILL POLY ARE REQUIRED FOR SEPARATION BETWEEN THE SLEEPER SLAB AND CONCRETE ROADWAY.
- 6) ALL BARS & BASKETS SHALL BE EPOXY COATED.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
TRANSVERSE EXPANSION JOINT DETAIL SLEEPER SLAB	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING	P-2	2/2019



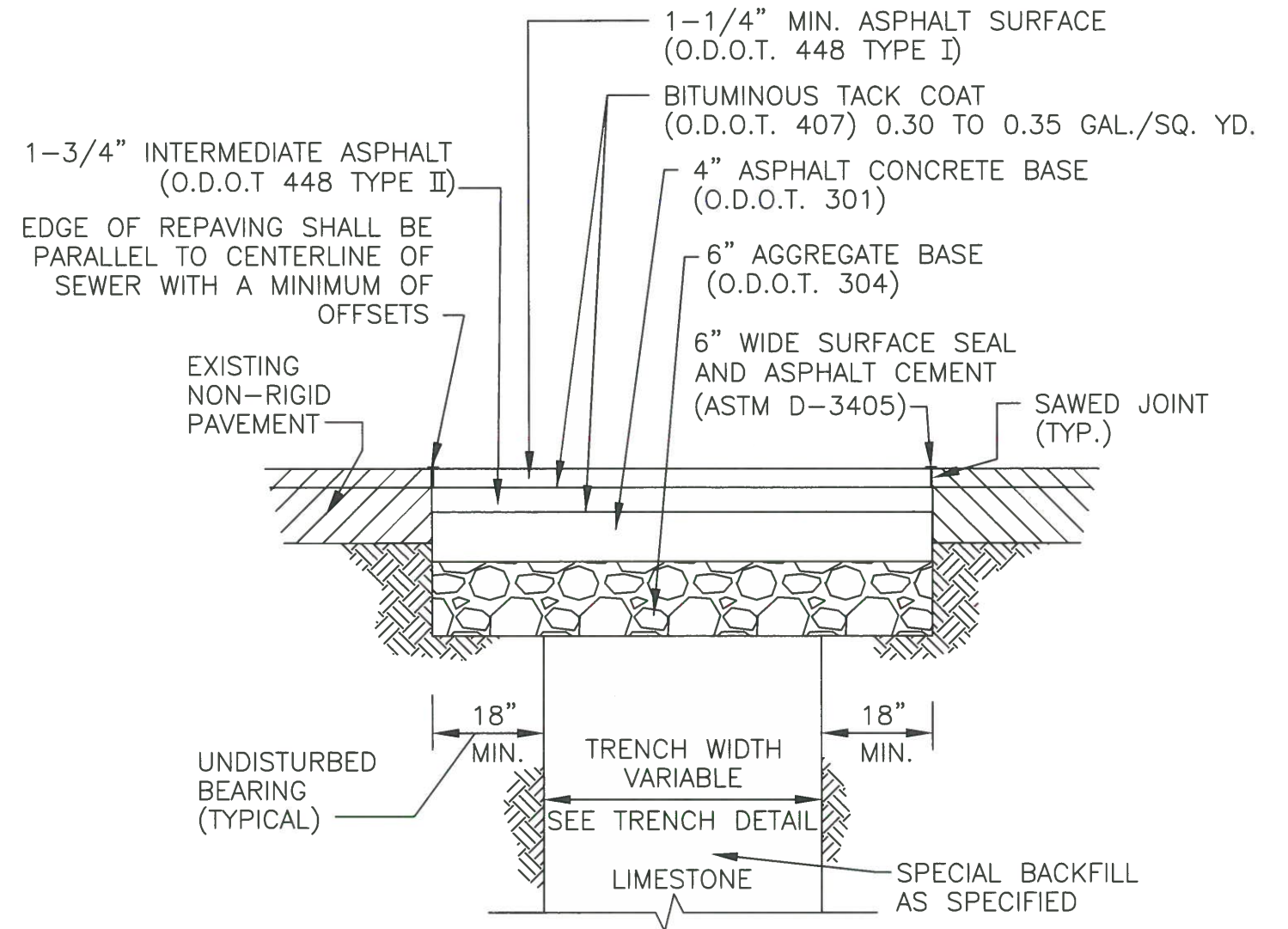
**DETAIL FOR RESTORING
CONCRETE PAVEMENT**

* 7" THICK FOR RESIDENTIAL
9" THICK FOR COMMERCIAL OR INDUSTRIAL
W/TUF STRAND MAX TEN FIBERS OR APPROVED EQUAL.



BUTT JOINT

NOTE:
NEITHER SLAG NOR SCREENINGS WILL BE PERMITTED AS A BASE COURSE MATERIAL. RECYCLED MATERIAL IS NOT ALLOWED IN ANY CIRCUMSTANCE

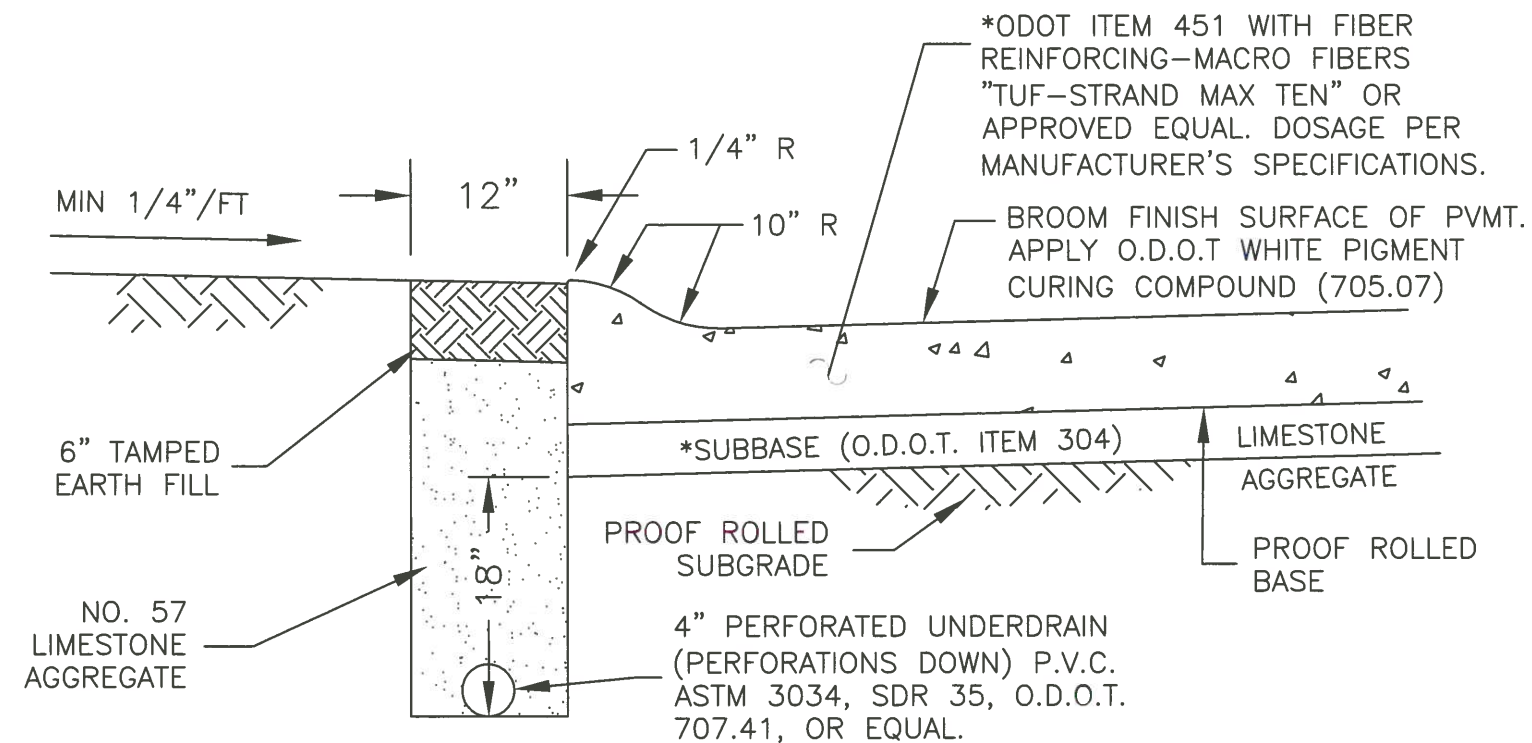


**DETAIL FOR RESTORING
ASPHALT CONCRETE PAVEMENT
ON NON-RIGID BASE**

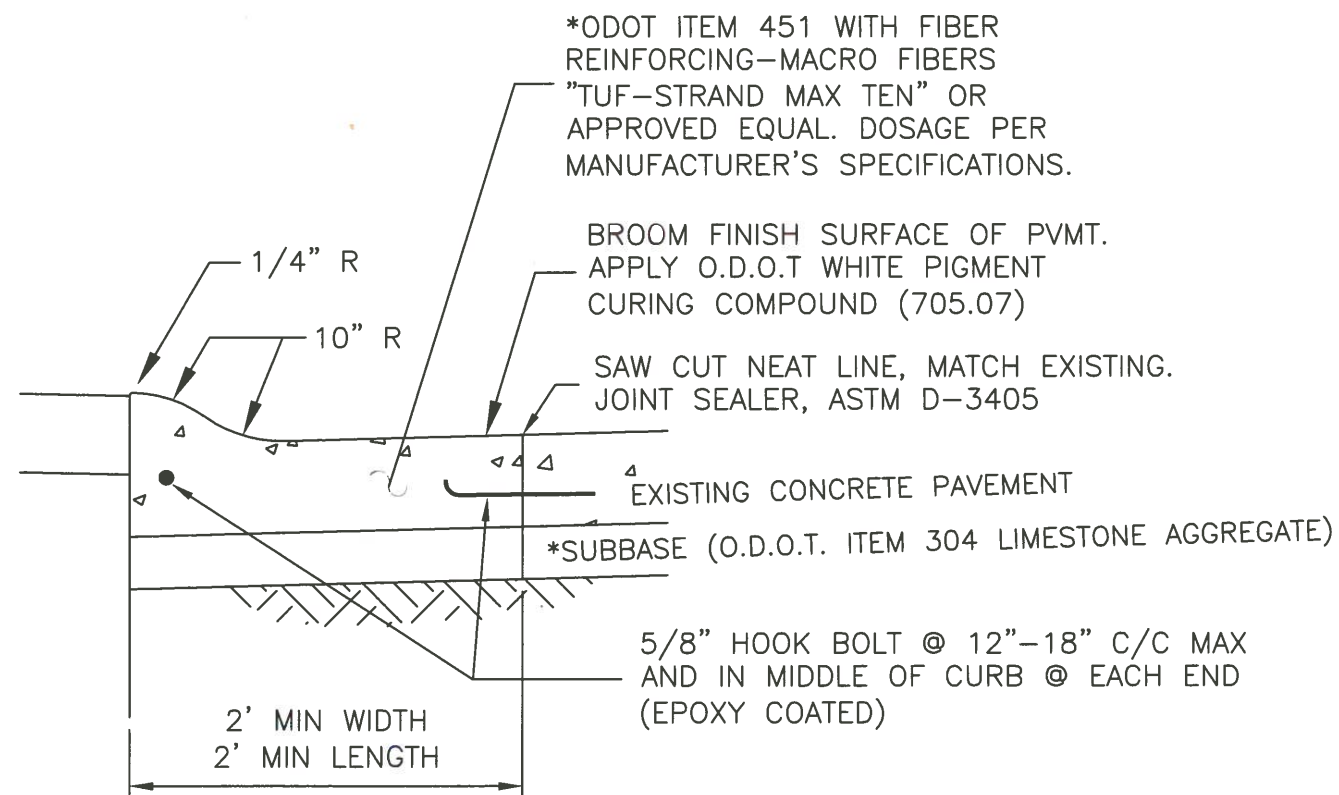
NOTES:

1. ASPHALT REPAIRS ALONG ROADWAY EDGES DAMAGED DUE TO ADJACENT CONSTRUCTION SHALL BE REMOVED TO A DEPTH OF 3" AND WIDTH OF 3' MINIMUM.
2. SOFT BASE AREAS ARE TO BE REMOVED TO A DEPTH OF 6" AND BACKFILLED WITH COMPACTED 304 LIMESTONE.
3. JOINTS ARE TO BE CRACKSEALED WITH ASTM 3405 SEALER OR AL-20, USING A SQUEEGY.
4. HOOK BOLTS SHALL BE EPOXY COATED.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
PAVEMENT RESTORATION	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING P-3		2/2019



TYPICAL CURB AND UNDERDRAIN DETAIL (NEW INSTALLATION)



CURB REPAIR DETAIL

PROOF ROLLING & COMPACTION NOTES

PROOF ROLLING SHALL BE PREFORMED VIA A TANDEM AXLE DUMP TRUCK WITH A GROSS WEIGHT OF 60,000 LBS.

COMPACTION REQUIREMENTS SHALL CONFORM TO ODOT ITEM 203.

ANY FILL PLACEMENT IN THE R/W AREAS SHALL BE VERIFIED BY AND COMPACTION TESTED BY A QUALIFIED TESTING LABORATORY WITH THE TESTING REPORTS AND RESULTS SUBMITTED TO THE SERVICE DIRECTOR AND/OR ENGINEER FOR REVIEW. EMBANKMENT SOIL COMPACTION REQUIREMENTS SHALL BE IN CONFORMANCE WITH ODOT 203 AND THE TABLE BELOW:

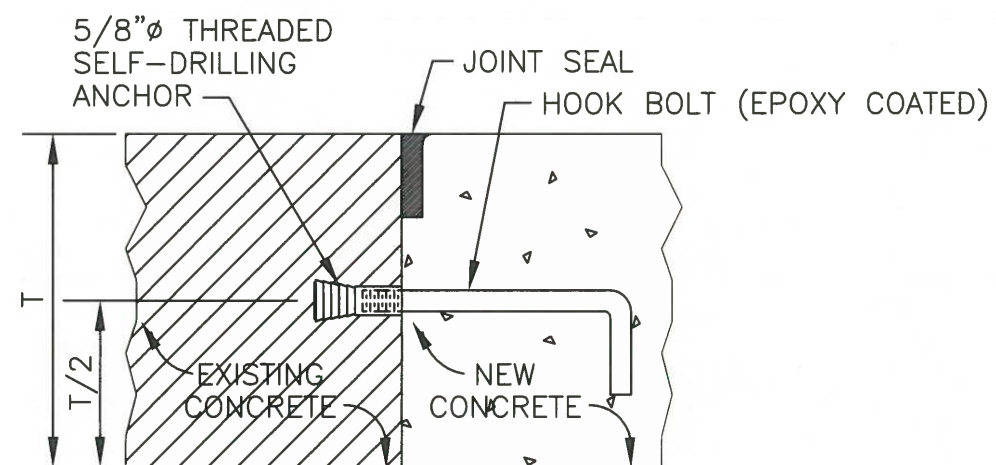
MAXIMUM LABORATORY DRY WEIGHT (POUNDS / CUBIC FOOT)	MINIMUM COMPACTION REQUIREMENTS (PERCENT LABORATORY) MAXIMUM
90 - 104.9	102
105 - 119.9	100
120 - HIGHER	98

CHEMICALLY STABILIZED SUB-GRADE NOTES

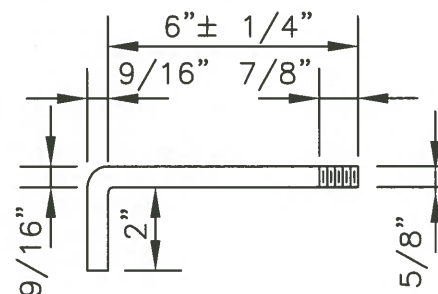
IN THE EVENT THAT THE ESTABLISHED SUB-GRADE IS TO BE CHEMICALLY STABILIZED, THIS STABILIZATION SHALL CONFORM TO ODOT ITEM 206.

*THICKNESS VARIES PER ROADWAY CLASSIFICATION. REFER TO G-1 AND G-3.

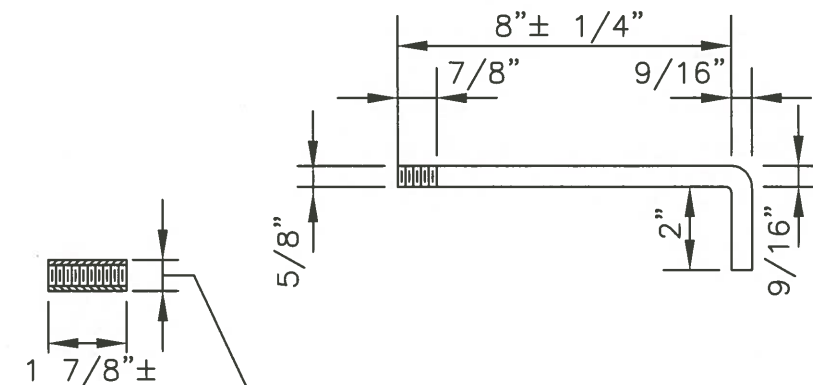
CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
CONCRETE CURB AND UNDER DRAIN DETAILS	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING P-4		2/2019



TRANSVERSE HOOK BOLTS @ 12" C/C

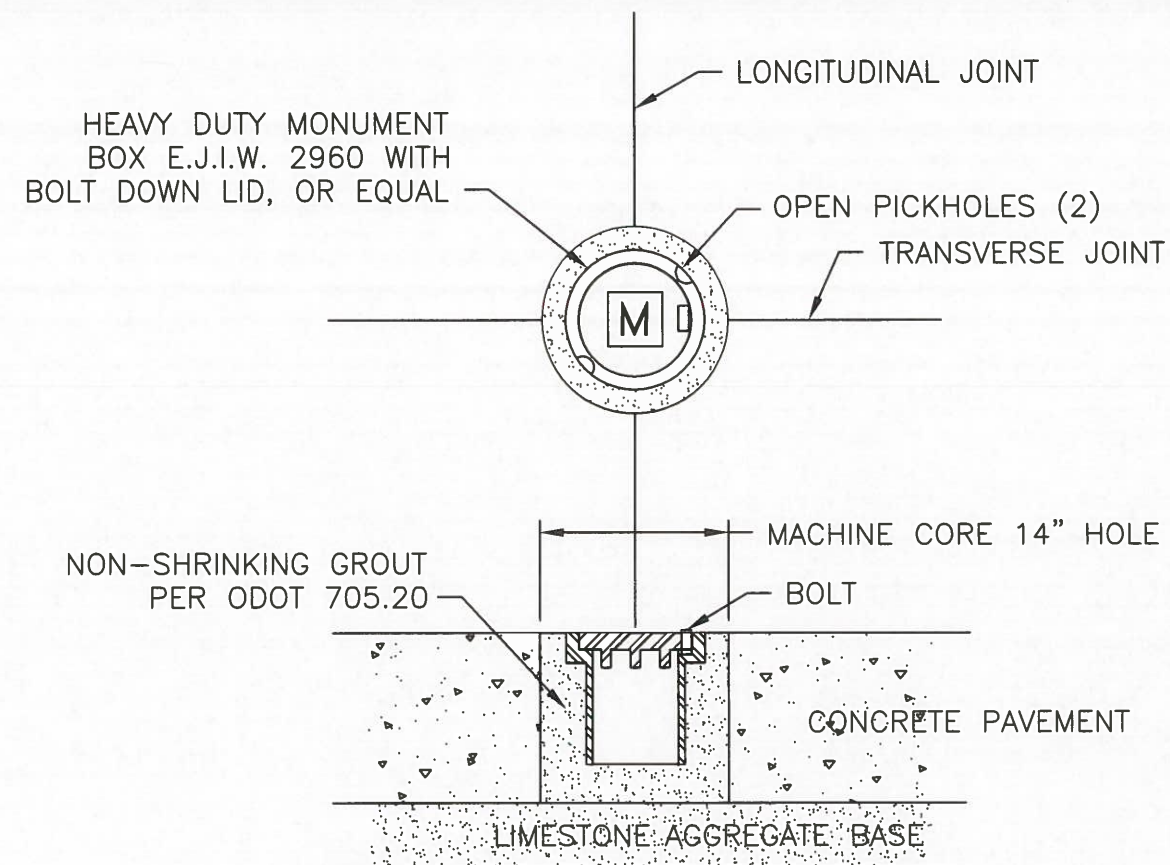


LONGITUDINAL HOOK BOLTS @ 30" C/C



STEEL COUPLING TO PROVIDE BOLT STRENGTH EQUIV. TO 11,000 LB.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
HOOK BOLT DETAILS	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING P-5		2/2019

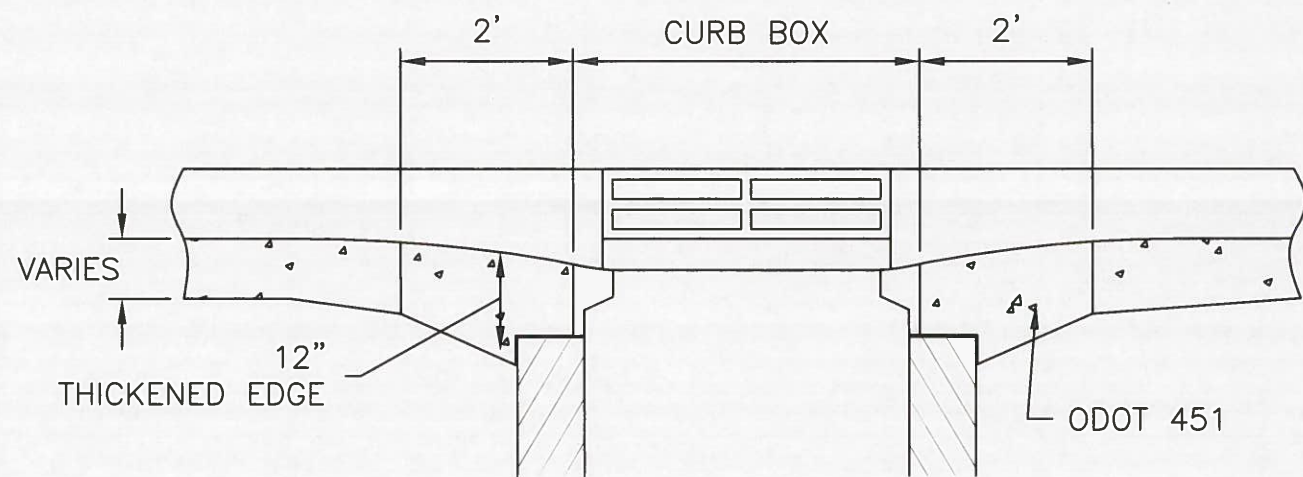


CORE DRILLED MONUMENT BOX DETAIL

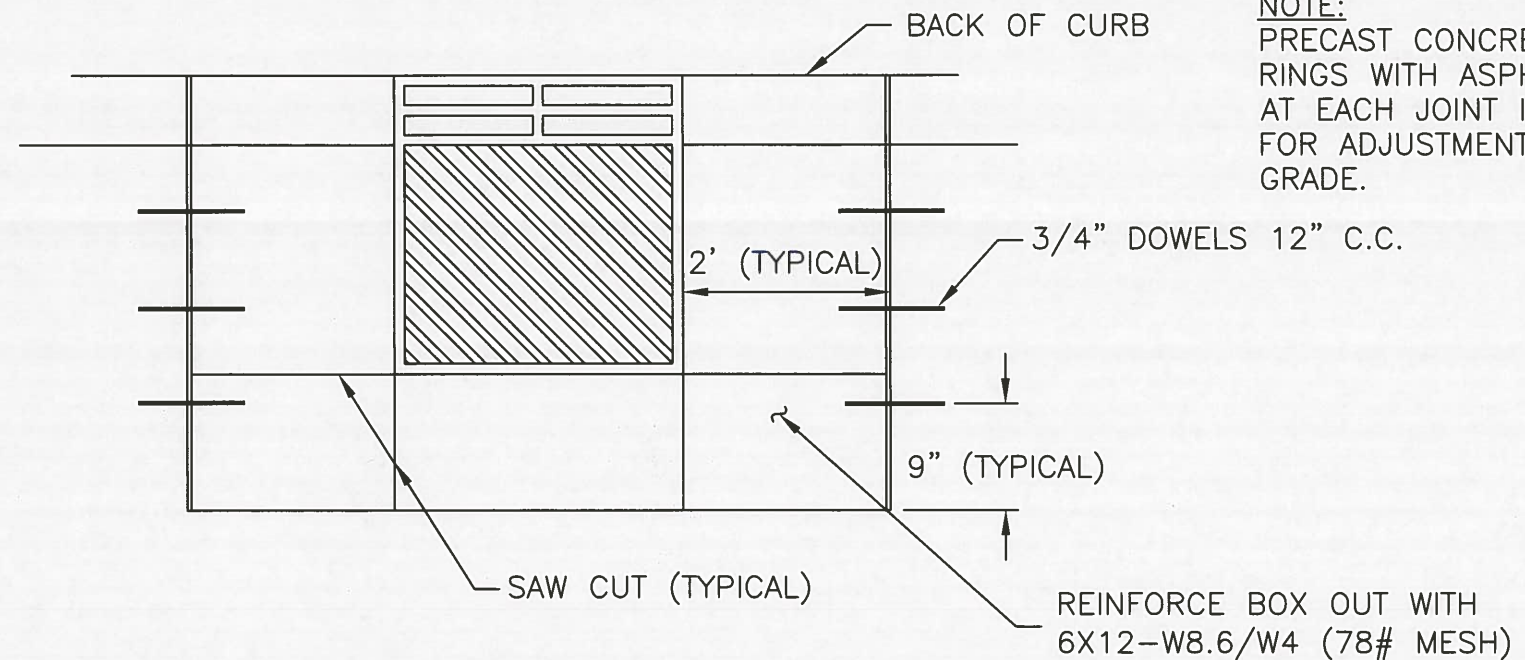
NOTE:

- 1) MONUMENT BOXES WILL NOT BE PERMITTED TO FALL IN AN EXPANSION JOINT. EXPANSION JOINTS ARE TO BE MOVED 5 FEET OUT OF THE CURVE SO AS NOT TO CONFLICT WITH THE MONUMENT BOX LOCATION.
- 2) SHOULD THE CITY PERMIT THE USE OF CAST RISERS IN CERTAIN CIRCUMSTANCES, A (3) THREE POINT WELD SHALL BE REQUIRED ON THE ROUND MONUMENT BOX.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
MONUMENT BOX DETAILS	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING P-6		2/2019

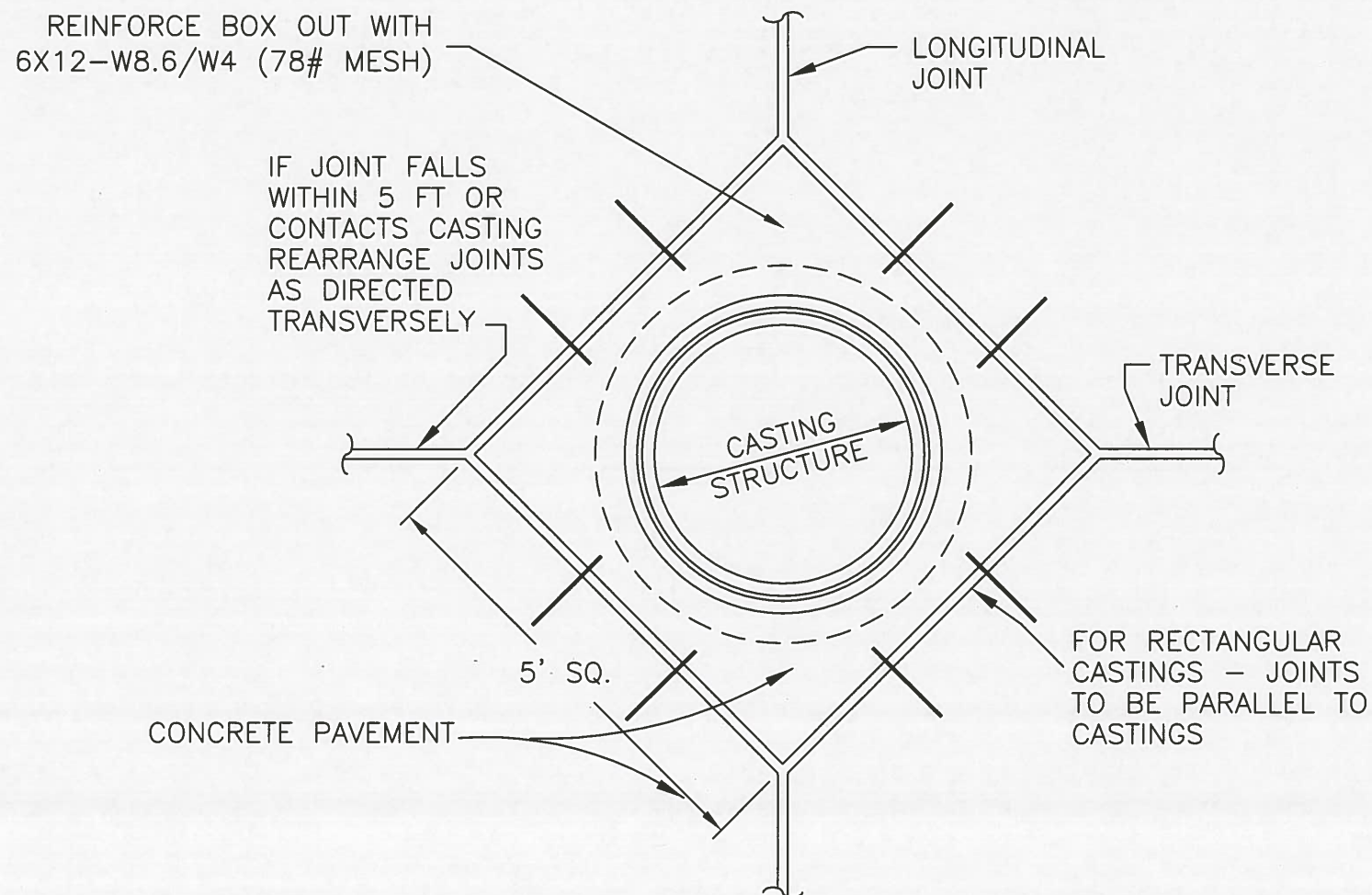


CATCH BASIN BOX OUT SECTION



CATCH BASIN BOX OUT DETAIL

NOTE:
PRECAST CONCRETE GRADE
RINGS WITH ASPHALT MASTIC
AT EACH JOINT IS REQUIRED
FOR ADJUSTMENTS TO FINISH
GRADE.

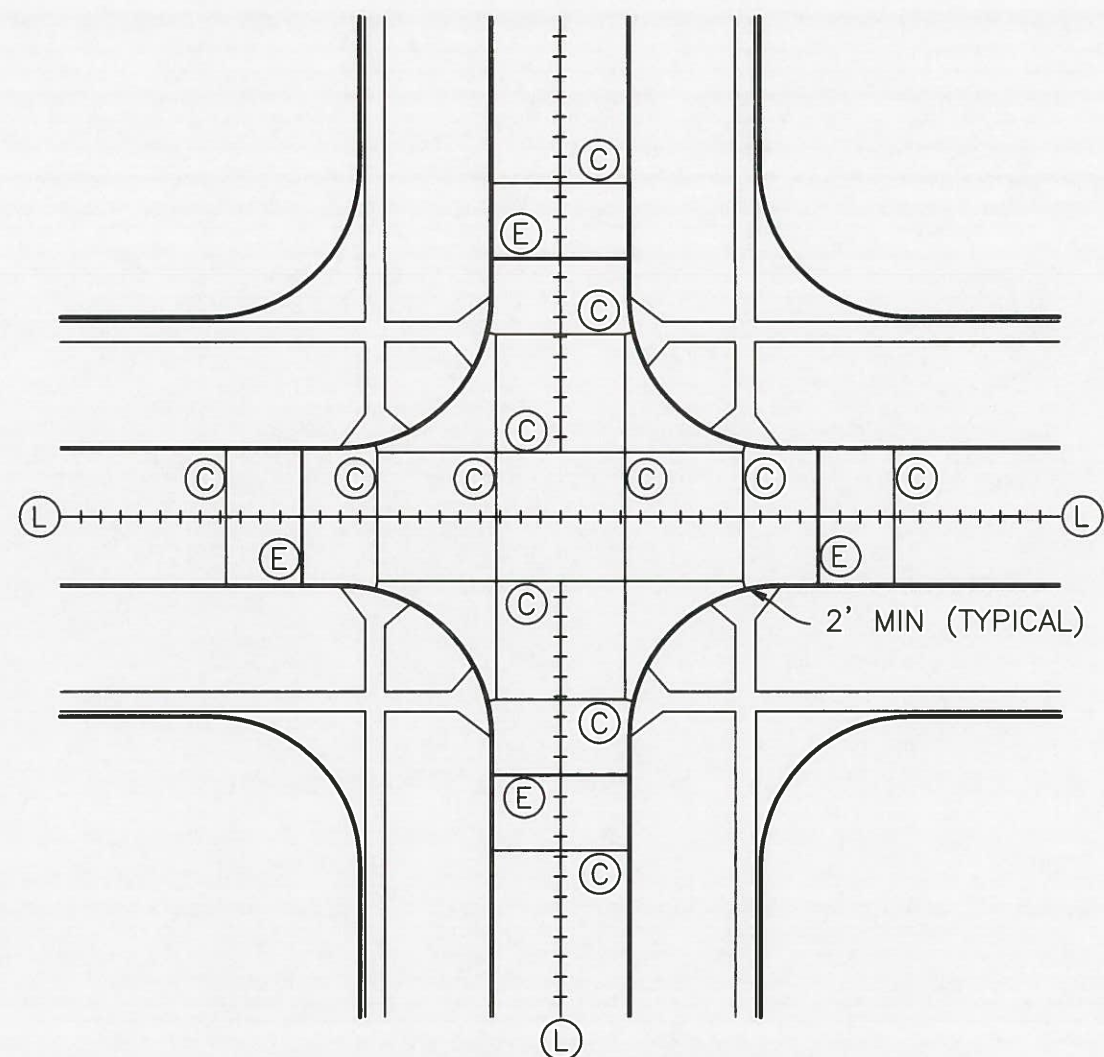


TYPICAL CASTING BOX OUT DETAIL

NOTE:

1. PROVIDE A BOND BREAK BETWEEN CASTING AND CONCRETE WITH OIL, PAINT OR OTHER SUITABLE MATERIAL.
2. SUBGRADE AND BASE GRADE ARE TO BE COMPACTED PRIOR TO PLACING CONCRETE IN MANHOLE OR CATCH BASIN BOX OUTS.
3. IN THE CASE OF EXISTING ROADWAYS, THE CITY MAY PERMIT THE USE OF CAST RISERS FOR ELEVATIONAL ADJUSTMENT OF MANHOLES AND OTHER TYPE OF CASTINGS. IN SUCH CASES, A (3) THREE POINT WELD SHALL BE REQUIRED ON ROUND CASTINGS AND A (4) POINT WELD SHALL BE REQUIRED ON SQUARE CASTINGS.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
BOX OUT DETAILS	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING P-7		2/2019



TYPICAL INTERSECTION PLAN

JOINT LEGEND

- (L) - - - - - STANDARD LONGITUDINAL JOINT
- (C) ——— STANDARD CONTRACTION JOINT
- (E) ——— EXPANSION JOINT

CONSTRUCTION NOTES AND STANDARDS

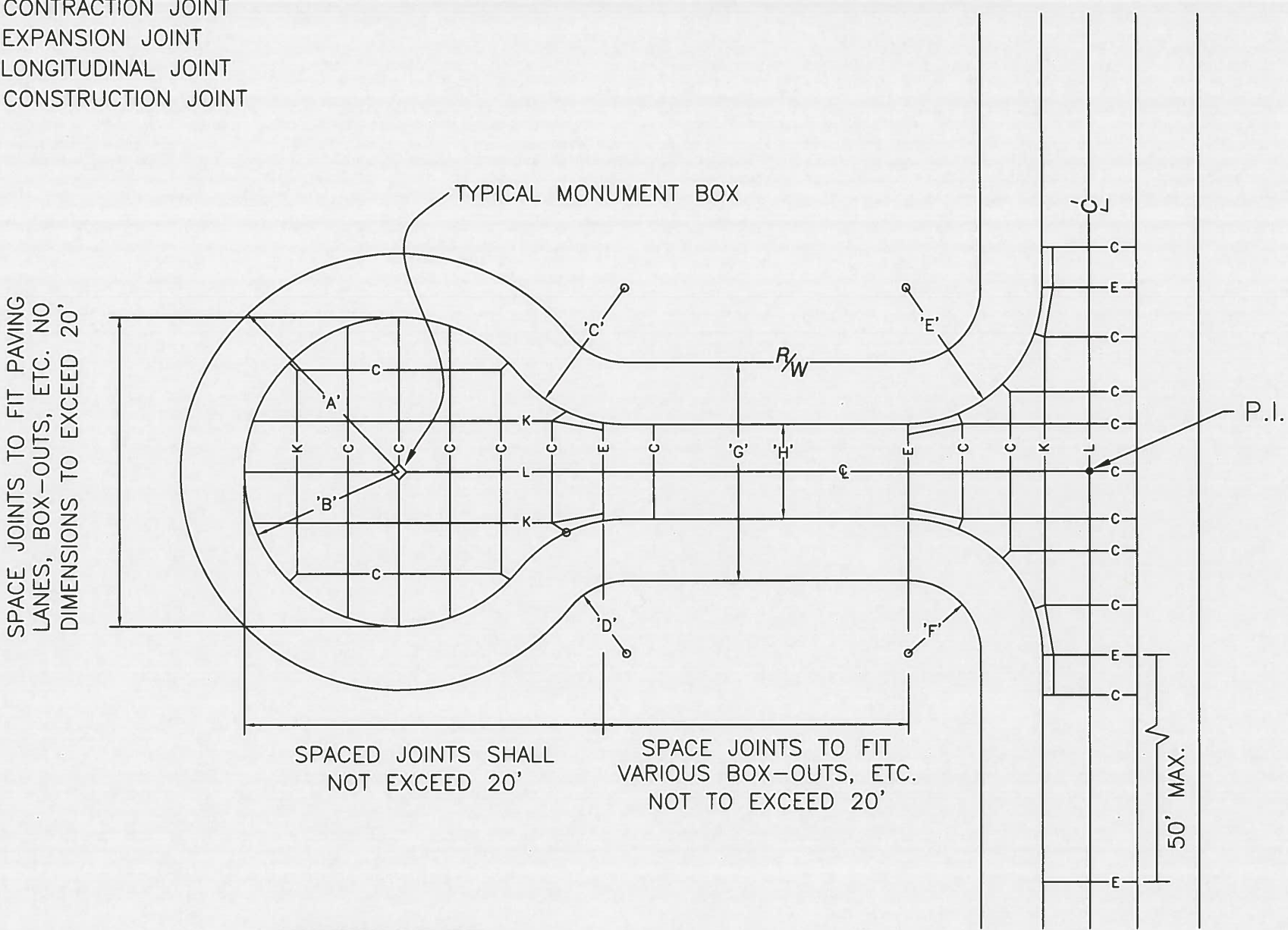
1. CONTRACTION JOINT SAW CUTS SHALL BE DONE AS SOON AS THE MACHINE CAN MAKE A CLEAN CUT WITH STRAIGHT EDGES MAXIMUM SPACING SHALL BE 15 FEET.
2. EXPANSION JOINTS IN CONFLICT WITH MONUMENT BOX LOCATIONS SHALL BE MOVED FIVE (5) FEET IN EITHER DIRECTION.
3. CONCRETE POURS OF ONE HUNDRED (100) CUBIC YARDS OR LESS IN ANY ONE (1) DAY SHALL REQUIRE THE TAKING MINIMUM OF TWO (2) 6"x12", OR THREE (3) 4"x8" TEST CYLINDERS BY A QUALIFIED TESTING LAB WITH ACI CERTIFIED TECHNICIAN AND OBTAIN A COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS.
4. CONCRETE POURS OF TEN (10) CUBIC YARDS OR LESS IN ANY ONE (1) DAY WILL NOT REQUIRE THE TAKING OF TEST CYLINDERS. HOWEVER, THE CONTRACTOR MAY DO SO AT HIS OPTION.
5. CONCRETE TEST CYLINDERS SHALL BE MADE DURING PAVING OPERATIONS AT THE MINIMUM RATE OF TWO (2) 6"x12", OR THREE (3) 4"x8" PER ONE HUNDRED (100) CUBIC YARDS AND TWO (2) TEST BEAMS FOR EACH DAY'S PLACEMENT OF CONCRETE, ONE (1) BEAM IN THE A.M. & ONE (1) BEAM IN THE P.M.
6. CYLINDERS AND BEAMS SHALL BE TAKEN BY A QUALIFIED TESTING LAB.
7. A BEAM IS TO BE TESTED AT SEVEN (7) DAYS CURING PERIOD. NO TRAFFIC SHALL BE PERMITTED ON THE NEWLY PLACED CONCRETE UNLESS THE SEVEN (7) DAY BEAM BREAK IS AT LEAST 600 PSI FLEXURAL STRENGTH.
8. ALL CONCRETE IS TO BE ODOT CLASS "QC-1" 4000 PSI WITH 7% AIR ENTRAINMENT, PLUS OR MINUS 2%.
9. ALL CONCRETE POURED FOR THE INSTALLATION OF ANY PUBLICLY DEDICATED (FUTURE OR PRESENT) STREET SHALL BE POURED BY AN AGITATING HAUL UNIT. NON-AGITATING HAUL UNITS (DUMP TRUCKS, ETC.) SHALL NOT BE USED FOR THE DELIVERY OF CONCRETE FROM A BATCH PLANT. A CONCRETE BATCH TICKET SHALL BE DELIVERED TO THE SITE INSPECTOR, SERVICE DIRECTOR, OR CITY ENGINEER WITH EACH LOAD OF CONCRETE DELIVERED FOR USE ON THE PROJECT.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
TYPICAL INTERSECTION	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING P-8		2/2019

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'
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.

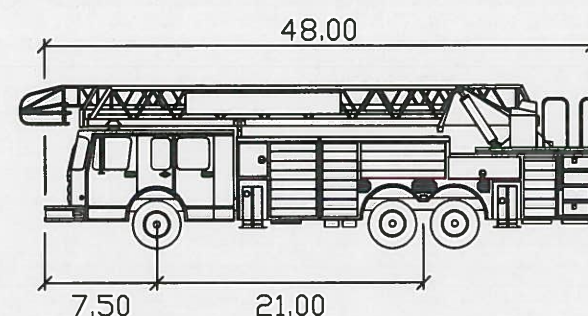
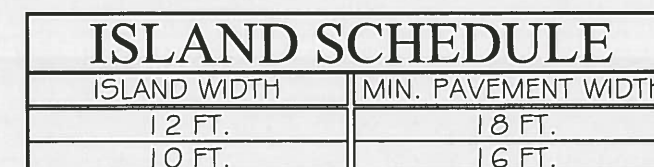
TEMPORARY CUL-DE-SACS SHALL BE PLACED WITHIN THE DEDICATED RIGHT-OF-WAY. THE DIAMETER SHALL MATCH THE DEDICATED RIGHT-OF-WAY DIMENSION FOR CITY OF AVON CODIFIED ORDINANCE 1246.04 A-B.

PAVEMENT SECTIONS ARE AS FOLLOWS:

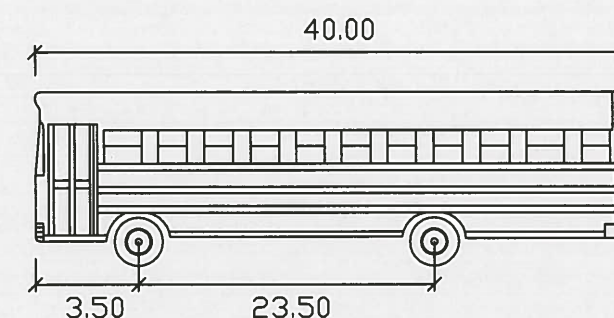
A) CASE #1 - TERMINUS LESS THAN 600 FT., AS MEASURED FROM THE P.I.
4" COMPACTED 304 LIMESTONE
2-1/2" OF 448 TYPE 1

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		2/2019



FIRE TRUCK	feet
Width	: 8.50
Track	: 7.50
Lock to Lock Time	: 6.00
Steering Angle	: 18.70

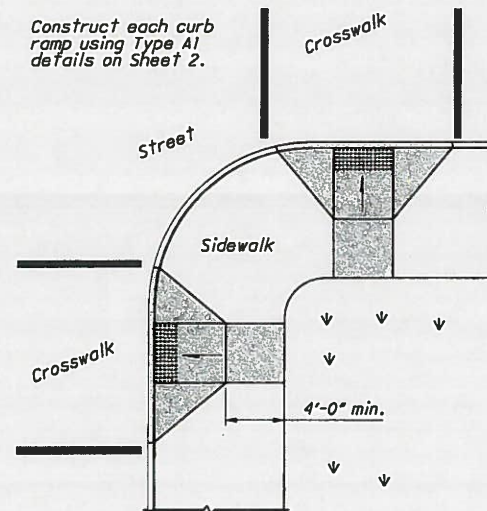


School Bus	feet
Width	: 8.50
Track	: 7.50
Lock to Lock Time	: 6.00
Steering Angle	: 38.40

NOTES:

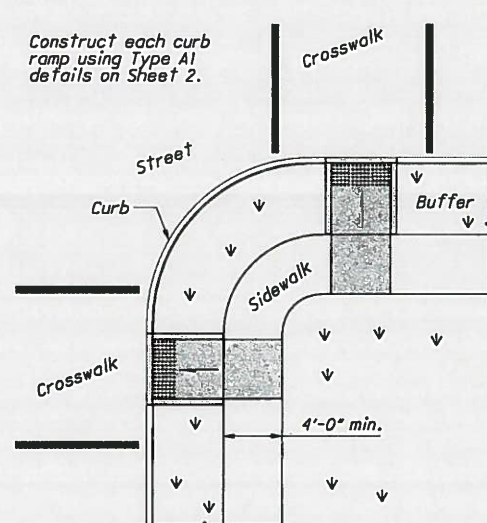
- 1.) VEHICLE PATH GENERATED BY AUTOTURN VERSION 4.1 OR LATER BY TRANSOFT SOLUTIONS, OR EQUAL APPROVED BY THE CITY ENGINEER.
- 2.) VEHICLE PATH SHOWN IS PROVIDED AS AN EXAMPLE ONLY. ALL TURNING MOVEMENTS IN AND OUT OF A PROPOSED ROADWAY OR DEVELOPMENT MUST BE MODELED AND FOUND ACCEPTABLE BY THE AVON FIRE CHIEF.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
TYPICAL ENTRY/EXIT AND ISLAND SETBACK	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING P-10		2/2019



Construct each curb ramp using Type A1 details on Sheet 2.

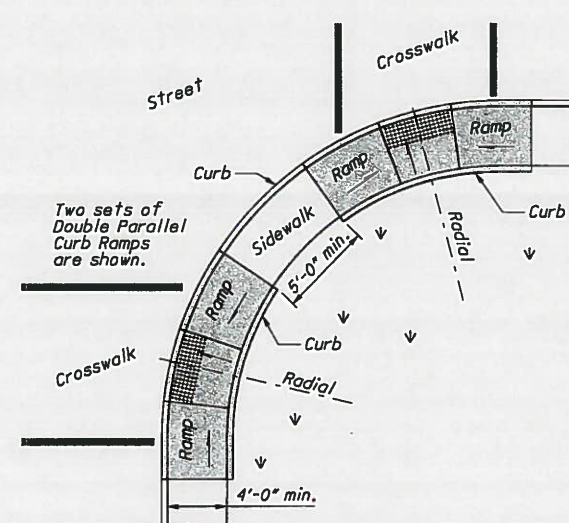
Use curb ramps with flared sides at locations with wide sidewalks.



Construct each curb ramp using Type A1 details on Sheet 2.

Use curb ramps with returned curbs where buffer is wide enough to accommodate ramp slope.

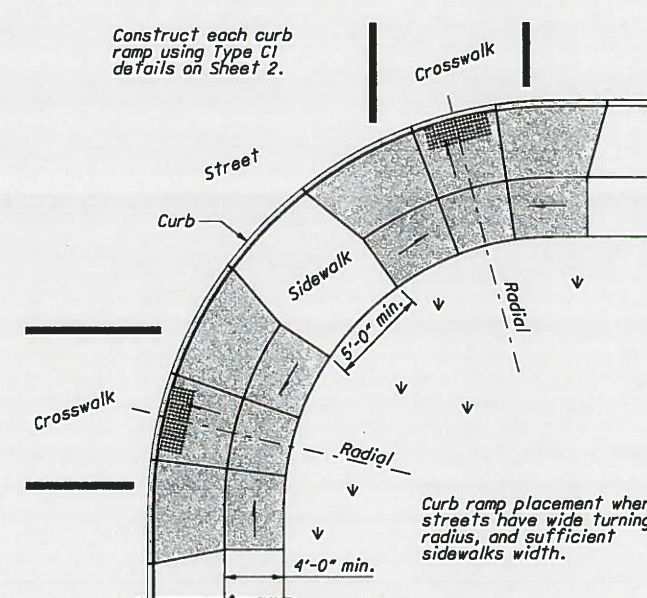
PERPENDICULAR CURB RAMPS



Two sets of Double Parallel Curb Ramps are shown.

Place on streets having wide turning radius and where sidewalks are narrow.

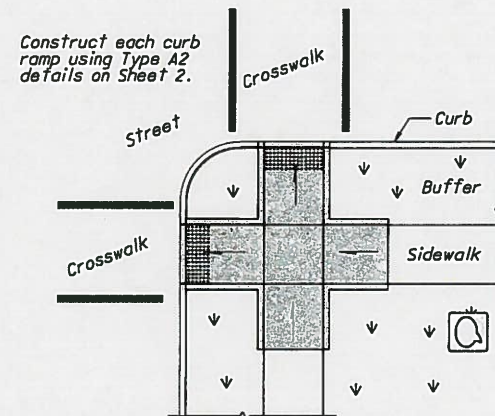
PARALLEL CURB RAMPS



Construct each curb ramp using Type C1 details on Sheet 2.

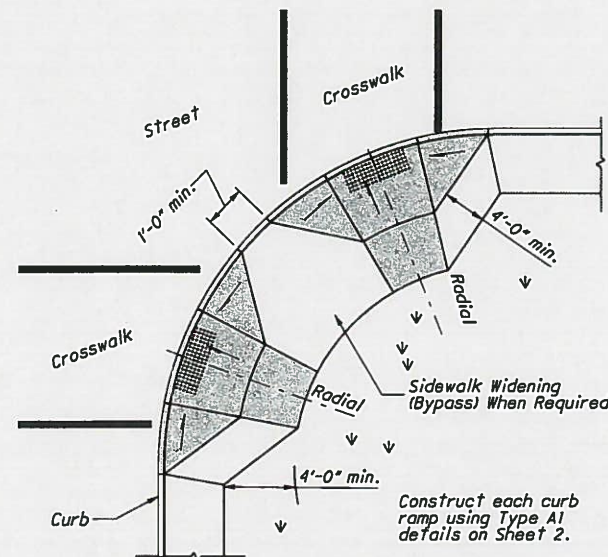
Curb ramp placement where streets have wide turning radius, and sufficient sidewalk width.

COMBINATION CURB RAMPS



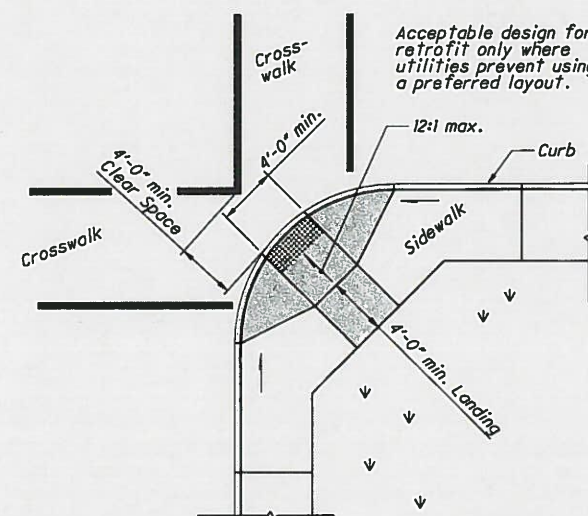
Construct each curb ramp using Type A2 details on Sheet 2.

PREFERRED CONSTRUCTION PLACEMENT



Acceptable design on corners with wide turning radius where user is able to maneuver within crosswalk limits so as not to encroach into adjacent traveled lanes.

PERPENDICULAR RAMPS



Acceptable design for retrofit only where utilities prevent using a preferred layout.

Use this design only for existing walks, and when site constraints prohibit other designs. The diagonal Type D ramp may be constructed as either a Perpendicular, Parallel or Combination curb ramp type. Avoid using where curb radii are less than 20'-0".

DIAGONAL RAMP (Type D)

NOTES

GENERAL: This drawing shows curb ramp types details and placement examples for curb ramp construction, including the installation of detectable warnings.

Curb ramp types are shown on Sheet 2 and include Perpendicular, Parallel, and Combined types as specified to be constructed in the locations shown on the project plans.

Curb ramps added to an existing intersection or walk should be individually detailed on the project plans to assure that the design is appropriate for site constraints and all items can be constructed to ADA standards. The contractor may adjust the placement of curb ramps if existing field conditions warrant with the approval of the Engineer.

PAYMENT: Measure and pay for the ramp area within the shaded limits of this drawing as Item 608 Curb Ramp, Square Foot. This includes the cost of any curb or curb and gutter, detectable warnings, landing areas and any additional materials, installation, grading, forming, and finishing required within the shaded area.

Work beyond the shaded ramp/landing area is paid for as curb (609) and walk (608). Removal of existing curb, walk (or existing curb ramps) are paid under Item 202.

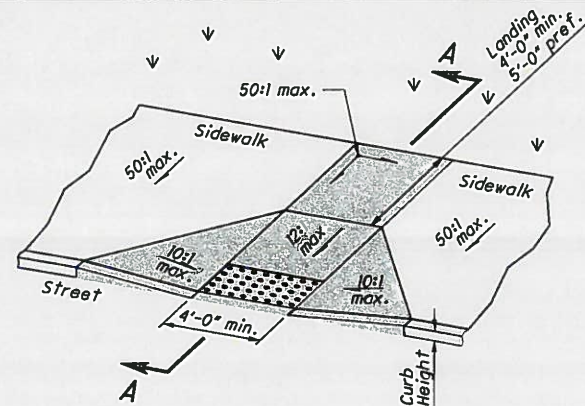
For at-grade crossing locations where only detectable warnings are required in order to achieve ADA compliance, measure and pay for the strip of detectable warnings as Item 608 Detectable Warning, Square Foot. The work to cast the tiles in place will also require removal of existing pavement (Item 202) to the nearest joint, or if no joint exists, a minimum of 4 feet.

ACCEPTABLE CONSTRUCTION PLACEMENT

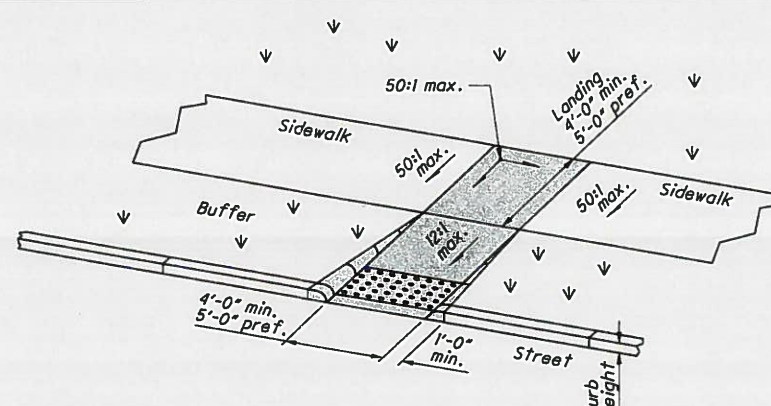
NOTE: MOST CURRENT ODOT VERSION TO BE USED AT TIME OF CONSTRUCTION.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS

CURB RAMP DETAIL	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING P-11		2/2019
		SHEET 1 OF 3

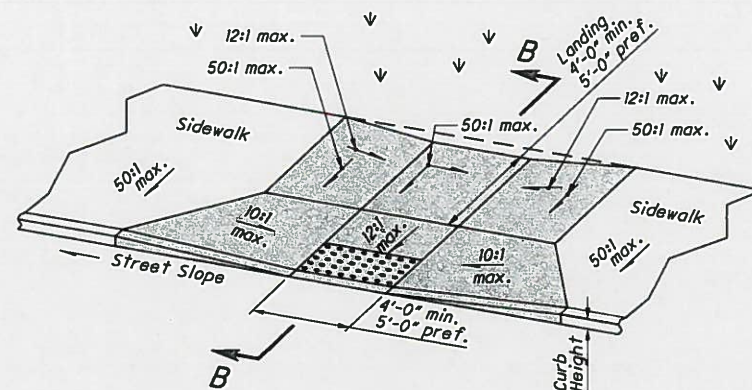


Type A1 (Perpendicular with flared sides)

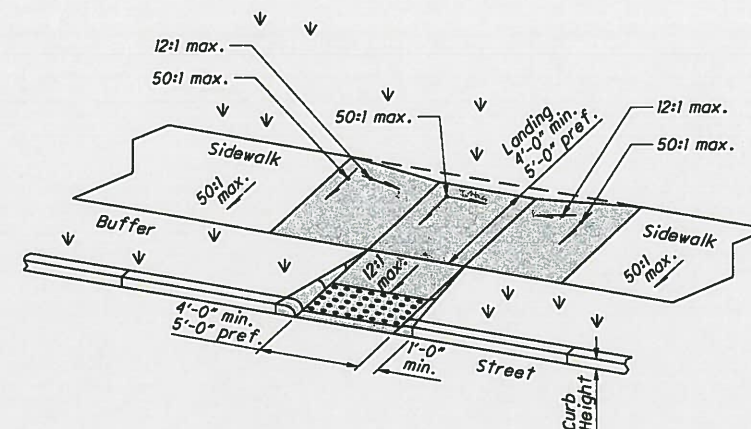


Type A2 (Perpendicular with returned curb)

PERPENDICULAR CURB RAMP DETAILS

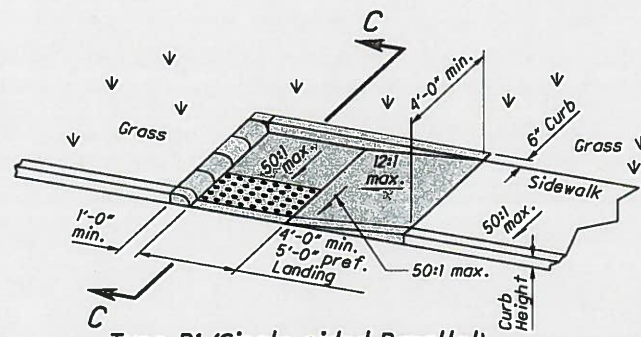


Type C1 (Combined with flared sides)

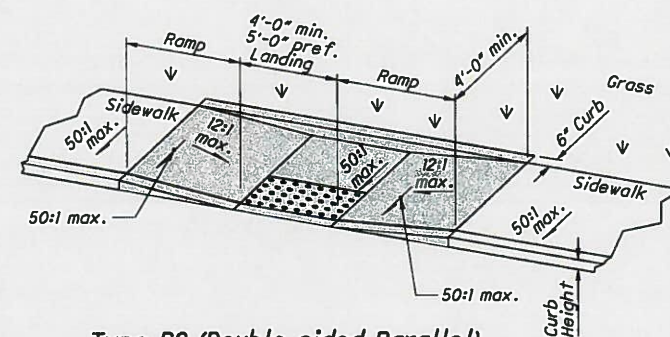


Type C2 (Combined with returned curb)

COMBINED CURB RAMP DETAILS

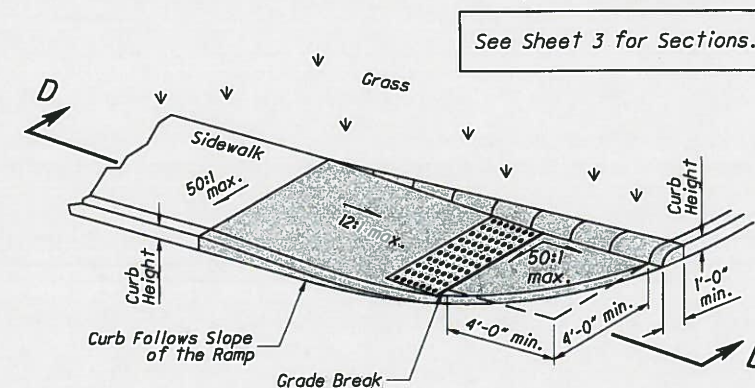


Type B1 (Single sided Parallel)



Type B2 (Double sided Parallel)

PARALLEL CURB RAMP DETAILS



Type B3 (Single sided Parallel)

NOTES CONTINUED

The running slope of the ramp is preferred to be 12:1 or flatter. In existing sidewalks, where the maximum ramp slope is not feasible due to site constraints (e.g. utility poles or vaults, right-of-way limits) it may be reduced as follows:

- A) 10:1 for a max. rise of 6".
- B) 8:1 for a max. rise of 3".
- C) 6:1 over a max. run of 2'-0" for historic areas where a flatter slope is not feasible.

To prevent chasing the grade indefinitely, the transition from existing sidewalk to the shaded curb ramp area is not required to exceed 15 feet in length.

While ramps may be skewed to the crosswalk, the entire lower landing area must fall within the cross walk that the ramp serves and cannot be located in the traveled lane of opposing traffic.

The counter slope of the gutter or street at the foot of a curb ramp, landing, or blended transitions shall be 20:1 or flatter.

The bottom edge of the ramp shall change planes perpendicular to the landing.

The edge of the curb shall be flush with the edge of the adjacent pavement and gutter and surface slopes that meet grade breaks shall also be flush.

Ramp landings shall be 4' min. x 4' min. with a 50:1 or flatter cross slope and running slope.

DETECTABLE WARNINGS: Install Detectable Warnings on each curb ramp with approved materials, as shown on Sheet 3. Install these proprietary products as per manufacturer's written instructions.

DRAINAGE: Contractor is to ensure the base of each constructed curb ramp allows for proper drainage, without exceeding allowable cross slope or ramp slopes. Vertical change in level exceeding 1/8" between the 1) pavement and gutter, and 2) gutter and ramp, are not allowed.

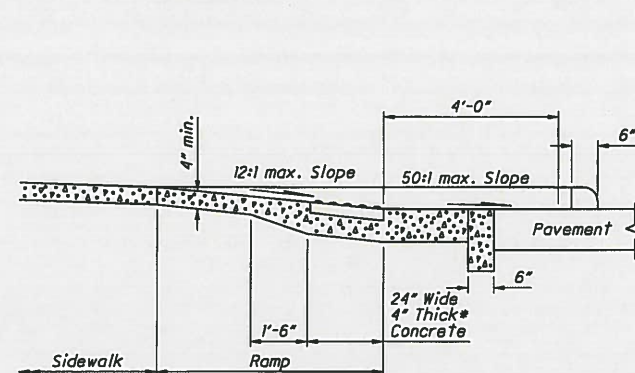
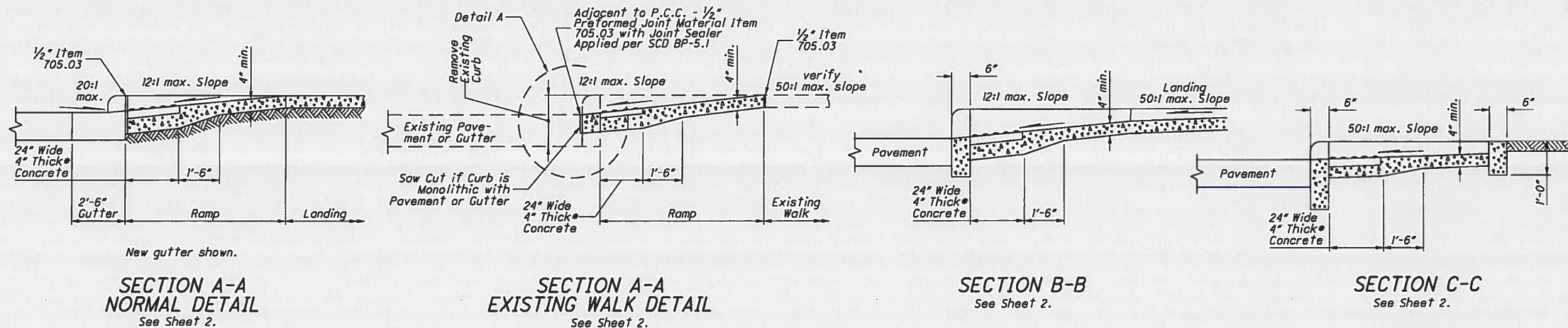
SURFACE TEXTURE: Texture concrete surfaces by coarse brooming transverse to the ramp slopes to be rougher than the adjacent walk.

JOINTS: Provide expansion joints in the curb ramp as extensions of walk joints, and consistent with Item 608.03 requirements for a new concrete walk. Provide a 1/2" Item 705.03 expansion joint filler around the edge of ramps built in existing concrete walks. Lines shown on this drawing indicate the ramp edges and slope changes, and do not necessarily indicate joint lines.

NOTE: MOST CURRENT ODOT VERSION TO BE USED AT TIME OF CONSTRUCTION.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS

CURB RAMP DETAIL	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING P-11		2/2019
		SHEET 2 OF 3



*Where possible, pour ramp area integral with the curb, otherwise use 6" thick walk.

DETECTABLE WARNINGS NOTES

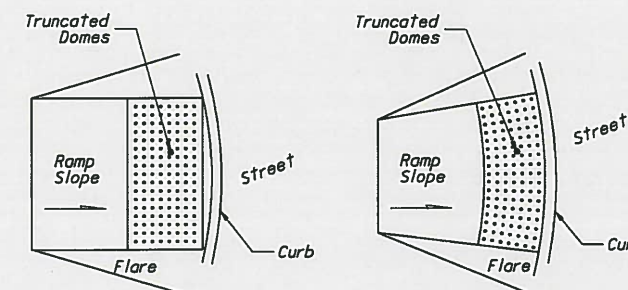
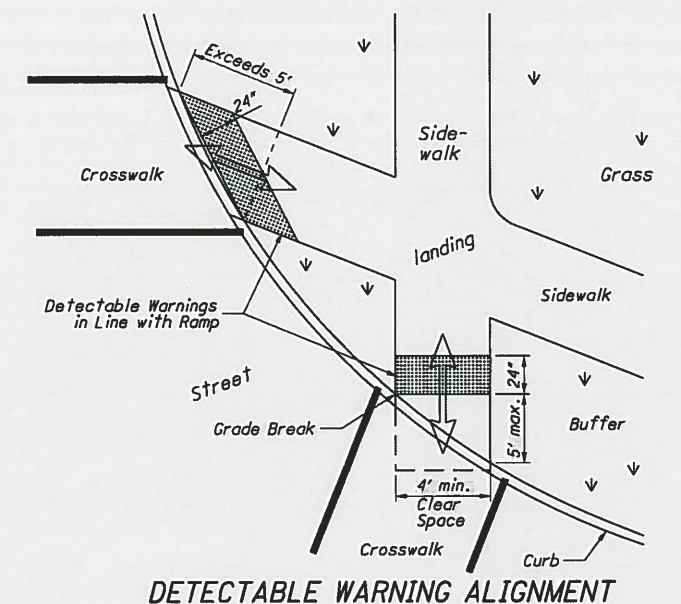
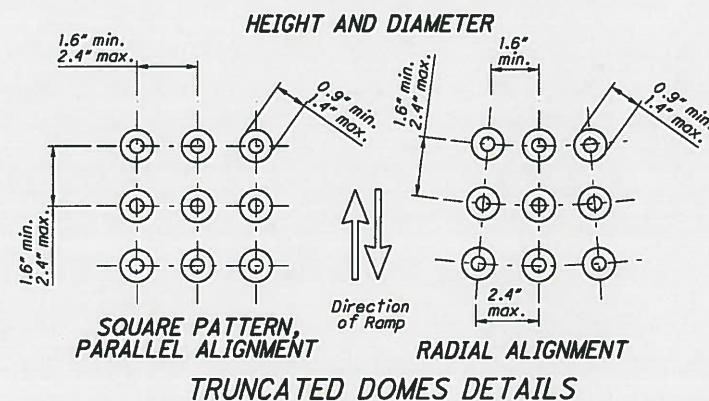
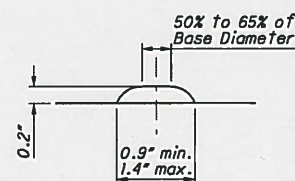
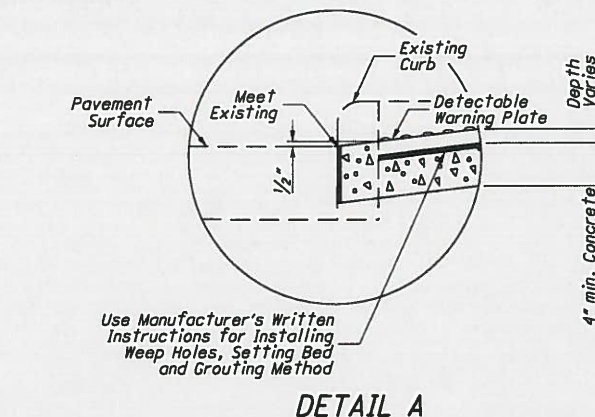
GENERAL: Detectable Warnings are a distinctive surface pattern of truncated domes which are detectable by cane or underfoot to alert people with vision impairments of their approach to streets and hazardous drop-offs.

PLACEMENT: Detectable warnings are to be installed at any location where pedestrians might cross paths with vehicular traffic lanes, such as the base of curb ramps or at blended curbs. A 24" strip of domes is to be installed for the full width of the ramp or walk. Typical street corner placement locations are shown on Sheet 1.

The depth of concrete underneath detectable warning products shall be a minimum of 4". See DETAIL A.

ALIGNMENT: Truncated domes should be aligned with the primary direction of the ramp as shown on the DETECTABLE WARNING ALIGNMENT Detail. Normally the detectable warnings should be flush with the back of the curb, but for skewed conditions see DETECTABLE WARNING ALIGNMENT Detail. For non-standard layouts, detectable warning materials may have to be mitered and placed segmentally.

PRODUCTS & COLORS: Color of the detectable warnings should contrast with surrounding concrete walk and ramp. Black is not an acceptable color. Approved products and guidance on color may be found on the Office of Roadway Engineering Service's Detectable Warnings Approved List. Install products as per manufacturer's printed instructions.

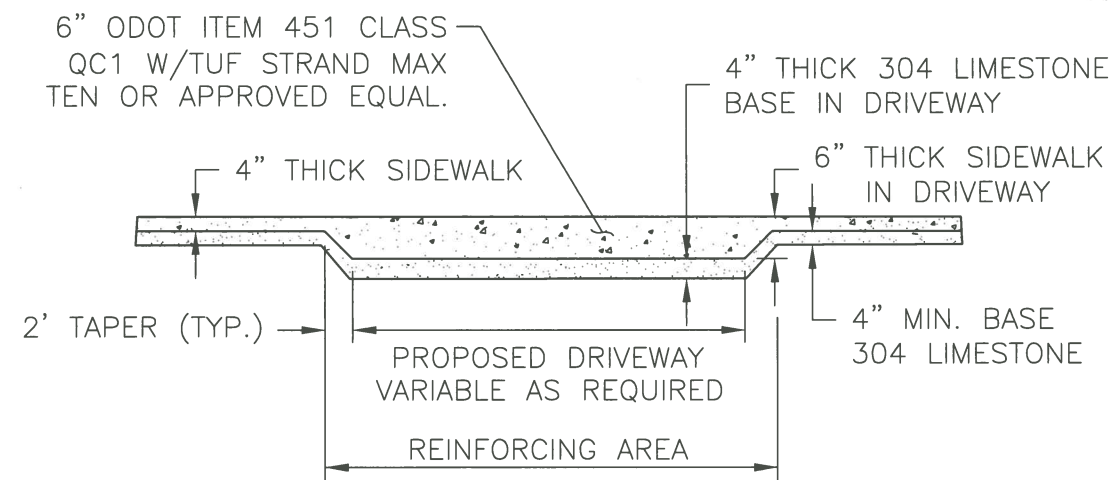
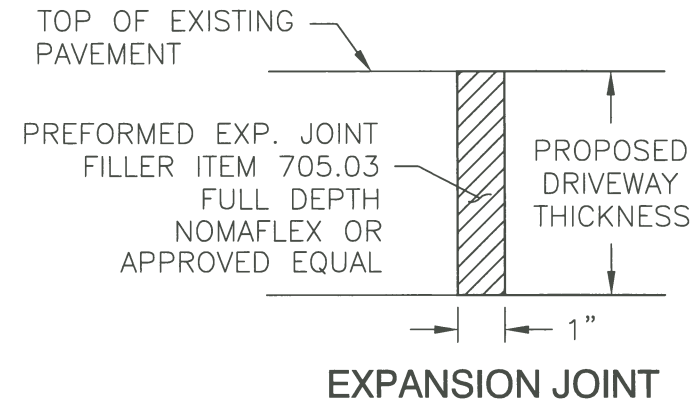


NOTE: MOST CURRENT ODOT VERSION TO BE USED AT TIME OF CONSTRUCTION.

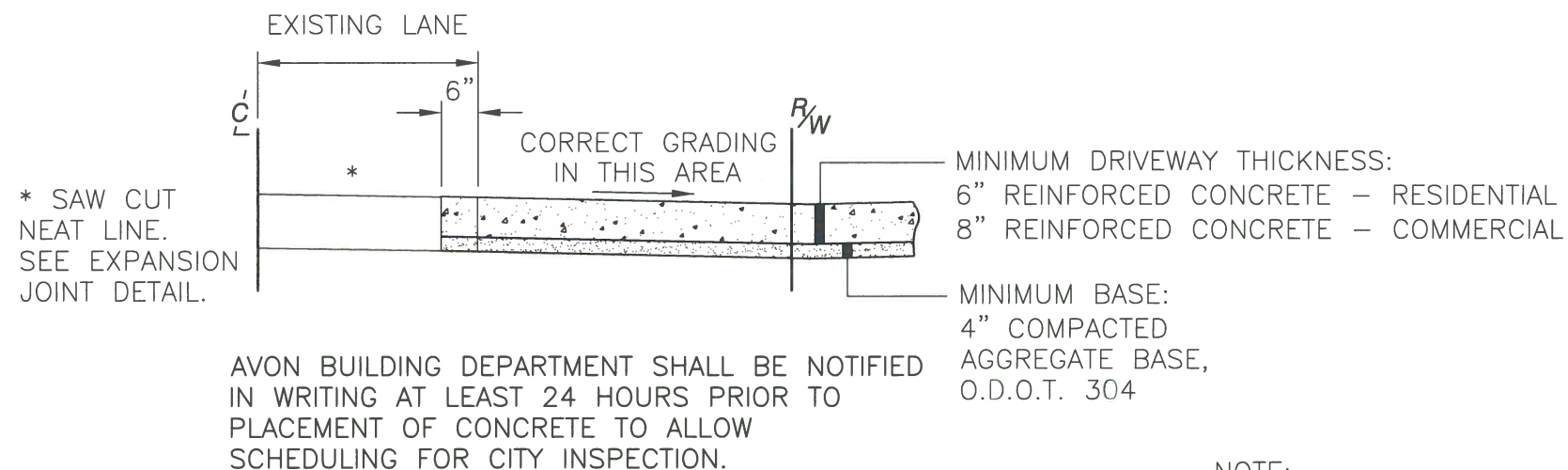
CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
CURB RAMP DETAIL	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING P-11		2/2019
		SHEET 3 OF 3

SIDEWALK WIDTHS BY ZONING DISTRICT

RESIDENTIAL 4' (R1 & R2)
 COMMERCIAL 5' (R3, M1, O1, O2, C1, C3 & C4)
 FRENCH CREEK DISTRICT 6' (C2)
 *PER CODIFIED ORDINANCE 1246.05

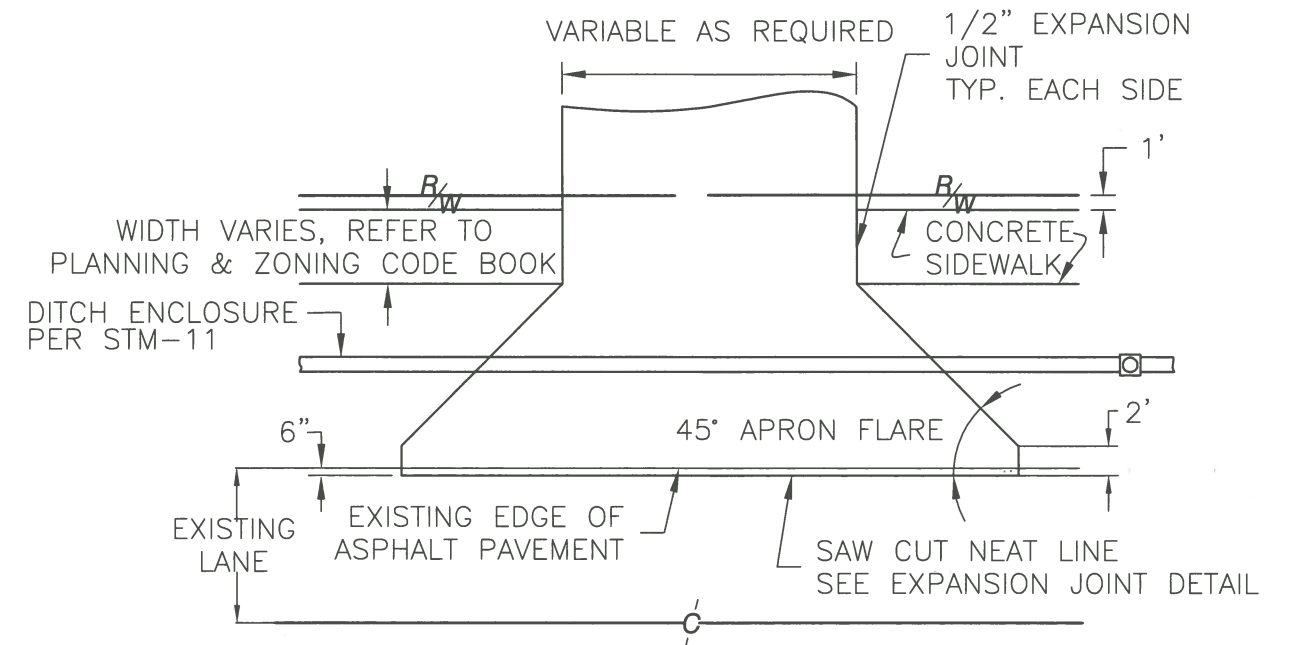


PROPOSED DRIVEWAY CROSS-SECTION

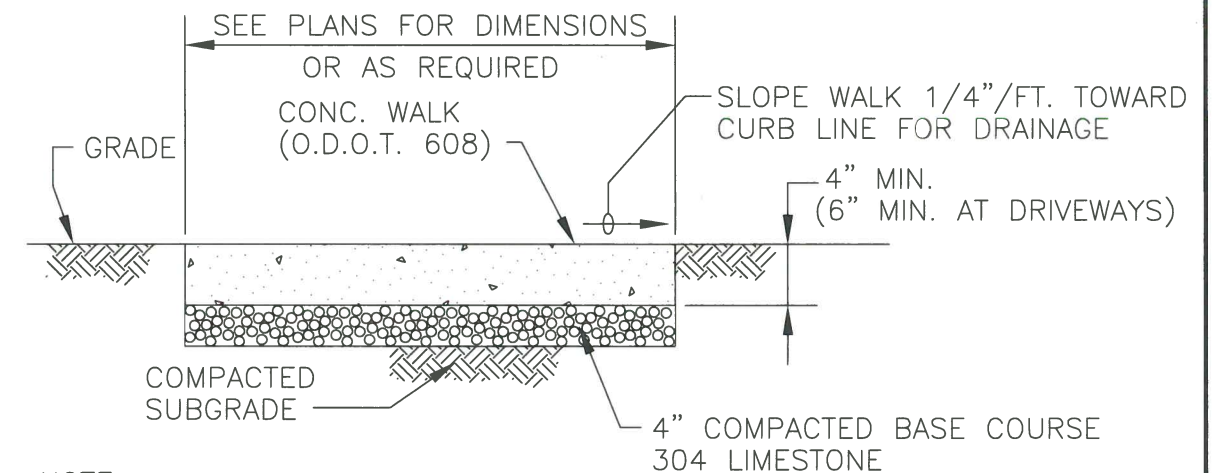


PROPOSED DRIVEWAY PROFILE

NOTE:
 FULL DEPTH, 1/2" EXPANSION JOINT FILLER SHALL BE PROVIDED ONCE EVERY 50 LINEAL FEET OF WALK



PROPOSED DRIVEWAY PLAN VIEW



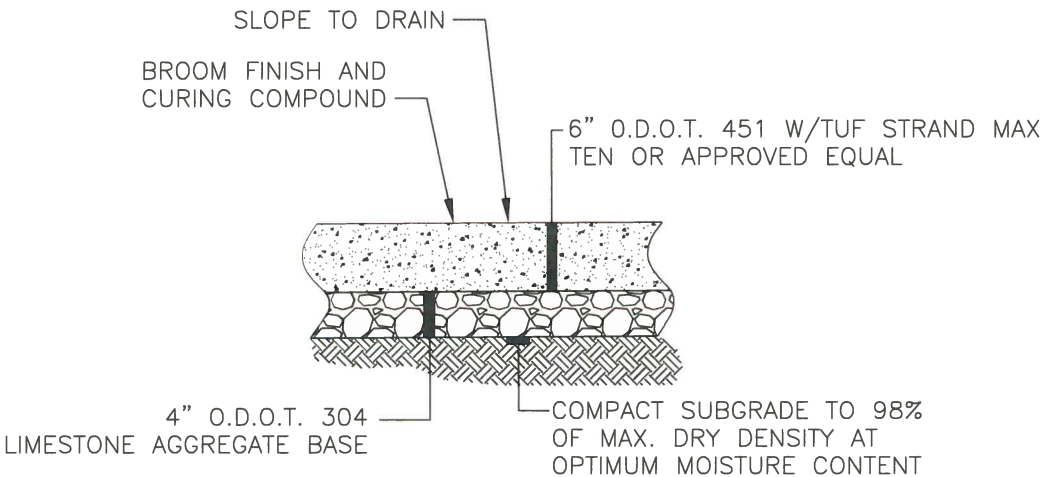
- NOTE:
- 1.) FULL DEPTH, 1/2" EXPANSION JOINT FILLER SHALL BE PROVIDED ONCE EVERY 50 LINEAL FEET OF WALK.
 - 2.) FIBROUS REINFORCING PER DRIVEWAY CROSS-SECTION IN DRIVEWAY AREA ONLY.
 - 3.) TROVELED JOINT SHALL BE PROVIDED EVERY 5'.

CONCRETE WALK DETAIL

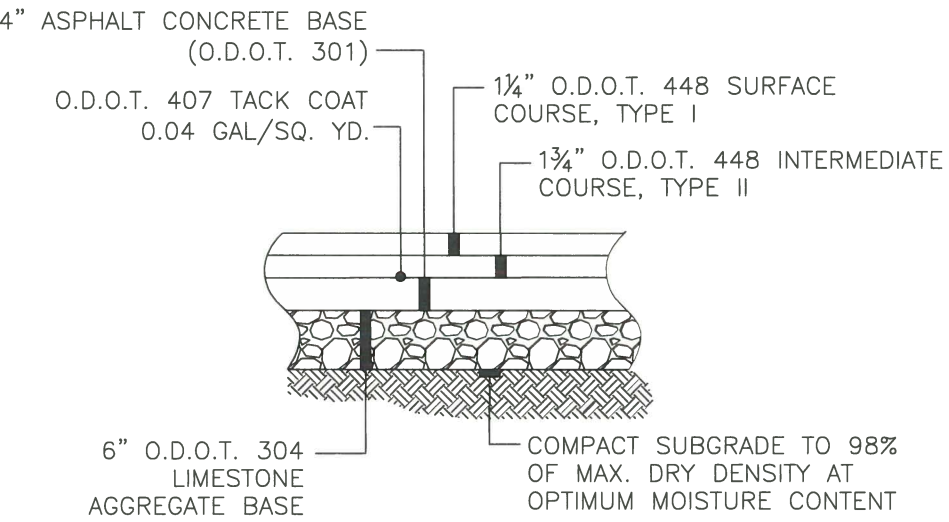
CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
CONCRETE DRIVEWAY & SIDEWALK CONSTRUCTION DETAIL	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING P-12		2/2019

CONCRETE DRIVEWAY NOTES

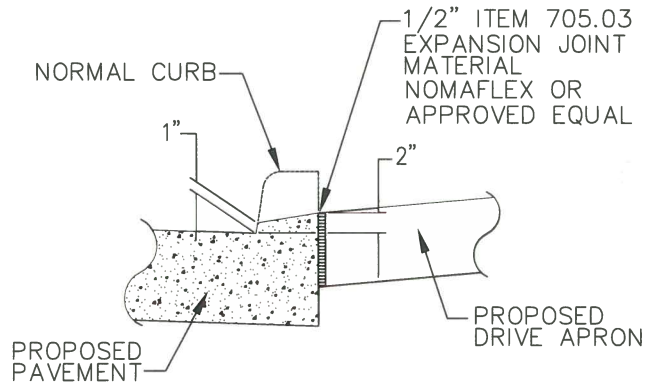
- USE QC-1 4000 P.S.I. @ 28 DAYS WITH 7 ±2% AIR ENTRAINMENT
- APPLY O.D.O.T. 451.10 CURING COMPOUND TO CONCRETE SURFACE A.S.A.P.
- SAW ALL JOINTS AS SOON AS SAW CAN BE PUT ON PAVEMENT WITHOUT CHIPPING OF SAWCUTS.
- SEAL ALL JOINTS (INCLUDING TOP OF EXPANSION JOINTS) WITH 1" MIN. DEPTH O.D.O.T. 705.04 JOINT SEALER.



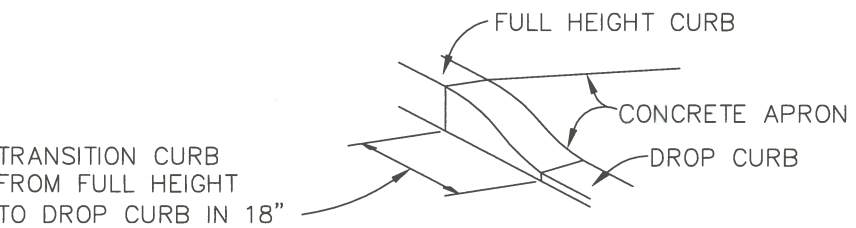
CONCRETE DRIVEWAY APRON
NO SCALE



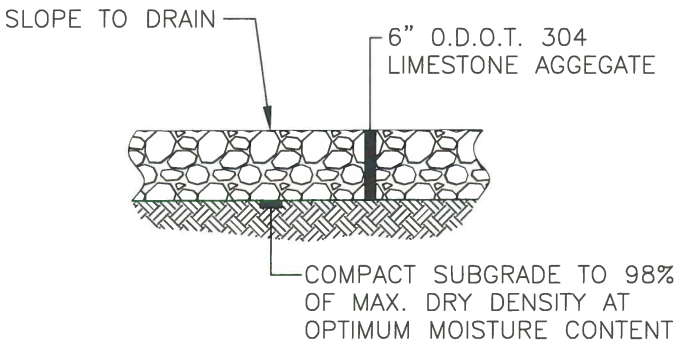
ASPHALT DRIVE APRON
NO SCALE



TYPICAL DROP CURB
NO SCALE

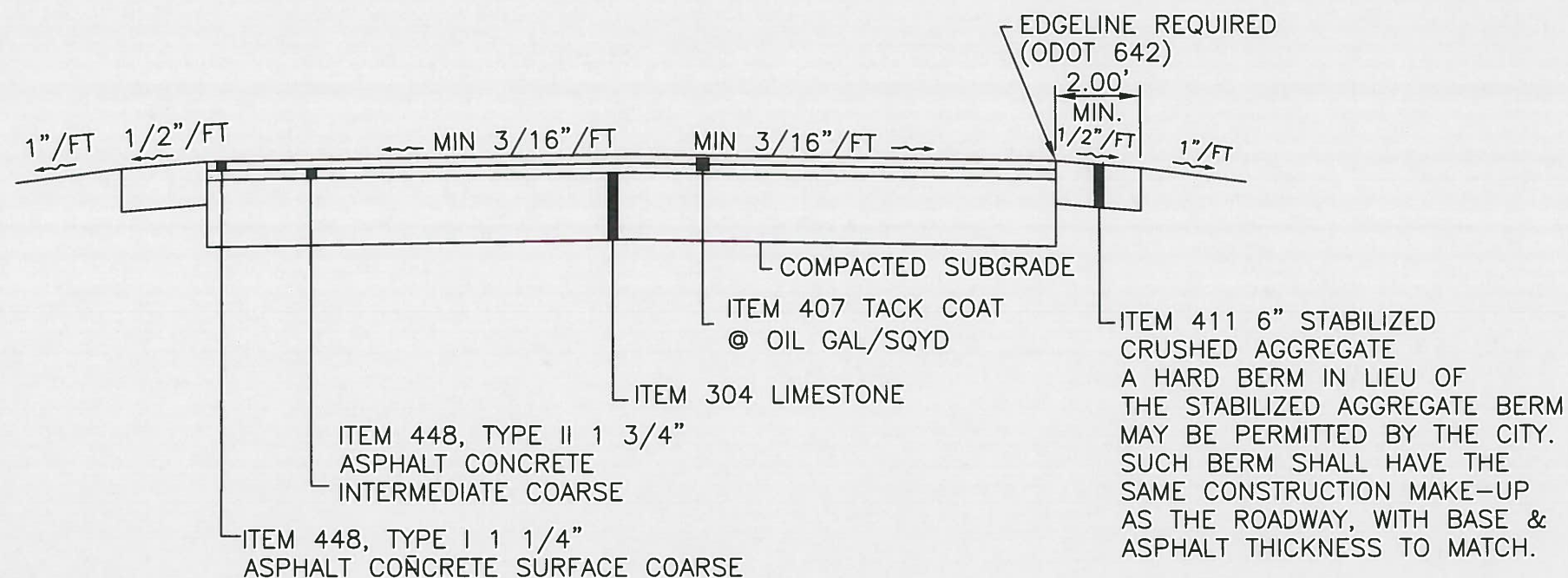


TYPICAL CURB TRANSITION
NO SCALE



GRAVEL DRIVEWAY APRON
NO SCALE

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
RESIDENTIAL DRIVE APRONS	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING P-13		2/2019



TYPICAL ASPHALTIC CONCRETE PAVEMENT CROSS-SECTION

REFERENCES

AASHTO – AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS
 ODOT – OHIO DEPARTMENT OF TRANSPORTATION

* CONSTRUCTION AND MATERIAL SPECIFICATION
 * LOCATION AND DESIGN MANUAL

ASTM – AMERICAN SOCIETY FOR TESTING MATERIALS
 AI – ASPHALT INSTITUTE

MINIMUM ASPHALT DESIGN REQUIREMENTS

REGULAR DUTY (TRUCK TRAFFIC LESS THAN 70,000 LBS)

6" O.D.O.T. 304 LIMESTONE
 6" O.D.O.T. 301 ASPHALT (IN 2 LIFTS)
 1 3/4" O.D.O.T. 448 TYPE II INTERMEDIATE COURSE
 1 1/4" O.D.O.T. 448 TYPE I SURFACE COURSE

HEAVY DUTY

6" O.D.O.T. 304 LIMESTONE
 8" O.D.O.T. 301 ASPHALT (IN 2 LIFTS)
 1 3/4" O.D.O.T. 448 TYPE II INTERMEDIATE COURSE
 1 1/4" O.D.O.T. 441 TYPE I SURFACE COURSE

NOTES:

NEW ASPHALT PAVEMENT

- 1) ALL NEW ASPHALT CONCRETE PAVEMENT SHALL BE DESIGNED BY OR UNDER THE SUPERVISION OF A QUALIFIED ENGINEER, EMPLOYING THE DESIGN PARAMETERS OUTLINED IN THE MOST RECENT ISSUE OF THE AASHTO PAVEMENT DESIGN GUIDES AND ODOT ROADWAY DESIGN MANUAL. VOLUME ONE.

TACK COAT (ODOT 407)

- 2) TACK COAT SHALL BE REQUIRED BETWEEN PAVEMENT LAYERS OF 301, 448 TYPE II & 448 TYPE I.

ASPHALTIC CONCRETE REHABILITATION

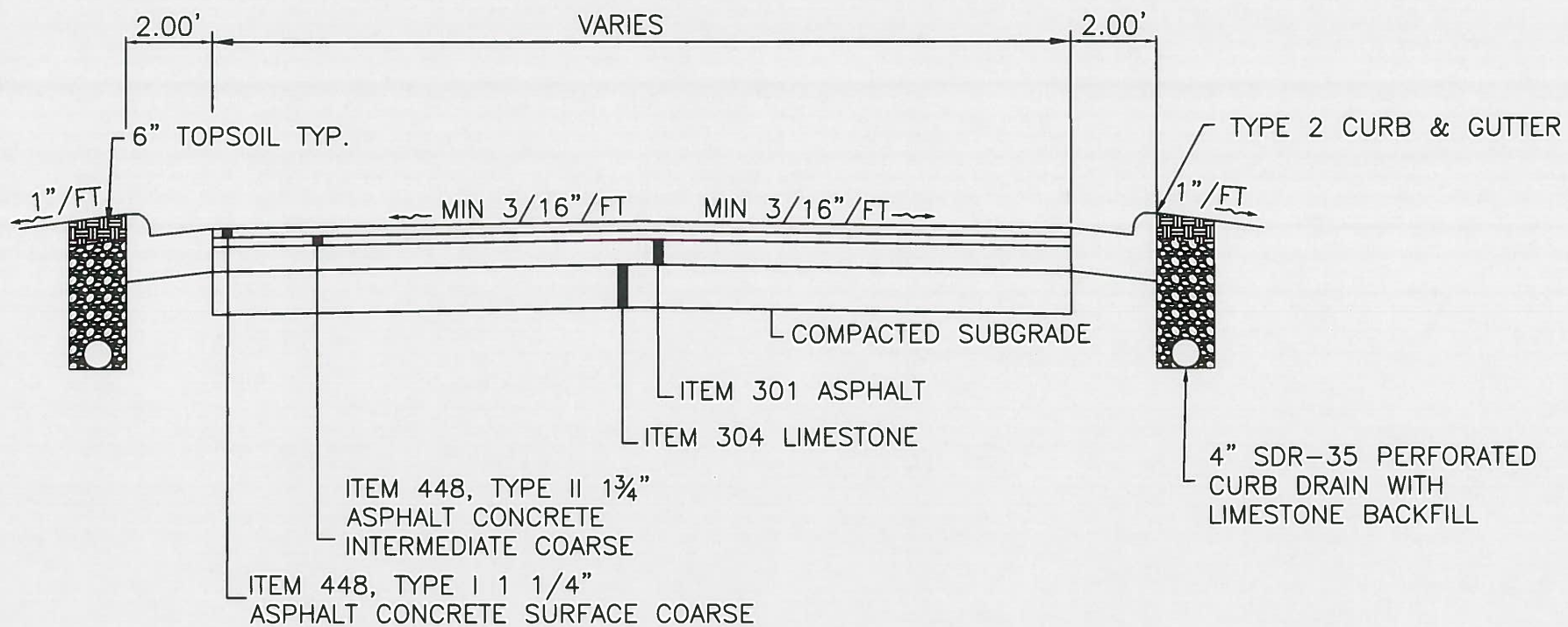
THE FOLLOWING PROCEDURES MAY BE USED FOR THE REHABILITATION OF EXISTING ASPHALTIC PAVEMENTS. THE SELECTION OF THE TYPE OF REHABILITATION IS OFTEN INFLUENCED BY ECONOMICS, BUT A DESIGN ANALYSIS SHOULD BE PERFORMED BY A QUALIFIED ENGINEER WHO SHALL MAKE A RECOMMENDATION BASED ON THE CONDITION OF EXISTING PAVEMENT AND BASE, TRAFFIC LOADING PATTERNS, AND A LIFE-CYCLE COST ANALYSIS. A MATERIAL, CONSTRUCTION AND PERFORMANCE SPECIFICATION SHALL BE PREPARED BY THE ENGINEER.

- * PAVEMENT OVERLAY
- * PAVEMENT PLANNING W/ PAVEMENT OVERLAY
- * ASPHALT PAVEMENT RECYCLING
 - A. PULVAMIXING
 - B. SINGLE-PASS RECYCLING

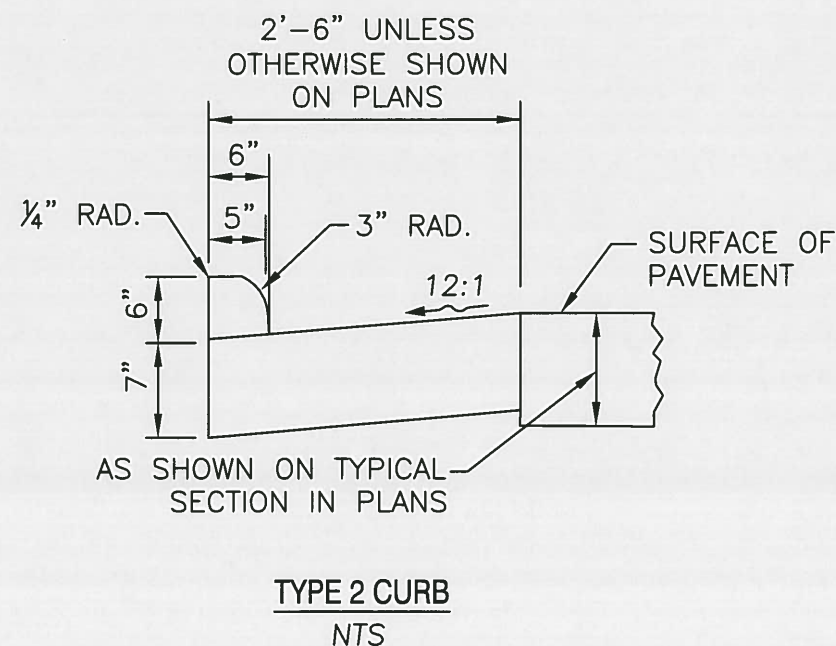
NOTE: AN INDEPENDENT TESTING LABORATORY SHOULD BE EMPLOYED TO ANALYZE THE EXISTING PAVEMENT MIX AND RECOMMEND THE FINAL MIX DESIGN.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS

ASPHALT PAVEMENT DETAIL	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING P-14		2/2019



**TYPICAL ASPHALTIC CONCRETE PAVEMENT
WITH CONCRETE CURB & GUTTER**



MINIMUM ASPHALT DESIGN REQUIREMENTS

REGULAR DUTY (TRUCK TRAFFIC LESS THAN 70,000 LBS)

- 6" O.D.O.T. 304 LIMESTONE
- 6" O.D.O.T. 301 ASPHALT (IN 2 LIFTS)
- 1 3/4" O.D.O.T. 448 TYPE II INTERMEDIATE COURSE
- 1 1/4" O.D.O.T. 448 TYPE I SURFACE COURSE

HEAVY DUTY

- 6" O.D.O.T. 304 LIMESTONE
- 8" O.D.O.T. 301 ASPHALT (IN 2 LIFTS)
- 1 3/4" O.D.O.T. 448 TYPE II INTERMEDIATE COURSE
- 1 1/4" O.D.O.T. 441 TYPE I SURFACE COURSE

NOTES:

NEW ASPHALT PAVEMENT

- 1) ALL NEW ASPHALT CONCRETE PAVEMENT SHALL BE DESIGNED BY OR UNDER THE SUPERVISION OF A QUALIFIED ENGINEER, EMPLOYING THE DESIGN PARAMETERS OUTLINED IN THE MOST RECENT ISSUE OF THE AASHTO PAVEMENT DESIGN GUIDES AND ODOT ROADWAY DESIGN MANUAL. VOLUME ONE.

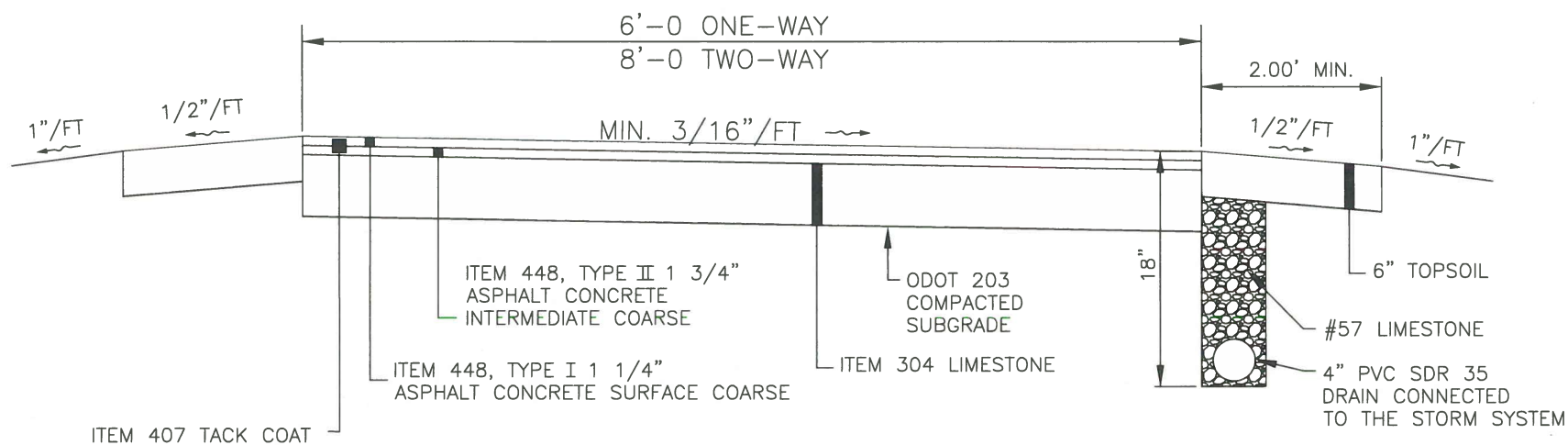
TACK COAT (ODOT 407)

- 2) TACK COAT SHALL BE REQUIRED BETWEEN PAVEMENT LAYERS OF 301, 448 TYPE II & 448 TYPE I.

REFERENCES

- AASHTO - AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS
- ODOT - OHIO DEPARTMENT OF TRANSPORTATION
- * CONSTRUCTION AND MATERIAL SPECIFICATION
- * LOCATION AND DESIGN MANUAL
- ASTM - AMERICAN SOCIETY FOR TESTING MATERIALS
- AI - ASPHALT INSTITUTE

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
ASPHALT PAVEMENT DETAIL WITH CONCRETE CURB & GUTTER	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING P-15		2/2019



TYPICAL WALK, BICYCLE & CARTPATH CROSS-SECTION

ASPHALT DESIGNS

LIGHT DUTY - (WALKWAY, BIKEWAY AND CARTPATH)

7" O.D.O.T. #304 LIMESTONE (COMPACTED IN TWO LIFTS)

1 3/4" O.D.O.T. #448 TYPE II ASPHALT CONCRETE INTERMEDIATE COARSE

1 1/4" O.D.O.T. #448 TYPE I ASPHALT CONCRETE SURFACE COARSE

NOTE:

TACK COAT (ODOT 407)

TACK COAT SHALL BE REQUIRED BETWEEN PAVEMENT LAYERS OF 448 TYPE II & 448 TYPE I.

WALK, BICYCLE & CARTPATHS

DESIGN AND CONSTRUCTION OF BICYCLE FACILITIES SHOULD BE CONSIDERED CAREFULLY TO ACCOUNT FOR UNIQUE VERTICAL AND HORIZONTAL ALIGNMENT REQUIREMENTS, AS WELL AS UNIQUE TRAFFIC CONTROL AND SURFACE REQUIREMENTS. THE GUIDELINES PRESENTED IN THE LATEST PUBLICATION: "GUIDE FOR THE DEVELOPMENT OF BICYCLE FACILITIES" BY AASHTO, SHALL BE USED AS A DESIGN REFERENCE.

NOTES:

- 1) CART PATHS, WALKING PATHS & BICYCLE PATHS
REQUIRED WIDTH IS 8'
REQUIRED WIDTH IN R-1 & R-2 ZONED AREAS IS 6'
-MATERIAL SHALL BE ASPHALT (PREFERRED)
-IN R-1 & R-2 ZONED AREAS ONLY
CONCRETE WILL BE CONSIDERED/REVIEWED

- 2) COMPACTED SUBGRADE SHALL COMPLY WITH ODOT ITEM 203 UNLESS ALTERNATE METHOD IS APPROVED BY THE CITY ENGINEER. PROOF ROLL IS REQUIRED. MINIMUM 40,000 LBS.

REFERENCES

- AASHTO - AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS
 ODOT - OHIO DEPARTMENT OF TRANSPORTATION
 * CONSTRUCTION AND MATERIAL SPECIFICATION
 * LOCATION AND DESIGN MANUAL
 ASTM - AMERICAN SOCIETY FOR TESTING MATERIALS
 AI - ASPHALT INSTITUTE

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS

WALK, BICYCLE CARTPATH DETAIL	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING P-16		2/2019

STREET SIGN SPECIFICATIONS

- 1) GENERAL: ALL SIGNING MATERIALS SHALL MEET THE LATEST VERSIONS OF THE "OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES", ODOT'S "CONSTRUCTION AND MATERIAL SPECIFICATIONS" AND ODOT'S "STANDARD CONSTRUCTION DRAWINGS".
- 2) STREET NAME SIGNS: FOR GROUND MOUNTED STREET NAME SIGNS NOT AT INTERSECTIONS OF MULTI-LANE ROADS WITH SPEED LIMIT OF 40 MPH OR GREATER, STREET NAME SIGNS SHALL BE DOUBLE FACED ON NINE (9) INCH EXTRUDED BLANKS USING COMBINATION UPPER CASE (6 INCH) AND LOWER CASE (4½ INCH) WHITE LETTERING ON A GREEN BACKGROUND. THE EXTRUDED ALUMINUM BLANKS SHALL HAVE A MINIMUM THICKNESS OF 0.063 INCH AND THICKER STIFFENED EDGES. HIGH INTENSITY GRADE, RETRO-REFLECTIVE SHEETING SHALL BE APPLIED TO BOTH SIDES FOR BOTH THE WHITE AND GREEN MATERIALS. FOR GROUND MOUNTED STREET NAME SIGNS AT INTERSECTIONS OF MULTI-LANE ROADS WITH SPEED LIMIT OF 40 MPH OR GREATER, STREET NAME SIGNS SHALL BE DOUBLE FACED ON TWELVE (12) INCH FLAT SHEET BLANKS USING COMBINATION UPPER CASE (8 INCH) AND LOWER CASE (6 INCH) WHITE LETTERING ON A GREEN BACKGROUND. FOR OVERHEAD SIGNS, SEE THE CITY ENGINEER FOR DETAILS AND SPECIFICATIONS.
- 3) SIGN POSTS: SIGN POSTS FOR STOP SIGNS AND STREET NAME SIGNS SHALL BE TEN (10) FEET IN LENGTH, FOURTEEN (14) GAUGE GALVANIZED, 2" X 2" TELES PAR QWIK-PUNCH POST. EACH INSTALLATION SHALL INCLUDE A TEN (10) FOOT LENGTH AND A FOUR (4) FOOT LENGTH SHALL BE INSTALLED INTO THE GROUND TO A DEPTH OF FORTY-TWO (42) INCHES. THE TEN (10) FOOT LENGTH SHALL BE ATTACHED TO THE FOUR (4) FOOT LENGTH OF 2 ¼ " X 2 ¼" TELES PAR BASE 12 GAUGE TO ALLOW THE BOTTOM OF TRAFFIC CONTROL SIGNS TO BE MOUNTED AT A MINIMUM HEIGHT OF SEVEN (7) FEET ABOVE THE GROUND FOR SINGLE SIGN ATTACHMENTS. STREET NAME SIGNS WILL BE MOUNTED ON TOP OF SIGN POSTS FOR STOP SIGNS TO COMBINE SIGNAGE FOR BETTER AESTHETICS. SEE ITEM 4A BELOW.
- 4) OTHER TRAFFIC CONTROL SIGNS:

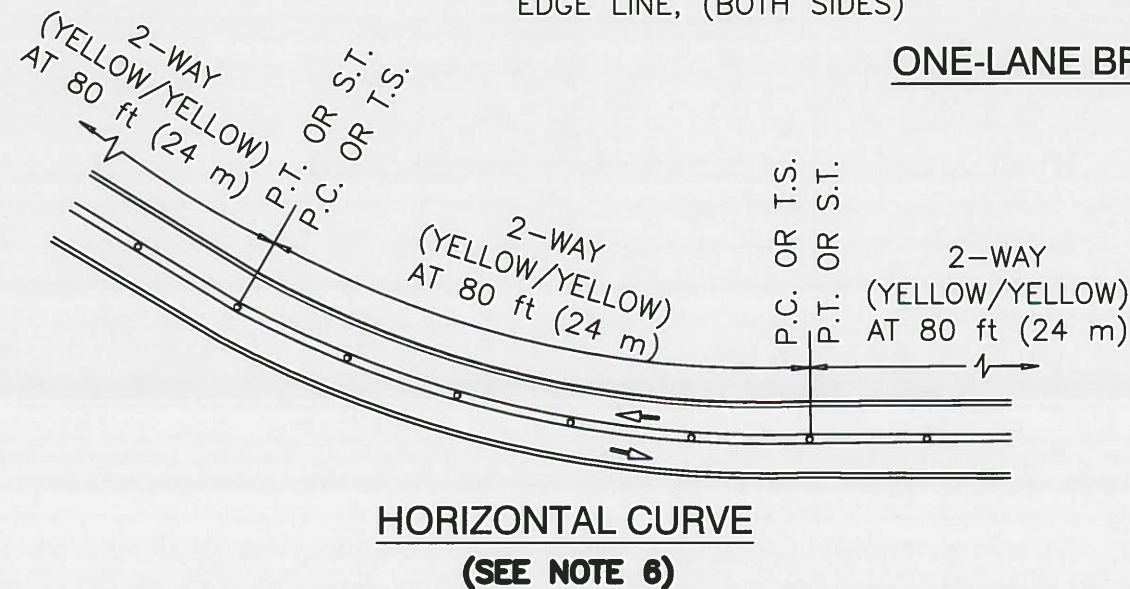
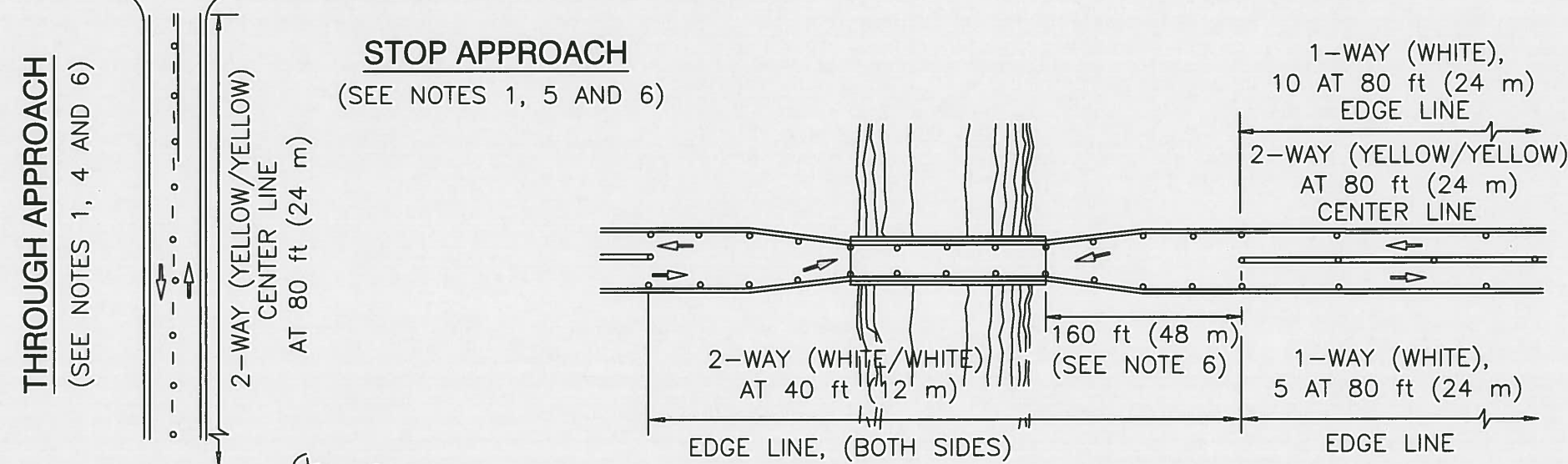
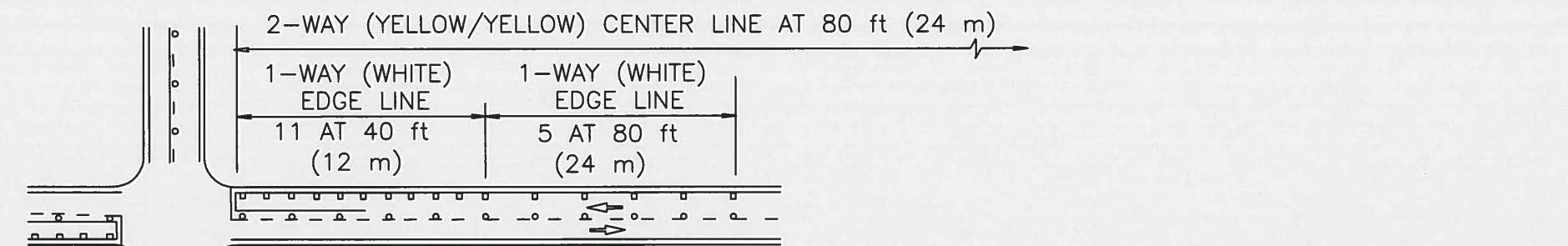
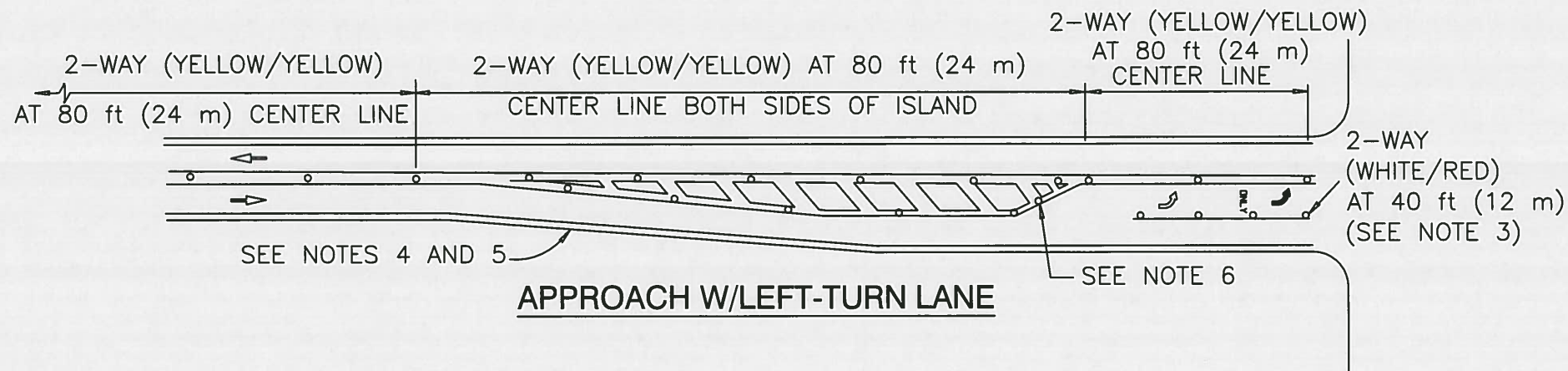
A) STOP SIGNS SHALL BE FLAT SHEET ALUMINUM, WITH A MINIMUM SIZE OF THIRTY (30) BY THIRTY (30) INCHES WITH MICRO-PRISMATIC, DIAMOND GRADE, RETRO-REFLECTIVE SHEETING.

B) NO PARKING SIGNS SHALL BE A MINIMUM SIZE OF TWELVE (12) BY EIGHTEEN (18) INCHES WITH, HIGH INTENSITY GRADE, RETRO-REFLECTIVE SHEETING.

C) SPEED LIMIT SIGNS SHALL BE TWENTY-FOUR (24) BY THIRTY (30) INCHES WITH MICRO-PRISMATIC, DIAMOND GRADE, RETRO-REFLECTIVE SHEETING.

- D) SIGN POSTS FOR TRAFFIC CONTROL SIGNS SHALL BE GALVANIZED U-CHANNEL TYPE STEEL POSTS, RATED AT THREE (3) POUNDS PER FOOT. EACH SIGN INSTALLATION SHALL INCLUDE A TEN (10) FOOT LENGTH AND A FIVE (5) FOOT LENGTH. THE FIVE (5) FOOT LENGTH SHALL BE DRIVEN INTO THE GROUND TO A DEPTH OF FORTY-TWO (42) INCHES. THE TEN (10) FOOT LENGTH SHALL BE ATTACHED TO THE FIVE (5) FOOT LENGTH TO ALLOW THE BOTTOM OF TRAFFIC CONTROL SIGNS TO BE MOUNTED AT A MINIMUM HEIGHT OF SEVEN (7) FEET ABOVE THE GROUND FOR SINGLE SIGN ATTACHMENTS. IF TWO SIGNS ARE ATTACHED TO ONE POST INSTALLATION, THEN THE BOTTOM OF THE PRIMARY SIGN SHALL BE MOUNTED AT SEVEN (7) FEET UNLESS THE BOTTOM OF THE SECONDARY SIGN IS MOUNTED LESS THAN SIX (6) FEET, THEN THE SIGNS SHALL BE RAISED SO THAT THE SECONDARY SIGN IS MOUNTED NO LESS THAN SIX (6) FEET ABOVE THE GROUND.
- E) NO PARKING SIGNS AND SPEED LIMIT SIGNS SHALL BE GALVANIZED J-CHANNEL TYPE STEEL POSTS, RATED AT THREE (3) POUNDS PER FOOT. EACH SIGN INSTALLATION SHALL INCLUDE A TEN (10) FOOT LENGTH AND A FIVE (5) FOOT LENGTH. THE FIVE (5) FOOT LENGTH SHALL BE DRIVEN INTO THE GROUND TO A DEPTH OF FORTY-TWO (42) INCHES. THE TEN (10) FOOT LENGTH SHALL BE ATTACHED TO THE FIVE (5) FOOT LENGTH TO ALLOW THE BOTTOM OF TRAFFIC CONTROL SIGNS TO BE MOUNTED AT A MINIMUM HEIGHT OF SEVEN (7) FEET ABOVE THE GROUND FOR SINGLE SIGN ATTACHMENTS. IF TWO SIGNS ARE ATTACHED TO ONE POST INSTALLATION, THEN THE BOTTOM OF THE PRIMARY SIGN SHALL BE MOUNTED AT SEVEN (7) FEET UNLESS THE BOTTOM OF THE SECONDARY SIGN IS MOUNTED LESS THAN SIX (6) FEET, THEN THE SIGNS SHALL BE RAISED SO THAT THE SECONDARY SIGN IS MOUNTED NO LESS THAN SIX (6) FEET ABOVE THE GROUND.
- 5) BEFORE INSTALLATION OF ANY SIGNAGE IN SUBDIVISIONS, THE CONTRACTOR SHALL CONTACT UNDERGROUND PROTECTION SERVICES FOR UTILITY LOCATIONS BEFORE ANY SIGN POSTS ARE DRIVEN INTO THE GROUND.
- 6) DEVELOPER SHALL SUBMIT SIGNING PLAN TO CITY FOR APPROVAL PRIOR TO INSTALLATION.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
STREET SIGN SPECIFICATIONS	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING P-17		2/2019



- LEGEND**
- 1-WAY REFLECTORS
 - 2-WAY REFLECTORS
 - ← DIRECTION OF TRAVEL

NOTES

1. RAISED PAVEMENT MARKERS SHALL NOT BE PLACED WITHIN THE INTERSECTION AREA.
2. RAISED PAVEMENT MARKERS ON LANE LINES ON MULTI-LANE ROADWAYS SHALL BE TWO-WAY WHITE/RED SPACED AT 80 FEET (24 M).
3. WHEN A CHANNELIZING LINE IS LESS THAN 80 FEET (24 M) IN LENGTH, ONE RAISED PAVEMENT MARKER SHALL BE PLACED AT EACH END OF THE LINE, AND ONE SHALL BE PLACED IN THE CENTER OF THE LINE.
4. RAISED PAVEMENT MARKERS SHALL NOT BE PLACED ON EDGE LINES ON A THROUGH APPROACH.
5. ALL APPROACHES AT A SIGNALIZED INTERSECTION SHALL BE TREATED AS SHOWN IN THE STOP APPROACH DETAIL BY ADDING EDGE LINE MARKERS ALONG THE RIGHT EDGE LINE.
6. THE SPACING FOR CENTER LINE RAISED PAVEMENT MARKERS SHALL BE 80 FEET (24 M) EXCEPT FOR THE FOLLOWING:

FOR ONE-LANE BRIDGES, CENTER LINE PAVEMENT MARKINGS, INCLUDING RAISED PAVEMENT MARKERS, SHALL BE OMITTED 160 FEET (48 M) ON EACH SIDE AND ACROSS THE BRIDGE.

FOR HORIZONTAL CURVES OF 5 DEGREES OR GREATER (RADIUS OF 1150 FEET (380 OR LESS)), THE SPACING OF THE CENTER LINE MARKERS SHALL BE REDUCED TO 40 FEET (12 M) BETWEEN P.C. OR T.S. AND P.T. OR S.T.

FOR HORIZONTAL CURVES OF 10 DEGREES OR GREATER (RADIUS OF 570 FEET (170 M) OR LESS), THE SPACING OF THE CENTER LINE MARKERS SHALL BE REDUCED TO 20 FEET (6 M) BETWEEN P.C. OR T.S. AND P.T. OR S.T. WHEN USING 20 FOOT (6 M) (6 M) SPACING, 12 RAISED PAVEMENT MARKERS AT 40 FOOT (12 M) SPACING SHALL BE INSTALLED ON EACH END OF THE 20 FOOT (6 M) SPACING.

ON AN INTERSECTION APPROACH WITH A LEFT-TURN LANE, A MINIMUM OF THREE EQUALLY SPACED RAISED PAVEMENT MARKERS SHALL BE INSTALLED ON THE BACK TAPER.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS

RAISED PAVEMENT MARKER SPACING DETAILS	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING P-18		2/2019

NOTES

1. CENTER LINE MARKERS SHALL BE PLACED BETWEEN THE LINES WHEN SINGLE OR DOUBLE SOLID LINES ARE USED. MARKERS INSTALLED ALONG AN EDGE LINE OR CHANNELIZING LINE SHALL BE PLACED SO THAT THE CASTING IS NO MORE THAN 1 INCH (25 MM) FROM THE NEAR EDGE OF THE LINE. MARKERS INSTALLED ALONG A LANE LINE OR DASHED YELLOW CENTER LINE SHALL BE PLACED BETWEEN AND IN LINE WITH THE DASHES. HOWEVER, DESPITE THESE PROVISIONS, THE MARKERS SHALL ALSO BE PLACED A MINIMUM OF 2 INCHES (50 MM) AWAY FROM A LONGITUDINAL OR TRANSVERSE JOINT.

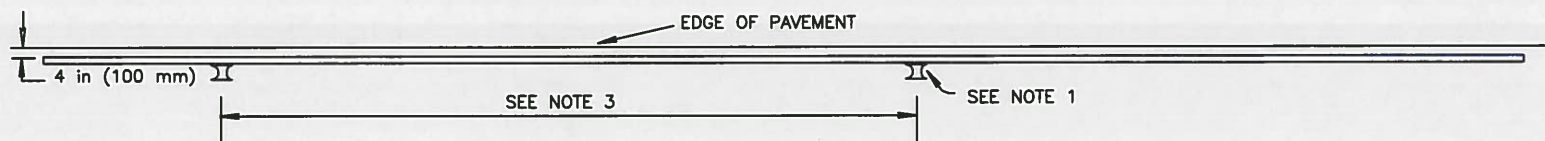
IF APPROVED BY THE ENGINEER, MARKERS MAY BE PLACED ON THE LINES WHERE THE LINES DEVIATE VISIBLY FROM THEIR CORRECT ALIGNMENT OR THE CONSTRUCTION JOINT WILL BE WITHIN 2 INCHES (50 MM) OF THE MARKER.

2. TO FACILITATE THE CUTTING OF THE TWO PARALLEL SLOTS AND INTERVENING CONCAVED SURFACE SIMULTANEOUSLY, IT IS RECOMMENDED THAT AN ARBOR AND SAW BLADE ASSEMBLY BE USED. FOR ADDITIONAL DETAILS AND TOLERANCES OF THE CASTING AND ARBOR-SAW ASSEMBLY CONTACT THE CASTING MANUFACTURER.
3. SEE SHEET P16 FOR SPACING DETAILS.
4. RAISED PAVEMENT MARKERS SHALL NOT BE PLACED WITHIN THE INTERSECTION AREA.
5. WHEN A CHANNELIZING LINE IS LESS THAN 80 FEET (24 M) IN LENGTH, ONE RAISED PAVEMENT MARKER SHALL BE PLACED AT EACH END OF THE LINE, AND ONE SHALL BE PLACED IN THE CENTER OF THE LINE.
6. RAISED PAVEMENT MARKERS SHALL NOT BE PLACED ON EDGE LINES ON A THROUGH APPROACH.
7. ALL APPROACHES AT A SIGNALIZED INTERSECTION SHALL BE TREATED AS SHOWN IN THE STOP APPROACH DETAIL BY ADDING EDGE LINE MARKERS ALONG THE RIGHT EDGE LINE.

EDGE LINE

1-WAY (WHITE)
WITH RIGHT EDGE LINE OR

2-WAY (YELLOW/RED)
WITH LEFT EDGE LINE ON
RAMPS, YELLOW SIDE FACING
TRAFFIC



CHANNELIZING LINE

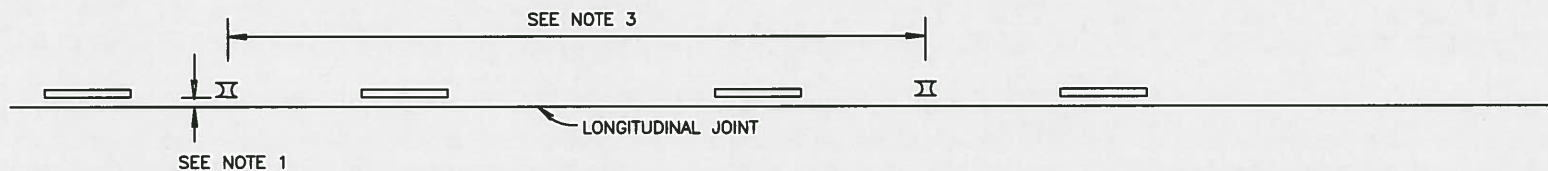
2-WAY (WHITE/RED),
WHITE SIDE FACING TRAFFIC



LANE LINE

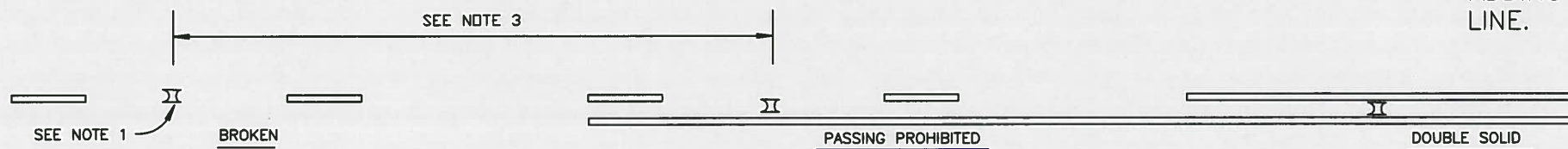
1-WAY (WHITE) OR

2-WAY (WHITE/RED),
WHITE SIDE FACING TRAFFIC



CENTER LINE

2-WAY (YELLOW/YELLOW)



CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
RAISED PAVEMENT MARKER PLACEMENT DETAILS	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING P-19		2/2019

CONSTRUCTION NOTES & STANDARDS FOR SANITARY SEWER INSTALLATION

1. A.) SANITARY SEWER PIPE SHALL BE POLYVINYL CHLORIDE (PVC) SDR 35 ASTM D-3034 WITH RING-TITE FACTORY INSTALLED RUBBER SEALING RING(ASTM D-3212) TO DEPTH OF 17 FT.

B.) FOR DEPTHS OF 17 FT. TO 28 FT. SDR 26 ASTM D3034 SHALL BE USED.

C.) THE SANITARY PIPE FOR DEPTHS GREATER THAN 28 FT. SHALL BE APPROVED BY THE CITY ENGINEER.

2. MANHOLE TO MANHOLE DISTANCE SHALL NOT EXCEED 400 FEET.

3. WELL POINTS SHALL BE INSTALLED AT THE DOWN STREAM MANHOLE OF ALL SANITARY MAIN SYSTEMS FOR THE PURPOSE OF MEASURING GROUND WATER, SO AS TO CALCULATE REQUIRED AIR PRESSURE. SEE SHEET SAN-2 SANITARY LINE AIR TESTING.

4. SANITARY MANHOLES SHALL MEET ASTM C-478 FOR MATERIAL AND ASTM C-443 FOR JOINTS.

5. FLEXIBLE GASKETS ON ALL SEWER LINE CONNECTIONS AND ALL PRECAST MAHOLE COLLARS SHALL BE ASTM C-923

6. ALL SANITARY MAINLINE RUNS SHALL END WITH A MANHOLE. A MANHOLE SHALL ALSO BE INSTALLED AT ALL PIPE SIZE CHANGES AND DIRECTION CHANGES.

7. ALL MANHOLE CASTINGS ARE TO BE E.J.I.W. 1040 SERIES HEAVY DUTY CASTING. SANITARY MANHOLE LIDS SHALL BE TYPE "A" GASKET SEAL, "WATERTITE" TYPE WITH 'O' RING GASKETTING(ASTM C-443)EXCEPTING THAT HEAVY DUTY BOLT DOWN CASTING AND COVER (E.J.I.W. 1040-WT) SHALL BE USED WHENEVER A SANITARY MANHOLE IS IN AN OFF-SITE EASEMENT, NEAR A WATERWAY OR WITHIN ROADWAY AREAS. THE MANHOLE SHALL CLEARLY BE LABELED "SANITARY" ON THE LID.

8. ALL ADJUSTMENTS TO CASTINGS SHALL BE MADE WITH PRECAST CONCRETE GRADE RINGS

9. FLOW LINES SHALL BE FORMED SO AS TO MATCH ALL PIPE PENETRATION INVERTS.
10. SANITARY SEWER MAINS AT MANHOLES PROPOSED WITHIN 2 FEET OF EXISTING INVERT ELEVATION SHALL BE REQUIRED TO MATCH THE EXISTING INVERT.

11. SANITARY SEWERS IN EXCESS OF 4 FEET SHALL REQUIRE A PRECAST EXTERIOR DROP MANHOLE. (REFERENCE S-13)

12. SANITARY SEWER MANHOLE CONNECTIONS SHALL BE THE A LOK OR Z LOK TYPE.

13. FOR DROP MANHOLE INSTALLATIONS, SEE SHEET SAN-8 AND SAN-9 FOR DETAILS.

14. A MONITORING MANHOLE SHALL BE REQUIRED FOR ALL COMMERCIAL AND INDUSTRIAL APPLICATIONS DURING DEVELOPMENT. THE MONITORING MANHOLE SHALL BE PLACED AS CLOSE TO THE ESTABLISHED RIGHT OF WAY AS POSSIBLE.

15. SANITARY 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. SAID EASEMENTS SHALL BE DESIGNATED AS BLOCKS.

16. IN NO CASE SHALL SANITARY OR LATERALS BE DIRECTLY CONNECTED INTO A MANHOLE.

17. ALL LATERALS SHALL HAVE A DEPTH OF (9) NINE FEET AT ITS RIGHT-OF-WAY TERMINUS POINT OR DEEP ENOUGH TO SERVICE THE LOWEST POINT OF THE BUILDING OR A DEPTH IN RELATION TO THE DEPTH OF SANITARY SYSTEM.

18. CLAY DAM IS TO BE PROVIDED 6 FT. FROM THE LATERAL TERMINUS PER G-10.

19. CROSSING AS HEREIN DEFINED SHALL BE EITHER PERPENDICULAR TO ANY PART OF A SKEW OR ANGLE AT THE CROSSING.

20. WHERE MINIMUM CLEARANCES ARE NOT MAINTAINED PER DRAWING G-7 DIP CLASS 52 SHALL BE USED.

21. WHERE THE SANITARY LATERAL IS LESS THAN 3 FT. IN DEPTH D.I.P. CLASS 52 SHALL BE USED.
22. TRANSITIONAL ADAPTERS ARE TO BE USED FROM PVC TO D.I.P. PREFERRED SINGLE UNIT ADAPTER IS SPECIFIED FITTINGS 791056-CDD 6" OR EQUAL. FERNCO FITTINGS WILL NOT BE PERMITTED IN PLACE OF ADAPTERS.

23. PVC SANITARY SEWER REPAIRS SHALL BE MADE USING SOLID SLEEVE COUPLINGS ONLY. FERNCO FITTINGS SHALL NOT BE PERMITTED FOR SANITARY REPAIRS.

24. SHOULD EXCAVATION ENCOUNTER EXISTING DRAINLINES, REPAIR SHALL BE MADE VIA A MINIMUM (6") SIX INCH TEE OR KOR-N-TEE INTO THE STORM SYSTEM. (6") SIX INCH PVC SDR 35 PIPE TO THE 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.

25. WHEN A WATER SERVICE AND/OR GAS SERVICE IS DISTURBED OR DISCONNECTED DURING TRENCH OR SHEETING EXCAVATION, SUCH SERVICES SHALL BE PLANKED USING 2"x8" HARDWOOD MINIMUM, 18" INTO VIRGIN SOIL, EACH END.

26. ROOF DRAINS, FOUNDATION DRAINS AND OTHER CLEAN WATER CONNECTIONS TO THE SANITARY SEWER ARE PROHIBITED.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
CONSTRUCTION NOTES FOR SANITARY SEWER INSTALLATION	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING SAN-1		2/2019

1. SANITARY LINE AIR TESTING

- A) LOW PRESSURE AIR SHALL BE INTRODUCED INTO THE SEALED LINE UNTIL THE INTERNAL PRESSURE REACHES 4.0 PSIG GREATER THAN THE AVERAGE BACK PRESSURE OF ANY GROUND WATER PRESSURE THAT MAY BE OVER THE PIPE. AT LEAST TWO (2) MINUTES SHALL BE ALLOWED FOR THE AIR PRESSURE TO STABILIZE. AFTER THE STABILIZATION PERIOD, THE HOSE FOR INTRODUCING LOW PRESSURE AIR INTO THE SEALED LINE SHALL BE DISCONNECTED FROM THE AIR SOURCE IN SUCH A MANNER AS TO RETAIN THE PRESSURE IN THE SEALED LINE.
- B) NO AIR PRESSURE LOSS SHALL BE ACCEPTED.

PIPE DIAMETER (INCHES)	MINUTES
6	4.0
8	4.0
10	5.0
12	5.5
15	7.5
18	8.5
21	10.0
24	12.5
27	15.0
30	18.0
33	21.0

- C) WHERE HIGH GROUND WATER IS KNOWN TO EXIST, THE HEIGHT IN FEET, OF GROUND WATER 2FT. ABOVE THE INVERT OF THE SEWER SHALL BE DIVIDED BY 2.31 TO ESTABLISH THE POUNDS OF PRESSURE THAT WILL BE ADDED TO THE INTERNAL AIR PRESSURE USED FOR THE LINE ACCEPTANCE TEST. MAXIMUM AIR PRESSURE IS NOT TO EXCEED 8 PSIG. DOWN STREAM MANHOLE WELL POINTS SHALL NOT BE PUMPED DOWN FOR THE PURPOSES OF THIS TESTING PROCEDURE.
- D) IF THE INSTALLATION FAILS TO MEET THE REQUIREMENTS OF THIS TEST, THE CONTRACTOR SHALL DETERMINE AT HIS OWN EXPENSE THE SOURCE OF THE LEAKAGE. HE SHALL REPAIR OR REPLACE ALL DEFECTIVE MATERIALS AND/OR WORKMANSHIP AND THEN RE-TEST THE INSTALLATION FOR COMPLIANCE WITH THESE SPECIFICATIONS FOR THE LINE ACCEPTANCE TEST.
- E) AT THE DISCRETION OF THE CITY ENGINEER, SANITARY SEWERS SHALL BE TESTED FOR INFILTRATION AND/OR EXFILTRATION NOT TO EXCEED 100 GAL. OF WATER PER INCH OF PIPE DIAMETER PER MILE PER DAY.

2. VACUUM TESTING FOR MANHOLES

- A) VACUUM TESTING SHALL BE IN ACCORDANCE WITH THE FOLLOWING:
- B) THIS TEST METHOD IS ONLY APPLICABLE TO PRECAST CONCRETE MANHOLES AND ITEM "M" AS NOTED BELOW.
- C) ALL LIFTING HOLES AND EXTERIOR JOINTS SHALL BE FILLED AND POINTED WITH AN APPROVED NON-SHRINKING MORTAR GROUT.
- D) ALL PIPES, MANHOLE BOOTS, STUBOUTS, AND OTHER OPENINGS INTO THE MANHOLE SHALL BE SUITABLY PLUGGED IN SUCH A MANNER AS TO PREVENT DISPLACEMENT OF THE PLUGS WHILE THE VACUUM IS DRAWN.
- E) INSTALLATION AND OPERATION OF VACUUM EQUIPMENT AND INDICATING DEVICES SHALL BE IN ACCORDANCE WITH EQUIPMENT SPECIFICATIONS AND INSTRUCTIONS PROVIDED BY THE MANUFACTURER.
- F) THE TEST HEAD SHALL BE PLACED AT THE INSIDE OF THE TOP OF THE MANHOLE CASTING AND THE SEAL INFLATED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION.
- G) A MEASURED VACUUM OF 10 INCHES OF MERCURY SHALL BE DRAWN TO THE MANHOLE. THE TIME FOR THE VACUUM TO DROP TO 9 INCHES OF MERCURY SHALL BE RECORDED.
- H) ACCEPTANCE FOR 4 FT. DIAMETER MANHOLES SHALL BE DEFINED AS WHEN THE ELAPSED TIME FOR A NEGATIVE PRESSURE CHANGE FROM 10 IN. TO 9 IN. OF MERCURY MEETS OR EXCEEDS THE FOLLOWING:

MANHOLE DEPTH	DIAMETER	TIME TO DROP 1" Hg
10 FT. OR LESS	4 FT.	60 SECONDS
10 FT. TO 15 FT.	4 FT.	75 SECONDS
15 FT. TO 25 FT.	4 FT.	90 SECONDS

- I) FOR MANHOLES 5 FT. IN DIAMETER, ADD AN ADDITIONAL 15 SECONDS AND FOR MANHOLES 6 FT. IN DIAMETER 30 SECONDS TO THE TIME REQUIREMENTS FOR FOUR FOOT DIAMETER MANHOLES. PRECAST GREASE TRAP TIMING SHALL BE DEPENDENT UPON SIZES OF THE UNIT.
- J) IF THE MANHOLE FAILS THE TEST, NECESSARY REPAIRS SHALL BE MADE BY THE CONTRACTOR AND THE VACUUM TEST REPEATED UNTIL THE MANHOLE PASSES THE TEST. REPAIRS ARE TO BE MADE WITH NON-SHRINK GROUT ONLY.
- K) IF THE MANHOLE JOINT MASTIC IS DISPLACED DURING THE VACUUM TEST, THE MANHOLE SHALL BE DISASSEMBLED, THE SEAL REPLACED, AND THE MANHOLE RETESTED.
- L) VACUUM TESTING WILL BE REQUIRED IN ALL EXISTING TIE-IN MANHOLES, UNLESS OTHERWISE ADVISED BY THE CITY UTILITY DEPARTMENT.
- M) VACUUM TESTING METHOD SHALL ALSO BE USED IN THE CASE OF EXTERIOR PRECAST GREASE TRAP/INTERCEPTOR INSTALLATIONS (REF. SAN-14)

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
SANITARY SEWER ACCEPTANCE TESTING	ADOPTION ORDINANCE	DATE
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		SHEET 1 OF 2

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 OF REPLACED BY THE CONTRACTOR.

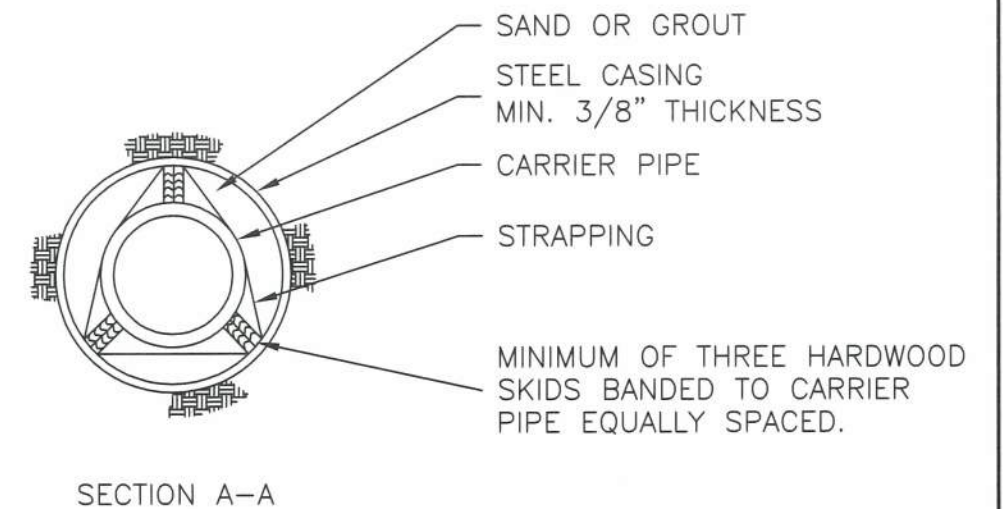
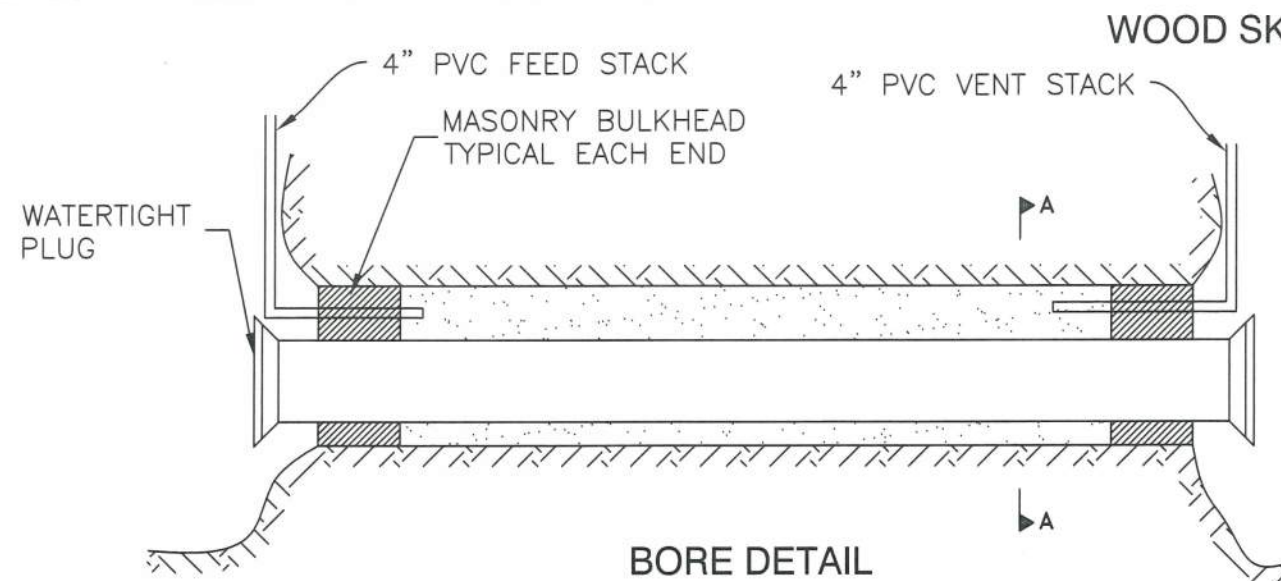
DEFLECTION TESTING SHALL BE ACCOMPLISHED BY USING AN ELECTRONIC DEFLECTOMETER WHICH PRODUCES A CONTINUOUS RECORD OF DIAMETER READINGS OR BY PULLING A SLED TYPE – FULL CIRCLE GAGE THROUGH THE PIPE. SLED TYPE – FULL CIRCLE GAGES SHALL BE A MANDREL TYPE. THE DIAMETER OR MINIMUM DIMENSION OF THE SLED TYPE – 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.

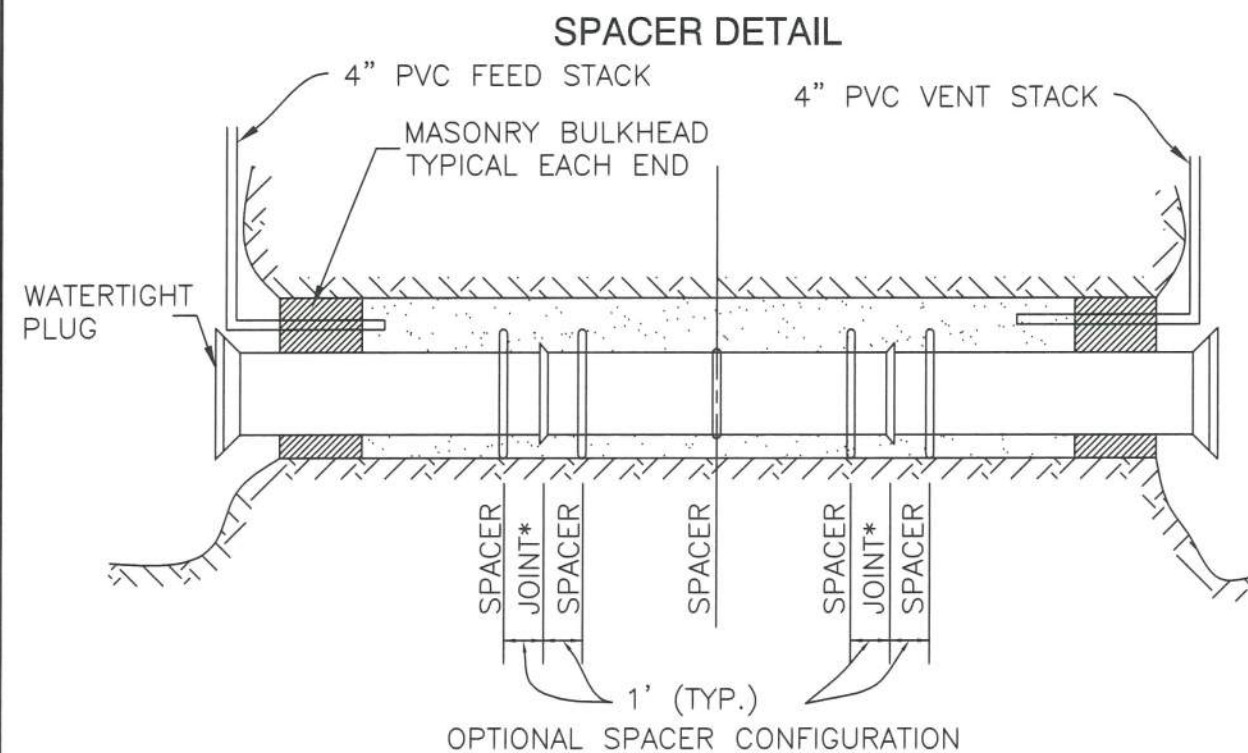
- A) ALL VIDEO TAPING SHALL BE FROM CENTER OF MANHOLE TO CENTER OF MANHOLE.
- B) VIDEO TAPING SHALL BE MADE UPSTREAM ONLY.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
SANITARY SEWER ACCEPTANCE TESTING	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING SAN-2		2/2019
		SHEET 2 OF 2



BORE NOTES:

- 1) PVC STACKS ARE TO BE FILLED TO WITHIN 2 FT. OF GRADE AND CUT AND CAPPED 2 FT. BELOW GRADE.
- 2) MASONRY BULK HEADS SHALL BE PROVIDED AT EACH END.
- 3) GRANULAR BEDDING IN BORE PIT AND RECEIVING PIT SHALL BE PLACED TO A MINIMUM OF 1 FOOT ABOVE THE PIPE.
- 4) BONDED SKIDS MAY BE PERMITTED IN LIEU OF RETAINING GLANDS, AS APPROVED BY THE CITY UTILITY DEPARTMENT.
- 5) SANITARY PIPE THROUGH THE CASING SHALL BE PVC SDR-35 ASTM D3034 OR SDR 26 IF 17FT DEEP OR DEEPER.
- 6) FREE BORE MAY BE PERMITTED ONLY AT THE DISCRETION OF THE CITY UTILITY DEPARTMENT. IN SUCH CASES THE BORE SHALL BE NO LARGER THAN THE BELL OF THE PIPE BEING USED. SHOULD THE BORE BE LARGER THAN THE PIPE BELL, ENGINEERED GROUT SHALL BE REQUIRED TO FILL THE VOID.
- 7) ANY TRANSITION OF PIPE FROM DIP TO PVC, SHALL BE DONE WITH A TRANSITIONAL ADAPTER AS DETAILED ON SHEET S-1.
- 8) MINIMUM CASING WALL THICKNESS IS TO BE 3/8"
- 9) CASING SIZE FOR PIPE IN EXCESS OF 16" SHALL BE REVIEWED AND DETERMINED BY THE ENGINEER AT THE TIME OF PLAN REVIEW AND PRIOR TO ANY CONSTRUCTION.
10. NO CASING SHALL BE REQUIRED UNDER THE ROAD IF OPEN CUT TRENCHING. THIS SHALL BE AT THE UTILITY DEPARTMENT'S DISCRETIONS.



PVC CASING SIZE REQUIREMENTS		
PIPE SIZE	BELL SIZE	CASING SIZE
6"	7.23"	12"
8"	9.50"	16"
10"	11.86"	18"
12"	14.06"	24"
15"	17.93"	24"

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
SANITARY PIPE BORE DETAIL	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING SAN-3		2/2019

A) ALL SANITARY SEWER LATERALS SHALL BE MINIMUM OF 6" P.V.C. SDR35 (3034) GASKETED PIPE. SHOULD A LATERAL HAVE LESS THAN THREE FEET OF COVER, DUCTILE IRON PIPE SHALL BE REQUIRED USING A TRANSITIONAL ADAPTER.

B) THERE SHALL BE AN INSPECTION/CLEAN OUT TEE AT THE RIGHT OF WAY AND APPROXIMATELY EVERY 100 LINEAR FEET. TEE SHALL BE SANITARY TEE TYPE.

C) THERE SHALL NOT BE ANY CLEAN OUT OR INSPECTION TEES WITHIN ANY DRIVEWAY OR ROADWAY WITHOUT UTILITY DEPARTMENT APPROVAL. INSTALLATION SHALL CONFORM TO SAN-5.

D) THERE SHALL BE A MINIMUM OF 6" OF STONE BEDDING AND A MINIMUM OF 6" OF STONE COVER OVER PIPE.

E) STONE SHALL BE #57 LIMESTONE FOR SANITARY.

F) 45 DEGREE AND 22 DEGREE BEND FITTING SHALL BE USED. THERE SHALL BE NO 90 DEGREE BEND FITTINGS. ALSO, THERE SHALL NOT BE "BACK TO BACK" FITTING USED. MINIMUM OF TWO (2) FEET OF PIPE BETWEEN FITTINGS.

G) SANITARY LATERAL SHALL HAVE A MINIMUM 1% GRADE.

H) SHOULD A NEW LATERAL TO A BUILDING BE INSTALLED TO ENTER THE BUILDING UNDER A FOOTER, AN EARTHEN DAM SHALL BE INSTALLED APPROXIMATELY 10' FROM THE BUILDING.

I) WHEN INSTALLING NEW SANITARY SEWER LATERAL, AND THERE IS A REQUIREMENT FOR NEW WATER AND STORM SERVICE LATERALS, THE SERVICE LATERALS SHALL NOT BE INSTALLED IN COMMON TRENCH. A HORIZONTAL SEPARATION OF TEN FEET (10') SHALL BE MAINTAINED.

J) ALL SANITARY SEWER MAINS WILL BE REQUIRED TO BE AIR TESTED AT FOUR (4) PSI FOR A MINIMUM OF FOUR (4) MINUTES WITHOUT ANY ALLOWABLE LOSS. IN THE CASE A COMMERCIAL OR INDUSTRIAL INSTALLATION, THE LATERAL WILL BE TESTED TO THE BUILDING IN ACCORDANCE WITH THESE SPECIFICATIONS.

K) THERE SHALL BE A "GLUE CAP" INSTALLED ON THE RISER OF ANY SANITARY SEWER CONNECTION RISING THROUGH THE FOUNDATION FLOOR. WHEN SAID SEWER CONNECTION IS NOT IMMEDIATELY "TIED-INTO" A HOUSE DRAIN, THIS CAP SHALL RISE TO A MINIMUM OF 18 INCHES ABOVE THE PROPOSED FINISH BASEMENT FLOOR GRADE.

L) FOR EXISTING HOMES, THE NEW 6" LATERAL IS TO BE INSTALLED TO AN APPROXIMATE LOCATION AS NEAR TO THE HOUSE AS POSSIBLE. ALL NEW PIPE SHALL BE CONNECTED TO THE EXISTING CAST IRON OR PLASTIC PIPE AT THIS LOCATION. A 4"x6" GASKETED P.V.C. REDUCER IS TO BE USED IF NEEDED. THERE SHALL BE A CLEAN OUT INSTALLED AT THIS POINT.

M) FOR COMMERCIAL/INDUSTRIAL SANITARY LATERALS, THERE SHALL BE INSTALLED A "MONITORING MANHOLE" AT THE RIGHT OF WAY OR EASEMENT LIMITS. THIS MANHOLE SHALL BE A STANDARD 48" DIAMETER BY 6 FOOT DEPTH. COMMERCIAL AND INDUSTRIAL SITES MAY BE REQUIRED TO INSTALL A GAS/OIL INTERCEPTOR.

N) THERE SHALL BE A \$100.00 INCIDENT FINE FOR DISCHARGING STORM OR GROUND WATER TO A SANITARY SEWER.

* THE CITY WILL REQUIRE A MINIMUM OF 24 HOURS NOTICE FOR ANY AND ALL INSPECTIONS. PLEASE CONTACT THE BUILDING DEPARTMENT AT 937-7818 AND THE UTILITIES DEPARTMENT AT 937-5740.

O) OWNER TO MAINTAIN SEWER TO MAIN LINE FROM RIGHT-OF-WAY CLEANOUT TO HOME.

P) LATERAL INSTALLATION FROM THE RIGHT-OF-WAY LINE TO THE BUILDING SHALL BE AT A SUFFICIENT DEPTH TO SERVE THE LOWEST POINT OF THE BUILDING, TO INCLUDE BASEMENTS, IF ANY. THE RISER SHALL EXTEND TO 3 FEET ABOVE GRADE.

Q) NEW SANITARY LATERAL CONNECTIONS FOR EXISTING HOMES SHALL BE REQUIRED TO HAVE THE EXISTING AERATION OR SEPTIC TANKS PUMPED AND SOLIDS TRUCKED AWAY. THE TANK(S) SHALL BE TOTALLY COLLAPSED WITH THE BOTTOM, SIDES AND TOP DESTROYED. THE TANK(S) SHALL BE FILLED WITH HEAVY FILL I.E. CLAY, STONE, ETC. THE OWNER SHALL SUPPLY THE CITY WITH A "PUMP SLIP". OWNER SHALL OBTAIN AN ABANDONMENT PERMIT FROM THE LORAIN COUNTY HEALTH DEPARTMENT.

R) ALL NORMAL HOUSEHOLD DRAINS, TOILETS, SINKS AND WASHING MACHINES MUST DISCHARGE TO A SANITARY SEWER.

S) SHOULD A WASHING MACHINE, LAUNDRY TUB, SERVICE SINK OR FLOOR DRAIN DISCHARGE INTO A SUMP PUMP, THIS PUMP MUST DISCHARGE INTO A SANITARY SEWER. HOWEVER, SHOULD THIS SUMP PUMP ALSO COLLECT STORM WATER FROM FOOTER TILE OR OTHER SOURCES, THERE SHALL BE A NEED TO SEPARATE THESE FLOWS BY INSTALLING SEPARATE PUMPS.

T) SUMP PUMPS FOR FOOTER TILE ARE PROHIBITED FROM DISCHARGING INTO A SANITARY.

U) PRIOR TO WORK COMMENCING, A REPRESENTATIVE OF THE UTILITIES DEPARTMENT AND BUILDING DEPARTMENT WILL PRE-INSPECT EACH HOME TO CONFIRM PROPER INSTALLATION AND ABANDONMENT OF SYSTEMS.

V) THE UTILITIES DEPARTMENT INSPECTS ALL INSTALLATIONS FROM THE STREET TO WITHIN THREE (3) FEET OF THE OUTSIDE OF THE BUILDING WALL. THE BUILDING DEPARTMENT INSPECTS ALL PLUMBING WITHIN A BUILDING. NOTE: THE BUILDING DEPARTMENT RESERVES THE RIGHT TO CHARGE THEIR OWN INSPECTION FEES. THE BUILDING DEPARTMENT MAY REQUIRE HOUSE DRAINS TO BE SMOKE TESTED.

W) SHOULD A RESIDENT ANTICIPATE THE HOUSE LATERAL TO BE INSTALLED UNDER THE FOOTER FOR FUTURE PLUMBING IN THE BASEMENT, ALL PROVISIONS FOR FUTURE WORK SHALL BE COMPLETED AT THIS TIME. AS PER THE BUILDING DEPARTMENT, THIS MEANS ANY PLUMBING WORK UNDER THE EXISTING FLOOR WILL BE REQUIRED TO BE INSTALLED NOW AND TESTED.

X) AS PER THE BUILDING DEPARTMENT, ANY MAJOR PLUMBING WORK INSIDE OF THE HOUSE SHALL BE COMPLETED BY A REGISTERED PLUMBER OR HOME OWNER AS PER PLUMBING CODES. THIS WILL BE DETERMINED AT THE TIME OF PRE-INSPECTION.

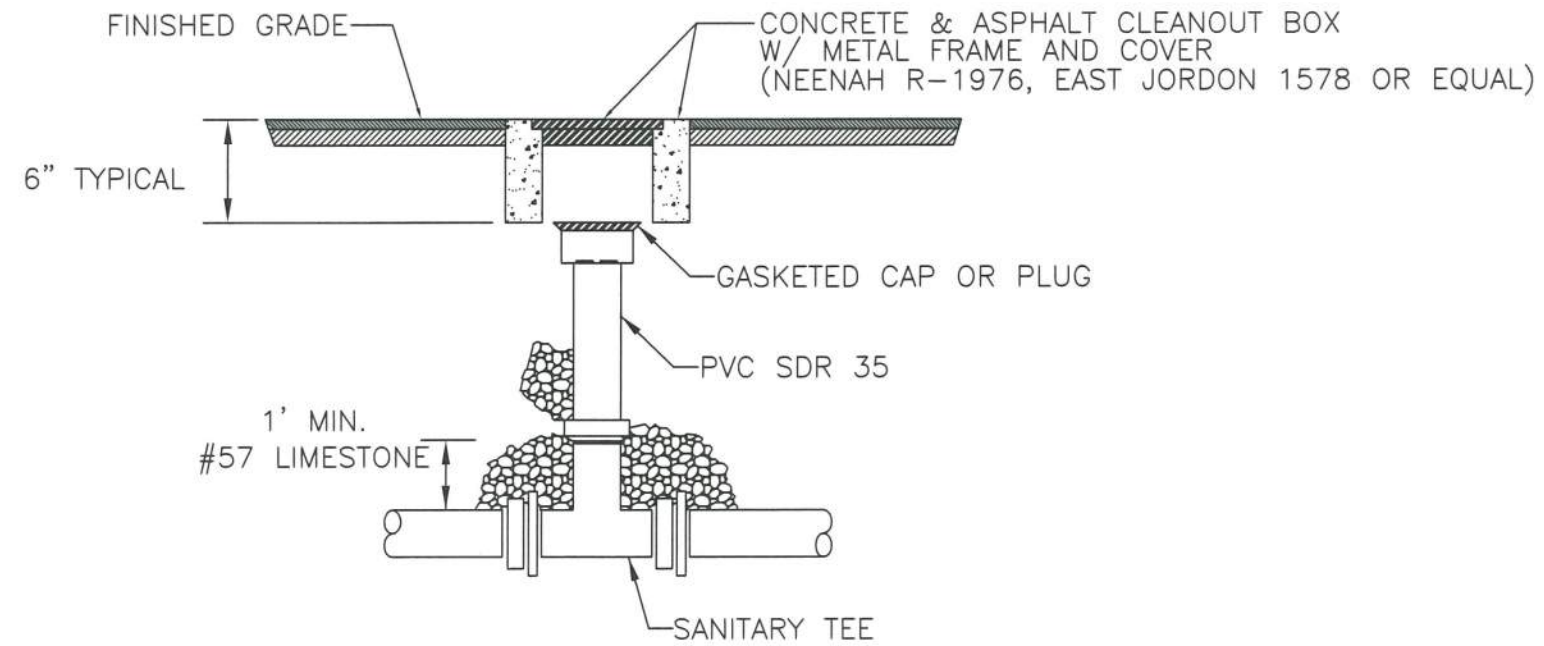
Y) THE BUILDING DEPARTMENT AND UTILITIES DEPARTMENT WILL PERFORM A FINAL INSPECTION AT THE COMPLETION OF EACH INSTALLATION.

Z) THE CITY WILL REQUIRE A MINIMUM OF 24 HOURS NOTICE FOR ANY AND ALL INSPECTIONS. PLEASE CONTACT THE BUILDING DEPARTMENT AT 937-7813 AND THE UTILITIES DEPARTMENT AT 937-5740.

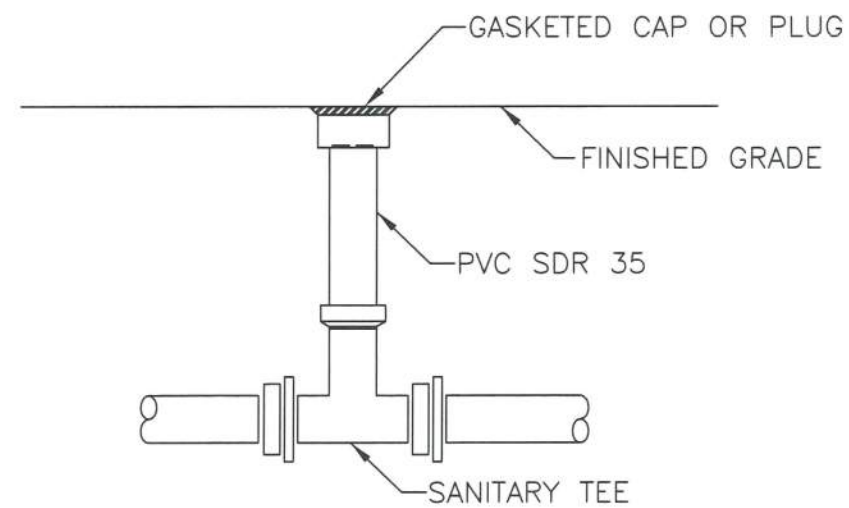
CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
SANITARY CONNECTION NOTES	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING SAN-4		2/2019

NOTE:

- 1.) G.C. TO INSTALL CLEANOUTS AT ANY PIPING ANGLE CHANGES AND EVERY 100' C.O. TO BE INSTALLED ON ALL ROOF DRAINS.
- 2.) A TEE OR WYE IS ACCEPTABLE FOR SANITARY CLEANOUTS.

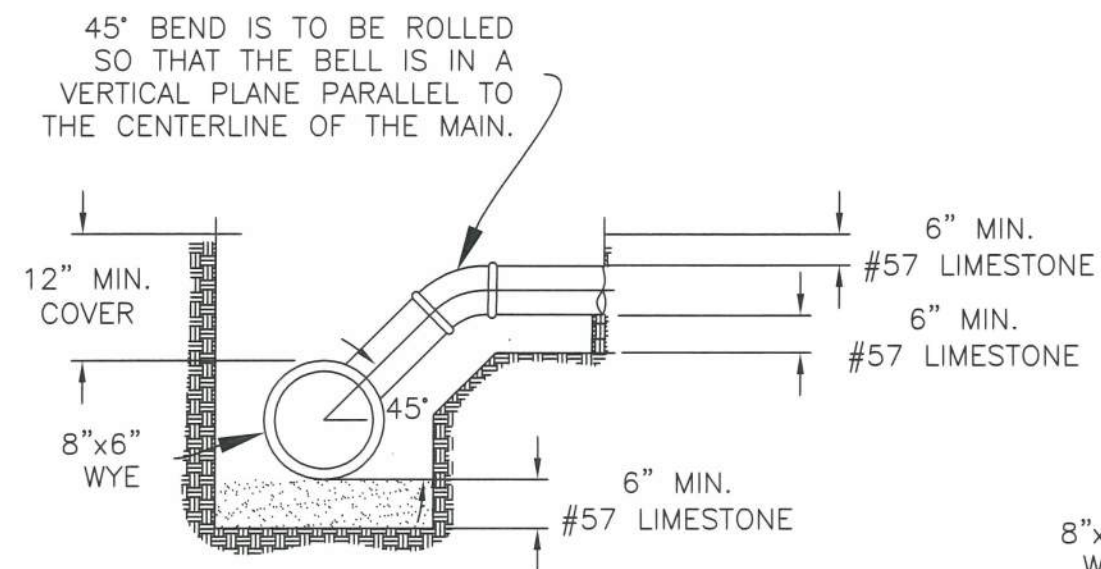


TYPICAL SANITARY
CLEANOUT IN PAVED AREAS

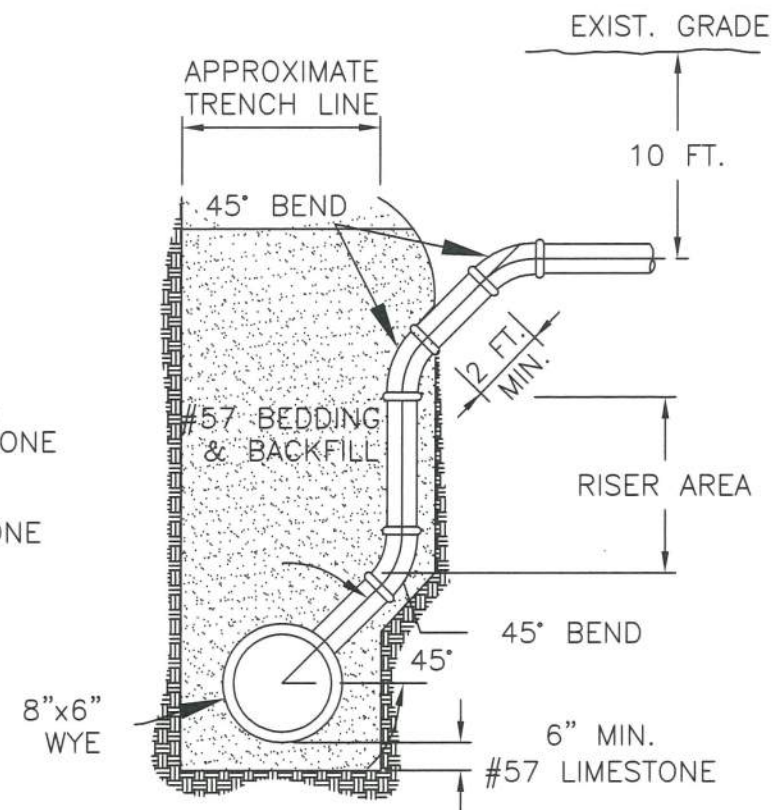


TYPICAL SANITARY CLEANOUT
IN UNPAVED AREAS

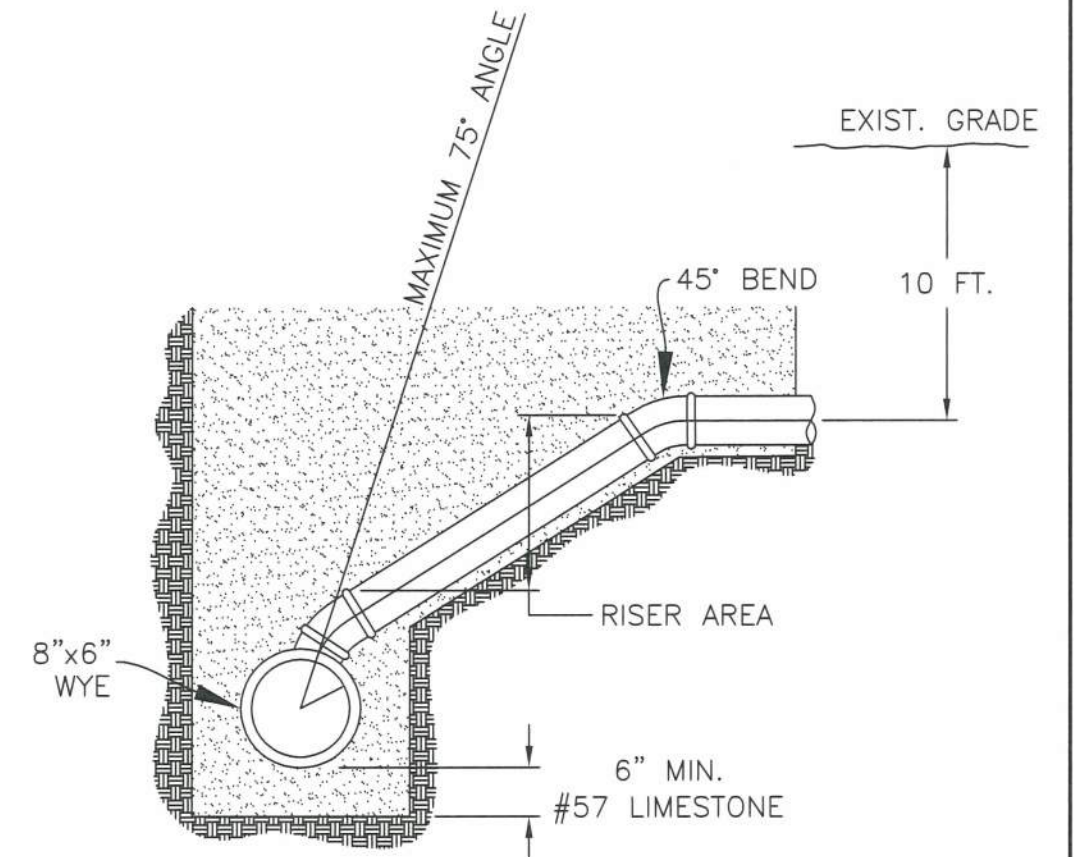
CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
FOR SANITARY SEWER CLEANOUT DETAILS	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING SAN-5		2/2019



TYPICAL SANITARY & STORM CONNECTION



SANITARY RISER DETAIL - EXCEPTION "A"



SANITARY RISER DETAIL - EXCEPTION "B"

RISER NOTES:

1) RISERS SHALL BE USED WHERE DEPTH OF COVER EXCEEDS FIFTEEN FEET (15 FT.) ON THE MAINLINE. RISERS SHALL BE EXTENDED INCLINED AT 10° TO A DEPTH OF (9) FEET FROM EXISTING GRADE.

2) 10 FEET BARREL TO BARREL SHALL BE MAINTAINED BETWEEN WATER AND STORM SERVICES WITH A MINIMUM OF 10 FEET DISTANCE BARREL TO BARREL BETWEEN SANITARY AND WATER SERVICES.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
SANITARY CONNECTION DETAIL	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING SAN-6		2/2019

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.

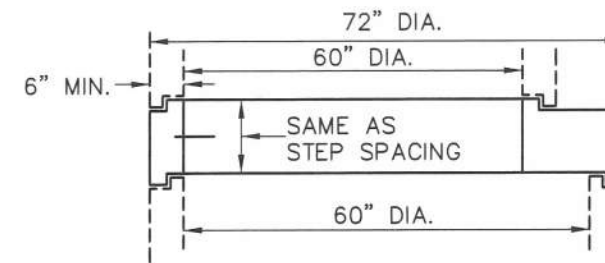
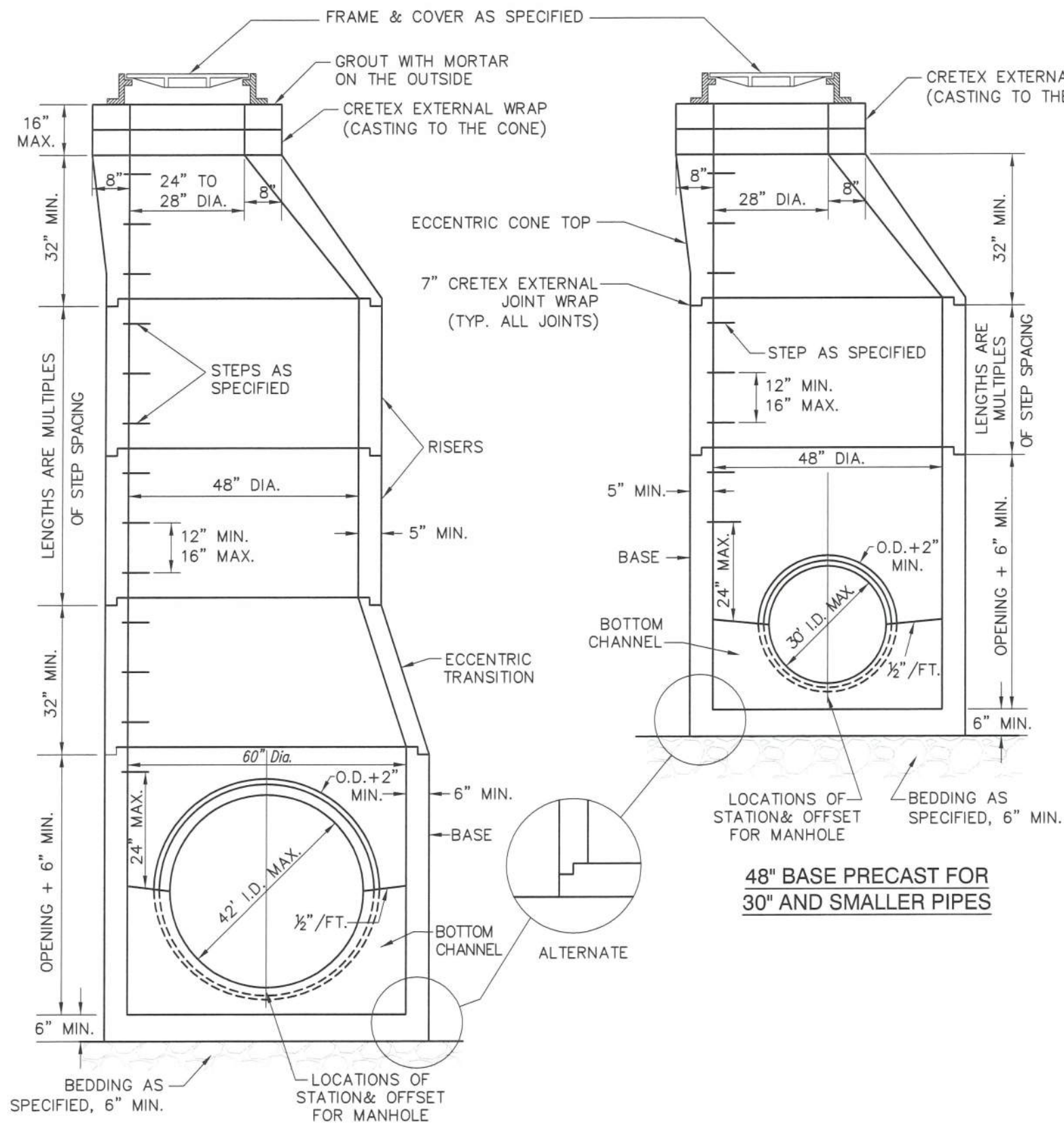
14. MANHOLES SHALL NOT BE INSTALLED IN SIDEWALKS OR ROADWAY AREAS WHENEVER POSSIBLE. WHEN THEY ARE THEY MUST BE INSPECTED BY THE UTILITIES DEPARTMENT PRIOR TO PAVEMENT RESTORATION.

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.

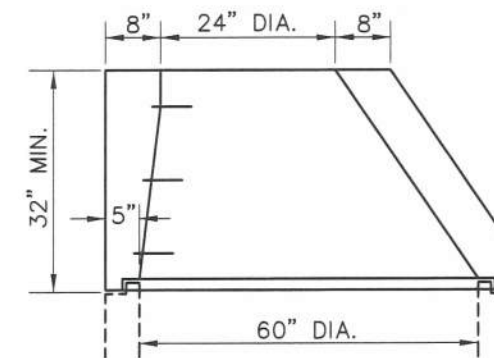
16. "DOGHOUSE" TYPE INSTALLATION SHALL NOT BE PERMITTED IN SANITARY SYSTEMS.

17. FOR 60" MANHOLES, E.J.I.W. #2075 52" RING WITH 36" OPENING IS REQUIRED

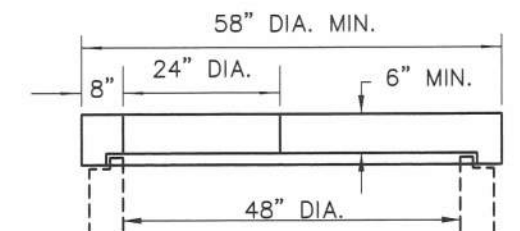
CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
CONSTRUCTION NOTES & STANDARDS FOR PRECAST SANITARY MANHOLE	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING SAN-7		2/2019



FLAT SLAB TRANSITION

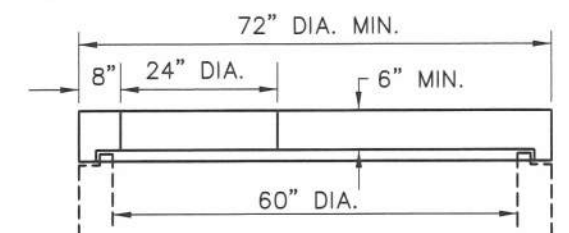


ALTERNATE ECCENTRIC CONE TOP



FLAT SLAB TOP

8" Min.



FLAT SLAB TOP

CITY OF AVON
CONSTRUCTION STANDARDS
AND SPECIFICATIONS

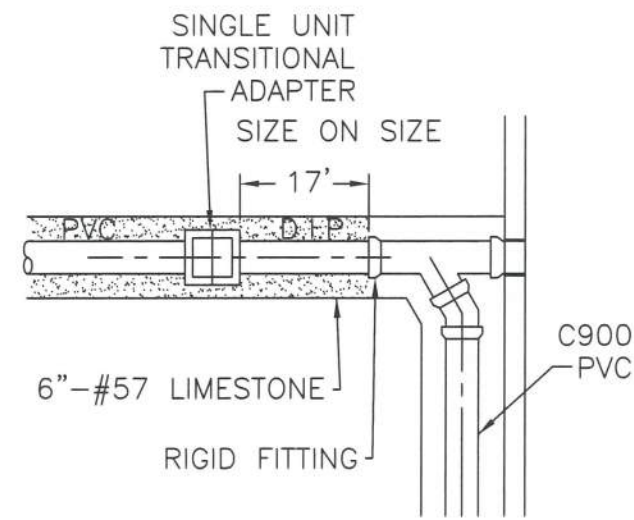
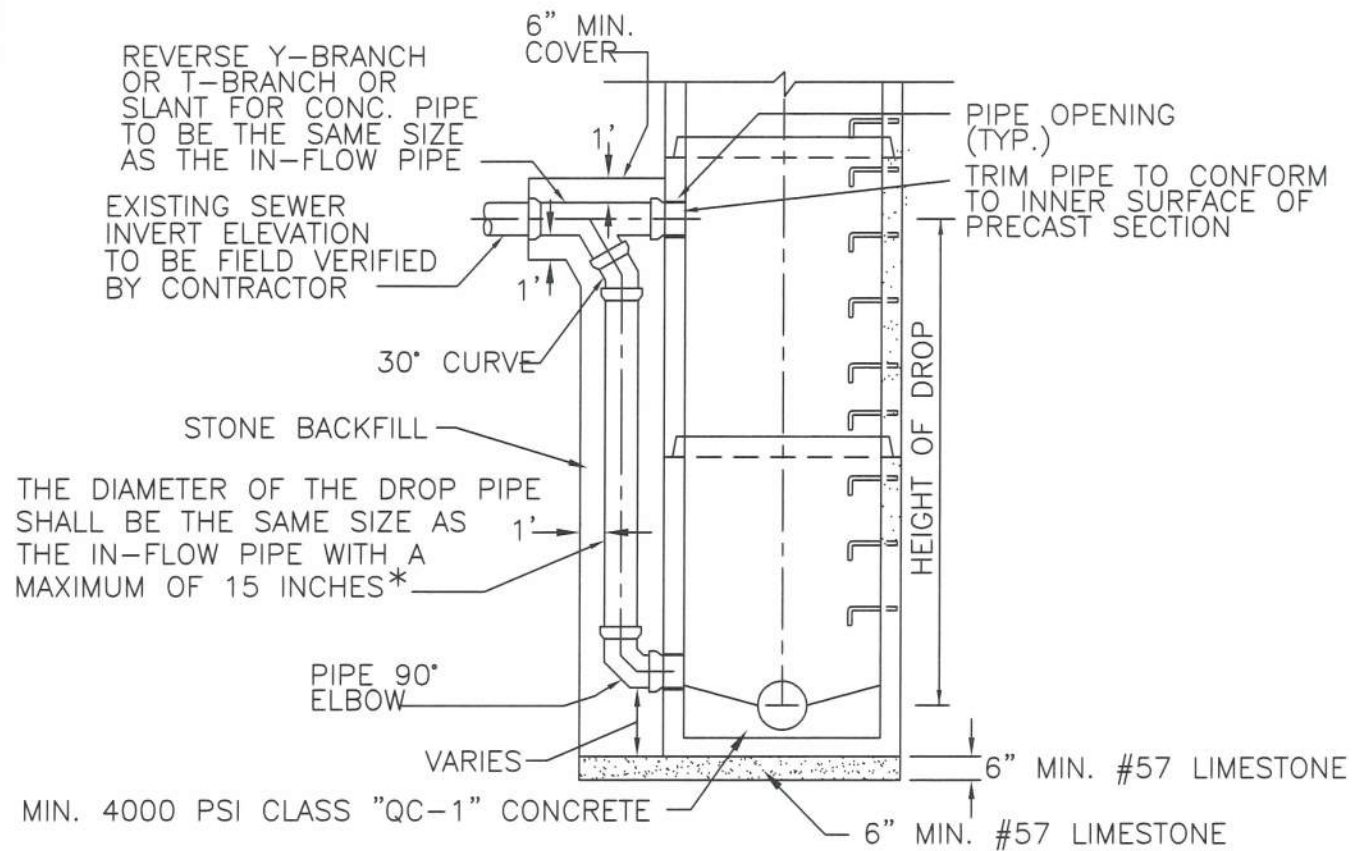
PRECAST SANITARY
MANHOLE

ADOPTION
ORDINANCE

DATE

STANDARD
CONSTRUCTION
DRAWING **SAN-8**

2/2019

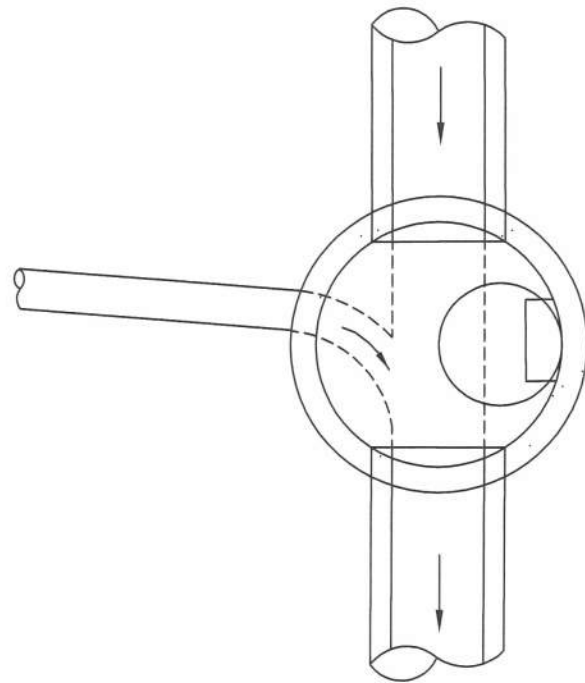


**PRECAST DROP MANHOLE
TRANSITIONAL ADAPTER**

- 1) ANY DROP IN EXCESS OF 4 FT. SHALL BE MANUFACTURED PRECAST CONCRETE TYPE.
- 2) IN CASE OF TIE-IN M.H.'S WHERE THE DROP EXCEEDS 2 FT., THE EXISTING GRADE SHALL BE CONTINUED AND A NEW PRECAST CONCRETE DROP M.H. INSTALLED.
- 3) IN THE CASE OF EXTERIOR DROP CONNECTIONS OF 2FT TO 4FT EXISTING MANHOLES FIELD FABRICATION MAY BE PERMITTED ONLY WITH THE AUTHORIZATION OF THE CITY OF AVON UTILITY DEPARTMENT
- 4) THE FIRST LENGTH OF PIPE OUT OF THE TOP OF THE DROP MANHOLE SHALL BE D.I.P. A TRANSITIONAL ADAPTER IS TO BE USED BETWEEN THE D.I.P. & PVC. ADAPTER SHALL BE A SINGLE UNIT SPECIFIED FITTINGS 581056 SWR. GXGDR18CDDSWR OR EQUAL. THE DROP PIPE SHALL BE C900 PVC.
- 5) THE ENTIRE EXCAVATION FOR THE DROP MANHOLE SHALL BE BACKFILLED TO GRADE.
- 6) THE BOTTOM 90° BEND SHALL BE AN ELBOW TYPE.
- 7) PIPE OPENINGS FOR PRECAST MANHOLE SHALL BE THE ALOK OR ZLOK TYPE PER ASTM C-923.
- 8) PIPE OPENINGS FOR FIELD FABRICATED CONNECTIONS TO EXISTING MANHOLES SHALL BE KOR-N-SEAL BOOT PER ASTM C-923.
- 9) REFER TO SANITARY MANHOLE DETAIL FOR ADDITIONAL REQUIREMENTS.

* THE MANUFACTURER IS TO BE CONSULTED FOR DROP PIPE SIZES LARGER THAN 15 INCHES.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
SANITARY DROP MANHOLE DETAIL	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING SAN-9		2/2019

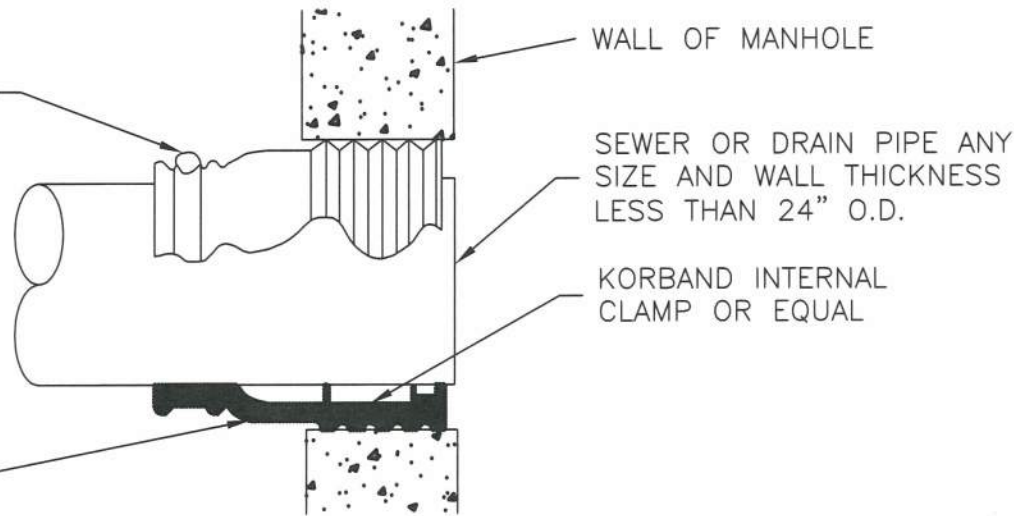


CORE/CONNECTOR DETAIL

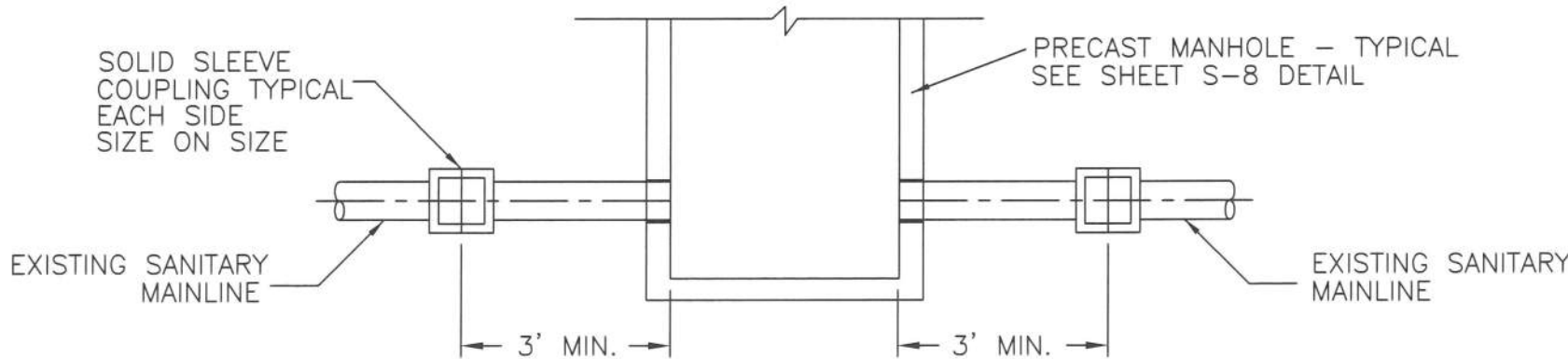
NOTE:
APPLIES TO ANY SIZE MANHOLE
FOR CUT-IN MANHOLES
AND FIELD FABRICATED DROPS

EXTERNAL CLAMP TIGHTENED BY
SCREWDRIVER, SEALS BOOT TO PIPE

NEOPRENE COMPOUND
PER A.S.T.M. C-923

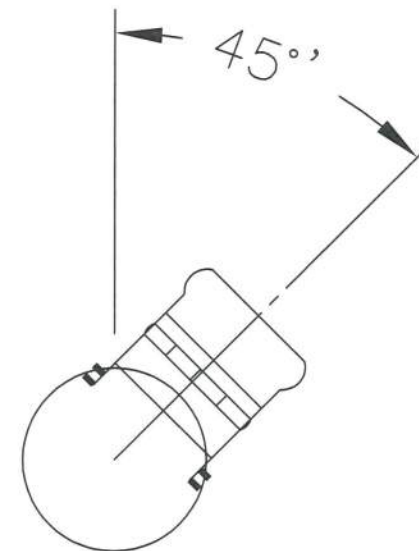


**SANITARY MANHOLE
KOR-N-SEAL BOOT**



SANITARY CUT-IN MANHOLE DETAIL

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
SANITARY MANHOLE FIELD FABRICATION DETAIL	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING SAN-10		2/2019



INSERTA TEE

SANITARY SEWER TAPS

TAP NOTES:

- 1) SANITARY MAIN SHALL BE CORED PRIOR TO SETTING THE TAPS IN PLACE.
- 2) TAPS ARE TO BE PLACED AT AN ANGLE OF 45° TO THE MAINLINE.
- 3) INSERTA TEE TAPS MAY BE USED ONLY AT THE DISCRETION OF THE CITY UTILITY DEPARTMENT.
- 4) INSERTA TEES SHALL BE THE FITTING TYPE OR EQUAL, AND APPROPRIATE TO THE PIPE INTO WHICH IT IS BEING INSTALLED.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
SANITARY CONNECTION DETAIL	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING SAN-11		2/2019

PRIVATE PUMP STATIONS

1. CONTRACTOR SHALL FURNISH AND INSTALL A PUMP STATION SYSTEM IN ACCORDANCE WITH THE MOST CURRENT VERSION OF THE OHIO EPA GREENBOOK AND TEN STATE STANDARDS.

2. CONTACTOR SHALL FURNISH OHIO ENVIRONMENTAL PROTECTION AGENCY PERMIT-TO-INSTALL PRIOR TO CONSTRUCTION.

3. IF THE PUMP STATION IS LOCATED IN A NON-PAVED AREA AN ACCESS DRIVE SHALL BE PROVIDED FOR MAINTENANCE PER AVON STANDARD DRAWING G-8.

4. BOTH AUDIO AND VISUAL ALARM SHALL BE PROVIDED.

5. THE FOLLOWING MATERIALS ARE ACCEPTABLE FOR WET WELL CONSTRUCTION: 4000 PSI CONCRETE AT 28 DAYS OR FIBERGLASS REINFORCED POLYESTER (FRP). FRP WET WELLS SHALL BE MANUFACTURED FROM COMMERCIAL GRADE UNSATURATED POLYESTER RESIN OR VINYL ESTER RESIN WITH FIBERGLASS REINFORCEMENTS. ALTERNATE MATERIALS MAY BE USED WITH UTILITY DEPARTMENT APPROVAL.

6. DESIGNER SHALL SUBMIT CALCULATIONS SIGNED, SEALED, AND DATED BY A PROFESSIONAL ENGINEER FOR CITY REVIEW. INCLUDE THE FOLLOWING:

A. FLOW CALCULATIONS AND ASSUMPTIONS

B. TOTAL DYNAMIC HEAD

C. SYSTEM CURVE/PUMP CURVE ANALYSIS

D. PUMP STATION CYCLE AND PUMP RUN TIMES

E. PUMP STATION FLOTATION

F. AVAILABLE EMERGENCY STORAGE CAPACITIES AT AVERAGE AND PEAK WASTEWATER FLOWS

G. MINIMUM FORCE MAIN VELOCITY AND PRESSURE CALCULATIONS. MINIMUM FORCEMAIN SIZE SHALL BE 2". MATERIAL TO BE APPROVED BY THE CITY

H. ANALYSIS OF DOWNSTREAM SEWER VERIFYING CAPACITY USING PEAK PROPOSED FLOWS AND PEAK EXISTING FLOWS.

5. DESIGNER SHALL SUBMIT SIGNED, SEALED, AND DATED CONSTRUCTION DRAWINGS BY A PROFESSIONAL ENGINEER FOR CITY REVIEW.

6. OPERATION AND MAINTENANCE PLAN SHALL BE SUBMITTED TO THE CITY FOR REVIEW. PLAN SHALL INCLUDE HOW MAINTENANCE VEHICLES WILL APPROACH THE PUMP STATION SITE, SPECIFICATIONS ON A NOTIFICATION SYSTEM (IE. AUTO DIALER/SCADA ALARM SYSTEM), EMERGENCY PUMPING AVAILABLE, AND EMERGENCY CONTACT INFORMATION OF RESPONSIBLE PARTY THAT WILL BE CONTACTED IN AN EMERGENCY.
8. WET WELL DETENTION TIME MAY BE REQUIRED AT THE UTILITY DEPARTMENT'S DISCRETION.

9. NOISE CONTROL MAY BE REQUIRED AT THE UTILITY DEPARTMENT'S DISCRETION.

10. CONCRETE WET WELL ACCEPTANCE TESTING SHALL CONFORM TO AVON STANDARD DRAWING SAN-2.

11. FIBERGLASS WET WELL ACCEPTANCE TESTING SHALL CONFORM TO THE FOLLOWING:
- AN EXFILTRATION TEST MUST BE PERFORMED AFTER THE WET WELL HAS BEEN BACKFILLED AND COMPACTED. EXFILTRATION SHALL NOT EXCEED 0.0142 GAL/HR PER FOOT DIAMETER PER FOOT DEPTH. THE TEST MUST BE DONE BY PLUGGING THE GRAVITY INVERT AND FILLING UP THE WET WELL WITH WATER TO EITHER 1-FOOT BELOW THE WET WELL TOP SLAB, OR UP TO THE MANHOLE LID WITH THE LOWEST ELEVATION BELOW TOP SLAB. THIS LEVEL MUST BE CLEARLY TEMPORARILY MARKED IN THE WE WELL INTERNAL WALL. ONCE THE WET WELL IS FILLED, IT MUST BE LEFT FOR STABILIZATION FOR 48 HOURS MINIMUM PRIOR TO BEGINNING THE EXFILTRATION TEST. AFTER THE STABILIZATION PERIOD, THE WET WELL MUST BE REFILLED UP TO THE MARK TO BEGIN THE TEST. THE TEST SHALL BE DONE FOR TWO HOURS MINIMUM, AND NO WATER MAY BE ADDED TO THE WET WELL DURING THE TEST PERIOD. THE EXFILTRATION TEST MUST BE DETERMINED BY MEASURING THE AMOUNT OF WATER REQUIRED TO RAISE THE WET WELL LEVEL BACK TO THE MARK AT THE END OF THE TEST PERIOD. THE MAXIMUM ALLOWABLE WATER LOSS TO PASS THE TEST IS DETERMINED BY THE FOLLOWING EQUATION:
- WATER LOSS (GALLONS) = 0.0142tDH
- WHERE:
- t=TEST TIME PERIOD (2 HOURS)
- D=WET WELL DIAMETER (IN FEET)
- h=WATER LEVEL DEPTH WITHIN WET WELL (IN FEET)
- IF THE WET WELL FAILS THE EXFILTRATION TEST, NECESSARY REPAIRS SHALL BE MADE BY THE CONTRACTOR AND THE TEST REPEATED UNTIL THE WET WELL PASSES.
12. WET WELL FOUNDATION SHALL BE #57 LIMESTONE AT A MINIMUM DEPTH OF 6". BACKFILL SHALL BE PER AVON STANDARD DRAWING G-6.

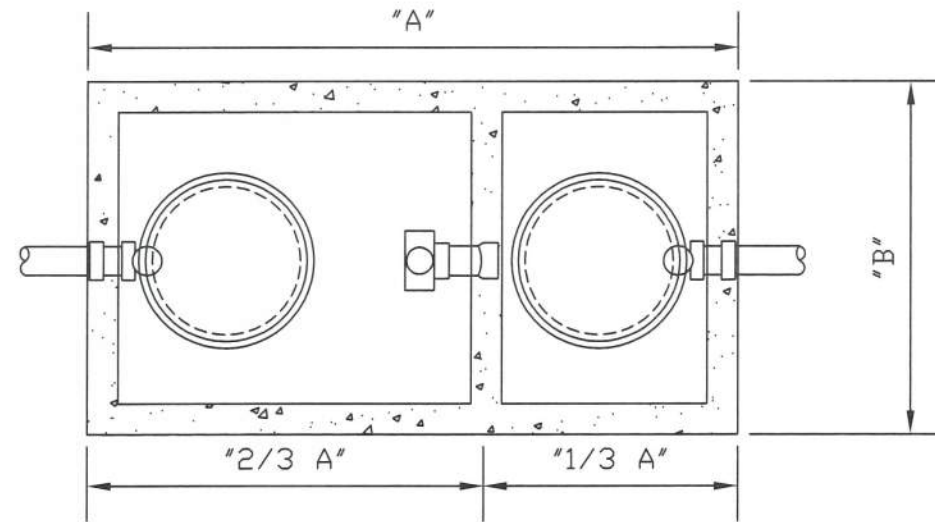
13. A SIGN SHALL BE POSTED ON OR ADJACENT TO THE LIFT STATION. THE SIGN SIZE SHALL BE 24"x30", WHITE BACKGROUND WITH RED LETTERS. THE SIGN SHALL STATE THE FOLLOWING:

A. PRIVATE SANITARY SEWER LIFT STATION

B. IN CASE OF EMERGENCY CALL.....

C. OWNER OR BUSINESS NAME AND PHONE NUMBER

D. CONTRACTOR'S NAME AND PHONE NUMBER
- | CITY OF AVON
CONSTRUCTION STANDARDS
AND SPECIFICATIONS | | |
|--|-----------------------|--------|
| PRIVATE
PUMP STATION
NOTES | ADOPTION
ORDINANCE | DATE |
| STANDARD
CONSTRUCTION
DRAWING SAN-12 | | 2/2019 |

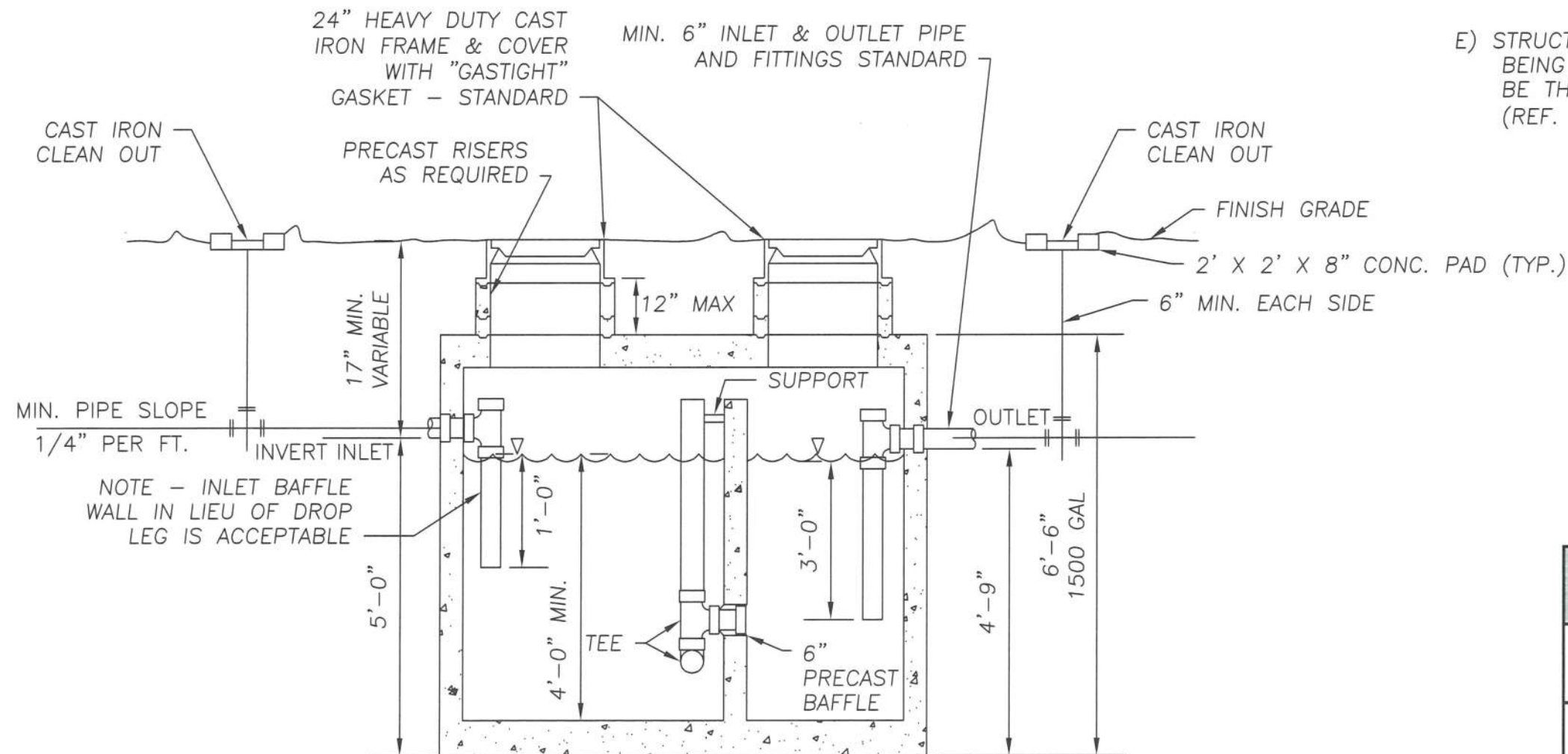


TOP VIEW
NOT TO SCALE

G.T. SIZE	DIM. "A"	DIM. "B"
500 GALLON	6'-2"	4'-2"
750 GALLON	8'-1"	4'-0"
1000 GALLON	8'-2"	5'-1"
1200 GALLON	8'-6"	5'-9"
1500 GALLON	9'-0"	7'-0"

NOTE:

- A) PRECAST TRAFFIC BEARING GREASE TRAP IS REQUIRED.
- B) INDIVIDUAL PRECAST DIMENSIONS MAY VARY.
- C) PROVIDE SHOP DRAWINGS FOR APPROVAL.
- D) REFERENCE IS TO BE MADE TO THE OHIO PLUMBING CODE FOR PROPER GREASE RETENTION CAPACITY OF THE INTERCEPTOR.
- E) STRUCTURES SHALL BE VACUUM TESTED PRIOR TO BEING PUT INTO USE. TESTING REQUIREMENTS SHALL BE THE SAME AS FOR MANHOLE VACUUM TESTING (REF. SAN-2)



SECTION VIEW
NOT TO SCALE

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
EXTERIOR PRECAST GREASE TRAP / INTERCEPTOR DETAIL	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING		2/2019
		SHEET 1 OF 3

SAN-13

NOTES

- 1) A PRECAST CONCRETE GREASE TRAP, DESIGNED TO TRAP NON-BIODEGRADABLE MATERIALS, SUCH AS GREASE AND SEDIMENTS EMANATING PRIMARILY FROM KITCHENS AND FOOD SERVICE OPERATIONS, SHALL BE PROVIDED.

2) THE CAPACITY AND DIMENSIONS FOR THE GREASE TRAP SHOWN ARE FOR USE AS A GUIDE ONLY. DETAILED SHOP DRAWINGS AND INSTALLATION PLANS SHALL BE SUBMITTED TO THE CITY FOR APPROVAL.

3) THE NUMBER OF INLET PIPES SHALL BE VERIFIED, AS ARE THE SIZES OF THE INLET AND OUTLET PIPES.

4) 6 INCH CLEAN OUTS SHALL BE PROVIDED FOR BOTH THE INLET AND OUTLET PIPE.

5) A SAMPLING PORT MANHOLE MAY BE REQUIRED BY THE CITY DOWNSTREAM OF THE INTERCEPTOR BEFORE CONNECTION TO THE SANITARY MAIN, FOR SAMPLING PURPOSES.

6) INSTALL STRUCTURE ON A BED OF 6 INCH COMPACTED #57 LIMESTONE AGGREGATE.

7) OUTLET IS TO BE AT 1/3 LIQUID DEPTH FROM BOTTOM OR A MINIMUM OF 1 FOOT WHICHEVER IS GREATER.

8) INTERCEPTOR IS TO BE CONSTRUCTED AS A PRECAST CONCRETE UNIT WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 5000 PSI.

9) UTILIZE CONTINUOUS BITUMINOUS SEALANT AT ALL JOINTS. ALL PENETRATIONS, LIFT POINTS, ETC. ARE TO BE MADE WATERTIGHT PRIOR TO BACKFILLING STRUCTURE EXTERIOR OF INTERCEPTOR IS TO BE ASPHALT COATED.
- 10) LOCATE INTERCEPTOR IMMEDIATELY OUTSIDE BUILDING WHERE THERE IS EASY ACCESS FOR CLEANING.

11) IT IS RECOMMENDED TO FILL INTERCEPTOR WITH WATER BEFORE ACTUAL SANITARY USE.

12) UTILIZE SCH. 40 PVC OR SCH. 80 PVC INSIDE STRUCTURE, UTILIZE SDR 26 OR SDR 35 PIPE OUTSIDE INTERCEPTOR, AS APPROVED BY THE CITY.

13) UTILIZE NON-CORROSIVE MATERIALS AND FASTENERS TO SUPPORT PIPE ON BAFFLE.

14) THE INTERCEPTOR SHALL BE CLEANED BY AN APPROVED SEWAGE DISPOSAL CONTRACTOR WHENEVER 25% OF THE OPERATING DEPTH OF THE GREASE INTERCEPTOR IS OCCUPIED BY FATS, OILS, GREASES AND SETTLED SOLIDS OR A MINIMUM OF ONCE EVERY FOUR (4) MONTHS WHICHEVER IS MORE FREQUENT. WRITTEN CLEANING RECORDS ARE TO BE MAINTAINED.

15) DO NOT CONNECT DISHWATER DISCHARGE TO A GREASE INTERCEPTOR.

16) FLOOR DRAINS AND HAND WASHING FACILITIES IN FOOD PREPARATION AND MEAT PREPARATION AREAS SHALL NOT DISCHARGE INTO GREASE TRAPS.

17) INVERT OF OUTLET SHALL BE INSTALLED A MINIMUM OF 3 INCHES BELOW INVERT OF INLET.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
EXTERIOR PRECAST GREASE TRAP / INTERCEPTOR NOTES	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING SAN-13		2/2019
		SHEET 2 OF 3

GENERAL DESIGN

SIZING OF GREASE TRAPS IS BASED ON WASTEWATER FLOW AND CAN BE CALCULATED FROM THE NUMBER AND KIND OF SINKS AND FIXTURES DISCHARGING TO THE TRAP. IN ADDITION, A GREASE TRAP SHOULD BE RATED ON ITS GREASE RETENTION CAPACITY, WHICH IS THE AMOUNT OF GREASE (IN POUNDS) THAT THE TRAP CAN HOLD BEFORE ITS AVERAGE EFFICIENCY DROPS BELOW 90%. CURRENT PRACTICE IS THAT GREASE-RETENTION CAPACITY IN POUNDS SHOULD EQUAL AT LEAST TWICE THE FLOW CAPACITY IN GALLONS PER MINUTE. IN OTHER WORDS, A TRAP RATED AT 20 gpm (1.3 l/sec) SHOULD RETAIN AT LEAST 90% OF THE GREASE DISCHARGED TO IT UNTIL IT HOLDS AT LEAST 40 lb. (18 kg) OF GREASE (1). MOST MANUFACTURERS OF COMMERCIAL TRAPS RATE THEIR PRODUCTS IN ACCORDANCE WITH THIS PROCEDURE.

RECOMMENDED MINIMUM FLOW-RATE CAPACITIES OF TRAPS CONNECTED TO DIFFERENT TYPES OF FIXTURES ARE GIVEN IN THE TABLE.

ANOTHER DESIGN METHOD HAS BEEN DEVELOPED THROUGH YEARS OF FIELD EXPERIENCE (3). THE FOLLOWING TWO EQUATIONS ARE USED FOR RESTAURANTS AND OTHER TYPES OF COMMERCIAL KITCHENS:

1. RESTAURANTS

$$(D) \times (GL) \times (ST) \times (HR/2) \times (LF) = \text{SIZE OF GREASE INTERCEPTOR, GALLONS}^a$$

WHERE:

D = NUMBER OF SEATS IN DINING AREA

GL = GALLONS OF WASTEWATER PER MEAL, NORMALLY 5 gal.

ST = STORAGE CAPACITY FACTOR -- MINIMUM OF 1.7
ON-SITE DISPOSAL-2.5

HR = NUMBER OF HOURS OPEN

LF = LOADING FACTOR -- 1.25 INTERSTATE FREEWAYS

1.0 OTHER FREEWAYS

1.0 RECREATIONAL AREAS

0.8 MAIN HIGHWAYS

0.5 OTHER HIGHWAYS

2. HOSPITALS, NURSING HOMES, OTHER TYPE COMMERCIAL KITCHENS WITH VARIED SEATING CAPACITY:

(M) X (GL) X (ST) X (2.5) X (LF) = SIZE OF GREASE INTERCEPTOR, GALLONS

WHERE:

M = MEALS PER DAY

GL = GALLONS OF WASTEWATER PER MEAL, NORMALLY 4.5 gal.

ST = STORAGE CAPACITY FACTOR -- MINIMUM OF 1.7
ON-SITE DISPOSAL-2.5

LF = LOADING FACTOR -- 1.25 GARBAGE DISPOSAL &
DISH WASHING

1.0 WITHOUT GARBAGE DISPOSAL

0.75 WITHOUT DISH WASHING

0.5 WITHOUT DISH WASHING AND
GARBAGE DISH WASHING

^a MINIMUM SIZE GREASE INTERCEPTOR SHOULD BE 750 gal.

THUS, FOR A RESTAURANT WITH A 75 - SEAT DINING AREA, AN 8 HR DAY OPERATION, A TYPICAL DISCHARGE OF 5 gal. (19 L) PER MEAL, A STORAGE CAPACITY FACTOR OF 1.7 AND A LOADING FACTOR OF 0.8, THE SIZE OF THE GREASE INTERCEPTOR IS CALCULATED AS FOLLOWS:

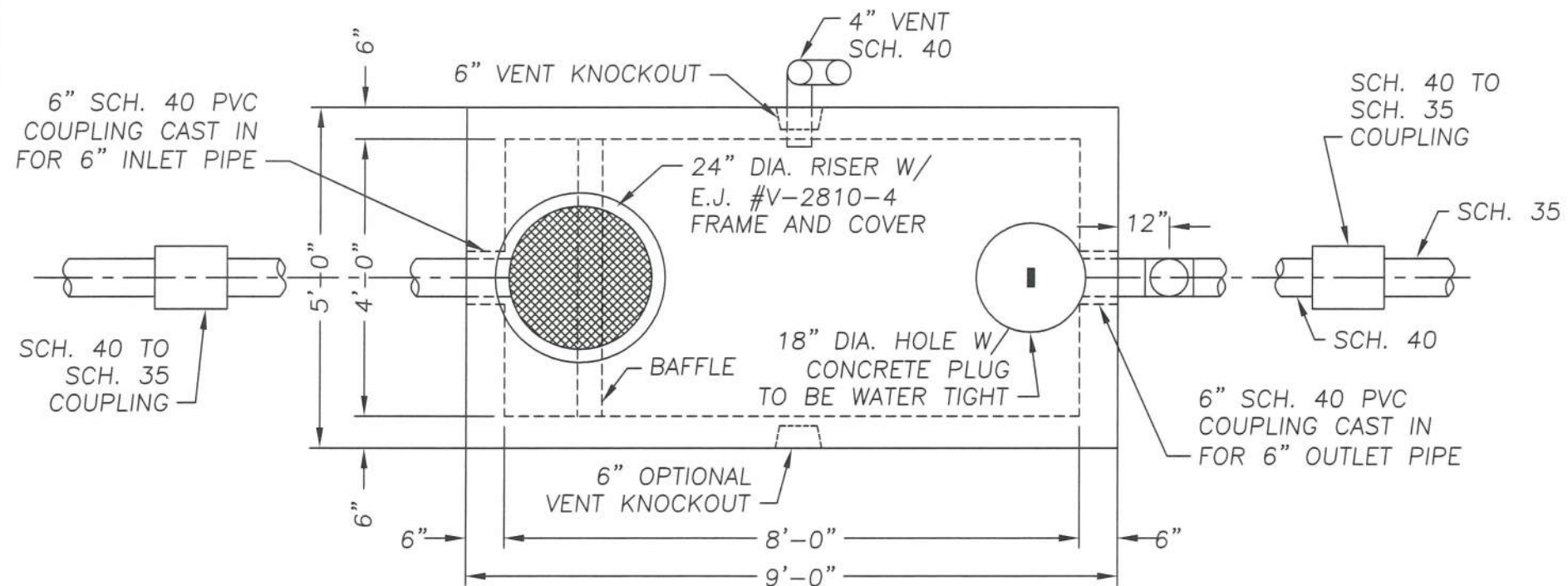
$$(75) \times (5) \times (1.7) \times (8/2) \times (0.8) = 2,040 \text{ gal. (7,722 L)}$$

OTHER DESIGN CONSIDERATIONS INCLUDE: FACILITIES FOR INSURING THAT BOTH THE INLET AND OUTLET ARE PROPERLY BAFFLED; EASY MANHOLE ACCESS FOR CLEANING; AND INACCESSIBILITY OF THE TRAP TO INSECTS AND VERMIN.

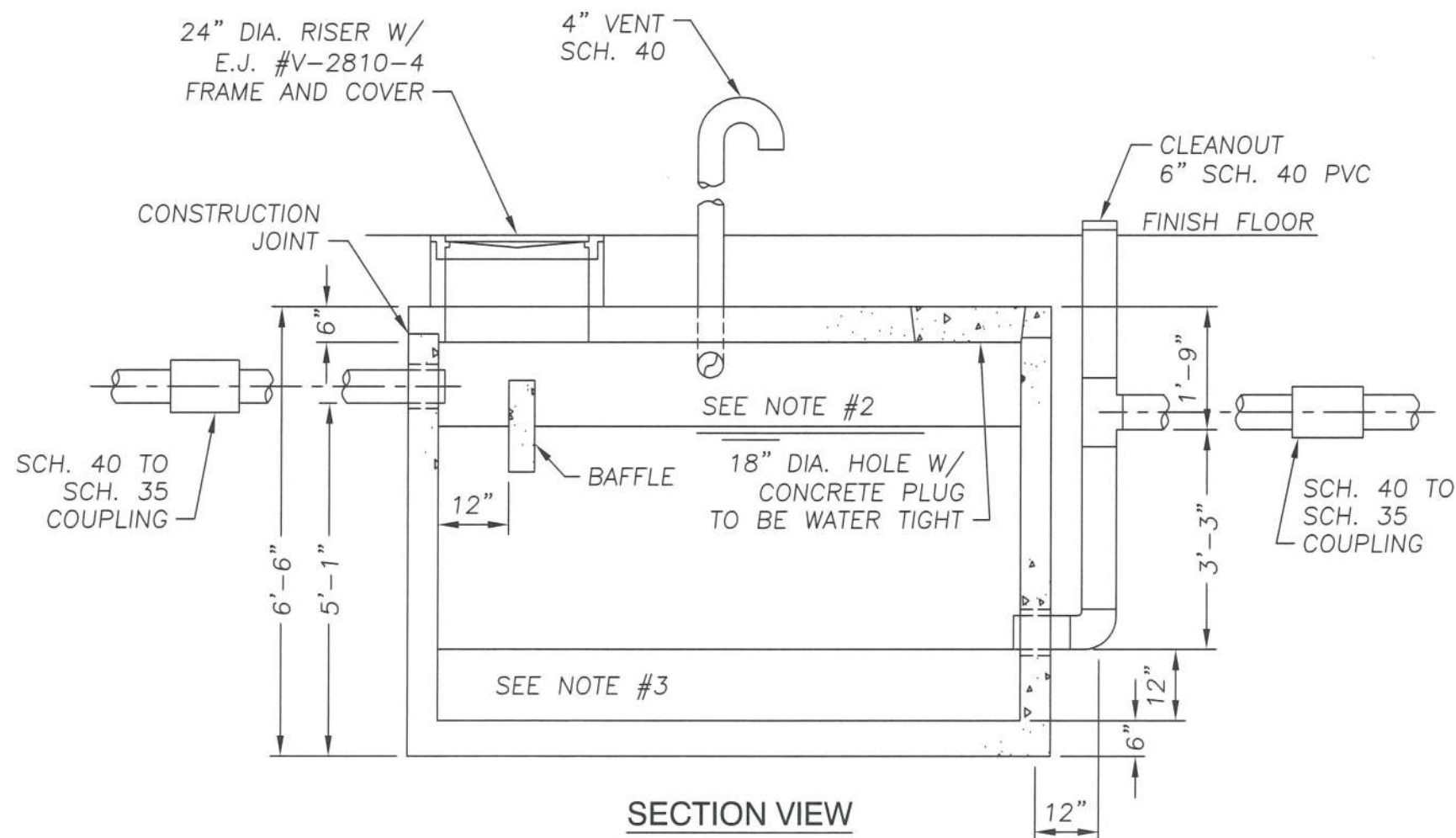
RECOMMENDED RATINGS FOR COMMERCIAL GREASE TRAPS

<u>TYPE OF FIXTURE</u>	<u>FLOW RATE gpm</u>	<u>GREASE RETENTION CAPACITY RATING lb</u>	<u>RECOMMENDED MAXIMUM CAPACITY PER FIXTURE CONNECTED TO TRAP gal</u>
RESTAURANT KITCHEN SINK	15	30	50.0
SINGLE-COMPARTMENT SCULLERY SINK	20	40	50.0
DOUBLE-COMPARTMENT SCULLERY SINK	25	50	62.5
2 SINGLE-COMPARTMENT SINKS	25	50	62.5
2 DOUBLE-COMPARTMENT SINKS	35	70	87.5
DISHWASHERS FOR RESTAURANTS:			
UP TO 30 gal. WATER CAPACITY	15	30	50.0
UP TO 50 gal. WATER CAPACITY	25	50	62.5
50 TO 100 gal. WATER CAPACITY	40	80	100.0

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
EXTERIOR PRECAST GREASE TRAP / INTERCEPTOR DESIGN	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING	SAN-13	2/2019
		SHEET 3 OF 3



TOP VIEW

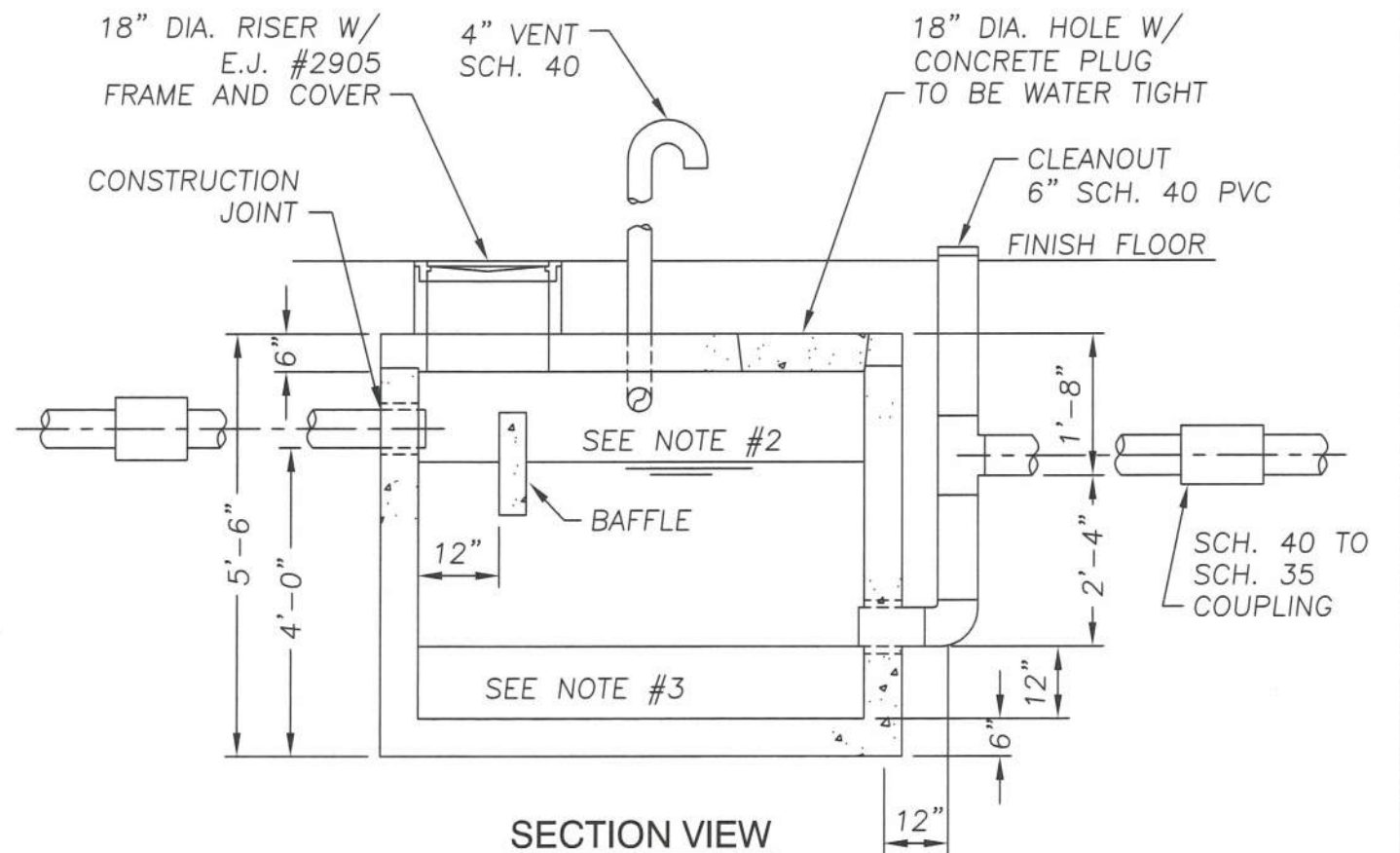
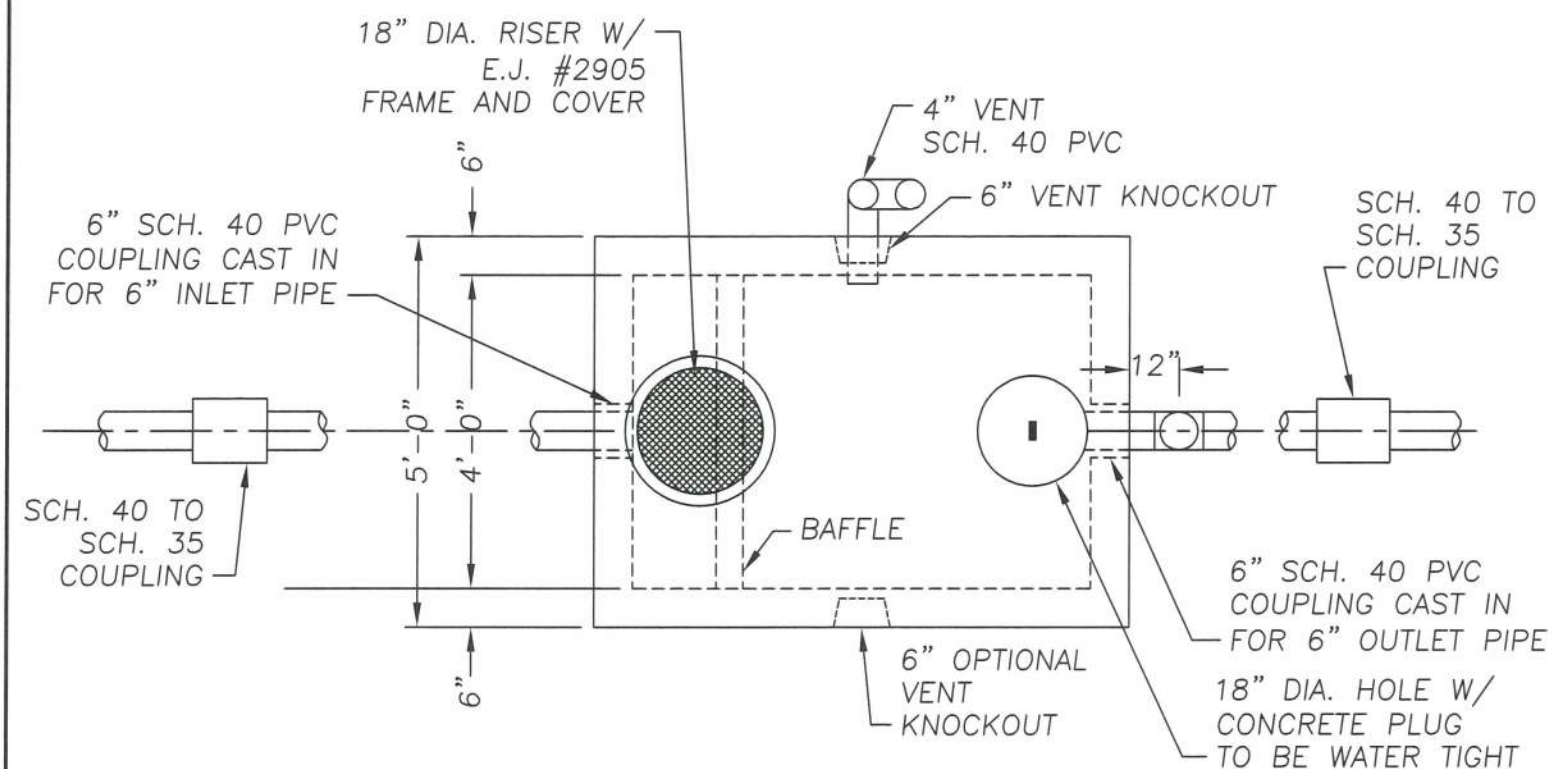


SECTION VIEW

NOTES:

- 1) REINFORCED PRECAST CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH OF 5000 PSI AT 28 DAYS.
- 2) VENTILATED AIRSPACE.
- 3) SPACE TO COLLECT SETTLING SOLIDS.
- 4) VENT PIPE TO BE 4" PVC SCH. 40 TYPE WITH HYDRAULIC CEMENT AT THE KNOCKOUT INSET.
- 5) THE VENT OUTLET SHALL BE PLACED IN A NON-TRAFFIC BEARING AREA.
i.e.: LAWN AREA OR NEXT TO THE WALL OF A BUILDING.
- 6) VENT RUNS SHALL RUN SO AS TO HAVE A SLIGHT POSITIVE PITCH BACK TO THE PRECAST TANK.
- 7) THE INLET PIPE MAY BE SCH. 35 PVC. HOWEVER, AN ADAPTER SHALL BE PROVIDED AND A SCH. 40 PVC COUPLING SHALL BE CAST IN FOR THE 6" INLET PIPE.
- 8) CLEANOUT INSTALLATION TO BE IN ACCORDANCE WITH DETAIL SHEET SAN-5 IN PAVED AREAS FOR COMMERCIAL/INDUSTRIAL AND UNPAVED AREAS FOR COMMERCIAL/INDUSTRIAL AREAS.
- 9) CONSTRUCTION JOINT TO BE SEALED WITH 1" CONSEAL CS-440 OIL RESISTANT SEALANT.
- 10) 24" DIAMETER RISER AVAILABLE IN 12" + 24" HEIGHTS.
- 11) ACCESS FOR CLEANING SHALL BE PROVIDED THROUGH A BOLT DOWN CAST IRON, GAS TIGHT COVER LOCATED AT THE INLET END OF THE STRUCTURE.
- 12) SHALL BE TRAFFIC BEARING IF WITHIN PAVED AREA.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
OIL & SAND SEPARATOR 104 CUBIC FEET EFFECTIVE CAPACITY	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING SAN-14		2/2019
		SHEET 1 OF 3



NOTES:

- 1) REINFORCED PRECAST CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH OF 5000 PSI AT 28 DAYS.
- 2) VENTILATED AIRSPACE.
- 3) SPACE TO COLLECT SETTLING SOLIDS.
- 4) VENT PIPE TO BE 4" PVC SCH. 40 TYPE WITH HYDRAULIC CEMENT AT THE KNOCKOUT INSET.
- 5) THE VENT OUTLET SHALL BE PLACED IN A NON-TRAFFIC BEARING AREA.
i.e.: LAWN AREA OR NEXT TO THE WALL OF A BUILDING.
- 6) VENT RUNS SHALL RUN SO AS TO HAVE A SLIGHT POSITIVE PITCH BACK TO THE PRECAST TANK.
- 7) THE INLET PIPE MAY BE SCH. 35 PVC. HOWEVER, AN ADAPTER SHALL BE PROVIDED AND A SCH. 40 PVC COUPLING SHALL BE CAST IN FOR THE 6" INLET PIPE.
- 8) CLEANOUT INSTALLATION TO BE IN ACCORDANCE WITH DETAIL SHEET SAN-5 IN PAVED AREAS FOR COMMERCIAL/INDUSTRIAL AND UNPAVED AREAS FOR COMMERCIAL/INDUSTRIAL AREAS.
- 9) CONSTRUCTION JOINT TO BE SEALED WITH 1" CONSEAL CS-440 OIL RESISTANT SEALANT.
- 10) 24" DIAMETER RISER AVAILABLE IN 12", 15" + 24" HEIGHTS.
- 11) ACCESS FOR CLEANING SHALL BE PROVIDED THROUGH A BOLT DOWN CAST IRON, GAS TIGHT COVER LOCATED AT THE INLET END OF THE STRUCTURE.
- 12) SHALL BE TRAFFIC BEARING IF WITHIN PAVED AREA.

WHERE AN OIL SEPARATOR ONLY IS REQUIRED AND ALL PLUMBING CODES ARE MET, A 50 CU. FT. PRECAST OIL SEPARATOR MAY BE PERMITTED BY THE CITY.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
OIL & SAND SEPARATOR 50 CUBIC FEET EFFECTIVE CAPACITY	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING SAN-14		2/2019
		SHEET 2 OF 3

VACUUM TESTING FOR PRECAST OIL AND SAND, OIL SEPARATORS

- A) VACUUM TESTING SHALL BE IN ACCORDANCE WITH THE FOLLOWING:
- B) THIS TEST METHOD IS ONLY APPLICABLE TO PRECAST CONCRETE OIL AND SAND, OIL SEPARATORS.
- C) ALL LIFTING HOLES AND EXTERIOR JOINTS SHALL BE FILLED WITH APPROVED HYDRAULIC CEMENT.
- D) ALL PIPES, STUBOUTS, AND OTHER OPENINGS INTO THE SEPARATOR SHALL BE SUITABLY PLUGGED IN SUCH A MANNER AS TO PREVENT DISPLACEMENT OF THE PLUGS WHILE THE VACUUM IS DRAWN.
- E) INSTALLATION AND OPERATION OF VACUUM EQUIPMENT AND INDICATING DEVICES SHALL BE IN ACCORDANCE WITH EQUIPMENT SPECIFICATIONS AND INSTRUCTIONS PROVIDED BY THE MANUFACTURER.
- F) THE TEST HEAD SHALL BE PLACED AT THE INSIDE OF THE TOP OF THE SEPARATOR CASTING AND THE SEAL INFLATED IN ACCORDANCE WITH THE MANUFACTURER’S RECOMMENDATION.
- G) A MEASURED VACUUM OF 5 INCHES OF MERCURY SHALL BE DRAWN TO THE SEPARATOR.
- H) ACCEPTANCE FOR THE OIL AND SAND, OIL SEPARATOR SHALL BE DEFINED AS WHEN THE ELAPSED TIME FOR A NEGATIVE PRESSURE HAS NO LOSS:

<u>SEPARATOR</u>	<u>CAPACITY</u>	<u>TEST TIME</u>
OIL AND SAND	104 CUBIC FEET	120 SECONDS
OIL	50 CUBIC FEET	120 SECONDS

- I) IF THE SEPARATOR FAILS THE TEST, NECESSARY REPAIRS SHALL BE MADE BY THE CONTRACTOR AND THE VACUUM TEST REPEATED UNTIL THE SEPARATOR PASSES THE TEST. REPAIRS ARE TO BE MADE WITH NON-SHRINK GROUT OR HYDRAULIC CEMENT ONLY.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
OIL AND SAND SEPARATOR TEST PROCEDURES	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING SAN-14		2/2019
		SHEET 3 OF 3

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.
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		2/2019

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.

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 DVD 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.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
STORM SEWER ACCEPTANCE TESTING	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING STM-2		2/2019

CORRUGATED SMOOTH INTERIOR HDPE STORM PIPE SPECIFICATIONS

1. THE CITY OF AVON SHALL CONSIDER THE USE OF HDPE IN AREAS OF DEDICATED RIGHT-OF-WAY ON A CASE-BY-CASE BASIS. ONLY PIPE DIAMETERS OF 12" OR GREATER SHALL BE CONSIDERED.
2. PIPE TYPE IS TO BE THE HANCOR SURE-LOK OR ADS N-12 WT TYPE OR EQUAL (AASHTO M294, TYPE S OR ASTM F2306) WITH SMOOTH INTERIOR AND ANNULAR EXTERIOR CORRUGATIONS. PIPE SHALL BE BELL AND SPIGOT TYPE WITH WATERTIGHT GASKET JOINING SYSTEM ACCORDING TO ASTM D3212.
3. FITTINGS SHALL BE PREFABRICATED AND CONFORM TO AASHTO M252, AASHTO M294, OR ASTM F2306.
4. TRANSITIONS FROM ONE TYPE OF PIPE TO ANOTHER OR FROM ONE SIZE TO ANOTHER SHALL BE DONE WITH PREFABRICATED FITTINGS OR FERNCOS. CONCRETE COLLARS SHALL ONLY BE USED WITH THE APPROVAL OF THE CITY ENGINEER.
5. STORM LATERAL CONNECTIONS SHALL BE MADE USING A FACTORY TEE WITH A 6" ADAPT WITH SDR 35 BELL AND 6" N-12 GASKET (NYLOPLAST ADS N-12 X SWR SDR35 BXB ADAPTER). STORM LATERAL CONNECTIONS MAY ALSO BE MADE USING AN INSERT TEE MANUFACTURED SPECIFICALLY FOR HDPE TYPE PIPE, AS MAY BE APPROVED BY THE CITY ENGINEER, PRIOR TO ANY CONSTRUCTION.
6. INSTALLATION SHALL REQUIRE THE FOLLOWING MINIMUM PIPE COVER:

NOMINAL DIAMETER (IN)	MINIMUM COVER (IN)
12	12
15	12
18	13
24	17
30	22
36	25
42	29
48	33
60	40

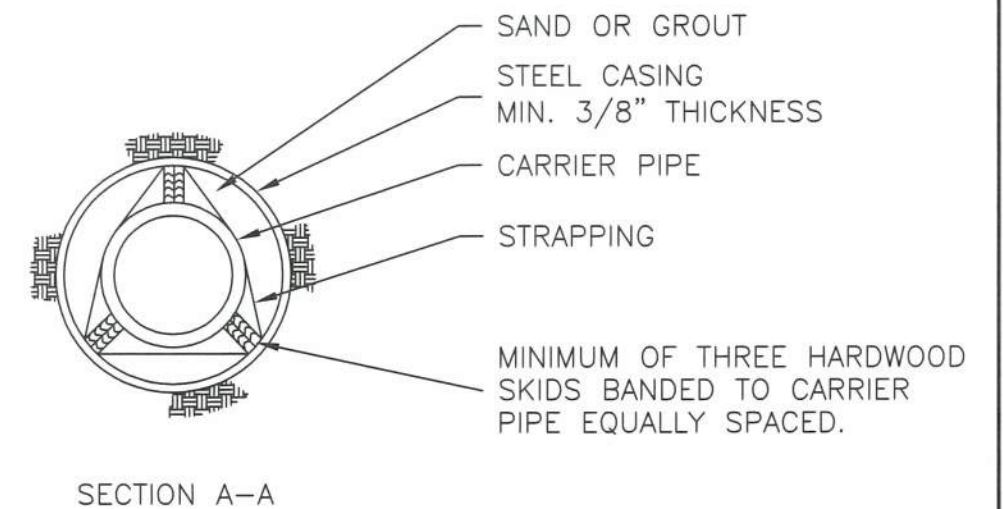
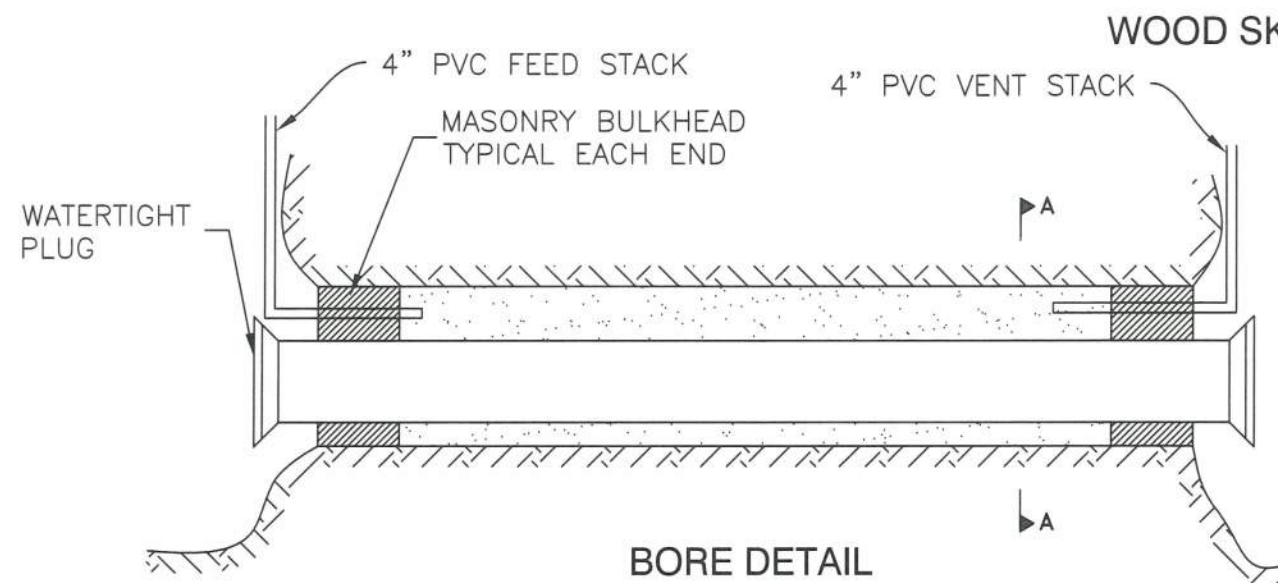
TOTAL MINIMUM COVER IS MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TO TOP OF RIGID PAVEMENT.

7. IF THE DESIGN ENGINEER CAN PROVIDE CALCULATIONS THAT PROVE FLOTATION WILL NOT BE A FACTOR THE FOLLOWING MINIMUM PIPE COVER MAY BE ACCEPTABLE:
 - A.) INSTALLATION IN TRAFFICKED AREAS SHALL REQUIRE A MINIMUM OF ONE (1) FOOT OF COVER FOR PIPE UP TO AND INCLUDING 48" DIAMETER. 54" AND 60" DIAMETER PIPE SHALL REQUIRE A MINIMUM OF TWO (2) FEET OF COVER.
 - B.) INSTALLATION IN GREEN SPACE AREAS SHALL REQUIRE A MINIMUM OF ONE (1) FOOT OF COVER FOR ALL DIAMETERS.
 - C.) WHEN NO PAVEMENT WILL BE INSTALLED, BUT VEHICLE TRAFFIC IS EXPECTED (GRAVEL DRIVEWAY) A TOTAL MINIMUM COVER OF 18 INCHES FOR PIPE SIZES UP TO AND INCLUDING 48" DIAMETER IS REQUIRED. 54" AND 60" DIAMETER PIPE SHALL REQUIRE A MINIMUM 30 INCHES OF COVER TO MINIMIZE RUTTING.
8. TEMPORARY MINIMUM PIPE COVER REQUIREMENTS FOR CONSTRUCTION EQUIPMENT LOADING SHALL BE PER THE MANUFACTURER'S RECOMMENDATION.
9. TRENCH DETAIL SHALL CONFORM TO DRAWING G-6 WITH THE FOLLOWING EXCEPTIONS:

NOMINAL PIPE DIAMETER (IN)	MINIMUM TRENCH WIDTH (IN)
48	80
54	88
60	96

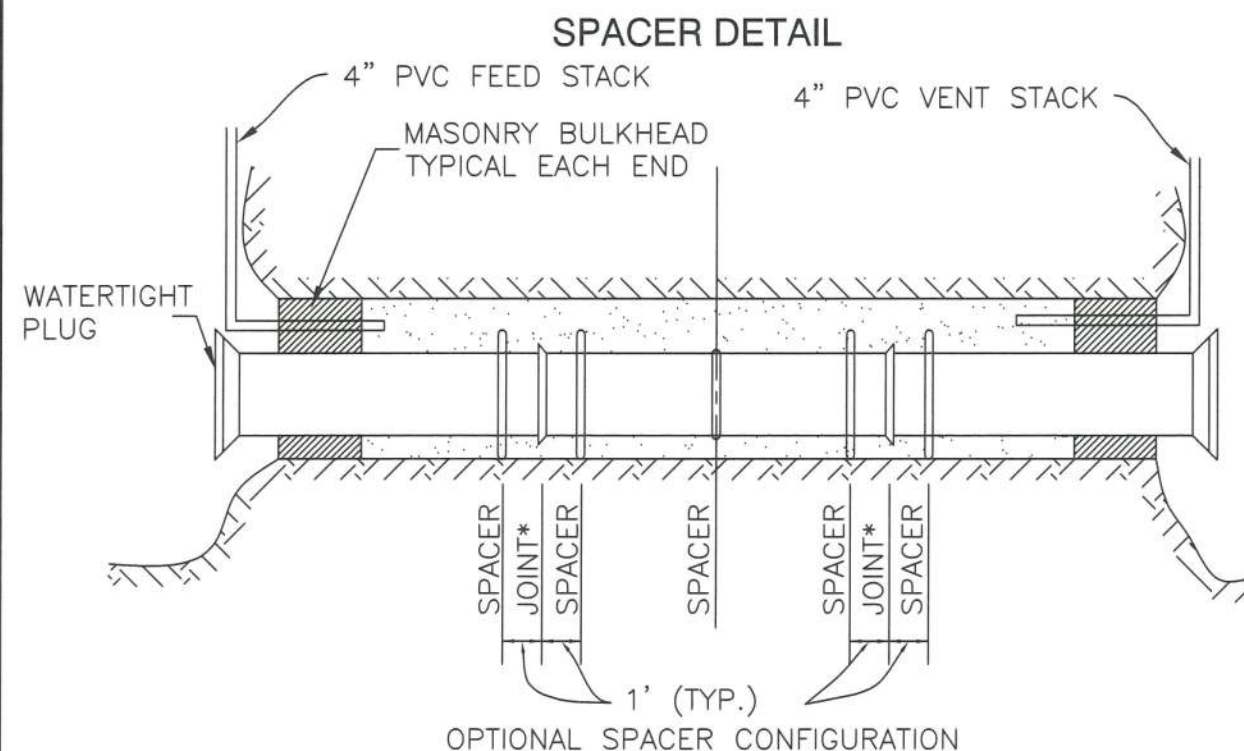
PIPE COVER FOR HDPE PIPE SHALL BE AS DISCUSSED ABOVE AND APPROVED BY THE CITY.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
HDPE NOTES	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING STM-3		2/2019



BORE NOTES:

- 1) PVC STACKS ARE TO BE FILLED TO WITHIN 2 FT. OF GRADE AND CUT AND CAPPED 2 FT. BELOW GRADE.
- 2) MASONRY BULK HEADS SHALL BE PROVIDED AT EACH END.
- 3) GRANULAR BEDDING IN BORE PIT AND RECEIVING PIT SHALL BE PLACED TO A MINIMUM OF 1 FOOT ABOVE THE PIPE.
- 4) BONDED SKIDS MAY BE PERMITTED IN LIEU OF RETAINING GLANDS, AS APPROVED BY THE CITY UTILITY DEPARTMENT.
- 5) SANITARY PIPE THROUGH THE CASING SHALL BE PVC SDR-35 ASTM D3034 OR SDR 26 IF 17FT DEEP OR DEEPER.
- 6) FREE BORE MAY BE PERMITTED ONLY AT THE DISCRETION OF THE CITY UTILITY DEPARTMENT. IN SUCH CASES THE BORE SHALL BE NO LARGER THAN THE BELL OF THE PIPE BEING USED. SHOULD THE BORE BE LARGER THAN THE PIPE BELL, ENGINEERED GROUT SHALL BE REQUIRED TO FILL THE VOID.
- 7) ANY TRANSITION OF PIPE FROM DIP TO PVC, SHALL BE DONE WITH A TRANSITIONAL ADAPTER.
- 8) MINIMUM CASING WALL THICKNESS IS TO BE 3/8"
- 9) CASING SIZE FOR PIPE IN EXCESS OF 16" SHALL BE REVIEWED AND DETERMINED BY THE ENGINEER AT THE TIME OF PLAN REVIEW AND PRIOR TO ANY CONSTRUCTION.
10. NO CASING SHALL BE REQUIRED UNDER THE ROAD IF OPEN CUT TRENCHING. THIS SHALL BE AT THE UTILITY DEPARTMENT'S DISCRETIONS.



PVC CASING SIZE REQUIREMENTS		
PIPE SIZE	BELL SIZE	CASING SIZE
6"	7.23"	12"
8"	9.50"	16"
10"	11.86"	18"
12"	14.06"	24"
15"	17.93"	24"

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
STORM PIPE BORE DETAIL	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING	STM-4	2/2019

CONSTRUCTION NOTES AND STANDARDS FOR PRECAST STORM 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. FLOOR AND BARREL SHALL BE A MONOLITHIC POUR TYPE.

4. FLEXIBLE CONNECTIONS SHALL BE PROVIDED FOR STORM 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 SERIES HEAVY DUTY CASTING OR EQUAL. HEAVY DUTY BOLT DOWN CASTING AND COVER (E.J.I.W. 1040-WT) OR EQUAL SHALL BE USED WHENEVER A STORM MANHOLE IS IN AN OFF-SITE EASEMENT OR NEAR A WATERWAY OR WITHIN ROADWAY AREAS.

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.

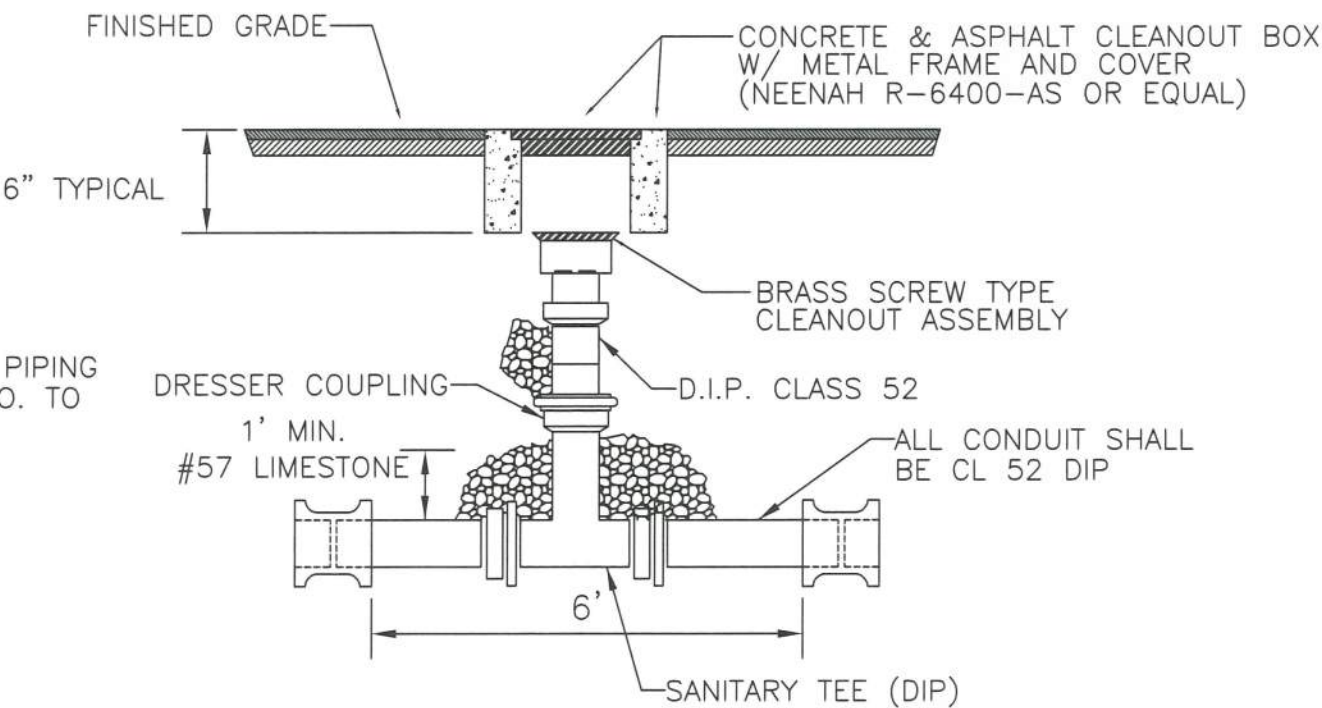
13. BEDDING SHALL BE 6" MIN. #57 LIMESTONE. BACKFILL SHALL CONFORM TO PIPE TRENCH DETAIL.

14. MANHOLES SHALL NOT BE INSTALLED IN SIDEWALKS OR ROADWAY AREAS WHENEVER POSSIBLE.

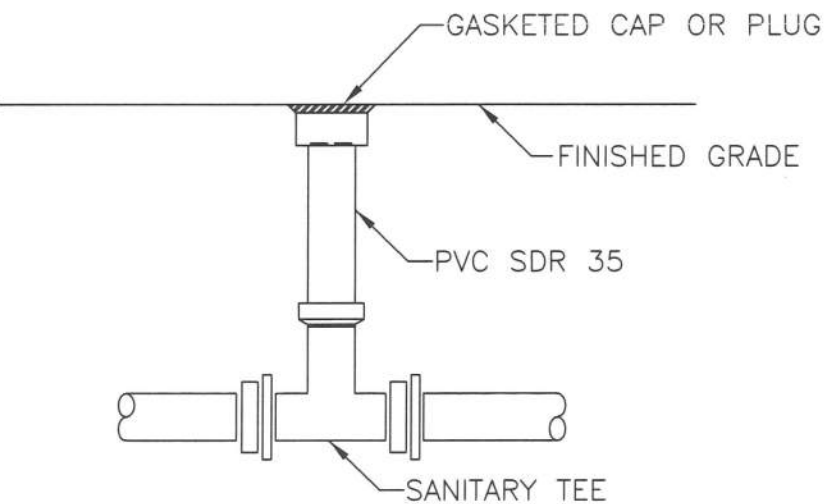
15. FOR 60" MANHOLES, E.J.I.W. #2075 52" RING WITH 36" OPENING IS REQUIRED

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
CONSTRUCTION NOTES & STANDARD FOR PRECAST STORM MANHOLES	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING STM-5		2/2019

NOTE: G.C. TO INSTALL CLEANOUTS AT ANY PIPING ANGLE CHANGES AND EVERY 100' C.O. TO BE INSTALLED ON ALL ROOF DRAINS.



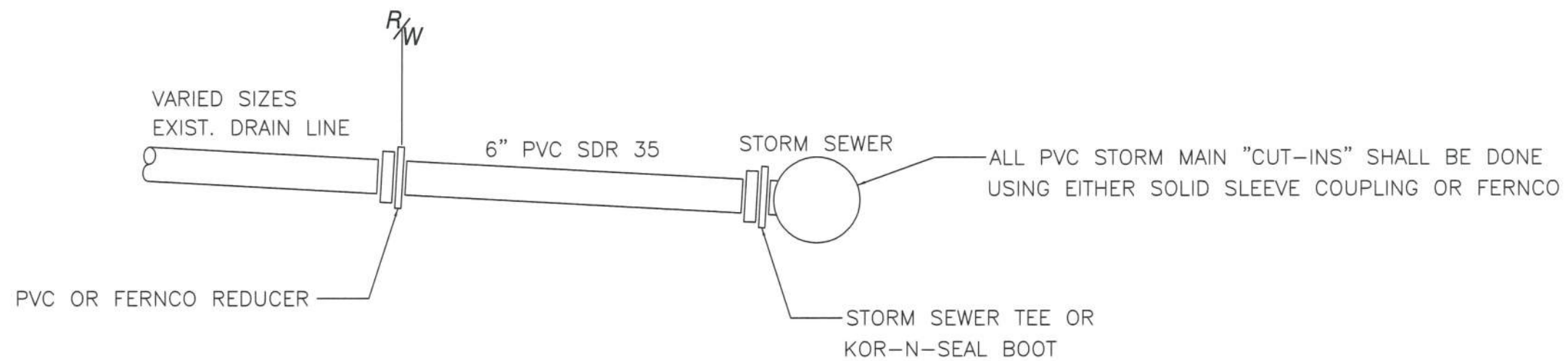
TYPICAL STORM CLEANOUT IN PAVED AREAS



TYPICAL STORM CLEANOUT IN UNPAVED AREAS

- ① ALL CLEANOUT'S & WATER CURB BOXES LOCATED IN DRIVEWAY OR SIDEWALK ARE TO BE PROVIDED WITH A 2' BOX OUT
- ② IN THE CASE OF RECTANGULAR CASTINGS, THE CASTING IS TO BE PARALLEL TO THE BOX OUT.
- ③ BOX OUTS ARE TO BE 6" THICK/ PLACED ON A WELL COMPACTED BASE
- ④ A TEE OR WYE IS ACCEPTABLE FOR SANITARY CLEANOUTS.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
STORM SEWER CLEANOUT DETAILS	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING STM-7		2/2019

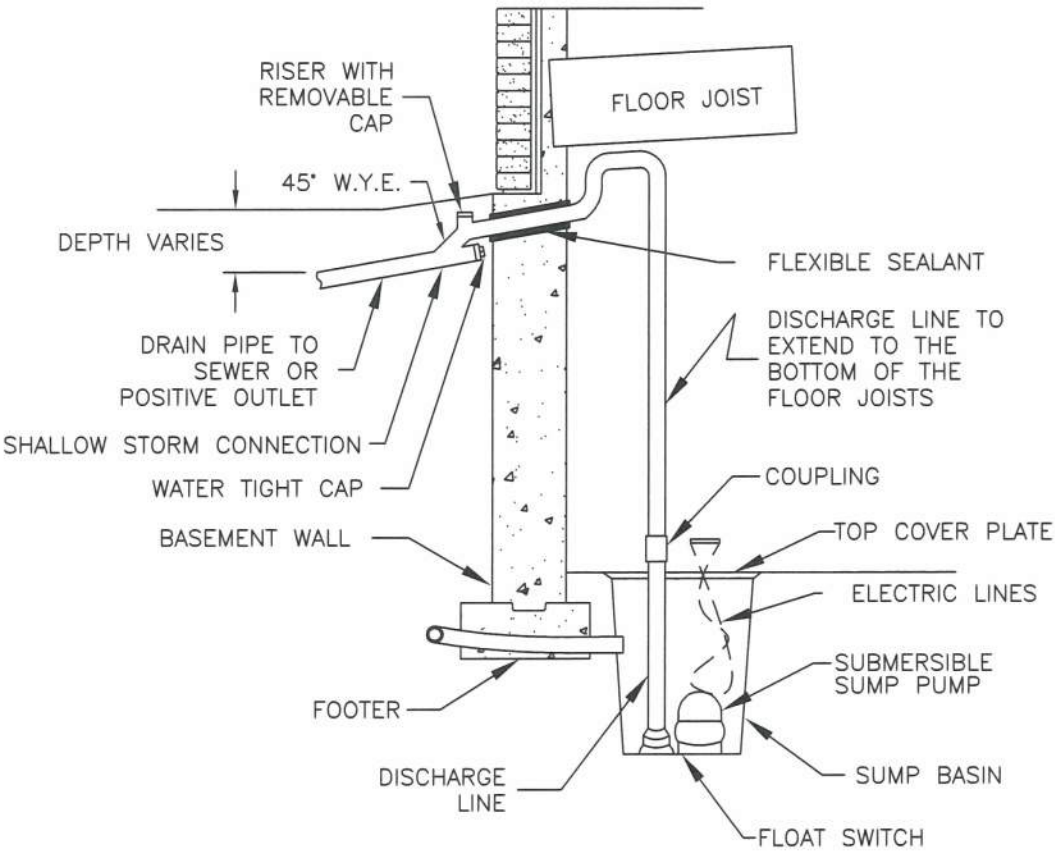


NOTE: VARIED BENDS ARE TO BE USED AS
NEEDED TO ESTABLISH ACCEPTABLE GRADE.

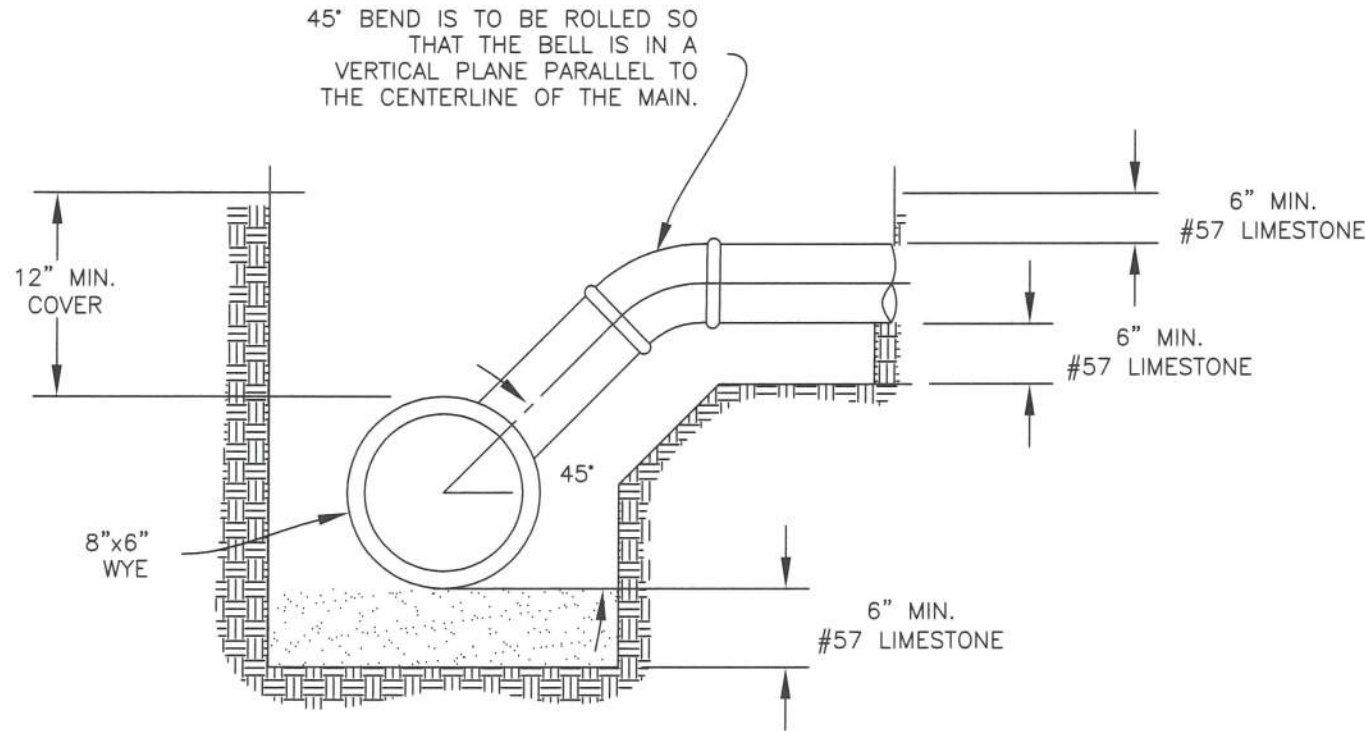
STORM SEWER EXIST. DRAIN LINE REPAIR

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
STORM SEWER DRAIN LINE REPAIR	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING STM-8		2/2019

- A) STORM SEWERS MUST STOP A MINIMUM OF FIVE FEET (5') FROM THE BUILDING WALL AND ALSO BE A MINIMUM OF TWO (2') FEET ABOVE A FOOTER. THERE SHALL NOT BE A DIRECT CONNECTION OF THE STORM SEWER TO FOOTER TILE. SEE DETAIL.
- B) IF WHEN INSTALLING A NEW STORM SEWER LATERAL, A REAR YARD DRAIN IS NECESSARY, THIS CONNECTION WILL BE MADE IMMEDIATELY AT THE STREET CONNECTION. AN INDIVIDUAL INSPECTION TEE SHALL BE INSTALLED AND A COMPLETELY SEPARATE SIX INCH (6") LATERAL SHALL BE INSTALLED FOR THE REAR YARD DRAIN. ALSO, THERE SHALL NOT BE DOWN SPOUT OR SUMP PUMP DRAINS CONNECTED TO REAR YARD DRAINS.
- C) STORM SEWER LATERAL SHALL BE A MINIMUM SIZE OF 6" P.V.C. GASKETED PIPE (SDR35 - 3034).
- D) BACKFILL AND BEDDING SHALL BE A MINIMUM 4" UNDER AND 6" OVER ALL PIPE. STONE SHALL BE #8 OR #57 LIMESTONE.
- E) INSPECTION AND CLEAN OUT TEES SHALL BE PER AVON STORM STANDARD STM-7. TEES SHALL BE LOCATED EVERY 100 LINEAR FEET AND AT THE STREET RIGHT OF WAY.
- F) THERE SHALL NOT BE ANY INSPECTOR OR CLEAN OUT TEES WITHIN DRIVEWAYS OR ROADWAY. SHOULD THIS APPEAR, TEES SHALL BE RELOCATED OUT OF THESE AREAS.
- G) THE FOLLOWING MINIMUM BARREL TO BARREL CLEARANCE SHALL BE MAINTAINED BETWEEN LATERALS:
SANITARY AND WATER = 10FT
STORM AND WATER = 10FT
SANITARY AND STORM = 5FT
- H) ALL PIPE REQUIREMENTS SHALL BE SHOWN ON STORM SEWER PLAN NOTES.
- I) YARD DRAINS ARE TO BE SIZED APPROPRIATELY TO THE SIZE OF THE STORM DRAIN LINE. EXAMPLE: 18" YARD DRAIN TO BE USED WITH A 12" STORM DRAIN LINE. SIZING CALCULATIONS MAY BE REQUIRED.

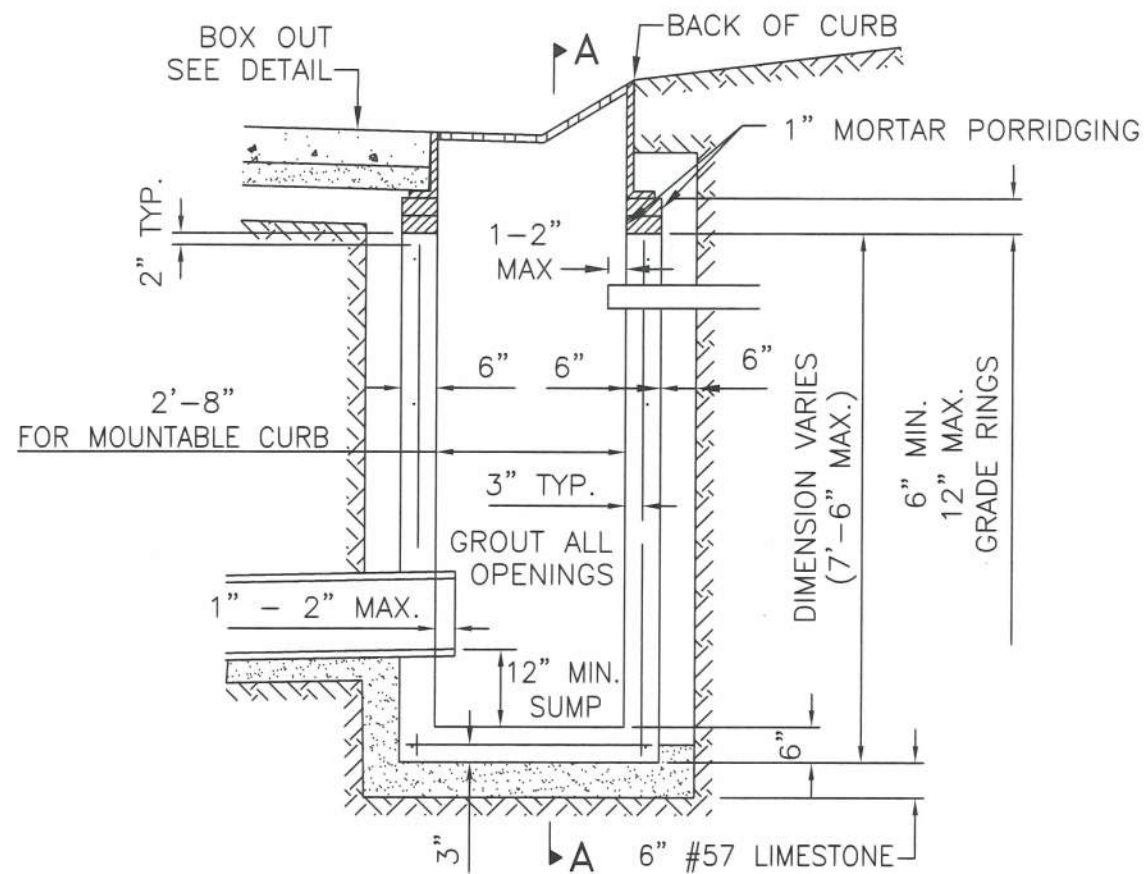


SUMP PUMP CONNECTION DETAIL

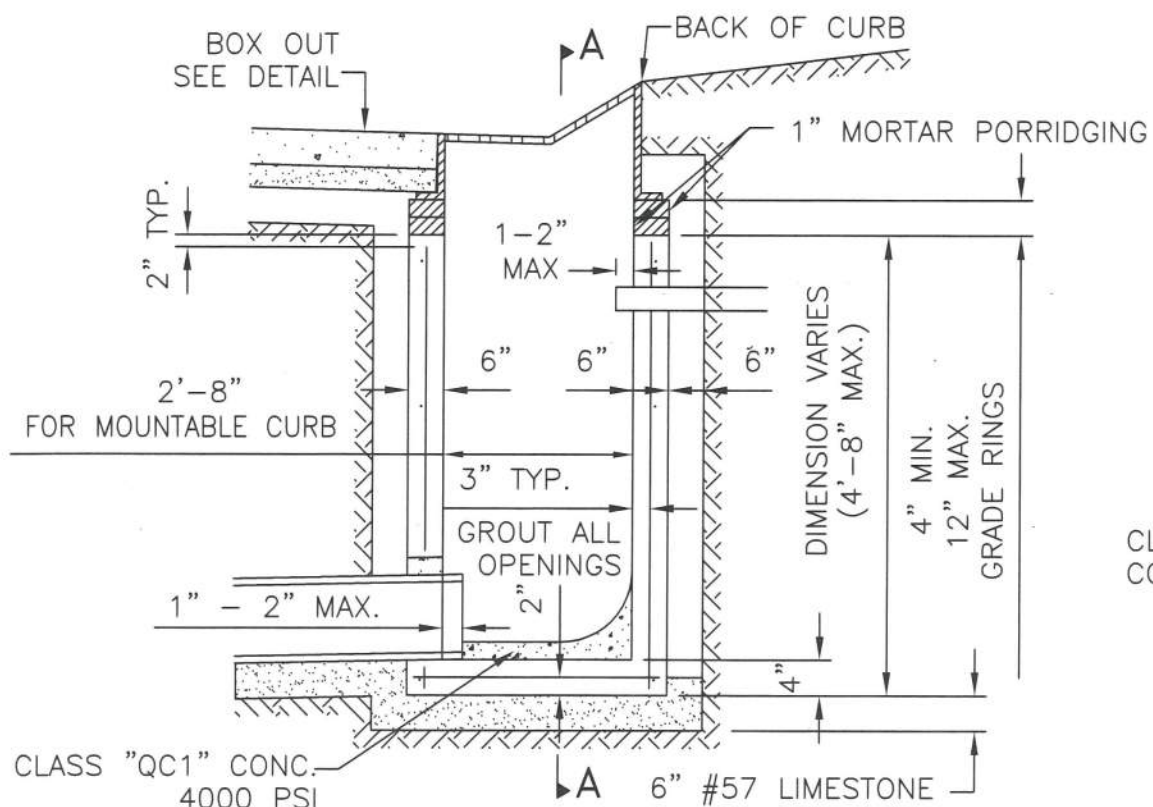


TYPICAL STORM CONNECTION

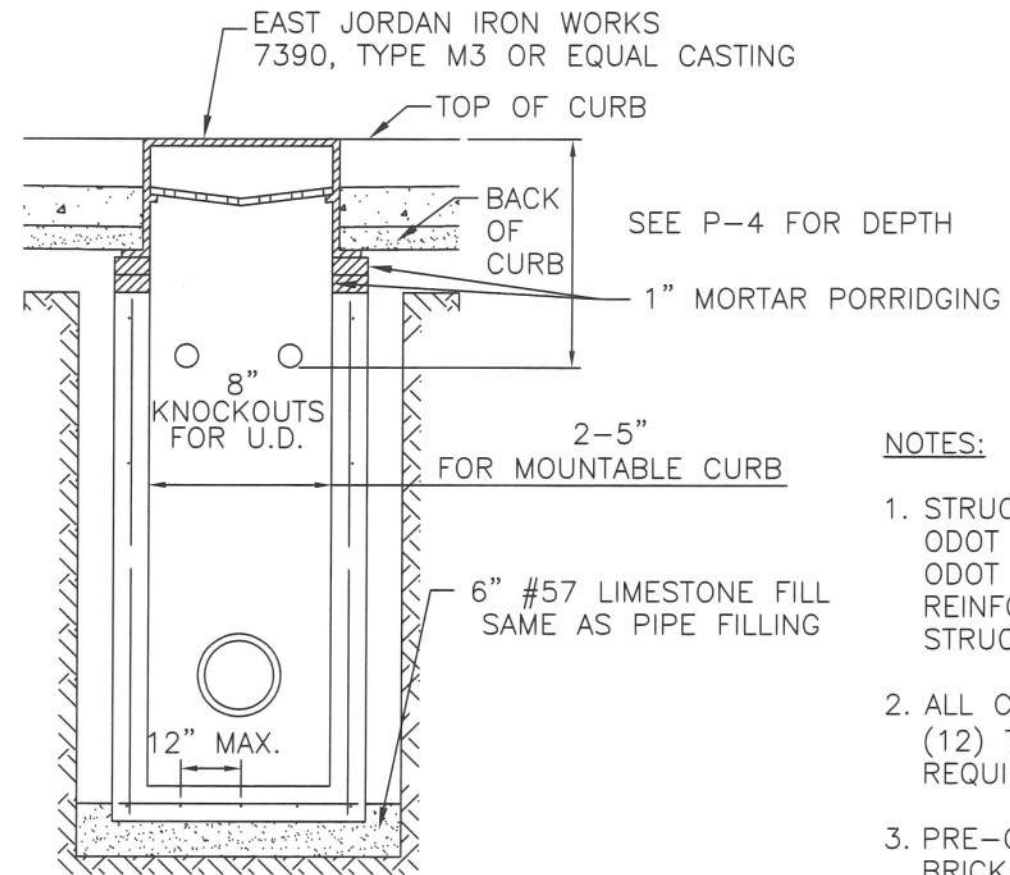
CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
STORM SEWER LATERAL DETAILS & SPECIFICATIONS	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING STM-9		2/2019



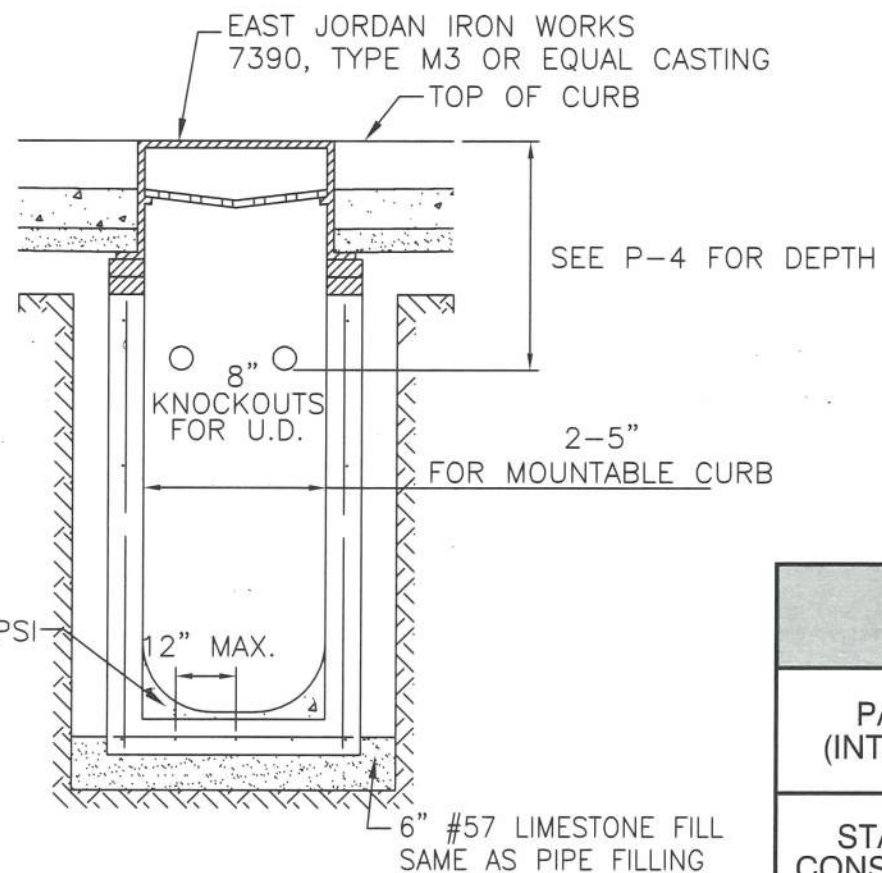
CATCH BASIN - TYPE "A" (PREFERRED)



CATCH BASIN - TYPE "B"



SECTION A-A

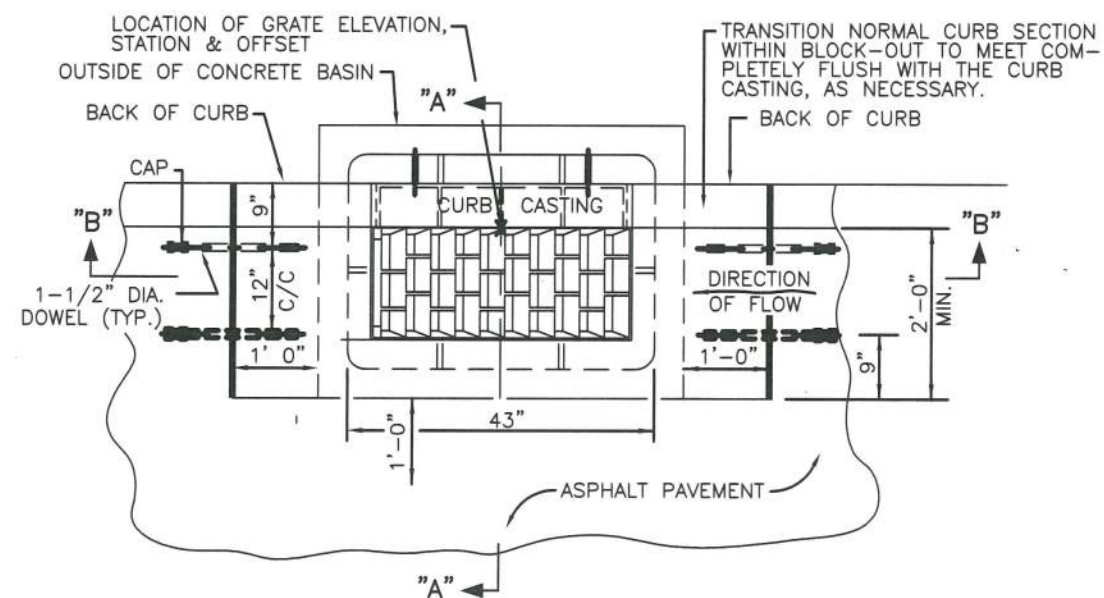
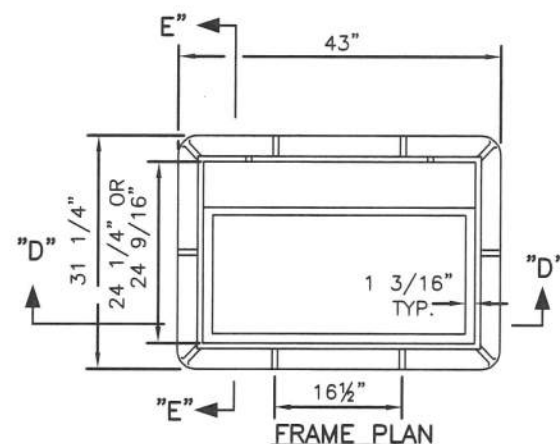
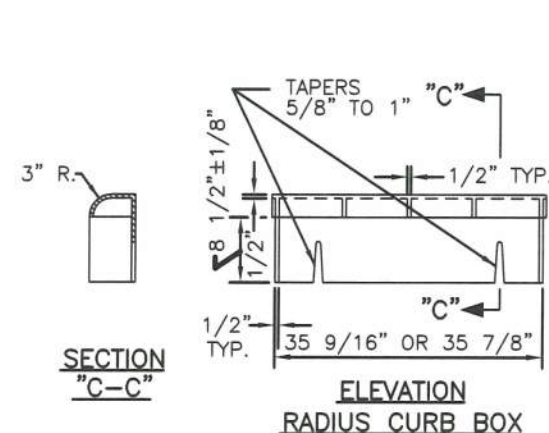
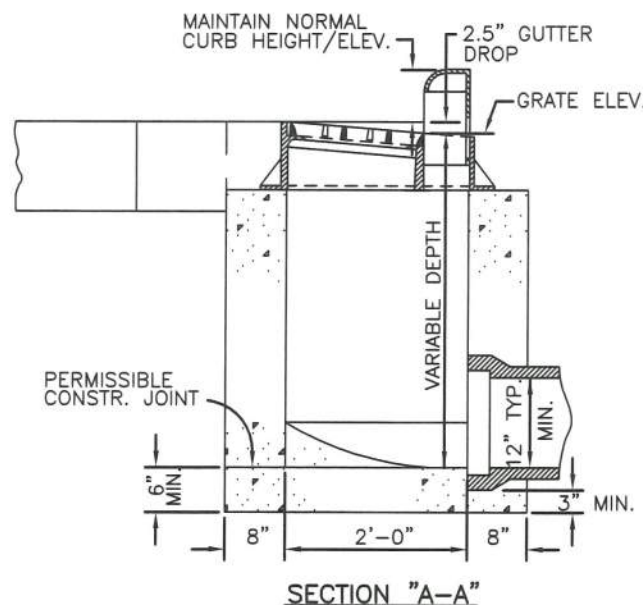
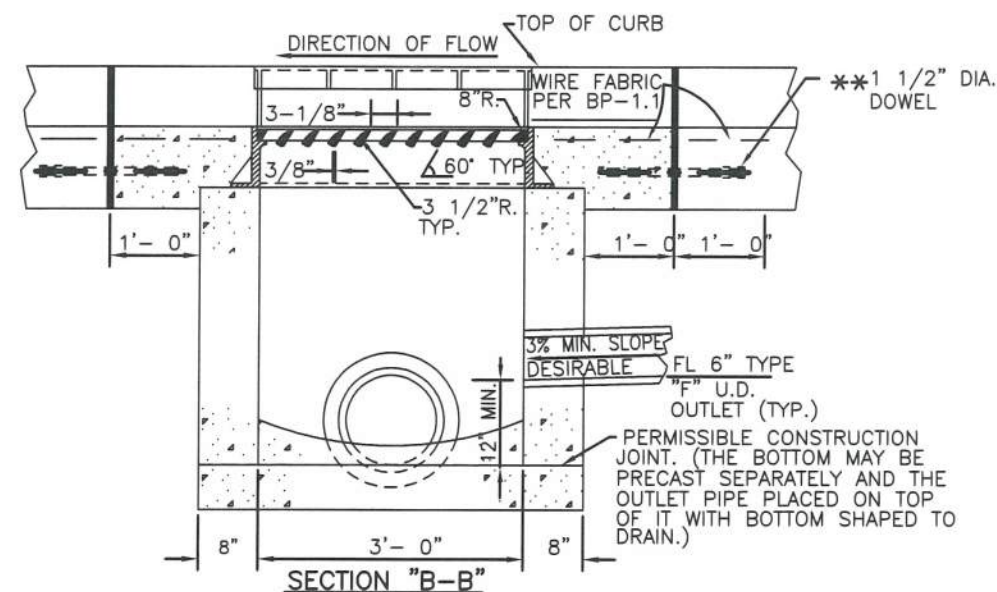


SECTION A-A

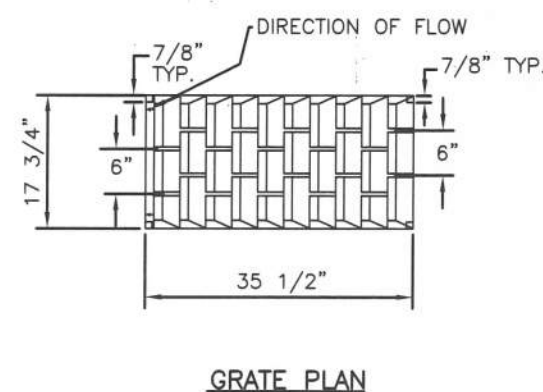
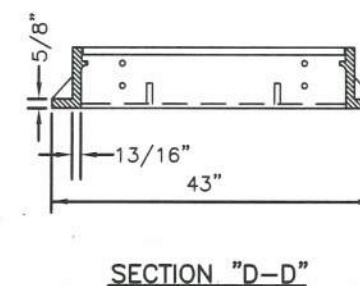
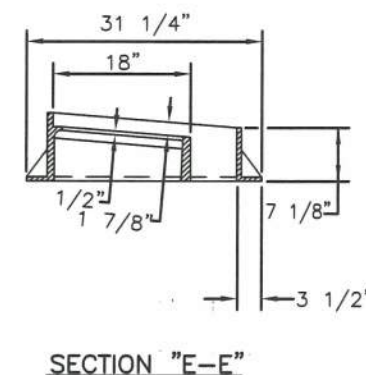
NOTES:

1. STRUCTURES SHALL BE PRECAST PER ODOT CMS 706.13. CONCRETE SHALL BE ODOT CLASS QC1 4000 PSI IN 28 DAYS. REINFORCING SHALL BE PER CMS 706.13. STRUCTURE SHALL BE TRAFFIC BEARING.
2. ALL CATCH BASIN INVERTS LESS THAN (12) TWELVE INCHES IN DEPTH SHALL REQUIRE THE INVERT TO BE POURED.
3. PRE-CAST RINGS ARE PREFERRED. BRICK SHALL NOT BE PERMITTED IN ANY CIRCUMSTANCE. CAST-IN-PLACE CONCRETE IS ALLOWABLE.
4. ALL CB/IB INSTALLATIONS WILL REQUIRE THE USE OF A 12" SUMP.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
PAVEMENT CATCH BASIN (INTEGRAL CONCRETE CURB)	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING	STM-10	2/2019



* 1" EXPANSION JOINT MATERIAL 705.03 AND SEAL PER O.D.O.T. STANDARD CONSTRUCTION DRAWING BP-2.2.



NOTES

CASTINGS SHALL MINIMALLY MEET THE REQUIREMENTS OF 604-711.12, A.S.T.M. A 48, CLASS 35B GRAY IRON.

SUBJECT TO THE ABOVE, THE FOLLOWING OR APPROVED EQUAL CASTINGS ARE ACCEPTED:

EAST JORDAN No. 7035 WITH TYPE M6 GRATE AND TYPE T6 CURB CASTING.

THE FOLLOWING TEXT SHALL BE CAST INTO THE TOP OF THE CURB CASTING: "DUMP NO WASTE" AND "DRAIN TO WATERWAY"

TEXT SHALL BE PRINTED IN BOLD, CAPITAL LETTERS WITH A MINIMUM HEIGHT OF 3/4". "WATERWAY" MAY BE SUBSTITUTED WITH "STREAM", "RIVER", "LAKE", ETC. ACTUAL PLACEMENT AND LOGO MAY VARY PER MANUFACTURER.

BEARING AREAS OF FRAME AND GRATE SHALL BE SO FITTED AND FINISHED AS TO PROVIDE A FIRM AND EVEN SEAT FOR ALL PORTIONS OF THE GRATE IN THE FRAME. NO PROJECTIONS SHALL EXIST ON BEARING AREAS OF EITHER CASTING AND THE GRATE SHALL SEAT IN ITS FRAME WITHOUT ROCKING. EACH FRAME AND GRATE SHALL BE FITTED, MATCHED AND MARKED BEFORE DELIVERY TO THE PROJECT.

PRECAST CONSTRUCTION IS PERMITTED, (EXCEPT FOR THE BLOCK-OUT PAVEMENT) AND CONCRETE SHALL MEET THE REQUIREMENTS OF 706.13. PRECAST WALLS SHALL HAVE A MINIMUM THICKNESS OF SIX (6) INCHES AND REINFORCING SHALL BE SUFFICIENT TO PERMIT SHIPPING AND PLACEMENT WITHOUT DAMAGE. THE WALL THICKNESS REDUCTION SHALL BE FROM THE OUTSIDE.

OPENINGS: PIPE OPENINGS SHALL BE THE O.D. OF PIPE BEING CONNECTED PLUS TWO (2) INCHES WHEN FABRICATED OR FIELD CUT. THE INTERSTITIAL SPACE SHALL BE FILLED WITH GROUT PER CMS 705.20.

ANY/ALL

CONSTRUCT THE PAVEMENT, CURB, SUBBASE, SUBGRADE AND BACKFILL WITHIN THE BLOCKOUT AREAS, IN ACCORDANCE WITH THE APPLICABLE PROVISIONS OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS, SHALL BE INCLUDED IN THE UNIT PRICE BID, PER EACH, FOR THE ITEM 2'x3' CATCH BASIN.

THIS CATCH BASIN IS NOT INTENDED FOR USE WITH MOUNTABLE TYPE CURBS NOR SHOULD IT BE LOCATED WITHIN A DRIVE APRON.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS

PAVEMENT CATCH BASIN
(CURB AND GUTTER, TYPE 2)

ADOPTION
ORDINANCE

DATE

STANDARD
CONSTRUCTION
DRAWING

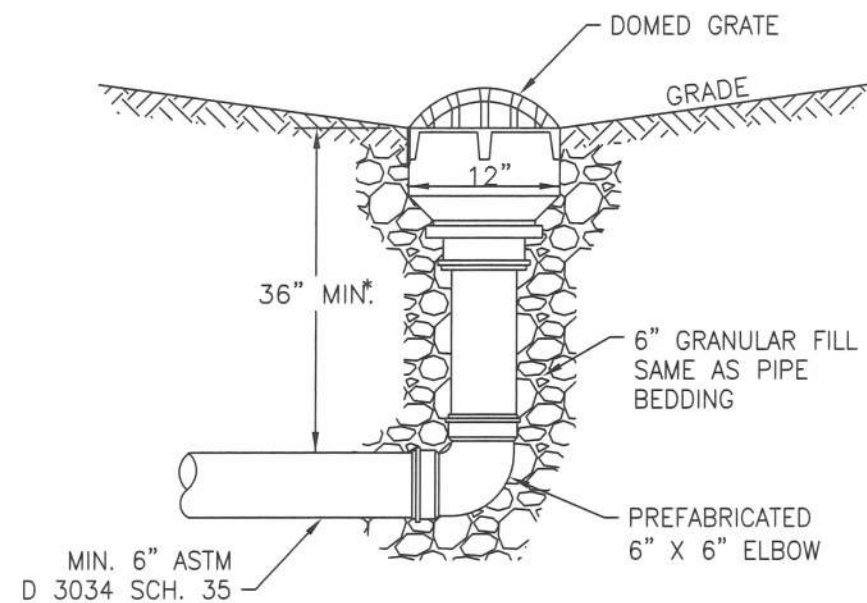
STM-11

2/2019

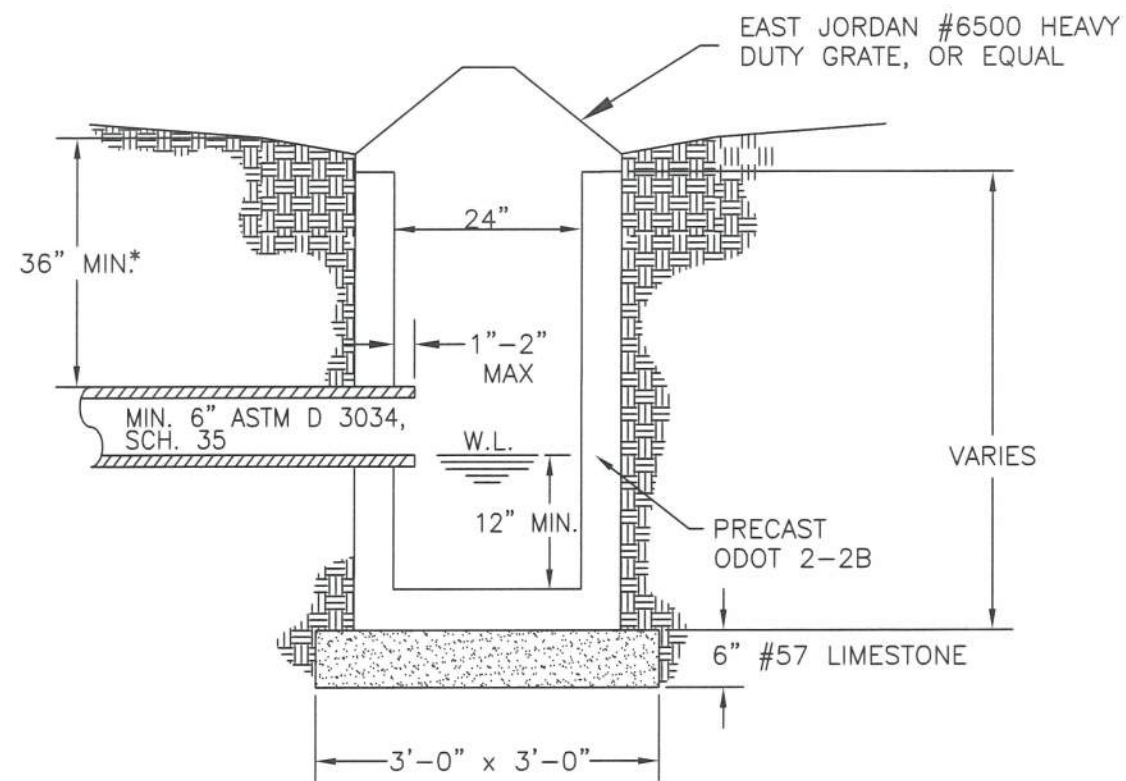
STORM SEWER DITCH ENCLOSURE STANDARDS

- 1. DITCH AREAS WITHIN RIGHT-OF-WAYS ALONG EXISTING ROADWAYS SHALL BE ENCLOSED AS DIRECTED BY THE CITY.
- 2. ALL PROPOSED DEVELOPMENT AREAS ABUTTING AN EXISTING DITCH ALONG EXISTING ROADWAYS SHALL BE ENCLOSED AS DIRECTED BY THE CITY.
- 3. MINIMUM PIPE SIZE FOR DITCH ENCLOSURES SHALL BE 12".
- 4. PIPE TYPE PERMITTED INCLUDES PVC SDR. 35 ASTM 3034, RCP CLASS 3, AND HDPE.
- 5. PIPE TYPE UNDER EXISTING AND/OR PROPOSED DRIVE APRONS SHALL BE RCP CLASS 3, PVC SDR35 OR HDPE WITH APPROVED COVER AND BEDDING.
- 6. A TRANSITION OF RCP TO PVC AT MID POINT SHALL NOT BE PERMITTED. APPROVED PIPE MATERIAL UNDER DRIVE APRONS SHALL EXTEND FROM STRUCTURE TO STRUCTURE, SUCH AS MANHOLE TO MANHOLE OR BASIN TO BASIN.
- 7. STORM SEWER MANHOLES SHALL ADHERE TO SHEET STM-6, EXCEPTING THAT A GRATE TYPE LID MAY BE REQUIRED BY THE CITY UNDER CERTAIN CONDITIONS.
- 8. STORM SEWER MANHOLES SHALL BE SPACED NO FURTHER THAN 400 FEET APART.
- 9. STORM SEWER BASINS SHALL BE SPACED NO FURTHER THAN 150 FEET APART, EXCEPTING AS PERMITTED BY THE CITY. (SEE SHEET STM-13, OPTION "B" FOR DETAIL)
- 10. AREA DRAINS SHALL BE SPACED NO FURTHER THAN 100 FEET APART, EXCEPTING THAT SPACING MAY VARY, AS PERMITTED BY THE CITY, TO DRAIN ADJACENT PROPERTY LOW AREAS.
- 11. AREA DRAIN CONNECTIONS TO THE STORM SYSTEM SHALL BE MADE VIA KOR-N-BOOT IN THE CASE OF RCP AND TEE OR INSERTA TEE IN THE CASE OF PVC AND HDPE STORM SYSTEMS.
- 12. THE GRADING AT THE ENCLOSED DITCH SHALL HAVE A MODERATE SWALE AREA WITH A MAXIMUM GRADE OF 1.00%± FROM STRUCTURE TO STRUCTURE.
- 13. AREA DRAINS MAY BE INSTALLED WITH OR WITHOUT A SUMP, AS PERMITTED BY THE CITY.
- 14. ENCLOSED DITCH AREAS SHALL BE FINE GRADED, SEEDED AND MULCHED.
- 15. ALL STORM TYPE DRAIN LINES ENCOUNTERED ALONG THE DITCH ENCLOSURE ACTIVITIES SHALL BE CONNECTED TO THE STORM SYSTEM BEING INSTALLED IN ACCORDANCE WITH STM-8.
- 16. STRUCTURES SHALL BE TRAFFIC BEARING IF REQUIRED BY THE CITY ENGINEER.

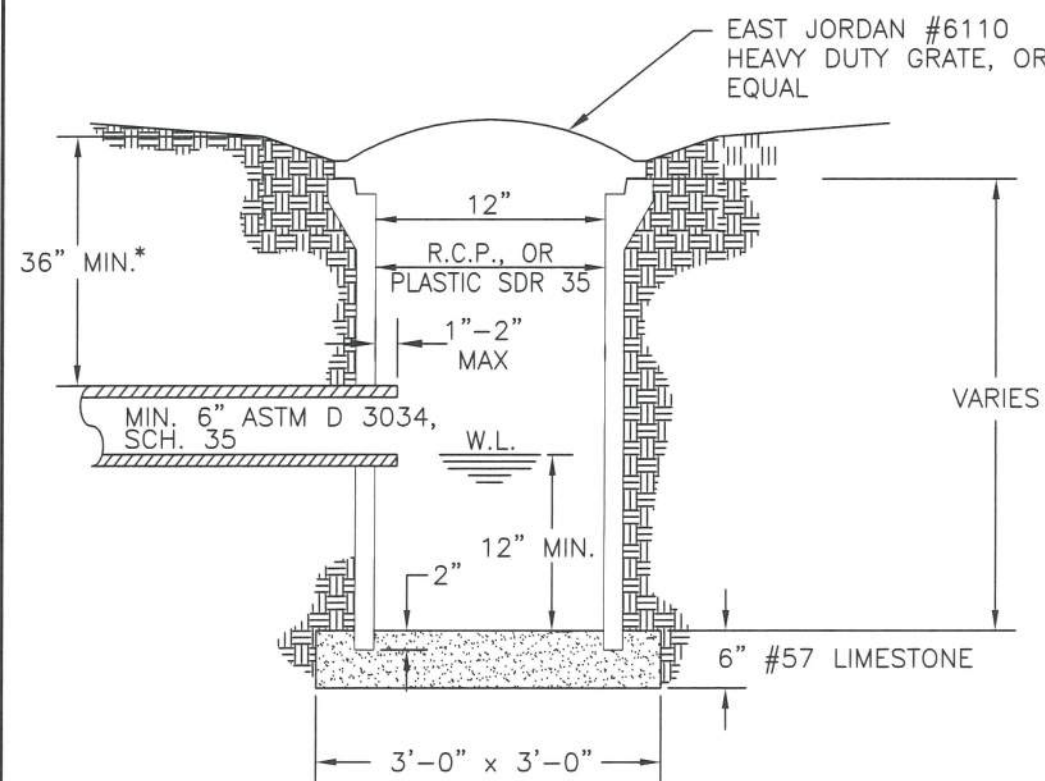
CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
DITCH ENCLOSURE STANDARDS	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING STM-12		2/2019



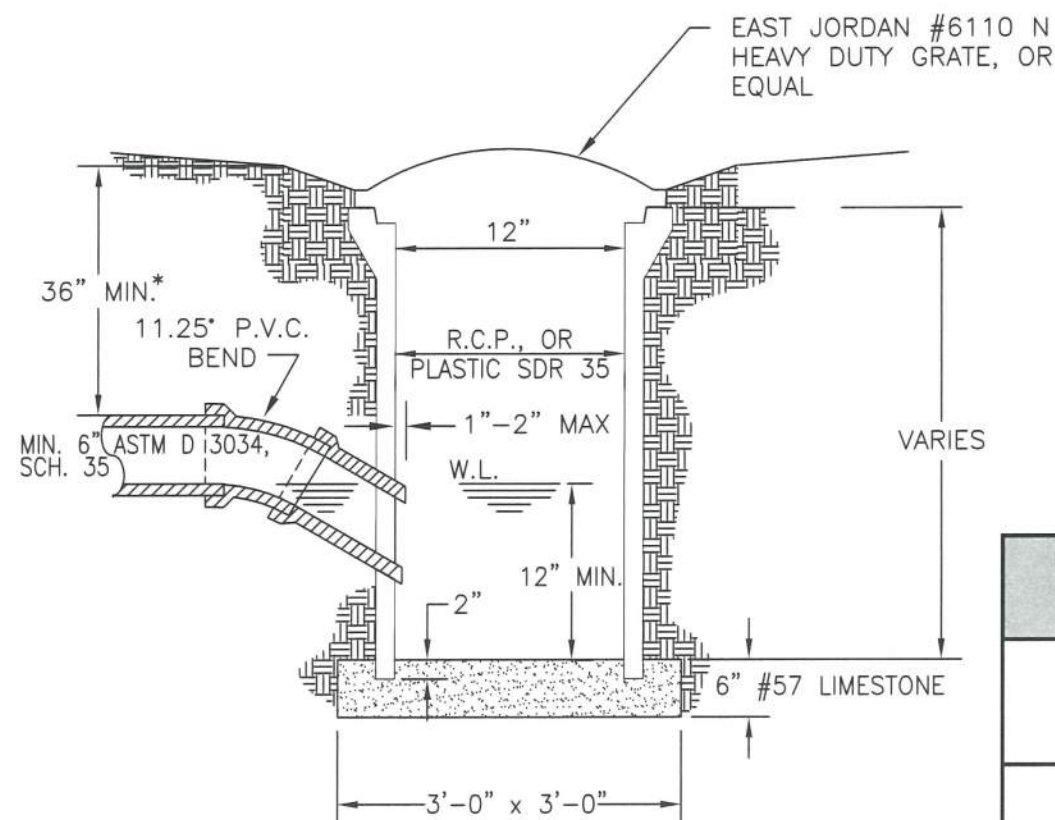
OPTION "A"



OPTION "B"



OPTION "C"



OPTION "D"

*UNLESS OTHERWISE APPROVED
BY THE CITY OF AVON ENGINEER.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
AREA DRAIN DETAILS	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING	STM-13	2/2019

GENERAL

CONTRACTOR SHALL MEET THE EROSION AND SEDIMENT CONTROL REQUIRMENTS OF THE OHIO ENVIRONMENTAL PROTECTION AGENCY, DEPARTMENT OF TRANSPORTATION AND THE CITY OF AVON CODIFIED ORDINANCES. APPLICABLE NPDES STORM WATER PERMITS SHALL BE REQUIRED.

IN CASES WHERE CONFLICTS EXIST BETWEEN STANDARDS, THE STRICTER REQUIREMENT SHALL GOVERN.

PROPOSED TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE APPROVED BY THE CITY ENGINEER AND INCORPORATE MEASURES AS RECOMMENDED BY THE MOST CURRENT EDITION OF "RAINWATER AND LAND DEVELOPMENT" AS PUBLISHED BY THE OHIO DEPARTMENT OF NATURAL RESOURCES.

AN ABBREVIATED STORM WATER POLLUTION PREVENTION PLAN (SWP3) SHALL BE REQUIRED FOR ALL NON-AGRICULTURAL SOIL DISTURBING ACTIVITIES DISTURBING LESS THAN ONE-ACRE OF LAND.

A STORM WATER POLLUTION PREVENTION PLAN (SWP3) SHALL BE REQUIRED FOR SOIL DISTURBING ACTIVITIES DISTURBING ONE OR MORE ACRES OF TOTAL LAND, LESS THAN ONE ACRE IF PART OF A LARGER COMMON PLAN OF DEVELOPMENT OR SALE DISTURBING ONE OR MORE ACRES OF TOTAL LAND. REFER TO CODIFIED ORDINANCE CHAPTER 1050.05 FOR FURTHER DETAIL.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
STORM WATER POLLUTION PREVENTION REQUIREMENTS	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING SWPPP-1		2/2019

ABBREVIATED STORMWATER POLLUTION PREVENTION PLAN (SWP3)

GENERAL NOTES FOR SEDIMENT POLLUTANT CONTROLS

1. PERIMETER SEDIMENT CONTROLS (I.E. SEDIMENT TRAPS, SILT FENCE, COMPOST SOCKS, COMPOST BERMS, ETC...) SHALL BE IMPLEMENTED AS THE FIRST STEP OF GRADING AND WITHIN SEVEN (7) DAYS FROM THE START OF GRUBBING AND SHALL CONTINUE TO FUNCTION UNTIL UPSLOPE AREAS DRAINING TO THEM ARE PERMANENTLY STABILIZED, OR AS DIRECTED BY THE AVON ENGINEER, OR HIS DESIGNATED REPRESENTATIVE.
2. NO EROSION AND SEDIMENT CONTROL SCMS SHALL BE REMOVED FROM THE SITE PRIOR TO ADEQUATE PERMANENT STABILIZATION OF THE ASSOCIATED UPLAND DRAINAGE AREAS AND WITHOUT FIRST OBTAINING AUTHORIZATION FROM THE AVON ENGINEER, OR HIS DESIGNATED REPRESENTATIVE, UNLESS THEIR REMOVAL IS SPECIFICALLY PROVIDED FOR WITHIN THE SITE'S APPROVED PLAN.
3. THERE SHALL BE NO SEDIMENT-LADEN OR TURBID DISCHARGES TO WATER RESOURCES OR WETLANDS RESULTING FROM DEWATERING ACTIVITIES. IF TRENCH OR GROUNDWATER CONTAINS SEDIMENT, IT MUST PASS THROUGH A SEDIMENT TRAP OR OTHER EQUALLY EFFECTIVE SEDIMENT CONTROL DEVICE, PRIOR TO BEING DISCHARGED FROM THE CONSTRUCTION SITE. ALTERNATIVELY, SEDIMENT MAY BE REMOVED BY SETTLING IN PLACE OR BY DEWATERING INTO A SUMP PIT, FILTER BAG OR COMPARABLE PRACTICE. GROUND WATER DEWATERING WHICH DOES NOT CONTAIN SEDIMENT OR OTHER POLLUTANTS IS NOT REQUIRED TO BE TREATED PRIOR TO DISCHARGE. HOWEVER, CARE MUST BE TAKEN WHEN DISCHARGING GROUND WATER TO ENSURE THAT IT DOES NOT BECOME POLLUTANT-LADEN BY TRAVERSING OVER DISTURBED SOILS OR OTHER POLLUTANT SOURCES.
4. STREETS DIRECTLY ADJACENT TO CONSTRUCTION ENTRANCES AND RECEIVING TRAFFIC FROM THE DEVELOPMENT AREA, SHALL BE CLEANED DAILY TO REMOVE SEDIMENT TRACKED OFF-SITE. IF APPLICABLE, THE CATCH BASINS ON THESE STREETS NEAREST TO THE CONSTRUCTION ENTRANCES SHALL ALSO BE CLEANED WEEKLY. BASED ON SITE CONDITIONS, THE AVON ENGINEER, OR HIS DESIGNATED REPRESENTATIVE, MAY REQUIRE ADDITIONAL BEST MANAGEMENT PRACTICES TO CONTROL OFF-SITE TRACKING AND DUST.
5. IT SHALL BE THE RESPONSIBILITY OF THE DEVELOPER, OR HIS/HER REPRESENTATIVE, TO INSPECT ALL CONTROLS ON THE SITE AT LEAST ONCE EVERY SEVEN (7) CALENDAR DAYS AND WITHIN TWENTY-FOUR (24) HOURS AFTER ANY STORM EVENT GREATER THAN ONE-HALF INCH OF RAIN PER TWENTY-FOUR (24) HOUR PERIOD. WHEN INSPECTIONS REVEAL THE NEED FOR REPAIR, REPLACEMENT, OR INSTALLATION OF EROSION AND SEDIMENT CONTROL SCMS, THE FOLLOWING PROCEDURES SHALL BE FOLLOWED:

a. WHEN PRACTICES REQUIRE REPAIR OR MAINTENANCE: IF AN INTERNAL INSPECTION REVEALS THAT A CONTROL PRACTICE IS IN NEED OF REPAIR OR MAINTENANCE, WITH THE EXCEPTION OF A SEDIMENT-SETTLING POND, IT MUST BE REPAIRED OR MAINTAINED WITHIN THREE (3) DAYS OF THE INSPECTION. SEDIMENT-SETTLING PONDS MUST BE REPAIRED OR MAINTAINED WITHIN TEN (10) DAYS OF THE INSPECTION.

b. WHEN PRACTICES FAIL TO PROVIDE THEIR INTENDED FUNCTION: IF AN INTERNAL INSPECTION REVEALS THAT A CONTROL PRACTICE FAILS TO PERFORM ITS INTENDED FUNCTION AS DETAILED IN THE SWP3 AND THAT ANOTHER, MORE APPROPRIATE CONTROL PRACTICE IS REQUIRED, THE SWP3 MUST BE AMENDED AND THE NEW CONTROL PRACTICE MUST BE INSTALLED WITHIN TEN (10) DAYS OF THE INSPECTION.

c. WHEN PRACTICES DEPICTED ON THE SWPPP ARE NOT INSTALLED: IF AN INTERNAL INSPECTION REVEALS THAT A CONTROL PRACTICE HAS NOT BEEN IMPLEMENTED IN ACCORDANCE WITH THE SCHEDULE, THE CONTROL PRACTICE MUST BE IMPLEMENTED WITHIN TEN (10) DAYS FROM THE DATE OF THE INSPECTION. IF THE INTERNAL INSPECTION REVEALS THAT THE PLANNED CONTROL PRACTICE IS NOT NEEDED, THE RECORD MUST CONTAIN A STATEMENT OF EXPLANATION AS TO WHY THE CONTROL PRACTICE IS NOT NEEDED.
6. THE APPLICANT SHALL MAINTAIN FOR THREE (3) YEARS FOLLOWING FINAL STABILIZATION THE RESULTS OF THESE INSPECTIONS, THE NAMES AND QUALIFICATIONS OF PERSONNEL MAKING THE INSPECTIONS, THE DATES OF INSPECTIONS, MAJOR OBSERVATIONS RELATING TO THE IMPLEMENTATION OF THE SWP3, A CERTIFICATION AS TO WHETHER THE FACILITY IS IN COMPLIANCE WITH THE SWP3, AND INFORMATION ON ANY INCIDENTS OF NON-COMPLIANCE DETERMINED BY THESE INSPECTIONS.
7. ALL EROSION AND SEDIMENT CONTROL PRACTICES SPECIFIED ON THIS PLAN SHALL CONFORM WITH DETAILS AND SPECIFICATIONS OUTLINED IN THE CURRENT VERSION OF THE OHIO DEPARTMENT OF NATURAL RESOURCES BOOKLET, "RAINWATER AND LAND DEVELOPMENT", OR AS SPECIFIED BY THE AVON ENGINEER, OR HIS DESIGNATED REPRESENTATIVE.
8. EROSION AND SEDIMENT CONTROL PRACTICES NOT ALREADY SPECIFIED ON THIS PLAN MAY BE NECESSARY DUE TO UNFORESEEN ENVIRONMENTAL CONDITIONS AND/OR CHANGES IN DRAINAGE PATTERNS CAUSED BY EARTH-MOVING ACTIVITY. ADDITIONAL PRACTICES SHALL BE IMPLEMENTED AT THE DEVELOPER'S EXPENSE AS DIRECTED BY THE AVON ENGINEER, OR HIS DESIGNATED REPRESENTATIVE.
9. STOCKPILES CREATED FROM BASEMENT EXCAVATION AND/OR TOPSOIL GRADING SHALL BE SITUATED AWAY FROM STREETS, SWALES, OR OTHER WATERWAYS AND SHALL BE SEEDED AND/OR MULCHED IMMEDIATELY.

10. DISTURBED AREAS MUST BE STABILIZED AS SPECIFIED IN THE FOLLOWING TABLE:

AREA REQUIRING TEMPORARY STABILIZATION:	TIME FRAME TO APPLY EROSION CONTROLS:
ANY DISTURBED AREA WITHIN FIFTY (50) FEET OF A STREAM AND NOT AT FINAL GRADE	WITHIN IN TWO (2) DAYS OF THE MOST RECENT DISTURBANCE IF THAT AREA WILL REMAIN IDLE FOR MORE THAN TWWNTY-ONE (21) DAYS.
FOR ALL CONSTRUCTION ACTIVITIES, ANY DISTURBED AREA, INCLUDING SOIL STOCKPILES THAT WILL BE DORMANT FOR MORE THAN TWENTY-ONE (21) DAYS BUT LESS THAN ONE YEAR, AND NOT WITHIN FIFTY (50) FEET OF A STREAM.	WITHIN SEVEN (7) DAYS OF THE MOST RECENT DISTURBANCE WITHIN THE AREA.
DISTURBED AREAS THAT WILL BE IDLE OVER WINTER.	PRIOR TO NOVEMBER 1ST.
NOTE: WHERE VEGETATIVE STABILIZATION TECHNIQUES MAY CAUSE STRUCTURAL INSTABILITY OR ARE OTHERWISE UNOBTAINABLE, ALTERNATIVE STABILIZATION TECHNIQUES MUST BE EMPLOYED. THESE TECHNIQUES MAY INCLUDE MULCHING OR EROSION MATTING.	

GENERAL NOTES FOR NON-SEDIMENT POLLUTANT CONTROLS

1. CONCRETE WASH WATER SHALL NOT BE ALLOWED TO FLOW TO STREAMS, DITCHES, STORM DRAINS, OR ANY OTHER WATER CONVEYANCE. A SUMP OR PIT WITH NO POTENTIAL FOR DISCHARGE SHALL BE CONSTRUCTED IF NEEDED TO CONTAIN CONCRETE WASH WATER. FIELD TILE OR OTHER SUBSURFACE DRAINAGE STRUCTURES WITHIN 10 FT. OF THE SUMP SHALL BE CUT AND PLUGGED. FOR SMALL PROJECTS, TRUCK CHUTES MAY BE RINSED AWAY FROM ANY WATER CONVEYANCES.
2. NO SOLID OR LIQUID WASTE SHALL BE DISCHARGED INTO STORMWATER RUNOFF. ANY AND ALL WASTE MATERIALS (SOLID, HAZARDOUS, CONSTRUCTION & DEMOLITION, SANITARY, TOXIC, CONTAMINATED SOILS, ETC.) GENERATED AT THE SITE SHALL BE PROPERLY DISPOSED OF IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL RULES/REGULATIONS. ON-SITE STORAGE CONTAINERS SHALL BE COVERED AND NOT LEAKING. IT IS PROHIBITED TO BURN, BURY OR POUR OUT ONTO THE GROUND OR INTO THE STORM SEWERS ANY SOLVENTS, PAINTS, GASOLINE, DIESEL FUEL, USED MOTOR OIL, HYDRAULIC FLUID, ANTIFREEZE, CEMENT CURING COMPOUNDS AND ANY OTHER SUCH TOXIC OR HAZARDOUS MATERIALS OR WASTES.
3. HANDLING CONSTRUCTION CHEMICALS. MIXING, PUMPING, TRANSFERRING OR OTHER HANDLING OF CONSTRUCTION CHEMICALS SUCH AS FERTILIZER, LIME, ASPHALT, CONCRETE DRYING COMPOUNDS, AND ALL OTHER POTENTIALLY HAZARDOUS MATERIALS SHALL BE PERFORMED IN AN AREA AWAY FROM ANY WATERCOURSE, DITCH OR STORM DRAIN.
4. EQUIPMENT FUELING AND MAINTENANCE, OIL CHANGING, ETC., SHALL BE PERFORMED AWAY FROM WATERCOURSES, DITCHES OR STORM DRAINS, IN AN AREA DESIGNATED FOR THAT PURPOSE. THE DESIGNATED AREA SHALL BE EQUIPPED FOR RECYCLING OIL AND CATCHING SPILLS. SECONDARY CON-TAINMENT WITH A MINIMUM CAPACITY EQUAL TO 110% OF THE VOLUME OF ALL CONTAINERS IN A STORAGE AREA SHALL BE PROVIDED FOR ALL FUEL/LIQUID STORAGE TANKS AND DRUMS.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
ABBREVIATED SWPPP	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING SWPPP-2		2/2019

NOTE: MOST CURRENT "RAINWATER AND LAND DEVELOPMENT" VERSION TO BE USED AT THE TIME OF CONSTRUCTION.

STORMWATER POLLUTION PREVENTION PLAN (SWP3)
GENERAL NOTES FOR SEDIMENT POLLUTANT CONTROLS

1. PERIMETER SEDIMENT CONTROLS (I.E. SEDIMENT TRAPS, SILT FENCE, COMPOST SOCKS, COMPOST BERMS, ETC...) SHALL BE IMPLEMENTED AS THE FIRST STEP OF GRADING AND WITHIN SEVEN (7) DAYS FROM THE START OF GRUBBING AND SHALL CONTINUE TO FUNCTION UNTIL UPSLOPE AREAS DRAINING TO THEM ARE PERMANENTLY STABILIZED, OR AS DIRECTED BY THE AVON ENGINEER, OR HIS DESIGNATED REPRESENTATIVE.
2. NO EROSION AND SEDIMENT CONTROL SCMS SHALL BE REMOVED FROM THE SITE PRIOR TO ADEQUATE PERMANENT STABILIZATION OF THE ASSOCIATED UPLAND DRAINAGE AREAS AND WITHOUT FIRST OBTAINING AUTHORIZATION FROM THE AVON ENGINEER, OR HIS DESIGNATED REPRESENTATIVE, UNLESS THEIR REMOVAL IS SPECIFICALLY PROVIDED FOR WITHIN THE SITE'S APPROVED PLAN.
3. THERE SHALL BE NO SEDIMENT-LADEN OR TURBID DISCHARGES TO WATER RESOURCES OR WETLANDS RESULTING FROM DEWATERING ACTIVITIES. IF TRENCH OR GROUNDWATER CONTAINS SEDIMENT, IT MUST PASS THROUGH A SEDIMENT TRAP OR OTHER EQUALLY EFFECTIVE SEDIMENT CONTROL DEVICE, PRIOR TO BEING DISCHARGED FROM THE CONSTRUCTION SITE. ALTERNATIVELY, SEDIMENT MAY BE REMOVED BY SETTLING IN PLACE OR BY DEWATERING INTO A SUMP PIT, FILTER BAG OR COMPARABLE PRACTICE. GROUND WATER DEWATERING WHICH DOES NOT CONTAIN SEDIMENT OR OTHER POLLUTANTS IS NOT REQUIRED TO BE TREATED PRIOR TO DISCHARGE. HOWEVER, CARE MUST BE TAKEN WHEN DISCHARGING GROUND WATER TO ENSURE THAT IT DOES NOT BECOME POLLUTANT-LADEN BY TRAVERSING OVER DISTURBED SOILS OR OTHER POLLUTANT SOURCES.
4. STREETS DIRECTLY ADJACENT TO CONSTRUCTION ENTRANCES AND RECEIVING TRAFFIC FROM THE DEVELOPMENT AREA, SHALL BE CLEANED DAILY TO REMOVE SEDIMENT TRACKED OFF-SITE. IF APPLICABLE, THE CATCH BASINS ON THESE STREETS NEAREST TO THE CONSTRUCTION ENTRANCES SHALL ALSO BE CLEANED WEEKLY. BASED ON SITE CONDITIONS, THE AVON ENGINEER, OR HIS DESIGNATED REPRESENTATIVE, MAY REQUIRE ADDITIONAL BEST MANAGEMENT PRACTICES TO CONTROL OFF-SITE TRACKING AND DUST.
5. IT SHALL BE THE RESPONSIBILITY OF THE DEVELOPER, OR HIS/HER REPRESENTATIVE, TO INSPECT ALL CONTROLS ON THE SITE AT LEAST ONCE EVERY SEVEN (7) CALENDAR DAYS AND WITHIN TWENTY-FOUR (24) HOURS AFTER ANY STORM EVENT GREATER THAN ONE-HALF INCH OF RAIN PER TWENTY-FOUR (24) HOUR PERIOD. WHEN INSPECTIONS REVEAL THE NEED FOR REPAIR, REPLACEMENT, OR INSTALLATION OF EROSION AND SEDIMENT CONTROL SCMS, THE FOLLOWING PROCEDURES SHALL BE FOLLOWED:

a. WHEN PRACTICES REQUIRE REPAIR OR MAINTENANCE: IF AN INTERNAL INSPECTION REVEALS THAT A CONTROL PRACTICE IS IN NEED OF REPAIR OR MAINTENANCE, WITH THE EXCEPTION OF A SEDIMENT-SETTLING POND, IT MUST BE REPAIRED OR MAINTAINED WITHIN THREE (3) DAYS OF THE INSPECTION. SEDIMENT-SETTLING PONDS MUST BE REPAIRED OR MAINTAINED WITHIN TEN (10) DAYS OF THE INSPECTION.

b. WHEN PRACTICES FAIL TO PROVIDE THEIR INTENDED FUNCTION: IF AN INTERNAL INSPECTION REVEALS THAT A CONTROL PRACTICE FAILS TO PERFORM ITS INTENDED FUNCTION AS DETAILED IN THE SWP3 AND THAT ANOTHER, MORE APPROPRIATE CONTROL PRACTICE IS REQUIRED, THE SWP3 MUST BE AMENDED AND THE NEW CONTROL PRACTICE MUST BE INSTALLED WITHIN TEN (10) DAYS OF THE INSPECTION.

c. WHEN PRACTICES DEPICTED ON THE SWPPP ARE NOT INSTALLED: IF AN INTERNAL INSPECTION REVEALS THAT A CONTROL PRACTICE HAS NOT BEEN IMPLEMENTED IN ACCORDANCE WITH THE SCHEDULE, THE CONTROL PRACTICE MUST BE IMPLEMENTED WITHIN TEN (10) DAYS FROM THE DATE OF THE INSPECTION. IF THE INTERNAL INSPECTION REVEALS THAT THE PLANNED CONTROL PRACTICE IS NOT NEEDED, THE RECORD MUST CONTAIN A STATEMENT OF EXPLANATION AS TO WHY THE CONTROL PRACTICE IS NOT NEEDED.
6. THE APPLICANT SHALL MAINTAIN FOR THREE (3) YEARS FOLLOWING FINAL STABILIZATION THE RESULTS OF THESE INSPECTIONS, THE NAMES AND QUALIFICATIONS OF PERSONNEL MAKING THE INSPECTIONS, THE DATES OF INSPECTIONS, MAJOR OBSERVATIONS RELATING TO THE IMPLEMENTATION OF THE SWP3, A CERTIFICATION AS TO WHETHER THE FACILITY IS IN COMPLIANCE WITH THE SWP3, AND INFORMATION ON ANY INCIDENTS OF NON-COMPLIANCE DETERMINED BY THESE INSPECTIONS.
7. ALL EROSION AND SEDIMENT CONTROL PRACTICES SPECIFIED ON THIS PLAN SHALL CONFORM WITH DETAILS AND SPECIFICATIONS OUTLINED IN THE CURRENT VERSION OF THE OHIO DEPARTMENT OF NATURAL RESOURCES BOOKLET, "RAINWATER AND LAND DEVELOPMENT", OR AS SPECIFIED BY THE AVON ENGINEER, OR HIS DESIGNATED REPRESENTATIVE.
8. EROSION AND SEDIMENT CONTROL PRACTICES NOT ALREADY SPECIFIED ON THIS PLAN MAY BE NECESSARY DUE TO UNFORESEEN ENVIRONMENTAL CONDITIONS AND/OR CHANGES IN DRAINAGE PATTERNS CAUSED BY EARTH-MOVING ACTIVITY. ADDITIONAL PRACTICES SHALL BE IMPLEMENTED AT THE DEVELOPER'S EXPENSE AS DIRECTED BY THE AVON ENGINEER, OR HIS DESIGNATED REPRESENTATIVE.
9. NO STRUCTURAL SEDIMENT CONTROLS (E.G. SILT FENCE, SEDIMENT TRAPS, ETC.) SHALL BE USED IN A WATER RESOURCE OR WETLAND, UNLESS THEIR USE IS SPECIFICALLY PROVIDED FOR WITHIN THE SITE'S APPROVED PLAN.
10. SOIL STOCKPILES, TOPSOIL OR OTHERWISE, SHALL BE SITUATED AWAY FROM STREETS, SWALES, OR OTHER WATERWAYS AND SHALL BE SEEDED AND/OR MULCHED IMMEDIATELY.

11. ON-SITE PERSONNEL SHALL TAKE ALL NECESSARY MEASURES TO COMPLY WITH APPLICABLE REGULATIONS REGARDING FUGITIVE DUST EMISSIONS, INCLUDING OBTAINING NECESSARY PERMITS FOR SUCH EMISSIONS. THE AVON ENGINEER, OR HIS DESIGNATED REPRESENTATIVE, MAY REQUIRE DUST CONTROLS INCLUDING, BUT NOT LIMITED TO, THE USE OF WATER TRUCKS TO WET DISTURBED AREAS, TARPING STOCKPILES, TEMPORARY STABILIZATION OF DISTURBED AREAS, AND REGULATION OF THE SPEED OF VEHICLES ON THE SITE.
12. ANY DISTURBED AREA NOT PAVED, SODDED, OR BUILT UPON SHALL HAVE A MINIMUM OF 80% UNIFORM VEGETATIVE COVER PRIOR TO FINAL INSPECTION, AND IN THE OPINION OF THE AVON ENGINEER, OR HIS DESIGNATED REPRESENTATIVE, WILL BE MATURE ENOUGH TO CONTROL EROSION SATISFACTORILY AND SURVIVE SEVERE WEATHER. DISTURBED AREAS MUST BE STABILIZED AS SPECIFIED IN THE FOLLOWING TABLES:

PERMANENT STABILIZATION

AREA REQUIRING PERMANENT STABILIZATION:	TIME FRAME TO APPLY EROSION CONTROLS:
ANY AREA THAT WILL LIE DORMANT ONE YEAR OR MORE.	WITHIN SEVEN (7) DAYS OF THE MOST RECENT DISTURBANCE.
ANY AREA WITHIN FIFTY (50) FEET OF A STREAM AND AT FINAL GRADE.	WITHIN TWO (2) DAYS OF REACHING FINAL GRADE.
ANY AREA AT FINAL GRADE.	WITHIN SEVEN (7) DAYS OF REACHING FINAL GRADE WITHIN THAT AREA.

TEMPORARY STABILIZATION

AREA REQUIRING TEMPORARY STABILIZATION:	TIME FRAME TO APPLY EROSION CONTROLS:
ANY DISTURBED AREA WITHIN FIFTY (50) FEET OF A STREAM AND NOT AT FINAL GRADE	WITHIN TWO (2) DAYS OF THE MOST RECENT DISTURBANCE IF THAT AREA WILL REMAIN IDLE FOR MORE THAN TWENTY-ONE (21)DAYS.
FOR ALL CONSTRUCTION ACTIVITIES, ANY DISTURBED AREA, INCLUDING SOIL STOCKPILES THAT WILL BE DORMANT FOR MORE THAN TWENTY-ONE (21) DAYS BUT LESS THAN ONE YEAR, AND NOT WITHIN FIFTY (50) FEET OF A STREAM.	WITHIN SEVEN (7) DAYS OF THE MOST RECENT DISTURBANCE WITHIN THE AREA.
DISTURBED AREAS THAT WILL BE IDLE OVER WINTER.	PRIOR TO NOVEMBER 1ST.
NOTE: WHERE VEGETATIVE STABILIZATION TECHNIQUES MAY CAUSE STRUCTURAL INSTABILITY OR ARE OTHERWISE UNOBTAINABLE, ALTERNATIVE STABILIZATION TECHNIQUES MUST BE EMPLOYED. THESE TECHNIQUES MAY INCLUDE MULCHING OR EROSION MATTING.	

GENERAL NOTES FOR NON-SEDIMENT POLLUTANT CONTROLS

1. ALL PERSONNEL WILL BE INSTRUCTED REGARDING THE CORRECT PROCEDURE FOR WASTE DISPOSAL. THE INDIVIDUAL WHO MANAGES THE DAY-TO-DAY SITE OPERATIONS WILL BE RESPONSIBLE FOR ENSURING ALL FORMS OF WASTE ARE PROPERLY DISPOSED OF.
2. CONTAMINATED SOILS FROM REDEVELOPMENT SITES SHALL BE DISPOSED OF PROPERLY. RUNOFF FROM CONTAMINATED SOILS SHALL NOT BE DISCHARGED FROM THE SITE. PROPER PERMITS SHALL BE OBTAINED FOR DEVELOPMENT PROJECTS ON SOLID WASTE LANDFILL SITES OR REDEVELOPMENT SITES.
3. CONCRETE WASH WATER SHALL NOT BE ALLOWED TO FLOW TO STREAMS, DITCHES, STORM DRAINS, OR ANY OTHER WATER CONVEYANCE. A SUMP OR PIT WITH NO POTENTIAL FOR DISCHARGE SHALL BE CONSTRUCTED IF NEEDED TO CONTAIN CONCRETE WASH WATER. FIELD TILE OR OTHER SUBSURFACE DRAINAGE STRUCTURES WITHIN 10 FT. OF THE SUMP SHALL BE CUT AND PLUGGED. FOR SMALL PROJ-ECTS, TRUCK CHUTES MAY BE RINSED AWAY FROM ANY WATER CONVEYANCES.
4. NO SOLID OR LIQUID WASTE SHALL BE DISCHARGED INTO STORMWATER RUNOFF. ANY AND ALL WASTE MATERIALS (SOLID, HAZARDOUS, CONSTRUCTION & DEMOLITION, SANITARY, TOXIC, CONTAMINATED SOILS, ETC.) GENERATED AT THE SITE SHALL BE PROPERLY DISPOSED OF IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL RULES/REGULATIONS. ON-SITE STORAGE CONTAINERS SHALL BE COVERED AND NOT LEAKING. IT IS PROHIBITED TO BURN, BURY OR POUR OUT ONTO THE GROUND OR INTO THE STORM SEWERS ANY SOLVENTS, PAINTS, GASOLINE, DIESEL FUEL, USED MOTOR OIL, HYDRAULIC FLUID, ANTIFREEZE, CEMENT CURING COMPOUNDS AND ANY OTHER SUCH TOXIC OR HAZARDOUS MATERIALS OR WASTES.
5. HANDLING CONSTRUCTION CHEMICALS. MIXING, PUMPING, TRANSFERRING OR OTHER HANDLING OF CONSTRUCTION CHEMICALS SUCH AS FERTILIZER, LIME, ASPHALT, CONCRETE DRYING COMPOUNDS, AND ALL OTHER POTENTIALLY HAZARDOUS MATERIALS SHALL BE PERFORMED IN AN AREA AWAY FROM ANY WATERCOURSE, DITCH OR STORM DRAIN.

6. EQUIPMENT FUELING AND MAINTENANCE, OIL CHANGING, ETC., SHALL BE PERFORMED AWAY FROM WATERCOURSES, DITCHES OR STORM DRAINS, IN AN AREA DESIGNATED FOR THAT PURPOSE. THE DESIGNATED AREA SHALL BE EQUIPPED FOR RECYCLING OIL AND CATCHING SPILLS. SECONDARY CON-TAINMENT WITH A MINIMUM CAPACITY EQUAL TO 110% OF THE VOLUME OF ALL CONTAINERS IN A STORAGE AREA SHALL BE PROVIDED FOR ALL FUEL/LIQUID STORAGE TANKS AND DRUMS.
7. ALL SANITARY WASTE SHALL BE COLLECTED FROM PORTABLE UNITS A MINIMUM OF THREE TIMES PER WEEK BY A LICENSED SANITARY WASTE MANAGEMENT CONTRACTOR, AS REQUIRED BY LOCAL REGULATION.
8. THE FOLLOWING GOOD HOUSEKEEPING PRACTICES WILL BE FOLLOWED ON SITE DURING THE CONSTRUCTION PROJECT:

a. AN EFFORT WILL BE MADE TO STORE ONLY ENOUGH PRODUCT REQUIRED TO DO THE JOB.

b. ALL MATERIALS STORED ON SITE WILL BE STORED IN A NEAT, ORDERLY MANNER IN THEIR APPROPRIATE CONTAINERS AND, IF POSSIBLE, UNDER A ROOF OR OTHER ENCLOSURE.

c. PRODUCTS WILL BE KEPT IN THEIR ORIGINAL CONTAINERS WITH THE MANUFACTURER'S LABEL. SUBSTANCES WILL NOT BE MIXED WITH ONE ANOTHER UNLESS RECOMMENDED BY THE MANUFACTURER.

d. WHENEVER POSSIBLE, ALL OF A PRODUCT WILL BE USED UP BEFORE DISPOSING OF THE CONTAINER.

e. THE MANUFACTURER'S RECOMMENDATIONS FOR PROPER USE AND DISPOSAL WILL BE FOLLOWED.

f. THE SITE SUPERINTENDENT WILL INSPECT DAILY TO ENSURE PROPER USE AND DISPOSAL OF MATERIALS ON SITE.
9. IN ADDITION TO PREVIOUS NOTES, THE FOLLOWING PRACTICES WILL BE FOLLOWED FOR SPILL PREVENTION AND CLEAN-UP:

a. MANUFACTURER'S RECOMMENDED METHODS FOR SPILL CLEAN-UP WILL BE POSTED AND SITE PERSONNEL MADE AWARE OF THE PROCEDURES AND THE LOCATION OF THE INFORMATION AND CLEANUP SUPPLIES.

b. MATERIALS AND EQUIPMENT NECESSARY FOR SPILL CLEANUP WILL BE KEPT IN THE MATERIAL STORAGE AREA ON SITE. EQUIPMENT AND MATERIALS WILL INCLUDE, BUT NOT BE LIMITED TO BROOMS, DUSTPANS, MOPS, RAGS, GLOVES, GOGGLES, CAT LITTER, SAND, SAWDUST, AND PLASTIC AND METAL TRASH CONTAINERS SPECIFICALLY DESIGNATED FOR THIS PURPOSE.

c. ALL SPILLS WILL BE CLEANED UP IMMEDIATELY AFTER DISCOVERY.

d. THE SPILL AREA WILL BE KEPT WELL-VENTILATED AND PERSONNEL WILL WEAR APPROPRIATE PROTECTIVE CLOTHING TO PREVENT INJURY FROM CONTACT WITH A HAZARDOUS SUBSTANCE.

e. SPILLS OF TOXIC OR HAZARDOUS MATERIALS WILL BE REPORTED TO THE APPROPRIATE STATE OR LOCAL GOVERNMENT AGENCY, REGARDLESS OF THE SIZE.

f. THE SPILL PREVENTION PLAN WILL BE ADJUSTED TO INCLUDE MEASURES TO PREVENT THIS TYPE OF SPILL FROM REOCCURRING AND HOW TO CLEAN UP THE SPILL IF THERE IS ANOTHER ONE. A DESCRIPTION OF THE SPILL, WHAT CAUSED IT, AND THE CLEANUP MEASURES WILL ALSO BE INCLUDED.

g. THE SITE SUPERINTENDENT RESPONSIBLE FOR THE DAY-TO-DAY OPERATIONS WILL BE THE SPILL PREVENTION AND CLEANUP COORDINATOR. HE/SHE WILL DESIGNATE SITE PERSONNEL WHO WILL RECEIVE SPILL PREVENTION AND CLEANUP TRAINING. THESE INDIVIDUALS WILL EACH BECOME RESPONSIBLE FOR A PARTICULAR PHASE OF PREVENTION AND CLEANUP. THE NAMES OF RESPONSIBLE SPILL PERSONNEL WILL BE POSTED IN THE MATERIAL STORAGE AREA AND IN THE OFFICE TRAILER ON SITE.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
STORM WATER POLLUTION PREVENTION PLAN	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING		2/2019

SWPPP-3

NOTE: MOST CURRENT "RAINWATER AND LAND DEVELOPMENT" VERSION TO BE USED AT THE TIME OF CONSTRUCTION.

Concrete Washout Areas

Installation:

- 1. Concrete wash water shall not be allowed to flow to streams, ditches, storm drains, or any other water conveyance and washout pits shall be situated a minimum of fifty (50) feet from them.
- 2. Field tile or other subsurface drainage structures within 10 ft. of the sump shall be cut and plugged.
- 3. Ensure a stable path is provided for concrete trucks to reach the washout area.
- 4. A highly visible sign that reads "Concrete Washout Area" shall be erected adjacent to the washout pit.
- 5. Surface runoff generated from upslope areas shall be diverted away from below-grade washout pits so as not to flow into them.
- 6. A single centralized washout area may be utilized for multiple sublots.

Maintenance:

- 7. The washout pit must be inspected frequently to ensure the liner is intact.
- 8. Once 75% of the original volume of the washout pit is filled or if the liner is torn, the material must be removed and properly disposed of once it is completely hardened. Once the hardened concrete is removed, the liner must be replaced (if torn). A new pit must be constructed if the original structure is no longer suitable.

Removal:

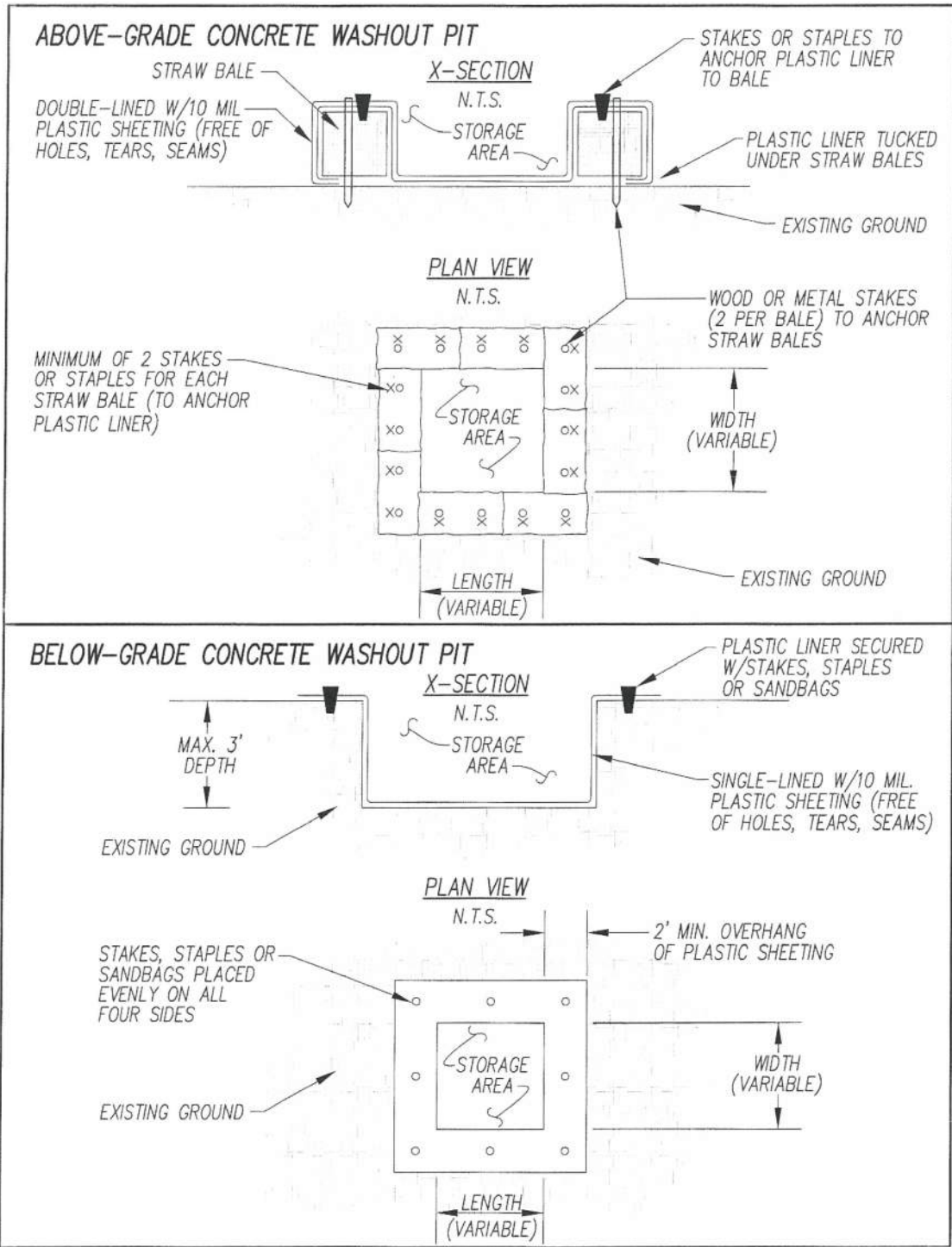
- 9. Once the washout pit is no longer needed, ensure all washout material has completely hardened, then remove and properly dispose of all materials. If straw bales were used, they can be spread as mulch.
- 10. Prefabricated containers specifically designed for concrete washout collection may be used subject to prior approval by the Community Engineer. Follow the manufacturer's suggestions for installation, maintenance and removal procedures.

Sizing of Concrete Washout Pits

Below-grade (3-ft depth)		
# of concrete trucks expected to be washed out on site*	Width (ft)	Length (ft)
2-3	3	3
4-5	4	4
6-7	5	5
8-10	6	6
11-14	7	7

Above-grade (2-ft depth)		
# of concrete trucks expected to be washed out on site*	Width (ft)	Length (ft)
2	3	3
3-4	4	4
5-6	5	5
7-8	6	6
9-11	7	7
12-15	8	8

*For small projects using a maximum of only one truckload of concrete or utilizing on-site mixing, rinsing of equipment may take place on the lot without a pit, provided it can be done a minimum of fifty (50) feet away from any water conveyances.



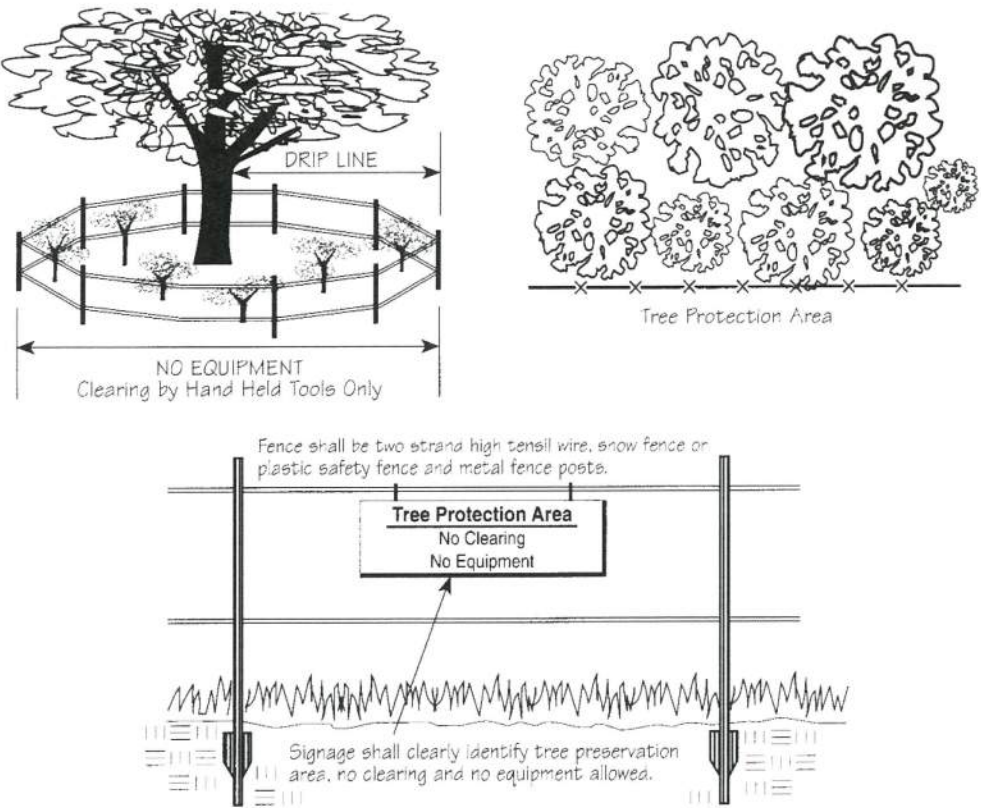
NOTE: MOST CURRENT "RAINWATER AND LAND DEVELOPMENT" VERSION TO BE USED AT THE TIME OF CONSTRUCTION.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
CONCRETE WASHOUT AREA	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING		2/2019

SWPPP-4

Preservation of Natural Vegetation

- 1. Areas where natural vegetation is to be preserved, including trees, shall be fenced prior to beginning clearing operations.
- 2. Acceptable fence materials include plastic fence or snow fence anchored to metal fence posts.
- 3. Signage shall clearly identify the protection area and state that no clearing or equipment is allowed within it.
- 4. Fence shall remain around protection areas until after final grading has been completed.
- 5. Fence shall be placed as shown on plans and beyond the drip line or canopy of trees to be protected.
- 6. If any clearing is done around specimen trees it shall be done by cutting at ground level with hand tools and shall not be grubbed or pulled out.



NOTE: MOST CURRENT "RAINWATER AND LAND DEVELOPMENT" VERSION TO BE USED AT THE TIME OF CONSTRUCTION.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
PRESERVATION OF NATURAL VEGETATION	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING	SWPPP-5	2/2019

Rock Check Dam

Installation:

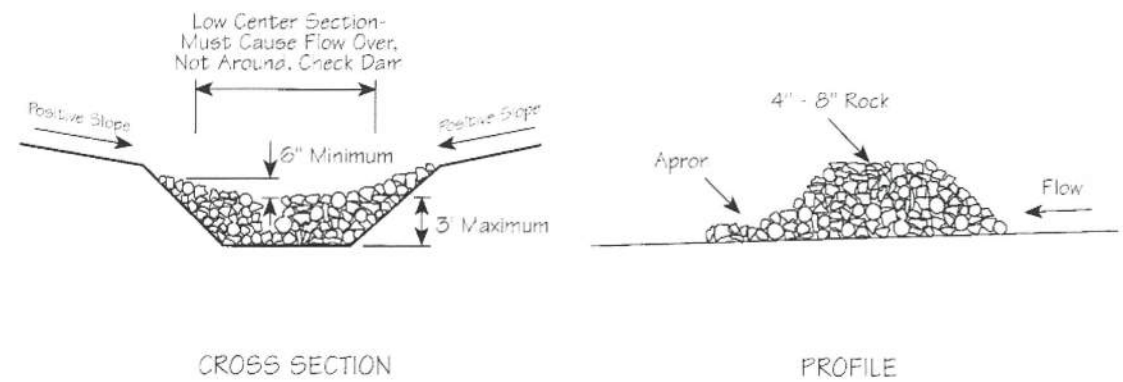
- 1. Constructed of 4 to 8 inch diameter stone, placed across the entire width of the channel. ODOT Type D stone is acceptable, but should be underlain with a gravel filter consisting of ODOT No. 3 or 4 or a suitable filter fabric.
- 2. The base of the check dam shall be entrenched approximately 6-inches.
- 3. Spacing between dams shall be as shown on the plan.
- 4. When check dams are expected to be in use for an extended period of time, a Splash Apron made of stone shall be constructed immediately downstream of the check dam to prevent flows from undercutting the structure. The apron should be 6 in. thick and its length two times the height of the dam.
- 5. Side slopes shall be a minimum of 2:1.

Maintenance:

- 1. Maintain required parabolic shape and minimum height per the site's approved plan. Repair as necessary.
- 2. Ensure that flow is passing over the center of the check dam. If flow displaces stone, replace as necessary.
- 3. Ensure that erosion is not occurring at the downstream toe or alongside the check dam. If erosion is occurring, properly repair eroded areas. Decrease spacing of check dams by adding additional structures.
- 4. Sediment shall be removed from behind the check dam once it accumulates to one-half the original height of the check dam.

Removal:

- 1. The time at which check dams can be removed is dependent upon stabilization techniques (refer to the plan). In conveyance channels that will not be mowed, the check dams can be left in place. Otherwise, stone can be blended into the surrounding landscape as site conditions allow.
- 2. Remove any accumulated sediments from the conveyance channel
- 3. Re-grade areas as necessary where accumulated sediments have been disposed of and where check dams were located. Establish vegetation on any resulting disturbed areas.



NOTE: MOST CURRENT "RAINWATER AND LAND DEVELOPMENT" VERSION TO BE USED AT THE TIME OF CONSTRUCTION.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
ROCK CHECK DAM	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING	SWPPP-6	2/2019

Rolled Erosion Control Products (RECP)

Installation:

- 1. The instructions and diagrams below provide a general idea of how to install a variety of rolled erosion control products. However, the manufacturer's specifications for the product of choice should be followed.
- 2. The selected material shall be appropriate for site conditions and be able to withstand shear stresses caused by runoff from a 10-year, 24-hour storm event.
- 3. Matting shall be held in place as recommended by the manufacturer (i.e. staples) and as appropriate for the site conditions. Generally, every square yard of material should have 1- 2.5 anchors, dependant on slope.
- 4. Apply appropriate seed mixture to the prepared seed bed prior to installing RECPs.

For slope installation:

- a. Excavate top and bottom trenches. Top trench should be at least 2-ft over crest of the slope. If necessary, excavate intermittent erosion check slots at a maximum of 30-ft centers or the mid point of the slope.
- b. Install RECP in top trench and then any erosion check slots, staple on 12-inch centers, backfill the trench and compact the soil.
- c. Unroll RECP down the slope with a minimum 3-inch overlap with adjacent rolls. Allow the RECP to remain loose (do not pull taught) and staple the side seams every 24-inches.
- d. Overlap roll ends a minimum of 12-inches (upslope RECP on top). Begin all new rolls in an erosion check slot, double anchor every 12-inches, backfill the trench, and compact the soil.
- e. Install RECP in bottom trench, staple on 12-inch centers, backfill the trench and compact the soil.

For channel installation:

- a. Excavate initial trench across the lower end of the project area.
- b. Excavate intermittent erosion check slots at a maximum of 30-ft centers up the channel slope.
- c. Excavate longitudinal channel slots along both sides of the channel, extending the RECP over the crest of both of the channel's side slopes (when possible).
- d. Install RECP in initial trench, staple on 12-inch centers, backfill the trench, and compact the soil.
- e. Roll out RECP beginning in the center of the channel toward an intermittent erosion check slot. Do not pull taught. Unroll adjacent rolls upstream with a 3-foot minimum overlap (anchor every 24-inches) and up each channel side slope.
- f. At the top of channel side slopes install outermost RECP in the longitudinal anchor slots, anchoring every 24-inches.
- g. Install RECP in intermittent erosion check slots, staple on 12-inch centers, backfill the trench, and compact the soil.
- h. Overlap roll ends a minimum of 12-inches (upslope RECP on top). Begin all new rolls in an erosion check slot, double anchor every 12-inches, backfill the trench, and compact the soil.
- i. Install RECP in top terminal trench, staple on 12-inch centers, backfill the trench and compact the soil.
- j. The swale shall be shaped, graded and prepared in such a manner to maximize matting-to-soil contact and to avoid "bridging" or "tenting" over obstructions.

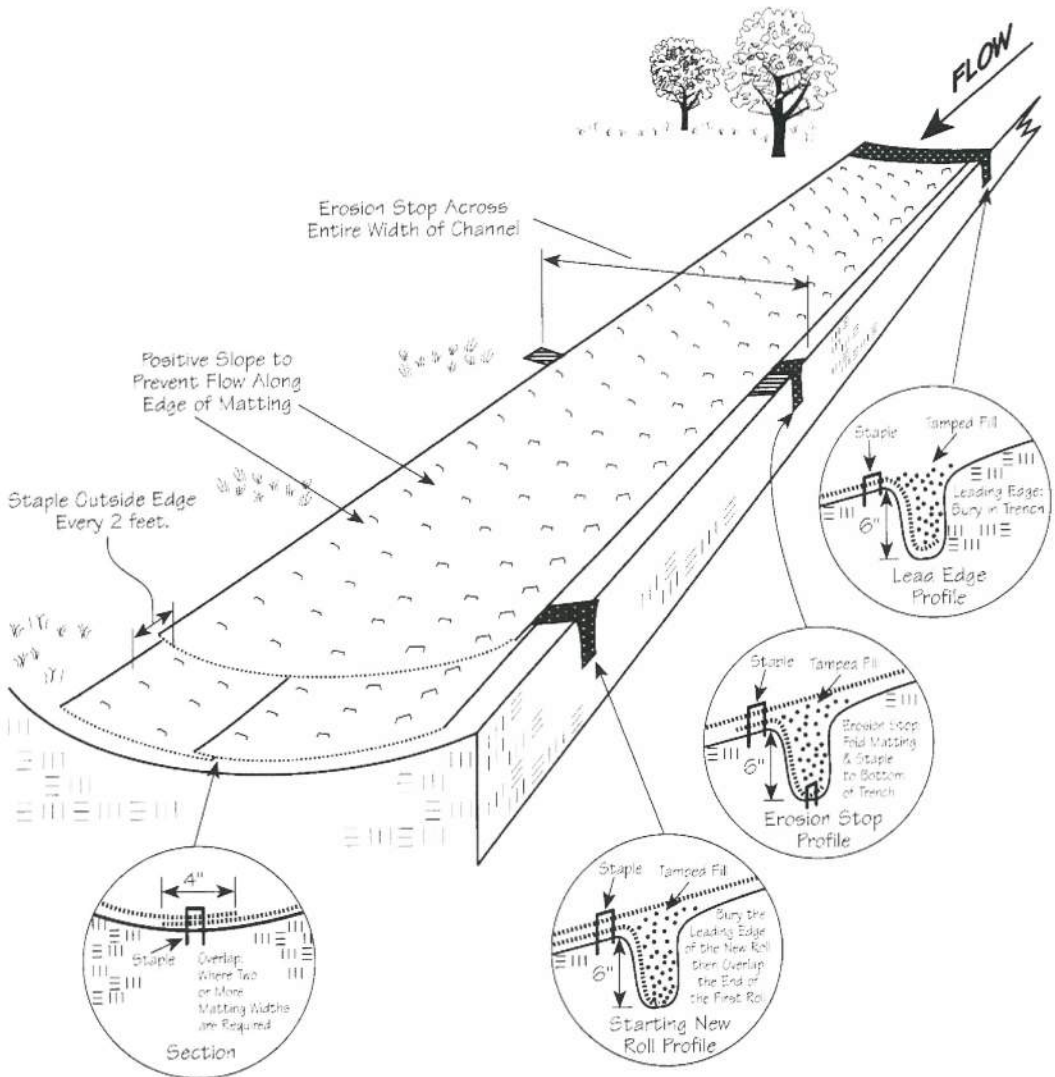
Maintenance:

- 1. Typical failures with matting include erosion alongside and parallel to the matting, scouring of the channel bottom below the matting, poor seed germination beneath, and torn or pulled-up matting caused by excessive shear stresses and/or poor installation.
- 2. Ensure manufactures installation recommendations and plan requirements were followed.
- 3. Ensure good contact between soil and the product. If erosion is noted under the product, properly repair the eroded area and re-install product.
- 4. Ensure stapling guidelines were followed. Install additional staples as necessary.
- 5. Ensure that erosion stops were installed as required. Repair as necessary.

- 1. In channels, ensure the width of product used is sufficient. Install product up side slopes of ditch line as well as across the bottom. If flows cause erosion at the edge of the product, increase the installation width of the product as necessary.
- 2. Replace any damaged product per required specifications. Damaged product shall be properly disposed of off-site.

Removal:

Erosion control matting is intended to remain in place after installation and therefore should not be removed. If metal staples were used to anchor the matting, be aware they may work themselves out of the ground over time. If the area where matting was used is accessible to foot traffic or will be mowed, it is advisable to remove the staples after the vegetation beneath the matting has become fully established. The staples can be located using a metal detector.



CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
ROLLED EROSION CONTROL PRODUCTS	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING		2/2019

NOTE: MOST CURRENT "RAINWATER AND LAND DEVELOPMENT" VERSION TO BE USED AT THE TIME OF CONSTRUCTION.

SWPPP-7

Sediment Trap

Installation:

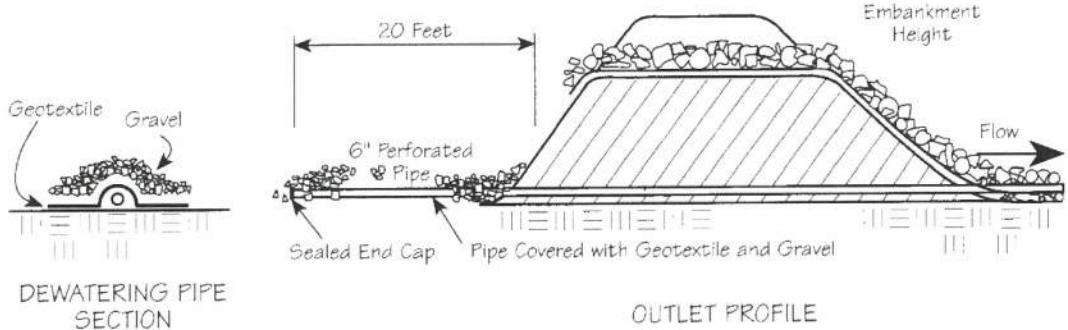
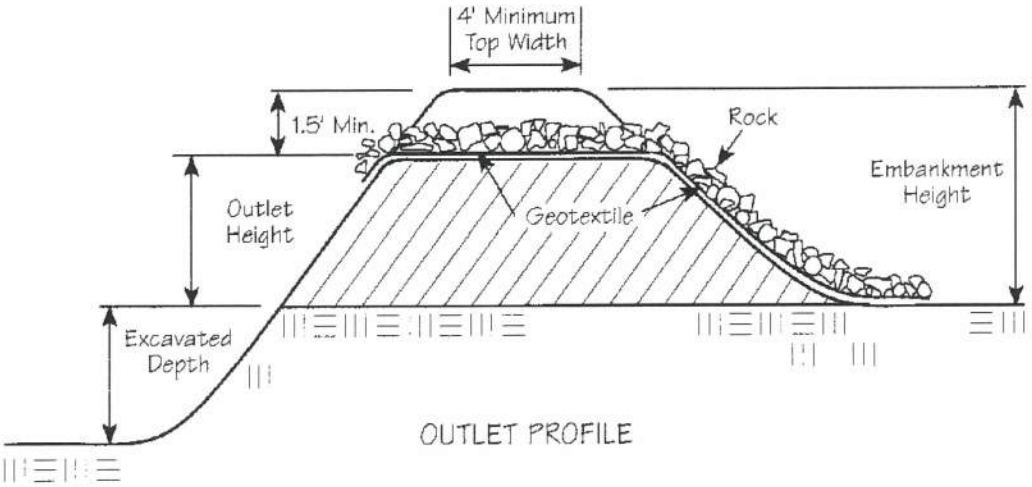
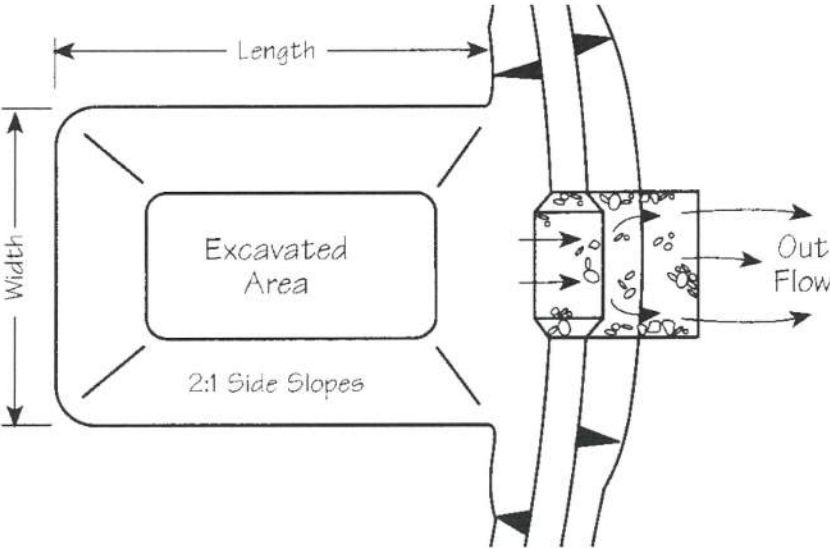
- 1. Shall be constructed and operational before upslope land disturbance begins.
- 2. The area under the embankment shall be cleared, grubbed and stripped of any vegetation and root mat. The pool area shall be cleared as necessary to facilitate sediment cleanout.
- 3. Fill material used for the embankment shall be free of roots or other woody vegetation as well as oversized stones, rocks, organic material or other objectionable material. The embankment shall be compacted by traversing with equipment while it is being constructed. Maximum height of the embankment shall be 5-feet as measured from the surrounding ground.
- 4. Cut-and-fill slopes shall be 2:1 or flatter.
- 5. Dikes directing runoff to the trap shall be higher than the height of the embankment.
- 6. Temporary seeding shall be established on all non-submerged areas of the trap.
- 7. Geotextile placed under the outlet spillway shall continue downstream of the embankment to form an apron on the surrounding ground. To prevent runoff from flowing under the geotextile, sections placed nearer the trap shall overlap following sections a minimum of 2-ft.
- 8. Rock used in the outlet spillway shall be placed 1-ft thick on top of the geotextile. The rock shall be between Type C and Type D rock where D₅₀ is about 8 inches.

Maintenance:

- 1. Once the trap has filled one-half its original depth, remove sediment to restore the trap to its original dimensions. The removed sediment must be stabilized and should not be placed where it could eventually be conveyed back to the trap via surface runoff.
- 2. If utilizing a perforated pipe to dewater the trap between rain events, remove accumulated sediment from the geotextile wrap as necessary.

Removal:

- 1. Pull out all materials and properly dispose of off-site. Stone can be blended into the surrounding landscape as site conditions allow.
- 2. Re-grade areas as necessary where accumulated sediments have been disposed of and where the sediment trap was located. Establish vegetation on any resulting disturbed areas.



NOTE: MOST CURRENT "RAINWATER AND LAND DEVELOPMENT" VERSION TO BE USED AT THE TIME OF CONSTRUCTION.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
SEDIMENT TRAP	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING		2/2019

SWPPP-8

Silt Fence

Installation:

- 1. Construct prior to upslope land disturbance.
- 2. Place continuous lengths of silt fence as close to the contour as possible so as to minimize the concentration of runoff at low points in the fence.
- 3. To prevent flow around ends, extend each end of a continuous length of silt fence upslope (90° to the contour) at least 1-foot in vertical elevation or 10-feet in horizontal distance, whichever is achieved first.
- 4. At a minimum, the bottom 8-inches of the silt fence material must be placed in a trench (minimum 6-inch depth) that is cut with a trencher, cable laying machine, or other suitable device. The trench shall not be constructed with the tilt blade of a bulldozer.
- 5. The trench must be backfilled with soil and properly compacted. When aggressively pulled upward between two consecutive stakes, the material should not pull out of the ground.
- 6. Stakes (min. 32-inch length, 2"x2" hardwood of good quality) must be placed on the downslope side of the silt fence material.
- 7. Silt fence material must be pulled tight between consecutive stakes to ensure the fence does not sag.
- 8. When it is necessary to join two separate lengths of silt fence to form a continuous run, the ends of two separate lengths must be joined together by first overlapping them and then twisting them together at least 180° prior to driving the stakes into the ground.

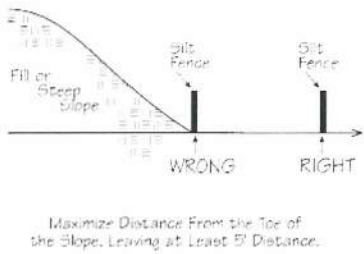
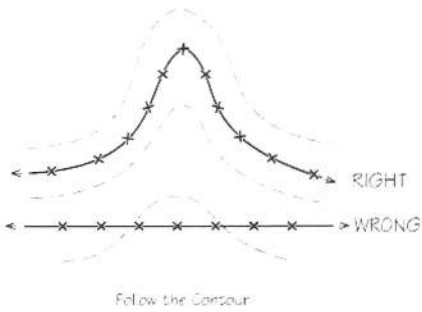
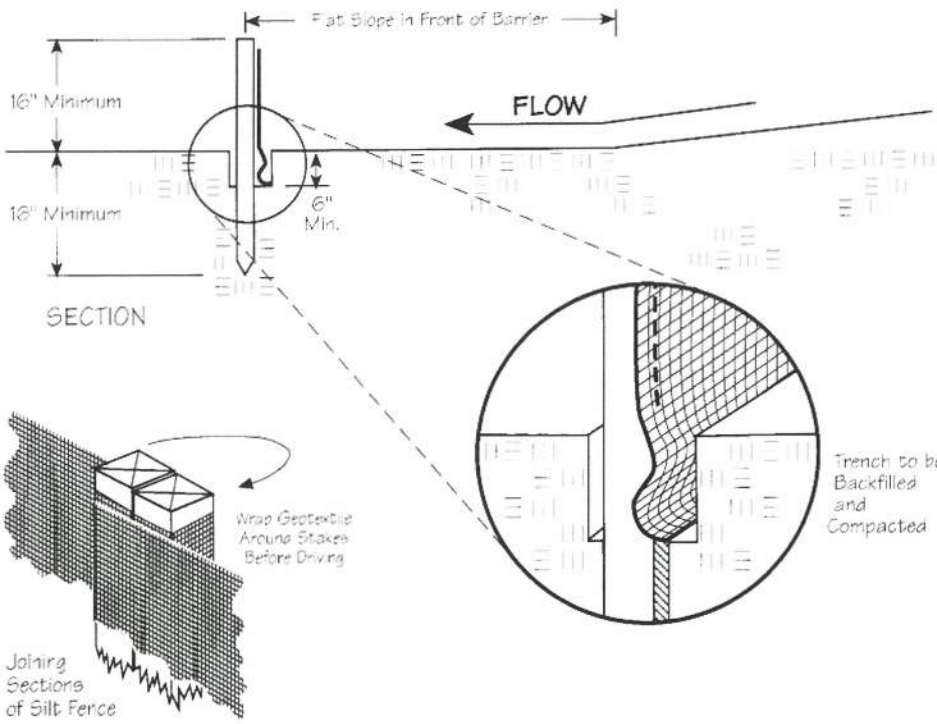
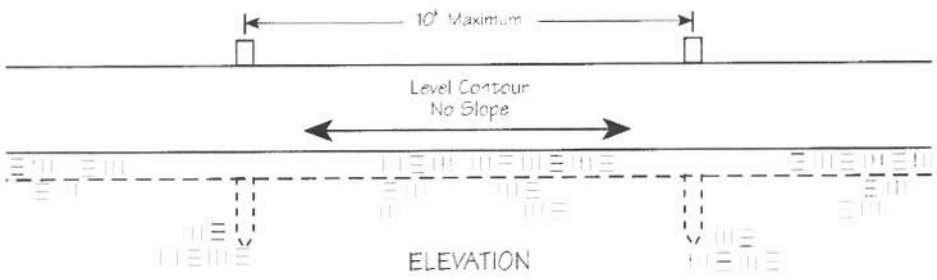
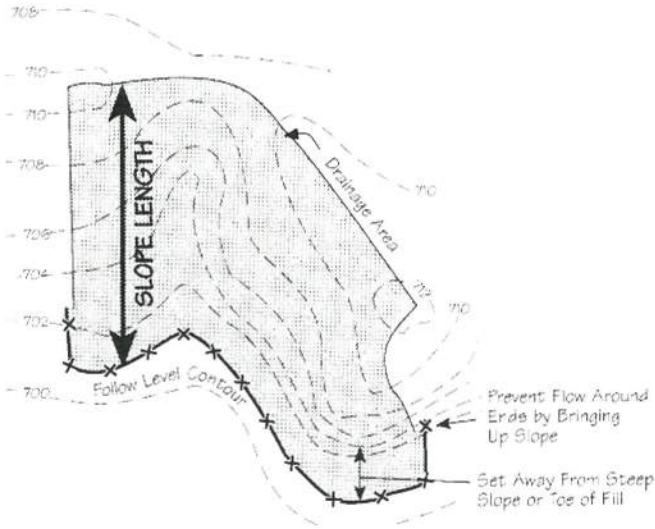
Maintenance:

- 1. Remove accumulated sediment when it reaches 1/3rd the height of the silt fence. The removed sediment must be stabilized and should not be placed where it could eventually be conveyed back to the silt fence via surface runoff.
- 2. Replace and properly dispose of damaged silt fence material.
- 3. Areas where surface flow has cut under the silt fence material within the trench shall be re-compacted with appropriate material (i.e. high clay content).

Removal:

- 1. Pull out all silt fence material and stakes and properly dispose of off-site.
- 2. Re-grade area where sediment has accumulated as necessary and establish vegetation in any resulting disturbed areas.

Maximum Drainage Area (acres) to 100 linear feet of effective silt fence ("effective" means on the same contour)	Range of Slope for a drainage area (%)
0.5	<2%
0.25	≥ 2% but < 20%
0.125	≥ 20% but < 50%



NOTE: MOST CURRENT "RAINWATER AND LAND DEVELOPMENT" VERSION TO BE USED AT THE TIME OF CONSTRUCTION.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
SILT FENCE	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING		2/2019

SWPPP-9

Guidelines for Permanent Seeding

1. Disturbed areas must be permanently stabilized as specified in the following table:

Area requiring permanent stabilization:	Time frame to apply erosion controls:
Any area that will lie dormant one year or more.	Within seven (7) days of the most recent disturbance.
Any area within fifty (50) feet of a stream and at final grade.	Within two (2) days of reaching final grade.
Any area at final grade.	Within seven (7) days of reaching final grade within that area.

2. Reduce soil compaction as much as possible so as to promote infiltration, which will aid in seed germination and long-term survivability.
3. Lime and fertilizer requirements should be determined through soil testing. If either is necessary, they should be worked into the soil to a depth of 3-inches.
4. Optimal seeding dates are from March 1 to May 31 and Aug 1 to September 30. However, with the use of mulch and irrigation, seedings may be made at any time during the growing season.
5. Seedings shall not be planted between October 1 and November 20. Although germination of seed is likely, it will probably not survive the winter.
6. To complete a dormant seeding, increase the seeding rates by 50% and only apply them after November 20 and before March 15. Seedbed preparation can take place any time prior to seeding.
7. Seeded areas shall be inspected for failure and vegetation re-established as needed. Depending on site conditions, it may be necessary to irrigate, fertilize, overseed, or re-establish plantings in order to provide permanent vegetation for adequate erosion control.
8. Maintenance fertilization rates shall be established by soil test recommendations.

Suggested rates for permanent seedings (other approved species may be substituted):

Seed Mix	Seeding Rate	
	lbs./Acre	lbs./1000ft ²
(General Use)		
Creeping Red Fescue	20 - 40	½ - 1
Domestic Ryegrass	10 - 20	¼ - ½
Kentucky Bluegrass	10 - 20	¼ - ½
(Lawns – Shaded areas)		
Kentucky Bluegrass	60	1 ½
Creeping Red Fescue	60	1 ½
(Lawns)		
Kentucky Bluegrass	60	1 ½
Perennial Ryegrass	60	1 ½

Guidelines for Temporary Seeding

1. Disturbed areas must be temporarily stabilized as specified in the following table:

Area requiring temporary stabilization:	Time frame to apply erosion controls:
Any disturbed area within fifty (50) feet of a stream and not at final grade.	Within two (2) days of the most recent disturbance if that area will remain idle for more than twenty-one (21) days.
For all construction activities, any disturbed area, including soil stockpiles that will be dormant for more than twenty-one (21) days but less than one year, and not within fifty (50) feet of a stream.	Within seven (7) days of the most recent disturbance within the area.
Disturbed areas that will be idle over winter.	Prior to November 1 st .

Note: Where vegetative stabilization techniques may cause structural instability or are otherwise unobtainable, alternative stabilization techniques must be employed. These techniques may include mulching or erosion matting.

2. The seedbed should be loose to ensure the success of establishing vegetation. However, temporary seeding shall not be postponed if ideal seedbed preparation is not possible.
3. Establishment of temporary vegetation may require the use of soil amendments. Soil tests should be taken on the site to predict the need for lime and fertilizer.
4. When feasible, seed that has been broadcast shall be covered by raking or dragging and then lightly tamped into place using a roller or cultipacker.
5. Seeded areas shall be inspected for failure and vegetation re-established as needed. Depending on site conditions, it may be necessary to irrigate, fertilize, overseed, or re-establish plantings in order to provide permanent vegetation for adequate erosion control.

Suggested rates for temporary seedings (other approved species may be substituted):

Seeding Dates	Seed Mix	Seeding Rate	
		Per Acre	lbs./1000ft ²
March 1 to August 15	Oats	4 Bushel	3
	Tall Fescue	40 lbs	1
	Annual Ryegrass	40 lbs	1
August 16 to November 1	Rye	2 Bushel	3
	Tall Fescue	40 lbs	1
	Annual Ryegrass	40 lbs	1
November 1 to Spring Seeding	Use mulch only, sodding practices, or dormant seeding		

Guidelines for Mulching

1. Mulching shall be applied after seedbeds have been prepared and seed has been applied. It can also be used as a stand-alone practice to provide a temporary cover over idle bare areas.
2. Straw mulch shall be unrotted and applied uniformly at 2 tons/Ac or 90-lbs/1000 ft² (2-3 bales).
3. Wood chips shall be applied uniformly at a rate of 10-20 tons/Ac.
4. Straw mulch shall be anchored immediately to minimize loss by wind or runoff. Acceptable means of anchoring include disking, crimping, netting, synthetic binders, and wood cellulose fiber.
5. Mulch shall be re-applied in areas where it has been displaced by surface flow and/or wind.

NOTE: MOST CURRENT "RAINWATER AND LAND DEVELOPMENT" VERSION TO BE USED AT THE TIME OF CONSTRUCTION.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
SOIL STABILIZATION	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING SWPPP-10		2/2019

Stabilized Construction Entrance

Installation:

- 1. ODOT #2 (1.5 – 2.5 inch) stone or recycled concrete equivalent shall be placed at a minimum 6-inch thickness for light duty use or at least 10-inch thickness for heavy-duty use.
- 2. The entrance shall be as long as required to stabilize high traffic areas (30-ft minimum on a single residential lot; 70-ft minimum elsewhere).
- 3. A geotextile shall be placed over the entire area prior to placing stone. It shall composed of strong rot-proof polymeric fibers and meet the following specifications:

Minimum tensile strength	200 lbs.
Minimum puncture strength	80 psi.
Minimum tear strength	50 lbs.
Minimum burst strength	320 psi.
Minimum elongation	20%
Equivalent opening size	EOS < 0.6 mm
Permeability	1x10-3 cm/sec

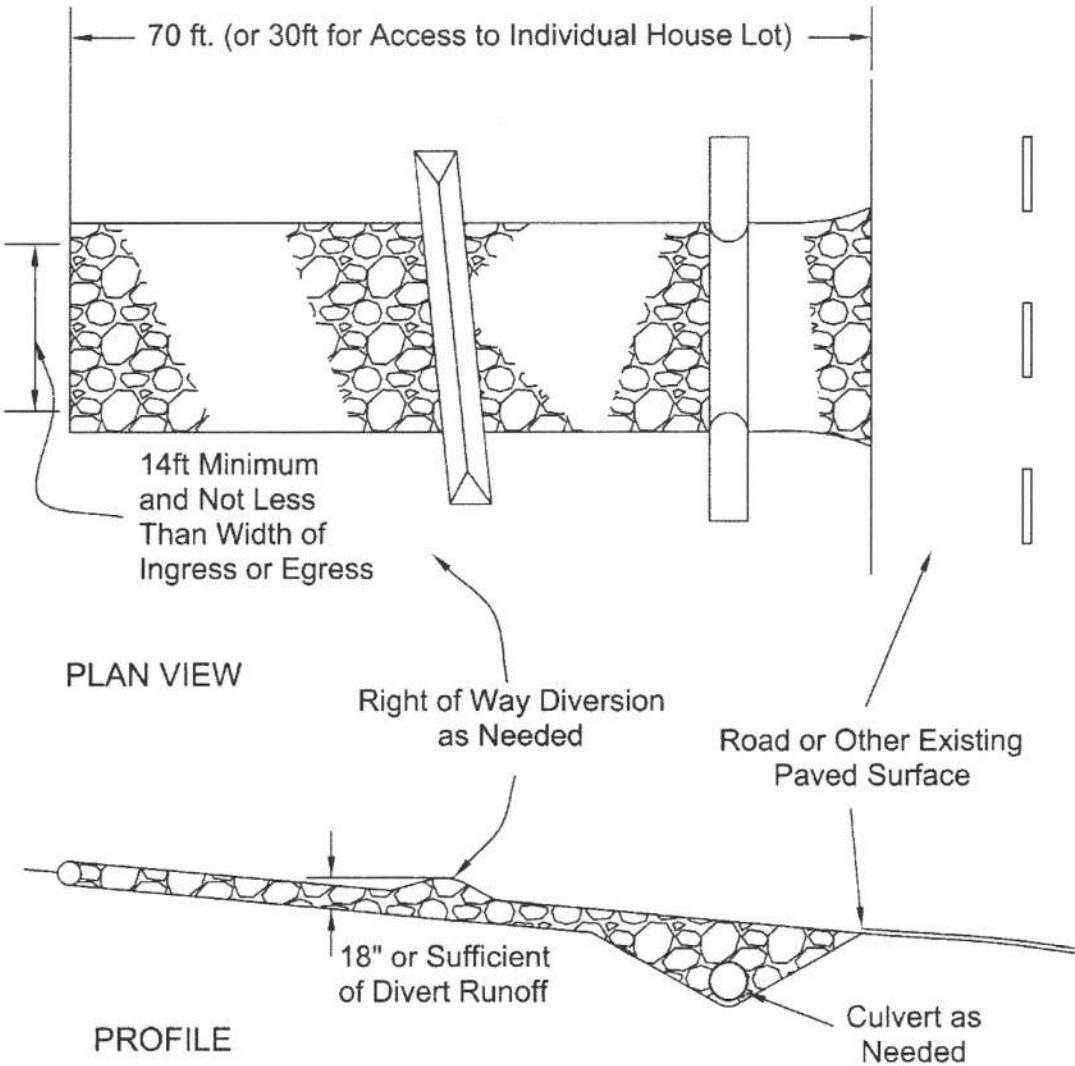
- 4. If needed, a pipe or culvert shall be constructed under the entrance to prevent surface water from flowing across the entrance out onto paved surfaces.
- 5. If needed, a water bar shall be constructed to prevent surface water from flowing along the length of the entrance out onto paved surfaces.

Maintenance:

- 1. Top dress with additional stone as site conditions demand.
- 2. Remove mud tracked onto public streets immediately via scraping or sweeping.
- 3. Ensure the ends of the temporary culvert pipe (if utilized) are not blocked and that the pipe is free of debris throughout.

Removal:

- 1. The entrance shall remain in place until the disturbed area is stabilized or replaced with a permanent roadway or entrance.
- 2. Pull out all construction entrance material and properly dispose of off-site. Stone can be blended into the surrounding landscape as site conditions allow.
- 3. Re-grade the area as necessary and establish vegetation on any resulting disturbed areas.



NOTE: MOST CURRENT "RAINWATER AND LAND DEVELOPMENT" VERSION TO BE USED AT THE TIME OF CONSTRUCTION.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
STABILIZED CONSTRUCTION ENTRANCE	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING	SWPPP-11	2/2019

Yard Drain Inlet Protection

Installation:

- 1. Construct prior to upslope land disturbance.
- 2. Construct wooden frame from 2"x4" lumber. Drive posts 1-foot into the ground at each corner directly against the concrete box and assemble the top frame with an overlap joint shown below. The top frame shall be set at an elevation that does not cause ponded water to backup into unwanted areas.
- 3. The wire mesh and geotextile shall be tightly stretched and fastened to the frame.
- 4. The geotextile shall overlap across one side of the inlet so the ends of the cloth are not fastened to the same post.
- 5. Backfill shall be placed in the 18-inch trench around the inlet in compacted 6-inch layers until the elevation of the top of the grate is reached.

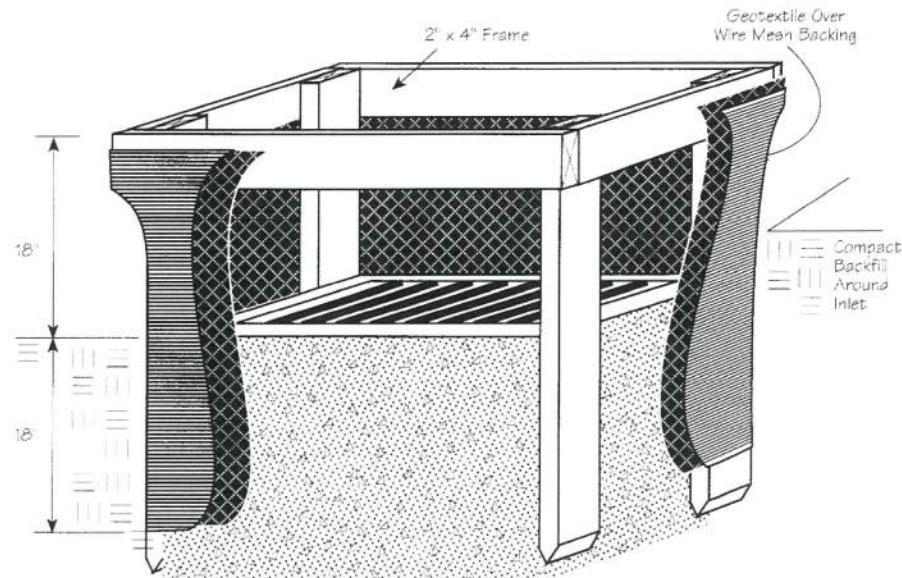
Maintenance:

- 1. Remove accumulated sediment when it reaches one-half the height of the practice. The removed sediment must be stabilized and should not be placed where it could eventually be conveyed back to the inlet via surface runoff.
- 2. Replace and properly dispose of damaged silt fence material.
- 3. Areas where surface flow has cut under the silt fence material within the trench shall be re-compacted with appropriate material (i.e. high clay content).

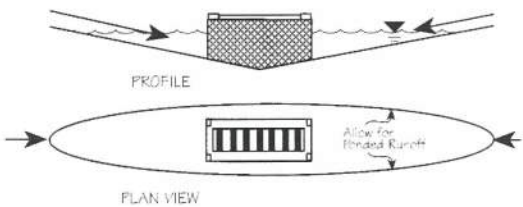
Removal:

- 1. Pull out all silt fence material and stakes and properly dispose of off-site.
- 2. Re-grade area where sediment has accumulated as necessary and establish vegetation on any resulting disturbed areas.

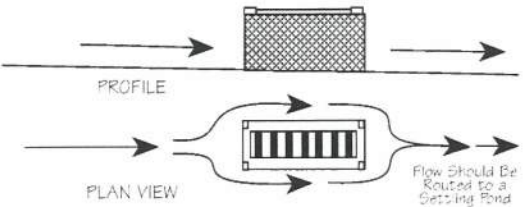
Alternative manufactured yard drain inlet protection products are available and can be used, subject to prior approval by the Community Engineer.



Correct Application – Runoff ponds around inlet



Incorrect Application – Runoff bypasses inlet



Inlet Protection for Curb Drains & Yard Drains Situated on a Slope

Installation:

- 1. Remove the grate from the catch basin.
- 2. Insert the filtration sack into opening of catch basin. Some products require the filtration sack be slipped over the catch basin grate first.
- 3. Reinsert grate into catch basin while ensuring all necessary support straps remain outside the catch basin on top of the surface. If necessary, insert rebar through the support straps to provide support and ensure the filtration sack does not fall into catch basin as it fills with sediment.

Maintenance:

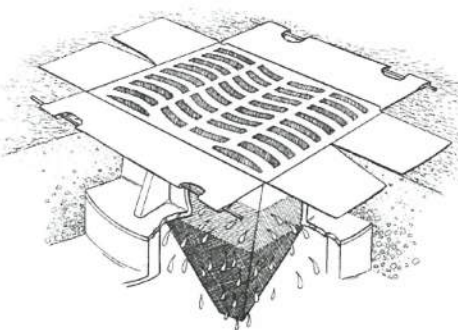
- 1. The filtration sack must be emptied when it is 1/3rd full of sediment and debris. Sacks are typically manufactured with lifting straps and dumping straps.
- 2. To empty the sack, remove the grate, lift the sack out of the catch basin via the lifting straps and haul it to an appropriate area. Turn it inside out with the dumping straps provided.
- 3. The filtration sack must be replaced if it is torn, otherwise the same sack can be used multiple times.

Removal:

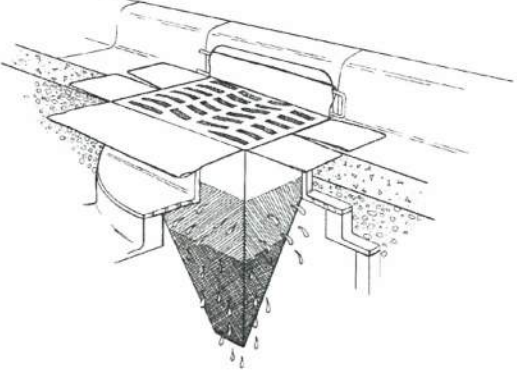
- 1. Pull out all inlet protection material and properly dispose of off-site.
- 2. Re-grade area where accumulated sediment has been placed as necessary and establish vegetation on any resulting disturbed areas.

The following diagrams provide a general idea of how to install and maintain a variety of manufactured storm drain inlet protection practices. Be sure to implement filtration sacks that are appropriate for either curb inlets or for yard drain inlets. Manufacturer's specifications for the product of choice should be followed.

Typical product for yard drains on a slope



Typical product for curb drains



NOTE: MOST CURRENT "RAINWATER AND LAND DEVELOPMENT" VERSION TO BE USED AT THE TIME OF CONSTRUCTION.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
YARD DRAIN INLET PROTECTION	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING	SWPPP-12	2/2019

City of Avon Traffic Signal Note

JANUARY 31, 2018

GENERAL

THE FOLLOWING NOTES ARE AVAILABLE IN A WORD DOCUMENT FORMAT FOR MODIFICATIONS RELATED TO SPECIFIC PROJECTS. ALL MODIFICATIONS MUST BE IDENTIFIED BY THE TRAFFIC SIGNAL SYSTEM DESIGNER AND THEN APPROVED BY THE CITY OF AVON PRIOR TO INCLUSION ON PLAN OR SPECIFICATION DOCUMENTS.

TYPICAL TRAFFIC SIGNAL NOTES HAVE BEEN CONSOLIDATED HERE FOR CONVENIENCE IN PREPARING TRAFFIC SIGNAL CONSTRUCTION PLANS FOR THE CITY OF AVON. WHEN A PLAN NOTE REVISES THE MATERIAL OR CONTRACTOR REQUIREMENTS FROM WHAT IS SPECIFIED IN THE ODOT CONSTRUCTION & MATERIALS SPECIFICATIONS (C&MS), BOTH THE NOTE AND THE BID ITEM WILL BE DESIGNATED "AS PER PLAN". THESE NOTES MAY BE MODIFIED TO FURTHER DEFINE CONDITIONS OF A PARTICULAR PROJECT BUT SUCH MODIFICATION MUST BE PRE-APPROVED BY THE CITY OF AVON.

THESE PLAN NOTES HAVE BEEN DEVELOPED FOR THE USE OF BOTH DESIGN CONSULTANTS HIRED BY THE CITY OF AVON TO PERFORM TRAFFIC SIGNAL DESIGN AS WELL AS DEVELOPER TEAMS WHO ARE INSTALLING TRAFFIC SIGNALS AS PART OF THEIR SITE PLANS. IT IS UNDERSTOOD THAT THE INSTALLATION OF TRAFFIC SIGNALS AS PART OF AN OVERALL SITE DEVELOPMENT MAY NOT INCLUDE AN ITEMIZED BID, HOWEVER, THESE PLAN NOTES AND REFERENCED DOCUMENTS SHALL GOVERN THE CONSTRUCTION AND MATERIAL SPECIFICATIONS REQUIRED FOR TRAFFIC SIGNAL INSTALLATION. NO EXCEPTIONS TO THESE SPECIFICATIONS ARE ALLOWABLE BY A DEVELOPER, UNLESS APPROVED BY THE CITY OF AVON.

T-0010 SCOPE

LABOR, SUPPLIES, EQUIPMENT AND MATERIALS SHALL BE FURNISHED TO PERFORM ALL OPERATIONS NECESSARY FOR THE ACCEPTABLE INSTALLATION OF THE TRAFFIC CONTROL DEVICES, IN STRICT ACCORDANCE WITH THESE PLANS, NOTES AND SPECIFICATIONS. THESE NOTES, SCHEDULES AND DRAWINGS ARE INTENDED TO PROVIDE FOR ALL MATERIAL AND LABOR REQUIRED TO FURNISH AND INSTALL A COMPLETE TRAFFIC CONTROL SYSTEM. ANY PERTINENT CITY OF AVON SIGNAL AND CONSTRUCTION PERMITS SHALL BE ACQUIRED AND SUBMITTED. THE COSTS INCURRED WITH THE PERMIT APPLICATIONS SHALL BE BORNE BY THE CONTRACTOR. ALL REQUIREMENTS FROM THE CITY OF AVON STANDARDS FOR ENGINEERING CONSTRUCTION SHALL BE ACQUIRED AND OBSERVED. DOCUMENTS SHALL BE OBTAINED FROM THE CITY ENGINEER'S OFFICE.

DESIGNER NOTE: NOTE T-0010 SHALL BE USED ON ALL CITY OF AVON TRAFFIC SIGNAL CONSTRUCTION PROJECTS.

T-0020 DEFINITIONS AND TERMS

WHEREVER THERE APPEARS IN THE STANDARD SPECIFICATIONS (ODOT ITEMIZED CMS) SUPPLEMENTAL SPECIFICATIONS OR PROPOSAL NOTES, THE TERM "THE STATE", "DIRECTOR OF TRANSPORTATION", "DEPARTMENT", "DISTRICT CONSTRUCTION ENGINEER (DCE)", "ENGINEER", OR ANY OTHER TERM DESIGNATING ANY REPRESENTATIVE OR EMPLOYEE OF THE STATE OR ITS DEPARTMENT OF TRANSPORTATION, SUCH TERM SHALL, FOR THE PURPOSE OF THIS CONTRACT, BE CONSIDERED AND TAKEN AS MEANING AND DESIGNATING THE EMPLOYEE OF THE CITY OF AVON WHOSE DUTY OR FUNCTION IT IS TO DEAL WITH THE SUBJECT MATTER IN CONNECTION WITH SUCH TERMS IS USED AND SPECIFICALLY:

THE STATE SHALL MEAN THE CITY OF AVON.
DEPARTMENT SHALL MEAN THE CITY OF AVON.
DIRECTOR SHALL MEAN THE CITY OF AVON CITY ENGINEER, HIS DEPUTIES OR ANY ENGINEER DESIGNATED AS THE CITY ENGINEER'S REPRESENTATIVE.
DISTRICT CONSTRUCTION ENGINEER SHALL MEAN THE DULY AUTHORIZED AGENT OR REPRESENTATIVE ENGINEER OF THE CITY OF AVON, ACTING WITHIN THE SCOPE OF HIS/HER AUTHORITY FOR THE PURPOSES OF CONSTRUCTION ENGINEERING AND ADMINISTRATION OF THE CONTRACT.
LABORATORY SHALL MEAN THE LABORATORY APPROVED BY THE CITY OF AVON.

DESIGNER NOTE: NOTE T-0020 SHALL BE USED ON ALL CITY OF AVON TRAFFIC SIGNAL CONSTRUCTION PROJECTS.

T-0030 SPECIFICATIONS

THE STANDARD SPECIFICATIONS OF THE CITY OF AVON AND THE OHIO DEPARTMENT OF TRANSPORTATION CONSTRUCTION AND MATERIAL SPECIFICATION, JANUARY 1, 2019 EDITION SHALL GOVERN THIS PROJECT. THIS SHALL INCLUDE ANY CHANGES OR SUPPLEMENTAL SPECIFICATIONS. SHOULD A CONFLICT ARISE BETWEEN THESE OR OTHER PROJECT SPECIFICATIONS, THE CITY OF AVON STANDARDS SHALL TAKE PRECEDENCE.

DESIGNER NOTE: NOTE T-0030 SHALL BE USED ON ALL CITY OF AVON TRAFFIC SIGNAL CONSTRUCTION PROJECTS.

T-0040 LOCAL LAWS, ORDINANCES, AND REGULATIONS
IN ACCORDANCE WITH SECTION 107.01 OF THE GENERAL PROVISIONS, THE CONTRACTOR SHALL STAY FULLY INFORMED OF ALL LOCAL LAWS, ORDINANCES, REGULATIONS, ORDERS, AND DECREES THAT AFFECT THE WORK. IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBSERVE AND COMPLY WITH ALL SUCH LAWS, ORDINANCES, REGULATIONS, ORDERS, AND DECREES AT NO ADDITIONAL COST TO THE PROJECT/CITY.

DESIGNER NOTE: NOTE T-0040 SHALL BE USED ON ALL CITY OF AVON TRAFFIC SIGNAL CONSTRUCTION PROJECTS.

T-0050 UNDERGROUND AND OVERHEAD UTILITIES

LISTED BELOW ARE ALL UTILITIES LOCATED WITHIN THE PROJECT CONSTRUCTION LIMITS TOGETHER WITH THEIR RESPECTIVE OWNERS:

(LIST ALL SANITARY, TELEPHONE, ELECTRIC, GAS, WATER, CABLE TV, ETC.) (NAME OF OWNER, STREET OR P.O. BOX, CITY, STATE, ZIP CODE, AND EMERGENCY TELEPHONE NUMBER.)

THE LOCATION OF THE UNDERGROUND UTILITIES SHOWN ON THE PLANS ARE AS OBTAINED FROM THE OWNERS AS REQUIRED BY SECTION 153.64 O.R.C. THE LOCATION OF ALL UNDERGROUND UTILITIES WITHIN THE WORK LIMITS SHALL BE VERIFIED BY THE CONTRACTOR. OVERHEAD UTILITY COMPANIES SHALL BE NOTIFIED AT LEAST TWO WORKING DAYS BEFORE INSTALLING SIGNAL POLES OR SUPPORTS. SPECIAL CARE SHALL BE TAKEN WHEN SETTING POLES OR SUPPORTS DUE TO CLOSE PROXIMITY OF OVERHEAD UTILITIES. COSTS FOR UTILITY VERIFICATION AND NOTIFICATION SHALL BE BORNE BY THE CONTRACTOR AND SHALL BE INCIDENTAL TO THE COST THE PROJECT.

DESIGNER NOTE: NOTE T-0050 SHALL BE USED ON ALL CITY OF AVON TRAFFIC SIGNAL CONSTRUCTION PROJECTS.

T-0060 MOBILIZATION

THE COST FOR MOBILIZATION INCLUDING FIELD OFFICE, ETC CONSIDERED INCIDENTAL TO, AND INCLUDED IN THE INDIVIDUAL ITEMS OF WORK. NO SEPARATE PAYMENT FOR MOBILIZATION WILL BE MADE.

DESIGNER NOTE: NOTE T-0060 SHALL BE USED ON ALL CITY OF AVON TRAFFIC SIGNAL CONSTRUCTION

PROJECTS WHERE THERE ARE FEWER THAN TEN (10) SIGNALIZED INTERSECTIONS WITHIN THE PROJECT. FOR PROJECTS WITH TEN (10) OR MORE SIGNALIZED INTERSECTIONS, SEPARATE BID ITEMS SHALL BE PROVIDED FOR MOBILIZATION AND CONSTRUCTION LAYOUT STAKES AND THIS NOTE WILL NOT BE USED.

T-0070 CONSTRUCTION LAYOUT STAKES AND SURVEYING

AN OHIO LICENSED PROFESSIONAL SURVEYOR SHALL BE PROVIDED BY THE CONTRACTOR TO MARK AND LAYOUT THE PLAN LOCATION OF TRAFFIC SIGNAL SUPPORTS AND ALL OTHER STATIONED SIGNAL ITEMS USING THE STATIONS AND OFFSETS PROVIDED IN THESE PLANS. THE SURVEYOR, PROVIDED BY THE CONTRACTOR, SHALL SET THE PROPER POLE AND CABINET FOUNDATION ELEVATIONS. THE CITY OF AVON SHALL APPROVE THE POLE FOUNDATION LOCATIONS AND ELEVATIONS PRIOR TO THE INSTALLATION OF ANY ITEM. THE COSTS FOR THIS SERVICE SHALL BE MADE INCIDENTAL TO THE COST OF THIS PROJECT.

DESIGNER NOTE: NOTE T-0070 SHALL BE USED ON ALL CITY OF AVON TRAFFIC SIGNAL CONSTRUCTION PROJECTS.

T-0080 MAINTENANCE OF TRAFFIC SIGNAL/ FLASHER INSTALLATION

THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING TRAFFIC SIGNAL/FLASHER INSTALLATIONS WITHIN THE PROJECT UNDER THE FOLLOWING CONDITIONS:

- EXISTING SIGNAL/FLASHER INSTALLATIONS WHICH REQUIRE THE CONTRACTOR TO ADJUST, MODIFY, ADD ONTO OR REMOVE, OR WHICH THE CONTRACTOR ACTUALLY ADJUSTS, MODIFIES OR OTHERWISE DISTURBS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ENTIRE INSTALLATION (AT AN INTERSECTION) FROM THE TIME HIS OPERATIONS FIRST DISTURB THE INSTALLATION UNTIL THE INSTALLATION HAS BEEN SUBSEQUENTLY REMOVED OR MODIFIED AND THE WORK IS ACCEPTED.
- NEW OR REUSED SIGNAL/FLASHER INSTALLATIONS OR DEVICES, INSTALLED BY THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE OF THESE FROM THE TIME OF INSTALLATION UNTIL THE WORK IS ACCEPTED.

THE CONTRACTOR SHALL CORRECT AS QUICKLY AS POSSIBLE ALL OUTAGES OR MALFUNCTIONS. HE SHALL PROVIDE THE CITY OF AVON SUCH ADDRESSES AND PHONE NUMBERS WHERE HIS MAINTENANCE FORCES CAN BE CONTACTED. THE CONTRACTOR SHALL PROVIDE ONE OR MORE PERSONS TO RECEIVE ALL CALLS AND DISPATCH THE NECESSARY MAINTENANCE FORCES TO CORRECT OUTAGES. SUCH A PERSON OR PERSONS MAY BE USED TO PERFORM OTHER DUTIES AS LONG AS PROMPT ATTENTION IS GIVEN TO THESE CALLS AND A PERSON IS READILY AVAILABLE CONTINUOUSLY 24 HOURS A DAY, 7 DAYS A WEEK.

ALL LAMP OUTAGES, CABLE OUTAGES, ELECTRICAL FAILURES, EQUIPMENT MALFUNCTIONS AND MISALIGNED SIGNAL HEADS SHALL BE CORRECTED TO THE SATISFACTION OF THE CITY OF AVON WITH THE SIGNAL BACK TO SERVICE WITHIN FOUR HOURS AFTER THE CONTRACTOR HAS BEEN NOTIFIED OF THE OUTAGE.

IN THE EVENT NEW SIGNALS ARE DAMAGED PRIOR TO ACCEPTANCE, ALL DAMAGED EQUIPMENT EXCEPT POLES AND CONTROL EQUIPMENT SHALL BE REPLACED BY THE CONTRACTOR TO THE SATISFACTION OF THE CITY OF AVON WITH THE SIGNAL BACK IN SERVICE WITHIN 8 HOURS AFTER THE CONTRACTOR'S NOTIFICATION OF THE OUTAGE. THE CONTRACTOR SHALL ARRANGE FOR FULL TRAFFIC CONTROL UNTIL THE SIGNAL IS BACK IN OPERATION.

IF POLES AND/OR CONTROL EQUIPMENT ARE DAMAGED AND MUST BE REPLACED, THE CONTRACTOR SHALL MAKE TEMPORARY REPAIRS AS NECESSARY TO BRING THE SIGNAL BACK INTO FULL OPERATION WITHIN THE ALLOWED 8-HOUR PERIOD, AND SHALL MAKE PERMANENT REPAIRS OR REPLACEMENT AS SOON THEREAFTER AS POSSIBLE.

NONE OF THE ABOVE SHALL BE CONSTRUED AS COLLECTIVE OR CONSECUTIVE OUTAGE TIME PERIODS AT ANY ONE LOCATION. THAT IS, WHERE MORE THAN ONE OUTAGE OCCURS AT ANY ONE LOCATION THEN THE ALLOTTED TIME LIMIT SHALL BE FOR THE WORST SINGLE OUTAGE.

WHERE OUTAGES ARE THE DIRECT RESULT OF A VEHICLE ACCIDENT THE RESPONSE OF THE CONTRACTOR SHALL BE AS OUTLINED ABOVE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COLLECTION OF ANY COMPENSATION FOR THIS WORK FROM THOSE PARTIES RESPONSIBLE FOR THE DAMAGE.

WHERE THE CONTRACTOR HAS FAILED TO, OR CANNOT RESPOND TO, AN OUTAGE OR SIGNAL EQUIPMENT MALFUNCTION, AT THESE LOCATIONS WITHIN HIS RESPONSIBILITY, WITHIN PERIODS AS SPECIFIED ABOVE, THE CITY OF AVON MAY INVOKE THE PROVISIONS OF SECTION 105.15 OF THE ODOT CONSTRUCTION & MATERIALS SPECIFICATIONS AND ANY SUBSEQUENT BILLINGS TO THE CITY OF AVON FOR POLICE SERVICES AND MAINTENANCE SERVICES BY CITY FORCES SHALL BE DEDUCTED FROM MONIES DUE OR TO BECOME DUE TO THE CONTRACTOR.

THE CONTRACTOR SHALL PROVIDE THE MAINTENANCE SERVICE ENTIRELY WITH HIS FORCES OR HE MAY CHOOSE TO ENTER INTO A COOPERATIVE UNDERSTANDING WITH THE LOCAL MAINTAINING AGENCY TO PROVIDE THE MAINTENANCE. THE CONTRACTOR SHALL INFORM THE CITY OF AVON, IN WRITING, OF THE MAINTENANCE METHOD SELECTED.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGES TO ANY TRAFFIC SIGNAL COMPONENTS REQUIRED TO BE HANDLED DURING THE RELOCATION OF POLES AND REVISIONS TO THE SIGNAL SYSTEM. WHEN A TRAFFIC SIGNAL MUST BE TAKEN OUT OF SERVICE BY THE CONTRACTOR, DUE TO CONSTRUCTION PROCEDURES, THIS OUTAGE SHALL NOT EXCEED 3 HOURS AND SHALL NOT INCLUDE THE HOURS OF 6 TO 9 AM, 12 TO 1 PM AND/OR 4 TO 7 PM. ANY SIGNALIZED INTERSECTION, WHERE THE SIGNAL IS OUT OF SERVICE DUE TO CONSTRUCTION PROCEDURES, OR DUE TO AN OUTAGE OR MALFUNCTION OR EQUIPMENT AS DESCRIBED ABOVE, SHALL BE PROTECTED, BY THE CONTRACTOR, BY OFF-DUTY CITY OF AVON POLICE, HIRED BY THE CONTRACTOR.

ANY VEHICULAR TRAFFIC SIGNAL HEAD, EITHER NEW OR EXISTING WHICH WILL BE OUT OF OPERATION SHALL BE COVERED IN THE MANNER DESCRIBED IN 632.25.

THE CONTRACTOR SHALL MAINTAIN COMPLETE RECORDS OF MALFUNCTIONS INCLUDING:

- TIME OF NOTIFICATION OF MALFUNCTION;
- TIME OF WORK CREW'S ARRIVAL TO CORRECT THE MALFUNCTION;
- ACTIONS TAKEN TO CORRECT THE MALFUNCTION, INCLUDING A LIST OF PARTS REPAIRED OR REPLACED;
- A DIAGNOSIS OF REASON FOR THE MALFUNCTION AND PROBABILITY OF RECURRENCE;
- TIME OF COMPLETION OF THE REPAIR AND SYSTEM RESTORED TO FULL SERVICE.

A COPY OF THESE RECORDS SHALL BE PROVIDED TO THE CITY OF AVON WITHIN THREE (3) WORKING DAYS FOLLOWING COMPLETION OF EACH REPAIR.

ALL COSTS RESULTING FROM THE ABOVE REQUIREMENTS SHALL BE CONSIDERED TO BE INCLUDED IN THE LUMP SUM BID FOR ITEM 614, MAINTAINING TRAFFIC.

DESIGNER NOTE: NOTE T-0080 SHALL BE USED ON ALL CITY OF AVON TRAFFIC SIGNAL CONSTRUCTION PROJECTS.

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T-0090 POWER SUPPLY FOR TRAFFIC SIGNALS
ELECTRIC POWER SHALL BE OBTAINED FROM FIRST ENERGY COMPANY AT THE THE LOCATION INDICATED ON THE PLANS. POWER SUPPLIED SHALL BE 115 VOLTS.

DESIGNER NOTE: NOTE T-0090 SHALL BE USED ON ALL CITY OF AVON TRAFFIC SIGNAL CONSTRUCTION PROJECTS WHERE TRAFFIC SIGNAL(S) REQUIRE NEW POWER SERVICE. TENTATIVE POWER SERVICE LOCATIONS SHALL BE SPECIFIED AS NEEDED ON THE PLANS EITHER ON THE SIGNAL SUPPORT OR AT SEPARATE SERVICE POLES. THIS NOTE IS AN ADAPTATION OF ODOT'S NOTE 442-2 FROM THEIR "TRAFFIC ENGINEERING MANUAL."

T-0100 SIGNAL ACTIVATION
PRIOR TO ACTIVATING THE NEW TRAFFIC SIGNAL TO STOP-AND-GO MODE AND/OR REMOVING THE EXISTING TRAFFIC SIGNAL FROM SERVICE, ALL ITEMS IN THE PROPOSED SIGNAL PLAN SHALL BE FULLY COMPLETED, (I.E., VEHICLE DETECTION, PEDESTRIAN SIGNAL HEADS, ETC). IF THERE ARE CONSTRUCTABILITY ISSUES (I.E., ROADWAY WIDENING, ETC.) THAT PREVENT THE SIGNAL FROM BEING COMPLETED PRIOR TO ACTIVATION, IT SHALL BE BROUGHT TO THE ATTENTION OF THE CITY OF AVON. THE CITY WILL THEN REVIEW, APPROVE OR REJECT PROPOSALS TO ACTIVATE THE TRAFFIC SIGNAL PRIOR TO COMPLETION.

THE CONTRACTOR SHALL NOTIFY THE CITY OF AVON AT LEAST 10 WORKI DAYS PRIOR TO SCHEDULING THE FINAL INSPECTION OF THE SIGNAL INSTALLATION. FINAL INSPECTION IS NOT CONSIDERED COMPLETE UNTIL DESIGNATED DISTRICT TRAFFIC PERSONNEL INSPECT THE TRAFFIC SIGNAL AND ISSUE WRITTEN APPROVAL. IF ISSUES ARE FOUND DURING THE FINAL INSPECTION THAT EFFECT THE SAFETY OF THE TRAVELING PUBLIC AND/OR THE EFFICIENCY OF THE INTERSECTION, THE SIGNAL SHALL NOT BE ACTIVATED ON THE PROPOSED DATE. ANY PUNCH LIST ITEMS THAT ARE FOUND SHALL BE CORRECTED AND REINSPECTED BY DISTRICT TRAFFIC PERSONNEL PRIOR TO FINAL ACCEPTANCE. THE CITY OF AVON SHALL ONLY ASSUME DAY TO DAY MAINTENANCE OF THE TRAFFIC SIGNAL AFTER FINAL WRITTEN ACCEPTANCE HAS BEEN ISSUED.

DESIGNER NOTE: NOTE T-0100 SHALL BE USED FOR ALL NEW CITY OF AVON TRAFFIC SIGNAL INSTALLATIONS.

T-0110 REMOVAL OF TRAFFIC SIGNAL INSTALLATION
TRAFFIC SIGNAL INSTALLATIONS, INCLUDING SIGNAL HEADS, CABLE, MESSENGER WIRE, STRAIN POLES, CABINET, CONTROLLER, ETC., SHALL BE REMOVED IN ACCORDANCE WITH C&MS 632.26 AND AS INDICATED ON THE PLANS. REMOVED ITEMS SHALL BE REUSED AS PART OF A NEW INSTALLATION ON THE PROJECT OR STORED ON THE PROJECT FOR SALVAGE BY THE CITY OF AVONIN ACCORDANCE WITH THE LISTING GIVEN HEREIN.

(ITEMS TO BE REUSED)

(ITEMS TO BE STORED)

REMOVED ITEMS SHALL BE DELIVERED TO THE CITY OF AVON WHOSE ADDRESS IS LISTED BELOW:

CITY OF AVON, ATTN: SERVICE DIRECTOR (440-937-5766)
35400 SCHNEIDER COURT
AVON, OHIO 44011

IN THE EVENT THE ITEMS STORED ON THE PROJECT FOR SALVAGE BY THE CITY OF AVON ARE NOT REMOVED, THE CONTRACTOR SHALL, WHEN DIRECTED BY THE CITY OF AVON IN WRITING, REMOVE AND DISPOSE OF THE ITEMS AT NO ADDITIONAL COST TO THE PROJECT.

DESIGNER NOTE: NOTE T-0110 SHALL BE INCLUDED ON PROJECTS WHERE EXISTING TRAFFIC SIGNAL INSTALLATIONS ARE BEING MOVED. A LISTING OF ITEMS TO BE REUSED AND/OR STORED MUST BE INCLUDED. PULL BOXES TO BE REMOVED SHALL ITEMIZED SEPARATELY AND PAID FOR UNDER ITEM 625 "PULL BOX REMOVED".

T-0120 INTERCONNECT CABLE, MISC.: (BY SIZE), WITH SUPPORT MESSENGER, AS PER PLAN
THE CONTRACTOR WILL BE PERMITTED TO USE EITHER OF TWO TYPES OF INTERCONNECT CABLE CONSTRUCTION AND INSTALLATION UNDER THIS ITEM AS FOLLOWS:

1. INTEGRAL MESSENGER TYPE INTERCONNECT CABLE MEETING THE REQUIREMENTS OF C&MS 732.19. UNDER THIS METHOD ANY SECTIONS OF CABLE SHOWN IN THE PLANS TO BE CONTAINED IN CONTROLLERS, CABINETS, POLES, CONDUITS OR SUPPORTED ON MESSENGER WIRE INSTALLED FOR OTHER PURPOSES SHALL HAVE THE SUPPORTING MESSENGER AND JACKET WEB NEATLY REMOVED BY THE USE OF A TOOL SPECIFICALLY DESIGNED AND SIZED FOR THIS PURPOSE. DEVIATIONS FROM THE CABLE ROUTING SHOWN IN THE PLAN, FOR THE SOLE PURPOSE OF REDUCING THE AMOUNT OF MESSENGER TO BE REMOVED, WILL NOT BE PERMITTED. THE CABLE SHALL BE INSTALLED WITH APPROXIMATELY ONE TWIST FOR EACH 15 FEET OF SPAN LENGTH.

2. SEPARATE INTERCONNECT CABLE MEETING THE REQUIREMENT C&MS732.19 PLUS A 1/4 INCH MESSENGER WIRE AND LASHING MEETING THE REQUIREMENTS OF C&MS 732.18. UNDER THIS METHOD THE CONTRACTOR WILL INSTALL A SEPARATE 1/4 INCH MESSENGER TO SUPPORT THE SPANS OF INTERCONNECT CABLES IN ALL LOCATIONS WHERE THE PLANS SHOW INTERCONNECT CABLE WHICH IS NOT OTHERWISE SUPPORTED BY A SIGNAL MESSENGER WIRE OR OTHER SUITABLE SUPPORT. UTILIZATION OF EXISTING MESSENGER WIRE, NOT PROVIDED BY THE PROJECT OR DESIGNATED THEREIN AS AVAILABLE FOR USE, IS PROHIBITED. DEVIATION FROM THE CABLE ROUTING SHOWN IN THE PLANS, FOR THE PURPOSE OF REDUCING THE NEED FOR SEPARATE MESSENGER WIRE, WILL NOT BE PERMITTED.

IN EITHER CASE THE NUMBER OF SPLICE LOCATIONS SHALL BE KEPT TO A MINIMUM.

MEASUREMENT WILL BE BASED UPON THE NUMBER OF FEET OF C&MS ITEM 632, "INTERCONNECT CABLE, MISC.: (BY SIZE), WITH SUPPORT MESSENGER, AS PER PLAN" IN PLACE IN ACCORDANCE WITH THE METHOD DESCRIBED IN C&MS 632.29 AND NO SEPARATE PAYMENT WILL BE PROVIDED FOR ANY SEPARATE MESSENGER WIRE USED TO SUPPORT INTERCONNECT CABLES.

DESIGNER NOTE: NOTE T-0120 MAY BE USED ON PROJECTS WITH OVERHEAD INTERCONNECT CABLE, IF ACCEPTABLE TO THE CITY OF AVON.

T-0130 DETECTION MAINTENANCE
IF VEHICLE DETECTION BECOMES UNEXPECTEDLY DISABLED, REQUIRE MODIFICATION, OR IS SCHEDULED TO BE TEMPORARILY REMOVED DURING THE CONSTRUCTION PROJECT, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE CITY OF AVON.

IF THE LOSS OF VEHICLE DETECTION IS KNOWN PRIOR TO THE START OF CONSTRUCTION, IT SHALL BE DISCUSSED AT THE PRECONSTRUCTION MEETING. AT SUCH TIME, THE CITY OF AVON SHALL ADVISE THE CONTRACTOR ON THE APPROPRIATE ACTION TO RECTIFY ANY LOSS OF VEHICLE DETECTION. THIS MAY INCLUDE PLACING THE TRAFFIC SIGNAL ON MINIMUM OR MAXIMUM RECALL, MODIFYING THE MINIMUM GREEN TIMES, AND REMOVING THE MALFUNCTIONING DETECTION FROM SERVICE. WHERE NONINTRUSIVE DETECTION (I.E. VIDEO, RADAR) ALREADY EXISTS, THE CONTRACTOR SHALL INSURE THAT DETECTION IS OPERATING AND MAINTAINED BY RECONFIGURING THE DETECTION UNITS ACCORDINGLY DURING ALL CONSTRUCTION PHASES. THIS IS TO AVOID THE SIGNAL FROM MAXING OUT THE EFFECTED SIGNAL PHASE AND CREATING UNNECESSARY DELAYS.

LOCATIONS WHERE NON-INTRUSIVE DETECTION IS PROPOSED AND THE EXISTING VEHICLE DETECTION IS TO BE ABANDON, THE NON-INTRUSIVE VEHICLE DETECTION SHALL BE INSTALLED, CONFIGURED AND MADE FULLY FUNCTIONAL PRIOR TO THE EXISTING DETECTION BEING DISABLED. THE CONTRACTOR SHALL CONTINUE TO MAINTAIN AND MODIFY THE DETECTION UNTIL FINAL ACCEPTANCE OF THE TRAFFIC SIGNAL. THIS IS TO ENSURE VEHICLE DETECTION REMAINS FULLY FUNCTIONAL THROUGHOUT CONSTRUCTION.

DESIGNER NOTE: NOTE T-0130 SHALL BE USED ON ALL PROJECTS WHERE A POTENTIAL CONFLICT EXISTS THAT WILL AFFECT VEHICLE DETECTION.

T-0140 WORK INSPECTION
THE CONTRACTOR SHALL PROVIDE THE CITY OF AVON WITH 72 HOURS NOTICE OF ANY SIGNAL WORK TO BEPERFORMED AT THE INTERSECTION SITE(S) SO THAT INSPECTION SERVICES CAN BE SUPPLIED.

DESIGNER NOTE: NOTE T-0140 SHOULD BE USED ON ALL PROJECTS WHERE SIGNAL MODIFICATIONS OCCUR OR NEW SIGNALS ARE CONSTRUCTED.

T-0150 GROUNDING AND BONDING
THE REQUIREMENTS OF THE ODOT CONSTRUCTION AND MATERIAL SPECIFICATIONS (C&MS) AND THE HL AND TC SERIES OF STANDARD CONSTRUCTION DRAWINGS ARE MODIFIED AS FOLLOWS:

1. ALL METALLIC PARTS CONTAINING ELECTRICAL CONDUCTORS SHALL BE PERMANENTLY JOINED TO FORM AN EFFECTIVE GROUND FAULT CURRENT PATH BACK TO THE GROUNDED CONDUCTOR IN THE POWER SERVICE DISCONNECT SWITCH.

A. PROVIDE AN EQUIPMENT GROUNDING CONDUCTOR IN METALLIC CONDUITS (725.04) IN ADDITION TO THE CONDUCTORS SPECIFIED AND BOND THE CONDUIT TO THIS GROUNDING CONDUCTOR

B. WHEN AN EQUIPMENT GROUNDING CONDUCTOR IS REQUIRED IN PLASTIC CONDUIT (725.05), THE INSTALLATION SHALL INCLUDE A SEPARATE EQUIPMENT GROUNDING CONDUCTOR IN ADDITION TO THE CONDUCTORS SPECIFIED.

C. METALLIC CONDUIT CARRYING THE LOOP WIRES FROM IN THE PAVEMENT TO THE PULL BOX SPLICE LOCATION WILL ONLY BE BONDED AT THE PULL BOX END, AND WILL NOT CONTAIN AN EQUIPMENT GROUNDING CONDUCTOR.

D. IF MULTIPLE CONDUIT RUNS BEGIN AND END AT THE SAME POINTS, ONLY ONE EQUIPMENT GROUNDING CONDUCTOR IS REQUIRED.

E. IF AN EQUIPMENT GROUNDING CONDUCTOR IS NEEDED IN CONDUIT BETWEEN SIGNALIZED INTERSECTIONS FOR UNDERGROUND INTERCONNECT CABLE, THE GROUNDING SYSTEM FOR EACH SIGNALIZED INTERSECTION WILL BE SEPARATED ABOUT MIDWAY BETWEEN THE INTERSECTIONS.

F. THE MESSENGER WIRE AT SIGNALIZED INTERSECTIONS WILL BE USED AS THE CONDUCTIVE PATH FROM CORNER TO CORNER IF CONDUIT IS NOT PROVIDED UNDER THE ROADWAY. WHEN CONDUIT CONNECTS THE CORNERS OF AN INTERSECTION, AN EQUIPMENT GROUNDING CONDUCTOR SHALL BE USED IN THE CONDUIT.

G. TRAFFIC SIGNAL COMPONENTS AND THE ENTIRE SYSTEM SHALL BE TESTED AS REQUIRED BY THE ODOT CONSTRUCTION AND MATERIALS SPECIFICATIONS (C&MS). GROUND RODS SHALL BE TESTED FOR SATISFACTORY LOW RESISTANCE TO GROUND. A CIRCUIT TEST SHALL BE PERFORMED ON ALL CONDUCTORS TO MAKE SURE THERE ARE NO SHORTS, CROSSES, AND HIGH RESISTANCE SPLICES OR OTHER IMPROPER CONNECTIONS. A CABLE INSULATION OR MEG-OHM TEST SHALL BE PERFORMED ON ALL CONDUCTORS TO VERIFY THE INTEGRITY OF THE INSULATION COVERING.

2. CONDUITS

A. THE 725.04 CONDUIT SHALL HAVE GROUNDING BUSHINGS INSTALLED AT ALL TERMINATION POINTS. THE BUSHING MATERIAL SHALL BE COMPATIBLE WITH GALVANIZED STEEL CONDUIT AND THE GROUNDING LUG MATERIAL SHALL BE COMPATIBLE FOR USE WITH COPPER WIRE. THREADED OR COMPRESSION TYPE BUSHINGS MAY BE USED.

B. THE 725.05 CONDUIT SHALL HAVE THE INSIDE AND OUTSIDE DIAMETERS OF THE CONDUIT DE-BURRED AT ALL TERMINATION POINTS.

C. BOTH ENDS OF METALLIC CONDUIT SHALL BE BONDED TO THE EQUIPMENT GROUNDING CONDUCTOR.

D. METALLIC CONDUIT MAY BE BONDED TO METALLIC BOXES THROUGH THE USE OF CONDUIT FITTINGS, UL APPROVED FOR THIS TYPE OF CONNECTION, WITH THE BOX BONDED TO THE EQUIPMENT GROUNDING CONDUCTOR.

E. DISSIMILAR METALS SHALL NOT BE USED TOGETHER IN ORDER TO AVOID OXIDATION.

3. WIRE FOR GROUNDING AND BONDING

A. USE INSULATED, COPPER WIRE FOR THE EQUIPMENT GROUNDING CONDUCTOR. BONDING JUMPERS IN BOXES AND ENCLOSURES MAY BE BARE OR INSULATED COPPER WIRE. WIRE SIZE SHALL BE AS FOLLOWS:

i. USE 4 AWG BETWEEN THE POWER SERVICE AND SUPPORTS, POLES, PEDESTALS, CONTROLLER OR FLASHER CABINETS.

ii. USE A MINIMUM 8 AWG BETWEEN LOOP DETECTOR PULL BOXES AND THE FIRST CONDUIT THAT REQUIRES A LARGER SIZE AS SPECIFIED IN 3.A.I. ABOVE.

iii. USE A MINIMUM 8 AWG BETWEEN THE "PREPARE TO STOP WHEN FLASHING" INSTALLATION (INCLUDING SUPPORT) AND THE FIRST CONDUIT THAT REQUIRES A LARGER SIZE AS SPECIFIED IN 3.A.I. ABOVE.

iv. THE INSULATION SHALL BE GREEN OR GREEN WITH YELLOW STRIPE(S). FOR 4 AWG OR LARGER, INSULATION MAY ALSO BE BLACK WITH GREEN TAPE/LABELS INSTALLED AT ALL ACCESS POINTS.

B. IN A HIGHWAY LIGHTING SYSTEM, THE EQUIPMENT GROUNDING CONDUCTOR SHALL BE THE SAME WIRE SIZE AS THE DUCT CABLE OR DISTRIBUTION CABLE CIRCUIT CONDUCTORS, WITH THE MINIMUM CONDUCTOR SIZE OF 4 AWG. BONDING JUMPERS WILL BE MINIMUM SIZE 4 AWG.

C. IF A NEW CONDUIT CONTAINS CABLING, INSTALL A FLAT WOVEN POLYESTER PULLING TAPE, RATED FOR 600 POUNDS MINIMUM, IN THE CONDUIT. IF THE CONDUIT IS TO REMAIN EMPTY, INSTALL AN HDPE INSULATED COPPER TRACER WIRE, 12 AWG MINIMUM, IN THE CONDUIT. ALLOW FOR 10 FEET OF SLACK IN EACH ADJACENT PULL BOX.

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4. GROUND ROD

- A. A ¾" SCHEDULE 40, PVC CONDUIT WILL BE USED IN FOUNDATIONS AND CONCRETE WALLS FOR THE GROUNDING CONDUCTOR (GROUND WIRE) RACEWAY TO THE GROUND ROD. SHOULD METALLIC CONDUIT BE USED, BOTH ENDS OF THE CONDUIT SHALL BE BONDED TO THE GROUNDING CONDUCTOR.
- B. THE TYPICAL GROUNDING CONDUCTOR (GROUND WIRE) SHALL BE 4 AWG INSULATED, COPPER.
5. THE GREEN CONDUCTOR IN SIGNAL CABLES (CONDUCTOR #4) SHALL NOT BE USED TO SUPPLY POWER TO A SIGNAL INDICATION. IT WILL BE CONNECTED TO THE SIGNAL BODY AS AN EQUIPMENT GROUND IN ALUMINUM HEADS AND IT WILL BE UNUSED IN PLASTIC HEADS. UNUSED CONDUCTORS SHALL BE GROUNDED IN THE CABINET. TYPICAL USE OF CONDUCTORS IS AS FOLLOWS:

COND. NO.	COLOR	VEHICLE SIGNAL	PEDESTRIAN SIGNAL
1	BLACK	GREEN BALL	#1 WALK
2	WHITE	AC NEUTRAL	AC NEUTRAL
3	RED	RED BALL	#1 DW/FDW
4	GREEN	EQUIP. GROUND	EQUIP. GROUND
5	ORANGE	YELLOW BALL	#2DW/FDW
6	BLUE	GREEN ARROW	#2 WALK
7	WHITE/BLACK	YELLOW ARROW	NOT USED

6. POWER SERVICE AND DISCONNECT SWITCH

- A. AT THE POWER SERVICE LOCATION, THE GROUNDING CONDUCTOR (GROUND WIRE) FROM THE DISCONNECT SWITCH NEUTRAL (AC-) BAR TO THE GROUND ROD SHALL BE A CONTINUOUS, UN-SPLICED CONDUCTOR. IF SPLICED, IT SHALL BE AN EXOTHERMIC WELD BUTT SPICE.
- B. THE SERVICE NEUTRAL (AC-) SHALL ONLY BE CONNECTED TO GROUND AT THE PRIMARY POWER SERVICE DISCONNECT SWITCH.
- i. NEMA CONTROLLER CABINETS: IF A POWER SERVICE DISCONNECT SWITCH IS LOCATED BEFORE THE CONTROLLER CABINET, THE NEUTRAL (AC-) AND THE GROUNDING BARS IN THE CONTROLLER CABINET SHALL NOT BE CONNECTED TOGETHER AS SHOWN IN NEMA TS-2, FIGURE 5-4.
- ii. IF SECONDARY DISCONNECT SWITCHES ARE CONNECTED AFTER THE PRIMARY DISCONNECT SWITCH, THE NEUTRAL (AC-) SHALL ONLY BE GROUNDED AT THE PRIMARY SWITCH. EQUIPMENT GROUNDING CONDUCTORS SHALL BE BROUGHT TO THE PRIMARY SWITCH BUT SHALL BE GROUNDED AT BOTH SECONDARY AND PRIMARY SWITCHES.
7. PAYMENT - ALL MATERIALS AND WORK REQUIRED TO COMPLETE THE EFFECTIVE GROUND FAULT CURRENT PATH SYSTEM ARE INCIDENTAL TO THE CONDUCTORS INSTALLED BY CONTRACT.

DESIGNER NOTE: NOTE T-0150 SHALL BE USED ON ALL CITY OF AVON TRAFFIC SIGNAL CONSTRUCTION PROJECTS. IT IS AN ADAPTATION OF ODOT'S NOTE 442-32 FROM THEIR "TRAFFIC ENGINEERING MANUAL" AND CONTAINS SPECIFIC ADDITIONAL REQUIREMENTS FOR THE CITY OF AVON.

T-0160

GUARANTEE
THE CONTRACTOR SHALL GUARANTEE THAT THE TRAFFIC CONTROL SYSTEM INSTALLED AS PART OF THIS CONTRACT SHALL OPERATE SATISFACTORILY FOR A PERIOD OF 180 DAYS FOLLOWING COMPLETION OF THE 10-DAY PERFORMANCE TEST. IN THE EVENT OF UNSATISFACTORY OPERATION, THE CONTRACTOR SHALL CORRECT FAULTY INSTALLATIONS, MAKE REPAIRS AND REPLACE DEFECTIVE PARTS WITH NEW PARTS OF EQUAL OR BETTER QUALITY.

EQUIPMENT, MATERIAL AND LABOR COSTS INCURRED IN CORRECTING AN UNSATISFACTORY OPERATION SHALL BE BORNE BY THE CONTRACTOR.

THE GUARANTEE SHALL COVER THE FOLLOWING ITEMS OF THE TRAFFIC CONTROL SYSTEM: CONTROLLERS AND ASSOCIATED EQUIPMENT, DETECTOR UNITS, INTERCONNECTION ITEMS AND MASTER CONTROL EQUIPMENT.

CUSTOMARY MANUFACTURER'S GUARANTEES FOR THE FOREGOING ITEMS SHALL BE TURNED OVER TO THE CITY OF AVON FOLLOWING ACCEPTANCE OF THE EQUIPMENT.

THE COST OF GUARANTEEING THE TRAFFIC CONTROL SYSTEM WILL BE INCIDENTAL TO AND INCLUDED IN THE CONTRACT UNIT PRICE OF THE VARIOUS ITEMS MAKING UP THE SYSTEM.

DESIGNER NOTE: NOTE T-0160 SHALL BE USED ON ALL CITY OF AVON TRAFFIC SIGNAL CONSTRUCTION PROJECTS. IT IS AN ADAPTATION OF ODOT'S NOTE 442-15 FROM THEIR "TRAFFIC ENGINEERING MANUAL." PARAGRAPH 3 SHALL BE MODIFIED TO LIST THE ACTUAL EQUIPMENT USED FOR THE SPECIFIC PROJECT. THE LIST INCLUDED IN THIS NOTE PROVIDES AN EXAMPLE OF THE TYPES OF EQUIPMENT REQUIRING THE GUARANTEE AND IS NOT ALL INCLUSIVE.

T-0170

PERSONNEL REQUIREMENTS
IN ADDITION TO THE REQUIREMENTS OF THE ODOT CONSTRUCTION AND MATERIAL SPECIFICATIONS (C&MS), SECTION 108.05, A FULL-TIME SUPERVISOR SHALL BE ASSIGNED FOR THIS PROJECT TO ENSURE ADHERENCE TO THE PLAN REQUIREMENTS AND SPECIFICATIONS AS INTERPRETED AND INSTRUCTED BY THE CITY OF AVON. THE SUPERVISOR SHALL NOT BE CHANGED FOR THIS PROJECT WITHOUT PRIOR WRITTEN NOTICE TO THE CITY OF AVON.

ALL CONTROLLER WORK, AS DEFINED BELOW IN ITEMS 1 THROUGH 4 SHALL BE PERFORMED BY, OR UNDER THE SUPERVISION OF AN IMSA LEVEL TWO CERTIFIED TECHNICIAN:

1. BACK PANEL WIRING TERMINATIONS
2. PROGRAMMING
3. TURN-ON
4. TROUBLESHOOTING

A FOREMAN, WHO IS, OR WORKS UNDER THE SUPERVISION OF, AN IMSA LEVEL ONE CERTIFIED TECHNICIAN, SHALL BE ASSIGNED TO EACH CREW PERFORMING WORK ON THIS PROJECT. THE FOREMAN SHALL BE PRESENT AT ALL TIMES WHEN WORK IS BEING PERFORMED BY THE CREW. PRIOR VERBAL OR WRITTEN NOTICE SHALL BE PROVIDED TO THE CITY OF AVON BEFORE REPLACING A CREW FOREMAN.

THE WORK, AS DEFINED BELOW IN ITEMS 1 THROUGH 7, SHALL BE PERFORMED BY, OR UNDER THE SUPERVISION OF AN IMSA LEVEL TWO CERTIFIED TECHNICIAN:

1. CABLE SPLICES
2. SIGNAL HEAD INSTALLATIONS
3. CABLE AND WIRE INSTALLATIONS
4. POWER SERVICE INSTALLATIONS
5. GROUND ROD TESTING
6. CABLE INSTALLATION TESTING
7. FIELD WIRE TERMINATIONS

THE IMSA CERTIFICATION PAPERS FOR ALL SIGNAL TECHNICIANS, FOREMAN AND CRAFTS-PERSONS WORKING ON THE PROJECT SHALL BE PRESENTED TO THE CITY OF AVON PRIOR TO COMMENCEMENT OF WORK.

SUFFICIENT WORK FORCES OF PERSONNEL, QUALIFIED IN THE OPINION OF THE CITY OF AVON TO PERFORM THE WORK REQUIRED UNDER THIS CONTRACT, SHALL BE PROVIDED.

EACH FOREMAN OR FOREMAN'S WORK TRUCK SHALL BE EQUIPPED WITH A CELLULAR TELEPHONE. THE CELLULAR TELEPHONE NUMBER FOR EACH FOREMAN SHALL BE PROVIDED TO THE CITY OF AVON.

DESIGNER NOTE: NOTE T-0170 SHALL BE USED ON ALL CITY OF AVON TRAFFIC SIGNAL CONSTRUCTION PROJECTS.

T-0180

UNDER DRAINS FOR PULL BOXES
REFERENCE ODOT TRAFFIC STANDARD CONSTRUCTION DRAWING HL-30.11 FOR DETAILS ABOUT DRAINING PULL BOXES. UNDER DRAINS FOR PULL BOXES SHALL BE USED AS DIRECTED BY THE CITY OF AVON AND SHALL BE PROVIDED WHERE THE LENGTH REQUIRED FOR A SATISFACTORY OUTLET DOES NOT EXCEED 20 FEET. THE FOLLOWING ESTIMATED QUANTITY IS CARRIED TO THE GENERAL SUMMARY FOR THIS PURPOSE:

ITEM 611 - 4" CONDUIT, TYPE E, _____FT.

DESIGNER NOTE: NOTE T-0180 SHALL BE USED ON ALL CITY OF AVON TRAFFIC SIGNAL CONSTRUCTION PROJECTS WHENEVER PULL BOXES ARE REQUIRED FOR THE PROJECT AND THE AREA IS PRONE TO A HIGH-WATER TABLE. IT IS AN ADAPTATION OF ODOT'S NOTE 442-33 FROM THEIR "TRAFFIC ENGINEERING MANUAL."

T-0190

TRENCHING UNDER EXISTING SIDEWALKS
WHERE CONDUIT FOR NEW TRAFFIC SIGNALS OR TRAFFIC SIGNAL INTERCONNECTION IS TO BE INSTALLED IN TRENCHES UNDER EXISTING SIDEWALK, DRIVE APRONS OR CURB RAMPS AND THE EXISTING CONCRETE SURFACE WILL BE DISTURBED, THE REMOVAL WILL BE AS DIRECTED BY THE CITY OF AVON AND WILL EXTEND TO THE NEAREST TOoled CONCRETE JOINT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TRENCHING, SAW CUTTING, CONCRETE REMOVAL AND RESTORATION REQUIRED TO INSTALL THE PROPOSED CONDUIT AND RESTORE THE SURFACE TO ACCEPTABLE CONDITIONS, AS DETERMINED BY THE CITY OF AVON.

DESIGNER NOTE: NOTE T-0190 SHALL BE USED ON ALL CITY OF AVON TRAFFIC SIGNAL CONSTRUCTION PROJECTS WHENEVER CONDUIT IS INSTALLED UNDER SIDEWALKS.

T-0200

RESTORATION OF DISTURBED AREAS

ALL DISTURBED LANDSCAPE AREAS, PAVEMENT SURFACES, SIDEWALKS AND DRIVEWAYS SHALL BE RESTORED TO CONDITION EQUAL TO OR BETTER THAN THAT WHICH EXISTED PRIOR TO THE START OF WORK. RESTORATION SHALL BE PERFORMED WITH MATERIALS IDENTICAL TO THE EXISTING SURFACE, INCLUDING, BUT NOT LIMITED TO, ASPHALT AND CONCRETE PAVEMENT, ASPHALT, CONCRETE AND BRICK SIDEWALK, INTEGRAL CURB AND SPECIAL SURFACES (SUCH AS COLORED OR TEXTURED) AS ENCOUNTERED. CONCRETE SIDEWALKS OR DRIVEWAYS SHALL NOT BE PATCHED. SIDEWALKS AND DRIVEWAYS SHALL BE REPLACED IN ENTIRE ORIGINAL SLAB SECTIONS.

RESTORATION WORK SHALL BE PERFORMED IN ACCORDANCE WITH PERTINENT SPECIFICATION ITEMS AS DIRECTED BY THE CITY OF AVON. THE CITY OF AVON WILL CONSIDER ALL RESTORATION WORK, INCLUDING MATERIALS, EQUIPMENT, LABOR, INCIDENTALS, AND DISPOSAL OF ALL SURPLUS MATERIALS, INCIDENTAL TO THE VARIOUS ITEMS OF UNDERGROUND WORK. NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK.

DESIGNER NOTE: NOTE T-0200 SHALL BE USED ON ALL CITY OF AVON TRAFFIC SIGNAL CONSTRUCTION PROJECTS WHENEVER UNDERGROUND CONSTRUCTION IS REQUIRED FOR FOUNDATIONS, CONDUIT, PULL BOXES, ETC.

T-0210

ITEM 625 CONDUIT, BY SIZE, 725.051, AS PER PLAN
ITEM 625 CONDUIT, JACKED OR DRILLED, 725.051, BY SIZE, AS PER PLAN
IN ADDITION TO THE REQUIREMENTS OF ITEM 625 AND 725.051, CONDUITS SHALL HAVE THE FOLLOWING FEATURES AND REQUIREMENTS:

CONDUITS SHALL HAVE A SINGLE CONDUCTOR TRACER WIRE INSTALLED WITHIN THE CONDUIT FOR USE IN ACCURATELY LOCATING UNDERGROUND CABLES. THE TRACER WIRE SHALL BE MANUFACTURED USING SOLID, SOFT DRAWN, BARE COPPER WITH A HIGH-DENSITY POLYETHYLENE INSULATION. THE WIRE SHALL BE 12 AWG OR LARGER. THE TRACER WIRE SHALL BE INSTALLED SO THAT ELECTRICAL CONTINUITY IS MAINTAINED THROUGHOUT THE CONDUIT SYSTEM USING AS FEW CONNECTIONS AS POSSIBLE.

PAYMENT FOR "ITEM 625 CONDUIT, BY SIZE, 725.051, AS PER PLAN" AND "ITEM 625 CONDUIT, JACKED OR DRILLED, 725.051, BY SIZE, AS PER PLAN" SHALL BE MADE AT THE CONTRACT UNIT PRICE BID PER LINEAL FOOT AND SHALL INCLUDE TRACER WIRE, CONNECTIONS AND ALL LABOR, EQUIPMENT AND MATERIALS.

DESIGNER NOTE: NOTE T-0210 SHALL BE USED ON ALL CITY OF AVON TRAFFIC SIGNAL CONSTRUCTION PROJECTS WHERE CONDUIT INSTALLATION IS REQUIRED.

T-0220

ITEM 625 LUMINAIRE, CONVENTIONAL, SOLID-STATE (LED), AS PER PLAN
IN ADDITION TO THE REQUIREMENTS OF ITEM 625 LUMINAIRES SHALL HAVE THE FOLLOWING REQUIREMENTS OR FEATURES:

LUMINAIRES SHALL BE SOLID-STATE (LED) RATED AT 120/277 VAC WITH A NOMINAL WATTAGE OF 83 WATTS. THE INITIAL FIXTURE LIGHT OUTPUT SHALL BE 10,900 LUMENS. THE LUMINAIRE SHALL HAVE A TYPE III DISTRIBUTION AND HOUSED IN A DIE CAST ALUMINUM HOUSING. THE LENS SHALL BE GLASS. THE LIGHT SHALL HAVE A COOL WHITE COLOR TEMPERATURE. A SHORTING CAP SHALL BE PROVIDED WITH EACH FIXTURE AND EACH LUMINAIRE SHALL BE WIRED TO THE POWER SERVICE PEDESTAL WHERE ONE PHOTOCCELL WILL BE PROVIDED TO POWER ALL LUMINAIRES TOGETHER.

THE LUMINAIRES SHALL BE A MODEL STREETSENSE AS MANUFACTURED BY DALIGHT.

PAYMENT FOR "ITEM 625 LUMINAIRE, CONVENTIONAL, SOLID-STATE (LED), AS PER PLAN" SHALL BE MADE AT THE CONTRACT UNIT PRICE BID FOR EACH AND SHALL INCLUDE ALL LABOR, EQUIPMENT AND MATERIALS.

DESIGNER NOTE: NOTE T-0220 SHALL BE USED ON ALL CITY OF AVON TRAFFIC SIGNAL CONSTRUCTION PROJECTS WHERE LUMINAIRE INSTALLATION IS REQUIRED.

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T-0230 ITEM 625 – GROUND ROD, AS PER PLAN
IN ADDITION TO THE REQUIREMENTS OF 625.16, A SEVEN (7) STRAND, NO. 4 AWG COPPER WIRE SHALL BE FURNISHED AND INSTALLED FROM THE TOP OF THE GROUND ROD AND ATTACHED TO THE NEUTRAL BAR IN THE CONTROLLER CABINET.

DESIGNER NOTE: NOTE T-0230 SHALL BE USED ON ALL CITY OF AVON TRAFFIC SIGNAL CONSTRUCTION PROJECTS WHERE A NEW TRAFFIC SIGNAL CONTROLLER AND/OR FOUNDATION INSTALLATIONS ARE REQUIRED.

T-0240 ITEM 631 INTERNALLY ILLUMINATED FIXED MESSAGE SIGN, BY SIZE, 1 FACE, LED EDGE LIT TYPE, AS PER PLAN
FURNISH AND INSTALL SIGNS WHICH ARE CAPABLE OF DISPLAYING ONE CLEARLY LEGIBLE MESSAGE AT A TIME IN ONE DIRECTION.

PROVIDE SIGNS WHICH DISPLAY THE PARTICULAR LEGEND, AND WITH A NOMINAL FACE SIZE SHOWN IN THE PLANS. FURNISH EACH SIGN IN AN ALUMINUM HOUSING WHICH IS RIGIDLY MOUNTED PERPENDICULAR (90 DEGREES) TO THE DIRECTION OF TRAFFIC IT FACES.

PROVIDE SIGNS WHICH OPERATE ON A 120-VAC POWER SOURCE. THE LIGHT SOURCE FOR THE SIGN SHALL BE LEDS (LIGHT EMITTING DIODES). LEDS SHALL BE MOUNTED ALONG BOTH THE TOP AND BOTTOM EDGES OF THE SIGN. THE LEDS SHALL EVENLY ILLUMINATE A LIGHT PANEL THAT IS THE SAME DIMENSIONS OF THE SIGN FACE. THE LEDS SHALL BE RATED TO OPERATE AT NO LESS THAN 70% OF THEIR INITIAL BRIGHTNESS FOR 60,000 HOURS. A MAXIMUM OF FOUR LEDS PER SQUARE FOOT SHALL BE USED.

PROVIDE SIGNS WITH A BLUE BACKGROUND, WHITE BORDER AND WHITE LEGEND FORMED FROM UPPER AND LOWER CASE MUTCD, HIGHWAY GOTHIC, SERIES C LETTERS, 12-INCH INITIAL UPPERCASE AND 9 INCH FOLLOWING LOWER CASE. PROVIDE A CITY OF AVON LOGO TO BE LOCATED TO THE LEFT OF THE STREET NAME LETTERING. THE CITY SHALL PROVIDE ART WORK FOR THE LOGO.

PROVIDE SIGNS WITH ATSM TYPE IX RETRO-REFLECTIVE SHEETING (BOTH SIGN LEGEND AND BACKGROUND).

THE SIGNS SHALL BE MANUFACTURED BY TEMPLE EDGE LIT, DECATUR, ALABAMA.

THE SIGNS SHALL BE MOUNTED TO MAST ARMS USING PELCO AS-3009 RACKETS. STAINLESS STEEL BANDING SHALL NOT BE USED.

PAYMENT FOR "ITEM 631 – INTERNALLY ILLUMINATED FIXED MESSAGE SIGN, BY SIZE, 1 FACE, LED EDGE LIT TYPE, AS PER PLAN" WILL BE MADE AT THE CONTRACT UNIT PRICE BID FOR EACH, IN PLACE, ALL CONNECTIONS MADE AND WIRING COMPLETED, TESTED AND ACCEPTED.

DESIGNER NOTE: NOTE T-0240 SHALL BE USED ON ALL CITY OF AVON TRAFFIC SIGNAL CONSTRUCTION PROJECTS WHERE STREET NAME SIGN INSTALLATION ON SIGNAL SUPPORTS IS REQUIRED.

T-0250 ITEM 632 – VEHICULAR SIGNAL HEAD, (LED), (BY TYPE), AS PER PLAN
IN ADDITION TO THE REQUIREMENTS OF THE ODOT CONSTRUCTION AND MATERIAL SPECIFICATIONS (C&MS) 632 AND 732, THE FOLLOWING REQUIREMENTS SHALL APPLY:

1. SIGNAL HEADS AND VISORS SHALL BE CONSTRUCTED OF BLACK POLYCARBONATE PLASTIC WITH VISORS AS SPECIFIED AND MEET ITE SPECIFICATIONS.
2. PROPER EXTERIOR COLORS SHALL BE OBTAINED BY USE OF COLORED PLASTIC MATERIAL RATHER THAN PAINTING.
3. THE ENTRANCE FITTING SHALL BE OF THE TRI-STUD DESIGN WITH SERRATED RINGS IN ORDER TO ACHIEVE POSITIVE LOCKING.
4. ALL SIGNAL HEADS SHALL BE RIGIDLY MOUNTED TO THE MAST ARM WITH THE RED LENS LOCATED IN FRONT OF THE MAST ARM.
5. ALUMINUM BACK-PLATES SHALL BE IN ACCORDANCE WITH THE ODOT C&MS AND INCLUDE A FLUORESCENT YELLOW REFLECTIVE BORDER.
6. THE LIGHT EMITTING DIODE (LED) SIGNAL LAMP UNITS SHALL MEET THE REQUIREMENTS OF THE ODOT C&MS 732.04-C. THE CONTRACTOR SHALL PROVIDE THE CITY OF AVON, IN WRITING, WITH THE LED MANUFACTURER NAME, SERIAL NUMBER, PART NUMBER, DESCRIPTION OF LAMP, AND DATE OF MANUFACTURE FOR ALL LED UNITS THAT ARE TO BE USED IN THE SIGNAL HEAD PRIOR TO INSTALLATION, FOR ACCEPTANCE AND WARRANTY PURPOSES.
7. SIGNAL HEADS SHALL HAVE A MINIMUM WALL THICKNESS OF 0.117 INCHES.
8. SIGNAL HEADS SHALL INCLUDE CUTAWAY TYPE VISORS UNLESS OTHERWISE SPECIFIED IN THE PLANS.
9. APPLY A BEAD OF SILICONE TO THE SIGNAL HEAD, WASHER, AND ENTRANCE ADAPTER SERRATIONS TO PREVENT WATER INTRUSION. ALSO, FILL THE SPACE BETWEEN CONCENTRIC SERRATION RINGS ON THE TOP OF THE SIGNAL HEAD TO COMPLETELY EXCLUDE WATER FROM THE SPACE BETWEEN THE CONCENTRIC RINGS.
10. BALANCE ADJUSTERS SHALL NOT BE USED ON ONE-WAY HEADS OR TETHERED HEADS.

PAYMENT FOR "ITEM 632 VEHICULAR SIGNAL HEAD, (LED), (BY TYPE), AS PER PLAN" SHALL BE MADE FOR COMPLETE SIGNAL HEAD FURNISHED AND INSTALLED, INCLUDING ALL LABOR, EQUIPMENT, MATERIALS, AND NEW ATTACHMENT HARDWARE.

DESIGNER NOTE: NOTE T-0250 SHALL BE USED ON ALL CITY OF AVON TRAFFIC SIGNAL CONSTRUCTION PROJECTS WHENEVER VEHICULAR SIGNAL HEADS ARE REQUIRED FOR THE PROJECT. IT IS AN ADAPTATION OF ODOT'S NOTE 442-13 FROM THEIR "TRAFFIC ENGINEERING MANUAL."

T-0260 ITEM 632 – PEDESTRIAN SIGNAL HEAD (LED), TYPE D2, COUNTDOWN, AS PER PLAN
IN ADDITION TO THE REQUIREMENTS OF THE ODOT CONSTRUCTION AND MATERIAL SPECIFICATIONS (C&MS) 632 AND 732, THE FOLLOWING REQUIREMENTS SHALL APPLY:

1. SIGNAL HEADS AND VISORS SHALL BE CONSTRUCTED OF BLACK, POLYCARBONATE PLASTIC AND MEET ITE SPECIFICATIONS.
2. PROPER EXTERIOR COLORS SHALL BE OBTAINED BY USE OF COLORED PLASTIC MATERIAL RATHER THAN PAINTING.
3. PIPE, SPACERS AND FITTINGS CONSTRUCTED OF POLYCARBONATE PLASTIC MAY BE USED IN LIEU OF GALVANIZED STEEL OR ALUMINUM.
4. THE PEDESTRIAN SIGNAL HEAD SHALL BE OF THE LED COUNTDOWN TYPE.
5. NEW ATTACHMENT HARDWARE AND FITTINGS SHALL BE USED. PEDESTRIAN SIGNAL HOUSINGS SHALL NOT BE Banded TO STEEL POLES. THE OPTIONAL 2-PIECE HINGED BRACKET WITH STAINLESS STEEL FASTENERS, AS PER ODOT STANDARD CONSTRUCTION DRAWING TC-85.10, SHALL BE USED.
6. THE LIGHT EMITTING DIODE (LED) SIGNAL LAMP UNITS SHALL MEET THE REQUIREMENTS OF THE ODOT C&MS 732.04-C. THE CONTRACTOR SHALL PROVIDE THE CITY OF AVON, IN WRITING, WITH THE LED MANUFACTURER NAME, SERIAL NUMBER, PART NUMBER, DESCRIPTION OF LAMP, AND DATE OF MANUFACTURE FOR ALL LED UNITS THAT ARE TO BE USED IN THE SIGNAL HEAD PRIOR TO INSTALLATION, FOR ACCEPTANCE AND WARRANTY PURPOSES.

PAYMENT FOR "ITEM 632 PEDESTRIAN SIGNAL HEAD (LED), TYPE D2, COUNTDOWN, AS PER PLAN" SHALL BE MADE FOR THE NUMBER OF COMPLETE SIGNAL HEADS FURNISHED AND INSTALLED, INCLUDING ALL LABOR, EQUIPMENT, MATERIALS AND NEW ATTACHMENT HARDWARE.

DESIGNER NOTE: NOTE T-0260 SHALL BE USED ON ALL CITY OF AVON TRAFFIC SIGNAL CONSTRUCTION PROJECTS WHENEVER PEDESTRIAN SIGNAL HEADS ARE REQUIRED FOR THE PROJECT. IT IS AN ADAPTATION OF ODOT'S NOTE 442-18 FROM THEIR "TRAFFIC ENGINEERING MANUAL" AND CONTAINS SPECIFIC ADDITIONAL REQUIREMENTS FOR THE CITY OF AVON.

T-0270 ITEM 632 – COVERING OF VEHICULAR SIGNAL HEAD, AS PER PLAN
COVER VEHICULAR SIGNAL HEADS IF ERECTED AT INTERSECTIONS WHERE TRAFFIC IS MAINTAINED BEFORE ENERGIZING THE SIGNALS. USE A STURDY OPAQUE COVERING MATERIAL SPECIFICALLY MADE FOR USE WITH TRAFFIC SIGNALS, AND ENSURE THAT THE COLOR OF THE COVER IS DIFFERENT THAN THE SIGNAL HEAD, TAN OR BEIGE, SO THAT IT IS CLEAR TO DRIVERS THE HEADS ARE COVERED, NOT DARK. USE A METHOD OF COVERING TO COVER ATTACHMENT AND MATERIALS, INCLUDING BACKPLATES, AS APPROVED BY THE CITY OF AVON. COVERS SHALL BE FREE OF TEXT, PICTURES, OR ANY TYPE OF ADVERTISING. MAINTAIN COVERS AND REMOVE THEM WHEN DIRECTED BY THE CITY OF AVON.

PAYMENT FOR "ITEM 632 COVERING OF VEHICULAR SIGNAL HEAD, AS PER PLAN" SHALL BE MADE FOR THE NUMBER OF COMPLETE COVERINGS FURNISHED AND INSTALLED, INCLUDING ALL LABOR, EQUIPMENT, AND MATERIALS.

DESIGNER NOTE: NOTE T-0270 SHALL BE USED ON ALL CITY OF AVON NEW TRAFFIC SIGNAL CONSTRUCTION PROJECTS AND ANY PROJECT THAT REQUIRE THE COVERING OF VEHICULAR SIGNAL HEADS. IT IS AN ADAPTATION OF ODOT'S NOTE 442-14 FROM THEIR "TRAFFIC ENGINEERING MANUAL."

T-0280 ITEM 632 – POWER SERVICE, AS PER PLAN
POWER SERVICE SHALL BE AS PER THE ODOT CONSTRUCTION AND MATERIAL SPECIFICATIONS (C&MS) 632.24 AND STANDARD CONSTRUCTION DRAWING TC-83.10. POWER SERVICE SHALL ALSO INCLUDE THE FOLLOWING:

1. DISCONNECT SWITCH ENCLOSURES SHALL BE A COMMERCIAL PEDESTAL TYPE SWITCHED LOAD CENTER USING NEMA TYPE 3R CONSTRUCTION. IT SHALL BE A MILBANK MODEL CP3B51119A22OCSSP1 OR PRE-APPROVED EQUAL AND SHALL INCLUDE A PADLOCK EQUAL TO WILSON BOHANNON 660, WITH LOCK BODY AND SHACKLE OF BRONZE OR BRASS AND KEYING SHALL BE TO THE STATE MASTER. THE PEDESTAL SHALL INCLUDE A PAD MOUNT BASE TO MOUNT TO A CONCRETE FOUNDATION. THE CABINET SHALL BE UNPAINTED NATURAL ALUMINUM.
2. THE MILBANK PEDESTAL SHALL INCLUDE A MOUNTING BASE, MODEL CP-16PDMNT-CALT PDSTL MNTNG BS. THE MOUNTING BASE SHALL BE INSTALLED FLUSH INTO THE CONCRETE FOUNDATION.

3. THE POWER SERVICE SHALL INCLUDE A RINGLESS SOCKET WITH LEVER BYPASS. THE METER BASE SHALL BE 100 AMP MINIMUM AND INCLUDE A LEVER OPERATED JAW RELEASE, A BYPASS SWITCH RATED FOR 100% CONTINUOUS DUTY. THE METER SOCKET JAWS MUST BE TIN PLATED COPPER AND SPRING SUPPORTED. THE METER BASE SOCKET SHALL HAVE A PLASTIC PROTECTOR TO BE REMOVED BY THE POWER COMPANY ONCE THE METER IS INSTALLED.

4. THE PEDESTAL SHALL HAVE SEPARATE CIRCUITS TO CONTROL THE TRAFFIC SIGNAL, THE LIGHTED STREET NAME SIGNS, THE LIGHTING LUMINAIRES AND EACH DUPLEX RECEPTACLE ON THE MAST ARM SUPPORTS. THE DUPLEX OUTLETS SHALL BE PROTECTED BY A SEPARATE GFI BREAKER. THE STREET NAME SIGNS AND THE LIGHTING LUMINAIRES SHALL BE CONTROLLED BY PHOTO CELLS MOUNTED IN THE ENCLOSURE WITH A WINDOW AND SHIELD. THE PEDESTAL SHALL BE MOUNTED ON THE CONTROLLER PAD SO THAT THE PHOTOCCELL WINDOW IS FACING NORTH. A CONCRETE WORKING PAD, SIZED THE SAME AS THE PEDESTAL FOUNDATION, SHALL BE PLACED IN FRONT OF THE PEDESTAL FOR MAINTENANCE ACCESS.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR REQUESTING AND SCHEDULING ANY INSPECTIONS THE POWER COMPANY MAY REQUIRE FOR THE POWER SERVICE HOOKUP. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING THE POWER COMPANY FOR ELECTRICAL SERVICE CONNECTION. UNDER NO CIRCUMSTANCES SHALL THE CONTRACTOR SPLICE POWER CABLES INTO THE POWER COMPANY'S CIRCUITS. THE VOLTAGE SUPPLIED SHALL BE NOMINALLY 115 VOLTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ANY NECESSARY PERMITS AND PAYING OF ALL FEES RELATING TO THE POWER SERVICE CONNECTION. THE CONTRACTOR SHALL PAY ALL POWER CHARGES UNTIL THE SIGNAL IS ACCEPTED BY THE MAINTAINING AGENCY.

IN ADDITION TO THE REQUIREMENTS OF THIS NOTE, PAYMENT WILL INCLUDE ALL NECESSARY LABOR, MISCELLANEOUS HARDWARE AND EQUIPMENT REQUIRED TO PROVIDE FOR THIS ITEM OF WORK IN ACCORDANCE WITH C&MS SPECIFICATION 632. PAYMENT WILL BE AT THE CONTRACT UNIT PRICE PER EACH.

DESIGNER NOTE: NOTE T-0280 SHALL BE USED ON ALL CITY OF AVON TRAFFIC SIGNAL CONSTRUCTION PROJECTS WHERE A NEW POWER SERVICE IS REQUIRED.

T-0290 ITEM 632 PEDESTRIAN PUSHBUTTON, AS PER PLAN
IN ADDITION TO THE REQUIREMENTS OF 632 AND 732.06, PEDESTRIAN PUSHBUTTONS SHALL BE PROVIDED WITH THE FOLLOWING FEATURES:

1. PUSHBUTTONS SHALL BE MADE BY "CAMPBELL COMPANY", PART NUMBER PN: 502-0001, MODEL: DCC 4 EVR -E- RND 4H -YELLOW ADA/TS2 COMPLIANT MOMENTARY SIGNAL.
2. PUSHBUTTONS SHALL BE FURNISHED THAT ARE RATED AS WATERPROOF AND WHICH INCORPORATE A SOLID NEOPRENE RUBBER GASKET TO SEAL ITSELF AGAINST MOISTURE.
3. PUSHBUTTONS SHALL BE FURNISHED THAT ARE PRESSURE ACTIVATED AND WHICH INCORPORATE A PIEZO-DRIVEN SOLID-STATE SWITCH, TWO TONE ACTIVATION BEEP AND LED INDICATOR THAT MOMENTARILY FLASHES.
4. THE PUSHBUTTON HOUSING SHALL BE SEALED TO THE SIGNAL SUPPORT, PEDESTAL OR POLE WITH A HIGH-QUALITY SILICONE SEALANT.
5. THE PUSHBUTTON SHALL BE WIRED WITH A 2-CONDUCTOR LOOP LEAD-IN WIRE TO THE TRAFFIC SIGNAL CONTROLLER. THE SHIELD OF THE CABLE SHALL BE GROUNDED AT THE CONTROLLER END AND INSULATED AT THE PUSHBUTTON END.

PAYMENT FOR "ITEM 632 PEDESTRIAN PUSHBUTTON, AS PER PLAN" SHALL BE MADE AT THE CONTRACT UNIT PRICE BID FOR EACH IN PLACE, COMPLETELY INSTALLED AT THE LOCATIONS SHOWN IN THE PLANS, WIRED, TESTED AND ACCEPTED.

DESIGNER NOTE: NOTE T-0290 SHALL BE USED ON ALL CITY OF AVON TRAFFIC SIGNAL CONSTRUCTION PROJECTS WHERE A NEW PEDESTRIAN PUSHBUTTON IS REQUIRED.

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TRAFFIC SIGNAL NOTES	ADOPTION ORDINANCE	DATE
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ITEM 632 SIGNAL SUPPORT BY TYPE, AS PER PLAN
IN ADDITION TO THE REQUIREMENTS OF 632 AND 732, SIGNAL SUPPORTS SHALL BE PROVIDED WITH THE FOLLOWING FEATURES:

1. A 20-AMP ELECTRICAL DUPLEX OUTLETS WITH A WEATHERPROOF COVER SHALL BE SUPPLIED AND INSTALLED 13 FEET FROM THE TOP OF FOUNDATION ON THE BACKSIDE OF THE SIGNAL SUPPORT.

PEDESTRIAN SIGNAL HEADS SHALL BE ATTACHED TO THE POLES UTILIZING THE OPTIONAL 2-PIECE HINGED BRACKET (CLAM SHELL) AS SHOWN ON ODOT STANDARD CONSTRUCTION DRAWING TC-85.10. BOLT THE HINGED BRACKET TO THE POLE USING STAINLESS STEEL SCREWS. STAINLESS STEEL BANDING SHALL NOT BE USED.

DUE TO THE POSSIBILITY OF CONFLICTS WITH EXISTING OR PROPOSED UNDERGROUND AND OVERHEAD OBSTRUCTIONS (INCLUDING THE POSSIBILITY OF UNRECORDED OBSTRUCTIONS) WHICH COULD AFFECT THE LOCATION OF THE FOUNDATIONS FOR THESE ITEMS, AND CONSEQUENTLY, THE DESIGN OF THE VARIOUS SUPPORTS, AND/OR ARMS, DO NOT PLACE FINAL ORDERS FOR THESE ITEMS UNTIL THE FOUNDATIONS HAVE BEEN INSTALLED AND WRITTEN NOTICE TO PROCEED WITH THE ORDERS FOR THESE ITEMS HAS BEEN RECEIVED FROM THE CITY OF AVON.

IF ANY FOUNDATION LOCATION MUST BE ADJUSTED, NOTIFY THE CITY OF AVON, WHO WILL DETERMINE THE REVISED LOCATIONS AND IF ANY SUPPORT DESIGN CHANGES ARE NECESSARY, IN CONSULTATION WITH THE MAINTAINING AGENCY. YOU WILL NOT BE RESPONSIBLE FOR DETERMINING THE REVISED DESIGN. THE CITY OF AVON WILL SUBSEQUENTLY INFORM THE CONTRACTOR OF ANY CHANGES NECESSARY, AND AUTHORIZE HIM TO ORDER THE SUPPORTS.

WHEN DEVELOPING THE PROGRESS SCHEDULE, AND THOSE OF THE SUB-CONTRACTORS, ENSURE THAT THE FOUNDATIONS ARE INSTALLED AT THE EARLIEST TIME AS FEASIBLE AND PRACTICAL, AND INCLUDE SUFFICIENT TIME IN THE PROGRESS SCHEDULE FOR THE ORDERING, MANUFACTURE, DELIVERY, AND INSTALLATION OF THESE ITEMS AFTER THE FOUNDATIONS ARE IN PLACE.

PAYMENTS WILL NOT MADE FOR DELIVERED MATERIALS FOR THESE ITEMS UNTIL THE FOUNDATIONS ARE IN PLACE, AND, IF CHANGES IN THE DESIGN OF THESE ITEMS ARE REQUIRED, NO PAYMENTS WILL BE MADE FOR ITEMS MANUFACTURED TO THE ORIGINAL DESIGNS.

PAYMENT FOR ACCEPTED QUANTITIES OF "ITEM 632 SIGNAL SUPPORT BY TYPE, AS PER PLAN" WILL BE MADE AT THE CONTRACT UNIT PRICE BID FOR EACH SIGNAL SUPPORT FURNISHED AND INSTALLED.

DESIGNER NOTE: NOTE T-0300 SHALL BE USED ON ALL CITY OF AVON TRAFFIC SIGNAL CONSTRUCTION PROJECTS FOR WHERE A NEW SIGNAL SUPPORT IS REQUIRED.

T-0310

ITEM 632 - SIGNAL SUPPORT, BY TYPE, AS PER PLAN
IN ADDITION TO PROVISIONS OF THE ODOT C&MS, FURNISH AND INSTALL SIGNAL POLES AS SPECIFIED IN THE PLANS.

THE SIGNAL SUPPORT DESIGNER SHALL PROVIDE DRAWINGS OF A SIGNAL SUPPORT WITH STRUCTURAL ASPECTS OF THE DESIGN AND MATERIALS IN COMPLIANCE WITH THE AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS. THE SIGNAL SUPPORT SHALL BE ASTM A595 GRADE A OR APPROVED EQUAL WITH A MINIMUM YIELD STRENGTH OF 50 KSI. THE FOLLOWING DESIGN PARAMETERS SHALL BE USED:

1. BASIC WING SPEED = 90 MPH
2. DESIGN LIFE = 25 YEARS
3. FATIGUE CATEGORY = III
4. GALLOPING: NO
5. TRUCK INDUCED GUST: NO

SUBMIT, TO THE CITY OF AVON PRIOR TO INCORPORATION: TWO COPIES OF THE SIGNAL SUPPORT DRAWINGS AND SHOP DRAWINGS, WHICH IDENTIFY AND DESCRIBE EACH MANUFACTURED SIGNAL SUPPORT AND SIGNAL SUPPORT ITEM WHICH IS BEING INCORPORATED INTO THE CONSTRUCTION. THE SIGNAL SUPPORT DRAWINGS AND SHOP DRAWINGS SHALL BE REVIEWED, SEALED, STAMPED, AND DATED BY TWO OHIO REGISTERED PROFESSIONAL ENGINEERS.

PAYMENT FOR ITEM 632 "SIGNAL SUPPORT, BY TYPE, AS PER PLAN" SHALL BE MADE AT THE CONTRACT UNIT PRICE PER EACH COMPLETE AND IN PLACE, AND SHALL INCLUDE ALL SIGNAL SUPPORT DESIGN, LABOR, MATERIALS, AND EQUIPMENT NECESSARY TO COMPLETE THE WORK.

DESIGNER NOTE: NOTE T-0310 SHALL BE USED ON ALL CITY OF AVON TRAFFIC SIGNAL CONSTRUCTION PROJECTS FOR WHERE NEW NON-STANDARD SIGNAL SUPPORTS ARE INCLUDED IN THE PLANS.

T-0320

ITEM 632 SIGNAL SUPPORT FOUNDATION
PRIOR TO ORDERING THE SIGNAL SUPPORTS, THE CONTRACTOR SHALL CONTACT OUPS TO HAVE ALL THE UTILITIES LOCATED IN THE FIELD THEN MEET WITH THE CITY OF AVON TO LOCATE THE PROPOSED SUPPORT LOCATIONS TO INSURE THERE ARE NO CONFLICTS WITH UTILITIES. IF THERE ARE ISSUES, THE CONTRACTOR SHALL PROVIDE GUIDANCE AS TO THE RELOCATION OF THE SUPPORT POLES FOR THE CITY OF AVON TO APPROVE.

PAYMENT WILL BE AT THE CONTRACT UNIT PRICE AND WILL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS, TOOLS, EQUIPMENT AND OTHER INCIDENTALS NECESSARY FOR EACH SUPPORT FURNISHED, IN PLACE, COMPLETE AND ACCEPTED.

DESIGNER NOTE: NOTE T-0320 SHOULD BE USED WHEN ANY NEW SIGNAL SUPPORTS ARE TO BE INSTALLED.

T-0330

ITEM 632 SIGNAL SUPPORT, MECHANICAL DAMPER FOR TC-81.21 MAST ARM (GREATER THAN 59' IN LENGTH), AS PER PLAN
THIS ITEM SHALL CONSIST OF THE CONTRACTOR INSTALLING A TUNED MECHANICAL STOCKBRIDGE OR MASS-SPRING TYPE DAMPER ON A TC-81.21 MAST ARM SIGNAL SUPPORT TO REDUCE THE POSSIBILITY OF HARMONIC VIBRATIONS CAUSED BY WIND LOADS. A MECHANICAL DAMPER SHALL BE APPLIED TO ALL MAST ARMS OVER 59 FEET IN LENGTH. THE INSTALLED DAMPER SHALL BE CAPABLE OF REDUCING THE LOADED MAXIMUM VERTICAL MOVEMENT AT THE TIP OF THE ARM TO 8 INCHES MEASURED FROM THE HIGHEST TO THE LOWEST POINT OF DEFLECTION AT WIND SPEEDS OF 5-20 MPH.

ALL ATTACHMENT HARDWARE CONNECTIONS SHALL BE STAINLESS STEEL. STOCKBRIDGE-TYPE DAMPERS SHALL HAVE A STAINLESS STEEL SAFETY CHAIN ANCHORED TO THE MAST ARM TO PREVENT WEIGHTS FROM FALLING SHOULD THEY BECOME SEPARATED FROM THE REST OF THE ASSEMBLY. THE DAMPER SHALL BE ATTACHED TO THE ARM WITHIN 8 FEET OF MAST ARM TIP. INSTALLATION SHALL BE PER THE MANUFACTURER'S GUIDELINES. STATIC DAMPERS SUCH AS HORIZONTAL FLAT SIGN MOUNTINGS SHALL NOT BE USED. ACCEPTABLE DEVICES INCLUDE THE FOLLOWING OR APPROVED EQUAL:

1. UNION METAL ALCOA DAMPER DEVICE - DWG. NO. 2G-1817-C1
2. VALMONT STRUCTURES ALCOA DEVICE - DWG. NO. OH104242P1
3. VALMONT STRUCTURES MITIGATOR - MODEL TR1
4. FLORIDA DOT SPRING-MASS DAMPER - DRAWING INDEX NO. 17749
5. PATHMASTER DAMPER ASSEMBLY - DWG. U2G-1817-C
6. HUBBELL 607 SERIES DAMPER - MILLERBERND WG. NO.

HUBBELL-6072014

PAYMENT FOR ITEM 632 "SIGNAL SUPPORT, MECHANICAL DAMPER FOR TC-81.21 MAST ARM (GREATER THAN 59 FEET IN LENGTH), AS PER PLAN" SHALL BE MADE AT THE CONTRACT UNIT PRICE PER EACH COMPLETE AND IN PLACE, AND SHALL INCLUDE ALL LABOR, MATERIALS, AND EQUIPMENT NECESSARY TO COMPLETE THE WORK.

DESIGNER NOTE: T-0330 IS REQUIRED ON ALL PROJECTS INSTALLING TRAFFIC SCD TC-81.21 MAST ARMS GREATER THAN 59 FEET IN LENGTH.

T-0340

ITEM 632 - SIGNALIZATION, MISC.: UNLASH AND RELASH MESSENGER WIRE
THE CONTRACTOR SHALL REMOVE EXISTING MESSENGER WIRE LASHING RODS AND REINSTALL THEM AS NECESSARY FOR THE INSTALLATION OF ANY NEW CABLES ON THE EXISTING INTERSECTION SIGNAL SPANS. THE CABLES SHALL ENTER THE EXISTING STRAIN POLE THROUGH THE POLE CABLE ENTRANCE FITTING AND USE THE EXISTING CONDUIT SYSTEM TO GET TO THE CONTROLLER CABINET. THE NEW CABLES SHALL BE SUPPORTED BY A NEW CABLE SUPPORT ASSEMBLY AT THE TOP OF THE STRAIN POLE.

THE NEW SIGNAL CABLES SHALL BE BID BY SEPARATE BID ITEMS.

PAYMENT FOR ITEM 632 "SIGNALIZATION MISC.: UNLASH AND RELASH MESSENGER WIRE" SHALL BE MADE AT THE CONTRACT UNIT PRICE PER FOOT AND SHALL INCLUDE ALL LABOR, MATERIALS, CABLE SUPPORT ASSEMBLIES AND EQUIPMENT TO INSTALL NEW CABLES ON EXISTING SIGNAL SPAN WIRE INSTALLATIONS.

DESIGNER NOTE: T-0340 IS INTENDED FOR USE ON PROJECTS WHERE UNLASHING AND RELASHING THE MESSENGER WIRE IS REQUIRED IN THE PLANS. TYPICAL USE WOULD BE FOR A TRAFFIC SIGNAL RETROFIT, WHERE A NEW SIGNAL HEAD AND ASSOCIATED CABLES ARE TO BE ADDED TO THE EXISTING SPAN.

T-0350

ITEM 632 - SIGNALIZATION, MISC.: FOUNDATION TEST HOLE
IF UNDERGROUND OBSTRUCTIONS ARE ENCOUNTERED THAT PRECLUDE THE USE OF THE STANDARD OR ALTERNATE FOUNDATION DESIGNS, THE CONTRACTOR SHALL PROVIDE THE CITY OF AVON WITH COMPLETE INFORMATION REGARDING THE OBSTRUCTION, INCLUDING TYPE (I.E. UTILITY), SIZE, DEPTH, AND LATERAL CLEARANCES TO THE SIDES OF THE FOUNDATION EXCAVATION. THE FOUNDATION HOLE SHALL BE COVERED WITH A STEEL PLATE UNTIL THE CITY OF AVON DETERMINES IF A NEW FOUNDATION LOCATION WILL BE REQUIRED.

IF DIRECTED BY THE CITY OF AVON, THE CONTRACTOR SHALL BACKFILL AND COMPACT THE HOLE AND SHALL RESTORE THE SURFACE TO THE SATISFACTION OF THE CITY OF AVON.

THE CONTRACTOR SHALL BE COMPENSATED FOR EACH FOUNDATION HOLE THAT MUST BE ABANDONED. PAYMENT FOR ALL LABOR, MATERIALS, EQUIPMENT, TOOLS, AND OTHER INCIDENTALS, INCLUDING BACKFILL, COMPACTING, AND SURFACE RESTORATION, SHALL BE AT THE CONTRACT UNIT PRICE BID FOR EACH ITEM 632 - SIGNALIZATION, MISC.: FOUNDATION TEST HOLE FOR THE NUMBER EXCAVATED AND BACKFILLED.

DESIGNER NOTE: NOTE T-0350 SHOULD BE USED WHEN ANY NEW SIGNAL SUPPORTS OR PEDESTALS ARE TO BE INSTALLED.

T-0360

ITEM 633 - CONTROLLER UNIT, TYPE TS2/A2, WITH CABINET TYPE TS2, AS PER PLAN
THIS ITEM SHALL BE IN ACCORDANCE WITH ODOT CONSTRUCTION AND MATERIAL SPECIFICATIONS (C&MS) 633 IN ADDITION TO THE FOLLOWING. THIS ITEM OF WORK SHALL CONSIST OF FURNISHING AND INSTALLING AN ACTUATED, SOLID STATE DIGITAL MICROPROCESSOR TYPE CONTROLLER WITH MENU DRIVEN PROMPTS, INTERNAL TBC, ETHERNET TELEMETRY PORT AND ALL OTHER ACCESSORIES THAT ARE REQUIRED TO MAKE THE CONTROLLER COMPLETELY FUNCTIONAL AND OPERATIONAL AS SHOWN IN THE PLANS.

THE CONTROLLER ASSEMBLY SHALL INCLUDE A NEMA TS2 TYPE A2 CONTROLLER UNIT, NEMA TS2, TYPE 2, CONFIGURATION 4 (16 POSITION) TERMINALS AND FACILITIES AND A NEMA TS2, TYPE 16, MALFUNCTION MANAGEMENT UNIT COMPLETE IN A NEMA TS2 CABINET ASSEMBLY. THE CONTROLLER UNIT SHALL BE MANUFACTURED BY ECONOLITE CONTROL PRODUCTS OF ANAHEIM, CALIFORNIA, MODEL COBAL WITH OPTIONAL 3.3V DATA KEY (8MB) AND GRAPHICAL TOUCH SCREEN.

IN ADDITION TO THE REQUIREMENTS OF 633, CONTROLLER UNITS SHALL BE PROVIDED WITH THE FOLLOWING FEATURES:

1. LOAD SWITCHES AND FLASH TRANSFER RELAYS SHALL BE MANUFACTURED BY EDI AND SUPPLIED IN SUFFICIENT QUANTITY TO PERFORM THE OPERATION AS SHOWN IN THE PLANS. THE LOAD SWITCHES PROVIDE INDICATORS ON THE INPUTS OF EACH CIRCUIT.
2. THE CONTROLLER UNIT SHALL BE 16-PHASE FULLY ACTUATED AND SHALL MEET ALL REQUIREMENTS FOR A NEMA TS2, TYPE 2 INCLUDING SDLC (PORT 1), 25 PIN SERIAL PORT (PORT 2), AND 9 PIN CONSOLE SERIAL PORTS. THE CONTROLLER SHALL ALSO INCLUDE A 10/100BASET ETHERNET PORT AND DATA-KEY TO MAINTAIN BACK-UP TIMING. MANUFACTURE SPECIFIC "D" CONNECTORS SHALL BE INCLUDED.
3. THE NEMA TS2, TYPE 16, MALFUNCTION MANAGEMENT UNIT (MMU) SHALL BE MANUFACTURED BY EDI AND PROVIDED WITH AN LCD DISPLAY AND AN IP ADDRESSABLE ETHERNET PORT. THE CABINET SHALL BE WIRED FOR APPROACH MONITORING. AN SDLC CABLE ASSEMBLY SHALL BE PROVIDED TO CONNECT PORT 1 OF THE CONTROLLER TO AN 8-PORT HUB AND FROM THE 8-PORT HUB TO PORT 1 OF THE MMU. THIS WILL ENABLE THE ADVANCED ERROR CHECKING, EVENT REPORTING AND LOGGING FEATURES AS DEFINED BY NEMA. THE MMU SHALL PASS ALL TESTS AS PERFORMED BY AN AUTOMATIC MONITOR TESTER. TEST RESULTS SHALL BE PRINTED AND SUPPLIED WITH EACH CABINET.
4. THE FOLLOWING SWITCHES SHALL BE ACCESSIBLE VIA THE POLICE PANEL:
 - A. SIGNAL ON/OFF
 - B. FLASH CONTROL
 - C. AUTOMATIC/MANUAL TRANSFER
 - D. MANUAL PUSHBUTTON AND 10' COILED HAND CORD
5. THE FOLLOWING SWITCHES SHALL BE MOUNTED ON A TECHNICIAN'S SWITCH PANEL ON THE INSIDE OF THE MAIN CABINET DOOR:
 - A. STOP TIME ON/OFF
 - B. FLASH CONTROL
 - C. TIMER POWER ON/OFF
 - D. DETECTOR TEST, MOMENTARY PUSHBUTTON
6. THE MAINTENANCE PANEL AND POLICE PANEL SHALL BE INSTALLED IN THE CABINET AS A COMPLETE AND INDEPENDENT ASSEMBLY. A SINGLE MULTI-PIN CONNECTOR ASSEMBLY SHALL BE USED TO INTERFACE TO THE MAIN BACK-PANEL. DIRECT WIRING FROM THE BACK-PANEL TO THE MAINTENANCE/POLICE PANEL WILL NOT BE ALLOWED. THE MAINTENANCE/POLICE PANEL ASSEMBLY SHALL BE EASILY REPLACED WITHOUT HAVING TO DISTURB ANY OTHER WIRING IN THE CABINET. THE MAINTENANCE PANEL SHALL BE HINGED WITH A STAINLESS-STEEL HINGE TO THE POLICE PANEL TO ALLOW EASY ACCESS TO THE WIRING WITHIN THE ASSEMBLY.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
TRAFFIC SIGNAL NOTES	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING		2/2019
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7. A LED CABINET LAMP KIT WITH DOOR ACTIVATED PUSHBUTTON SHALL BE PROVIDED AND SHALL CONSIST OF TWO (2) LED LIGHT SOURCES, THE FIRST MOUNTED TO THE FAN PANEL TO ILLUMINATE THE ENTIRE CABINET, THE SECOND MOUNTED UNDERNEATH THE BOTTOM SHELF TO ILLUMINATE THE ENTIRE LOAD BAY AREA. EACH LIGHT SOURCE SHALL BE A MINIMUM OF 30" IN LENGTH AND BE LOW PROFILE SO NOT TO INTERFERE WITH THE REMOVAL OR MAINTENANCE OF ANY CABINET EQUIPMENT.
8. THE CABINET SHALL BE ALUMINUM, WITH A NATURAL SATIN FINISH, MEASURING 55"H X 60"W X 26"D AND SHALL COMPLY WITH THE REQUIREMENTS OF 733.03. THE INTERIOR SHALL BE PAINTED WHITE IN COLOR. THE CABINET SHALL BE DOUBLE DOOR AND COMPARTMENTALIZED SO THAT THE CONTROLLER CAN BE HOUSED IN ONE COMPARTMENT AND A UPS IN THE OTHER. THE CABINET SHALL HAVE A MINIMUM OF THREE SHELVES IN THE CONTROLLER COMPARTMENT.
9. THE CONTRACTOR SHALL FURNISH, FOR APPROVAL, A CABINET PLAN SHOWING COMPONENT LAYOUT.
10. THE MAIN POWER SURGE PROTECTOR SHALL BE PLUG-IN TYPE, INCLUDE A FAILURE INDICATOR AND A SET OF DRY CONTACTS TO INDICATE THE UNIT HAS FAILED. THE UNIT SHALL BE AN EDCO MODEL SHA-1250 INCLUDING BASE. THE FAIL CONTACTS OF THE SURGE PROTECTOR SHALL BE WIRED TO AN ALARM INPUT FOR REPORTING A FAILED DEVICE TO A CENTRAL COMPUTER.
11. THE FOLLOWING LIST OF FEATURES SHALL BE INCORPORATED INTO THE CABINET AND TERMINALS FACILITY:
- A. THE FIELD TERMINALS FOR SIGNAL HOOK-UP SHALL BE MOUNTED TO A PANEL AND ANGLED AT 45 DEGREES FOR EASE OF INSTALLATION AND MAINTENANCE. NO WIRES, LUGGED OR OTHERWISE, SHALL BE PERMITTED ON THE SIGNAL HOOK-UP SIDE OF THE FIELD TERMINAL BLOCKS, EXCEPT THE PANEL SHALL BE WIRED FROM THE FACTORY SUCH THAT THE PHASING CAN BE REWIRED AT TRAFFIC PHASING, OVERLAPS OR PEDESTRIAN SIGNALS USING JUMPERS FROM THE FRONT OF THE PANEL WITHOUT THE REMOVAL OF THE BACKBOARD AND WITHOUT A NEED FOR SOLDERING. ALL UNUSED WIRES IN THE MMU AND CONTROLLER WILL BE WIRED TO THE CONNECTOR AND BUNDLED FOR FUTURE USE IN THE PANEL.
- B. WIRE CONNECTIONS TO THE BACK-PANEL SHALL BE MADE WITH CRIMP TERMINALS AND THREADED FASTENERS. SOLDER CONNECTIONS MAY BE USED ON THE BACKSIDE OF A PANEL THAT UTILIZES FEED-THRU STYLE TERMINAL BLOCKS. PRINTED CIRCUIT BOARDS SHALL NOT BE USED ON ANY PART OF THE MAIN BACK-PANEL ASSEMBLY.
- C. ALL WIRES FASTENED TO THE LOAD SWITCH, FLASHER AND FLASH TRANSFER RELAY SOCKETS SHALL BE SOLDERED IN PLACE. A GOOD MECHANICAL CONNECTION MUST BE MADE PRIOR TO SOLDERING.
- D. THE BACK-PANEL SHALL BE PROVIDED WITH A UNITIZED SELF-LEVELING/SELF-ADJUSTING HINGED MOUNTING MECHANISM TO ALLOW EASY ACCESS TO ALL WIRING ON THE REAR OF THE PANEL. THE BACK-PANEL SHALL SLIDE ONTO THE HINGE SUPPORT BRACKETS AND BE SECURED IN THE CABINET WITH STAINLESS STEEL MOUNTING HARDWARE SECURELY FASTENED AT NO MORE THAN TWO (2) POINTS. COMPLETE REMOVAL AND REPLACEMENT OF THE MAIN BACK-PANEL ASSEMBLY SHALL BE ACCOMPLISHED WITH THE USE OF SIMPLE HAND TOOLS.
- E. THE BACK-PANEL SHALL BE DESIGNED SUCH THAT IT CAN BE EASILY REMOVED AND REPLACED WITHIN THE CABINET. CONNECTORS SHALL BE USED TO CONNECT ALL SIDE PANELS TO THE BACK-PANEL INCLUDING THE DETECTOR PANEL, MAINTENANCE/POLICE PANEL, CABINET FAN PLATE AND ANY AUXILIARY PANEL. THE MAIN BACK-PANEL ASSEMBLY SHALL BE EASILY REMOVED AND REPLACED WITHOUT REMOVING OR RE-WIRING ANY OF THE SIDEWALL MOUNTED PANELS.
- F. ALL WIRING OF HARNESSSES AND INTER-PANEL WIRING, INCLUDING WIRING TO THE POLICE PANEL SHALL BE PROTECTED WITH A NYLON MESH OR "SNAKE SKIN". ANY EXPOSED WIRES, OR THE USE OF CABLE TIES TO HOLD THE WIRE BUNDLES TOGETHER SHALL NOT BE ALLOWED.
- G. ALL BACK-PANEL TERMINALS AND COMPONENTS SHALL HAVE SILK-SCREENED TERMINAL/ SOCKET FUNCTION IDENTIFICATION LABELS SUCH AS "AC COM", "PHASE 3 GREEN", ETC. SILK-SCREENED TERMINAL REFERENCE NUMBERS SHALL ALSO BE PROVIDED. LOAD SWITCH FIELD TERMINALS SHALL BE LABELED WITH THE LOAD SWITCH NUMBER, COLOR AND TERMINAL REFERENCE NUMBER.
- H. ALL SWITCHES SHALL BE IDENTIFIED WITH PERMANENT TYPE LABELS. THE USE OF PLASTIC MARKING TAPE OR "CROY" TYPE TAPE IS NOT ACCEPTABLE.
- I. ALL MAIN POWER PANEL DEVICES SHALL BE MOUNTED TO THE LOWER RIGHT PORTION OF THE MAIN PANEL, INCLUDING ALL CIRCUIT BREAKERS, LINE FILTERS AND LOAD RELAYS. AS AN ALTERNATE, A SEPARATE POWER PANEL MOUNTED TO THE RIGHT-SIDE WALL OF THE CABINET WILL BE PERMITTED.
- J. FIELD TERMINATIONS FOR LOOPS AND PEDESTRIAN PUSHBUTTONS SHALL BE ON THE LEFT SIDE WALL. THE TERMINAL BLOCK FOR THESE ITEMS SHALL BE MOUNTED VERTICALLY. TERMINATING OF FIELD WIRES OVER TOP OF OTHER TERMINAL BLOCKS SHALL NOT BE ALLOWED.
- K. ALL EQUIPMENT HARNESSSES SHALL BE ATTACHED TO THE UNDERSIDE OF THE SHELVES WITH APPROPRIATE CABLE TIE MOUNTING BLOCKS. FOR EASE OF MAINTENANCE, ALL HARNESSSES SHALL BE OF SUFFICIENT LENGTH TO PLACE THE EQUIPMENT ON TOP OF THE CABINET AND BE OPERATIONAL.

- L. A COLOR-CODED WIRING SYSTEM SHALL BE USED THROUGHOUT THE WIRING OF THE CABINET. THE WIRING COLOR-CODE SHALL BE AS FOLLOWS:
- I. CONTROLLER UNIT - BLUE, 22 GAUGE
- II. MMU - VIOLET, 22 GAUGE
- III. RED LOAD SWITCH OUTPUT - RED, 16 GAUGE
- IV. YELLOW LOAD SWITCH OUTPUT - YELLOW, 16 GAUGE
- V. GREEN LOAD SWITCH OUTPUT - BROWN, 16 GAUGE
- VI. AC LINE POWER - BLACK, VARIES*
- VII. AC NEUTRAL - WHITE, VARIES*
- VIII. EARTH GROUND - GREEN, VARIES*
- IX. LOGIC GROUND - GRAY, 22 GAUGE
- X. FLASH PROGRAMMING - ORANGE, 16 GAUGE
- *SIZED APPROPRIATELY TO HANDLE THE VARYING CURRENT REQUIREMENTS.
12. EACH CABINET SHALL BE EQUIPPED WITH TWO (2) 16-CHANNEL DETECTOR RACKS INCLUDING BUS INTERFACE UNITS AND TERMINATION PANELS.
- A. THE TERMINATION PANEL SHALL BE PROVIDED WITH PROVISIONS AND FULLY WIRED FOR A MINIMUM OF EIGHT (8) LOOP DETECTORS INCLUDING CONNECTORS AND LOOP TERMINATION BLOCKS.
- B. TERMINATION POINTS SHALL BE PROVIDED FOR EIGHT (8) PEDESTRIAN PUSHBUTTONS.
- C. PROVISIONS FOR INTERFACING SYSTEM DETECTORS AND ADDITIONAL DETECTOR INPUTS SHALL BE INCLUDED ON THE PANEL.
13. ALL LOOP DETECTOR RACK POSITIONS SHALL BE TAGGED WITH A WHITE PLASTIC TAG, AND SHALL IDENTIFY WITH PERMANENT MARKER, THE LOOP NUMBER, DIRECTION OF TRAVEL AND DESIGNATE THE LANE FOR WHICH THE LOOP IS PLACED. IT SHALL ALSO INCLUDE ANY NOMENCLATURE AS SHOWN ON THE DRAWINGS USED FOR IDENTIFICATION OF THE HARNESS.
14. A SYSTEMS INTERFACE PANEL SHALL BE PROVIDED AND CONVENIENTLY MOUNTED. TERMINAL BLOCKS SHALL BE FEED-THRU TYPE AND MOUNTED VERTICALLY. ALL SYSTEMS FUNCTIONS OF THE CONTROLLER SHALL BE TERMINATED ON A SINGLE PANEL. AT A MINIMUM, THE SYSTEMS PANELS SHALL INCLUDE TERMINATION POINTS FOR 16 ADDITIONAL DETECTOR INPUTS, 6 PREEMPT INPUTS, 6 PREEMPT OUTPUTS AND 4 SPECIAL FUNCTION OUTPUTS. THE SYSTEMS INTERFACE PANEL SHALL CONNECT TO THE MAIN BACK-PANEL ASSEMBLY AND THE DETECTOR PANEL WITH THE USE OF MULTI-PIN CONNECTORS. DIRECT WIRING FROM THE MAIN BACK-PANEL TO THE SYSTEMS INTERFACE PANEL WILL NOT BE ALLOWED.
15. THE CABINET SHALL CONTAIN A PULL-OUT DOCUMENT DRAWER WITH "HOLD-CLOSED" AND "LOCK-OPEN" FEATURE. THE DOCUMENT DRAWER SHALL MEASURE 22"W X 12"D X 2.5"H. THE DOCUMENT DRAWER SHALL INCLUDE A NON-SKID SURFACE DESIGNED TO SUPPORT THE WEIGHT OF A TYPICAL LAPTOP COMPUTER AND SHALL BE MOUNTED BELOW THE TIMER SHELF.
16. THE CABINET SHALL BE FULLY WIRED TO ACCOMMODATE THE PREEMPTION EQUIPMENT AND PERFORM THE PREEMPTION SEQUENCES AS SPECIFIED IN THESE PLANS.
17. THE CABINET ASSEMBLY SHALL BE FULLY TESTED, WITH ALL COMPONENTS INSTALLED, AT THE FACTORY PRIOR TO SHIPMENT. THE CONTROLLER, MONITOR AND DETECTORS SHALL BE FULLY PROGRAMMED PER THE PLANS AND SPECIFICATIONS, BY A TRAINED FACTORY REPRESENTATIVE. THE COMPLETE AND FULLY PROGRAMMED CABINET ASSEMBLY SHALL BE FACTORY TESTED FOR A MINIMUM OF 24 HOURS, PRIOR TO SHIPMENT. THE SUPPLIER SHALL CERTIFY IN WRITING THAT THE TESTS HAVE BEEN SUCCESSFULLY PERFORMED PRIOR TO INSTALLATION IN THE FIELD. ALL TESTING SHALL BE SUPERVISED BY A LICENSED PROFESSIONAL ENGINEER.
18. THE HEIGHT OF THE CONTROLLER SHOULD BE AROUND 6 FEET TO THE TOP OF THE CABINET SO THE FIELD TECHNICIAN CAN WORK COMFORTABLY ON IT. THE CONTROLLER CABINET SHALL NOT SIT DIRECTLY ON THE FOUNDATION, IT MUST HAVE A 12" RISER. THE CABINET DOOR SHALL BE POSITIONED TO FACE AWAY FROM TRAFFIC, AND SHALL NOT FACE TOWARDS THE PATH OF SNOW REMOVAL. A CONCRETE PAD SHALL BE IN FRONT OF THE CABINET.
19. INCLUDE ALL MANUALS AND SOFTWARE FOR ALL COMPONENTS IN THE CABINET.
20. ALL USED PARTS AND SPARE STOCK SHALL BE RETURNED TO THE CITY OF AVON.

THE CONTRACTOR SHALL PROVIDE TRAINING FOR UP TO FIVE (5) PEOPLE IN THE OPERATION, MAINTENANCE AND TROUBLESHOOTING OF THE CONTROLLER AND CABINET. IT SHALL CONSIST OF HANDS-ON INSTRUCTION FOR A MINIMUM OF EIGHT (8) HOURS. ALL TRAINING SHALL BE HELD IN A LOCATION AS SPECIFIED BY THE CITY AND CONDUCTED BY SOMEONE WHO HAS PERFORMED THE TRAINING WITHIN THE LAST YEAR AND DOES IT ON A REGULAR BASIS. THE COST OF TRAINING, INCLUDING COURSE MATERIAL, TRAVEL, SUBSISTENCE AND RELATED COSTS SHALL BE ENTIRELY BORNE BY THE CONTRACTOR AND SHALL BE INCIDENTAL TO THE COST OF THE PREEMPT EQUIPMENT.

PAYMENT FOR "ITEM 633 - CONTROLLER UNIT, TYPE TS2/A2 WITH CABINET TYPE TS2, AS PER PLAN" SHALL BE MADE AT THE CONTRACT PRICE BID. PAYMENT SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS, TOOLS, EQUIPMENT, TESTING, CERTIFICATIONS AND OTHER INCIDENTALS NECESSARY TO FURNISH THE CONTROLLER COMPLETE IN PLACE, INCLUDING ALL CONNECTIONS MADE AND WIRING COMPLETE, TESTED AND ACCEPTED.

DESIGNER NOTE:

NOTE T-0360 SHALL BE USED ON ALL CITY OF AVON TRAFFIC SIGNAL CONSTRUCTION PROJECTS FOR WHERE A NEW CONTROLLER UNIT IS REQUIRED. THE CITY MAY ELECT TO DELETE THE TRAINING REQUIREMENT ONCE THEY ARE CONFIDENT IN TROUBLESHOOTING AND MAINTENANCE OF THE CONTROLLER.

T-0370

ITEM 633 - CABINET FOUNDATION, AS PER PLAN
ITEM 633 - CONTROLLER WORK PAD, AS PER PLAN
THE SIZE OF THE CABINET FOUNDATION AND THE CONTROLLER WORK PAD SHALL BE INCREASED TO ACCOMMODATE THE PROPOSED CONTROLLER CABINET WITH UNINTERRUPTIBLE POWER SUPPLY AND PEDESTAL MOUNTED POWER SERVICE FROM THOSE SHOWN ON ODOT STANDARD CONSTRUCTION DRAWING TC-83.20. THE CABINET FOUNDATION SHALL BE 90" W X 36" D X 36" H AND THE CONTROLLER WORK PAD SHALL BE 90" X 30". THE CONTRACTOR SHALL PROVIDE A SCHEMATIC OF THE FOUNDATION AND CONTROLLER WORK PAD TO THE CITY OF AVON FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTING. ALL OTHER DETAILS SHALL BE AS SHOWN ON TC-83.20.

DESIGNER NOTE: NOTE T-0370 SHALL BE USED ON ALL CITY OF AVON TRAFFIC SIGNAL CONSTRUCTION PROJECTS FOR WHERE A NEW CONTROLLER UNIT IS REQUIRED.

T-0380

ITEM 633 UNINTERRUPTIBLE POWER SUPPLY (UPS), AS PER PLAN
THIS WORK IS FOR THE FURNISHING AND INSTALLATION OF AN UNINTERRUPTIBLE POWER SYSTEM (UPS) WITH AUTOMATIC GENERATOR/VEHICLE INVERTER DISCONNECT. IN ADDITION TO THE REQUIREMENTS OF 633 AND 633.18, PROVIDE AN UNINTERRUPTIBLE POWER SUPPLY WITH THE FOLLOWING FEATURES:

1. THE UPS SHALL BE A CLARY CORPORATION SP1250LX SERIES OR APPROVED.
2. THE UPS SHALL BE A DIGITAL, TRUE, ON-LINE, DOUBLE CONVERSION, POWER CONDITIONER AND UNINTERRUPTIBLE POWER SYSTEM (UPS) WITH BATTERY BACKUP CAPABILITY. THE UPS INVERTER SHALL BE IN OPERATION AT ALL TIMES SUPPLYING CLEAN REGULATED POWER (BOTH VOLTAGE AND FREQUENCY) TO ALL LOADS, AT ALL TIMES. THE UPS, BATTERIES AND POWER INTERFACE MODULE SHALL BE CERTIFIED BY AN INDEPENDENT LABORATORY TO OPERATE FROM -40°F TO +165°F. THE COMPLETE SYSTEM, INCLUDING BATTERIES, SHALL HAVE A TWO-YEAR FACTORY WARRANTY.
3. THE UPS UNIT SHALL USE DIGITAL TECHNOLOGY (IRON CORE TRANSFORMERS WILL NOT BE ACCEPTED) TO CONTINUOUSLY CREATE AND CONTROL PURE SINE WAVE OUTPUT POWER. THE UPS SHALL ISOLATE THE CONNECTED EQUIPMENT AGAINST SPIKES, SAGS AND LINE NOISE BY CONVERTING THE UTILITY AC TO DC AND THEN REGENERATE CLEAN AC AT A NOMINAL 120 VOLTS WITH A FREQUENCY OF 60HZ. WHEN OPERATING ON BATTERY POWER, THE UPS SHALL MAINTAIN +/- .0005% FREQUENCY STABILITY TO PREVENT TIME DRIFT PROBLEMS WITH THE TRAFFIC CONTROLLER'S INTERNAL TBC CLOCK. THE BATTERY CHARGING SYSTEM SHALL BE A SEPARATE, DISTINCT, 3 STAGE DESIGN INCORPORATING A PULSE CHARGE CAPABILITY. THE DOUBLE CONVERSION OPERATION OF THE UPS SHALL WORK NORMALLY EVEN WITH BATTERIES DISCONNECTED OR CHARGING. THE SYSTEM SHALL SUPPORT A MAXIMUM 865-WATT LOAD FOR APPROX. 1.8 HOURS AT AMBIENT TEMPERATURE. THE UPS SYSTEM SHALL, IN THE ABSENCE OF AC, BE ABLE TO BE COLD STARTED USING ONLY BATTERY POWER. THE UPS SHALL INCORPORATE ALARM OUTPUTS THAT CAN BE USED FOR REMOTE MONITORING AS WELL AS OUTPUTS THAT CAN BE USED FOR OPERATING THE INTERSECTION IN A COMBINATION OF FULL OPERATION AND FLASH.
4. THE BATTERY SET SHALL BE CERTIFIED TO MEET OR EXCEED THE SAFETY REQUIREMENTS OF MIL-SPEC #MIL-B-8565J. THE BATTERY SET SHALL BE COMPRISED OF EXTREME TEMPERATURE, DEEP CYCLE, AGM/VRLA (ABSORBED GLASS MAT/VALVE REGULATED LEAD ACID) BATTERIES. ALL TERMINALS SHALL HAVE ANDERSON POWER POLE CONNECTORS WITH WIRE LEADS WELDED TO THE BATTERY TERMINALS THUS ELIMINATING THE NEED TO PERIODICALLY RE-TIGHTEN MECHANICAL CONNECTIONS. ALL BATTERY TERMINALS SHALL BE PERMANENTLY SEALED AGAINST CORROSION BY THE BATTERY MANUFACTURER. BOLT ON BATTERY CABLES AND EXPOSED BATTERY TERMINALS WILL NOT BE ACCEPTED. BATTERIES SHALL BE 51AH AND NOT TO EXCEED 25LBS EACH. ALL BATTERIES SHALL BE PLACED ON THERMOSTATICALLY CONTROLLED BATTERY HEATER MATS IN THE ENCLOSURE.

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5. 'A POWER INTERFACE MODULE (PIM) SHALL BE PROVIDE WHICH CONTAINS A TERMINAL STRIP FOR INPUT AND OUTPUT POWER CONNECTIONS IN ADDITION TO NEUTRAL AND GROUND CONNECTIONS. THIS MODULE SHALL HAVE AN INTERFACE THAT WILL ALLOW AN EXTERNAL GENERATOR OR VEHICLE INVERTER TO BE PLUGGED INTO THE SYSTEM. THE UPS SHALL SUPPLY FULLY REGENERATED CLEAN AND CONDITIONED POWER FROM THE GENERATOR/INVERTER POWER SOURCE (WITHOUT SWITCHING TO BATTERIES) IN ADDITION TO MAINTAINING THE 3 STAGE, BATTERY CHARGING SYSTEM. AC INDICATION SHALL BE PROVIDED ON THE OUTSIDE OF CABINET. ONE FOR LINE VOLTAGE (GREEN), AND ONE FOR UPS VOLTAGE (RED).

6. THE UPS MANUFACTURER SHALL BE ISO9001:2008 CERTIFIED AND ALL MANUFACTURING PROCESSES SHALL BE DONE IN THE UNITED STATES AND FULLY COMPLY WITH THE "MADE IN USA" STANDARD. THE UPS SHALL BE FIELD PROVEN WITH A MINIMUM OF THREE YEARS OF USE FOR TRAFFIC SIGNAL APPLICATIONS WITHIN THE UNITED STATES.

7. THE UPS SHALL ALSO INCLUDE A 10/100BASET ETHERNET PORT.

POLE ATTACHMENT HARDWARE WILL BE INCLUDED FOR POLE-MOUNTED CABINETS, AND A CABINET RISER (8 INCH MINIMUM) AND ANCHOR BOLTS WILL BE PROVIDED FOR BASE-MOUNTED CABINETS. BEFORE PERFORMING THE WORK, THE CONTRACTOR AND THE CITY OF AVON WILL PERFORM A SITE INSPECTION TO ESTABLISH THE LOCATION OF THE UPS CABINET AND FOUNDATION.

THE UPS CABINET SHALL INCLUDE A GENERATOR POWER PANEL WITH A HEAVY DUTY POWER RELAY VERSUS THE LINE VOLTAGE GENERATOR SWITCH. THE GENERATOR INLET SHALL BE A RECESSED PANEL WITH A DOOR THAT IS FLUSH WITH THE EXTERNAL SIDE OF THE UPS CABINET. IT SHALL INCLUDE A RECESSED PLUG, AUTOMATIC TRANSFER SWITCH AND A DOOR THAT SECURELY CLOSES OVER THE POWER CORD.

THE UPS OUTPUT NOTIFICATIONS FOR ON BATTERY, BATTERY 2-HOUR TIMER, AND LOW BATTERY SHALL BE WIRED INTO THE TRAFFIC SIGNAL CABINET BACK PANEL TO PROVIDE SPECIAL STATUS ALARMS FOR EACH OUTPUT INTO THE SIGNAL CONTROLLER.

THIS ITEM SHALL INCLUDE A RED LED STATUS INDICATOR LAMP TO ALLOW MAINTENANCE PERSONNEL AND LAW ENFORCEMENT TO QUICKLY ASSESS WHETHER A TRAFFIC SIGNAL CABINET IS BEING POWERED BY A UPS. THE LED HOUSING SHALL BE NEMA 4X, IP65 OR IP66, RATED FOR OUTDOOR USE AND BE TAMPER/SHATTER RESISTANT. IT SHALL BE A DOMED ENCLOSURE CONTAINING A RED LENS WITH LED THAT IS VISIBLE FROM 100 FOOT MINIMUM. THE ENCLOSURE AND LED MODULE SHOULD BE PLACED AND CENTERED ON THE TOP SURFACE OF THE UPS CABINET AND SEALED FROM WATER INTRUSION. IT SHOULD BE WIRED USING MINIMUM 20GA STRANDED, INSULATED HOOKUP WIRE TO THE STATUS RELAY OUTPUTS OF THE UPS. THE WIRES SHALL BE TERMINATED BY LUGS AT THE DISPLAY END AND PERMANENTLY LABELED "BACKUP POWER STATUS DISPLAY,"WITH THE WIRE POLARITY INDICATED. THE RED LED SHALL ONLY ILLUMINATE TO INDICATE THE CABINET IS OPERATING UNDER UPS BACKUP POWER (THE "BACKUP" OPERATING CONDITION). THIS ITEM INCLUDES PROGRAMMING THE UPS STATUS RELAY OUTPUTS TO PRODUCE THE LAMP STATUS DISPLAYS. THESE STATUS DISPLAYS WILL BE SOLID 100% DUTY CYCLE (NOT FLASHING) DISPLAYS. THE OPERATING VOLTAGE OF THE LED LAMP SHALL BE 120V AC UNLESS OTHERWISE INDICATED.

PAYMENT FOR "ITEM 633 UNINTERRUPTIBLE POWER SUPPLY (UPS), AS PER PLAN" SHALL BE MADE AT THE CONTRACT UNIT PRICE BID FOR EACH IN PLACE, COMPLETELY INSTALLED AT THE LOCATIONS SHOWN IN THE PLANS, INCLUDING EXTRA CABINET SPACE, CABINET FOUNDATION AND WORK PAD.

DESIGNER NOTE: NOTE T-0380 SHALL BE USED ON ALL CITY OF AVON TRAFFIC SIGNAL CONSTRUCTION PROJECTS WHERE A NEW CONTROLLER UNIT IS REQUIRED.

T-0390 ITEM 633 – PREEMPTION, AS PER PLAN
THIS ITEM OF WORK SHALL CONSIST OF FURNISHING AND INSTALLING PREEMPTION EQUIPMENT IN THE LOCATIONS AND LOCAL CONTROLLERS AS SHOWN IN THE PLANS. THE PREEMPTION SHALL CONFORM TO ODOT SPECIFICATION 633 AND SHALL UTILIZE COMMUNICATIONS TO IDENTIFY THE PRESENCE OF AN EMERGENCY PRIORITY VEHICLE. IT SHALL CAUSE THE TRAFFIC SIGNAL CONTROLLER TO SELECT A PRE-PROGRAMMED PREEMPTION PLAN THAT WILL DISPLAY AND HOLD THE DESIRED SIGNAL PHASE FOR THE DIRECTION OF THE EMERGENCY VEHICLE.

THE PREEMPTION SYSTEM SHALL BE MODEL SONEM 2000 AS MANUFACTURED BY TRAFFIC SYSTEMS, LLC, SCOTTSDALE, ARIZONA

THE COMMUNICATIONS MEDIUM SHALL EMPLOY SIREN ACTIVATED DETECTION TECHNIQUES TO DETERMINE AND LOG THE PRESENCE OF THE EMERGENCY VEHICLE. THE SYSTEM SHALL DETECT THE PRESENCE OF THE VEHICLE THROUGH A SIREN LOCATED ON THE EMERGENCY VEHICLE. THE SYSTEM SHALL ACTIVATE THE PREEMPTION SEQUENCE BY APPLYING A SIGNAL TO ONE OF THE CONTROLLER'S PREEMPT DISCRETE INPUTS. THE SYSTEM SHALL BE COMPLETELY COMPATIBLE WITH THE NEMA SPECIFIED CONTROLLER.

THE EQUIPMENT SHALL BE RACK-MOUNTED, BE EASILY REMOVABLE AND REPLACEABLE WITHIN THE CABINET WITHOUT THE USE OF HARNESSSES OR PLUG-IN STYLE CONNECTORS. THE EQUIPMENT SHALL BE SUPPLIED COMPLETELY WIRED IN THE CONTROLLER CABINET AND TESTED.

THE SYSTEM SHALL BE CAPABLE OF PREEMPTING AND RECEIVING PRIORITY FOR EACH APPROACH TO THE INTERSECTION. IT SHALL BE POSSIBLE TO DETECT THE EMERGENCY VEHICLE UP TO 1200 FEET FROM THE INTERSECTION. THE SUPPLIER SHALL CERTIFY IN WRITING THAT NO FALSE DETECTION CAN OCCUR.

EACH INTERSECTION SHOWN IN THE PLANS SHALL BE SUPPLIED WITH THE FOLLOWING COMPONENTS, EACH BID SEPARATELY:

1. PREEMPTION RECEIVING UNIT
2. PREEMPT DETECTOR CABLE
3. PREEMPT PHASE SELECTOR ASSEMBLY AND INTERFACE WIRING PANEL
4. PREEMPT CONFIRMATION LIGHT

THE EQUIPMENT SHALL BE RACK-MOUNTED, BE EASILY REMOVABLE AND REPLACEABLE WITHIN THE CABINET WITHOUT THE USE OF HARNESSSES OR PLUG-IN STYLE CONNECTORS. THE EQUIPMENT SHALL BE SUPPLIED COMPLETELY WIRED IN THE CONTROLLER CABINET AND TESTED.

THE SYSTEM SHALL BE CAPABLE OF PREEMPTING AND RECEIVING PRIORITY FOR EACH APPROACH TO THE INTERSECTION. IT SHALL BE POSSIBLE TO DETECT THE EMERGENCY VEHICLE UP TO 1200 FEET FROM THE INTERSECTION. THE SUPPLIER SHALL CERTIFY IN WRITING THAT NO FALSE DETECTION CAN OCCUR.

EACH INTERSECTION SHOWN IN THE PLANS SHALL BE SUPPLIED WITH THE FOLLOWING COMPONENTS, EACH BID SEPARATE

THE PREEMPTION RECEIVING UNITS SHALL CONSIST OF FURNISHING AND INSTALLING A LIGHTWEIGHT, WEATHERPROOF AND DIRECTIONAL ASSEMBLY. EACH RECEIVING UNIT SHALL BE 360 DEGREE ADJUSTABLE. THE RECEIVING UNIT SHALL BE CAPABLE OF SENDING THE PROPER ELECTRICAL SIGNAL TO THE TRAFFIC SIGNAL CONTROLLER VIA THE PREEMPTION DETECTOR HOME RUN CABLE. DETECTORS SHALL BE SUPPLIED WITH BRACKET ARM MOUNTING HARDWARE. THE DETECTORS WILL FACE OUTBOUND (TO MINIMIZE FALSE CALLS FROM TURNING EMERGENCY VEHICLES) MOUNTED AS TO POINT DOWN THE CENTER OF ROADWAY. AT TEE INTERSECTIONS, THE LOCATION OF THE DETECTORS MAY BE MOUNTED INBOUND.

THE CONTRACTOR SHALL THOROUGHLY TEST THE INSTALLED SYSTEM. AS A MINIMUM, THE CONTRACTOR SHALL VERIFY THAT ALL CONNECTIONS ARE PROPERLY MADE TO THE CONTROLLER CABINETS. THE CONTRACTOR SHALL CHECK THAT THE RANGE SETTING IS PROPER FOR EACH APPROACH. THE CONTRACTOR SHALL DETERMINE THAT ALL PHASE SELECTORS ARE SELECTING THE PROPER PHASE AND TIMING ACCURATELY. THE CONTRACTOR SHALL VERIFY THAT ALL VEHICLE EMITTERS ARE BEING PROPERLY DETECTED.

ALL CABLES, CONNECTORS, TERMINALS, AND INTERFACE RACKS TO PROVIDE A COMPLETE PRIORITY CONTROL SYSTEM SHALL BE INCIDENTAL TO THIS ITEM. PAYMENT SHALL BE MADE AT THE CONTRACT UNIT PRICE FOR EACH "ITEM 633 – PREEMPTION, AS PER PLAN", IN PLACE AND FULLY OPERATIONAL AS SHOWN IN THE PLANS, EXCEPT FOR THOSE ITEMS BID SEPARATELY.

DESIGNER NOTE: NOTE T-0390 SHALL BE USED ON ALL CITY OF AVON TRAFFIC SIGNAL CONSTRUCTION PROJECTS WHERE A NEW CONTROLLER UNIT IS REQUIRED OR IF AN EXISTING EMERGENCY VEHICLE PREEMPT SYSTEM IS BEING REPLACED.

T-0400 ITEM 633 – PREEMPT CONFIRMATION LIGHT, LED, AS PER PLAN
THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING PREEMPT CONFIRMATION LIGHT INCLUDING HARDWARE AND ALL OTHER ACCESSORIES THAT ARE NECESSARY TO MAKE THE PREEMPT CONFIRMATION LIGHT COMPLETELY FUNCTIONAL AND OPERATIONAL AS SHOWN IN THE PLANS.

A CONFIRMATION LIGHT SHALL BE SUPPLIED FOR EACH INTERSECTION TO INDICATE THAT THE EMERGENCY VEHICLE HAS ACHIEVED CONTROL OF THE TRAFFIC SIGNAL.

THE CONFIRMATION LIGHT SHALL BE A VAPOR TIGHT, ALUMINUM LIGHTING FIXTURE WITH A BAKED-ON EPOXY FINISH, BLUE LED CLUSTER LIGHT OUTPUT, AND STAINLESS-STEEL MOUNTING HARDWARE TO ATTACH TO THE TRAFFIC SIGNAL MAST ARM. THE CONFIRMATION LIGHT SHALL BE POWERED BY A LOAD SWITCH IN THE TRAFFIC SIGNAL CONTROLLER CABINET DEDICATED TO FOR THAT PURPOSE. SIGNAL CABLE CONFORMING TO 732.19 SHALL BE USED FOR CONFIRMATION LIGHTS. A MINIMUM OF 4-CONDUCTOR CABLE SHALL BE USED WITH THE GREEN WIRE SERVING AS THE SAFETY GROUND CONDUCTOR.

THE CONTROLLER SHALL BE PROGRAMMED TO FLASH THE CONFIRMATION LIGHT IN THE DIRECTION OF THE EMERGENCY VEHICLE. ALL OTHER CONFIRMATION LIGHTS SHALL BE STEADY ON.

THE CONFIRMATION LIGHT SHALL BE A MODEL 7100 SERIES MANUFACTURED BY TOMAR ELECTRONICS, GILBERT, ARIZONA OR PRE-APPROVED EQUAL.

PAYMENT FOR "ITEM 633 – PREEMPT CONFIRMATION LIGHT, LED, AS PER PLAN" SHALL BE MADE AT THE CONTRACT UNIT PRICE FOR EACH LIGHT IN PLACE, COMPLETELY INSTALLED IN THE LOCATION SHOWN IN THE PLANS, WIRED, TESTED AND ACCEPTED. LOAD SWITCH, CONTROLLER WIRING AND CONTROLLER PROGRAMMING SHALL BE CONSIDERED INCIDENTAL AND INCLUDED IN THE COST OF THE PREEMPT CONFIRMATION LIGHT.

DESIGNER NOTE: NOTE T-0400 SHALL BE USED ON ALL CITY OF AVON TRAFFIC SIGNAL CONSTRUCTION PROJECTS WHERE A NEW CONTROLLER UNIT IS REQUIRED OR IF AN EXISTING EMERGENCY VEHICLE PREEMPT SYSTEM IS BEING REPLACED.

T-0410 ITEM 633 – PREEMPTION RECEIVING UNIT, AS PER PLAN
RECEIVING UNITS SHALL CONSIST OF LIGHT WEIGHT, WEATHERPROOF AND DIRECTIONAL ASSEMBLY. EACH RECEIVING UNIT SHALL BE 360 DEGREE ADJUSTABLE. THE RECEIVING UNIT SHALL BE CAPABLE OF SENDING THE PROPER ELECTRICAL SIGNAL TO THE TRAFFIC SIGNAL CONTROLLER VIA THE PREEMPTION DETECTOR CABLE. RECEIVING UNITS SHALL BE SUPPLIED WITH MAST ARM MOUNTING HARDWARE AS SHOWN IN THE PLANS.

INSTALL THE DETECTORS AT THE LOCATIONS RECOMMENDED BY THE PREEMPT DETECTOR SUPPLIER. FOR MAST ARM MOUNTED LOCATIONS, MOUNT THE PREEMPT DETECTORS BY FIELD DRILLING A WIRE ENTRANCE HOLE IN THE MAST ARM. PROVIDE AND INSTALL A RUBBER GROMMET FOR THE WIRE ENTRANCE HOLE.

FURNISH PREEMPTION RECEIVING UNITS WITH 60-MONTH WARRANTIES OR FOR THE MANUFACTURER'S STANDARD WARRANTY WHICHEVER IS GREATER. ENSURE THE WARRANTY PERIOD BEGINS ON THE DATE OF SHIPMENT TO THE PROJECT. ENSURE THAT EACH UNIT HAS A PERMANENT LABEL OR STAMP INDICATING THE DATE OF SHIPMENT.

FURNISH SONEM MODEL PREEMPTION RECEIVING UNITS, AS MANUFACTURED BY TRAFFIC SYSTEMS, LLC, SCOTTSDALE, ARIZONA.

PAYMENT FOR ACCEPTED QUANTITIES OF "ITEM 633 – PREEMPTION RECEIVING UNIT, AS PER PLAN" SHALL BE AT THE CONTRACT UNIT PRICE FOR EACH RECEIVING UNIT IN PLACE, COMPLETELY INSTALLED AT THE LOCATIONS SHOWN IN THE PLANS, WIRED, TESTED AND ACCEPTED. FIELD DRILLING OF THE MAST ARM FOR THE WIRE ENTRANCE HOLE AND GROMMET SHALL BE CONSIDERED INCIDENTAL TO AND INCLUDED IN THE COST OF THE RECEIVING UNIT.

DESIGNER NOTE: NOTE T-0410 SHALL BE USED ON ALL CITY OF AVON TRAFFIC SIGNAL CONSTRUCTION PROJECTS WHERE A NEW CONTROLLER UNIT IS REQUIRED OR IF AN EXISTING EMERGENCY VEHICLE PREEMPT SYSTEM IS BEING REPLACED.

T-0420 ITEM 633 – PREEMPT PHASE SELECTOR, AS PER PLAN
THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING PREEMPT PHASE SELECTORS, INCLUDING WIRING INTERFACE PANELS IN THE LOCAL CONTROLLER CABINET, AND ALL OTHER ACCESSORIES THAT ARE NECESSARY TO MAKE THE PREEMPT PHASE SELECTORS COMPLETELY FUNCTIONAL AND OPERATIONAL AS SHOWN IN THE PLANS. THIS ITEM SHALL INCLUDE THE EXTRA CABINET SPACE NECESSARY TO BE LOCATED IN THE LOCAL CONTROLLER CABINETS WHERE INDICATED IN THE PLANS.

THE PHASE SELECTORS SHALL CONSIST OF A MODULE OR MODULES THAT WILL PROVIDE THE NECESSARY INPUTS TO THE CONTROLLER. PHASE SELECTORS SHALL BE SUPPLIED WITH SUFFICIENT QUANTITIES OF CHANNELS TO PROVIDE PREEMPTION FOR ALL APPROACHES TO THE INTERSECTION SEPARATELY. POWER SHALL BE OBTAINED FROM THE PHASE SELECTOR OR PHASE SELECTOR POWER SUPPLY AND NOT FROM THE LOCAL CONTROLLER TIMER.

THE PHASE SELECTORS SHALL HAVE FRONT PANEL INDICATORS FOR ACTIVE PREEMPT CHANNEL STATUS. IT SHALL HAVE TEST SWITCHES TO ACTIVATE ALL PREEMPT CHANNELS.

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FURNISH PREEMPT PHASE SELECTORS WITH 60-MONTH WARRANTIES OR FOR THE MANUFACTURER'S STANDARD WARRANTY WHICHEVER IS GREATER. ENSURE THE WARRANTY PERIOD BEGINS ON THE DATE OF SHIPMENT TO THE PROJECT. ENSURE THAT EACH UNIT HAS A PERMANENT LABEL OR STAMP INDICATING THE DATE OF SHIPMENT.

FURNISH SONEM MODEL PREEMPT PHASE SELECTORS, AS MANUFACTURED BY TRAFFIC SYSTEMS, LLC, SCOTTSDALE, ARIZONA.

PAYMENT FOR "ITEM 633 – PREEMPT PHASE SELECTOR, AS PER PLAN" SHALL BE MADE AT THE CONTRACT UNIT PRICE FOR EACH PHASE SELECTOR IN PLACE, COMPLETELY INSTALLED IN THE LOCAL CONTROLLER SHOWN IN THE PLANS, WIRED, TESTED AND ACCEPTED.

DESIGNER NOTE: NOTE T-0420 SHALL BE USED ON ALL CITY OF AVON TRAFFIC SIGNAL CONSTRUCTION PROJECTS WHERE A NEW CONTROLLER UNIT IS REQUIRED OR IF AN EXISTING EMERGENCY VEHICLE PREEMPT SYSTEM IS BEING REPLACED.

T-0430 ITEM 633 – PREEMPT DETECTOR CABLE, AS PER PLAN
THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING PREEMPT DETECTOR HOME RUN CABLE IN THE LOCATIONS SHOWN IN THE PLANS. IT SHALL CONNECT THE PREEMPT RECEIVING UNITS TO THE PHASE SELECTORS IN THE LOCAL CONTROLLER CABINET.

PREEMPT DETECTOR CABLE SHALL CONFORM TO ODOT SPECIFICATION 632. ONLY ONE EXTERNAL SPLICE SHALL BE PERMITTED BETWEEN PREEMPTION RECEIVER UNIT AND THE CONTROLLER CABINET. THIS SPLICE SHALL MEET THE REQUIREMENTS OF THE ODOT CONSTRUCTION AND MATERIALS SPECIFICATIONS (C&MS) 632.23 USING A WATERPROOF EPOXY SPLICE KIT. THE CABLE SHALL BE APPROVED FOR BOTH OVERHEAD AND UNDERGROUND USE. THE JACKET SHALL WITHSTAND EXPOSURE TO SUNLIGHT AND ATMOSPHERIC TEMPERATURES AND STRESSES REASONABLY EXPECTED IN NORMAL INSTALLATIONS.

PAYMENT FOR QUANTITIES OF "ITEM 633 – PREEMPT DETECTOR CABLE, AS PER PLAN" SHALL BE MADE AT THE CONTRACT UNIT PRICE BID PER FOOT FOR THE CABLE FURNISHED, IN PLACE, ALL CONNECTIONS MADE AND WIRING COMPLETED, TESTED AND ACCEPTED.

DESIGNER NOTE: NOTE T-0430 SHALL BE USED ON ALL CITY OF AVON TRAFFIC SIGNAL CONSTRUCTION PROJECTS WHERE A NEW CONTROLLER UNIT IS REQUIRED OR IF AN EXISTING EMERGENCY VEHICLE PREEMPT SYSTEM IS BEING REPLACED.

T-0440 ITEM 809 – ITS DEVICE, MISC.: UNIVERSAL TRAFFIC MANAGEMENT RADAR VEHICLE DETECTION SYSTEM
THIS ITEM OF WORK SHALL CONSIST OF FURNISHING AND INSTALLING A UNIVERSAL TRAFFIC MANAGEMENT RADAR VEHICLE DETECTION SYSTEM CAPABLE OF INTERSECTION ADVANCE DETECTION AND STOP BAR PRESENCE DETECTION UTILIZING ABOVE GROUND DIGITAL RADAR DETECTION TECHNIQUES. THE UNIVERSAL TRAFFIC MANAGEMENT RADAR VEHICLE DETECTION SYSTEM SHALL BE A MODEL ACCUSCAN 600C, AS MANUFACTURED BY ECONOLITE CORPORATION ANAHEIM, CALIFORNIA.

THE SYSTEM SHALL BE NON-INTRUSIVE AND SHALL DETECT VEHICLES UP TO 8 LANES WIDE AT THE STOP BAR AND SIMULTANEOUSLY DETECT VEHICLES UP TO 160 METERS (500 FEET) FROM THE SENSOR. THE SYSTEM SHALL DETECT INDIVIDUAL VEHICLE PRESENCE, SPEED, WRONG WAY, QUEUE LENGTH AS WELL AS USER DEFINED CUSTOM APPLICATIONS. THE SYSTEM SHALL TRACK AND CLASSIFY UP TO 256 OBJECTS SIMULTANEOUSLY (OBJECTS INCLUDE TRUCKS, VEHICLES, BICYCLES AND PEDESTRIANS) WITHIN THE RANGE OF THE SENSOR. ONE OR MORE SENSORS AS REQUIRED TO ACHIEVE THE DETECTION OBJECTIVE AS SHOWN IN THE PLANS SHALL BE PROVIDED PER APPROACH, COVERING MULTIPLE LANES WHERE STOP BAR AND ADVANCE DETECTION IS REQUIRED. THE DETECTION SYSTEM SHALL INCLUDE THE FOLLOWING FEATURES AND CAPABILITIES:

THE RADAR SENSING UNIT (600C) SHALL OPERATE IN THE 24.0 TO 24.5 GHZ (K-BAND) AND SHALL PROVIDE ACCURATE PRESENCE-DETECTION OF STOPPED, MOVING OR A CLUSTER OF VEHICLES. THE SENSOR SHALL BE MOUNTED IN A FORWARD-FIRE POSITION, LOOKING AT EITHER APPROACHING OR DEPARTING TRAFFIC AND SHALL ONLY DETECT VEHICLES IN ONE DIRECTION OF TRAVEL BY LANE. IT SHALL MAINTAIN ACCURATE PERFORMANCE IN ALL WEATHER CONDITIONS INCLUDING RAIN, FREEZING, RAIN, SNOW, WIND, DUST, FOG, CHANGES IN TEMPERATURE, OR CHANGES IN LIGHTING AND SHALL BE TESTED TO MEET NEMA TS2 ENVIRONMENTAL STANDARDS.

THE SYSTEM SHALL TRACK ALL VEHICLES BY LANE AS THEY APPROACH THE SENSOR.

THE SYSTEM SHALL INCLUDE A SIMPLE SETUP ROUTINE TO CONFIGURE AND CALIBRATE THE SENSOR FOR PROPER OPERATION DURING INSTALLATION. THE SENSOR SHALL BE CAPABLE OF BEING PROGRAMMED AND UPDATED FROM A LAPTOP COMPUTER OR OTHER PORTABLE PROGRAMMING DEVICE. SOFTWARE SHALL BE PROVIDED. THE SOFTWARE SHALL SUPPORT TCP/IP CONNECTIVITY, UNIT CONFIGURATION, BACK-UP AND RESTORE AND VIRTUAL SENSOR CONNECTIONS. THE GRAPHICAL USER INTERFACE SHALL OPERATE ON A WINDOWS PLATFORM.

THE SENSOR SHALL BE MOUNTED DIRECTLY TO A POLE OR MAST ARM AS RECOMMENDED BY THE MANUFACTURER. CABLE SHALL BE PROVIDED AS REQUIRED AND RECOMMENDED BY THE MANUFACTURER.

SURGE PROTECTION DEVICES AS RECOMMENDED BY THE MANUFACTURER SHALL BE INCLUDED BOTH AT THE POLE WHERE THE SENSOR IS LOCATED TO PROTECT THE SENSOR AND IN THE TRAFFIC CABINET TO PROTECT THE CABINET ELECTRONICS.

POWER SHALL BE PROVIDED FROM THE TRAFFIC CABINET. THE SENSOR SHALL CONSUME LESS THAN 10 WATTS AND OPERATE FROM A DC INPUT BETWEEN 12VDC AND 28VDC. COMPLETE AND AUTOMATIC RECOVERY FROM A POWER FAILURE SHALL BE WITHIN 15 SECONDS AFTER RESUMPTION OF NORMAL POWER.

THE TRAFFIC MANAGEMENT INTERFACE BOARD (TMIB2) SHALL CONNECT UP TO FOUR (4) 600C RADAR SENSORS IN A SINGLE RACK MOUNT PLUG-IN ASSEMBLY. THE ASSEMBLY SHALL CONTAIN ALL SURGE AND OVER-VOLTAGE PROTECTION CIRCUITRY FOR FOUR (4) LONG CABLE RUNS. THE TMIB2 SHALL PROVIDE FULL NEMA TS2 SDLC INTERFACE TO THE TRAFFIC CONTROLLER AND PROVIDE UP TO 64 PROGRAMMABLE DETECTION ZONES. A SINGLE FIELD TERMINATION PANEL SHALL BE PROVIDED THAT INTERFACES UP TO FOUR (4) 600C SENSORS TO THE TMIB2 VIA INDUSTRY STANDARD PLUG-IN CAT6 CABLES. THE FIELD TERMINATION PANEL SHALL CONTAIN A SEPARATE AND ISOLATED POWER SUPPLY TO PROVIDE THE APPROPRIATE POWER TO EACH 600C SENSOR.

ALL MAJOR RADAR SYSTEM COMPONENTS, INCLUDING THE 600C SENSOR, TMIB2 INTERFACE AND SYSTEM SOFTWARE SHALL BE FROM THE SAME MANUFACTURER.

THE MANUFACTURER'S REPRESENTATIVE SHALL PROVIDE A SIX (6) HOUR TRAINING COURSE ON THE SETUP, OPERATION AND MAINTENANCE OF THE SYSTEM.

THE DETECTOR SHALL BE LOCATED AND MOUNTED IN ACCORDANCE WITH MANUFACTURE SPECIFICATIONS AND/OR RECOMMENDATIONS.

PAYMENT FOR "ITEM 809 – ITS DEVICE, MISC.: UNIVERSAL TRAFFIC MANAGEMENT RADAR VEHICLE DETECTION SYSTEM" SHALL BE MADE AT THE CONTRACT UNIT PRICE FOR EACH, COMPLETE AND IN PLACE INCLUDING ALL REQUIRED PROGRAMMING, CABINET HARDWARE, MOUNTING BRACKETS, CABLES, CONNECTIONS TESTED AND ACCEPTED.

DESIGNER NOTE: NOTE T-0440 SHALL BE USED ON ALL CITY OF AVON TRAFFIC SIGNAL CONSTRUCTION PROJECTS WHERE RADAR DETECTION IS REQUIRED.

T-0450 ITEM 804 FIBER OPTIC CABLE MEDIA CONVERTER, ETHERNET, AS PER PLAN
IN ADDITION TO THE REQUIREMENTS OF THE ODOT SUPPLEMENTAL SPECIFICATION 804, THE FIBER OPTIC MEDIA CONVERTER SHALL BE AN ENVIRONMENTALLY HARDENED, MANAGED ETHERNET SWITCH MANUFACTURED BY COMNET, MODEL CNGE3FE7MS3. IT SHALL HAVE SEVEN (7) 10/100 BASE-TX AND THREE (3) 100/1000 FX COMBO PORTS.

THE ETHERNET SWITCH SHALL BE USED TO CONNECT THE CONTROLLER, MMU, UPS AND OTHER PERIPHERALS TO A FIBER OPTIC INTERCONNECT SYSTEM. SUFFICIENT CAT5/6 CABLES SHALL BE FURNISHED AND INSTALLED TO MAKE THE CONNECTIONS.

PAYMENT FOR "ITEM 804 – FIBER OPTIC CABLE MEDIA CONVERTER, ETHERNET, AS PER PLAN" SHALL BE MADE AT THE CONTRACT UNIT PRICE FOR EACH, COMPLETE AND IN PLACE INCLUDING ALL REQUIRED PROGRAMMING, MOUNTING BRACKETS, CABLES, CONNECTIONS TESTED AND ACCEPTED.

DESIGNER NOTE: NOTE T-0450 SHALL BE USED ON ALL CITY OF AVON TRAFFIC SIGNAL CONSTRUCTION PROJECTS WHERE FIBER OPTIC INTERCONNECT IS UTILIZED.

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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. 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. 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. 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. 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. 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. 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. 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. 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. 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. SIZE ON SIZE TAPPING SLEEVES WILL NOT BE PERMITTED.

17. TAPPING VALVE SHALL BE FLANGED OR MJ X MJ.

18. 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
& STANDARD | ADOPTION
ORDINANCE | DATE |
| STANDARD
CONSTRUCTION
DRAWING W-1 | | 2/2019 |
| | | SHEET
1 OF 2 |

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

19. 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.

20. THE CONTRACTOR IS RESPONSIBLE TO FACE ALL HYDRANT STEAMER STORZ TOWARD THE PAVEMENT, PRIOR TO TESTING AND CHLORINATION OF WATER MAINS.

21. 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.

22. 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.

23. 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.

24. 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.
25. 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.

26. BACKFILL MATERIAL SHALL BE PER THE TRENCH DETAIL ON W-2.

27. ALL WATER WORK REQUIRED WILL BE AT THE EXPENSE OF THE PROJECT AND SHALL CONFORM TO THE CITY OF AVON CONSTRUCTION DETAILS.

28. 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.

29. 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.

30. THE CONTRACTOR IS REQUIRED TO CONTACT THE CITY OF AVON UTILITIES DEPARTMENT PRIOR TO STARTING THE PROJECT.

31. 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.
32. A MINIMUM 10' HORIZONTAL DISTANCE SHALL BE MAINTAINED FROM EXISTING AND PROPOSED WATER AND SANITARY OR STORM SEWER.
33. A MINIMUM 18" VERTICAL DISTANCE SHALL BE MAINTAINED FROM EXISTING AND PROPOSED WATER AND SANITARY OR STORM SEWER.
34. BOOSTER PUMPS ARE NOT PERMITTED ON SERVICE CONNECTIONS.
35. 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

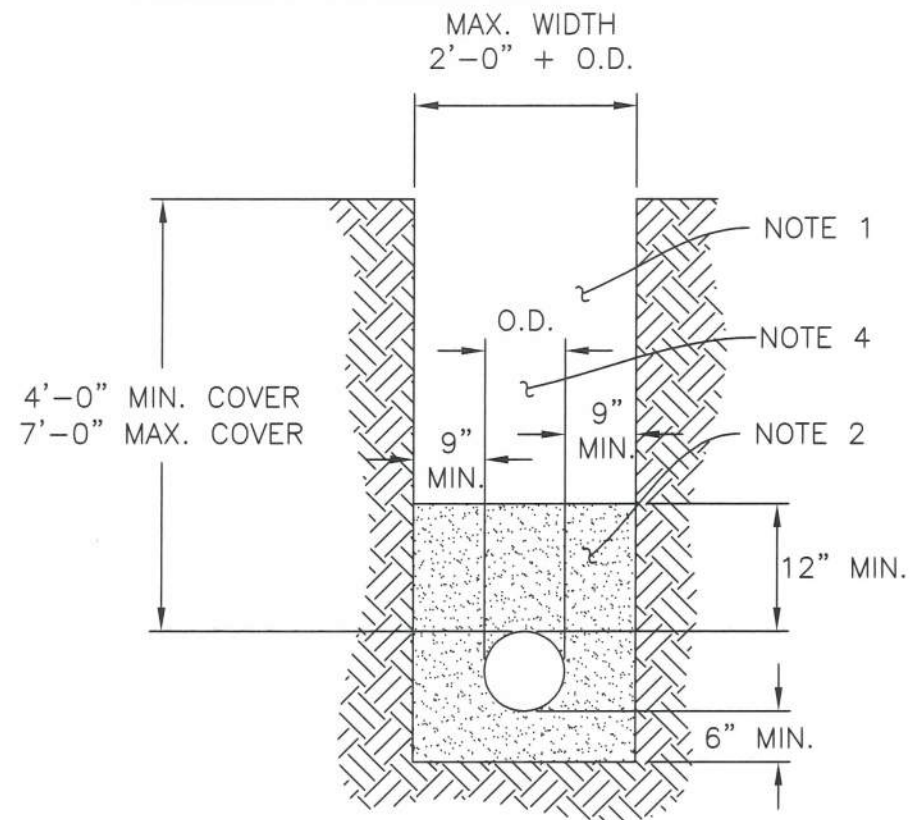
200 PSI: LENGTH X PIPE DIAMETER (IN) X 14.20 / 133,200
= GAL/HR ALLOWABLE LOSS X 2 = TOTAL ALLOWABLE LOSS
IN INCHES

TESTING IS TO BE AS FOLLOWS:

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

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

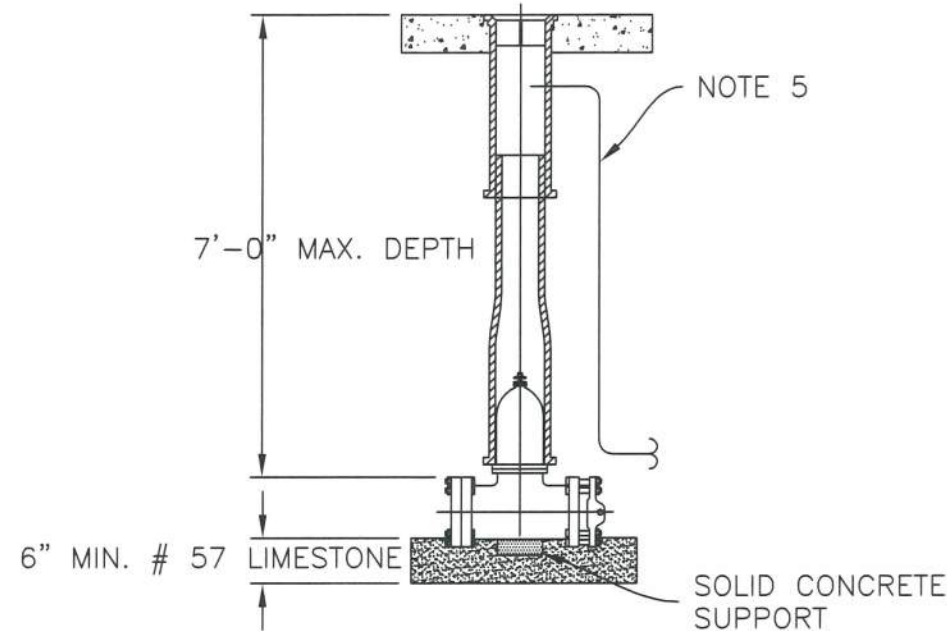
CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
WATER MAIN CONSTRUCTION NOTES & STANDARD	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING W-1		2/2019
		SHEET 2 OF 2



WATER MAIN TRENCH DETAIL

TRENCH NOTES:

1. BACKFILL SHALL BE PER G-6.
2. BEDDING AND PIPE COVER TO BE AGGREGATE NO. 8 WASHED LIMESTONE.
3. ANY WATER MAIN RELATED BORES REQUIRED SHALL CONFORM TO SHEET W-9, "PIPE BORE DETAIL".
4. DETECTABLE TRACER TAPE AND 2 TRACER WIRES OF DIFFERING COLORS 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/BUE 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 IN A SEPARATE BOX ADJACENT TO ALL VALVE BOXES.

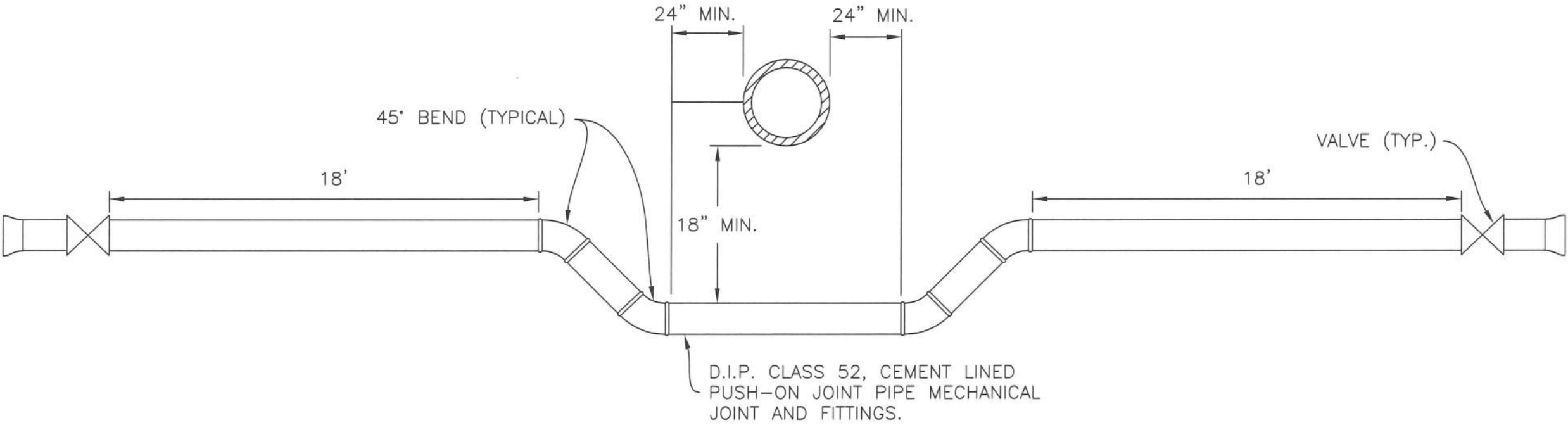


LINE VALVE DETAIL

LINE VALVE NOTES:

1. LINE VALVES SHALL HAVE STANDARD M.J. X M.J. ENDS.
2. VALVE PREFERRED MANUFACTURE MUELLER RESILIENT WEDGE A-2362 M.J. X M.J.
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. -THREADED TYPE.
5. TRACER WIRE SHALL BE INSTALLED THROUGH A SLOT IN THE VALVE BOX WHEN REQUIRED.
6. FIELD LOCK GASKETS SHALL BE PLACED 3 JOINTS PRIOR TO THE VALVE AND 3 JOINTS AFTER.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
WATER MAIN DETAILS	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING W-2		2/2019
		SHEET 1 OF 2



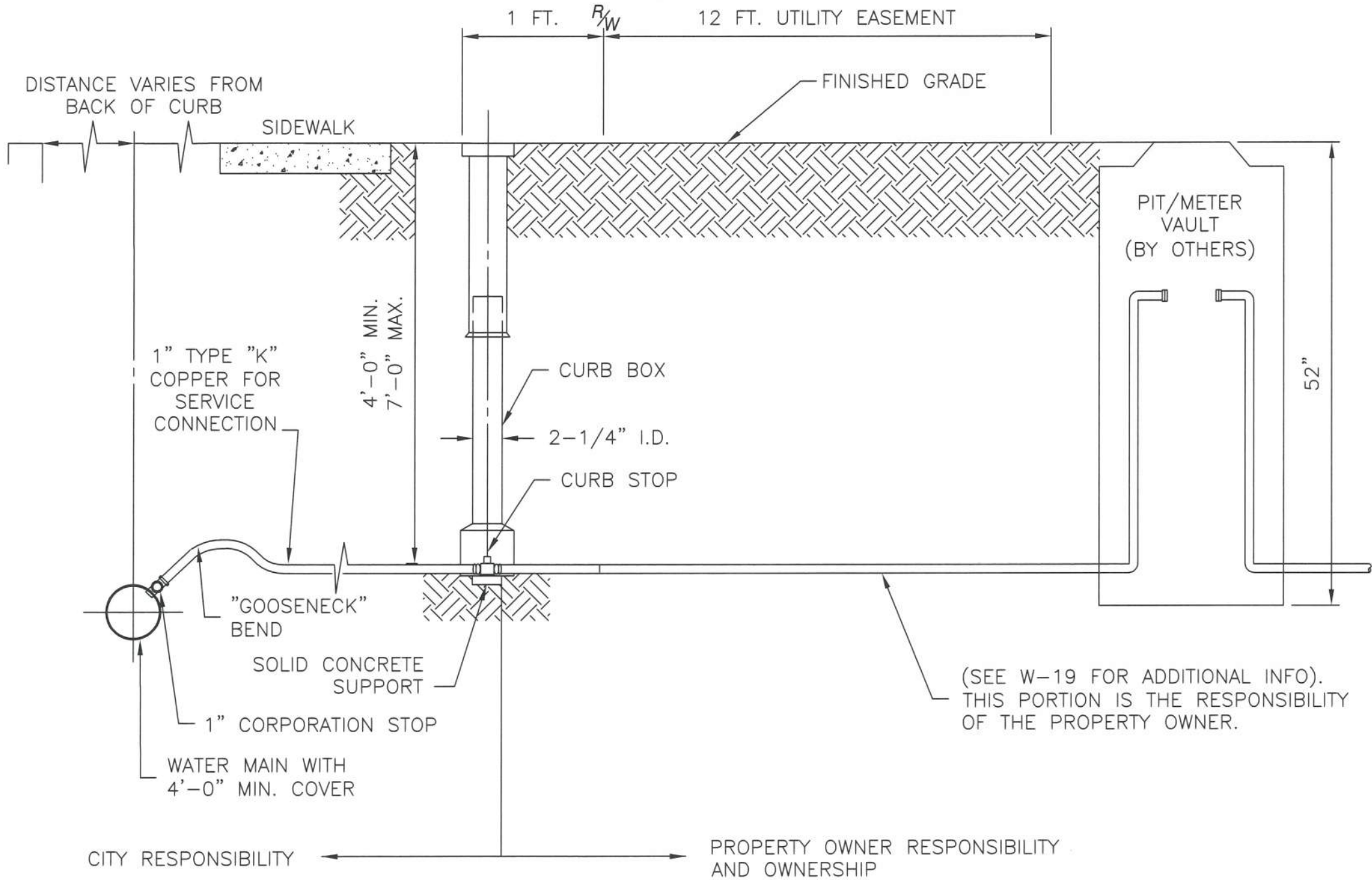
WATER MAIN LOWERING DETAIL

- 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 UNLESS APPROVED BY AVON UTILITIES.
- 3. VALVE REQUIREMENT MAY BE ELIMINATED AT THE UTILITY DEPARTMENT DISCRETION.
- 4. FIELD LOK GASKETS SHALL BE REQUIRED THROUGHOUT LOWERING AND THREE JOINTS BEFORE AND AFTER THE LOWERING.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
WATER MAIN DETAILS	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING W-2		2/2019
		SHEET 2 OF 2

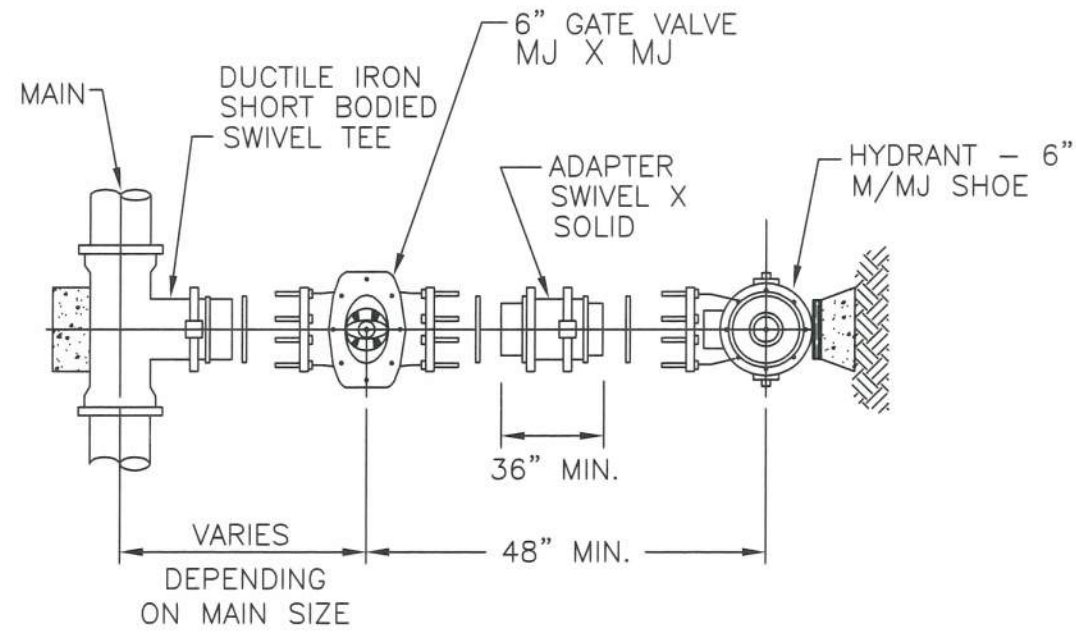
NOTES

- 1. CURB STOP: MUELLER #15200
CURB BOX & COVER: DOMESTIC SCREW TYPE 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. AN ISOLATION VALVE SHALL BE INSTALLED.
- 3. WHERE POSSIBLE, DO NOT INSTALL CURB BOX IN PAVEMENT, SIDEWALKS, DRIVEWAYS, OR APRONS.
- 4. CURB STOP & BOX ARE TO BE LOCATED ONE FOOT INSIDE THE RIGHT-OF-WAY BETWEEN THE SIDEWALK AND 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 WATER TAPS 1-1/2" TO 2" ARE TO BE SADDLE TAPS AS APPROVED BY THE CITY UTILITY DEPT. BRONZE OR STAINLESS STEEL SERVICE SADDLES SHALL BE REQUIRED WHEN TAPPING ANY DI WATER MAIN. MUELLER SADDLES H-13000 SERIES WILL BE REQUIRED WHEN TAPPING C909.
- 6. THE TAP SHALL BE THE SAME SIZE AS THE CONNECTION.
- 7. 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 JUST OUTSIDE THE UTILITY EASEMENT ON THE PROPERTY SIDE AS CLOSE TO THE RIGHT-OF-WAY AS POSSIBLE. PLACEMENT SHALL BE BY THE PROPERTY OWNER.
 - 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.
- 8. BOOSTER PUMPS ARE NOT PERMITTED ON SERVICE CONNECTIONS.
- 9. SERVICE CONNECTION SHALL BE ONE CONTINUOUS PIECE OF 1" PIPE FROM THE CURB STOP TO THE MAIN SHUT-OFF VALVE AT THE HOUSE. CONTRACTOR SHALL SLEEVE THE UTILITY EASEMENT WITH MINIMUM 2" PVC PIPE.

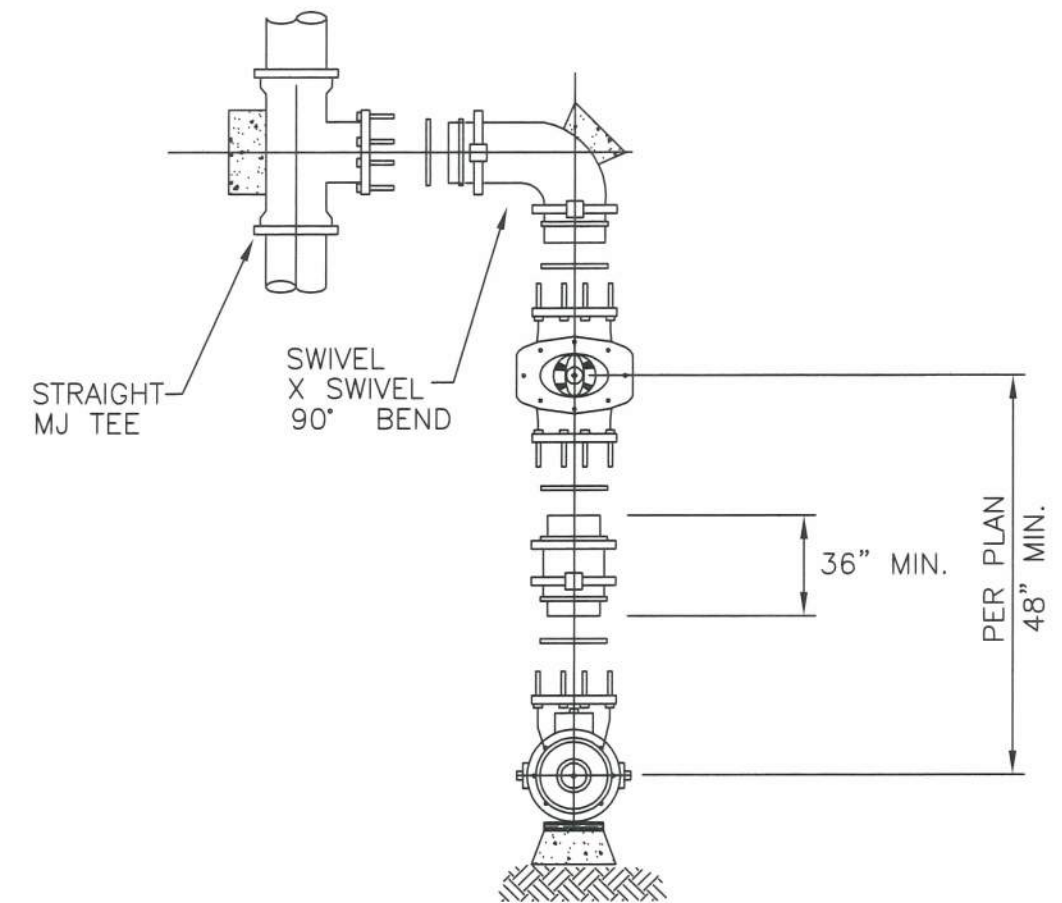


SERVICE CONNECTION DETAIL

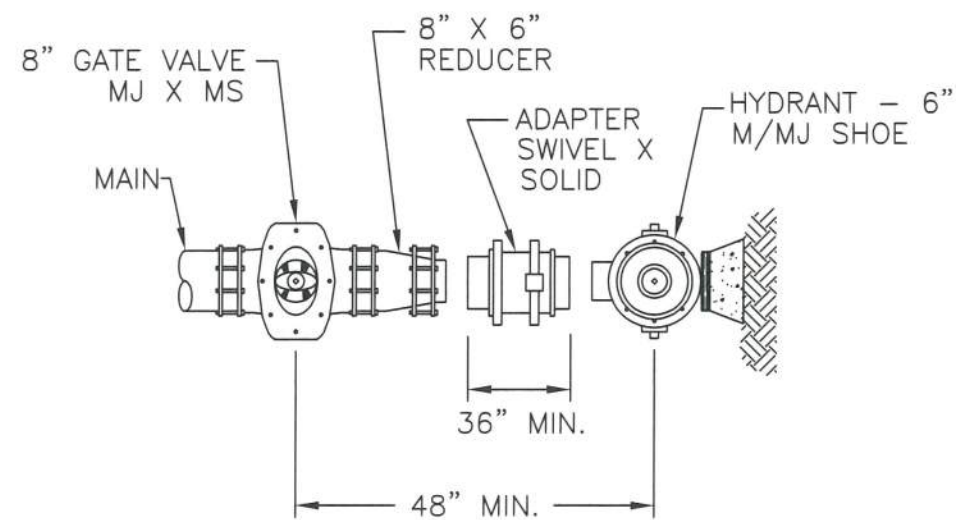
CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
CURB BOX & METER PIT DETAIL	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING W-3		2/2019



TYPE A PREFERRED



TYPE B
(WITH UTILITY DEPARTMENT APPROVAL)

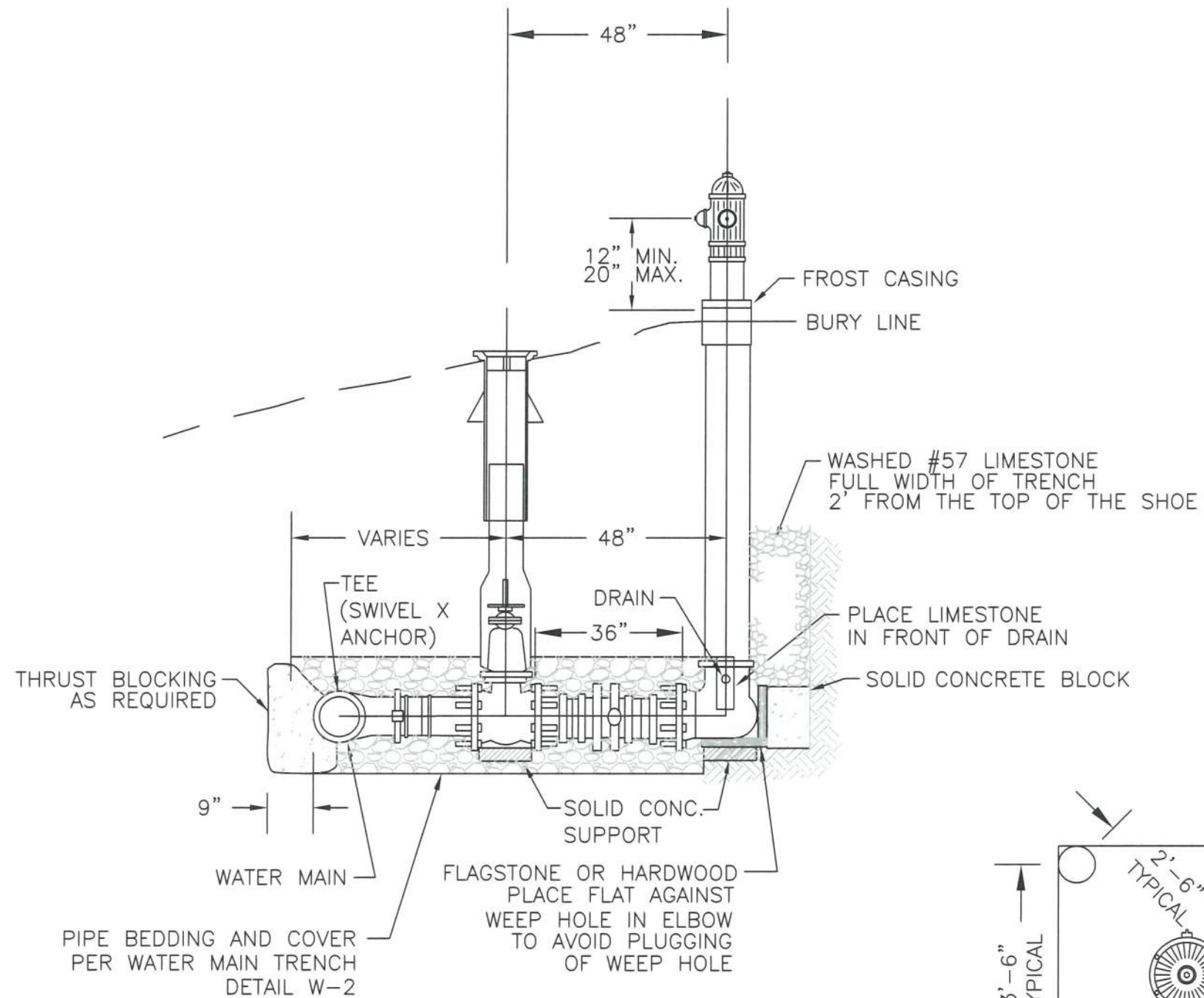


TYPE C
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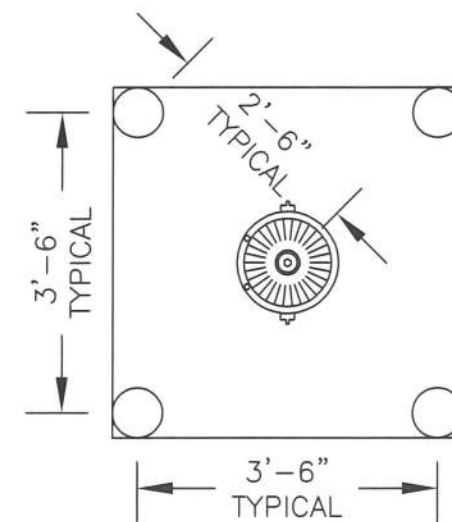
NOTE:

- 1.) TYPE B HYDRANT ASSEMBLY SHALL BE PLACED WITH THE DIRECTION OF TRAFFIC.
- 2.) THE PLACEMENT OF FIRE HYDRANTS SHALL BE AT 300 FEET INTERVALS, HOWEVER, IN NO CASE SHALL THEY BE SPACED GREATER THAN 350 FEET MEASURED IN A STRAIGHT LINE DISTANCE.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
FURNISHINGS & SETTINGS FOR 6" HYDRANT	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING W-4		2/2019



TYPE "A" SHOWN FOR REFERENCE ONLY

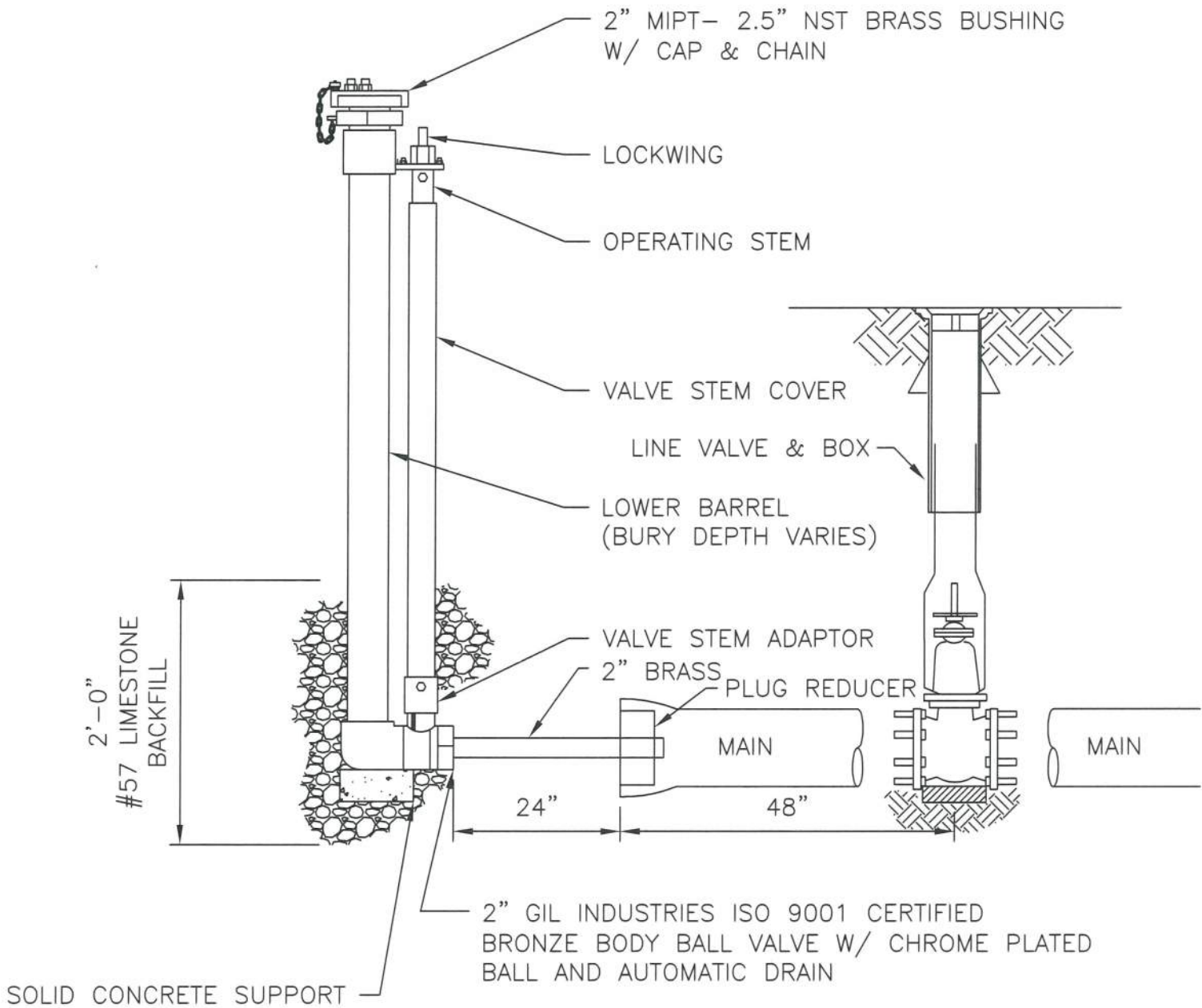


HYDRANT BOLLARD PROTECTION

CONSTRUCTION NOTES AND STANDARDS FOR FIRE HYDRANT INSTALLATIONS

1. ALL MECHANICAL JOINT FITTINGS SHALL BE MEGA LUG TYPE.
2. ALL BOLTS AND NUTS FURNISHED WITH MECHANICAL JOINTS OR RETAINED MECHANICAL JOINTS INCLUDING RETAINER OR WEDGE ACTION TYPE GLANDS SHALL BE STAINLESS STEEL.
3. WHERE HYDRANTS ARE PROVIDED IN A COMMERCIAL OR INDUSTRIAL PARKING FACILITY, A BOLLARD SURROUND SHALL BE PROVIDED TO PROTECT THE HYDRANT ASSEMBLY.
 - A. FOUR (4) BOLLARDS LOCATED 2'-6" C.C. FROM THE HYDRANT TO THE BOLLARD
 - B. BOLLARDS SHALL BE A MINIMUM 6" STEEL PIPE, FIVE (5) FEET IN HEIGHT WITH A 2'-6" BURY, CONCRETE FILLED, TOP DOMED AND PAINTED YELLOW.
 - C. THE HYDRANT VALVE SHALL BE LOCATED IN A MANNER SO AS NOT TO CONFLICT WITH THE OPERATION OF THE VALVE.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
TYPICAL HYDRANT & HYDRANT PROTECTION DETAILS	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING W-5		2/2019



SLIMLINE HYDRANT

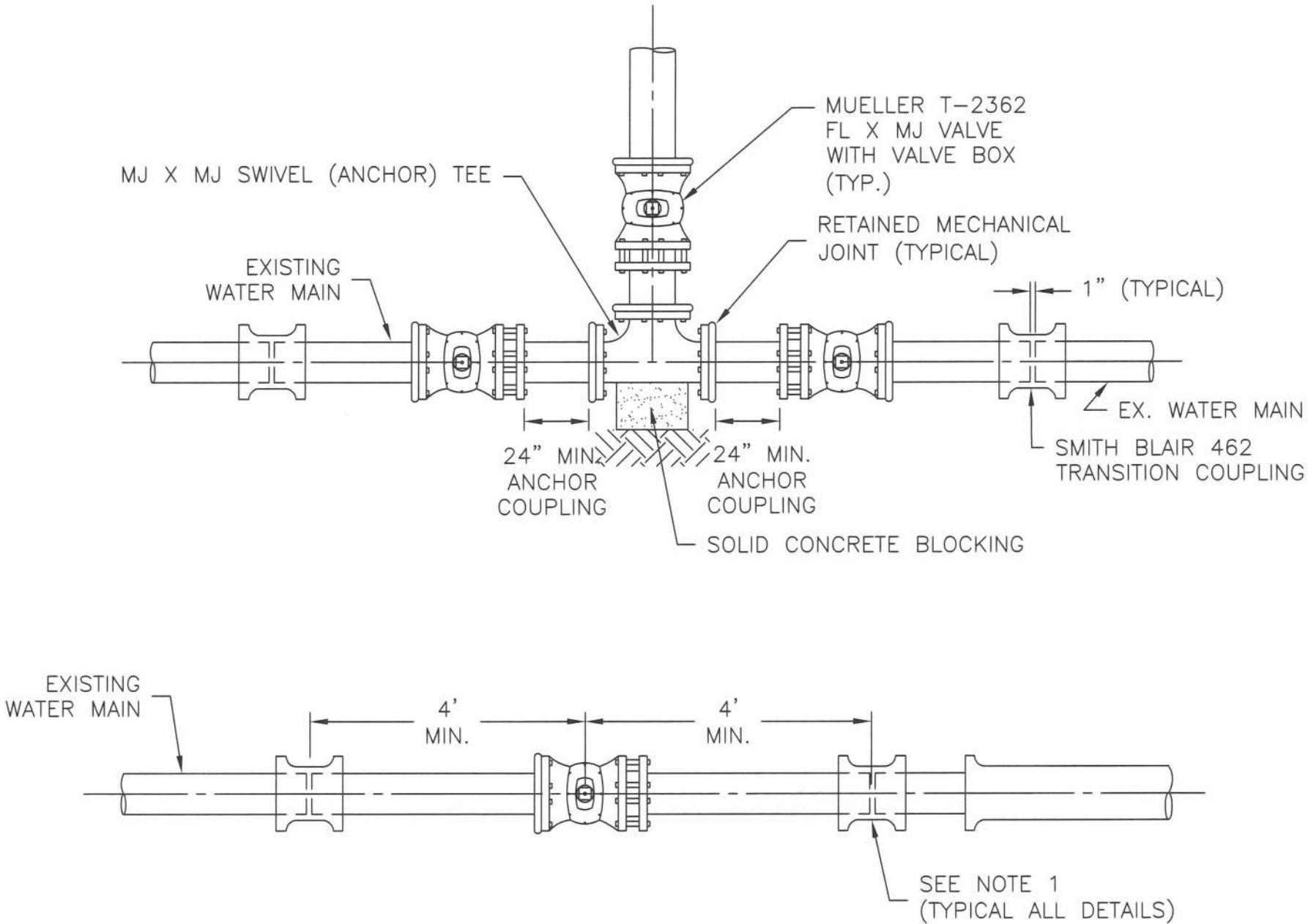
NOTES

1. FLUSHING HYDRANT SHALL BE AUTOMATIC FREEZE-PROOF DESIGN WITH WEEP HOLE INSTALLED WITHIN A 2" BALL VALVE. VALVE WILL BE 600 LBS. WOG BRONZE BODY WITH CHROME PLATED BRASS BALL AND TEFLON SEALS. BALL VALVE TO BE ISO 9001 CERTIFIED.
2. HYDRANT BARREL MUST BE OF BLACK IRON PIPE. EXTERIOR SHALL RECEIVE 4 MIL THICKNESS OF ELECTROSTATICALLY APPLIED SHERWIN-WILLIAMS FAST DRY ACRYLIC ENAMEL, CATALYZED WITH POLANE FOR DURABILITY. ALL HYDRANTS TO BE PAINTED BLUE. OVERALL LENGTH OF HYDRANT WILL VARY, ACCORDING TO THE DEPTHS OF WATER SYSTEMS. A BRASS HOSE CONNECTION, 2-1/2" NSFT WITH ATTACHED CAP & CHAIN, SHALL BE PROVIDED FOR CONVENIENCE IN FLUSHING.
3. OPERATING DEVICE TO BE OF KEY TYPE DESIGN, WITH PERMANENT ATTACHMENT TO THE VALVE STEM. VALVE STEM MUST BE FULL LENGTH OF THE HYDRANT BARREL WITH PERMANENT ATTACHMENT TO THE VALVE. HYDRANT MUST HAVE A PROVISION FOR LOCK UP TO PREVENT TAMPERING.
4. FLUSHING HYDRANT TO BE SLIMLINE HYDRANT AS MANUFACTURED BY GIL INDUSTRIES, INC., PENSACOLA, FLORIDA, OR APPROVED EQUAL.
5. BACKFILL SHALL BE #57 LIMESTONE FOR A DEPTH OF 2 FEET FROM BASE THROUGH TO THE BARREL.
6. REGARDLESS OF LENGTH / DIAMETER, 3 JOINTS FROM END SHALL BE "FIELD-LOCK GASKETS" FOR DI PIPE. PVC SHALL HAVE RESTRAINED MECHANICAL JOINTS.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
PERMANENT FLUSHING/BLOW-OFF ASSEMBLY DETAIL	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING	W-6	2/2019

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.

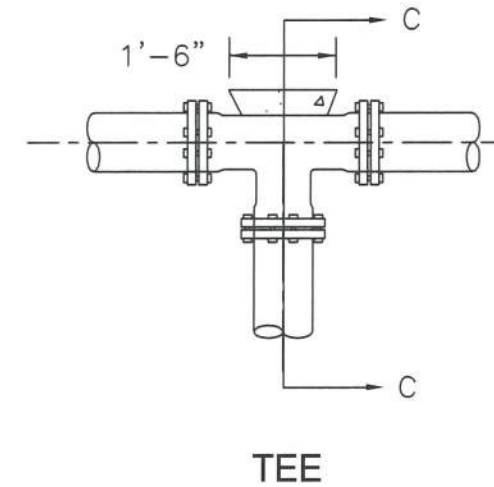
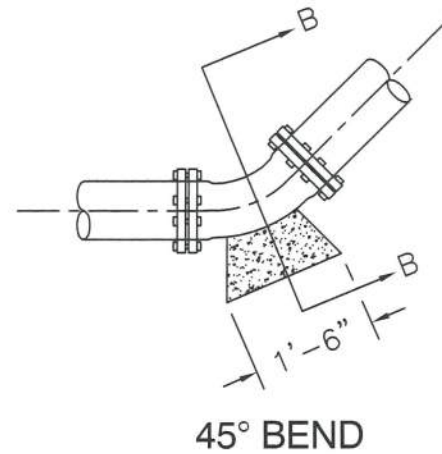
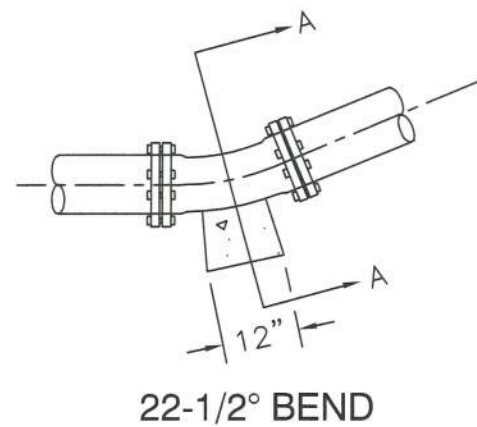


CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
CUT-IN TEE & SLEEVE-IN DETAIL	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING W-7		2/2019

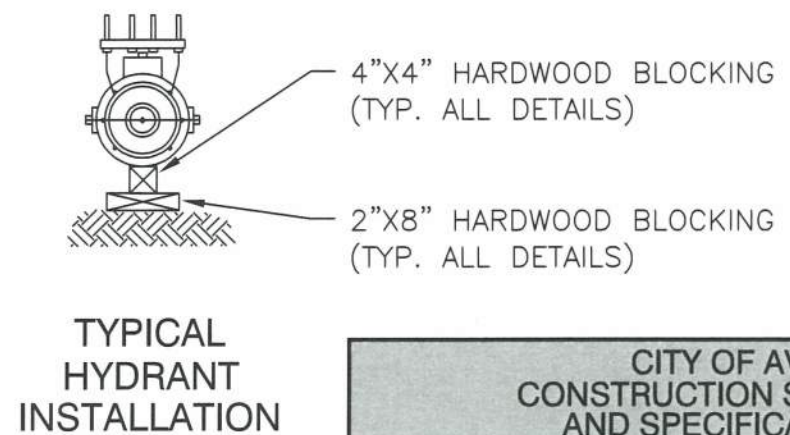
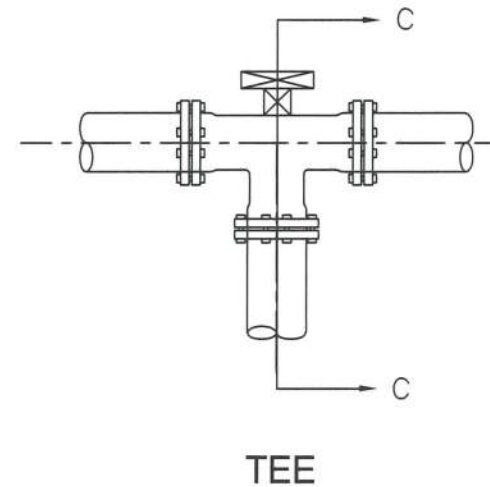
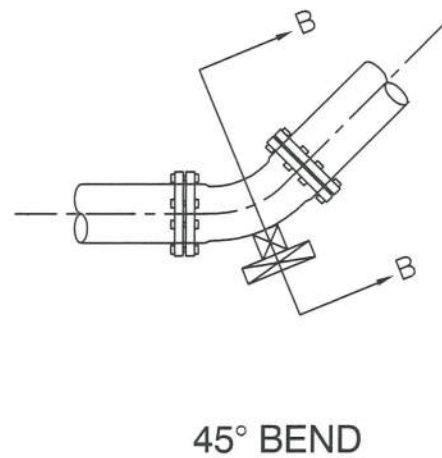
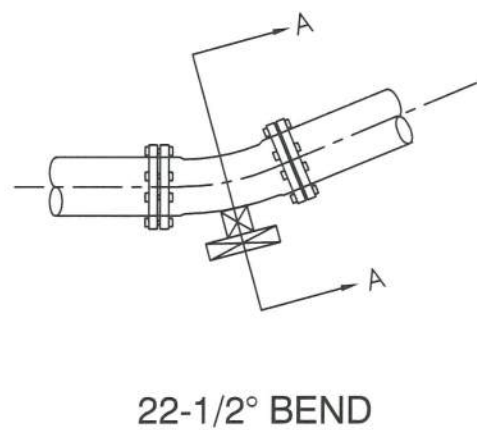
THRUST BLOCK NOTES:

- 1) D = PIPE DIAMETER.
- 2) ALL DIMENSIONS SHOWN ARE MINIMUM. THRUST BLOCKS SHALL BE POURED TO UNDISTURBED EARTH.
- 3) ALL CONCRETE FOR THRUST BLOCKS SHALL BE ODOT CLASS QC-1 HAVING A 4,000 PSI 28 DAY COMPRESSIVE STRENGTH. BAG MIX CONFORMING TO ODOT CLASS QC-1 MAY BE PERMITTED. HOWEVER, THE PLACEMENT OF DRY-MIX BAGS WITHOUT PRE-MIXING WILL NOT BE PERMITTED.
- 4) TAPPING SLEEVE ASSEMBLIES SHALL REQUIRE HARDWOOD BLOCKING ONLY.
- 5) DO NOT COVER BOLTS WITH CONCRETE.
- 6) USE FORMS WHEN POURING CONCRETE TO MAINTAIN SHAPE AND DIMENSIONS OF THRUST BLOCKS.
- 7) CONCRETE THRUST BLOCKS SHALL ONLY BE PERMITTED WITH THE APPROVAL OF THE UTILITIES DEPARTMENT.

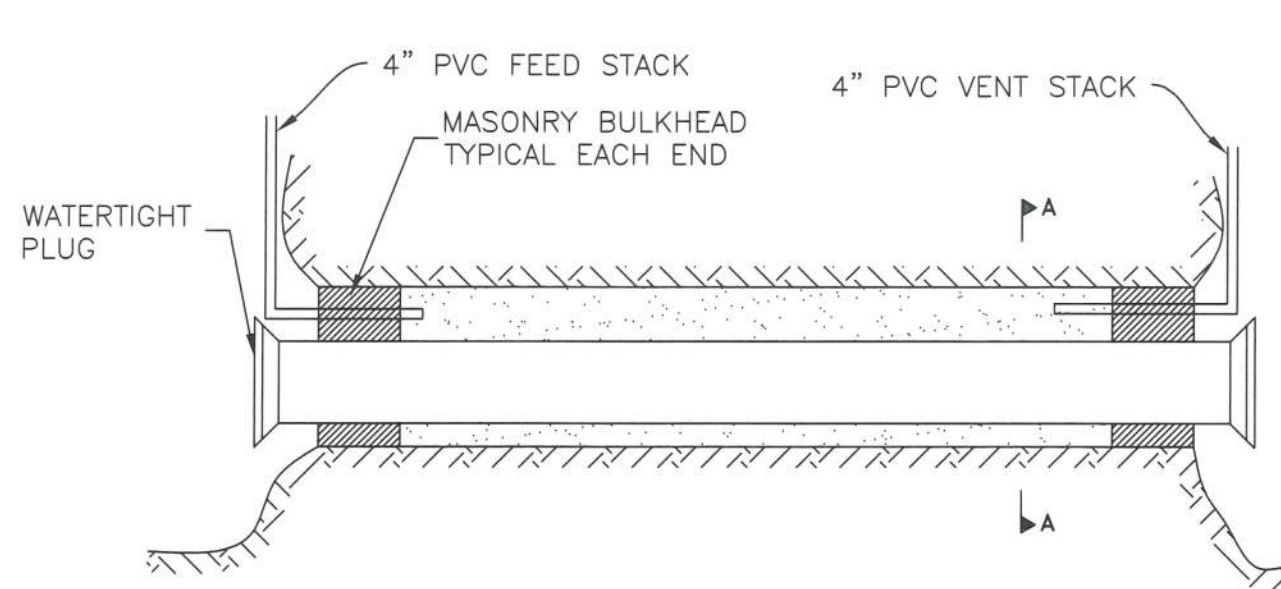
CONCRETE THRUST BLOCK DETAILS



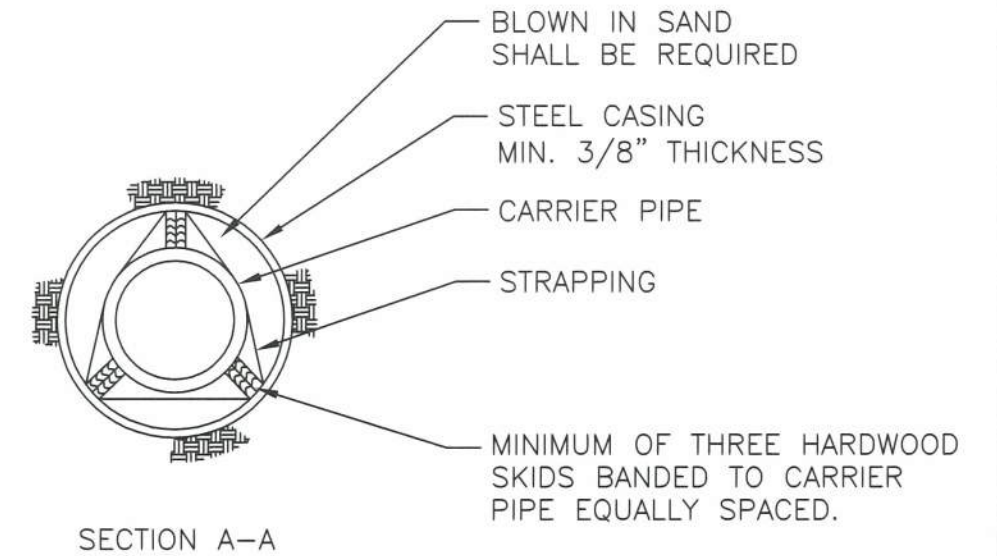
WOOD THRUST BLOCK DETAILS



CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
THRUST BLOCK DETAILS	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING	W-8	2/2019

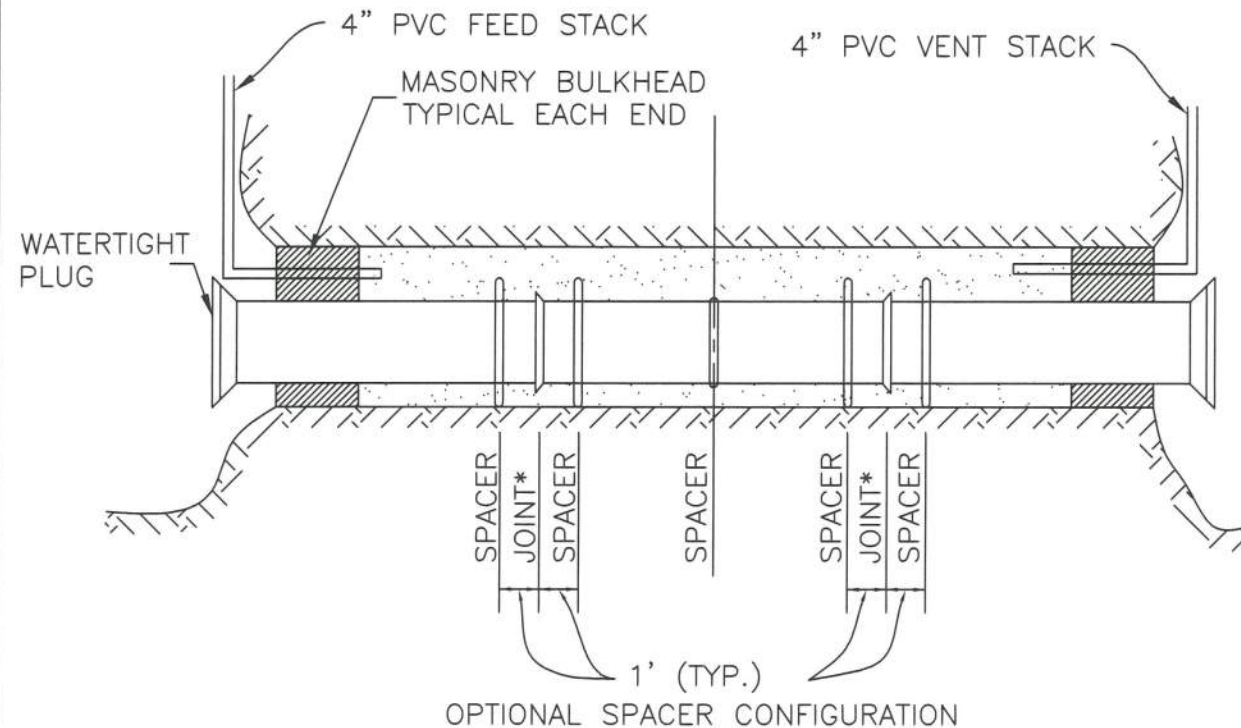


BORE DETAIL



BORE NOTES:

1. DUCTILE IRON PIPE SHALL BE THE CLASS 52 TYPE.
ALL WATER LINE PIPE JOINTS ARE TO HAVE "FIELD LOK" GASKETS.
2. PVC STACKS ARE TO BE FILLED TO WITHIN 2 FT. OF GRADE AND CUT AND CAPPED 2 FT. BELOW GRADE.
3. MASONRY BULK HEADS SHALL BE PROVIDED AT EACH END.
4. GRANULAR BEDDING IN BORE PIT AND RECEIVING PIT SHALL BE PLACED TO A MINIMUM OF 1 FOOT ABOVE THE PIPE.
5. BONDED SKIDS MAY BE PERMITTED IN LIEU OF RETAINING GLANDS, AS APPROVED BY THE CITY UTILITY DEPARTMENT.
6. MINIMUM CASING WALL THICKNESS IS TO BE 3/8"
7. FREE BORE MAY BE PERMITTED ONLY AT THE DISCRETION BY THE CITY UTILITY DEPARTMENT. IN SUCH CASES THE BORE SHALL BE NO LARGER THAN THE BELL OF THE PIPE BEING USED. SHOULD THE BORE BE LARGER THAN THE PIPE BELL, ENGINEERED GROUT SHALL BE REQUIRED TO FILL THE VOID.
8. CASING SIZE FOR PIPE IN EXCESS OF 16" SHALL BE REVIEWED AND DETERMINED BY THE CITY UTILITY DEPARTMENT AT THE TIME OF PLAN REVIEW AND PRIOR TO ANY CONSTRUCTION.
9. A VALVE SHALL BE REQUIRED ON EACH SIDE OF THE BORE.
10. A CASING IS REQUIRED ON ALL ROAD CROSSINGS.



D.I.P. CASING SIZE REQUIREMENTS		
PIPE SIZE	BELL SIZE	CASING SIZE
6"	8.75"	12"
8"	10.98"	16"
10"	12.94"	18"
12"	15.24"	24"
16"	19.98"	24"

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
WATERLINE PIPE BORE DETAIL	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING	W-9	2/2019

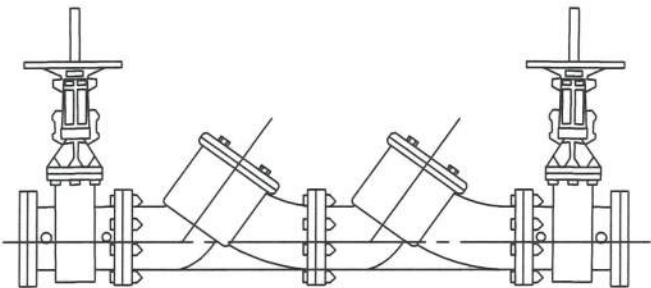
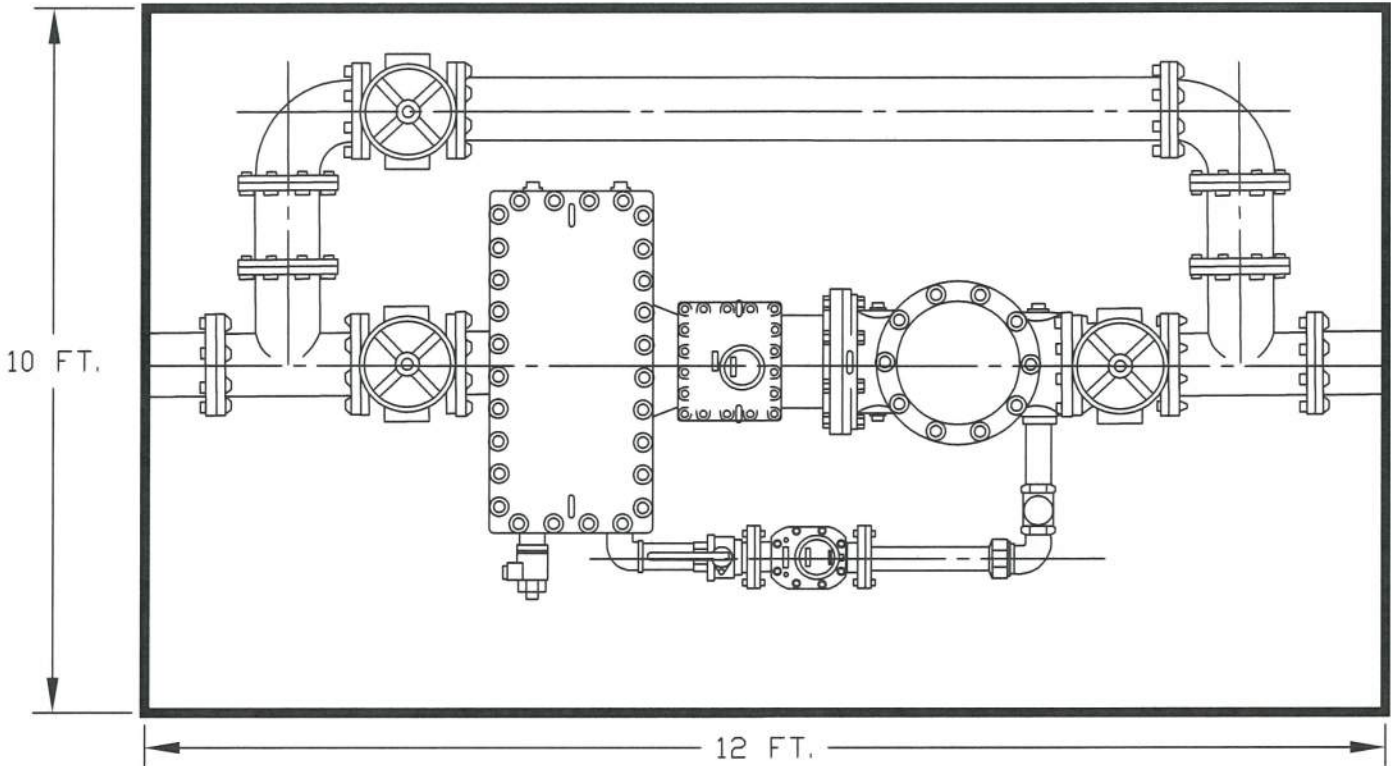
- A) ALL "PRIVATE" WATER MAINS IN EXCESS OF TWO (2) INCHES SHALL BE REQUIRED TO INSTALL A FIRE LINE METER AT THE RIGHT OF WAY LIMITS OF SAID PROPERTY.
- B) EACH DOMESTIC LINE INSTALLATION AND APPLICATION SHALL BE REVIEWED ON AN INDIVIDUAL BASIS AS PART OF THE APPROVAL PROCESS.
- C) ALL FIRE LINE OR "PRIVATE" MAINS SHALL REQUIRE AN APPROVED BACKFLOW DEVICE BY THE UTILITY DEPARTMENT.
- D) ALL COMMERCIAL AND INDUSTRIAL SITES WILL BE REQUIRED TO HAVE AN ADDITIONAL REDUCED PRESSURE BACKFLOW DEVICE INSTALLED WITHIN THE BUILDING AT ALL SERVICE POINTS.
- E) BADGER TYPE FSAA METER SHALL BE USED FOR 2", 4", 6", 8"10" & 12" METERED. BADGER TYPE METERS ARE TO BE PROVIDED WITH AN ENDPOINT FOR AMR W/POSITIVE DISPLACEMENT MODEL 170 OR FIRE RATED E-SERIES METER.
- F) ABOVE GROUND INSTALLATION WITH APPROVED "HOT HOUSES.", FOR BACKFLOW DEVICES.
- G) A METER BYPASS ASSEMBLY SHALL BE REQUIRED IN ALL CASES. THE BYPASS LINE SHALL BE THE SAME SIZE AS THE FIRELINE.
- H) BOTH METER AND BACKFLOW DEVICE SHALL BE REQUIRED TO BE INSTALLED IN A WATERPROOF VAULT OF SUFFICIENT SIZE TO ACCOMMODATE TWO SERVICE TECHNICIANS TO ENTER VAULT. METER VAULTS MAY BE PRECAST IN TWO SECTIONS, THE BOTTOM SECTION OF WHICH SHALL BE 50% OR GREATER OF THE OVERALL HEIGHT REQUIRED. THE JOINT SEAL BETWEEN PRECAST SECTIONS SHALL BE AN ASPHALTIC STRIP, WITH WATER PLUG JOINT SEAL ON THE INTERIOR AND AN ASPHALTIC EXTERIOR JOINT SEAL WITH A MINIMUM OF 1 FT. IN WIDTH. THE VAULT SHALL BE SET TO 1 INCH AND NO MORE THAN 2 INCHES ABOVE FINISHED GRADE WITH NO SURROUNDING OBSTRUCTIONS. (I.E.: PLANTER BOXES, WALLS, ETC...)
- I) IN THE EVENT THAT VAULTS ARE NOT WATER TIGHT, A SUMP HOLE SHALL BE INSTALLED.
- J) BACKFLOW DEVICE VAULTS SHALL BE PRECAST CONCRETE, AS DESCRIBED ABOVE & SHALL MEET THE STANDARDS.
- K) THERE SHALL BE PROPER INGRESS AND EGRESS. STEPS AND LID TO MATCH METER VAULTS. THE METER SHALL EASILY BE READABLE FROM THE HATCH.

L) ACCESS FRAMES AND COVERS

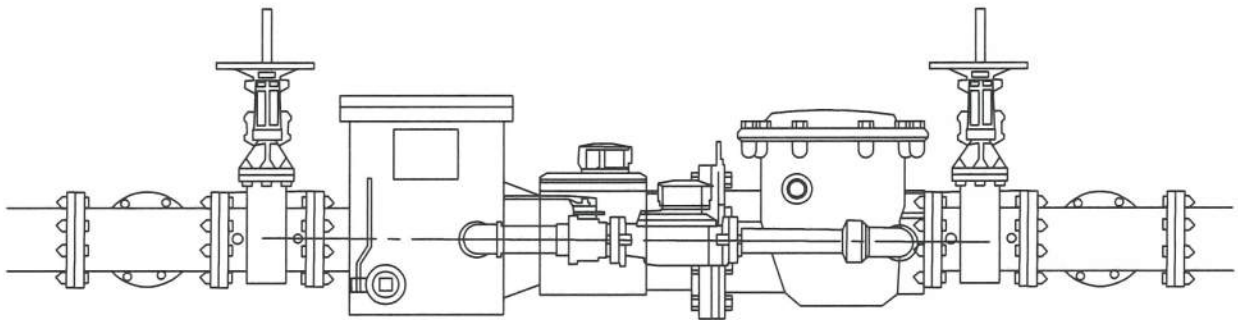
- THE ALUMINUM ACCESS FRAMES AND COVERS SHALL HAVE A 3 FT. BY 3 FT. OPENING AND BE MANUFACTURED WITH 1/4" THICK, ONE PIECE ALUMINUM EXTRUDED FRAME, WITH A CONTINUOUS CONCRETE ANCHOR AS PART OF THE ONE PIECE EXTRUSION. THE DOOR PANELS SHALL BE 1/4" THICK ALUMINUM DIAMOND PLATE, TO WITHSTAND A LIVE LOAD OF 300 LBS. PER SQUARE FOOT, WITH SAFETY FACTOR OF TIMES 3. THE DOORS SHALL BE PROVIDED WITH STAINLESS STEEL HINGES WITH TAMPERPROOF FASTENERS. ALL HARDWARE SHALL BE STAINLESS STEEL. THE DOORS SHALL OPEN TO 90° AND LOCK AUTOMATICALLY IN THAT POSITION WITH A STAINLESS STEEL RELEASE HANDLE. DOORS SHALL BE PROVIDED WITH A STAINLESS STEEL LIFTING HANDLE, STAINLESS STEEL LOCKING BAR, OR STAINLESS STEEL SNAP-LOCK WITH REMOVABLE KEY HANDLE. THE DOORS SHALL CLOSE FLUSH WITH THE TOP OF THE FRAME, RESTING ON 1/2" WIDE LIP AROUND THE ENTIRE INSIDE OF THE FRAME FOR ADDED SUPPORT. THE INTERIOR DOOR PANELS SHALL BE FITTED WITH HORIZONTAL ALUMINUM EXTRUSIONS TO ACT AS HAND HOLDS TO FACILITATE INGRESS AND EGRESS.
- * EXAMPLE. THE CITY WILL PERMIT THE NON-TRAFFIC BEARING TYPE OF BILCO J4AL, U.S. FABRICATION TYPE OR EQUAL.
- M) BACK FLOW DEVICES MUST BE TESTED UPON INSTALLATION AND EVERY 12 MONTHS THEREAFTER AND TEST RESULTS SUBMITTED TO THE CITY OF AVON UTILITIES DEPARTMENT. THE TESTER MUST BE STATE CERTIFIED AND BE REGISTERED WITH THE CITY OF AVON. FAILURE TO HAVE BACK FLOW DEVICES TESTED EVERY 12 MONTHS WILL RESULT IN TERMINATION OF WATER SERVICE AS REQUIRED BY THE OHIO REVISED CODE.
- N) METERS SHALL NOT BE LOCATED IN THE BUILDING. METERS SHALL BE LOCATED IN A VAULT (SEE SHEET W-11) VAULTS SHALL BE LOCATED AT (1) ONE FOOT OUTSIDE THE RIGHT-OF-WAY LINE.
- O) THE DOUBLE CHECK ASSEMBLY ASSE 1015 SHALL BE A CAST IRON BODY TYPE. (SEE CONFIGURATION ON SHEET W-11)
- P) THE CITY MAY PERMIT A SINGLE VAULT SO LONG AS DIMENSIONAL REQUIREMENTS ARE MET.
- Q) ANY VAULT LOCATED WITHIN A PAVED AREA SHALL BE THE TRAFFIC BEARING TYPE WITH THE ACCESS FRAME AND COVER LOCATED OUTSIDE OF THE PAVEMENT.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
WATERLINE, FIRELINE & VAULT SPECIFICATIONS	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING W-10		2/2019

PREFERRED BADGER METER
MODEL FSA-01 WITH VALVES
4" - 8"
WITH OS&Y VALVES



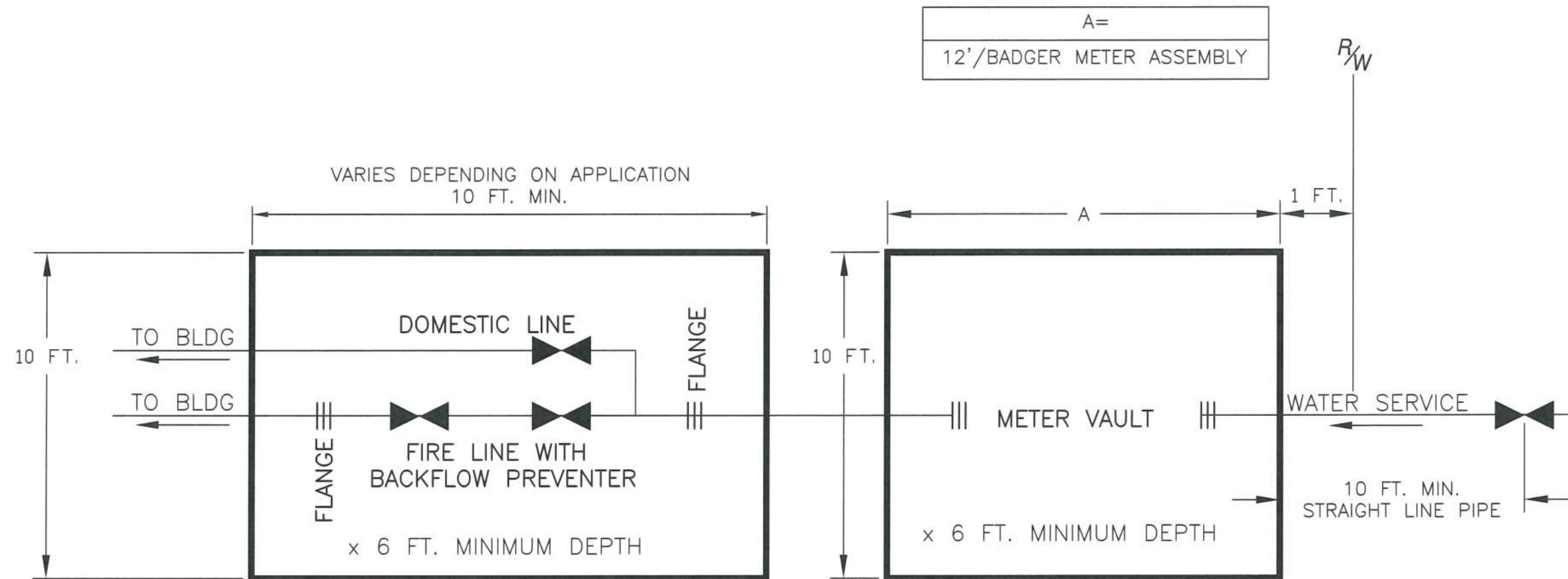
REQUIRED DOUBLE CHECK
DETECTOR CHECK
ASSEMBLY 1048



NOTE:

- 1) VAULT SIZES SHOWN ARE FOR GENERAL GUIDANCE ONLY. SHOP DRAWINGS SHALL BE SUBMITTED TO THE CITY UTILITY DEPARTMENT FOR APPROVAL PRIOR TO INSTALLATION. THE VAULT SIZE SHALL BE IN DIRECT PROPORTION TO THE MECHANICALS BEING INSTALLED, MAINTAINING RECOMMENDED HEIGHT & SIDE DIMENSIONS.
- 2) SAME VAULT FOR BOTH METERS AS STANDARD.
- 3) THE LOW FLOW METER SHALL BE SIZED TO THE DOMESTIC WATERLINE, HOWEVER, RATED FOR FIRE USE.
- 4) IN THE EVENT THE VAULTS ARE NOT WATER TIGHT, A SUMP HOLE SHALL BE INSTALLED.
- 5) METERS IN VAULTS MUST BE ABLE TO BE READ FROM ABOVE WITHOUT ENTRY. IF NO CLEAR LINE OF SITE TO THE METER CAN BE ACHIEVED BY PLACEMENT OF ACCESS MANHOLE A 12" DIAMETER VIEWING PORT MUST BE PROVIDED THAT IS CENTERED OVER THE METER FOR READING PURPOSES IN ADDITION TO THE ACCESS MANHOLE. THE VAULT SHALL MAINTAIN ITS STRUCTURAL INTEGRITY.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
METER PIT DETAIL	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING	W-11	2/2019

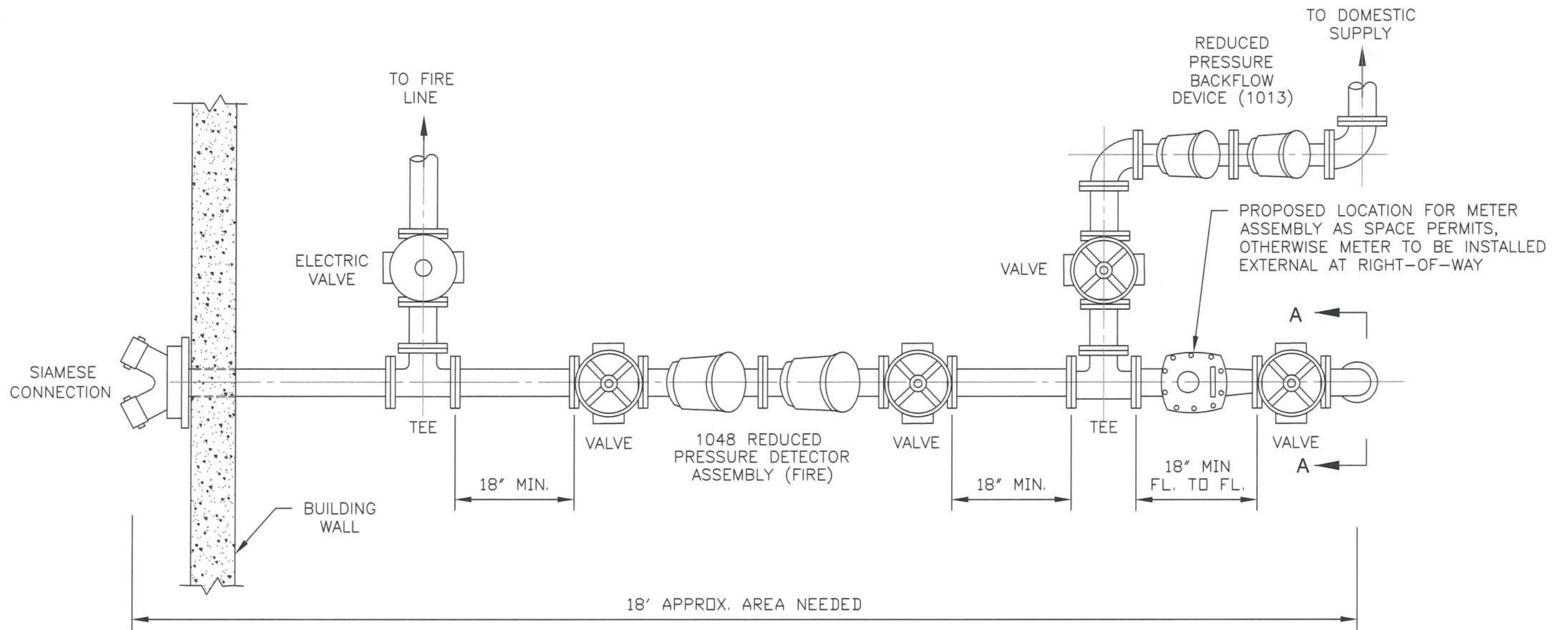


SCHEMATIC
GENERAL VAULT LAYOUT

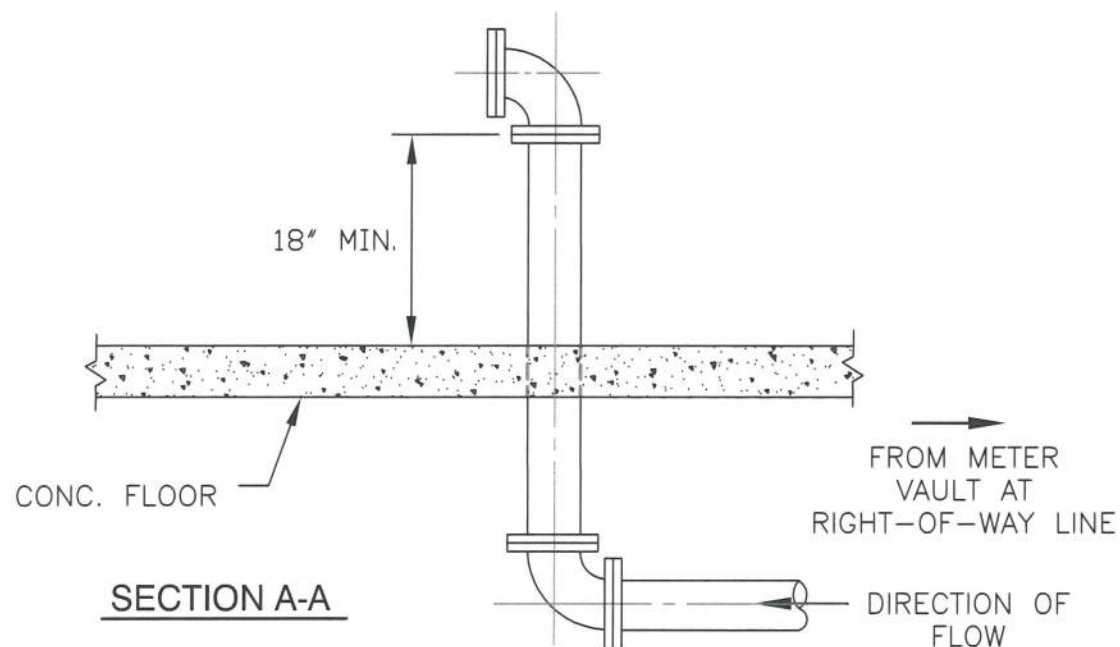
NOTES:

1. VAULT SIZES SHOWN ARE FOR GENERAL GUIDANCE ONLY. SHOP DRAWINGS SHALL BE SUBMITTED TO THE CITY UTILITY DEPARTMENT FOR APPROVAL PRIOR TO INSTALLATION. THE VAULT SIZE SHALL BE IN DIRECT PROPORTION TO THE MECHANICALS BEING INSTALLED, MAINTAINING RECOMMENDED HEIGHT & SIDE DIMENSIONS.
2. THE CITY MAY PERMIT A SINGLE VAULT SO LONG AS DIMENSIONAL REQUIREMENTS ARE MET.
3. ANY VAULT LOCATED WITHIN A PAVED AREA SHALL BE THE TRAFFIC BEARING TYPE WITH THE ACCESS FRAME AND COVER LOCATED OUTSIDE OF THE PAVEMENT.
4. POUR IN PLACE VAULT NOT PERMITTED UNDER PAVEMENT.
5. THIS CONFIGURATION SHALL ONLY BE USED WITH THE APPROVAL OF THE UTILITY DEPARTMENT.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
GENERAL VAULT LAYOUT COMMERCIAL & INDUSTRIAL	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING W-12		2/2019



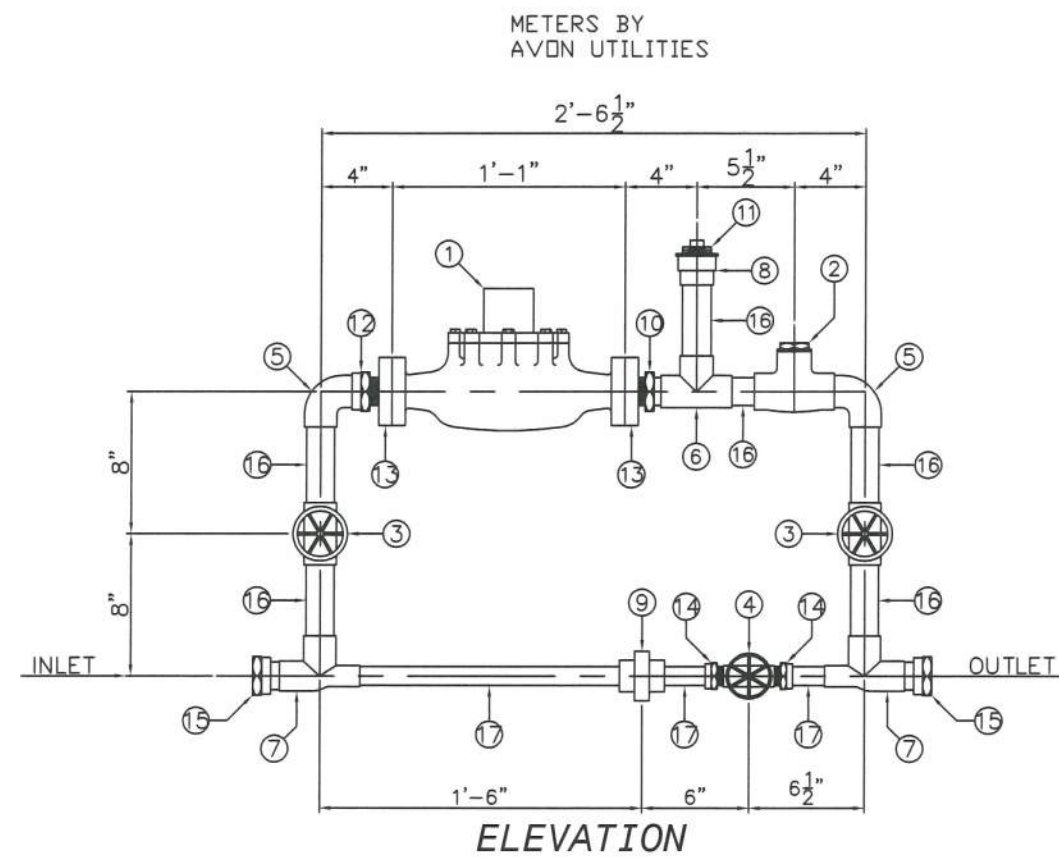
PLAN
INTERNAL FIRELINE INSTALLATION



NOTE:

- 1.) THIS IS NOT THE PREFERRED METHOD. INSTALLATION TO BE APPROVED BY THE CITY FIRE DEPARTMENT AND CITY UTILITY DEPARTMENT.
- 2.) INSTALL UNDERGROUND PIPE AND RISER IN BUILDING.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
INTERNAL FIRELINE INSTALLATION COMMERCIAL & INDUSTRIAL	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING W-13		2/2019



NOTES:

- 1.) CONTACT AVON UTILITY DEPARTMENT FOR CORRECT METER (SUPPLIED BY CONTRACTOR)
- 2.) VERIFY METER LENGTH WITH AVON UTILITIES DEPARTMENT
- 3.) ITEM ④ TO BE SET AT AN ANGLE WITH LOCK AND CABLE.
- 4.) MINOR VARIATIONS IN THE OVERALL LENGTH ARE TO BE EXPECTED DEPENDING ON THE TEE'S, VALVES, AND CHECK VALVES SUPPLIED.
- 5.) ADJUSTMENTS TO THE BYPASS (ITEM 17) WILL BE MADE BY AVON UTILITIES AS NEEDED.
- 6.) ALL BOLTS AND GASKETS BY SUPPLIER.

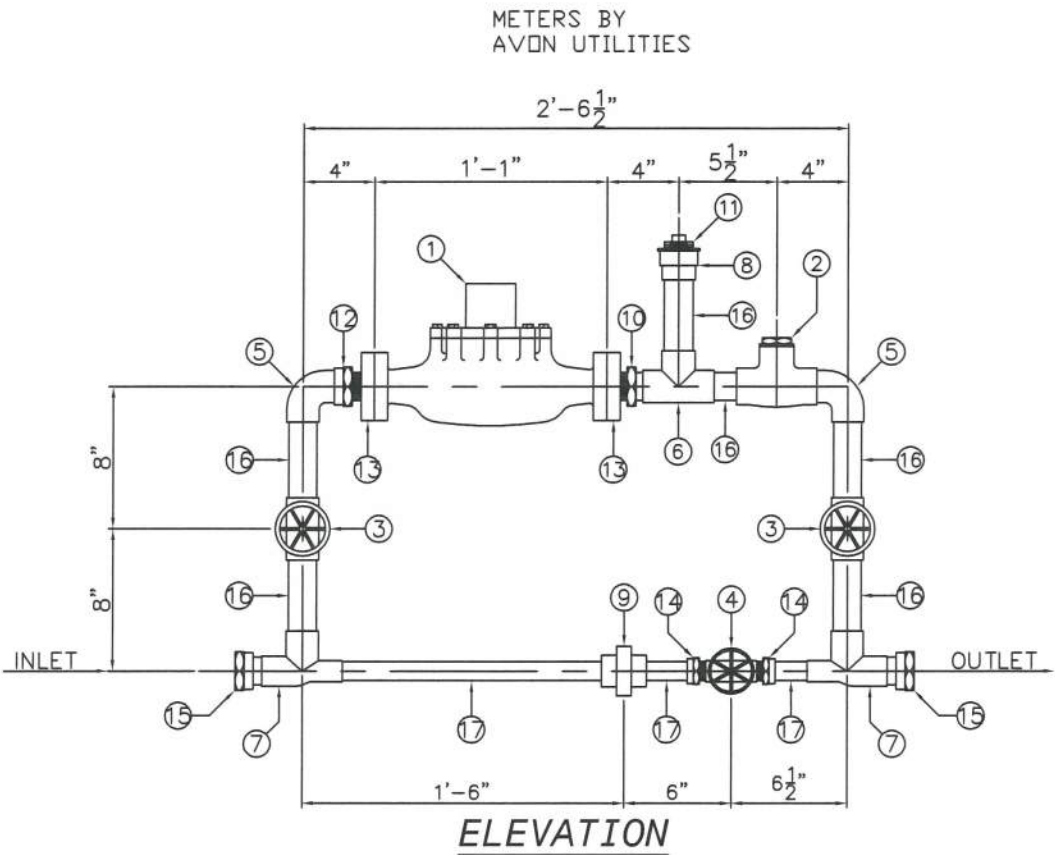
MATERIALS REQUIRED FOR INSTALLATION
STANDARD 1 1/2" METER SETTING WITH 1 1/2" METER

ITEM	REQ'D	SIZE	DESCRIPTION
1	1	1-1/2"	METER BY AVON UTILITIES
2	1	1-1/2"	STREAMLINE SWING CHECK VALVE, COPPER TO COPPER
3	2	1-1/2"	STREAMLINE HAND WHEEL GATE VALVE
4	1	1"	STREAMLINE HAND WHEEL GATE VALVE
5	2	1-1/2"	STREAMLINE STREET ELBOW, COPPER TO COPPER
6	1	1-1/2"	STREAMLINE TEE, COPPER TO COPPER
7	2	1-1/2" X 1 X 1-1/2"	STREAMLINE TEE, COPPER TO IRON, FEMALE
8	1	1-1/2"	STREAMLINE COUPLING, COPPER TO IRON, FEMALE
9	1	1"	STREAMLINE UNION, COPPER TO COPPER
10	1	1-1/2"	STREAMLINE COUPLING, COPPER TO IRON, MALE
11	1	1-1/2"	BRASS SCREW PLUG
12	1	1-1/2"	STREAMLINE COUPLING, COPPER TO IRON, FEMALE
13	2	1-1/2"	OVAL FLANGES, FEMALE
14	2	1"	STREAMLINE COUPLING, COPPER TO IRON, FEMALE
15	2	1-1/2"	STREAMLINE COUPLING, COPPER TO IRON, FEMALE
16	37"	1-1/2"	COPPER TUBING-HARD
17	30"	1"	COPPER TUBING-HARD
18	1lb.		SPECIAL SOLDER

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
STANDARD 1-1/2" METER SETTING	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING W-14		2/2019

STANDARD 2" METER SETTING WITH 2" METER

MATERIALS REQUIRED FOR INSTALLATION

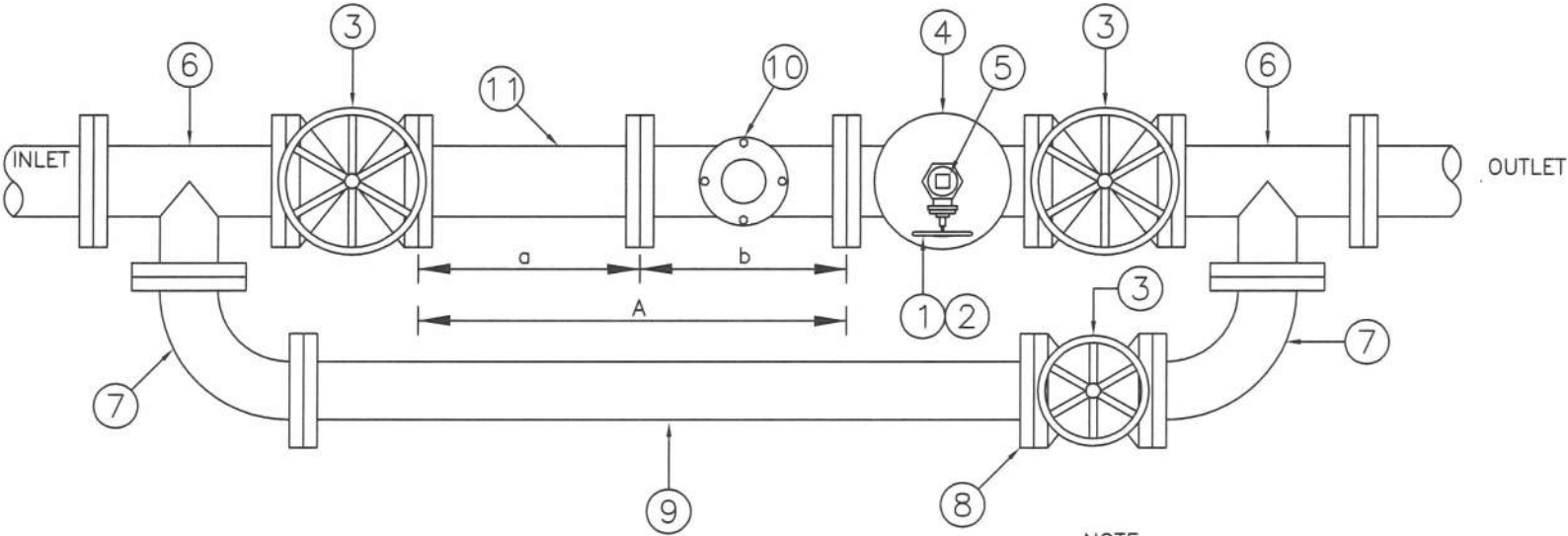


NOTES:

- 1.) VERIFY METER LENGTH WITH AVON UTILITIES DEPARTMENT
- 2.) ITEM (4) TO BE SET AT AN ANGLE WITH LOCK AND CABLE.
- 3.) MINOR VARIATIONS IN THE OVERALL LENGTH ARE TO BE EXPECTED DEPENDING ON THE TEE'S, VALVES, AND CHECK VALVES SUPPLIED.
- 4.) ALL BOLTS AND GASKETS BY SUPPLIERS.
- 5.) THE CONTRACTOR SHALL PURCHASE 1-1/2" AND 2" METERS SUPPLIED BY AVON UTILITIES.

ITEM	REQ'D	SIZE	DESCRIPTION
1	1	2"	METER BY AVON UTILITIES
2	1	2"	STREAMLINE SWING CHECK VALVE, COPPER TO COPPER
3	2	2"	STREAMLINE HAND WHEEL GATE VALVE
4	1	1-1/2"	STREAMLINE HAND WHEEL GATE VALVE
5	2	2"	STREAMLINE STREET ELBOW, COPPER TO COPPER
6	1	2"	STREAMLINE TEE, COPPER TO COPPER
7	2	2 X 1-1/2" X 2"	STREAMLINE TEE, COPPER TO IRON, FEMALE
8	1	2"	STREAMLINE COUPLING, COPPER TO IRON, FEMALE
9	1	1-1/2"	STREAMLINE UNION, COPPER TO COPPER
10	1	2"	STREAMLINE COUPLING, COPPER TO IRON, MALE
11	1	2"	BRASS SCREW PLUG
12	1	2"	STREAMLINE COUPLING, COPPER TO IRON, FEMALE
13	2	2"	OVAL FLANGES, FEMALE
14	2	1-1/2"	STREAMLINE COUPLING, COPPER TO IRON, FEMALE
15	2	2"	STREAMLINE COUPLING, COPPER TO IRON, FEMALE
16	37"	2"	COPPER TUBING-HARD
17	30"	1-1/2"	COPPER TUBING-HARD
18	1lb.		SPECIAL SOLDER

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
STANDARD 2" METER SETTING	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING W-15		2/2019



PLAN

NOTE:
ALL BOLTS AND GASKETS BY SUPPLIER.

NOTES:

- 1.) MINOR VARIATIONS IN THE OVERALL LENGTH ARE TO BE EXPECTED DEPENDING ON THE TEE'S VALVES, AND CHECK VALVES SUPPLIED.
- 2.) CONTACT AVON UTILITY DEPT. FOR CORRECT METER & SPACER. (SUPPLIED BY CONTRACTOR)
- 3.) 3", 4", AND 6" METER SETTINGS SHALL CONFORM TO THE ABOVE SCHEMATIC. FOR MATERIALS REQUIRED FOR INSTALLATION REFER TO DUAL SERVICE SETTING WITH BACKFLOW DEVICE STANDARD CONSTRUCTION DRAWING SHEETS 2, 3, AND 4.

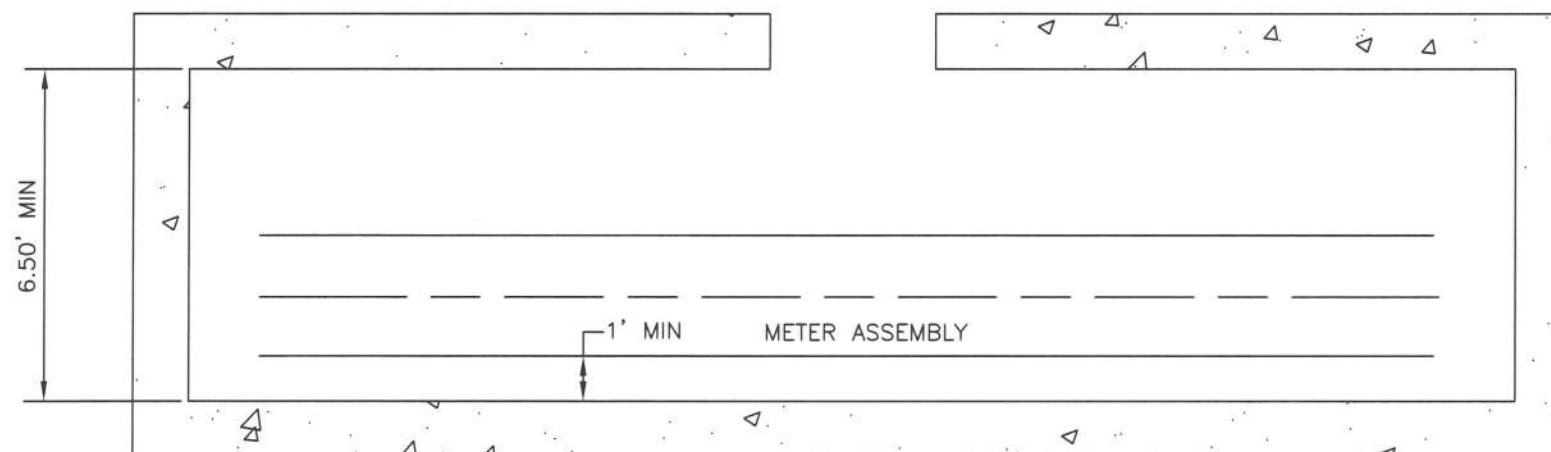
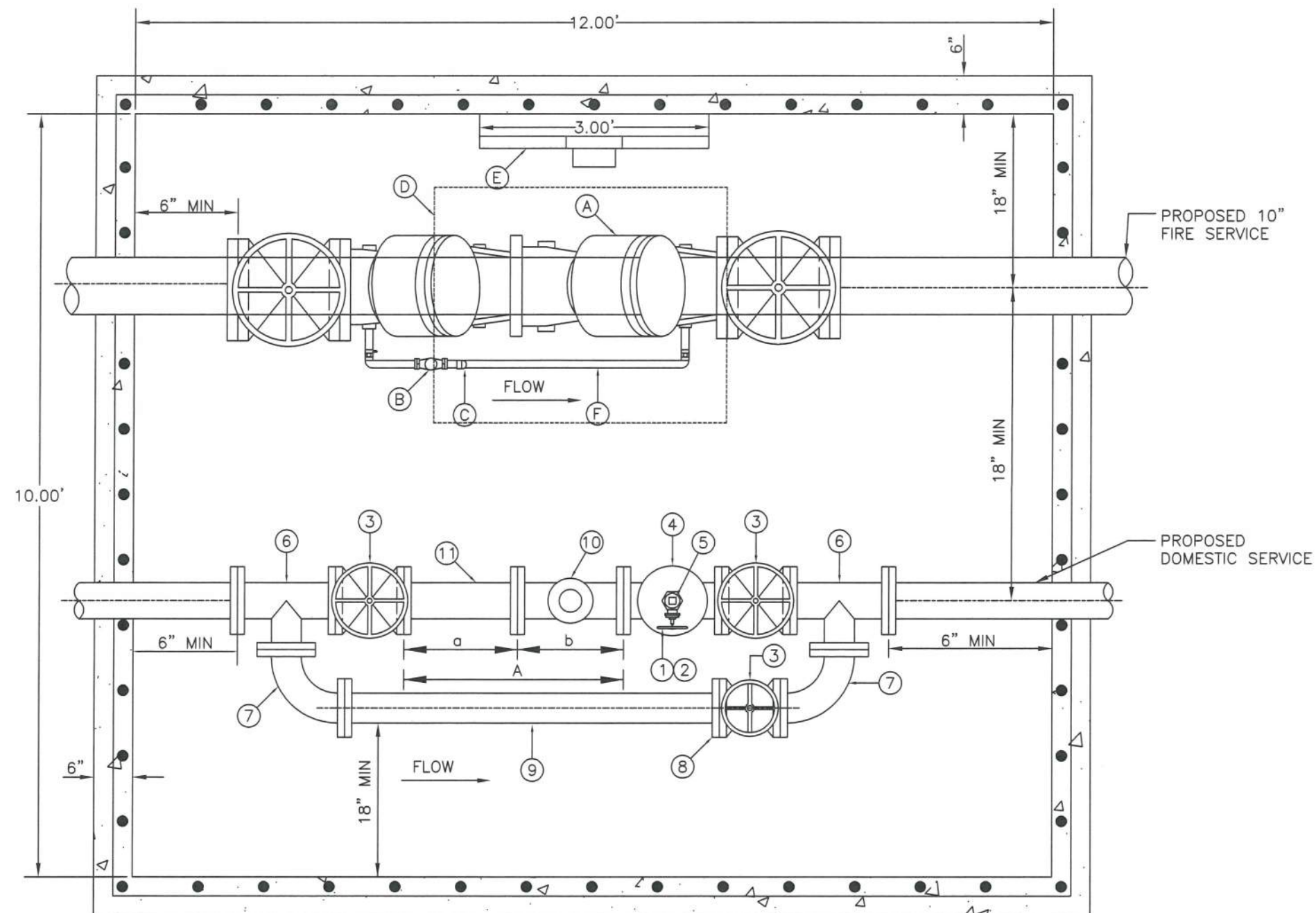
STANDARD 4" METER SETTING WITH 4" METER
MATERIALS REQUIRED FOR INSTALLATION

CHART A

ITEM	REQ'D	SIZE	DESCRIPTION
1	1	2"	HAND WHEEL GATE VALVE, SCREWED
2	1	2" X 10"	BRASS NIPPLE
3	3	4"	O.S.Y. VALVE, FLANGED
4	1	4"	SWING CHECK VALVE, FLANGED W/2" TAP
			ON CHECK VALVE PLATE
5	1	2"	BRASS PLUG
6	2	4" X 4" X 4"	CAST IRON TEES, FLANGED
7	2	4"	CAST IRON ELBOWS, FLANGED LONG RADIUS
8	1	4"	MEGA FLANGE
9		SIZE TO FIT	CLASS 53 DIP FLANGED BY PLAIN END
10	1	*	TURBINE METER <u>OR</u> COMPOUND METER
11	1	*	SPACER SPOOL PIECE FLANGE BY FLANGE

*REFER TO CHART B FOR DIMENSIONS

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
STANDARD 4" METER SETTING	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING W-16		2/2019



- (A) FIRE SERVICE BACKFLOW PREVENTION DEVICE:
WATTS #709-DCDA, AMES #3000 DCDA, OR EQUAL.
- (B) BY-PASS METER (3/4" OR 1")
NOTE: BY-PASS LIEN REQUIRES A BACKFLOW DEVICE
SIMILAR TO THE WATTS #709.
- (C) 3" AND LARGER DOMESTIC METERS SHALL BE INSTALLED WITH
FLANGED CLASS 53 DUCTILE IRON PIPE. 2" AND LESS SHALL
BE "K" COPPER.
- (D) LID: BILCO MODEL #J-4AL, OR HALLIDAY MODEL #W1S3636,
OR APPROVED EQUAL.
- (E) ALUMINUM LADDER: OSHA APPROVED HALLIDAY SERIES L-1B
WITH SERIES L-1E SAFETY POST, OR APPROVED EQUAL.
- (F) CONTRACTOR/PLUMBER TO VERIFY LAYING LENGTH OF
BACKFLOW DEVICE, VALVES, METERS, ETC.

NOTES:

- 1.) VAULT SIZE SHOWN IS FOR GENERAL GUIDANCE ONLY. SHOP
DRAWINGS SHALL BE SUBMITTED TO THE CITY UTILITY
DEPARTMENT FOR APPROVAL PRIOR TO INSTALLATION. THE
VAULT SIZE SHALL BE IN DIRECT PROPORTION TO THE
MECHANICALS BEING INSTALLED, MAINTAINING RECOMMENDED
HEIGHT & SIDE DIMENSIONS.
- 2.) SAME VAULT FOR BOTH METERS AS STANDARD.
- 3.) 8" AND LARGER SHALL CONFORM TO THE SAME SETTING
SPECIFICATIONS. CONTACT AVON UTILITY DEPARTMENT FOR
METER AND SPOOL PIECE DIMENSIONS.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
DUAL SERVICE SETTING WITH BACKFLOW DEVICE	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING W-17		2/2019
		SHEET 1 OF 4

STANDARD 3” METER SETTING WITH 3” METER

MATERIALS REQUIRED FOR INSTALLATION

CHART A

ITEM	REQ'D	SIZE	DESCRIPTION
1	1	2"	HAND WHEEL GATE VALVE, SCREWED
2	1	2" X 10"	BRASS NIPPLE
3	3	3"	O.S.Y. VALVE, FLANGED
4	1	3"	SWING CHECK VALVE, FLANGED W/ 2"
			TAP ON CHECK VALVE PLATE
5	1	2"	BRASS PLUG
6	2	3" X 3" X 3"	CAST IRON TEES, FLANGED
7	2	3"	CAST IRON ELBOWS, FLANGED LONG RADIUS
8	1	3"	MEGA FLANGE
9		SIZE TO FIT	CLASS 53 DIP FLANGED BY PLAIN END
10	1	*	COMPOUND METER OR E-METER
11	1	*	SPACER SPOOL PIECE FLANGE BY FLANGE

*REFER TO CHART B FOR DIMENSIONS

CHART B

METER TYPE	A	a	b
E-METER			
COMPOUND	24"	7"	17"

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
DUAL SERVICE SETTING WITH BACKFLOW DEVICE	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING	W-17	2/2019
		SHEET 2 OF 4

STANDARD 4” METER SETTING WITH 4” METER

MATERIALS REQUIRED FOR INSTALLATION

CHART A

ITEM	REQ'D	SIZE	DESCRIPTION
1	1	2"	HAND WHEEL GATE VALVE, SCREWED
2	1	2" X 10"	BRASS NIPPLE
3	3	4"	O.S.Y. VALVE, FLANGED
4	1	4"	SWING CHECK VALVE, FLANGED W/ 2"
			TAP ON CHECK VALVE PLATE
5	1	2"	BRASS PLUG
6	2	4" X 4" X 4"	CAST IRON TEES, FLANGED
7	2	4"	CAST IRON ELBOWS, FLANGED LONG RADIUS
8	1	4"	MEGA FLANGE
9		SIZE TO FIT	CLASS 53 DIP FLANGED BY PLAIN END
10	1	*	COMPOUND METER OR E-METER
11	1	*	SPACER SPOOL PIECE FLANGE BY FLANGE

*REFER TO CHART B FOR DIMENSIONS

CHART B

METER TYPE	A	a	b
E-METER			
COMPOUND	29"	9"	20"

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
DUAL SERVICE SETTING WITH BACKFLOW DEVICE	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING	W-17	2/2019
		SHEET 3 OF 4

STANDARD 6” METER SETTING WITH 6” METER

MATERIALS REQUIRED FOR INSTALLATION

CHART A

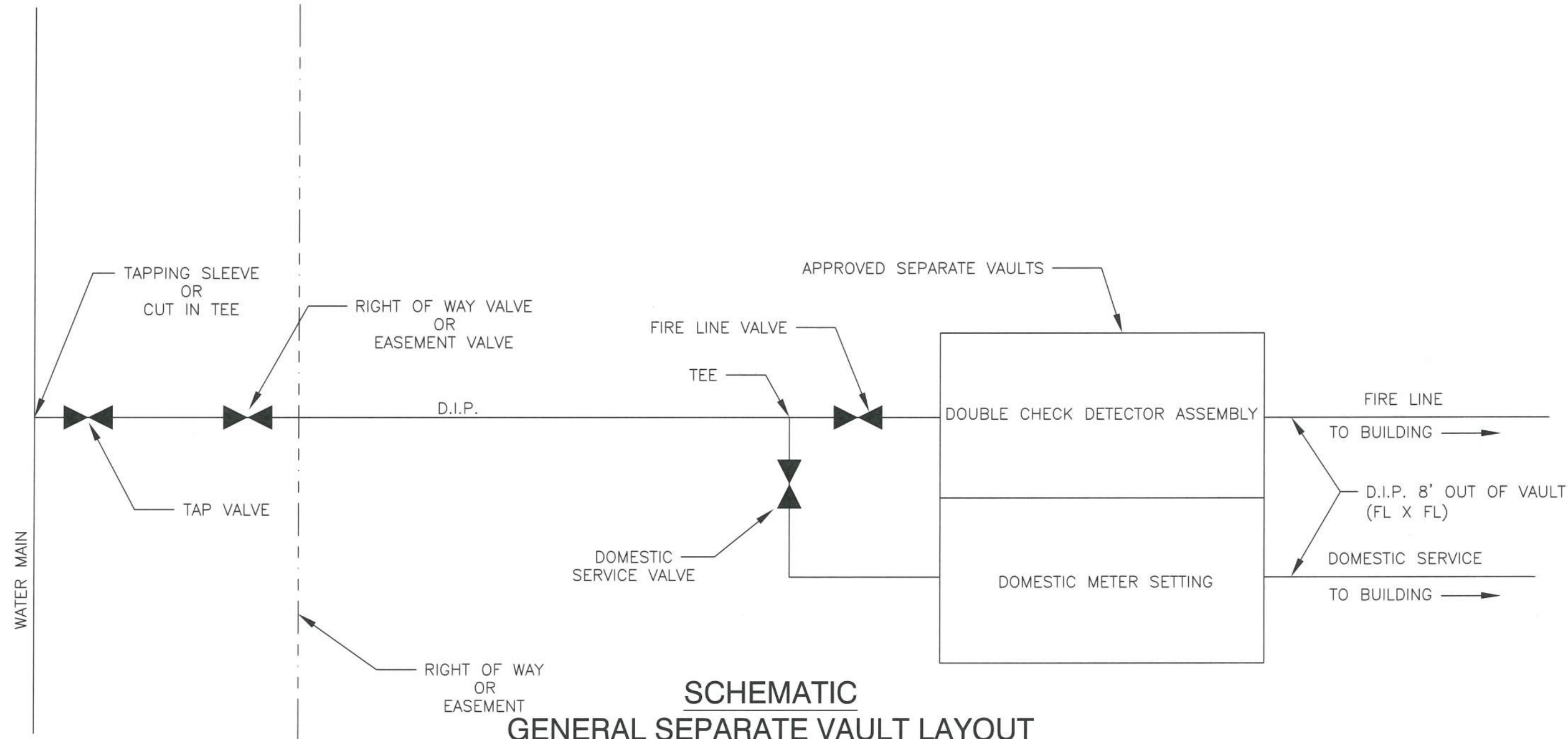
ITEM	REQ'D	SIZE	DESCRIPTION
1	1	2"	HAND WHEEL GATE VALVE, SCREWED
2	1	2" X 10"	BRASS NIPPLE
3	3	6"	O.S.Y. VALVE, FLANGED
4	1	6"	SWING CHECK VALVE, FLANGED W/ 2"
			TAP ON CHECK VALVE PLATE
5	1	2"	BRASS PLUG
6	2	6" X 6" X 6"	CAST IRON TEES, FLANGED
7	2	6"	CAST IRON ELBOWS, FLANGED LONG RADIUS
8	1	6"	MEGA FLANGE
9		SIZE TO FIT	CLASS 53 DIP FLANGED BY PLAIN END
10	1	*	TURBINE METER OR COMPOUND METER
11	1	*	SPACER SPOOL PIECE FLANGE BY FLANGE

*REFER TO CHART B FOR DIMENSIONS

CHART B

METER TYPE	A	a	b
TURBINE	37"	10"	27"
COMPOUND	37"	13"	24"

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
DUAL SERVICE SETTING WITH BACKFLOW DEVICE	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING	W-17	2/2019
		SHEET 4 OF 4

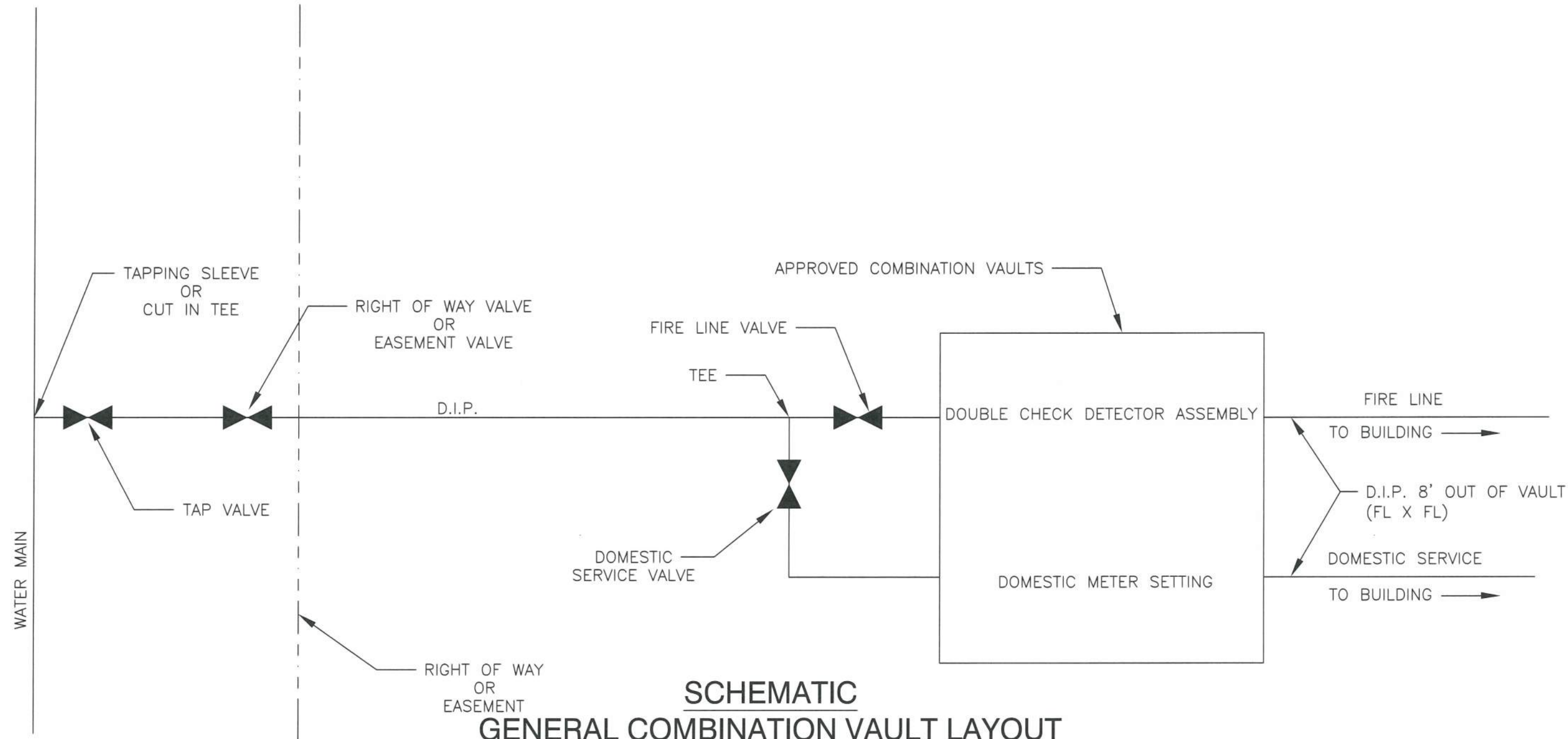


**SCHEMATIC
GENERAL SEPARATE VAULT LAYOUT**

NOTES:

1. SHOP DRAWINGS SHALL BE SUBMITTED TO THE CITY UTILITY DEPARTMENT FOR APPROVAL PRIOR TO INSTALLATION. THE VAULT SIZE SHALL BE IN DIRECT PROPORTION THE MECHANICALS BEING INSTALLED.
2. THE CITY MAY PERMIT A SINGLE VAULT SO LONG AS DIMENSIONAL REQUIREMENTS ARE MET
3. ANY VAULT LOCATED WITHIN A PAVED AREA SHALL BE THE TRAFFIC BEARING TYPE WITH THE ACCESS FRAME AND COVER LOCATED OUTSIDE OF THE PAVEMENT.
4. POUR IN PLACE VAULT NOT PERMITTED UNDER PAVEMENT.
5. 6 FT. MINIMUM DEPTH.
6. LID SHALL BE BILCO MODEL #J-4AL OR APPROVED EQUAL.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
GENERAL SEPARATE VAULT LAYOUT COMMERCIAL & INDUSTRIAL	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING W-18		2/2019



**SCHEMATIC
GENERAL COMBINATION VAULT LAYOUT**

NOTES:

1. SHOP DRAWINGS SHALL BE SUBMITTED TO THE CITY UTILITY DEPARTMENT FOR APPROVAL PRIOR TO INSTALLATION. THE VAULT SIZE SHALL BE IN DIRECT PROPORTION THE MECHANICALS BEING INSTALLED.
2. THE CITY MAY PERMIT A SINGLE VAULT SO LONG AS DIMENSIONAL REQUIREMENTS ARE MET
3. ANY VAULT LOCATED WITHIN A PAVED AREA SHALL BE THE TRAFFIC BEARING TYPE WITH THE ACCESS FRAME AND COVER LOCATED OUTSIDE OF THE PAVEMENT.
4. POUR IN PLACE VAULT NOT PERMITTED UNDER PAVEMENT.
5. 6 FT. MINIMUM DEPTH.
6. LID SHALL BE BILCO MODEL #J-4AL OR APPROVED EQUAL.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
GENERAL COMBINATION VAULT LAYOUT COMMERCIAL & INDUSTRIAL	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING W-19		2/2019

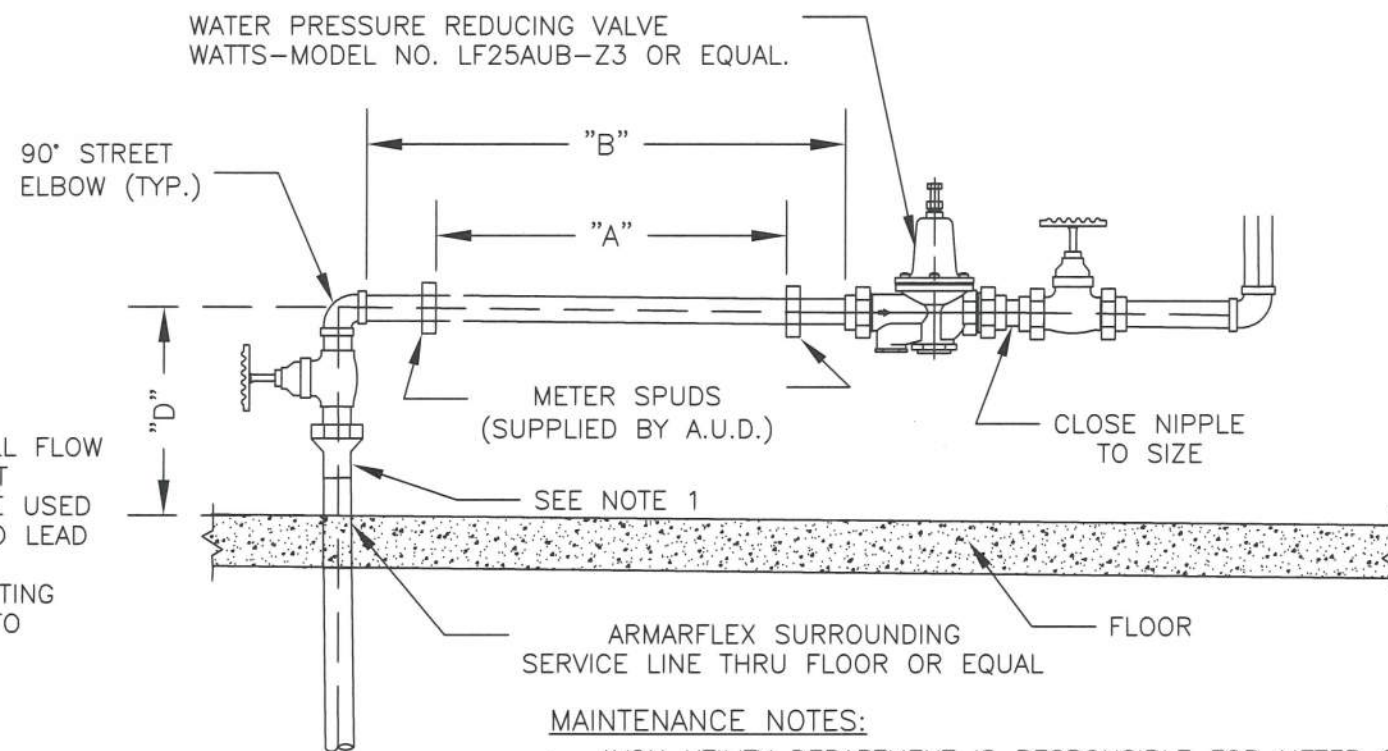
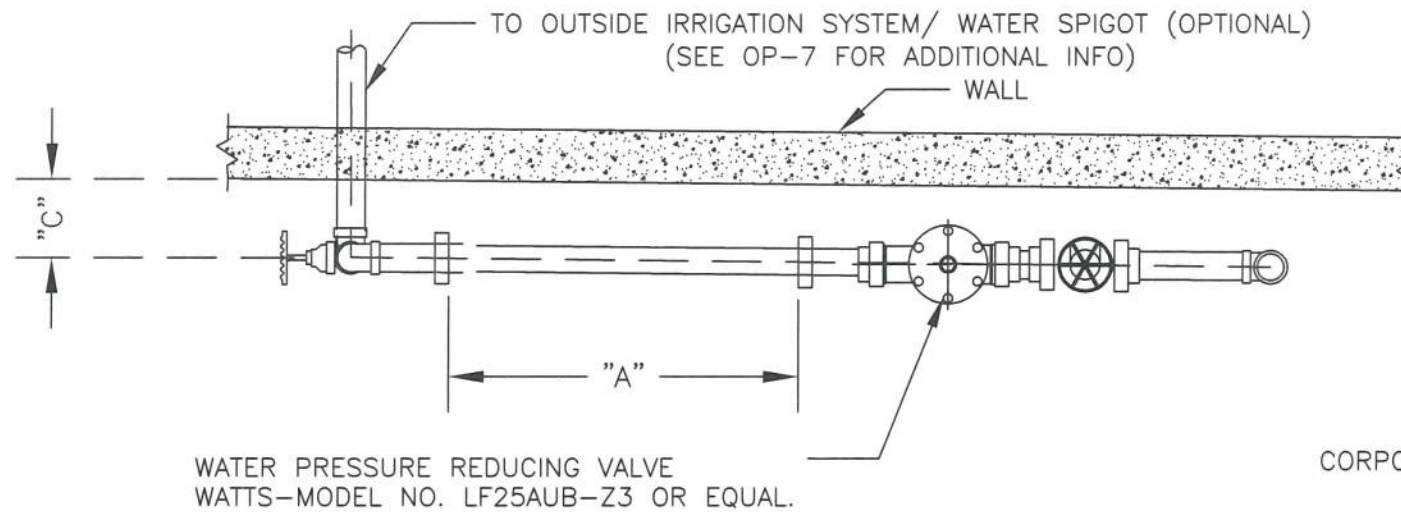
- 1) SERVICES FROM THE CURB STOP TO THE WATER METER SHALL BE ONE OF THE FOLLOWING MATERIALS:
- A) SOFT COPPER, TYPE "K"
 - B) CROSSLINKED POLYETHYLENE(PEX_d) MEETING THE FOLLOWING STANDARDS: ASTM F 876, ASTM F 2657, ASTM F 2080, ASTM F 2023 AND AWWA C904 AND AWWA C800 (FITTINGS) AS MANUFACTURED BY REHAU "MUNICIPEX" OR APPROVED EQUAL. SDR-9, PC200@73°F. SHALL BE USED AT THE APPROVAL OF THE AVON UTILITY DEPARTMENT.
 - C) HDPE PE3408, 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 PER W-3. 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.
- 2) ALL SERVICES SHALL BE A MINIMUM OF ONE (1") INCH FOR ALL NEW CONSTRUCTION.
- 3) 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.
- 4) METER SIZE SHALL MATCH THE SERVICE LINE SIZE.
- 5) 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.
- 6) 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.
- 7) SERVICE LINE INSTALLATION MAY NOT BE ACCOMPLISHED BY "SHELVING" TRENCH WITH STORM OR SANITARY.
- 8) 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.
- 9) 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.
- 10) 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. 2 TRACER WIRES OF DIFFERENT COLORS WITH NO SPLICES ARE REQUIRED..

- 11) WATER SERVICE LINES BETWEEN THE CURB STOP AND THE WATER METER SHALL CONFORM TO THE FOLLOWING:
- A) SERVICE LINES WILL BE THE SAME SIZE AS THE METER SUCH AS 3/4", 1", 2".
 - B) UNDER NO CIRCUMSTANCES WILL A SWEAT CONNECTION BE PERMITTED IN A SERVICE LINE. (ANY LINE PRIOR TO MASTER METER)
- 12) INSIDE METER SET REQUIREMENTS SHALL CONFORM TO THE FOLLOWING:
- 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) NO SUPPLEMENTAL FITTINGS WILL BE ALLOWED BETWEEN THE CURB STOP AND THE METER SETTING.
 - C) 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 AN ENDPOINT FLOOR JOIST AND REMAIN ACCESSIBLE. IF COVERED THERE MUST BE A MINIMUM OF AN 18" X 18" ACCESS PANEL FOR MAINTENANCE PURPOSES.
- 13) WATER SERVICE LINE INSTALLATION SHALL CONFORM TO THE FOLLOWING OHIO EPA CONSTRUCTION NOTES:
- 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 CONSTRUCTION STANDARDS AND SPECIFICATIONS		
WATER SERVICE LINE SPECIFICATIONS	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING W-20		2/2019
		SHEET 1 OF 2

- 14) 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.
- 15) 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.
- 16) ALL PERSONS ARE FORBIDDEN TO COVER UP OR INTERFERE WITH ANY METER-BOX, VALVE-BOX, HYDRANT OR OTHER WATER INFRASTRUCTURE APPURTENANCE.
- 17) 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.
- 18) 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.
- 19) ALL SERVICES SHALL BE METERED.
- 20) 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.
- 21) PROPERTY OWNER IS ULTIMATELY RESPONSIBLE FOR PAYING WATER BILLS.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
WATER SERVICE LINE SPECIFICATIONS	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING W-20		2/2019
		SHEET 2 OF 2



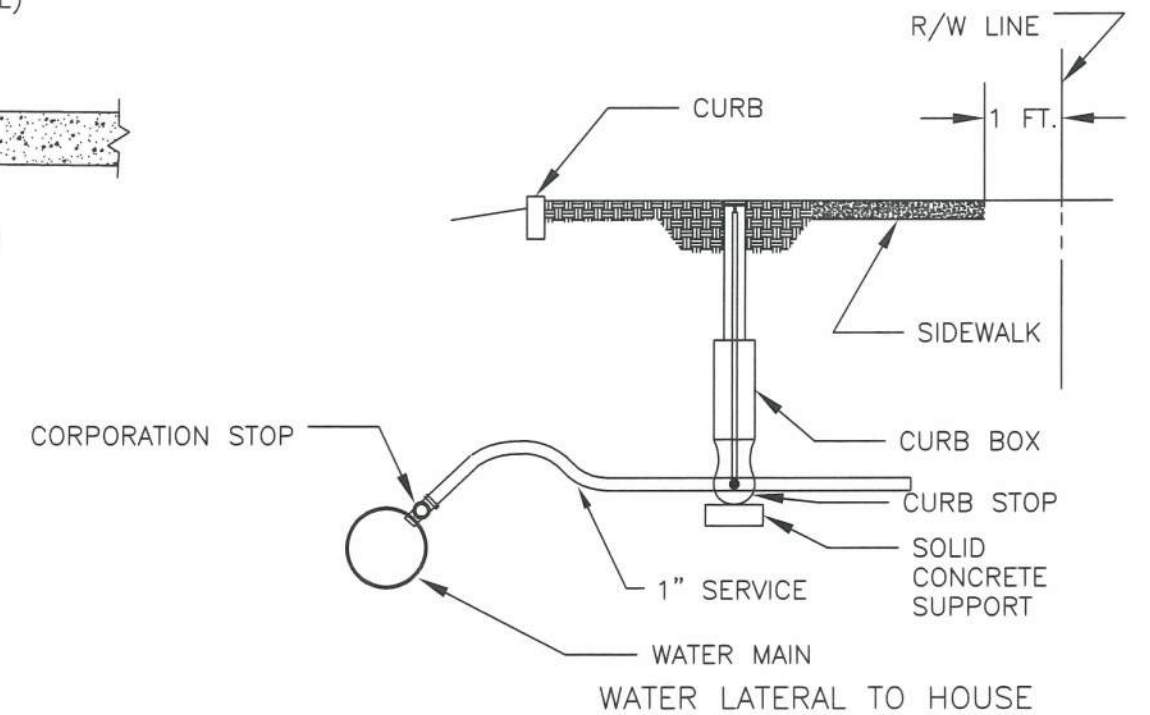
- ALL VALVES ARE FULL FLOW IRON TO IRON F-NPT
- BALL VALVES MAY BE USED
- ALL FITTINGS ARE NO LEAD BRASS.
- OUTLET SIDE OF SETTING MUST BE SECURED TO WALL OR FLOOR.

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 (F2080) WITH STAINLESS STEEL INSERT.
2. ALL INSTALLATIONS MUST COMPLY WITH PUBLISHED RULES AND REGULATIONS
3. INSIDE METER ASSEMBLY TO BE ACCESSIBLE AT ALL TIMES
4. NO SEWER CHARGE FOR SECOND METER; WATER CHARGE ONLY.



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.

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 CONSTRUCTION STANDARDS AND SPECIFICATIONS		
INSIDE METER INSTALLATION	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING W-21		2/2019

- 1) 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) A PRESSURE VACUUM BREAKER DEVICE WILKINS MODEL 720A OR APPROVED EQUAL AS PER SPECIFICATION ASSE #1020 IS REQUIRED ON OUTSIDE SPRINKLER SYSTEMS.

THE DEVICE MUST BE TESTED UPON INSTALLATION AND EVERY 12 MONTHS THEREAFTER. THE TEST FOR RESIDENTIAL IRRIGATION SYSTEMS MUST BE COMPLETED EVERY YEAR BEFORE MAY 31ST DEADLINE REGARDLESS OF WHEN THE DEVICE WAS INSTALLED. DEVICE TESTING IS A REQUIREMENT OF THE OHIO REVISED CODE AND MUST BE COMPLETED REGARDLESS OF WHETHER THE SYSTEM IS USED. ALL TEST RESULTS MUST BE SUBMITTED TO THE CITY OF AVON UTILITIES DEPARTMENT.

B) THERE SHALL BE PAID A PERMIT FEE TO BOTH THE UTILITIES AND BUILDING DEPARTMENTS FOR SUCH APPLICATION.

C) 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.

D) 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 18" WIDE X 18" DEEP REMOVABLE PANEL.

2) SANITARY SEWER DEDUCT METERS SHALL BE INSTALLED FOR USE WITH IRRIGATION SYSTEMS AND OUTSIDE SPIGOTS.

3) SUCH COMMON AREAS SHALL HAVE INDIVIDUAL IRRIGATION TAPS/SYSTEMS SEPARATE FROM HOMES.

4) ALL RESIDENTIAL DEDUCT METERS SHALL BE SIZED ACCORDING TO THE SERVICE AND INSTALLED AS PER CITY OF AVON STANDARDS.

5) 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.

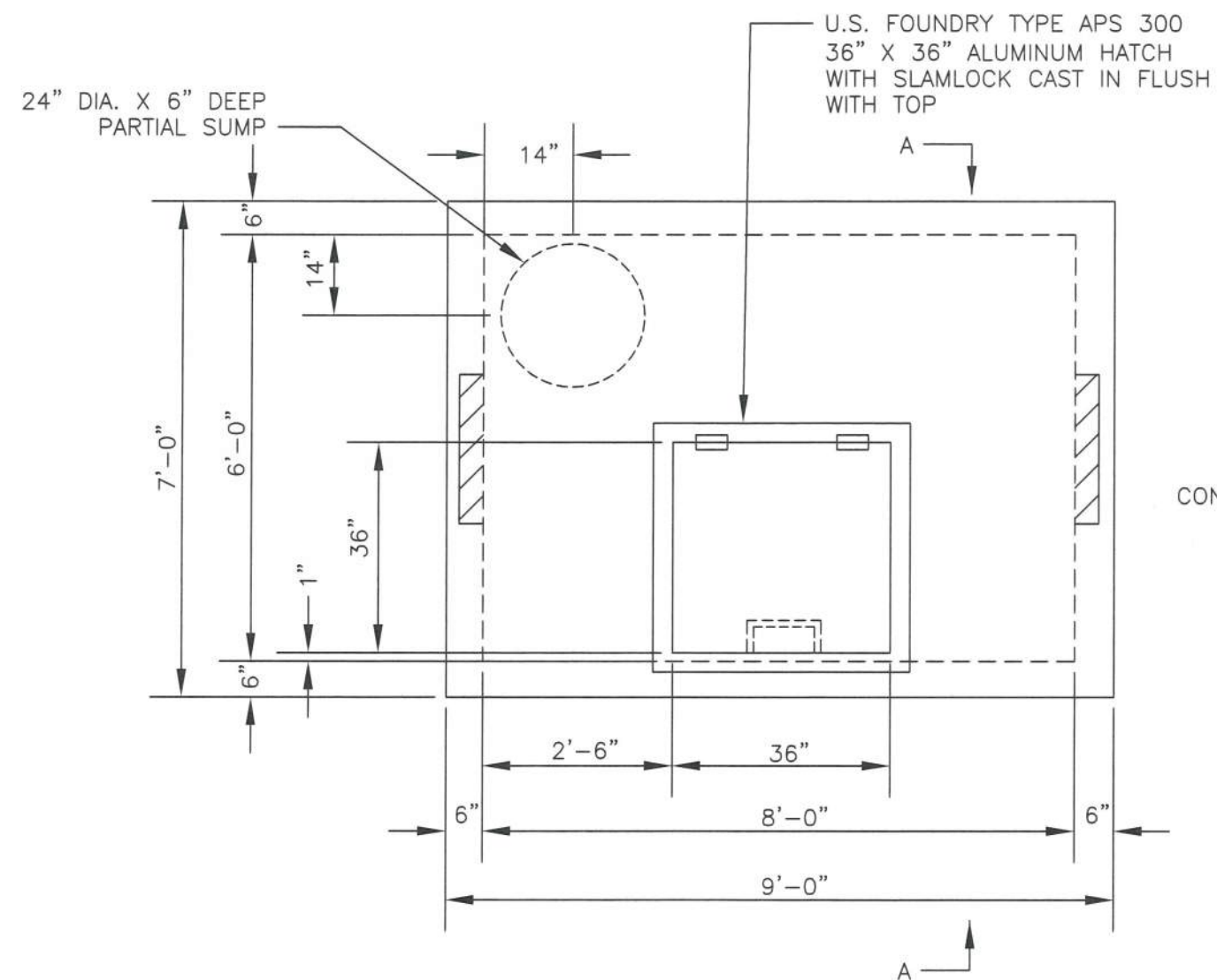
6) IRRIGATION SYSTEMS THAT ARE TO BE INSTALLED ON HOMES/PROPERTIES THAT ARE OF A SLAB TYPE CONSTRUCTION SHALL BE REQUIRED TO INSTALL AN INDIVIDUAL/SEPARATE LINE FROM THE "MASTER METER" TO A POINT AT WHICH THE IRRIGATION SYSTEM EXITS THE HOME COORDINATED WITH AVON UTILITIES DEPARTMENT WHEN THE STANDARD 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.

7) THE CITY OF AVON UTILITIES DEPARTMENT SHALL RESERVE THE RIGHT TO DENY ANY AND ALL DEDUCT METER INSTALLATIONS DUE TO IMPROPER INSTALLATION.

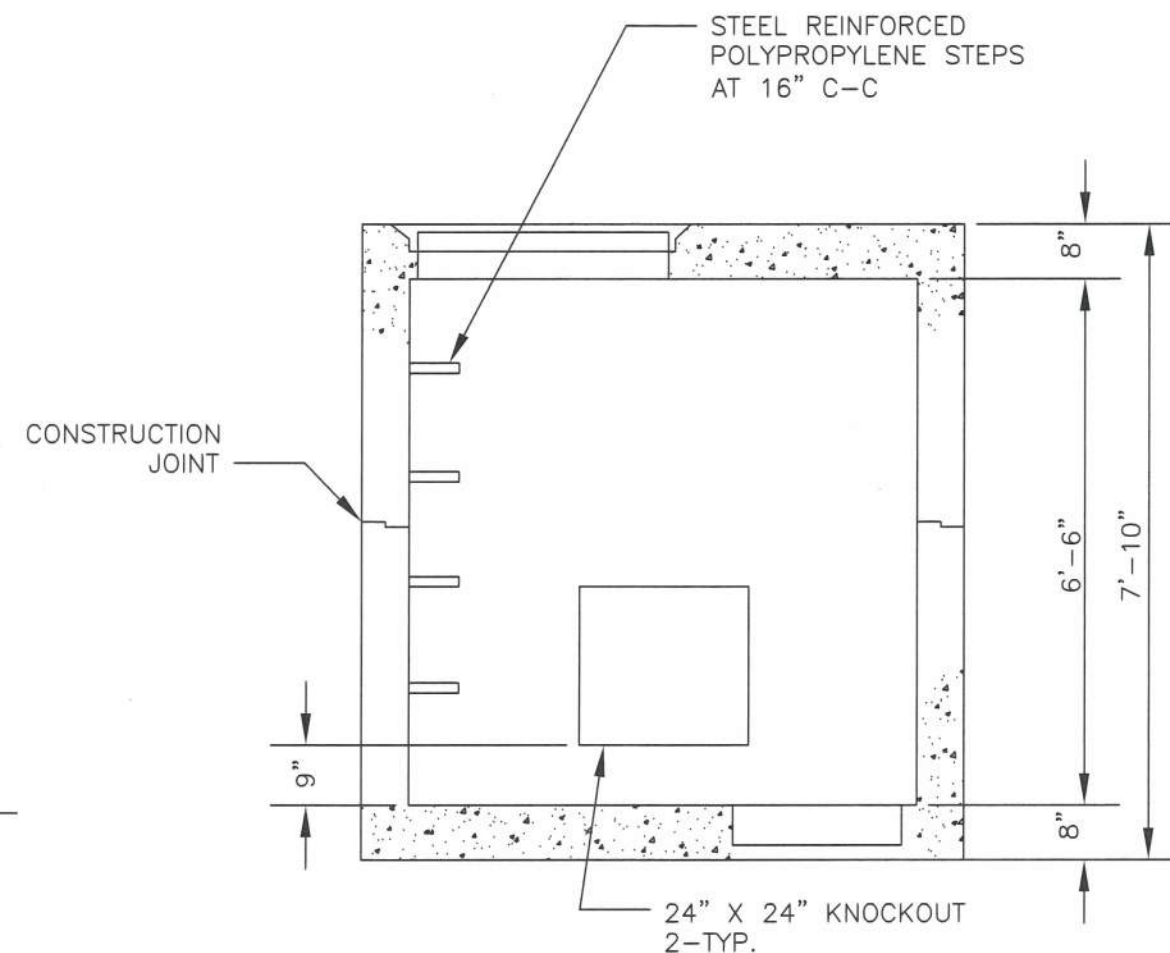
8) ANY AND ALL COST SHALL BE AT THE EXPENSE OF THE HOMEOWNER AND/OR THEIR AGENTS.

9) IT SHALL BE THE RESPONSIBILITY OF THE HOMEOWNER TO CONTACT THE CITY FOR INSPECTIONS AND METER INSTALLS FOURTY-EIGHT (48) HOURS IN ADVANCE.

10) COMMERCIAL/INDUSTRIAL/SLAB HOMES IRRIGATION SYSTEMS SHALL BE REVIEWED AND APPROVED ON AN INDIVIDUAL BASIS.
- | CITY OF AVON
CONSTRUCTION STANDARDS
AND SPECIFICATIONS | | |
|--|-----------------------|--------|
| SEWER DEDUCT METER
SPECIFICATIONS | ADOPTION
ORDINANCE | DATE |
| STANDARD
CONSTRUCTION
DRAWING W-23 | | 2/2019 |



TOP VIEW

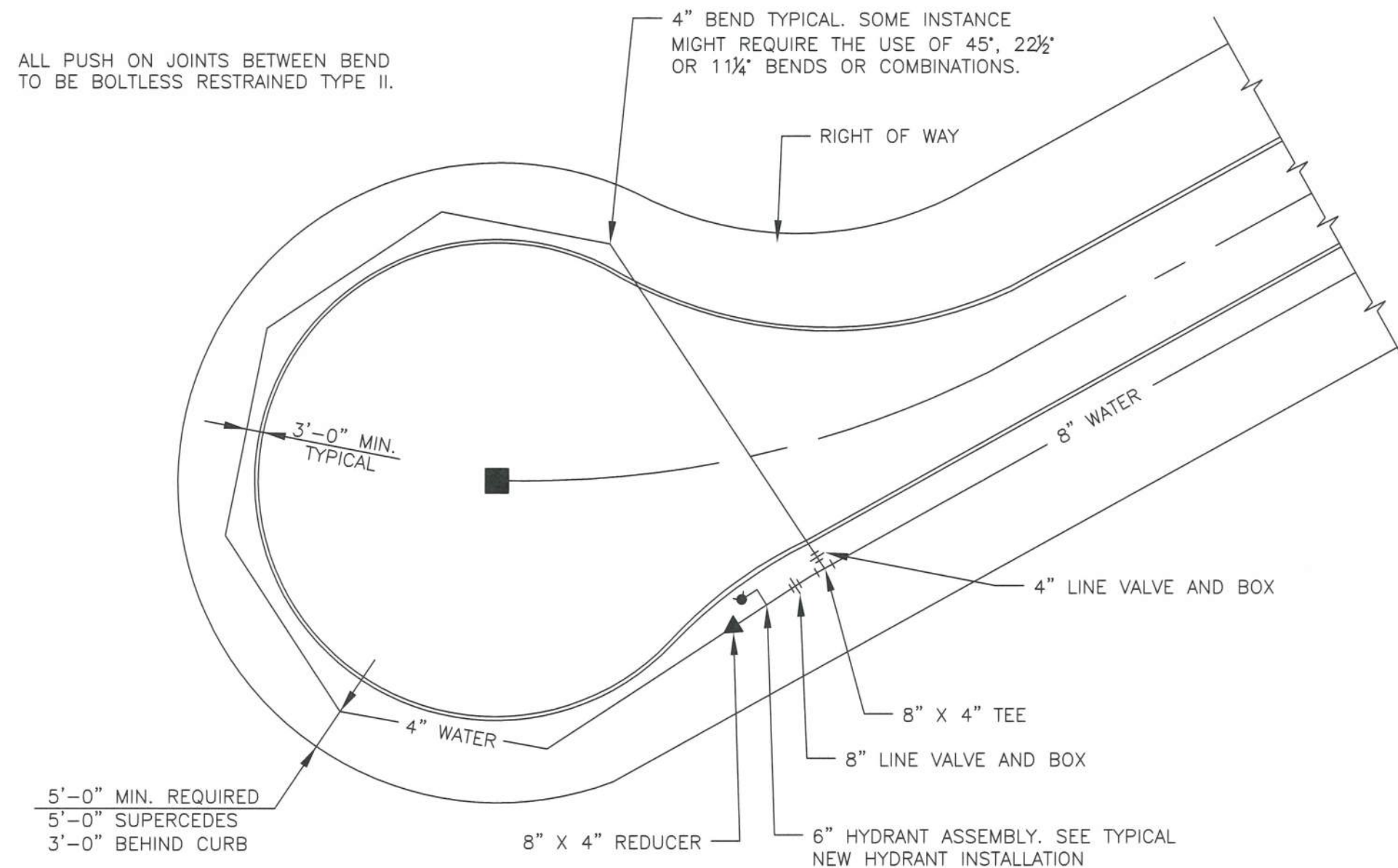


SECTION A-A

NOTES:

1. REINFORCED PRECAST CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH OF 5000 PSI AT 28 DAYS.
2. VAULT TO BE NON-TRAFFIC BEARING OR TRAFFIC BEARING PER LOCATION.
3. CONSTRUCTION JOINT TO BE SEALED WITH CONSEAL CS-102 MASTIC SEALANT.
4. ALL PIPING BY OTHERS.
5. HEAVIEST LIFT = 13,500 LBS.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
6' X 8' CITY OF AVON METER VAULT	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING W-24		2/2019



NOTE: LINE VALVE AND HYDRANT TO BE AS CLOSE TO TEE AS POSSIBLE. HYDRANT TEE TO BE WITHIN 18'-0" OF 8" X 4" TEE.

CITY OF AVON CONSTRUCTION STANDARDS AND SPECIFICATIONS		
STANDARD CUL-DE-SAC HYDRANT/LOOP SCHEMATIC	ADOPTION ORDINANCE	DATE
STANDARD CONSTRUCTION DRAWING	W-25	2/2019