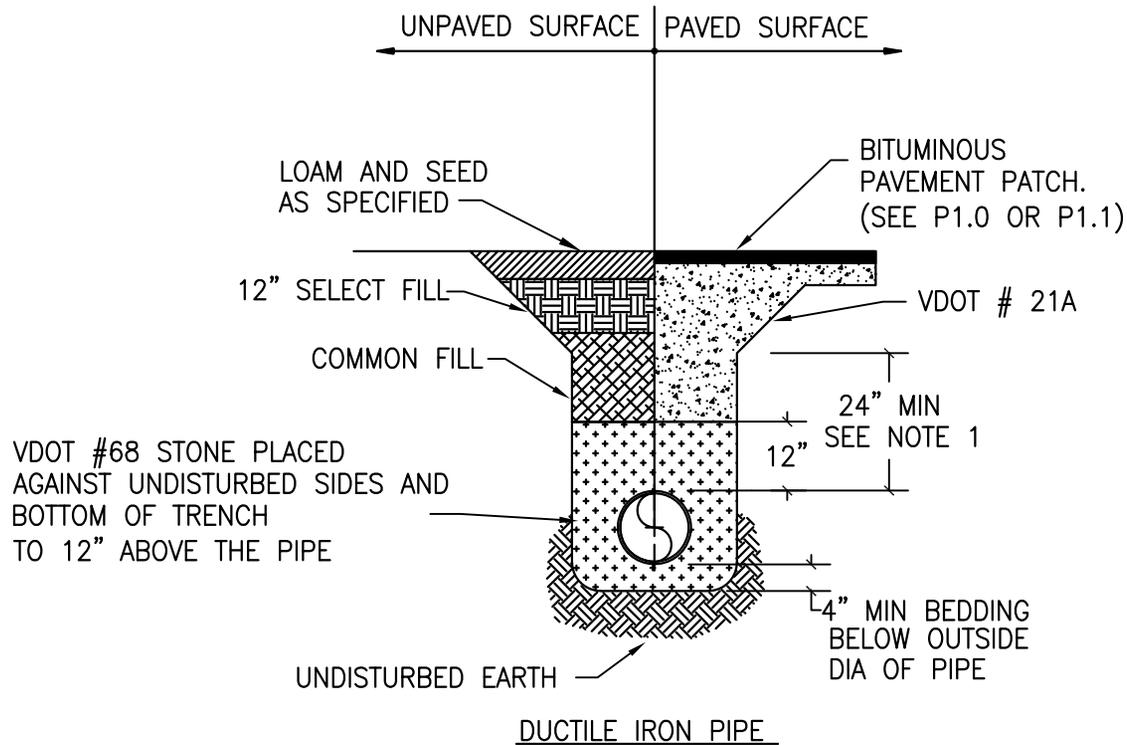


APPENDIX C

POTABLE WATER SYSTEM DETAILS

CITY OF CHARLOTTESVILLE, VIRGINIA

W 1.0	Pipe Trench and Bedding Standard Subgrade --Typical
W 1.1	Pipe Trench and Bedding --Unstable Soil
W 2.0	Concrete Thrust Blocks
W 2.1	Concrete Thrust Block Dimensions
W 2.2	Vertical Concrete Thrust Blocks
W 2.3	Vertical Concrete Thrust Block Dimensions
W 2.4	Restraint Joint Lengths Chart
W 3.0	Fire Hydrants --Typical
W 3.1	Fire Hydrant Bollards
W 4.0	Gate Valve --Typical
W 5.0	Service Lateral --Typical
W 6.1	Meter Box - 5/8" and 1" Meters
W 6.2	Meter Box - 1.5" and 2" Meters
W 6.3	Meter Vault - 3" Meter
W 6.4	Meter Vault - 4" Meter
W 7.0	Water Line Abandonment
W 7.1	Water Lateral Abandonment
W 8.0	Air Release Valve and Vault
W 8.1	Offset Air Release Valve and Vault
W 8.2	Blow-off Assembly
W 9.0	Steel Casing Installations Under Roadways
W 9.1	Steel Casing Installations Under Railways
W 9.2	Pipe Casing Requirements
W 9.3	Stream-Crossing
W 9.4	Concrete Anchors
W 9.5	Typical Water Pressure Test Rig
W 9.6	Typical Sprinkler Service
W 9.7	Concrete Piers



NOTES:

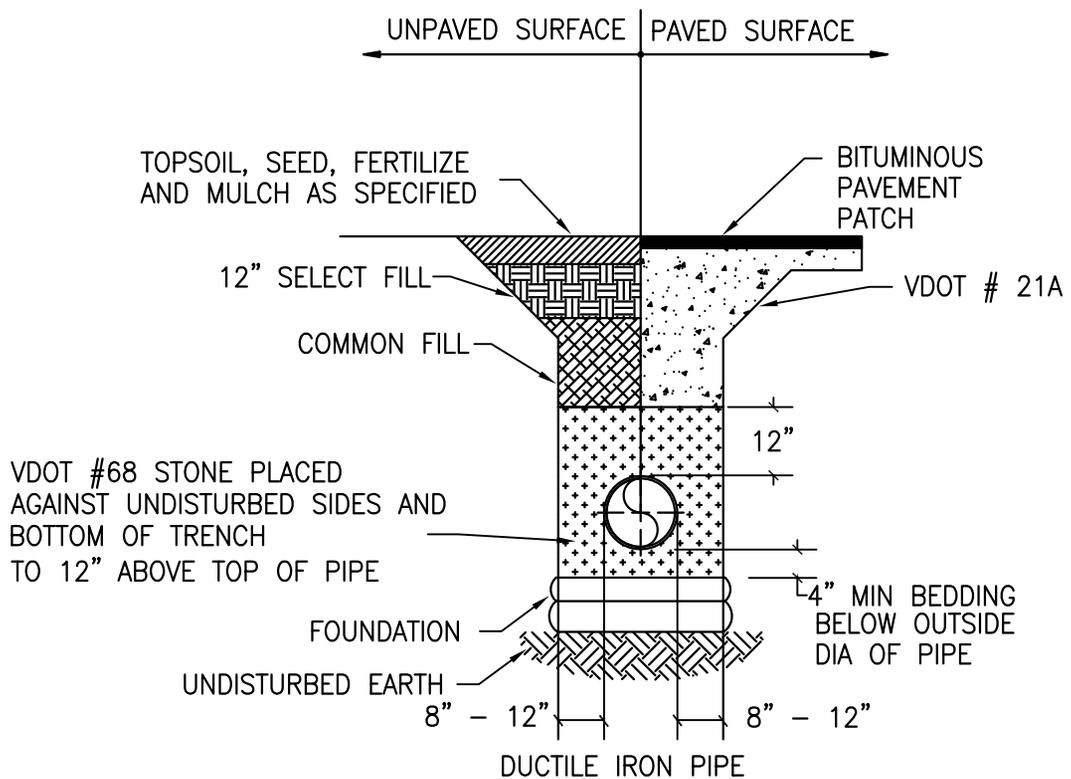
1. MAINTAIN VERTICAL TRENCH WALLS FROM BOTTOM OF TRENCH TO 24" ABOVE CROWN OF PIPE. TRENCH WIDTH IN THIS AREA: PIPE O.D. + 24".
2. FOR EXCAVATIONS OVER 5 FT. DEEP, SLOPE TRENCH WALLS AS REQUIRED AND/OR PROVIDE OTHER SAFETY MEASURES IN ACCORDANCE WITH OSHA GUIDELINES.
3. ROCK SHALL BE REMOVED TO A MINIMUM OF 6-INCH CLEARANCE AROUND THE BOTTOM AND 12-INCH MINIMUM CLEARANCE TO THE SIDES OF PIPE.
4. ALL BEDDING AND BACKFILL SHALL BE PLACED IN 6" LIFTS AND COMPACTED TO 95% MAXIMUM DENSITY PER ASTM D698.
5. "PAVED SURFACES" INCLUDE ALL PREVIOUSLY PAVED SURFACES OR SURFACES TO BE PAVED AS PART OF PROJECT.



CITY OF CHARLOTTESVILLE

AUG	2013
MAR	2014
APR	2023
REVISION	DATE

CITY STANDARDS	
PIPE TRENCH UNIVERSAL STANDARD SUBGRADE – TYPICAL	
SCALE: N.T.S.	STANDARD NUMBER: W 1.0



NOTES:

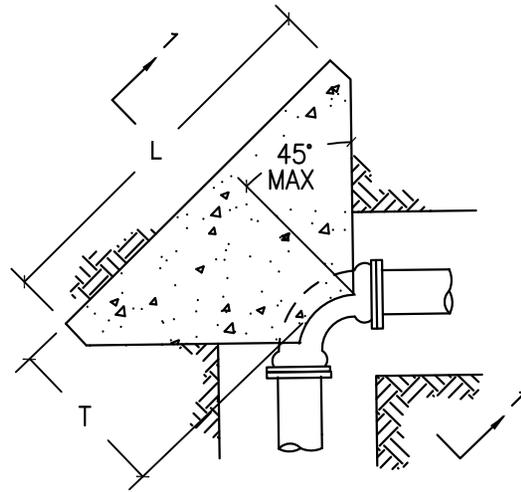
1. IN UNSTABLE SOILS, PROVIDE A FOUNDATION MAT FROM THE BOTTOM OF PIPE BEDDING TO UNDISTURBED STABLE SOIL, OR 18" MAX. DEPTH. THE FOUNDATION MAT SHALL CONSIST OF TWO (2) MATS (9" MAX. EACH) OF VDOT #1 CRUSHED STONE WRAPPED IN A HIGH STRENGTH GEOTEXTILE FABRIC; LINQ INDUSTRIAL FABRICS, INC. GTF 375N OR EQUAL. MATS SHALL EXTEND FULL WIDTH OF TRENCH EXCAVATION WITH MINIMUM FABRIC OVERLAP OF 18".
2. FOR ALL EXCAVATIONS, SLOPE TRENCH WALLS AS REQUIRED AND/OR PROVIDE OTHER SAFETY MEASURES IN ACCORDANCE WITH OSHA GUIDELINES.
4. ALL BEDDING AND BACKFILL SHALL BE PLACED IN 6" LIFTS AND COMPACTED TO 95% MAXIMUM DENSITY PER ASTM D698.
5. "PAVED SURFACES" INCLUDE ALL PREVIOUSLY PAVED SURFACES OR SURFACES TO BE PAVED AS PART OF PROJECT.



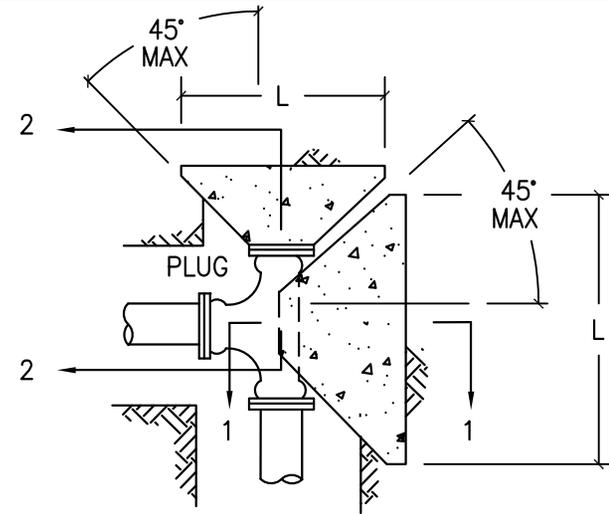
CITY OF CHARLOTTESVILLE

JULY	2011
MAR	2014
APR	2023
REVISION	DATE

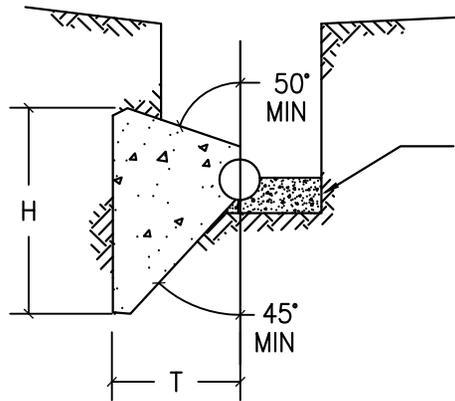
CITY STANDARDS	
PIPE TRENCH	
UNIVERSAL – UNSTABLE SOIL	
SCALE: N.T.S.	STANDARD NUMBER: W 1.1



FOR ALL BENDS

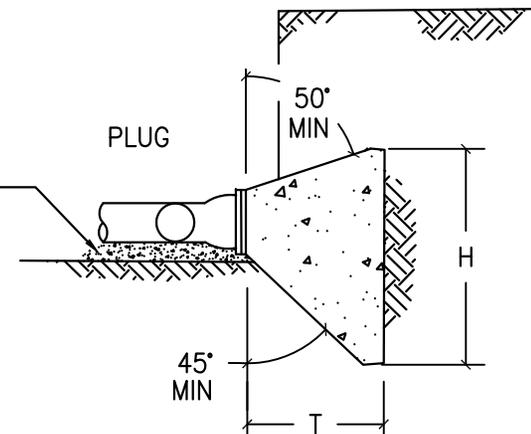


FOR TEE OR PLUG FITTINGS



SECTION 1-1

BEDDING AS REQUIRED



SECTION 2-2

NOTES:

1. MAXIMUM TEST PRESSURE: 225 PSI.
2. MINIMUM ALLOWABLE SOIL BEARING PRESSURE: 2000 PSF.
3. THRUST BLOCKS OR RESTRAINED JOINT FITTINGS ARE REQUIRED WHENEVER PIPELINE CHANGES DIRECTION, SIZE, OR DEAD-ENDS.
4. USE 3000 P.S.I. CONCRETE.
5. WRAP PIPE AND FITTINGS IN PLASTIC TO PREVENT DIRECT CONTACT WITH CONCRETE. NO CONCRETE SHALL BE Poured ON ANY PART OF THE JOINT.
6. SEE DRAWING W 2.1 FOR THRUST BLOCK DIMENSIONS.



CITY OF CHARLOTTESVILLE

JULY	2011
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CITY STANDARDS

CONCRETE THRUST BLOCKS

SCALE: N.T.S.

STANDARD NUMBER: W 2.0

PIPE SIZE	DEGREE OF BEND	BEND (FT)			MIN. PIPE COVER (FT)	TEE AND PLUG (FT)			MIN. PIPE COVER (FT)
		L	H	T		L	H	T	
4" & 6"	90	3.00	2.50	3.01	3	2.00	2.30	2.50	3
	45	2.00	2.30	2.60					
	22 1/2	1.50	2.00	2.50					
	11 1/4	1.50	2.00	2.50					
8" & 10"	90	4.50	3.50	3.20	3	3.20	3.00	3.00	3
	45	3.00	2.70	2.80					
	22 1/2	2.00	2.00	2.70					
	11 1/4	1.70	2.00	2.70					
12" & 14"	90	7.30	4.00	3.60	4	4.30	4.00	2.80	4
	45	4.50	3.60	3.00					
	22 1/2	3.30	2.60	2.90					
	11 1/4	1.80	2.30	2.90					
16" & 18"	90	10.70	4.50	3.40	5	6.30	4.60	3.80	5
	45	6.50	4.00	3.00					
	22 1/2	4.50	3.30	3.00					
	11 1/4	2.80	2.70	3.00					

REFERENCE DRAWING 2.0 FOR DIMENSION LOCATIONS

NOTES:

1. MAXIMUM TEST PRESSURE: 225 PSI.
2. MINIMUM ALLOWABLE SOIL BEARING PRESSURE: 2000 PSF.
3. USE MINIMUM 3000 P.S.I. CONCRETE.
4. THE DESIGN ENGINEER SHALL BE RESPONSIBLE FOR VERIFICATION OF ADEQUACY OF ALL THRUST BLOCKS.



CITY OF CHARLOTTESVILLE

JULY 2011

REVISION DATE

CITY STANDARDS

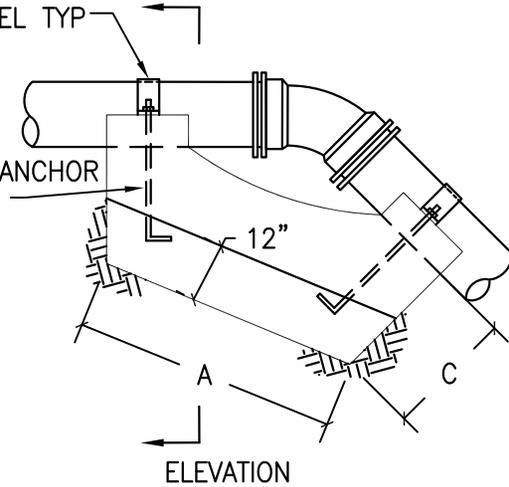
CONCRETE THRUST BLOCK DIMENSIONS

SCALE: N.T.S.

STANDARD NUMBER: W 2.1

3/8"x 2" PIPE STRAP
STAINLESS STEEL TYP

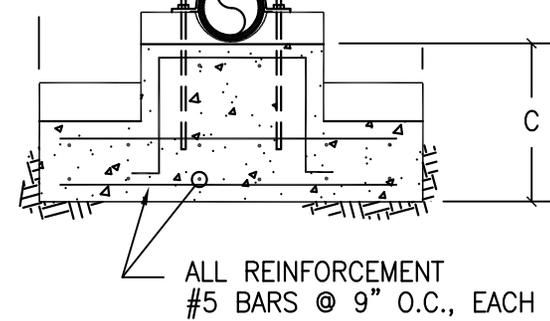
3/4" DIA.
ANCHOR
BOLT TYP



ELEVATION

UPPER VERTICAL BEND

15" | B | 15"
3/8"x 2" PIPE STRAP
STAINLESS STEEL TYP | 3/4" DIA. ANCHOR
BOLT TYP

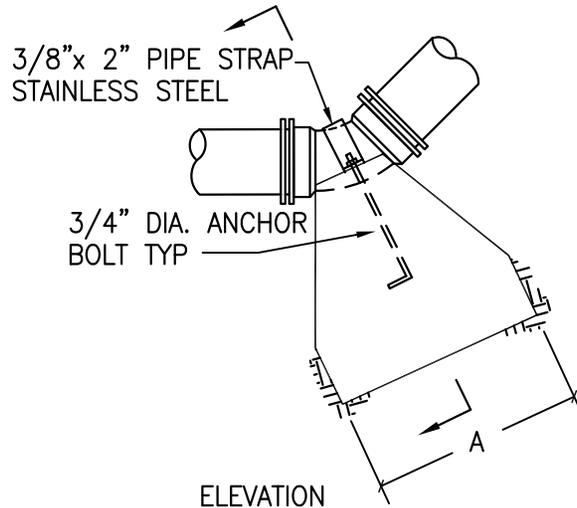


SECTION

ALL REINFORCEMENT
#5 BARS @ 9" O.C., EACH WAY

3/8"x 2" PIPE STRAP
STAINLESS STEEL

3/4" DIA. ANCHOR
BOLT TYP

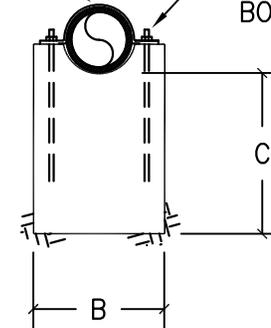


ELEVATION

LOWER VERTICAL BEND

3/8"x 2" PIPE STRAP
STAINLESS STEEL

3/4" DIA. ANCHOR
BOLT TYP



SECTION

NOTES:

1. MAXIMUM TEST PRESSURE: 225 PSI.
2. MINIMUM ALLOWABLE SOIL BEARING PRESSURE: 2000 PSF.
3. THRUST BLOCKS ARE REQUIRED WHENEVER PIPELINE CHANGES DIRECTION, SIZE, OR DEAD-ENDS.
4. USE 3000 P.S.I. CONCRETE. GLANDS AND BOLTS SHALL BE PROTECTED FROM CONCRETE BY PLASTIC SHEETING WHEN POURING THRUST BLOCKS.
5. SEE DRAWING W 2.3 FOR THRUST BLOCK DIMENSIONS.



CITY OF CHARLOTTESVILLE

JULY 2011

REVISION DATE

CITY STANDARDS

VERTICAL CONCRETE THRUST
BLOCKS

SCALE: N.T.S.

STANDARD NUMBER: W 2.2

PIPE SIZE	DEGREE OF BEND	BEND (FT)			MIN. PIPE COVER (FT)	TEE AND PLUG (FT)			MIN. PIPE COVER (FT)
		L	H	T		L	H	T	
4" & 6"	90	3.00	2.50	3.00	3	2.00	2.30	2.50	3
	45	2.00	2.50	2.60					
	22 1/2	1.50	2.00	2.50					
	11 1/4	1.50	2.00	2.50					
8" & 10"	90	4.50	3.50	3.20	3	3.00	2.90	2.70	3
	45	3.00	2.70	2.80					
	22 1/2	2.00	2.00	2.70					
	11 1/4	1.70	2.00	2.70					
12" & 14"	90	7.30	4.00	3.60	4	4.30	4.00	2.80	4
	45	4.50	3.60	3.00					
	22 1/2	3.30	2.60	2.90					
	11 1/4	1.80	2.30	2.80					
16" & 18"	90	10.70	4.50	3.40	5	6.30	4.60	3.75	5
	45	6.50	4.00	3.00					
	22 1/2	4.50	3.30	2.90					
	11 1/4	2.80	2.60	2.80					

REFERENCE DRAWING 2.0 FOR DIMENSION LOCATIONS

NOTES:

1. MAXIMUM TEST PRESSURE: 225 PSI.
2. MINIMUM ALLOWABLE SOIL BEARING PRESSURE: 2000 PSF.
3. USE MINIMUM 3000 P.S.I. CONCRETE.
4. THE DESIGN ENGINEER SHALL BE RESPONSIBLE FOR VERIFICATION OF ADEQUACY OF ALL THRUST BLOCKS.



CITY OF CHARLOTTESVILLE

JULY 2011

REVISION DATE

CITY STANDARDS

VERTICAL CONCRETE THRUST
BLOCK DIMENSIONS

SCALE: N.T.S.

STANDARD NUMBER: W 2.3

Conditions	
Laying Condition:	Type 4
Soil Condition:	Clay 2
Depth of Pipe:	3 Feet
Design Pressure:	150 PSI
Safety Factor:	1.5

Fittings and Valves:					
Type	Pipe Diameter				
	4-inch	6-inch	8-inch	10-inch	12-inch
90-degree bend					
Horizontal	13	19	25	31	36
Vertical Up	13	19	25	31	36
Vertical Down	27	39	51	62	74
45-degree bend					
Horizontal	6	8	10	13	15
Vertical Up	6	8	10	13	15
Vertical Down	11	16	21	26	31
22.5-degree bend					
Horizontal	3	4	5	6	7
Vertical Up	3	4	5	6	7
Vertical Down	3	4	5	6	7
11.25-degree bend					
Horizontal	1	2	2	3	4
Vertical Up	1	2	2	3	4
Vertical Down	3	4	5	6	7
Cap	14	19	25	31	37
Valve	14	19	25	31	37

Tees and Wyes:					
Branch Diameter	Run Diameter				
	4-inch	6-inch	8-inch	10-inch	12-inch
4-inch	13	13	13	13	13
6-inch	19	19	19	19	19
8-inch	25	25	25	25	25
10-inch	31	31	31	31	31
12-inch	37	37	37	37	37

Reducers:					
Large Diameter	Small Diameter				
	4-inch	6-inch	8-inch	10-inch	12-inch
4-inch	N/A	N/A	N/A	N/A	N/A
6-inch	10	N/A	N/A	N/A	N/A
8-inch	18	11	N/A	N/A	N/A
10-inch	25	19	10	N/A	N/A
12-inch	32	27	20	11	N/A

* - Distances are given in feet both upstream and downstream from the fitting.

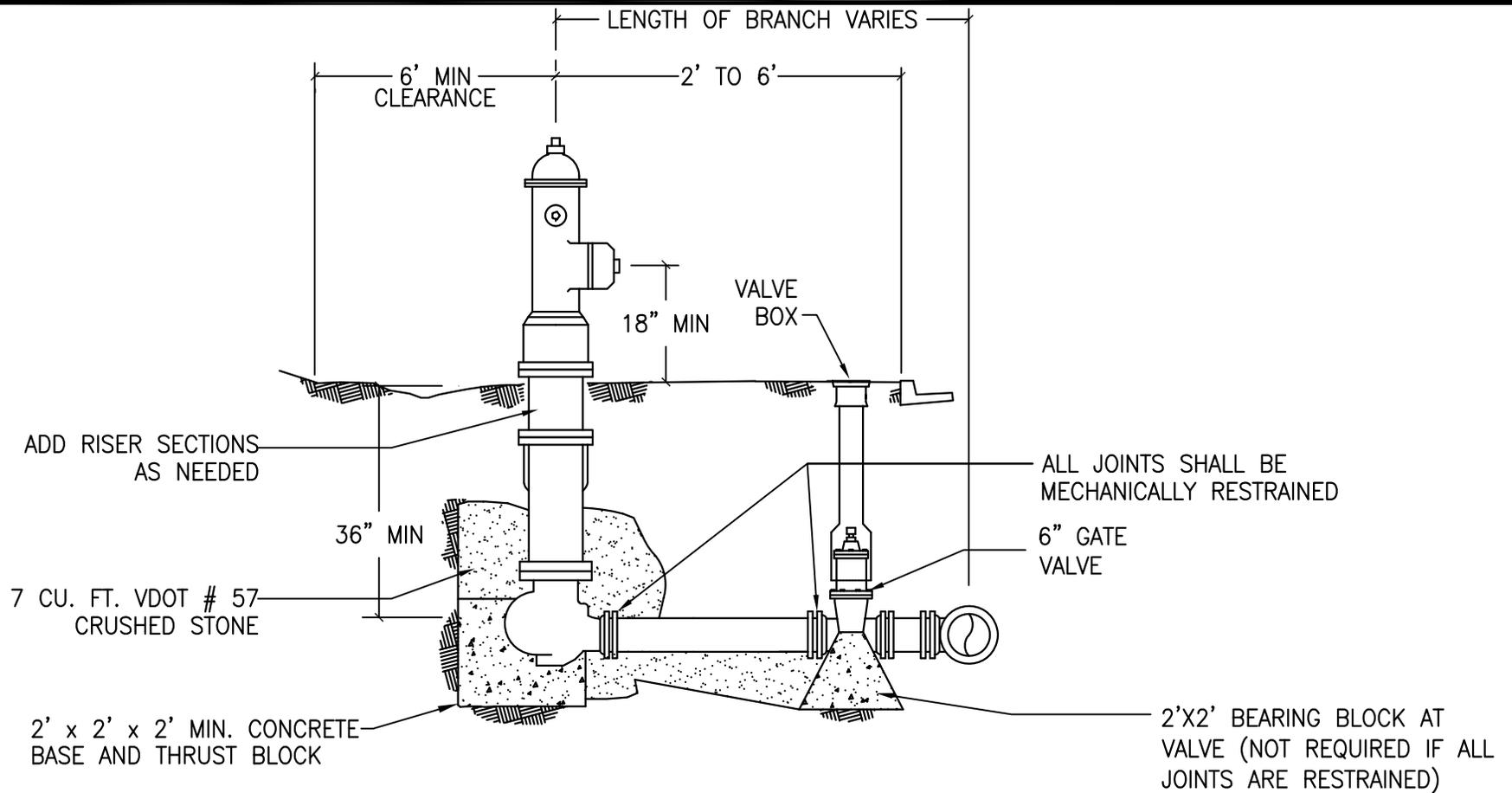


CITY OF CHARLOTTESVILLE

JULY	2011
REVISION	DATE

CITY STANDARDS
**RESTRAINED JOINT PIPE
 LENGTHS CHARTS**

SCALE: N.T.S. STANDARD NUMBER: W 2.4



NOTES:

1. SURROUND WEEP HOLES WITH GRAVEL AND KEEP FREE OF CONCRETE.
2. MAINTAIN A 3' MIN. COVER FROM THE MAIN TO THE FIRE HYDRANT (INCLUDING DITCHES).
3. FINISHED GRADE SHALL SLOPE AWAY FROM THE FIRE HYDRANT AND VALVE BOX.
4. GATE VALVE SHALL NOT BE PLACED WITHIN THE DITCH LINES.
5. IF GROUNDWATER IS PRESENT AT THE INSTALLATION SITE, COORDINATE THE RELOCATION OF THE HYDRANT WITH CITY.
6. EACH NEW FIRE HYDRANT SHALL BE FRESHLY PAINTED WITH "GLID" GUARD #45 SAFETY RED, BY "GLIDDEN" OR APPROVED EQUAL.
7. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT ALL FIRE HYDRANTS ARE PROVIDED WITH "CITY OF CHARLOTTESVILLE" THREADS.
8. ALL CHAINS SHALL BE REMOVED FOLLOWING INSTALLATION AND TESTING.



CITY OF CHARLOTTESVILLE

MAR 2013

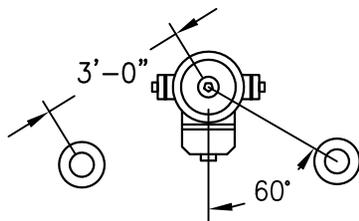
CITY STANDARDS

FIRE HYDRANT – TYPICAL

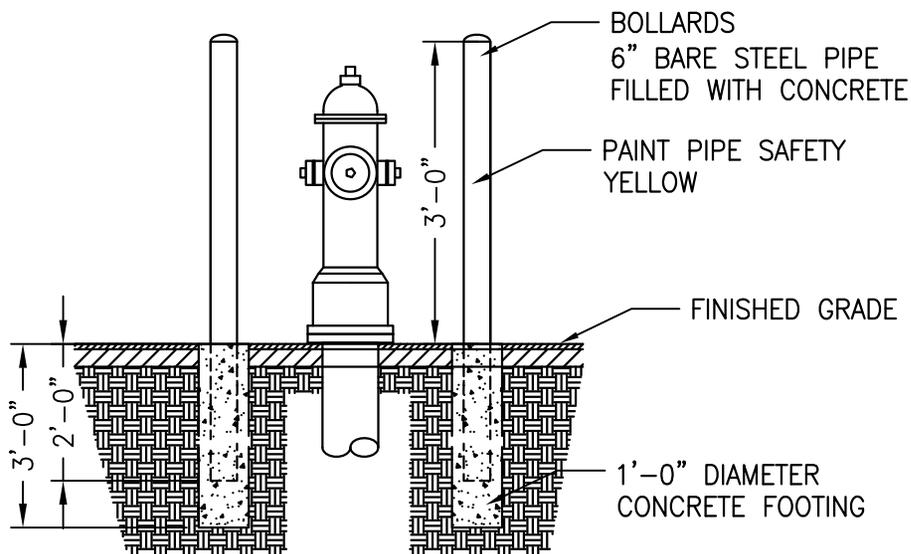
REVISION DATE

SCALE: N.T.S.

STANDARD NUMBER: W 3.0



TYPICAL BOLLARD PLACEMENT PLAN



ELEVATION

NOTES:

1. QUANTITY AND PLACEMENT OF BOLLARDS TO BE DETERMINED BY PLANS OR FIELD INSPECTION BY UTILITIES DEPARTMENT OR FIRE MARSHALL.
2. CONCRETE TO BE CLASS A3.



CITY OF CHARLOTTESVILLE

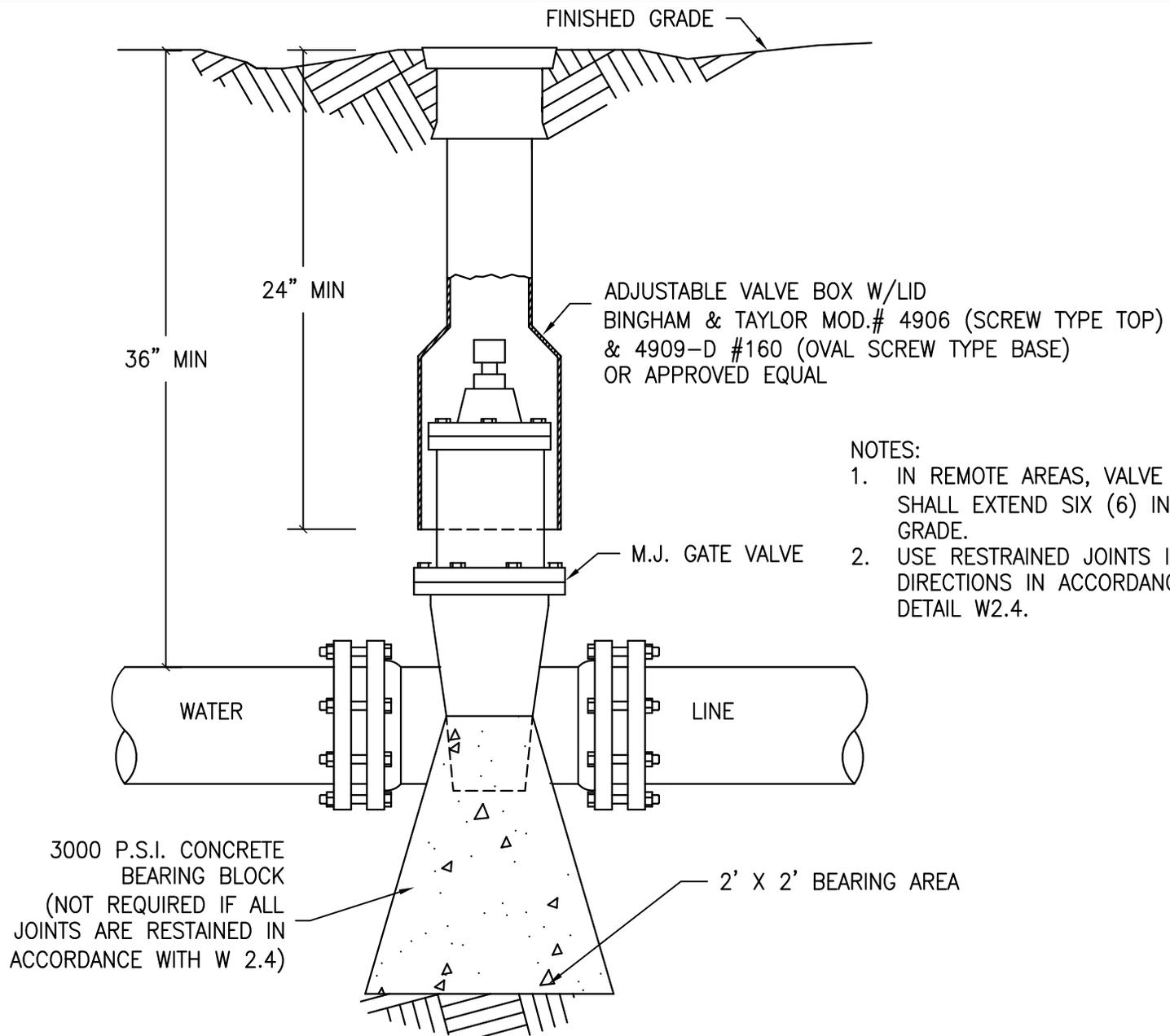
JUN	2012
REVISION	DATE

CITY STANDARDS

FIRE HYDRANT BOLLARDS

SCALE: N.T.S.

STANDARD NUMBER: W 3.1



NOTES:

1. IN REMOTE AREAS, VALVE BOXES SHALL EXTEND SIX (6) INCHES ABOVE GRADE.
2. USE RESTRAINED JOINTS IN BOTH DIRECTIONS IN ACCORDANCE WITH DETAIL W2.4.



CITY OF CHARLOTTESVILLE

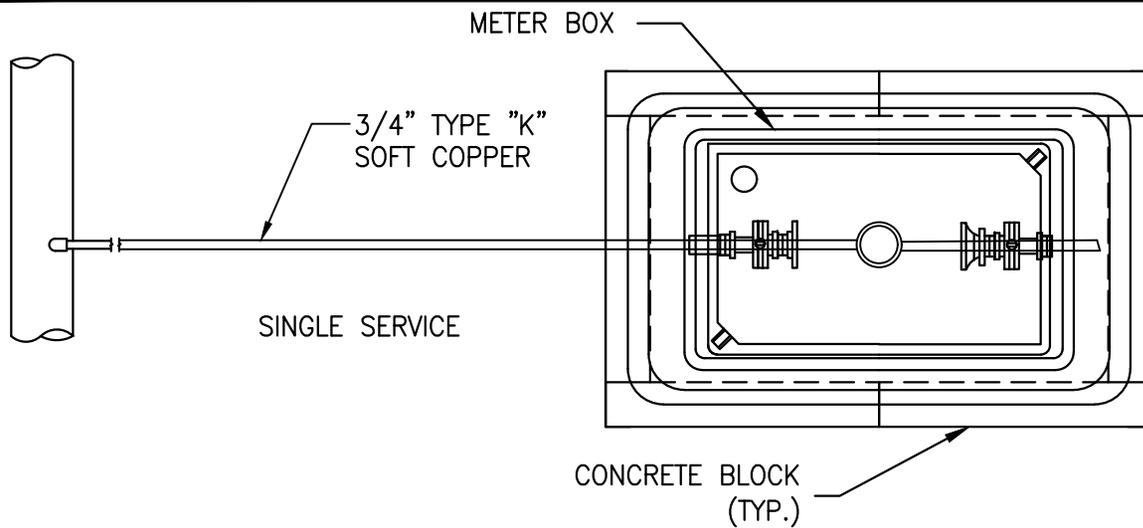
JULY	2011
REVISION	DATE

CITY STANDARDS

GATE VALVE – TYPICAL

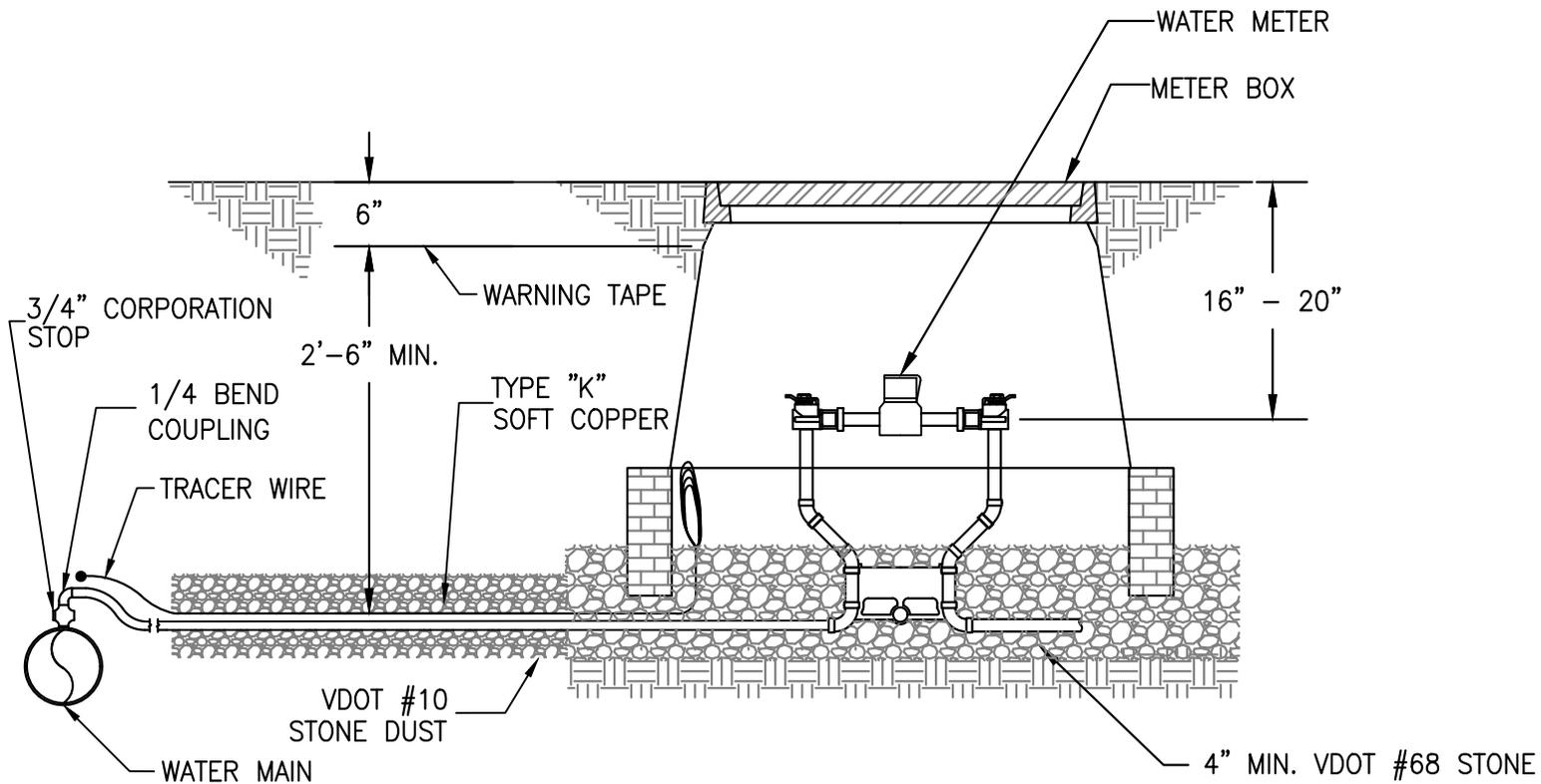
SCALE: N.T.S.

STANDARD NUMBER: W 4.0



NOTES:

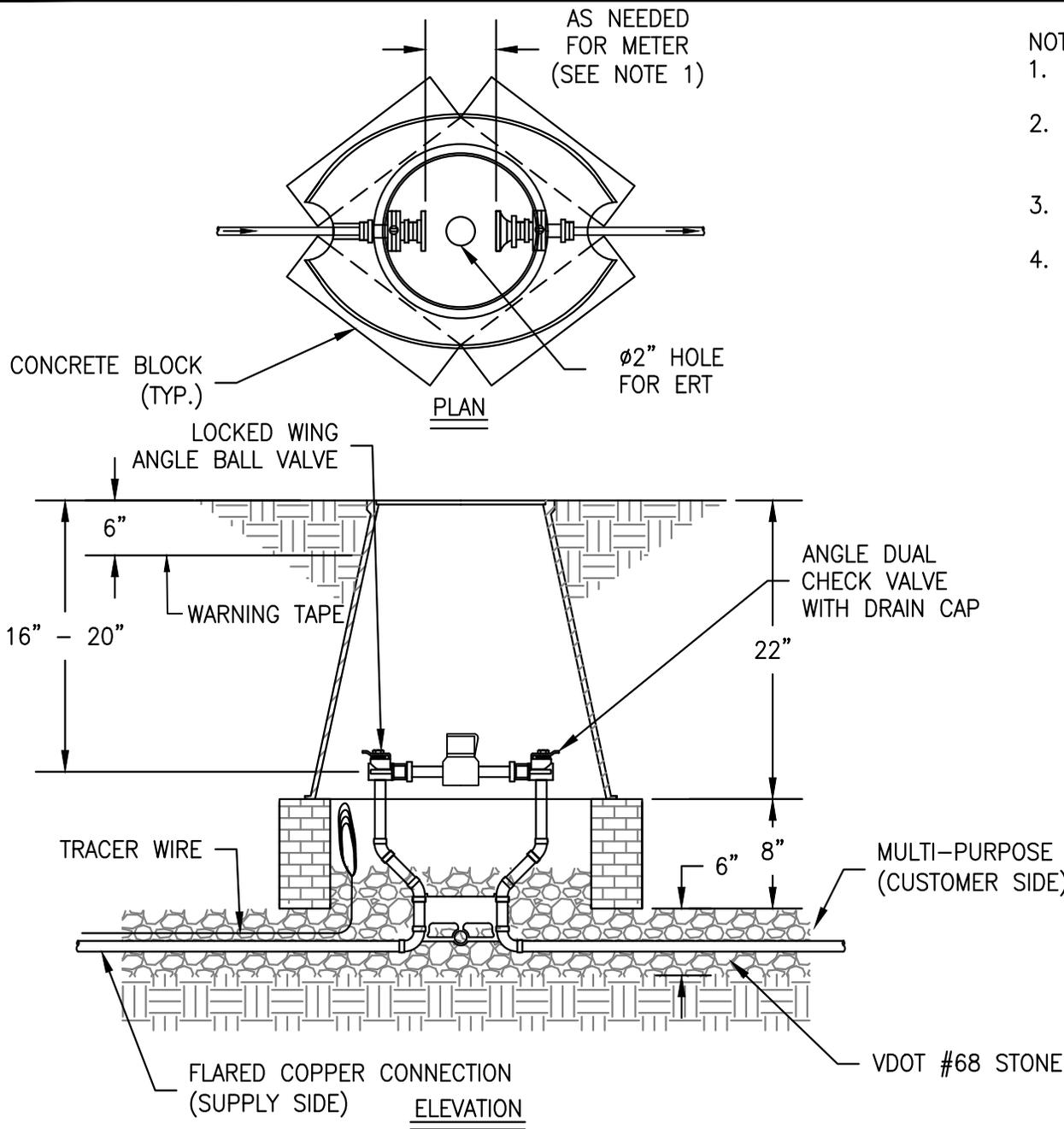
1. THE WATER SERVICE, 1/4 BEND COUPLING, AND CORPORATION STOP SHALL BE THE SAME SIZE AS THE METER SETTER.
2. METER TO BE INSTALLED BY THE CITY.
3. INSTALL WARNING TAPE AND TRACER WIRE WITH WATER SERVICE.
4. CORPORATION STOPS THREADED INTO IRON PIPES, AND FITTINGS SHALL HAVE THEIR THREADS COATED WITH SEALING COMPOUND PRIOR TO ASSEMBLY.
5. TAPS SHALL NOT BE MADE WITHIN TWO (2) FEET OF A BELL JOINT, FITTING, OR OTHER TAP ON DUCTILE IRON WATER MAIN, AND FIVE (5) FEET ON CAST IRON WATER MAIN.



CITY OF CHARLOTTESVILLE

JAN.	2022
REVISION	DATE

CITY STANDARDS	
WATER SERVICE - 5/8-INCH	
SCALE: N.T.S.	STANDARD NUMBER: W 5.0



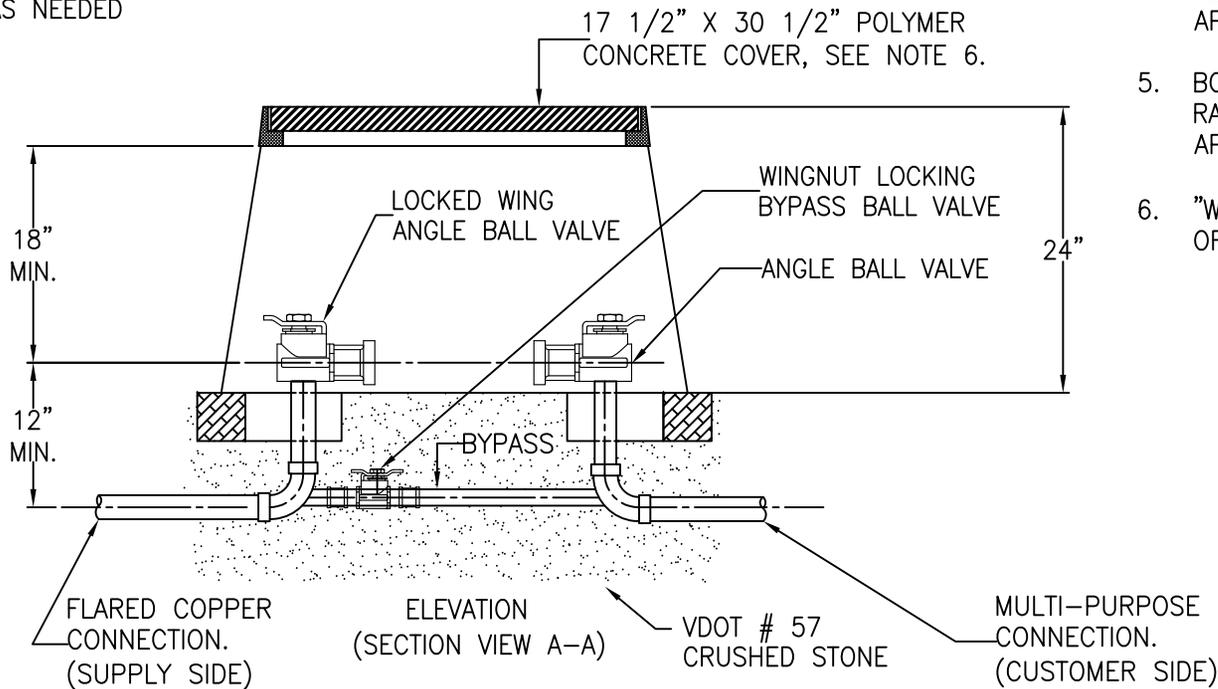
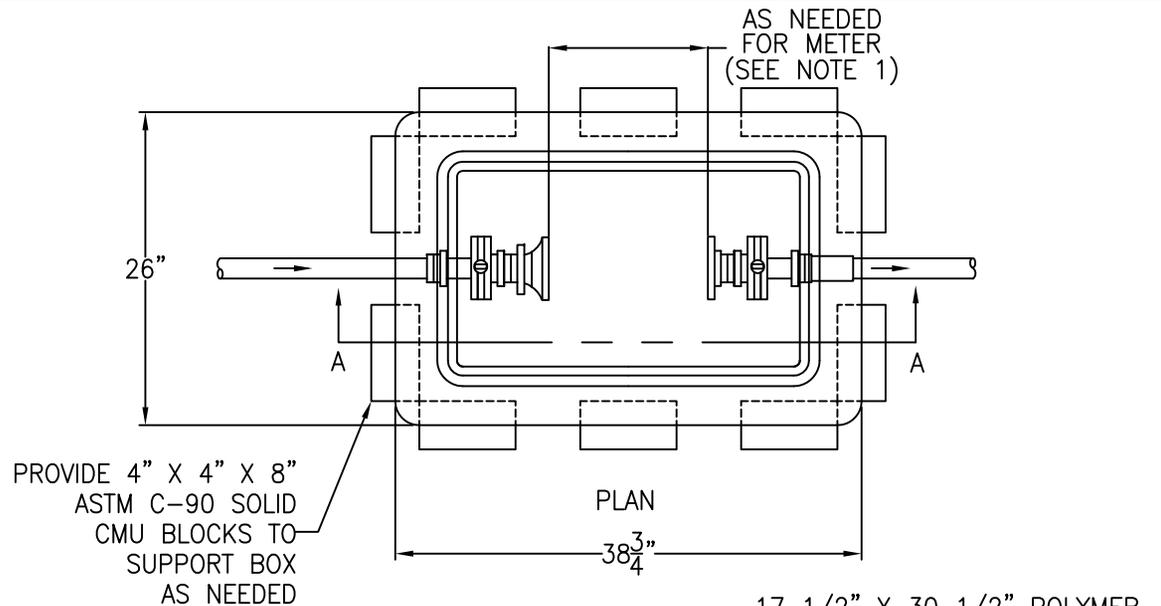
- NOTES:
1. CONSULT WITH DEPARTMENT OF UTILITIES FOR METER LAYING LENGTH.
 2. INSTALL WARNING TAPE AND TRACER WIRE WITH WATER SERVICE. TERMINATE WIRE IN A LOOP WITHIN METER BOX.
 3. BOX AND CONCRETE BLOCK SHALL NOT REST ON WATER SERVICE PIPING.
 4. LID SHALL BE CAST WITH 2-INCH DIAMETER HOLE TO ACCEPT AN ITRON, INC. ERT MODULE.



CITY OF CHARLOTTESVILLE

JAN.	2022
REVISION	DATE

CITY STANDARDS	
METER BOX - 5/8" AND 1"	
METERS - TRAFFIC RATED	
SCALE: N.T.S.	STANDARD NUMBER: W 6.1



NOTES:

1. CONSULT WITH DEPARTMENT OF PUBLIC WORKS – WATER DIVISION FOR METER LAYING LENGTH.
2. INSTALL WARNING TAPE AND TRACER WIRE WITH SERVICE LATERAL. TERMINATE WIRE IN A LOOP WITHIN METER BOX.
3. BOX SHALL NOT REST ON SERVICE PIPING.
4. COPPERSETTER SHALL BE FORD METER BOX VBB7X-12B-44-XX-NL OR APPROVED EQUAL.
5. BOX SHALL BE FRP TIER 15 RATED BY ARMORCAST OR APPROVED EQUAL.
6. "WATER" TO BE CAST ON TOP OF LID.



CITY OF CHARLOTTESVILLE

OCTOBER 2015

REVISION DATE

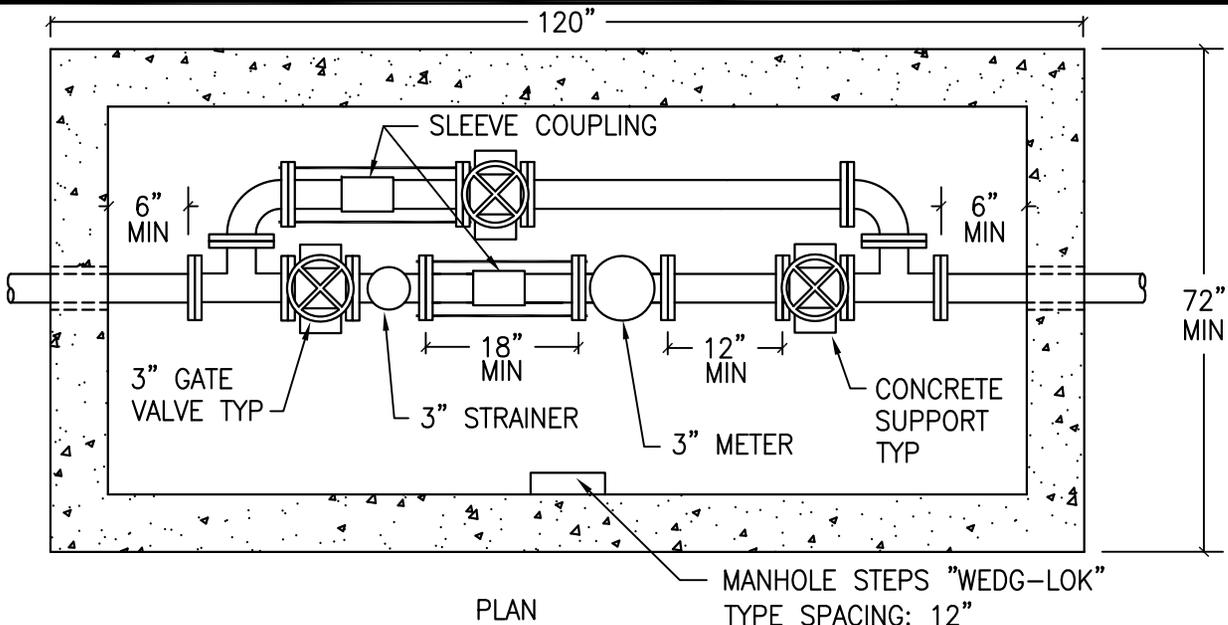
CITY STANDARDS

METER BOX

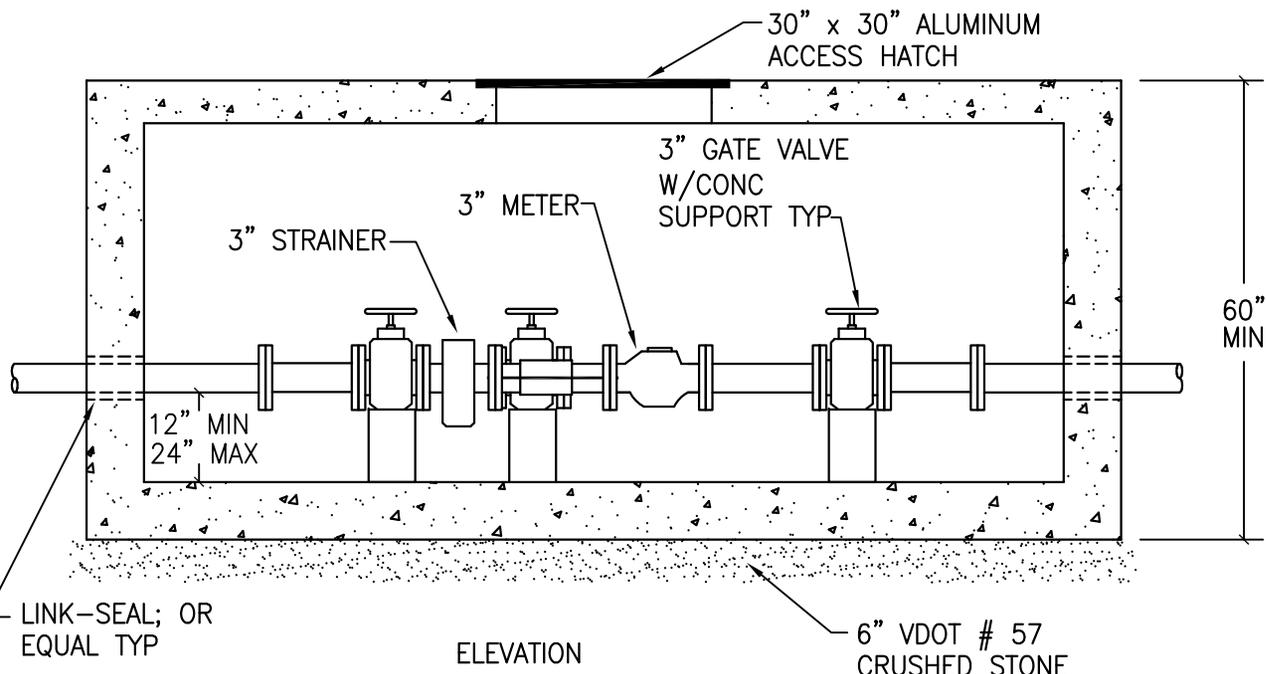
1.5" AND 2" METERS

SCALE: N.T.S.

STANDARD NUMBER: W 6.2



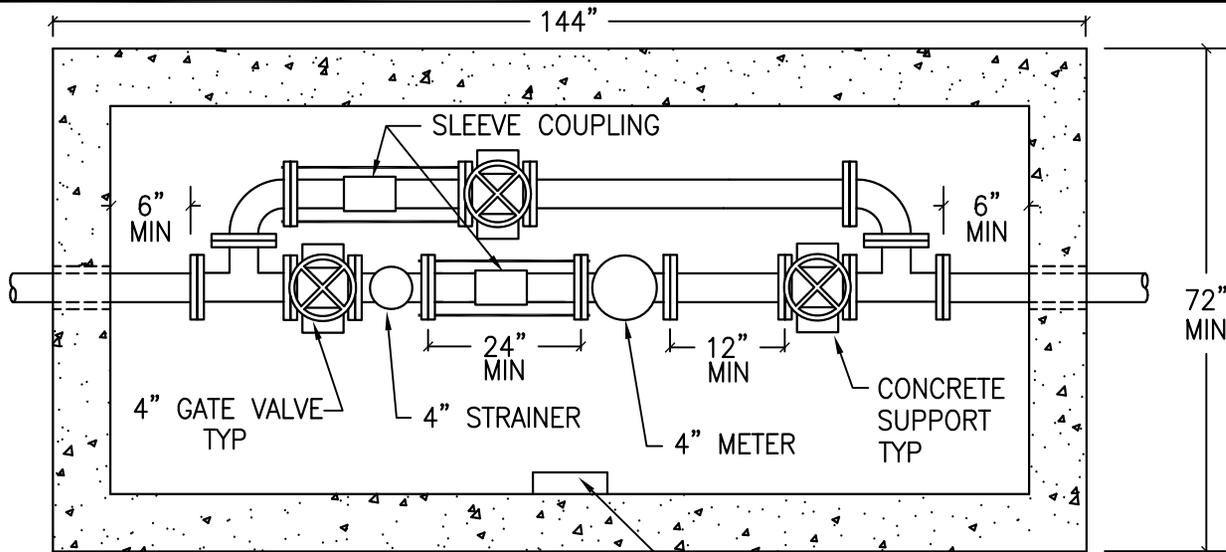
- NOTES:
1. MINIMUM WALL THICKNESS FOR PRECAST VAULT SHALL BE 6".
 2. OUTSIDE OF VAULT BELOW GRADE SHALL BE COATED WITH AN APPROVED WATER PROOFING COMPOUND.
 3. PROVIDE A FLOOR DRAIN WITH A 2" DRAIN RUN TO DAYLIGHT OR INSTALL A SUMP PUMP.
 4. CONSULT WITH DEPARTMENT OF PUBLIC WORKS – WATER DIVISION FOR METER LAYING LENGTH.
 5. INSTALL WARNING TAPE AND TRACER WIRE WITH SERVICE LATERAL. TERMINATE WIRE IN A LOOP WITHIN METER BOX.



CITY OF CHARLOTTESVILLE

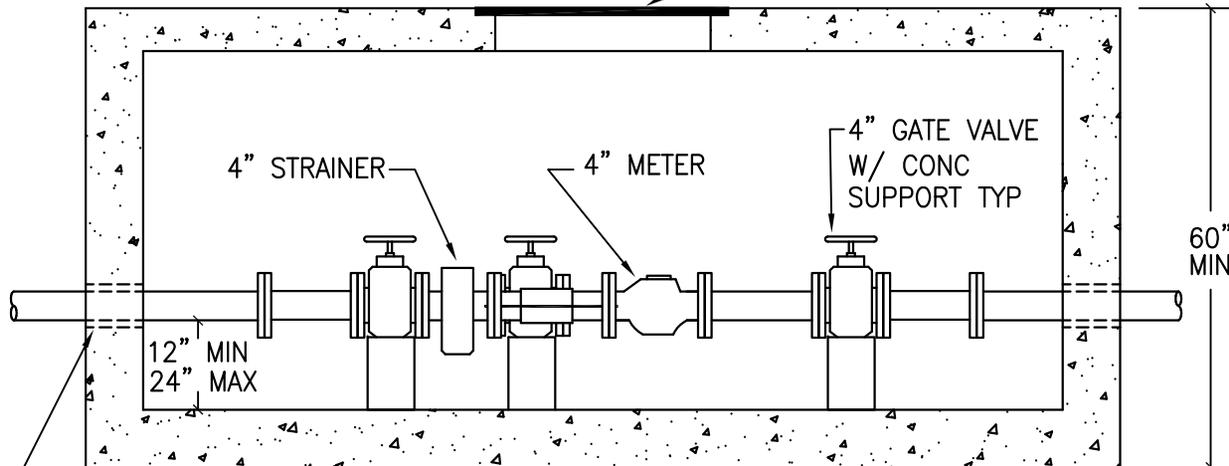
JULY	2011
REVISION	DATE

CITY STANDARDS	
METER VAULT – 3" METER	
SCALE: N.T.S.	STANDARD NUMBER: W 6.3



PLAN

MANHOLE STEPS "WEDG-LOK"
TYPE SPACING: 12"
30" x 30" ALUMINUM
ACCESS HATCH



ELEVATION

LINK-SEAL;
OR EQUAL
TYP

6" VDOT # 57
CRUSHED STONE

NOTES:

1. MINIMUM WALL THICKNESS FOR PRECAST VAULT SHALL BE 6".
2. OUTSIDE OF VAULT BELOW GRADE SHALL BE COATED WITH AN APPROVED WATER PROOFING COMPOUND.
3. PROVIDE A FLOOR DRAIN WITH A 2" DRAIN RUN TO DAYLIGHT OR INSTALL A SUMP PUMP.
4. CONSULT WITH DEPARTMENT OF PUBLIC WORKS - WATER DIVISION FOR METER LAYING LENGTH.
5. INSTALL WARNING TAPE AND TRACER WIRE WITH SERVICE LATERAL. TERMINATE WIRE IN A LOOP WITHIN METER BOX.



CITY OF CHARLOTTESVILLE

JULY 2011

CITY STANDARDS

METER VAULT - 4" METER

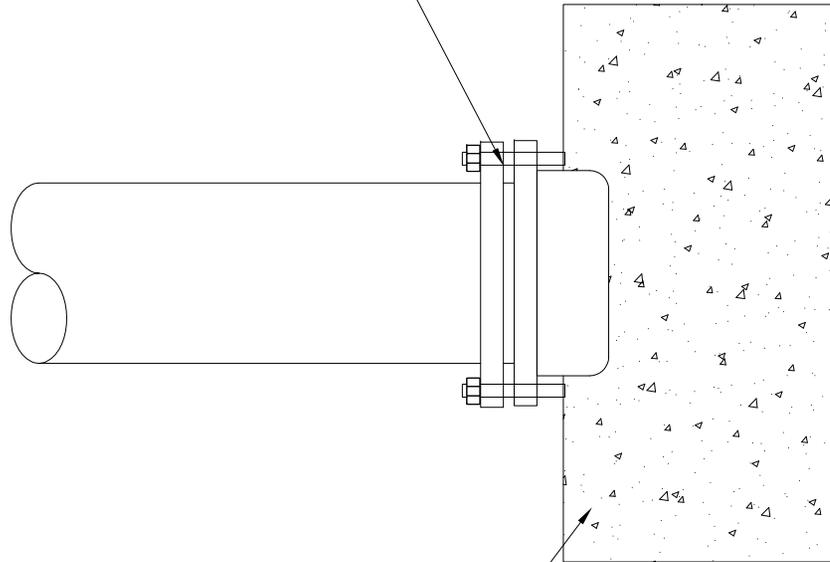
REVISION DATE

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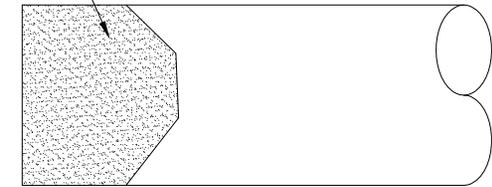
STANDARD NUMBER: W 6.4

CAP WITH RESTRAINED JOINT
FITTINGS "MEGA-LUG", OR
APPROVED EQUAL.

SEAL PIPE ABANDONED PIPE
END WITH NON-SHRINK
GROUT OR FOAM.



INSTALL TRUST BLOCK PER
DETAIL W 2.0.



NOTES:

1. PIPE SHALL BE SAW CUT PERPENDICULAR TO PIPE.
2. PROVIDE PLASTIC SHEETING BETWEEN PIPE AND CONCRETE THRUST BLOCK.
3. PRESSURE PIPES SHALL BE CHECKED FOR LEAKS PRIOR TO BACKFILL.



CITY OF CHARLOTTESVILLE

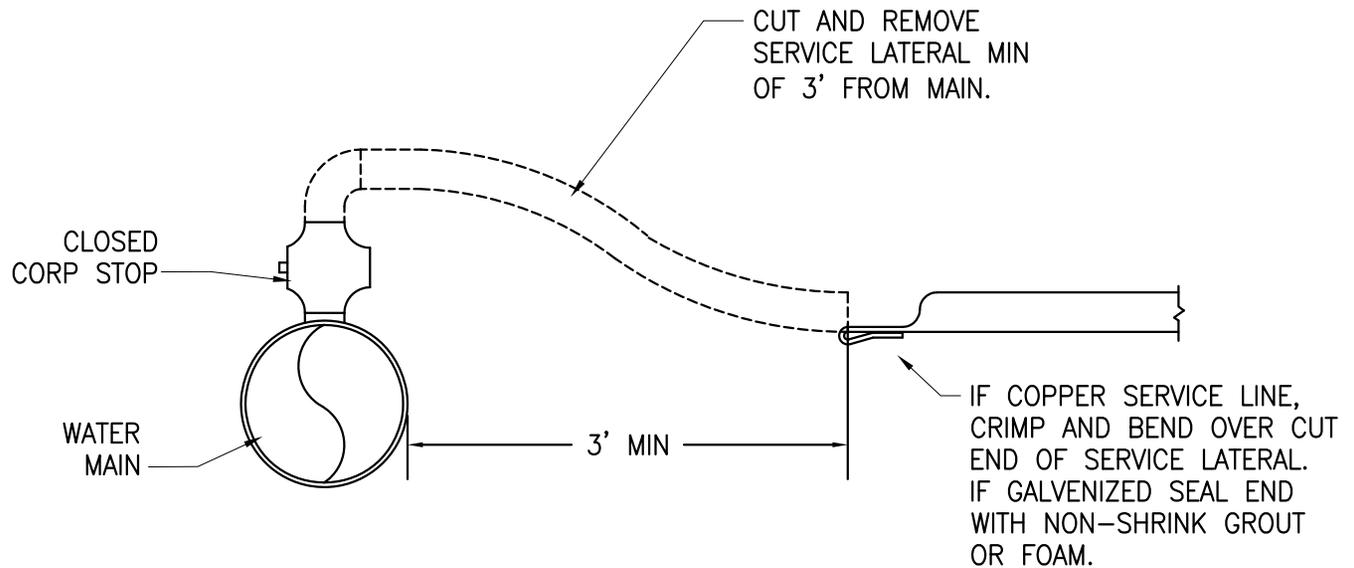
JAN	2012
REVISION	DATE

CITY STANDARDS

WATER MAIN ABANDONMENT

SCALE: N.T.S.

STANDARD NUMBER: W 7.0



NOTES:

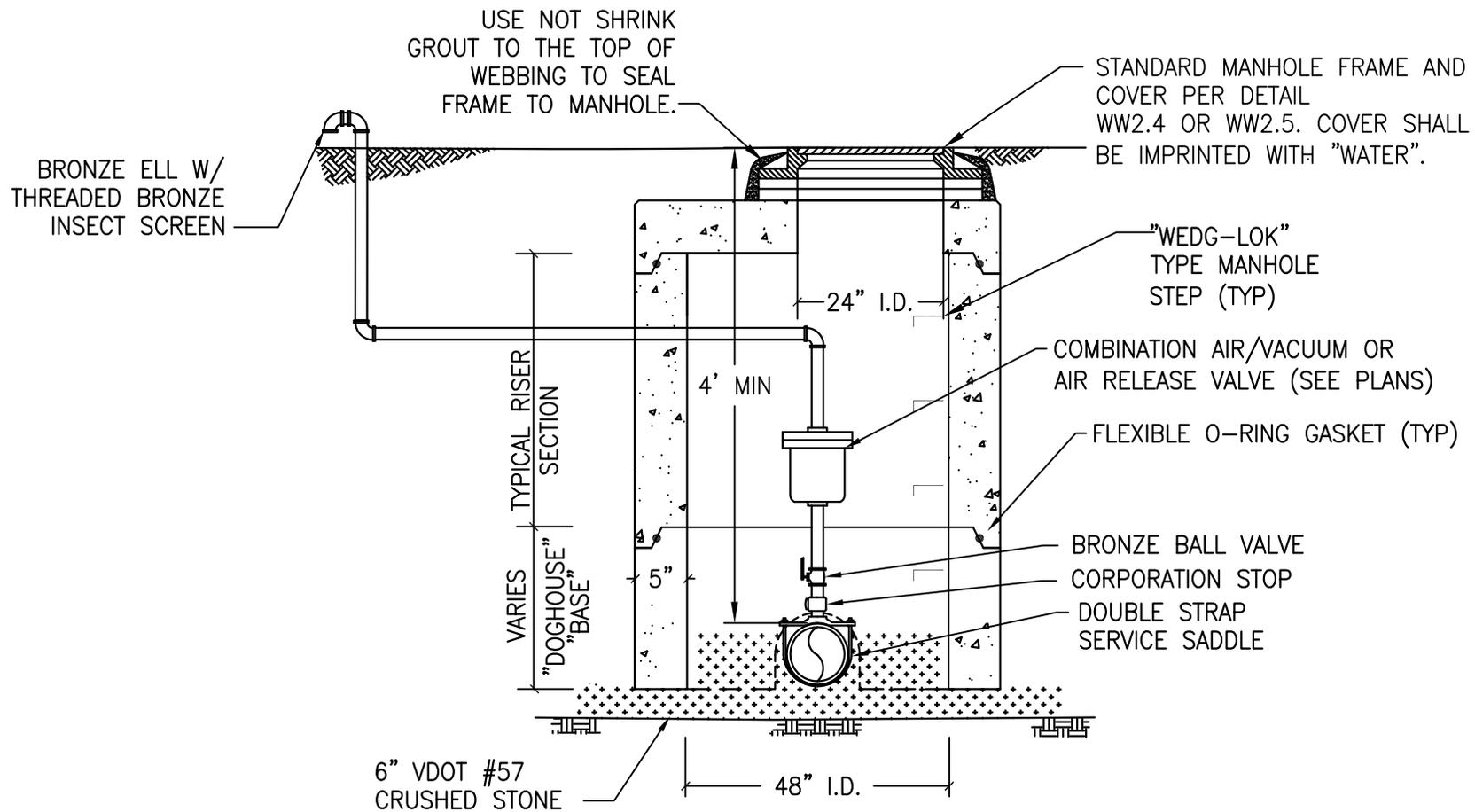
1. METER TO BE REMOVED BY THE CITY.
2. CORPORATION STOPS SHALL BE COMPLETELY CLOSED AND CHECKED FOR LEAKS. LEAKS SHALL BE REPAIRED PRIOR TO BACKFILL.



CITY OF CHARLOTTESVILLE

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CITY STANDARDS	
SERVICE LATERAL ABANDONMENT	
SCALE: N.T.S.	STANDARD NUMBER: W 7.1



NOTES:

1. A PRECAST MANHOLE "FLAT TOP" AND "DOGHOUSE" STYLE BASE SHALL BE USED FOR THE VAULT.
2. FOR WATER LINES SMALLER THAN 12" USE 1" AIR RELEASE ASSEMBLY AND FITTINGS AS NOTED ON THE PLANS. WATER LINES 12" AND LARGER USE 2" AIR RELEASE ASSEMBLY AS NOTED.
3. VENT SHALL BE LOCATED IN RIGHT OF WAY IN NON-TRAFFIC AND NON-PEDESTRIAN AREA AS APPROVED BY THE CITY.
4. A.R.V. SHALL BE INSTALLED AT THE HIGHEST POINT IN THE LINE. LAY PIPE IN EITHER DIRECTION ACCORDINGLY.

AIR RELEASE ASSEMBLIES	
COMBINATION AIR/VACUUM VALVES	AIR RELEASE VALVES
APCO MODEL 143C (1")	APCO MODEL 200A (1")
APCO MODEL 145C (2")	APCO MODEL 200 (2")

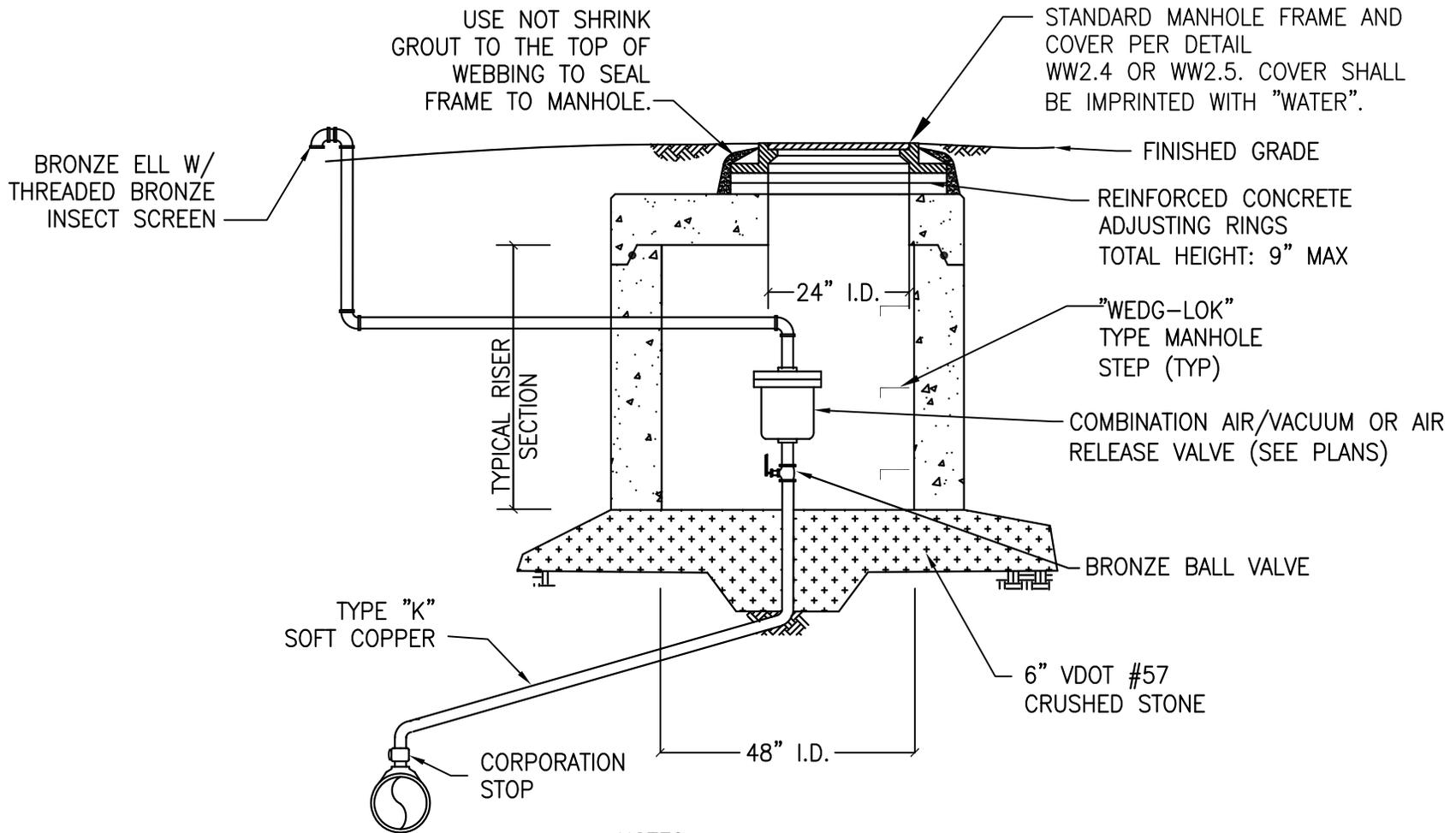
OR APPROVED EQUAL



CITY OF CHARLOTTESVILLE

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CITY STANDARDS	
AIR RELEASE VALVE AND VAULT	
SCALE: N.T.S.	STANDARD NUMBER: W 8.0



NOTES:

1. A PRECAST MANHOLE "FLAT TOP" AND "DOGHOUSE" STYLE BASE SHALL BE USED FOR THE VAULT.
2. FOR WATER LINES SMALLER THAN 12" USE 1" AIR RELEASE ASSEMBLY AND FITTINGS AS NOTED ON THE PLANS. WATER LINES 12" AND LARGER USE 2" AIR RELEASE ASSEMBLY AS NOTED.
3. VENT SHALL BE LOCATED IN RIGHT OF WAY IN NON-TRAFFIC AND NON-PEDESTRIAN AREA AS APPROVED BY THE CITY.
4. A.R.V. SHALL BE INSTALLED AT THE HIGHEST POINT IN THE LINE. LAY PIPE IN EITHER DIRECTION ACCORDINGLY.

AIR RELEASE ASSEMBLIES	
COMBINATION AIR/VACUUM VALVES	AIR RELEASE VALVES
APCO MODEL 143C (1")	APCO MODEL 200A (1")
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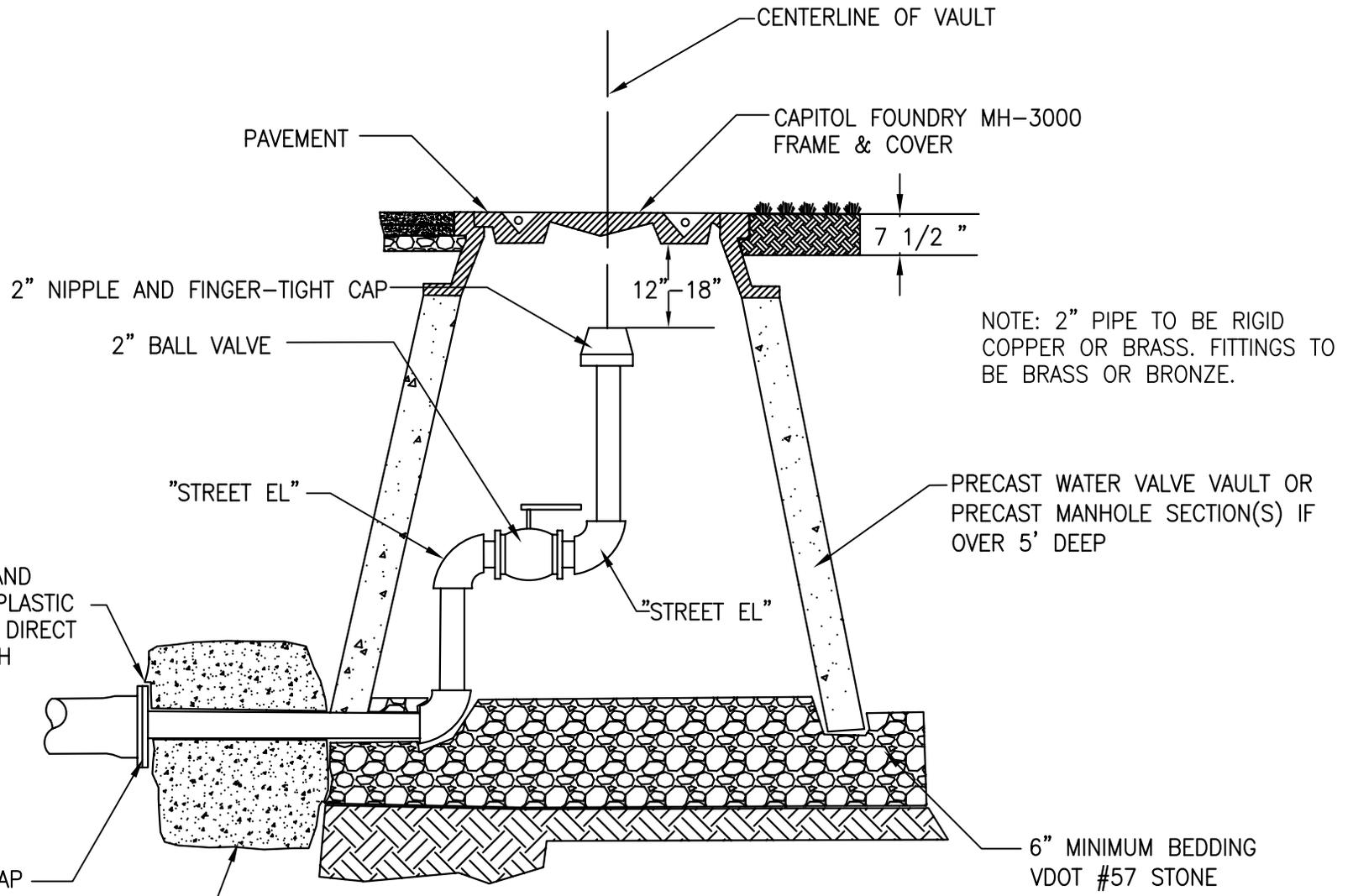
OR APPROVED EQUAL



CITY OF CHARLOTTESVILLE

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CITY STANDARDS	
OFFSET AIR RELEASE VALVE AND VAULT	
SCALE: N.T.S.	STANDARD NUMBER: W 8.1



NOTE: 2" PIPE TO BE RIGID COPPER OR BRASS. FITTINGS TO BE BRASS OR BRONZE.

WRAP PIPE AND FITTINGS IN PLASTIC TO PREVENT DIRECT CONTACT WITH CONCRETE.

M.J. PLUG DRILL & TAP
 THRUST BLOCK IN ACCORDANCE WITH W2.0 OR RESTRAIN JOINTS IN ACCORDANCE WITH W2.4

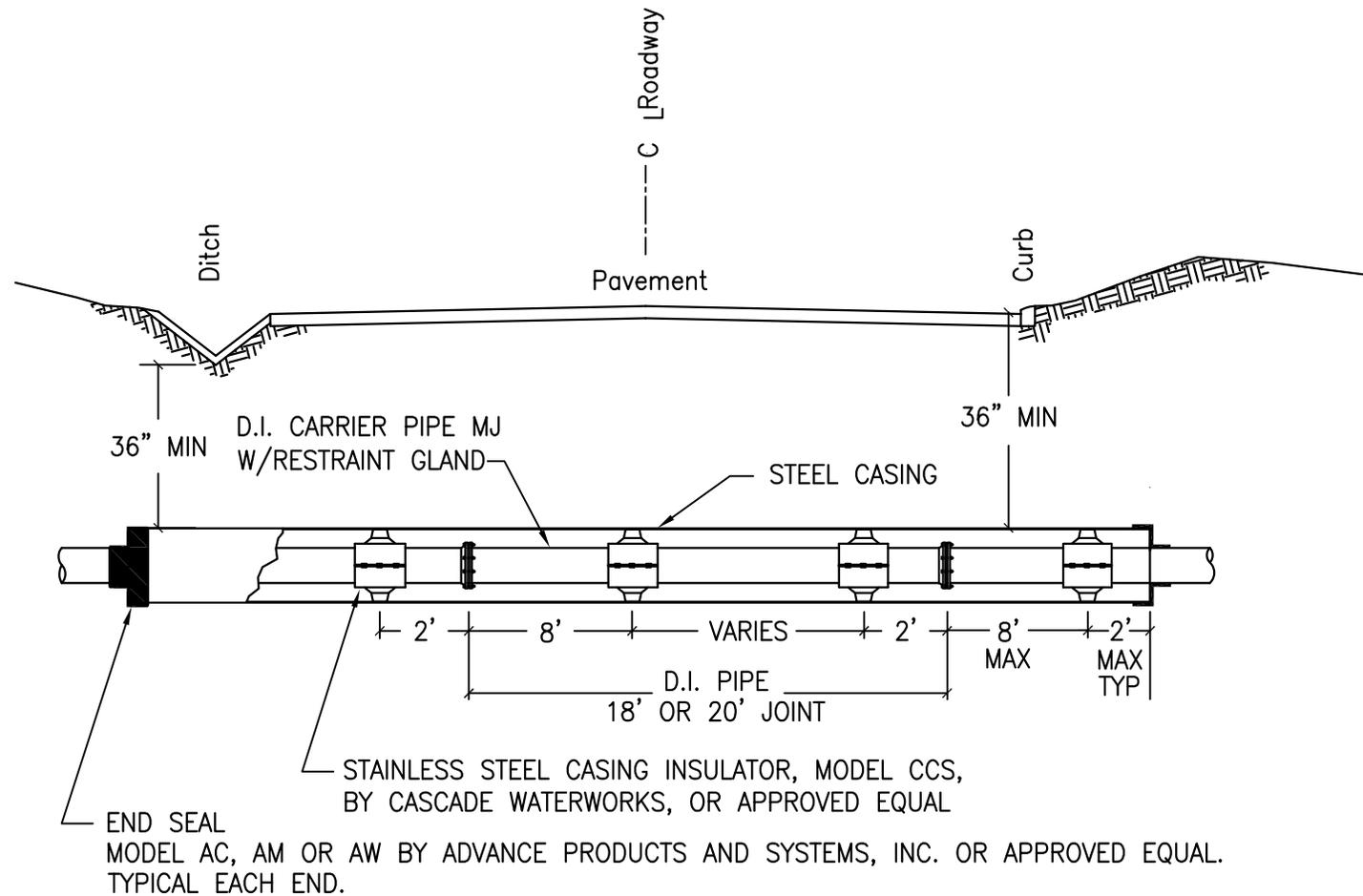
NOTES:
 1. BLOW OFF ASSEMBLY TO BE INSTALLED AT DEAD-END WATER LINES.



CITY OF CHARLOTTESVILLE

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CITY STANDARDS	
BLOW OFF ASSEMBLY	
SCALE: N.T.S.	STANDARD NUMBER: W 8.2



NOTES:

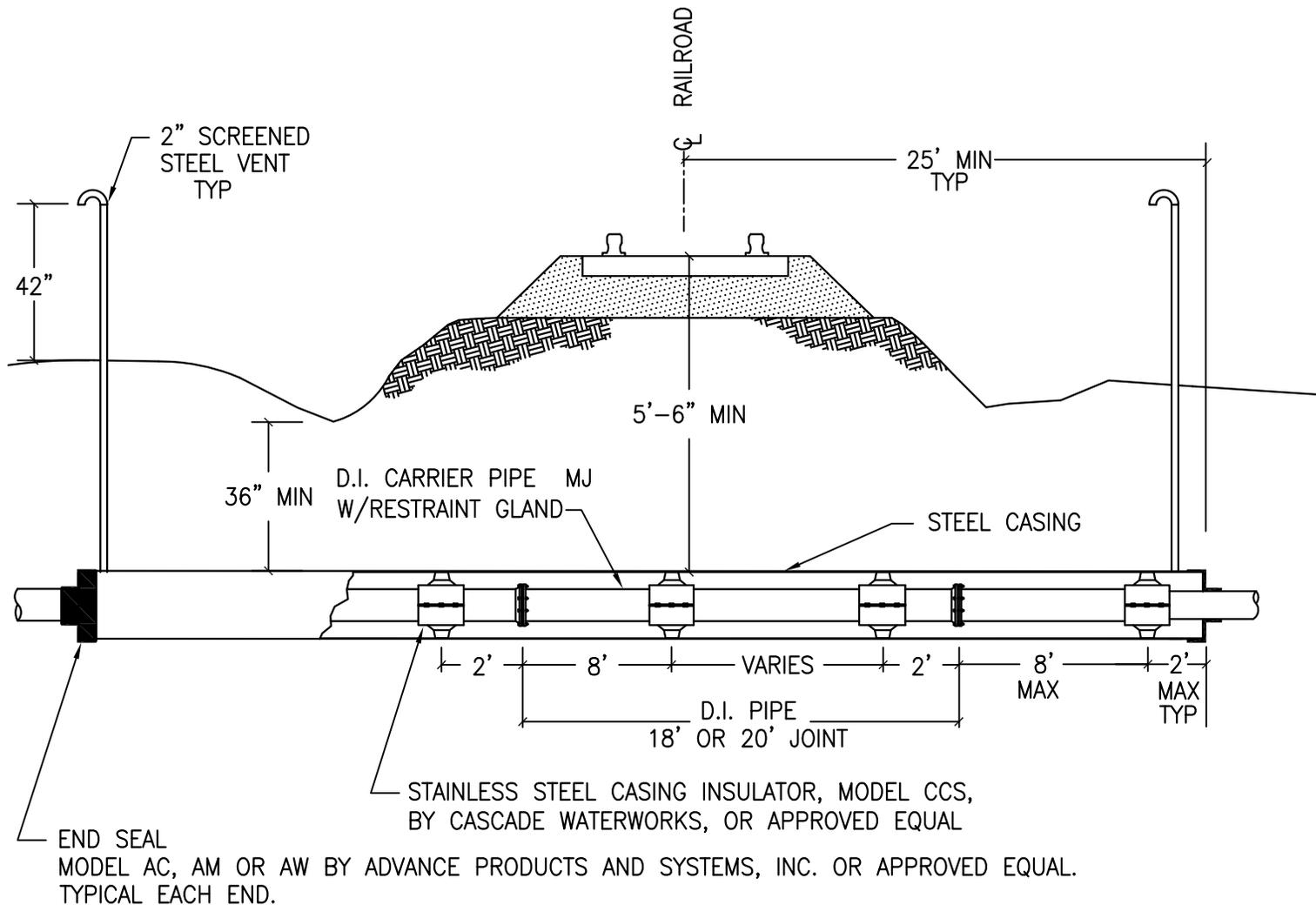
1. STEEL CASING TO EXTEND TO BACK OF CURB, DITCH, SIDEWALK, ETC. OR A MINIMUM OF 5' BEYOND THE EDGE OF PAVEMENT, WHICHEVER IS GREATER.
2. REFERENCE DRAWING W 9.3 FOR MINIMUM STEEL CASING SIZE AND WALL THICKNESS.
3. PROPRIETARY RESTRAINED JOINT PIPE MAY BE SUBSTITUTED FOR MECHANICAL JOINT PIPE WITH RESTRAINT GLANDS WHERE APPROVED BY THE CITY.
4. APPROVED EQUAL CASING INSULATORS SHALL BE SPACED PER MANUFACTURER'S INSTRUCTIONS.
5. CARRIER PIPE SHALL BE CENTERED WITHIN CASING.



CITY OF CHARLOTTESVILLE

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CITY STANDARDS	
STEEL CASING INSTALLATION UNDER ROADWAYS	
SCALE: N.T.S.	STANDARD NUMBER: W 9.0



- NOTES:
1. ALSO REFERENCE THE AREA MANUAL FOR RAILWAY ENGINEERING – PART 5, PIPELINES
 2. REFERENCE DRAWING W 9.3 FOR MINIMUM STEEL CASING SIZE AND WALL THICKNESS.
 3. PROPRIETARY RESTRAINED JOINT PIPE MAY BE SUBSTITUTED FOR MECHANICAL JOINT PIPE WITH RESTRAINT GLANDS WHERE APPROVED BY THE CITY.
 4. APPROVED EQUAL CASING INSULATORS SHALL BE SPACED PER MANUFACTURER'S INSTRUCTIONS.
 5. CARRIER PIPE SHALL BE CENTERED WITHIN CASING.



CITY OF CHARLOTTESVILLE

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CITY STANDARDS	
STEEL CASING INSTALLATION UNDER RAILWAYS	
SCALE: N.T.S.	STANDARD NUMBER: W 9.1

PIPE CASING			
CARRIER PIPE DIA.	MIN. PIPE CASING DIA.	MINIMUM WALL THICKNESS	
		CRITERIA WITHIN RAILROAD RIGHT-OF-WAY	CRITERIA WITHIN CITY OR VDOT RIGHT-OF-WAY
		STEEL	STEEL
6"	20"	0.375"	0.250"
8"	20"	0.375"	0.250"
10"	24"	0.375"	0.250"
12"	24"	0.375"	0.250"
14"	30"	0.500"	0.375"
16"	30"	0.500"	0.375"
18"	36"	0.563"	0.375"
20"	36"	0.563"	0.375"
24"	48"	0.688"	0.500"
30"	48"	0.688"	0.500"

NOTES:

1. INCREASE THICKNESS OF CASING 0.125" WHERE BORE LENGTH EXCEEDS 125 FEET.
2. A MINIMUM OF 0.375" THICKNESS IS REQUIRED WHEN GROUND COVER OVER PIPE EXCEEDS 15 FEET.
3. WHERE RESTRAINING DEVICES ARE REQUIRED FOR THE CARRIER PIPE, THE CASING PIPE DIAMETER SHALL BE INCREASED AS NECESSARY.



CITY OF CHARLOTTESVILLE

JULY 2011

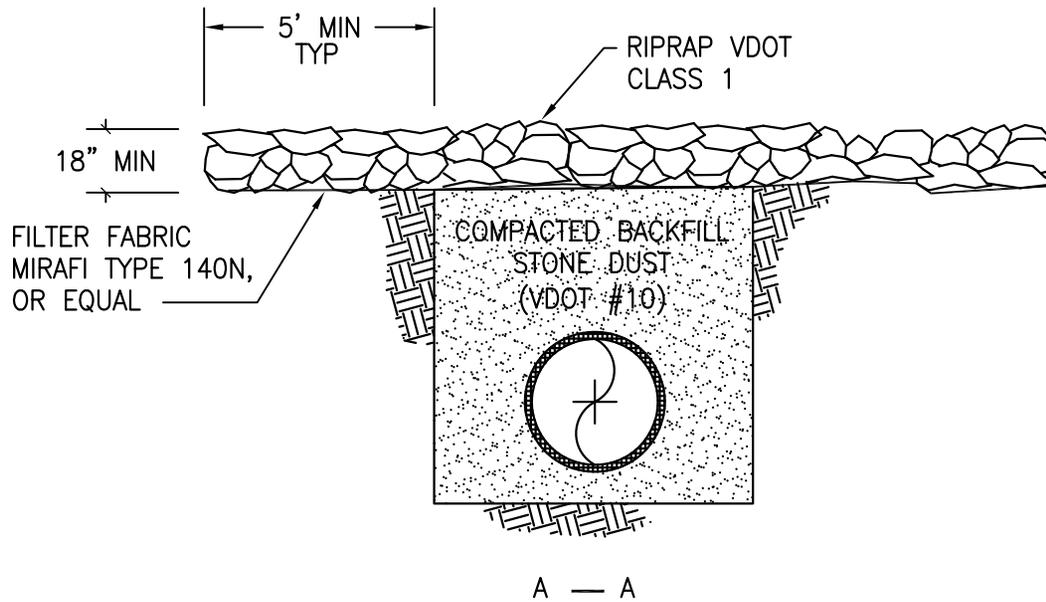
CITY STANDARDS

PIPE CASING REQUIREMENTS

REVISION DATE

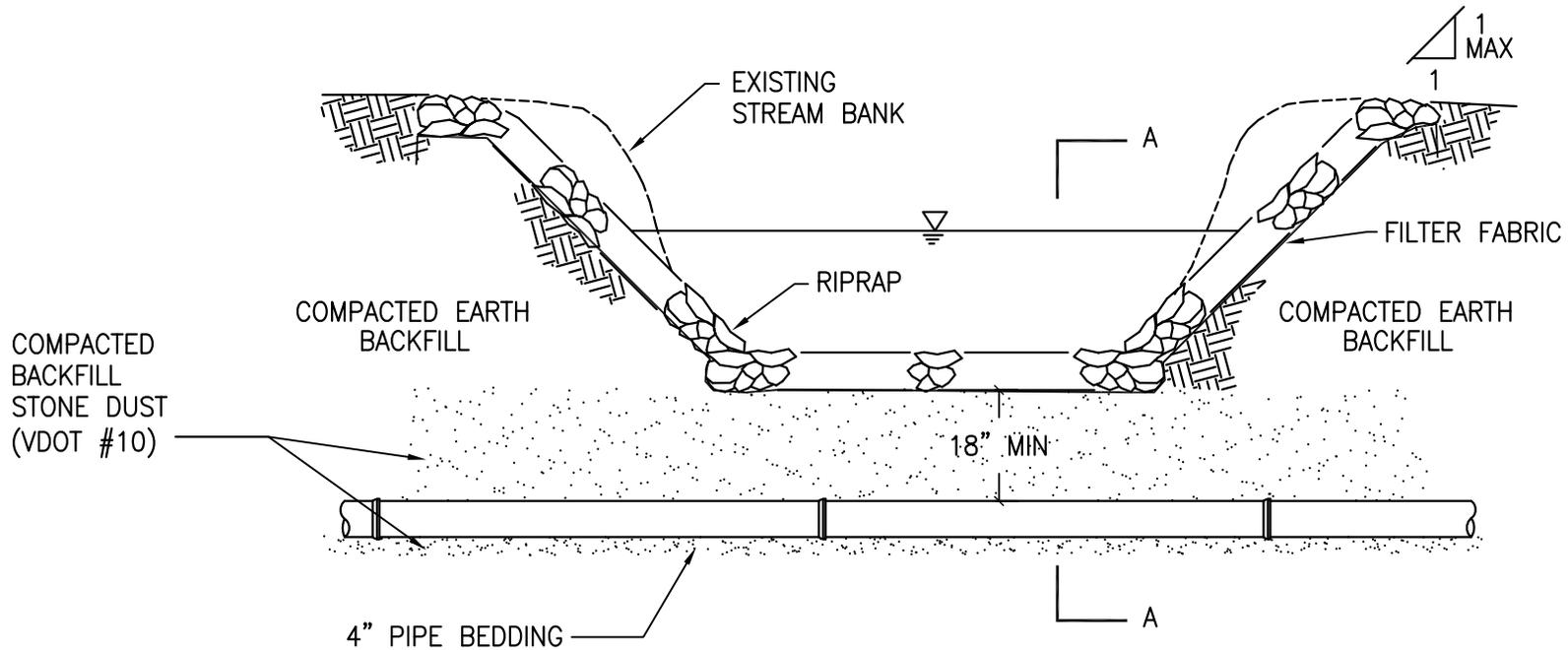
SCALE: N.T.S.

STANDARD NUMBER: W 9.2



NOTE:

1. BACKFILL FROM TOP OF PIPE BEDDING TO BOTTOM OF STREAM CHANNEL WITH VDOT #10 STONE DUST COMPACTED TO 95% MAXIMUM DENSITY PER ASTM D698. RIPRAP BACKFILL SHALL EXTEND FROM TOP OF BANK TO TOP OF BANK.
2. COMPACTED EARTH BACKFILL WITHIN EXTENTS OF STREAM CROSSING SHALL EXTEND FROM TOP OF VDOT #10 BACKFILL TO TOP OF TRENCH. COMPACT TO 95% MAXIMUM DENSITY PER ASTM D698.
3. MATCH EXISTING BANK PROFILE EXCEPT WHERE SLOPE OF BANK EXCEEDS 1 TO 1.
4. ANY PIPES CROSSING MEADOW CREEK, MOORE'S CREEK, THE RIVANNA RIVER, OR ANY OTHER STREAM THAT HAS A DESIGNATED STREAM BUFFER (SEE CITY CODE, CHAP. 10), MUST HAVE CONCRETE ENCASEMENT. SEE DETAIL WW 4.1.



CITY OF CHARLOTTESVILLE

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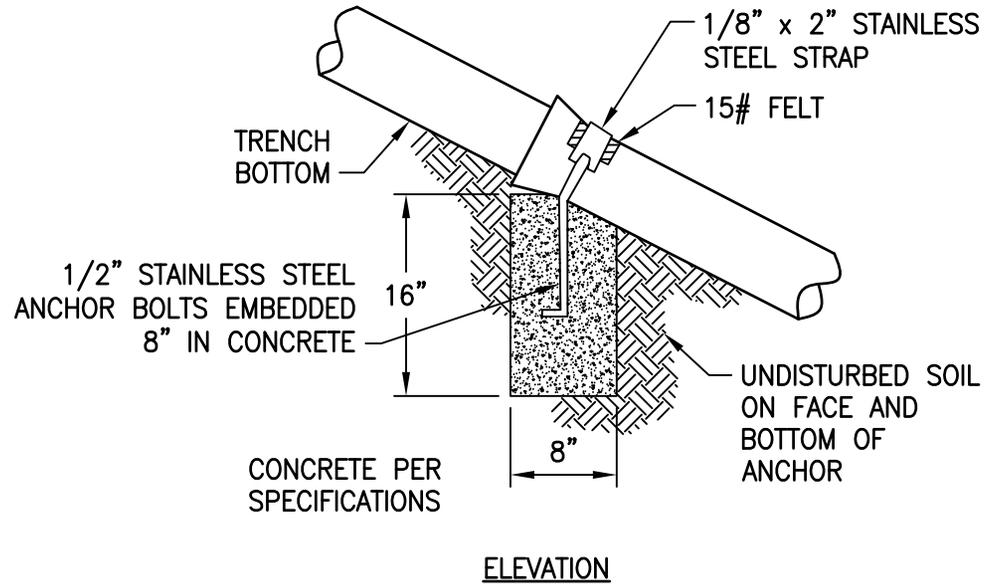
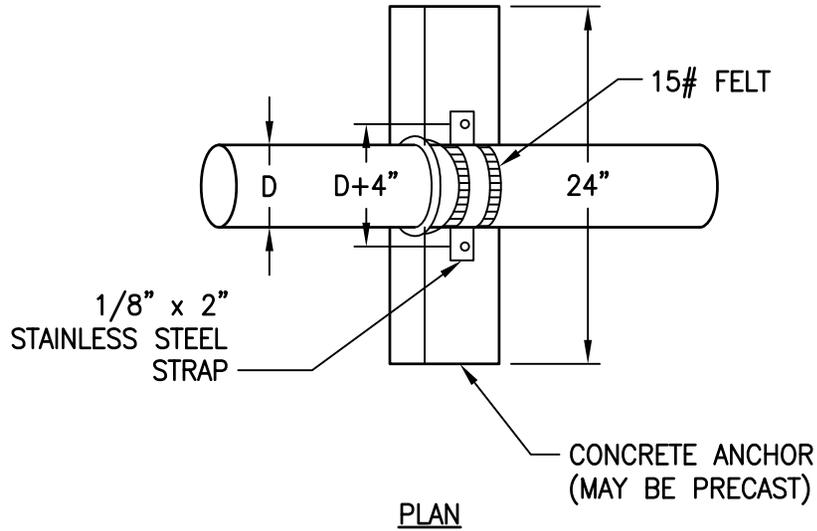
CITY STANDARDS

STREAM-CROSSING

SCALE: N.T.S.

STANDARD NUMBER: W 9.3

ANCHORS SHALL BE SPACED
AS SHOWN ON PLAN



CONCRETE ANCHOR
FOR SLOPES OVER 20%

NOTES:

1. SIDES AND BOTTOM OF CONCRETE ANCHOR TO BE POURED AGAINST UNDISTURBED EARTH.
2. SPACING OF ANCHORS: SLOPES:
20% - 35%: <36 FEET
CENTER-TO-CENTER
OVER 35%: <16 FEET
CENTER-TO-CENTER



CITY OF CHARLOTTESVILLE

JULY 2011

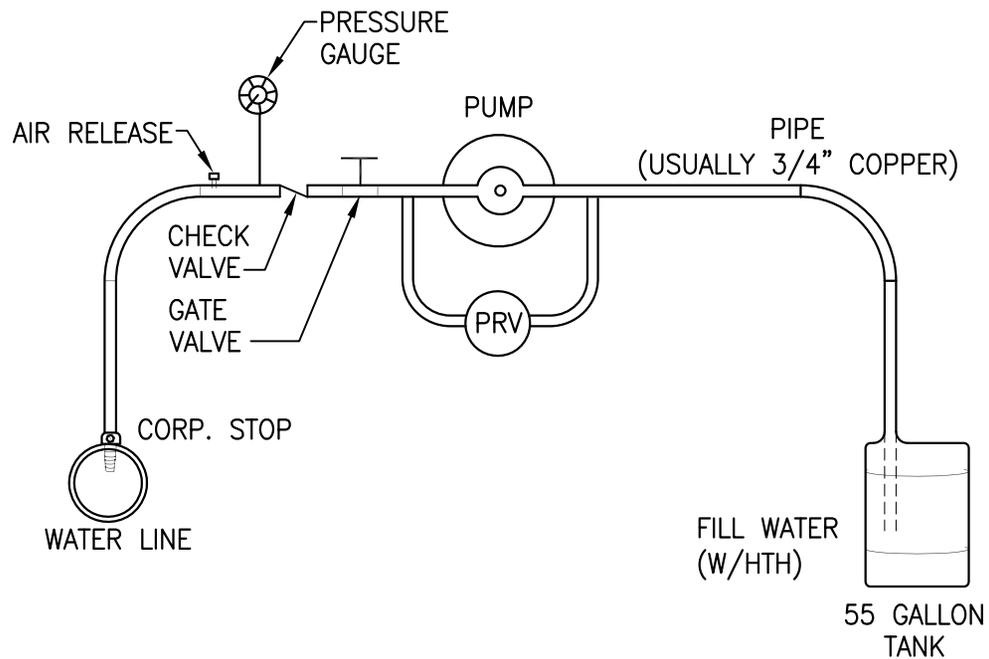
CITY STANDARDS

CONCRETE ANCHOR

REVISION DATE

SCALE: N.T.S.

STANDARD NUMBER: W 9.4



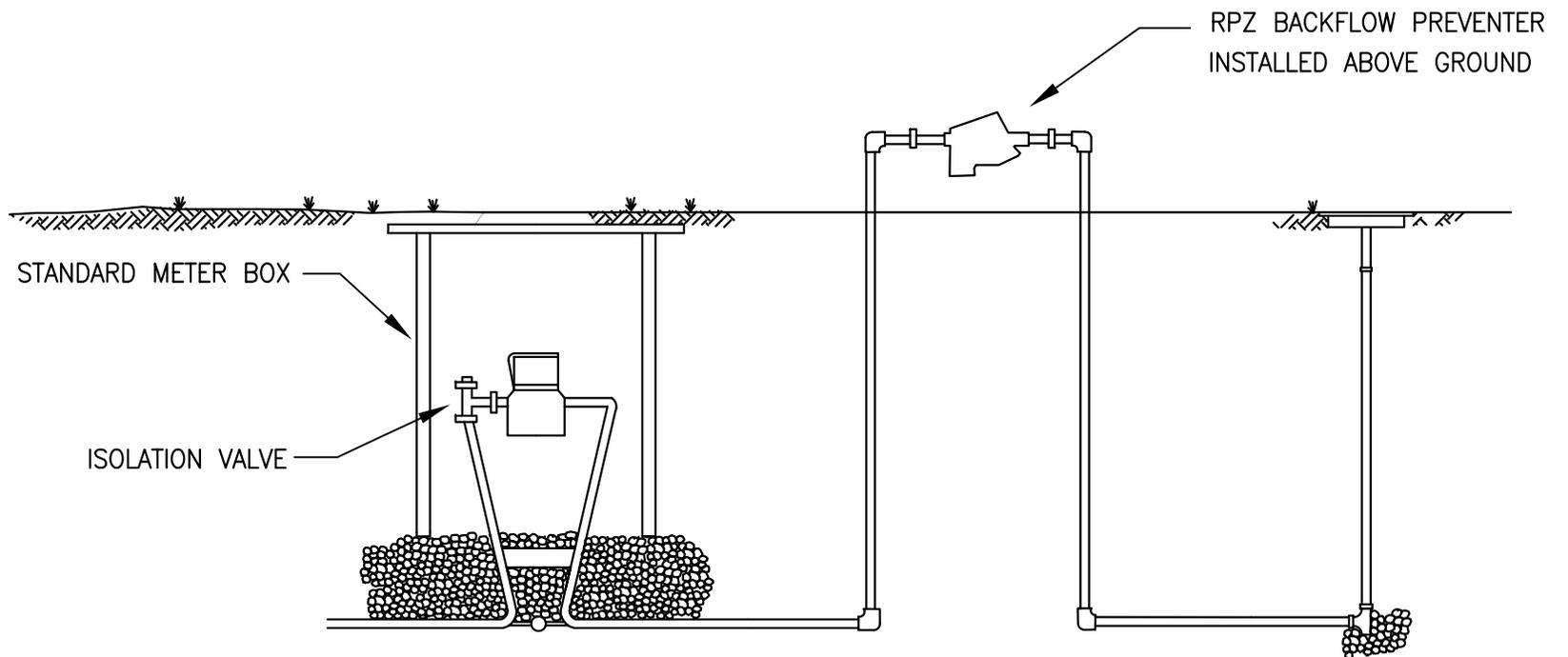
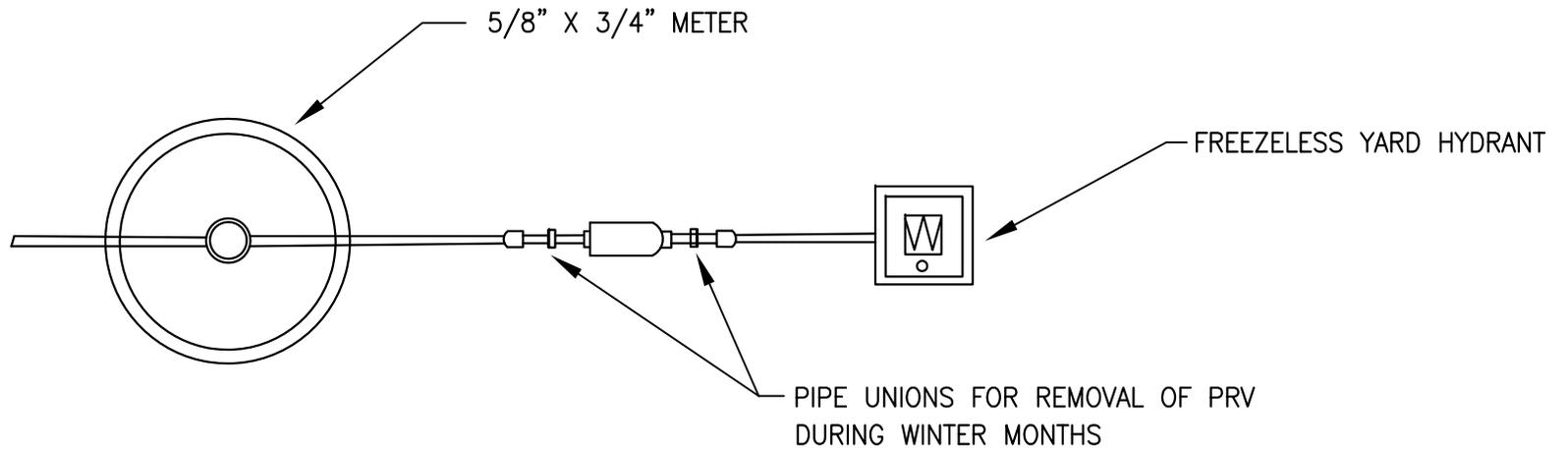
TYPICAL WATER PRESSURE TEST RIG



CITY OF CHARLOTTESVILLE

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CITY STANDARDS	
TYPICAL WATER PRESSURE TEST RIG	
SCALE: N.T.S.	STANDARD NUMBER: W 9.5



CITY OF CHARLOTTESVILLE

JULY 2011

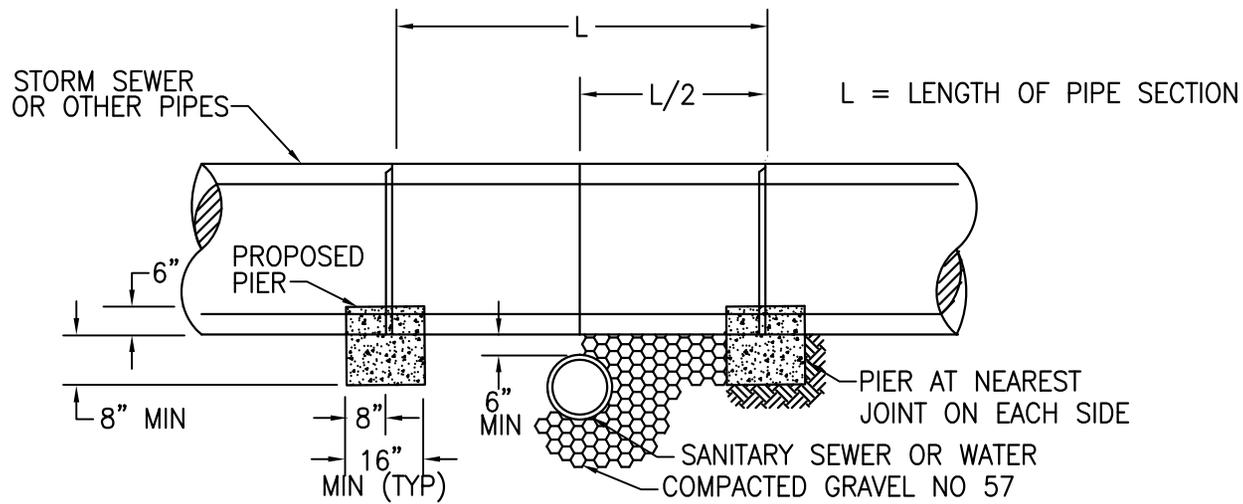
REVISION DATE

CITY STANDARDS

TYPICAL SPRINKLER SERVICE

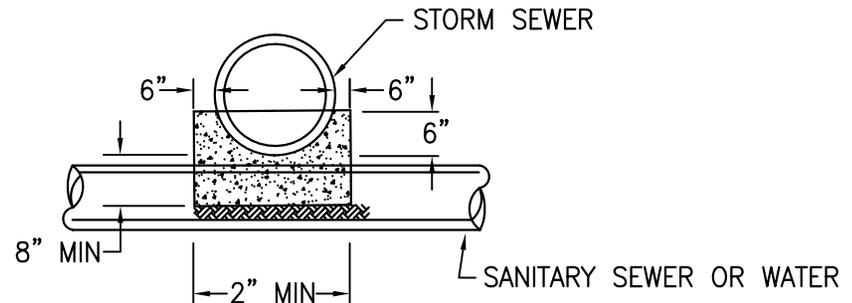
SCALE: N.T.S.

STANDARD NUMBER: W 9.6



NOTE:

1. PIER REQUIRED WHEN STORM DRAIN OR OTHER PIPES CROSS OVER THE OTHER UTILITY WITH A VERTICAL CLEARANCE OF LESS THAN 12". (LESS THAN 12" ONLY ALLOWED WITH A WAIVER FROM THE DIRECTOR OF PUBLIC WORKS)
2. PIER TO BE BUILT ON UNDISTURBED EARTH.
3. CONCRETE TO BE READY MIX, CLASS A3.



CITY OF CHARLOTTESVILLE

JULY 2011

CITY STANDARDS

CONCRETE PIER

REVISION DATE

SCALE: N.T.S.

STANDARD NUMBER: W 9.7