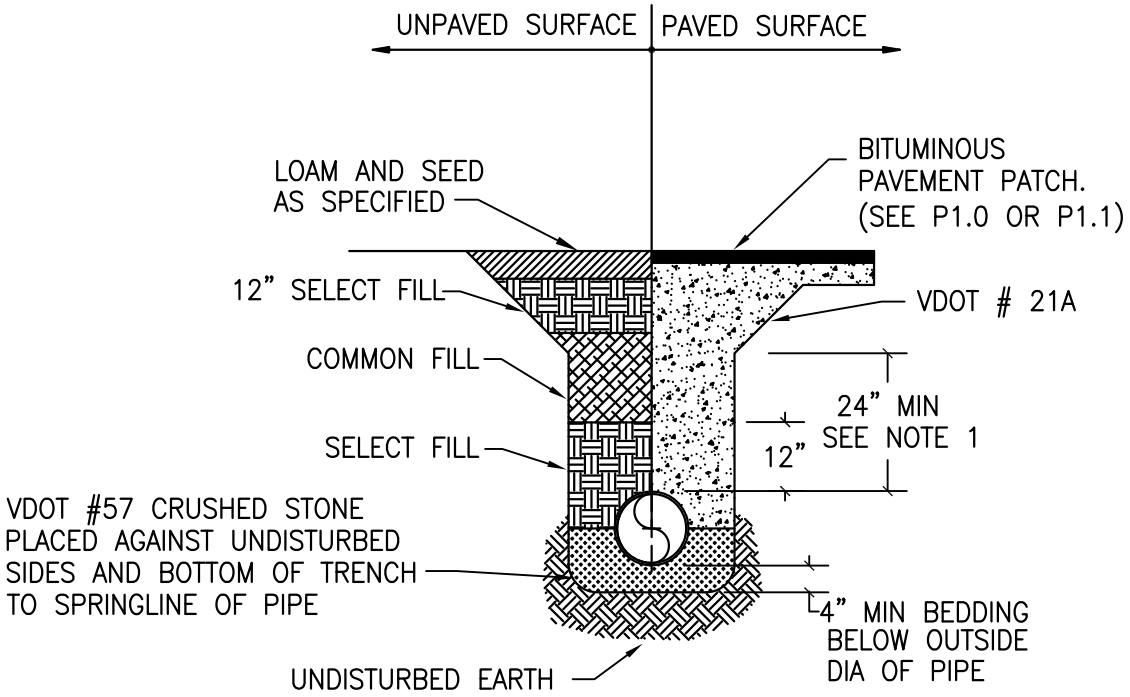
APPENDIX C

POTABLE WATER SYSTEM DETAILS

CITY OF CHARLOTTESVILLE, VIRGINIA



DUCTILE IRON PIPE

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.

CITY OF CHARLOTTESVILLE

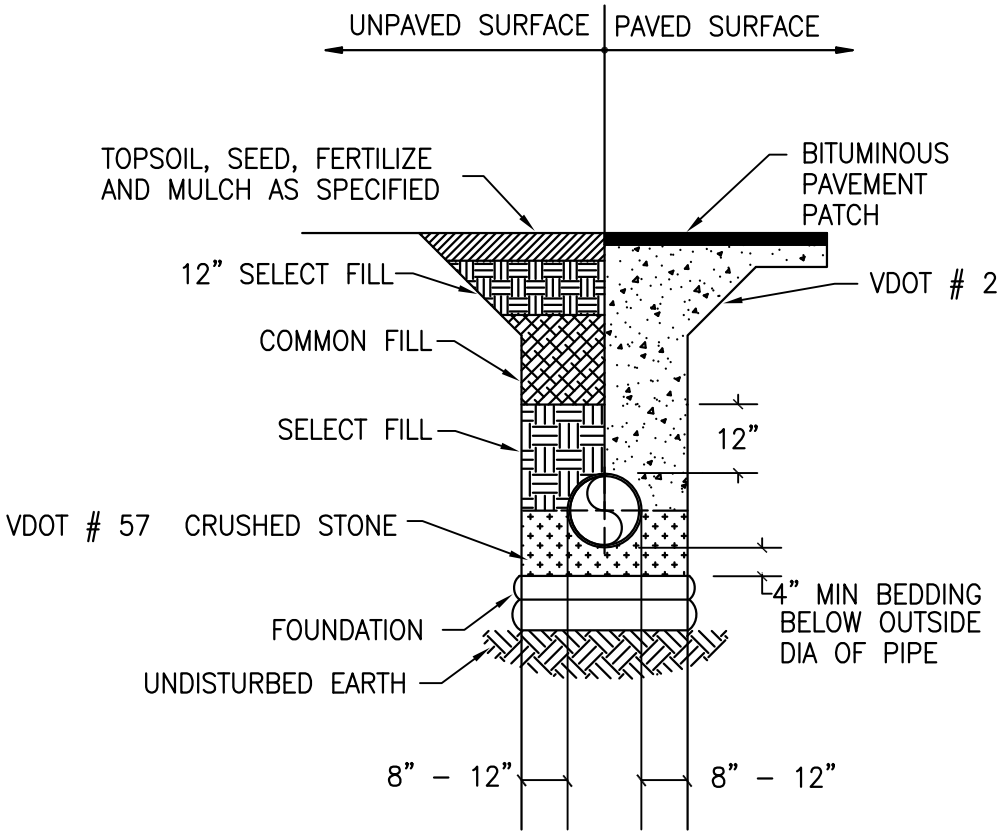
REVISION	DATE
FEB	2012

CITY STANDARDS

PIPE TRENCH UNIVERSAL STANDARD SUBGRADE – TYPICAL

SCALE: N.T.S.

STANDARD NUMBER: W 1.0



DUCTILE IRON PIPE

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.

CITY OF CHARLOTTESVILLE

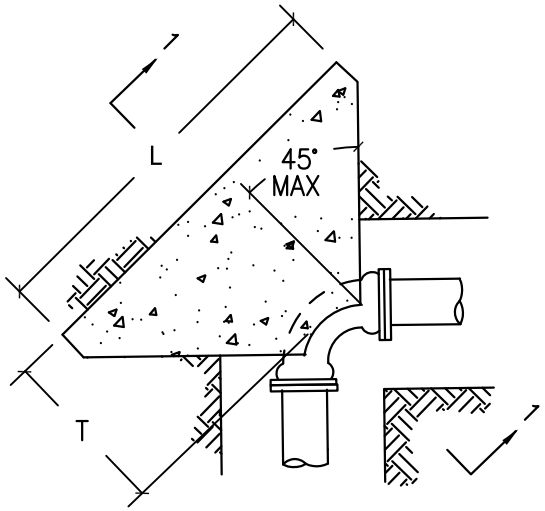
REVISION	DATE
JULY	2011

CITY STANDARDS

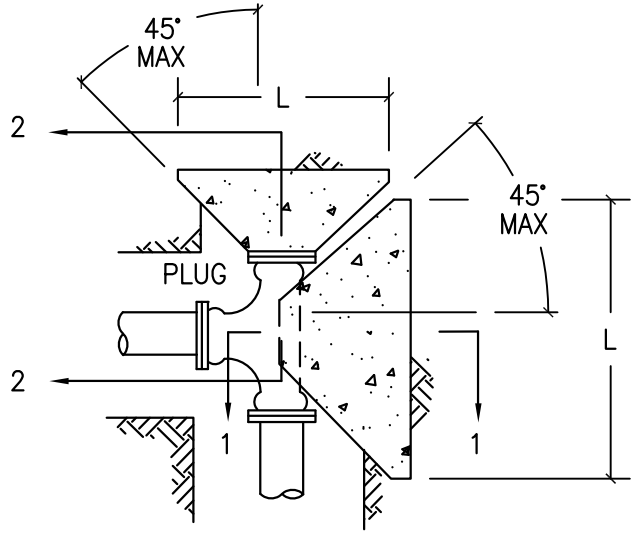
PIPE TRENCH
UNIVERSAL – UNSTABLE SOIL

SCALE: N.T.S.

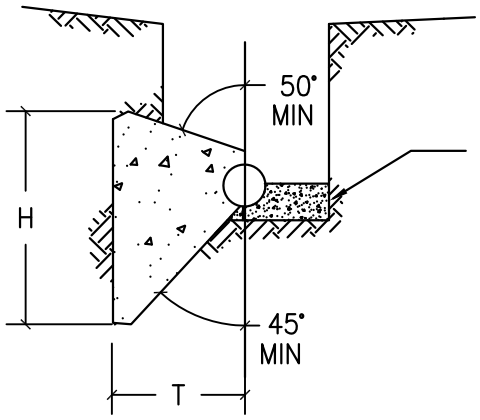
STANDARD NUMBER: W 1.1



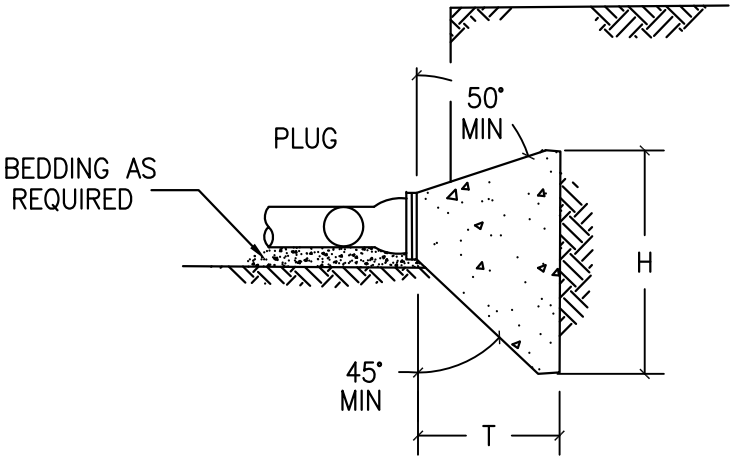
FOR ALL BENDS



FOR TEE OR PLUG FITTINGS



SECTION 1–1



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. NO CONCRETE SHALL BE POURED ON ANY PART OF THE JOINT.
5. SEE DRAWING W 2.1 FOR THRUST BLOCK DIMENSIONS.

CITY OF CHARLOTTESVILLE	JULY	2011	CITY STANDARDS
			CONCRETE THRUST BLOCKS
	REVISION	DATE	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.

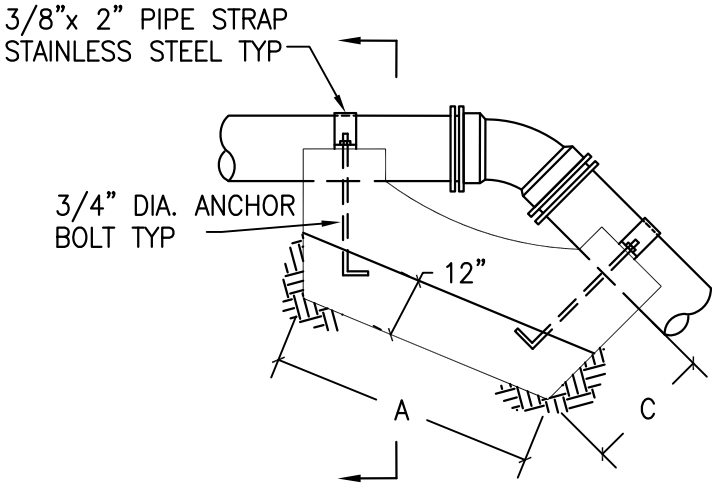
CITY OF CHARLOTTESVILLE

JULY	2011
REVISION	DATE

CITY STANDARDS

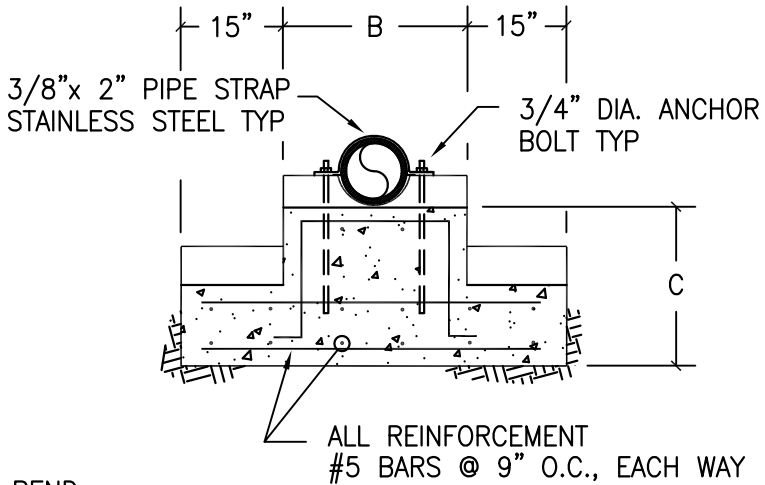
CONCRETE THRUST BLOCK DIMENSIONS

SCALE: N.T.S. | STANDARD NUMBER: W 2.1

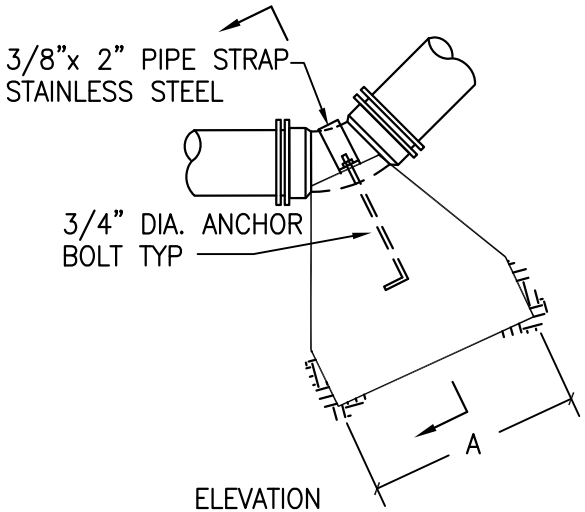


ELEVATION

UPPER VERTICAL BEND

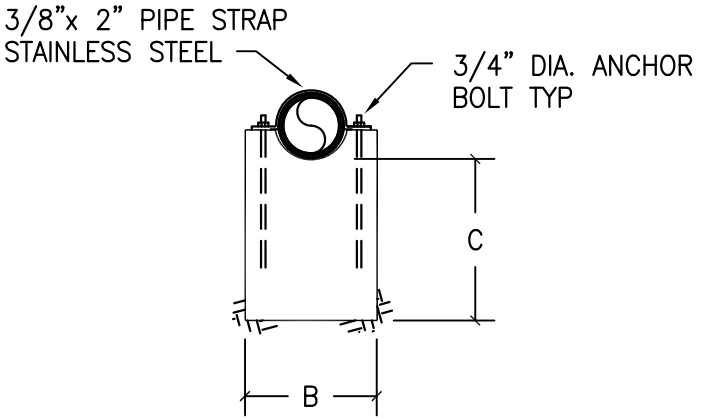


SECTION



ELEVATION

LOWER VERTICAL BEND



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:

	Pipe Diameter				
Type	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:

	Run Diameter				
Branch 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:

	Small Diameter				
Large 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

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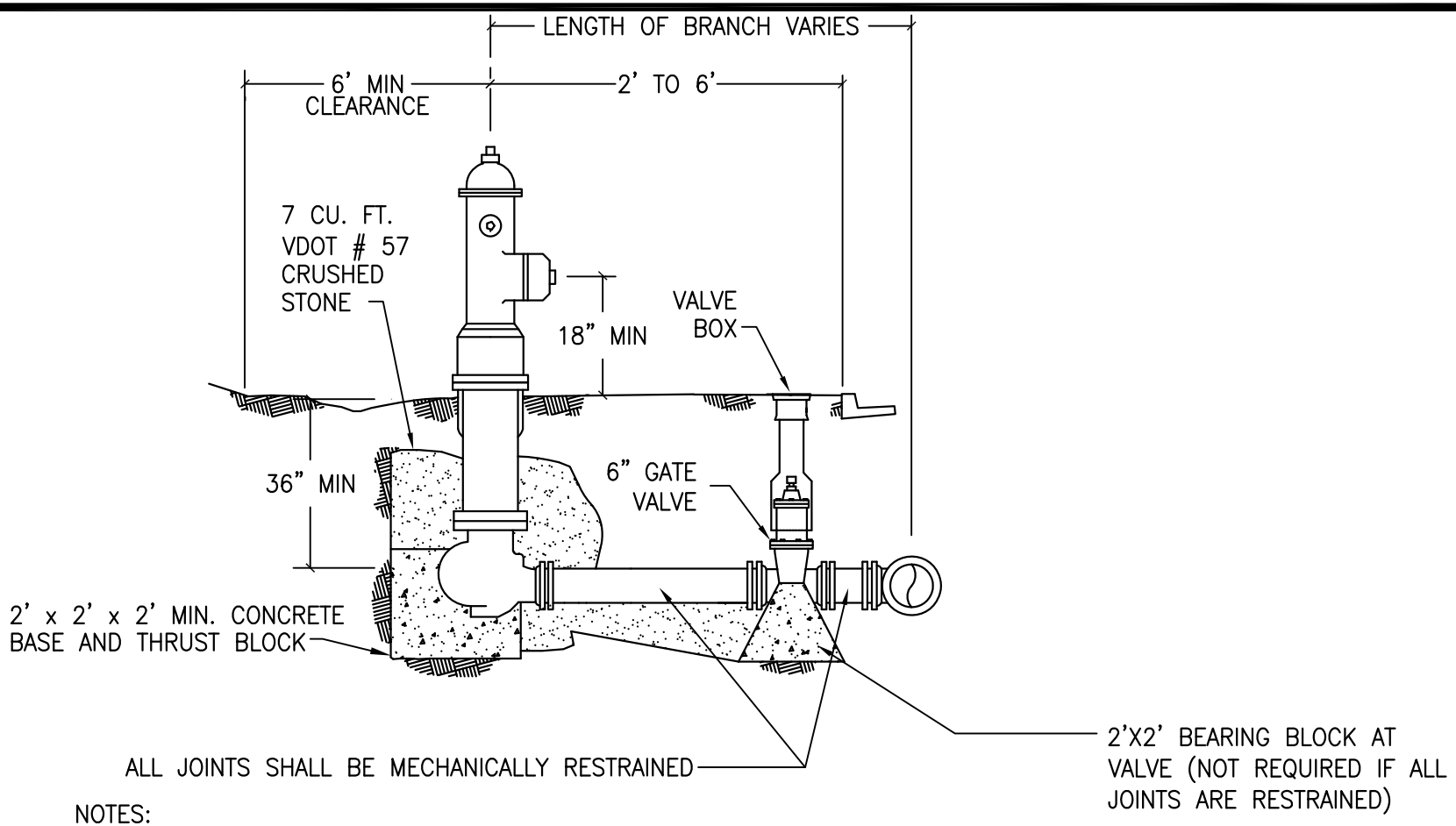
CITY STANDARDS

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

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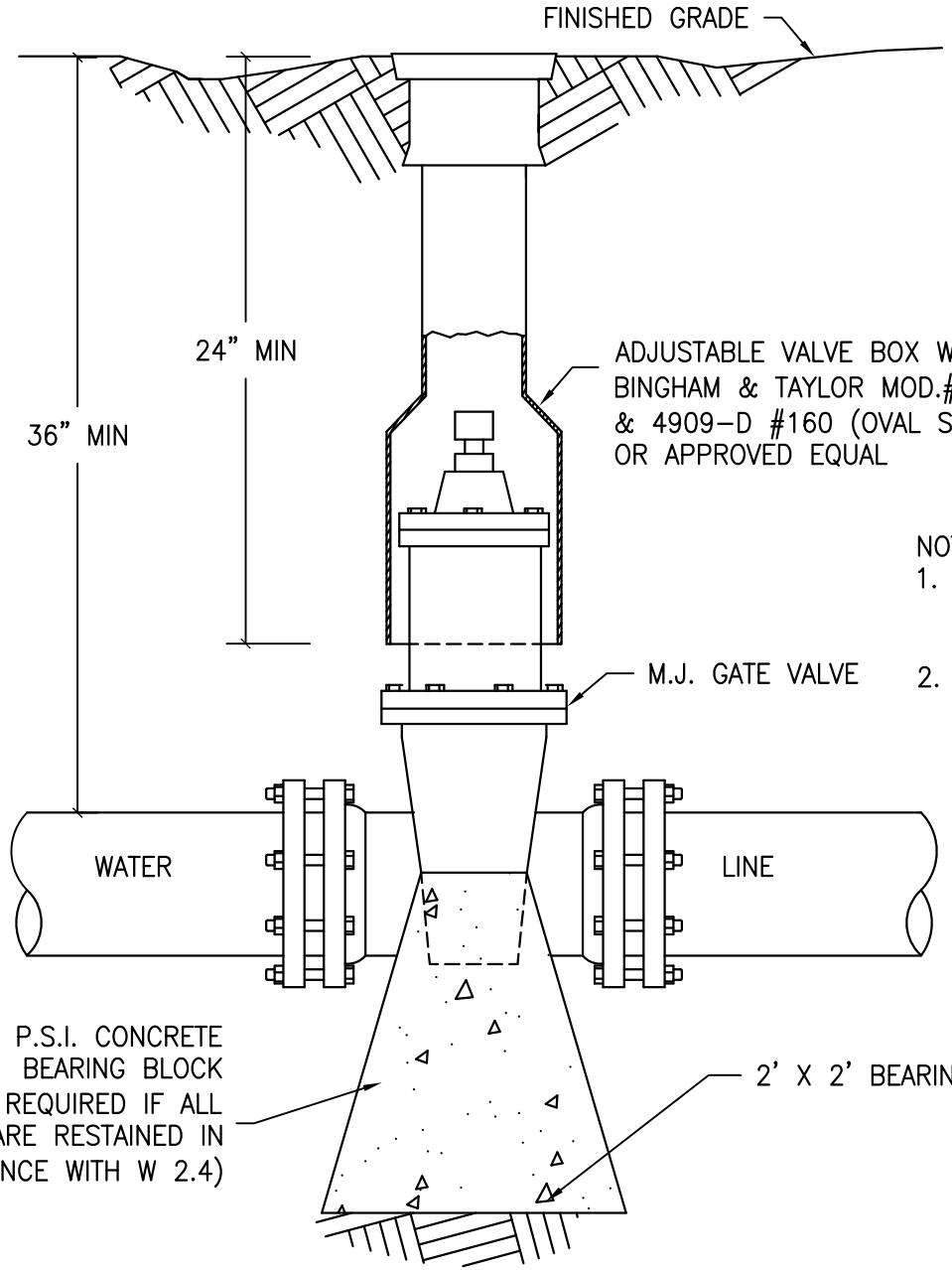
CITY STANDARDS

FIRE HYDRANT – TYPICAL

SCALE: N.T.S. | STANDARD NUMBER: W 3.0



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

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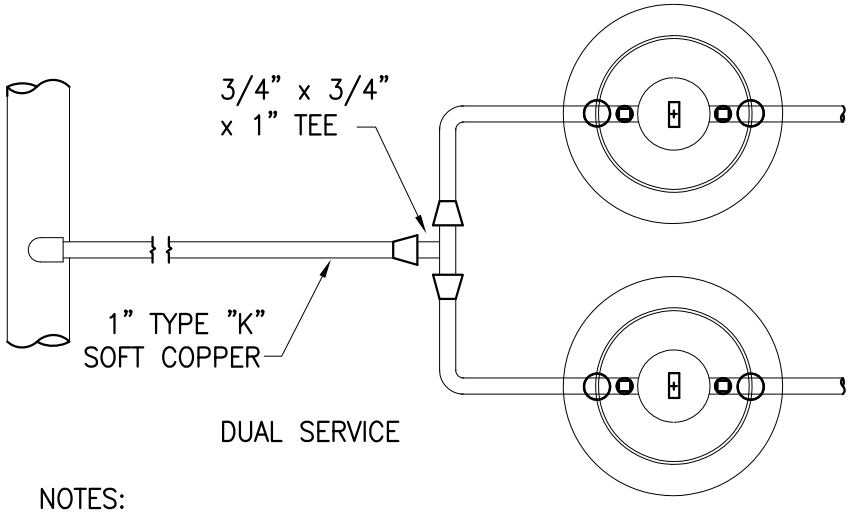
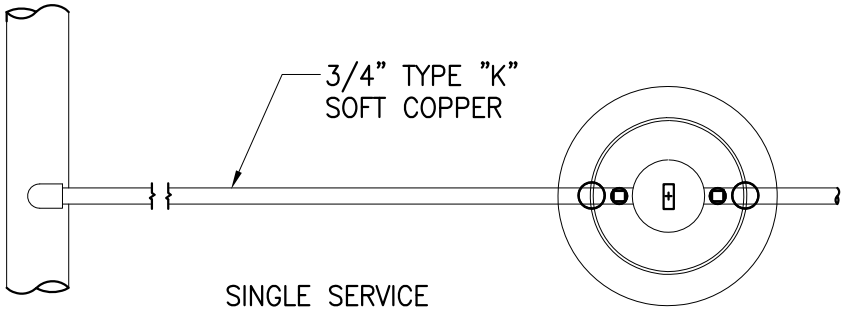
CITY STANDARDS

GATE VALVE – TYPICAL

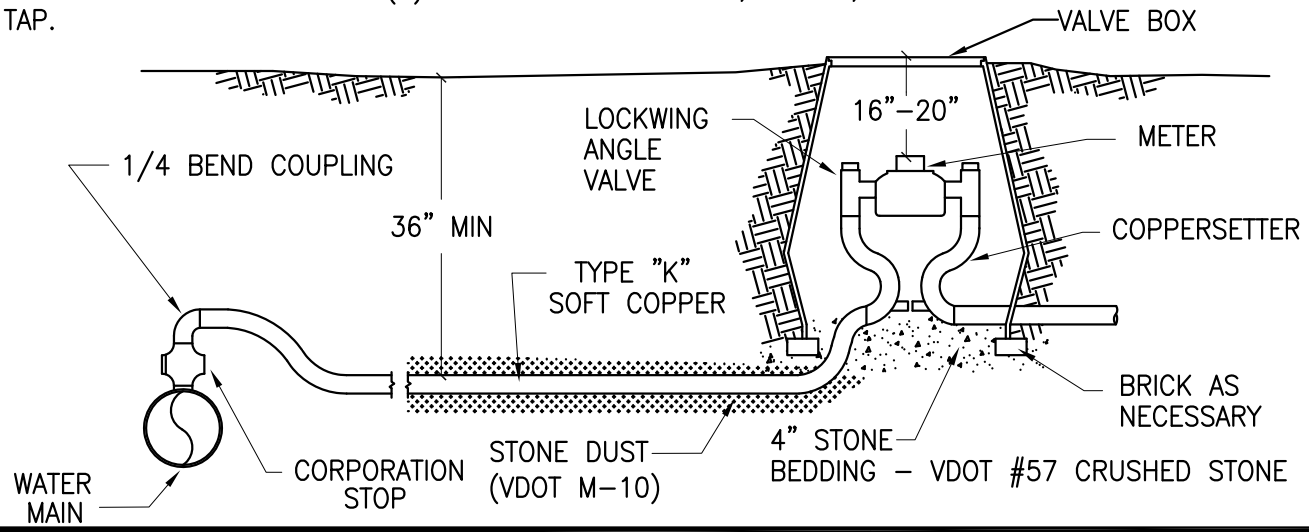
SCALE: N.T.S. | STANDARD NUMBER: W 4.0





NOTES:

1. THE SERVICE LATERAL, 1/4 BEND COUPLING, AND CORPORATION STOP SHALL BE THE SAME SIZE AS THE COPPERSETTER, EXCEPT AS NOTED ABOVE.
2. METER TO BE INSTALLED BY THE CITY.
3. INSTALL WARNING TAPE WITH SERVICE LATERAL.
4. CORPORATION STOPS THREADED INTO IRON PIPES, FITTINGS, OR SPECIALS SHALL HAVE THEIR THREADS WRAPPED IN TEFLON TAPE PRIOR TO ASSEMBLY.
5. TAPS SHALL NOT BE MADE WITHIN TWO (2) FEET OF A BELL JOINT, FITTING, OR OTHER TAP.



CITY OF CHARLOTTESVILLE

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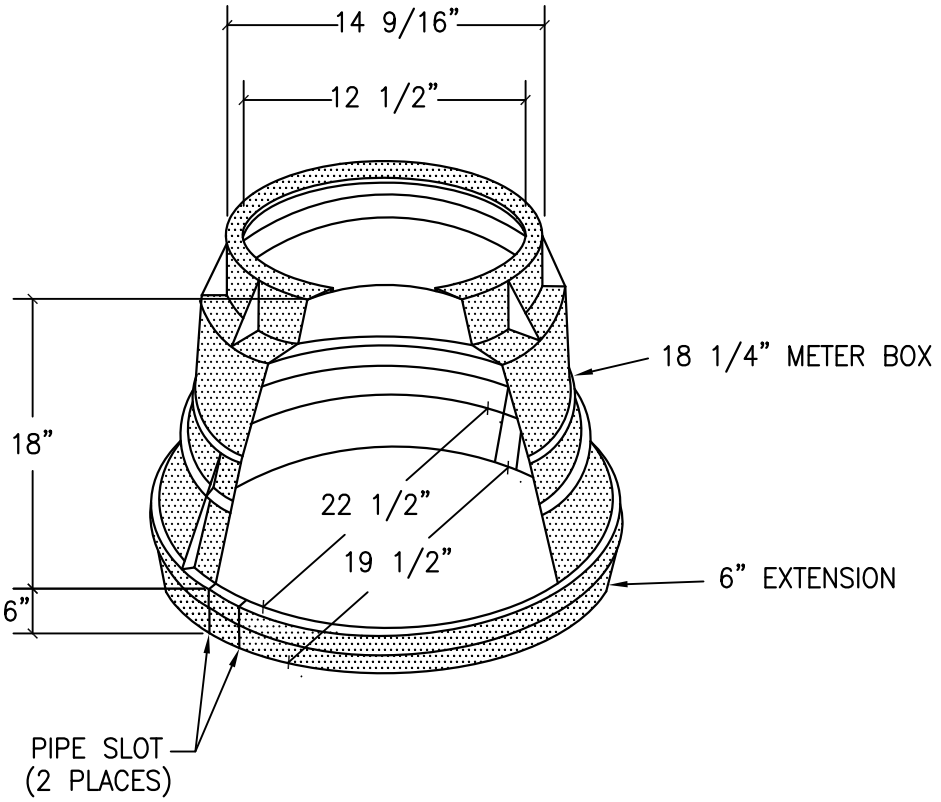
	JAN 2012

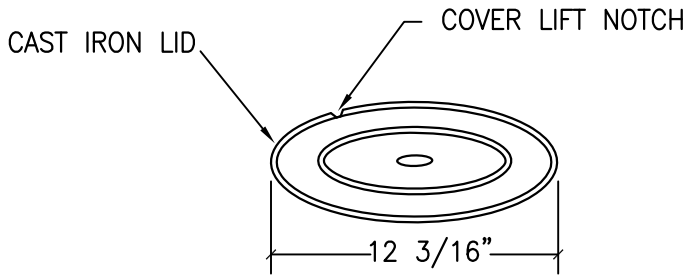
CITY STANDARDS

SERVICE LATERAL – TYPICAL

SCALE: N.T.S. | STANDARD NUMBER: W 5.0



CARSON 2200 SERIES



NOTES:

1. UNPAVED AREAS (PREFERRED LOCATION): PLASTIC BROOKS 2200 SERIES WITH 6" EXTENSION OR APPROVED EQUAL.

2. PAVED AREAS (ALTERNATE LOCATION): CAST IRON BINGHAM AND TAYLOR NO. 6015–B OR APPROVED EQUAL. USE 6" OF BRICK AND/OR BLOCK TO INCREASE DEPTH TO 24".

3. LID MUST BE CAST TO ACCEPT AN ITRON, INC. WATER ERT METER MODULE.

CITY OF CHARLOTTESVILLE

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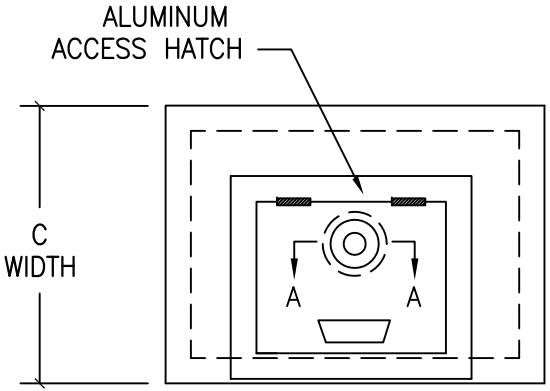
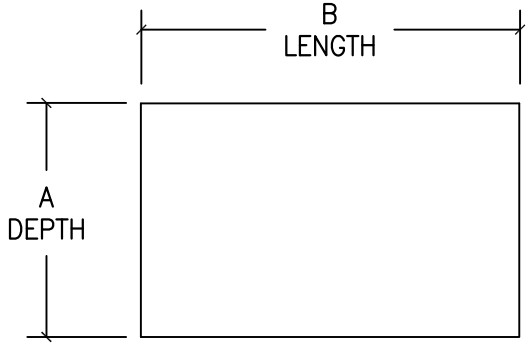
CITY STANDARDS

METER BOX – 5/8" AND 1" METERS

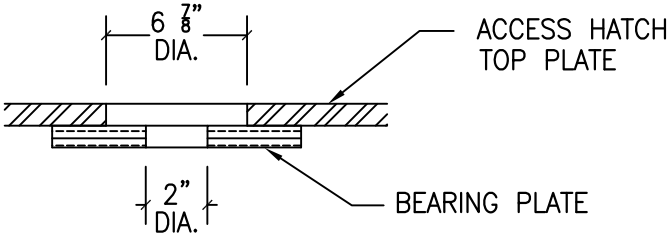
SCALE: N.T.S. | STANDARD NUMBER: W 6.0



TOP VIEW



SIDE VIEW



SECTION A – A

METER SIZE	DEPTH A	LENGTH B	WIDTH C	ACCESS DOOR
1 1/2"	37" MIN.	60"	44" MIN.	24" x 30"
2"	37" MIN.	60"	44" MIN.	24" x 30"
3"	60" MIN.	120"	72" MIN.	30" x 30"
4"	60" MIN.	144"	72" MIN.	30" x 30"
> 4"	PROPOSALS WILL BE SUBMITTED			

CITY OF CHARLOTTESVILLE

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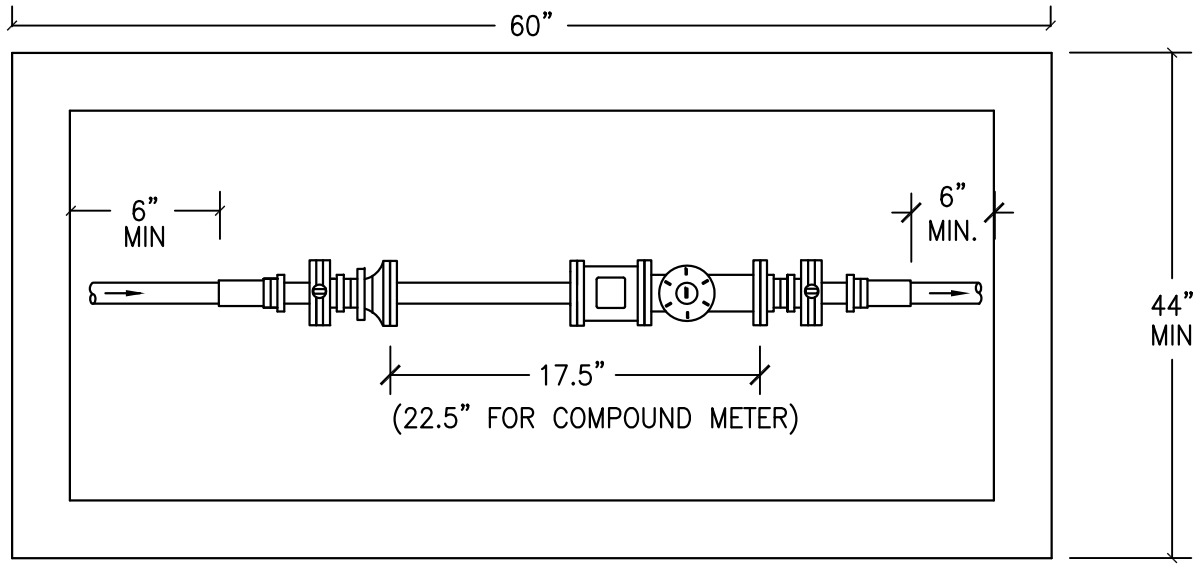
CITY STANDARDS

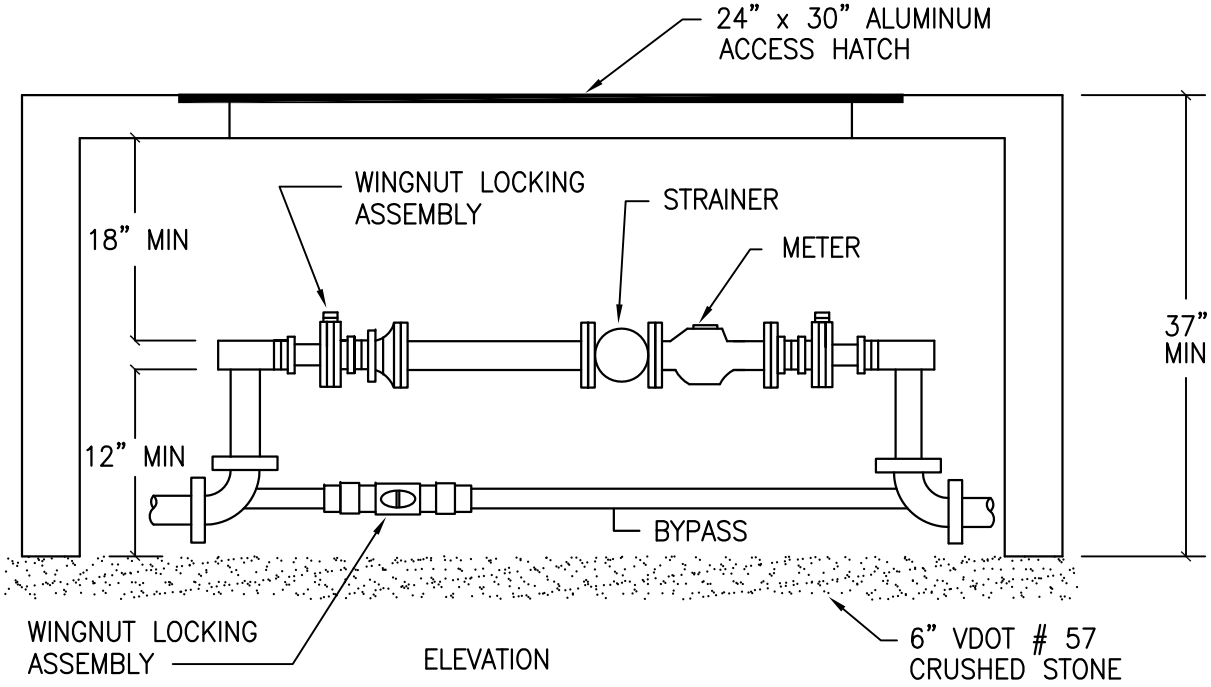
METER VAULTS

SCALE: N.T.S.

STANDARD NUMBER: W 6.1



PLAN



ELEVATION

NOTES:

1. MINIMUM WALL THICKNESS FOR PRECAST VAULT SHALL BE 4".
2. OUTSIDE OF VAULT BELOW GRADE SHALL BE COATED WITH AN APPROVED WATER PROOFING COMPOUND.
3. CONSULT WITH DEPARTMENT OF PUBLIC WORKS – WATER DIVISION FOR METER LAYING LENGTH.
4. INSTALL WARNING TAPE AND TRACER WIRE WITH SERVICE LATERAL. TERMINATE WIRE IN A LOOP WITHIN METER BOX.

CITY OF CHARLOTTESVILLE

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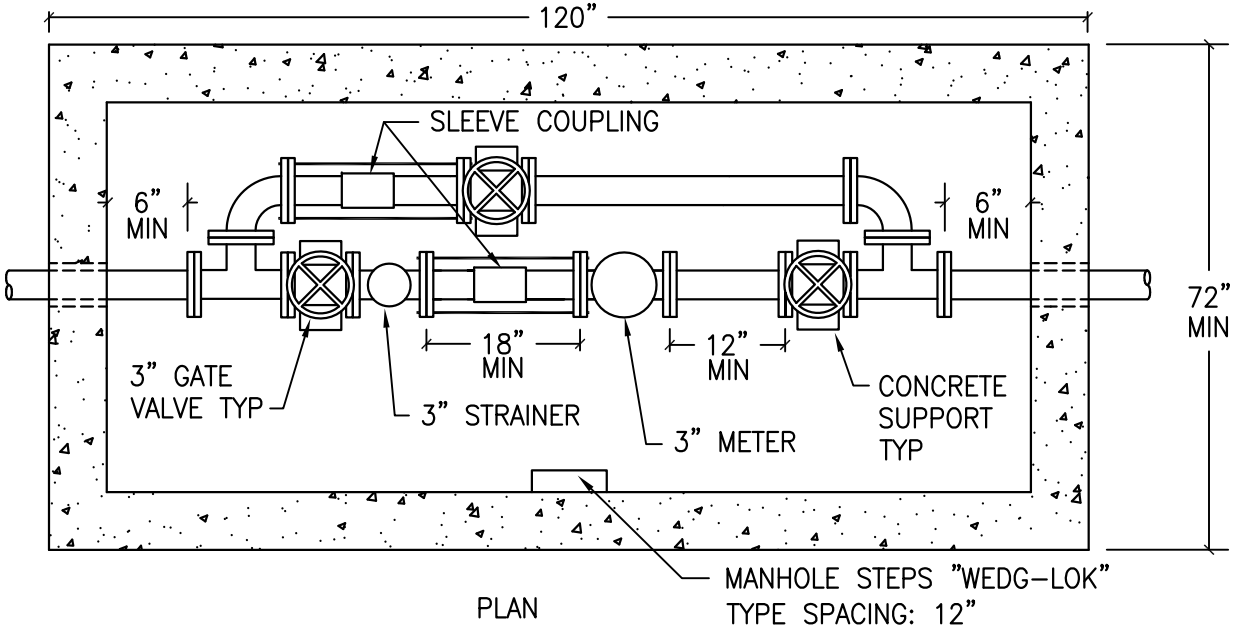
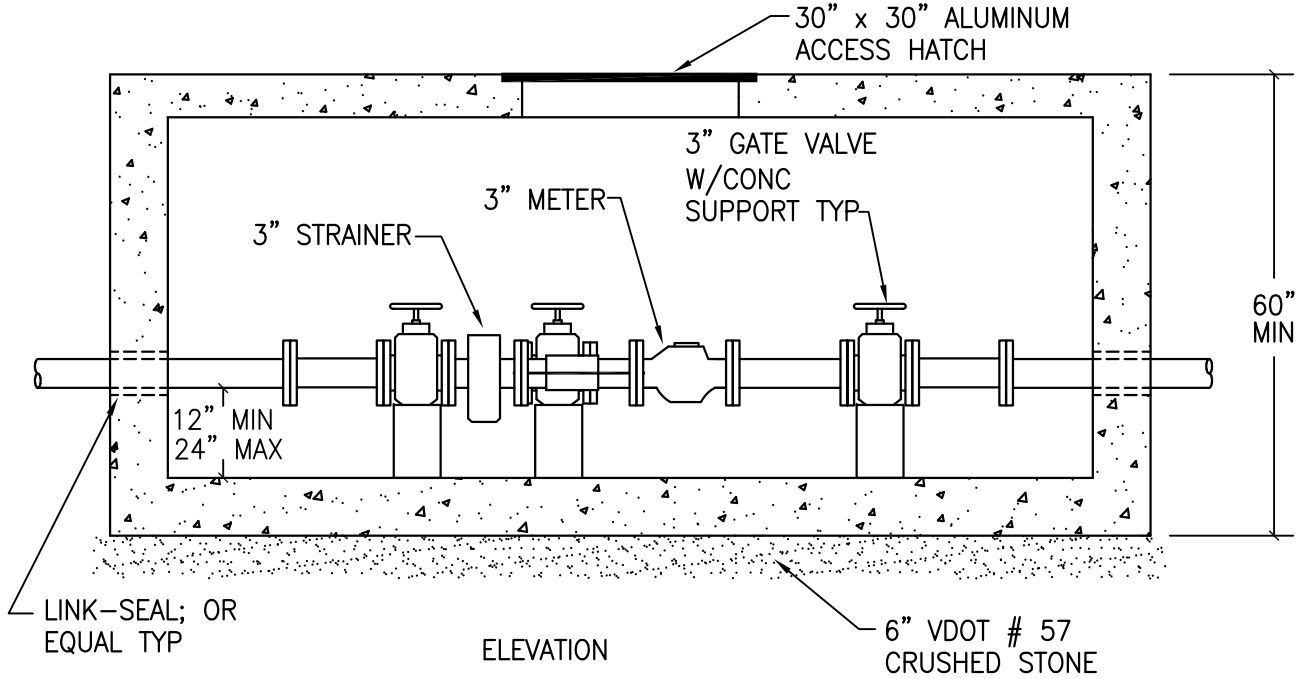
CITY STANDARDS

METER VAULT
1.5" AND 2" METERS

SCALE: N.T.S. | STANDARD NUMBER: W 6.2



PLAN



ELEVATION

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.

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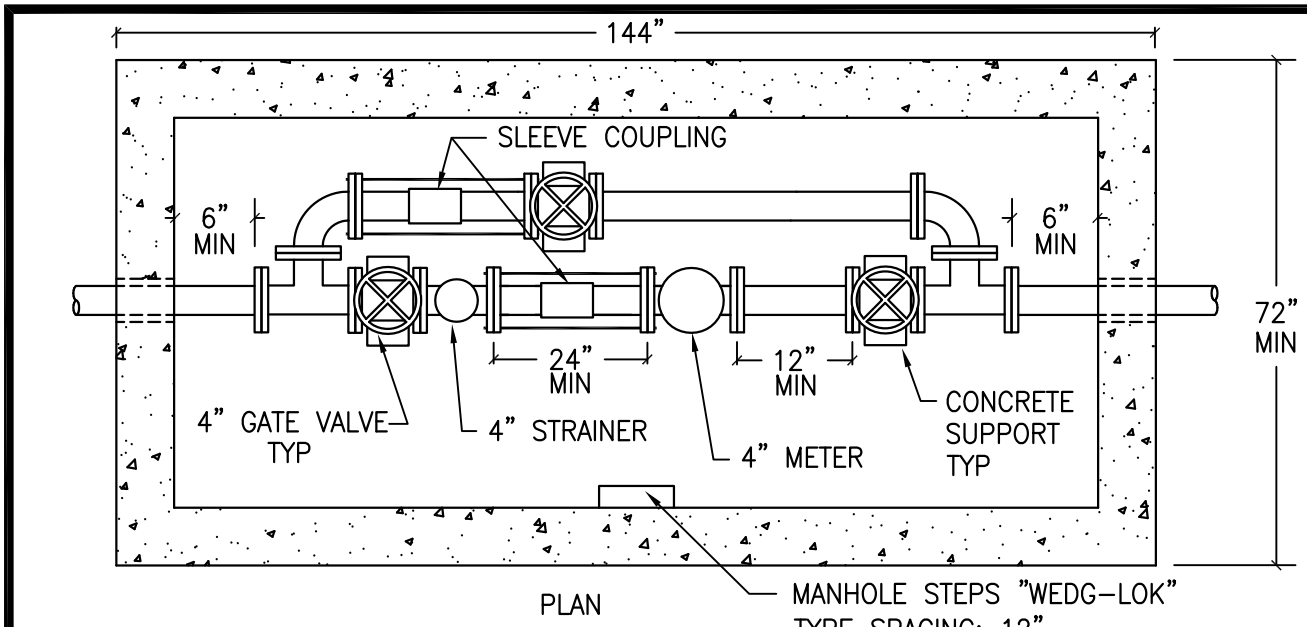
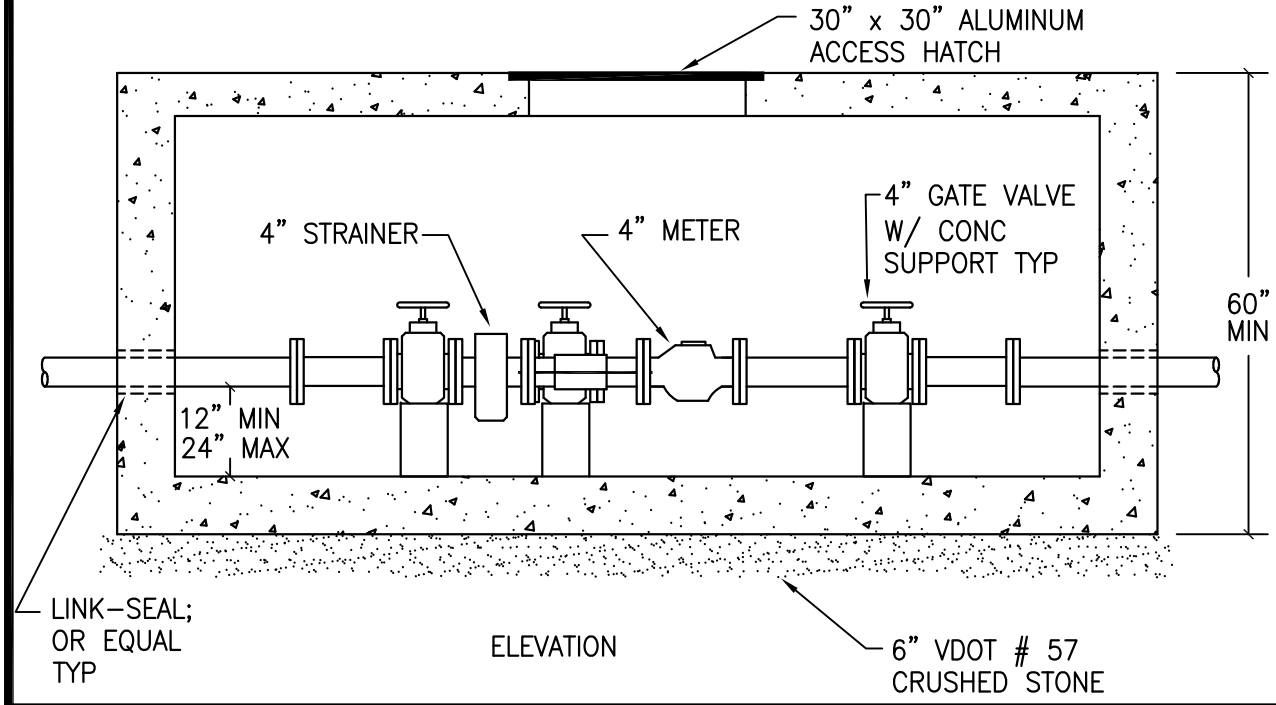
CITY STANDARDS

METER VAULT – 3" METER

SCALE: N.T.S. | STANDARD NUMBER: W 6.3



PLAN



ELEVATION

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

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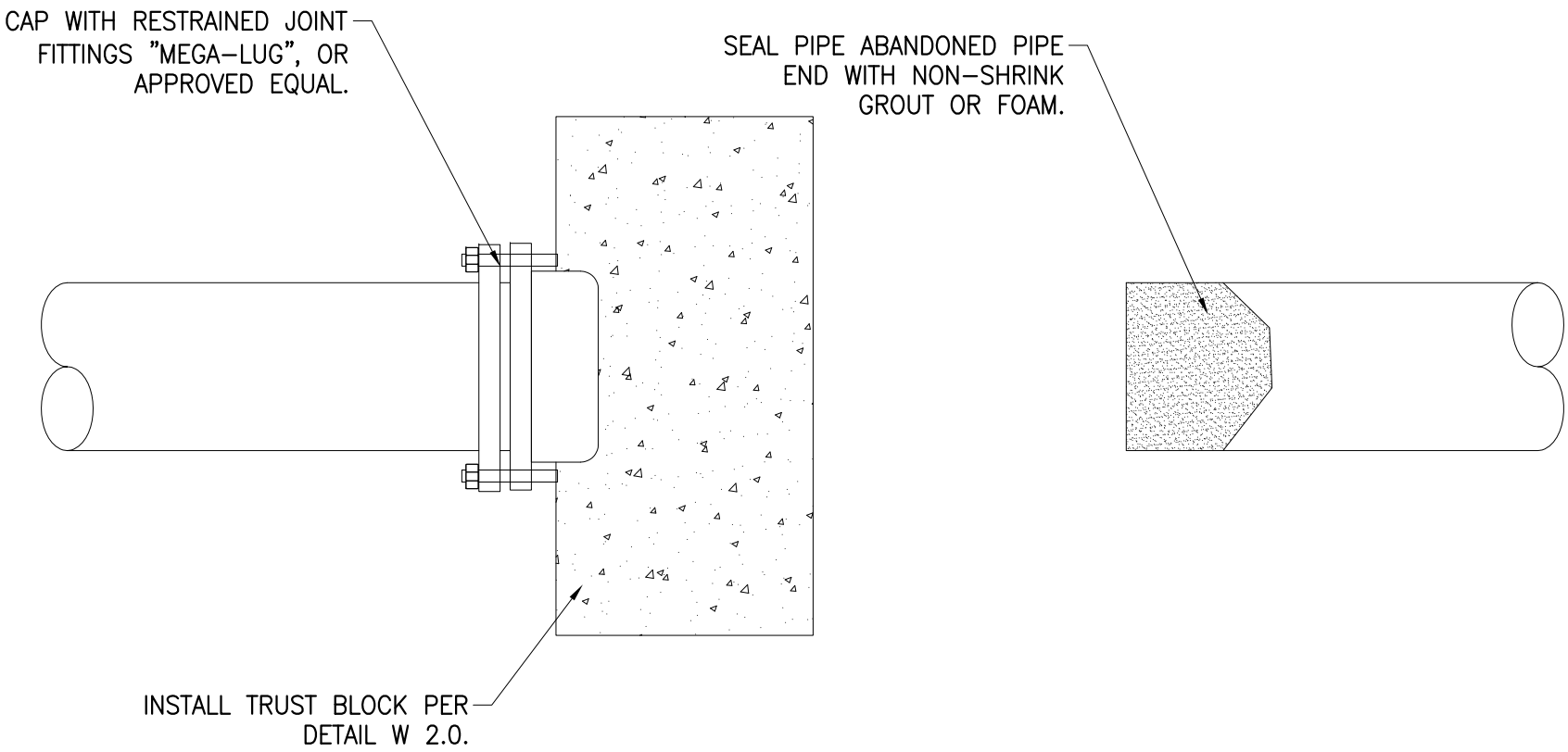
CITY STANDARDS

METER VAULT – 4" METER

SCALE: N.T.S. | STANDARD NUMBER: W 6.4



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

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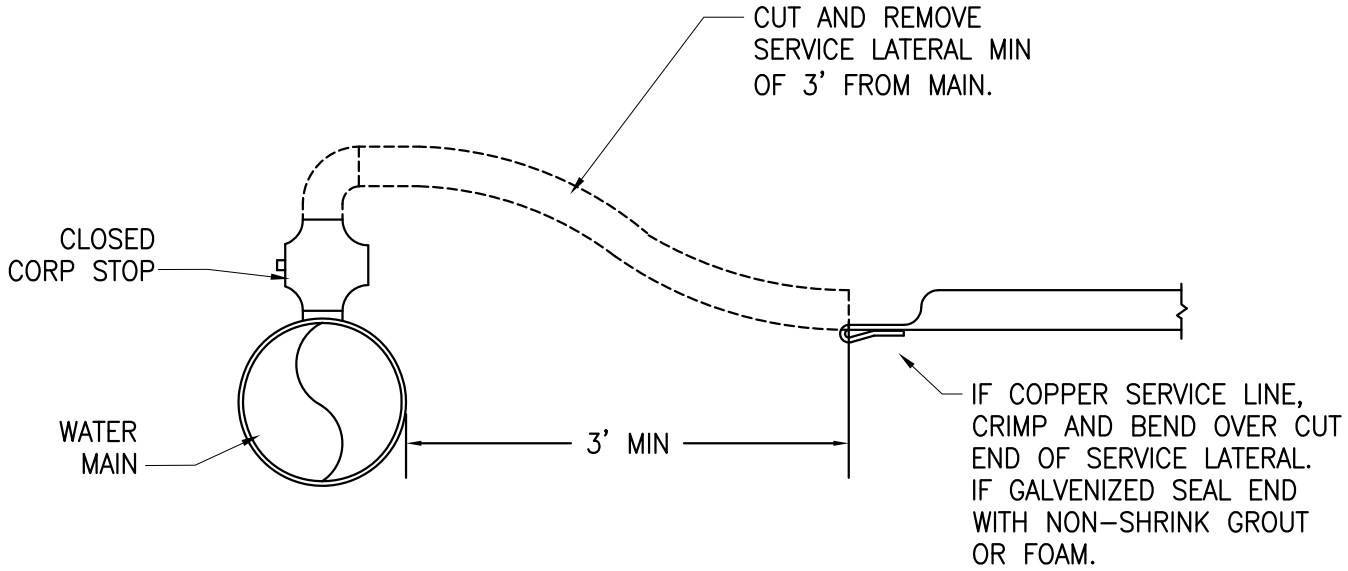
JAN	2012

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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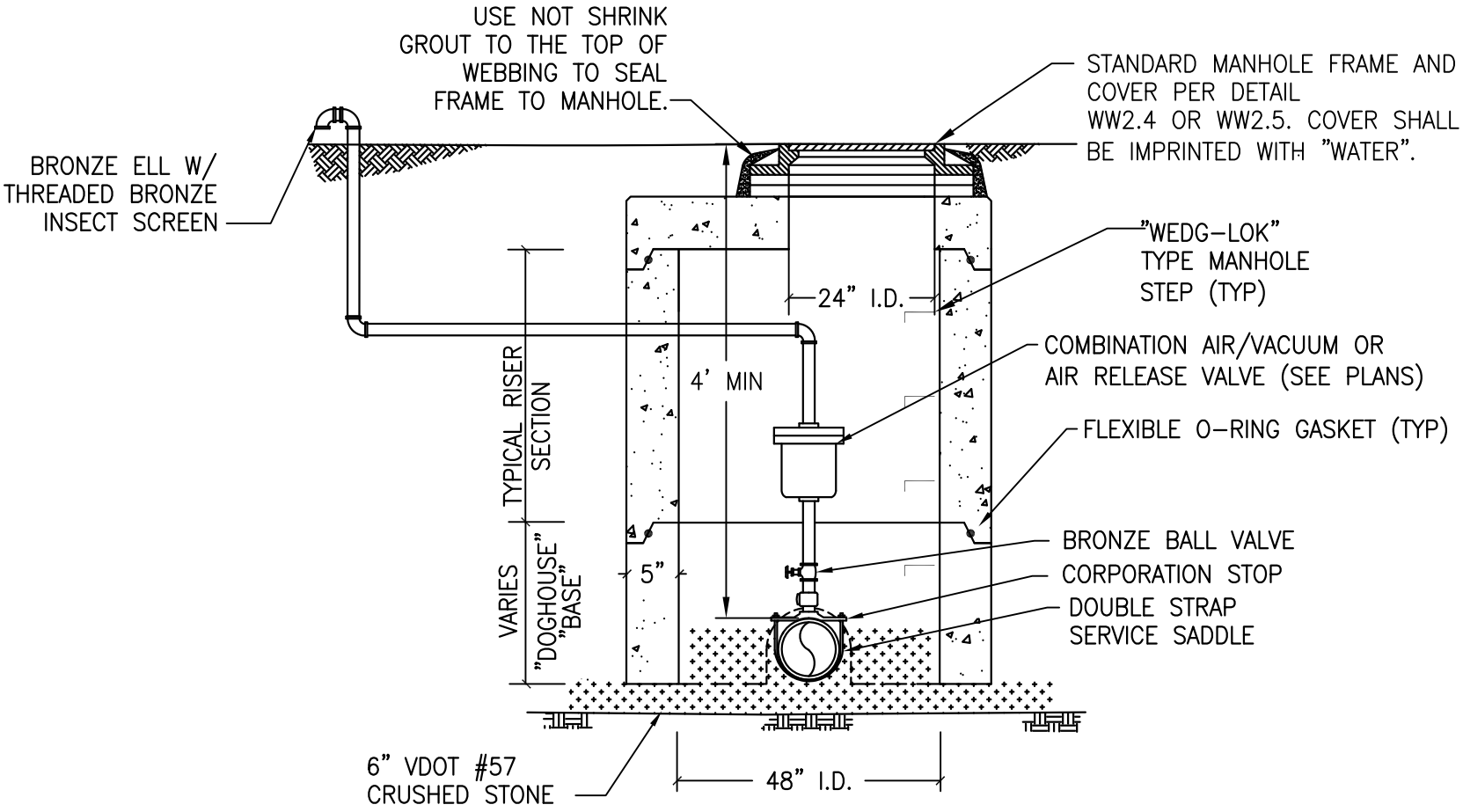
CITY STANDARDS

SERVICE LATERAL ABANDONMENT

SCALE: N.T.S. | STANDARD NUMBER: W 7.1



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

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.

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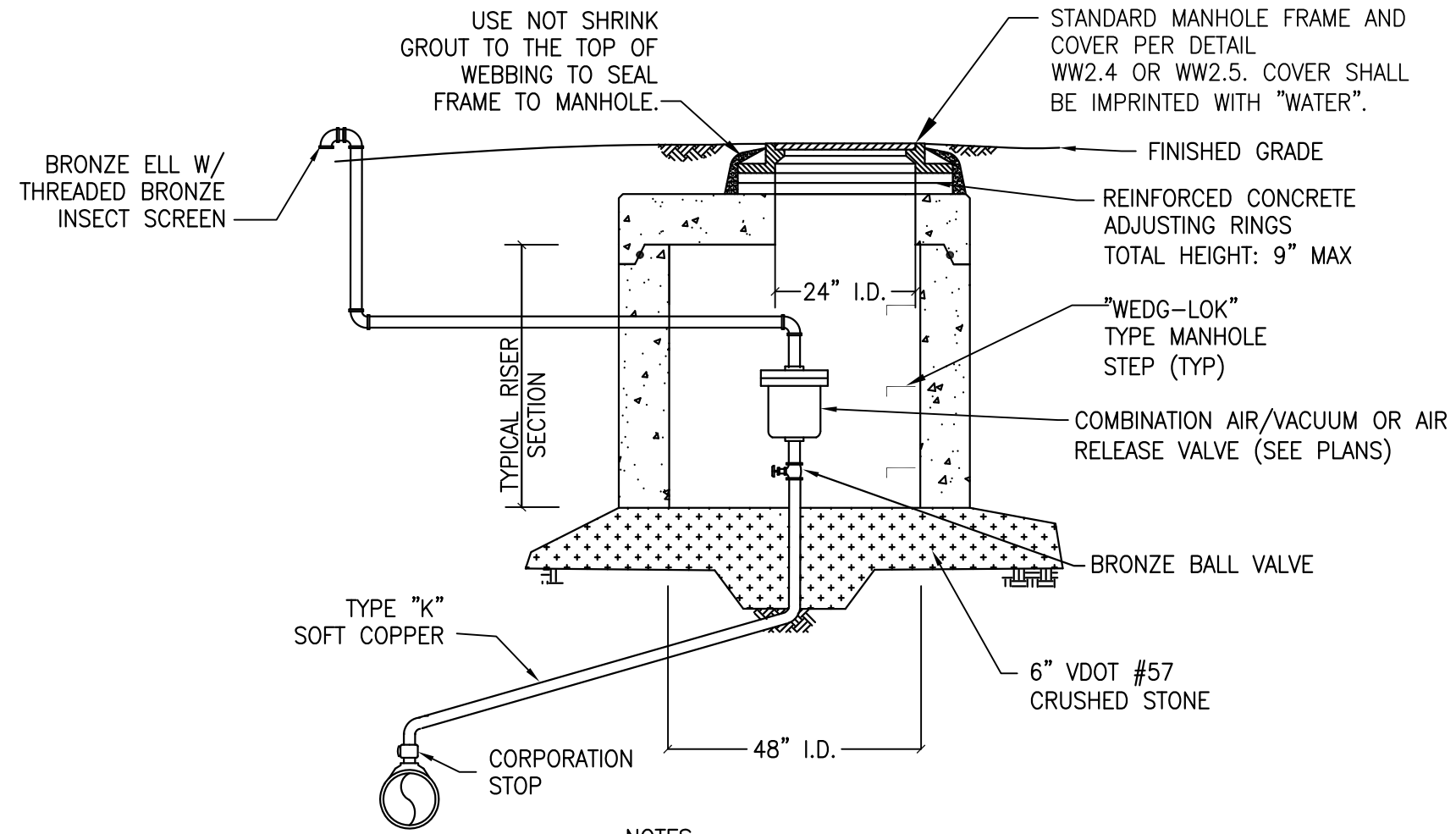
CITY STANDARDS

AIR RELEASE VALVE AND VAULT

SCALE: N.T.S.

STANDARD NUMBER: W 8.0



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

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.

CITY OF CHARLOTTESVILLE

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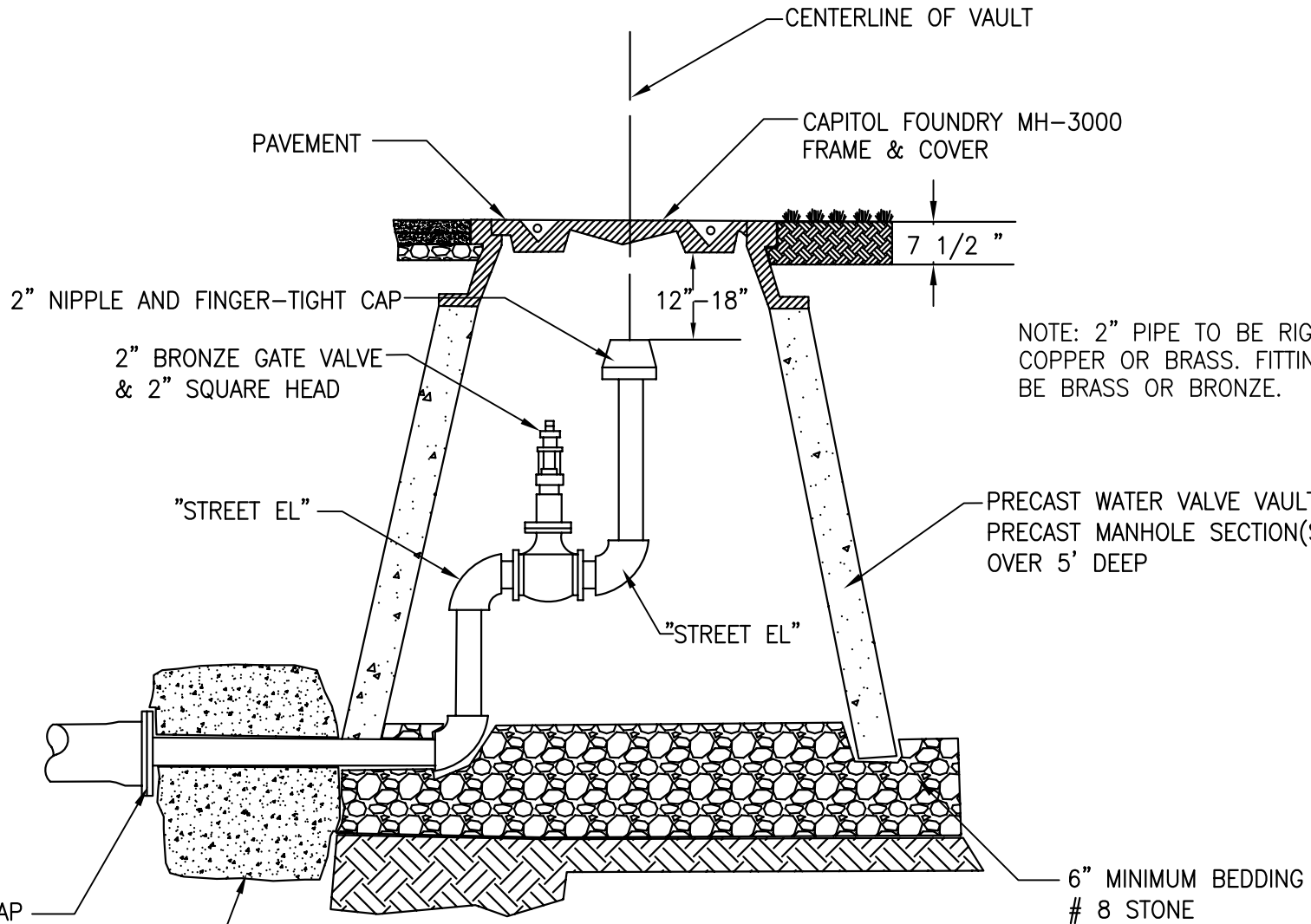
REVISION	DATE

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.

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

CITY OF CHARLOTTESVILLE

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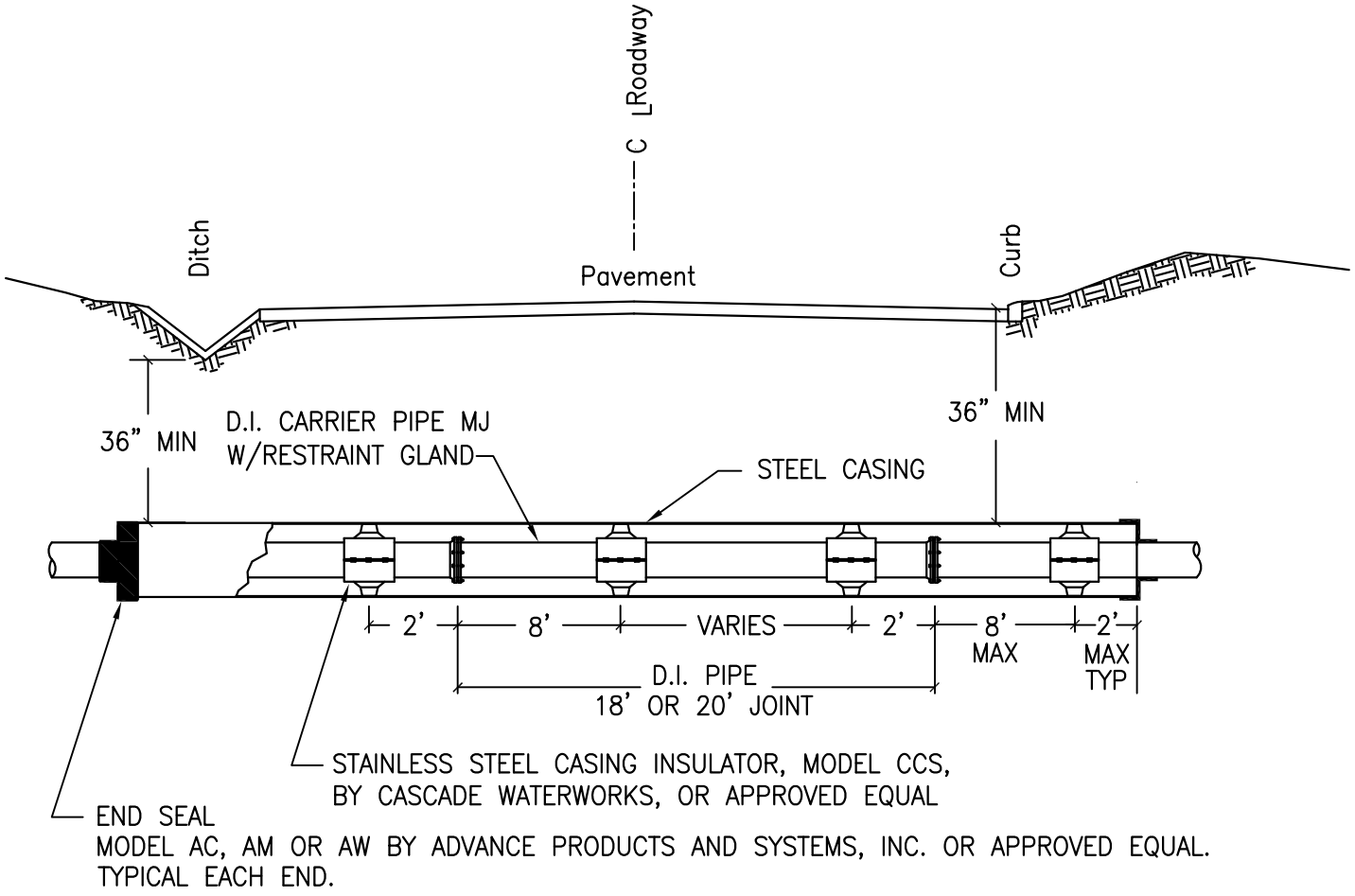
CITY STANDARDS

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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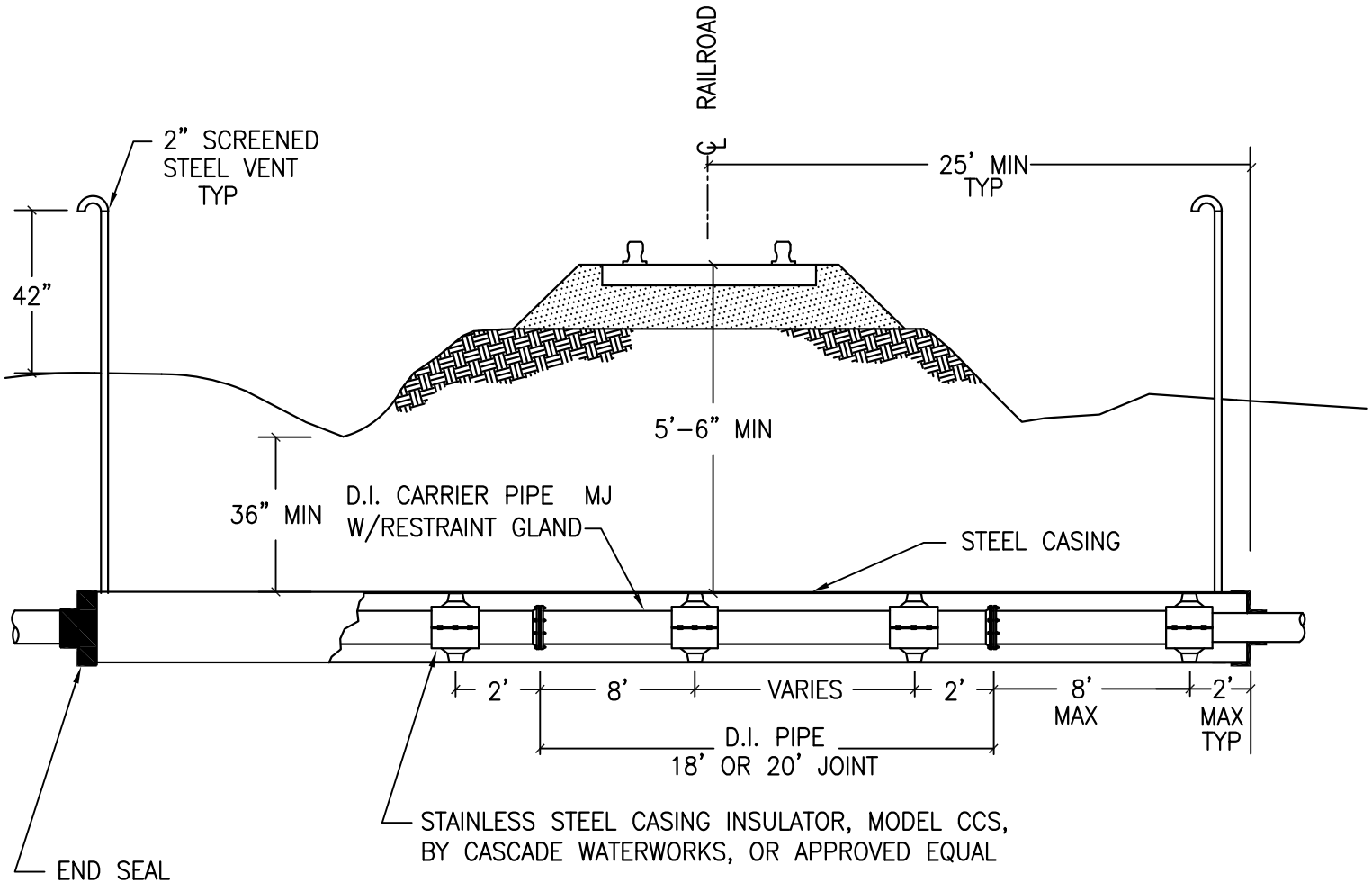
CITY STANDARDS

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.

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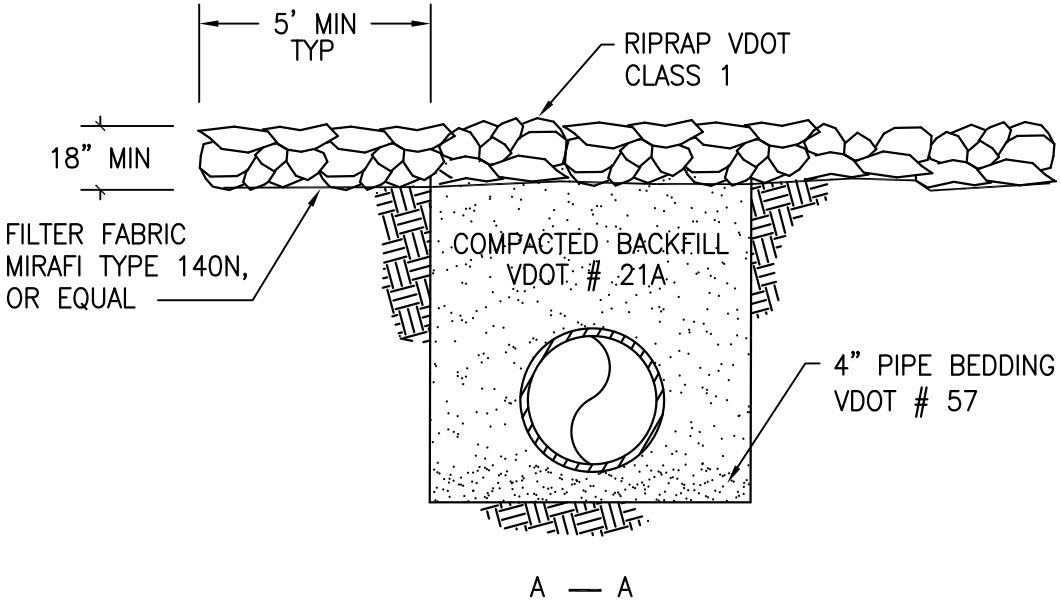
CITY STANDARDS

PIPE CASING REQUIREMENTS

SCALE: N.T.S.

STANDARD NUMBER: W 9.2



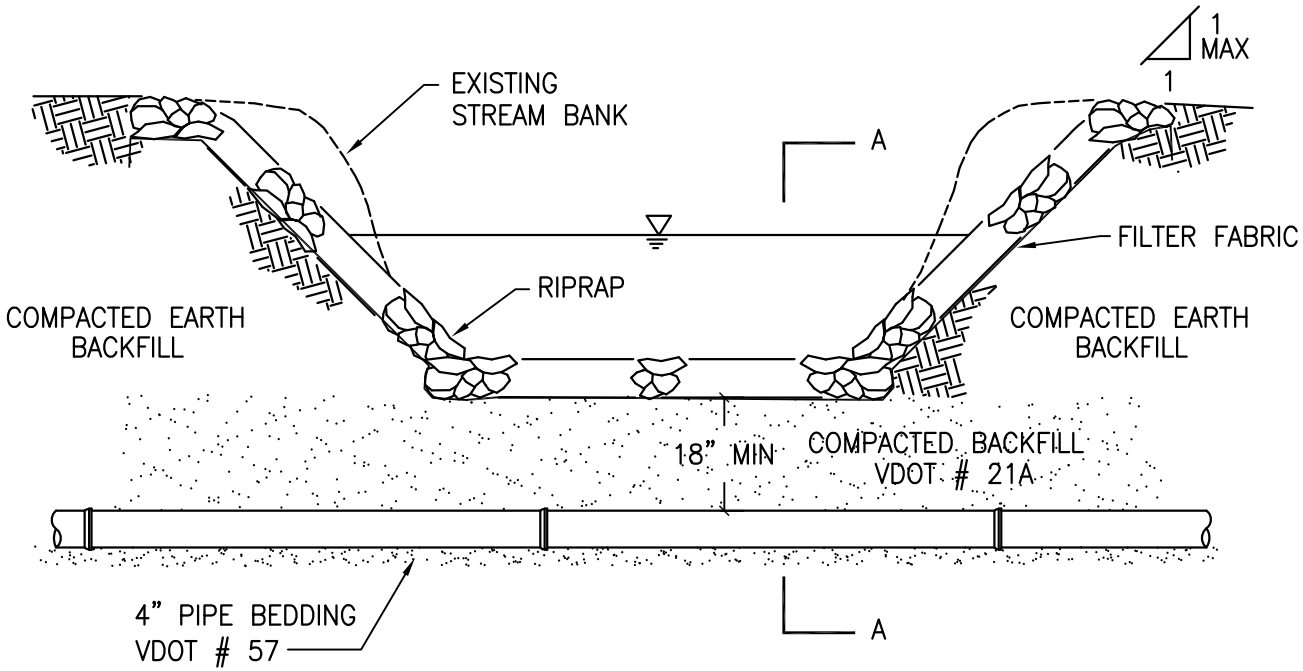
NOTE:

1. BACKFILL FROM TOP OF PIPE BEDDING TO BOTTOM OF STREAM CHANNEL WITH VDOT # 21A CRUSHED STONE COMPACTED TO 90% MAXIMUM DENSITY PER ASTM D 698. 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 # 21A BACKFILL TO TOP OF TRENCH. COMPACT TO 95% MAXIMUM DENSITY PER ASTM D 698.

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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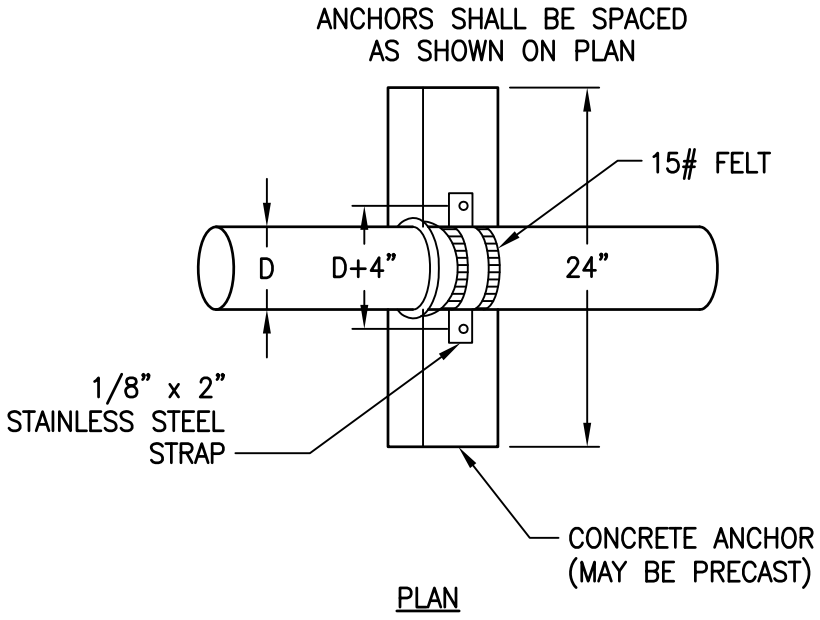
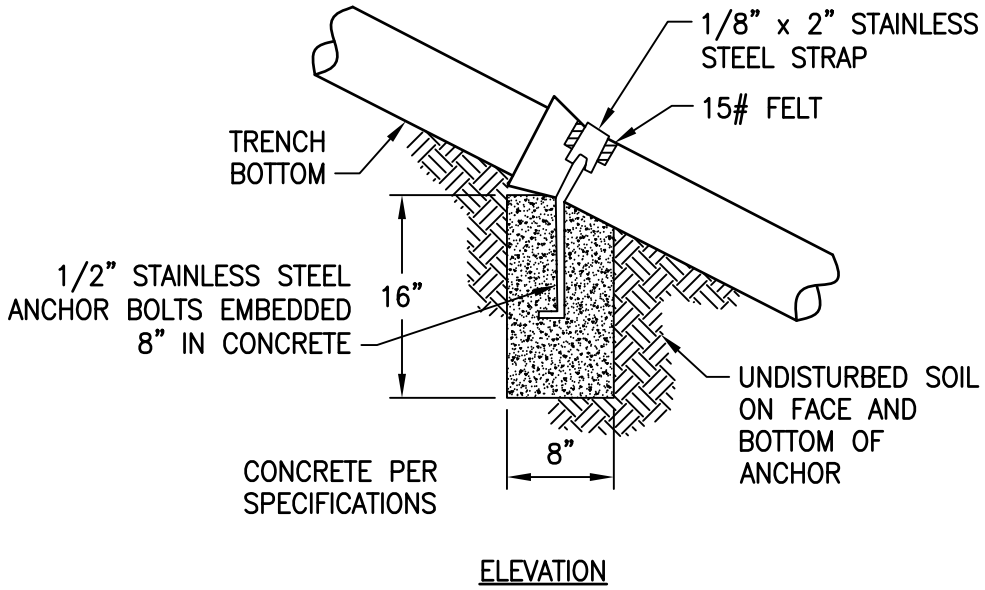
CITY STANDARDS

STREAM–CROSSING

SCALE: N.T.S. | STANDARD NUMBER: W 9.3





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

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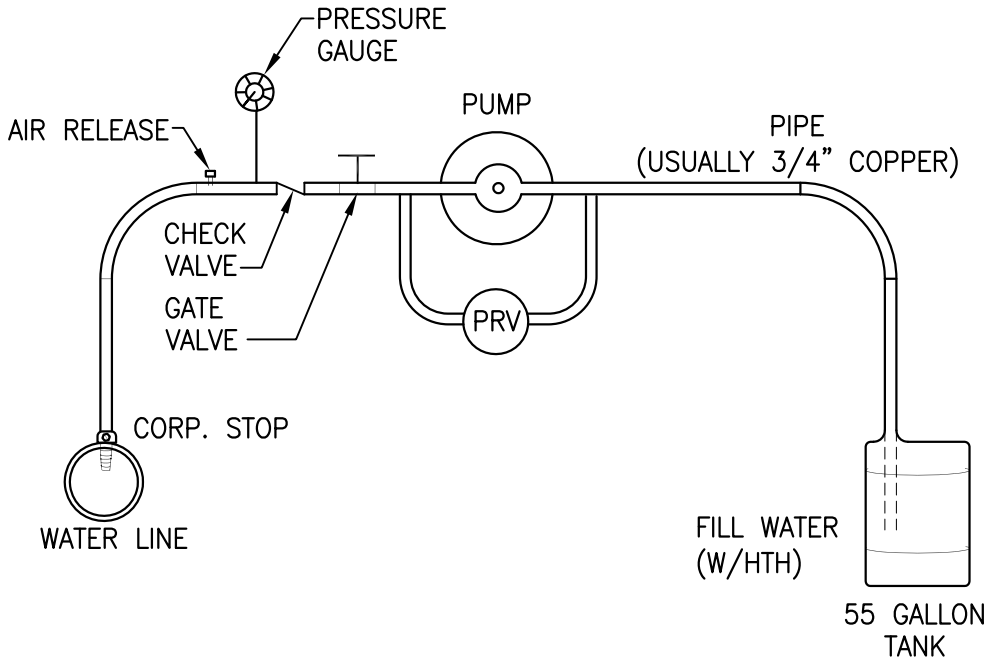
CITY STANDARDS

CONCRETE ANCHOR

SCALE: N.T.S. | STANDARD NUMBER: W 9.4



TYPICAL WATER PRESSURE TEST RIG

CITY OF CHARLOTTESVILLE

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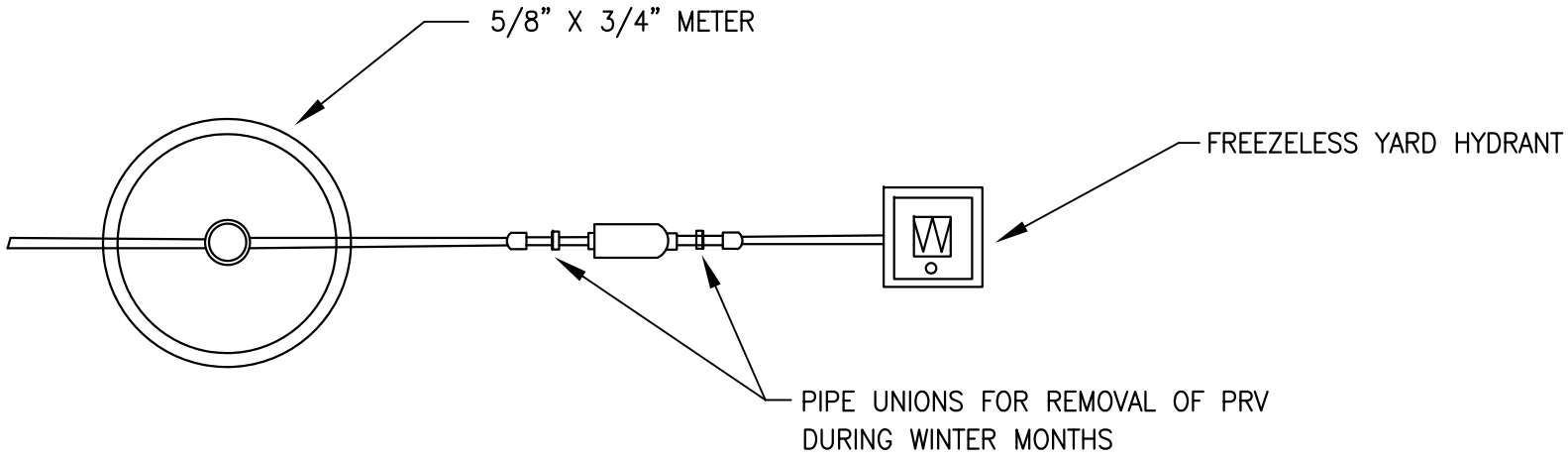
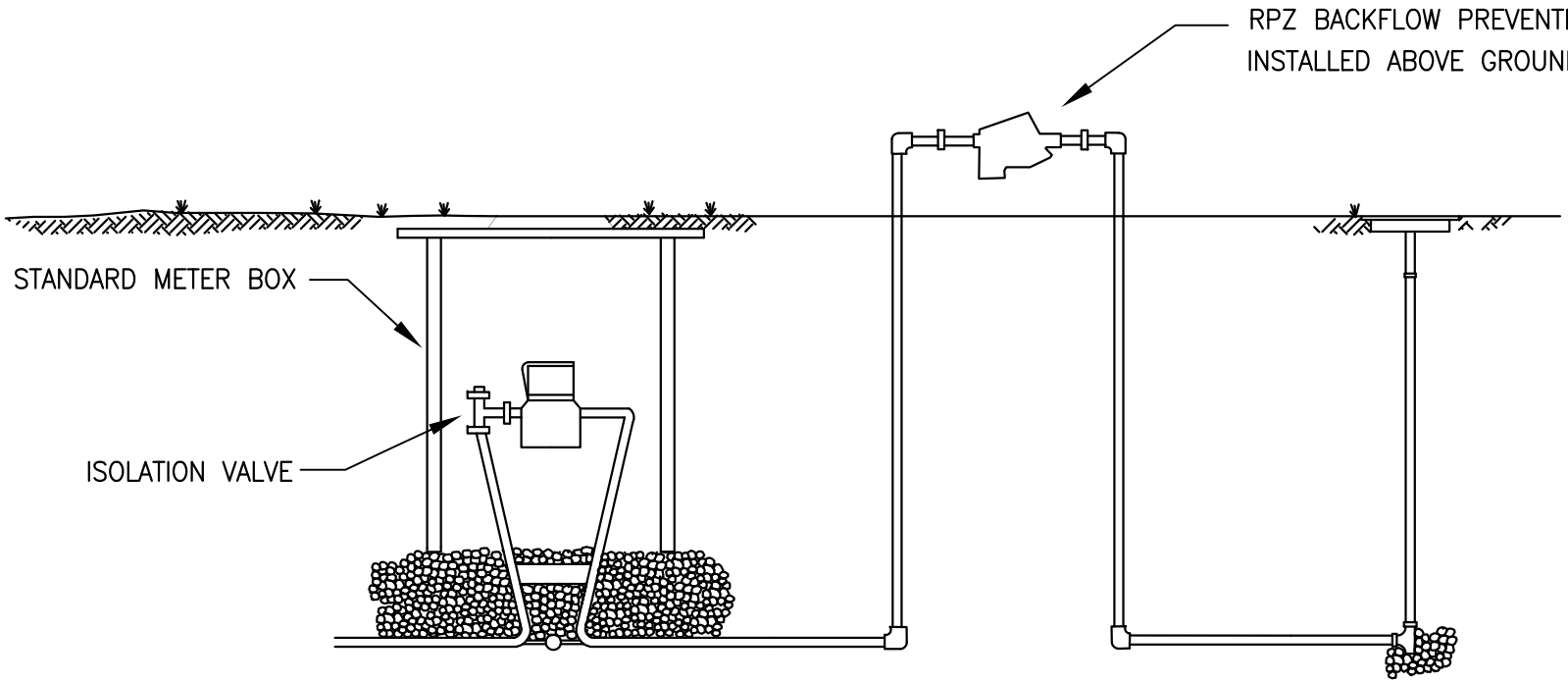
CITY STANDARDS

TYPICAL WATER PRESSURE TEST RIG

SCALE: N.T.S. | STANDARD NUMBER: W 9.5





CITY OF CHARLOTTESVILLE

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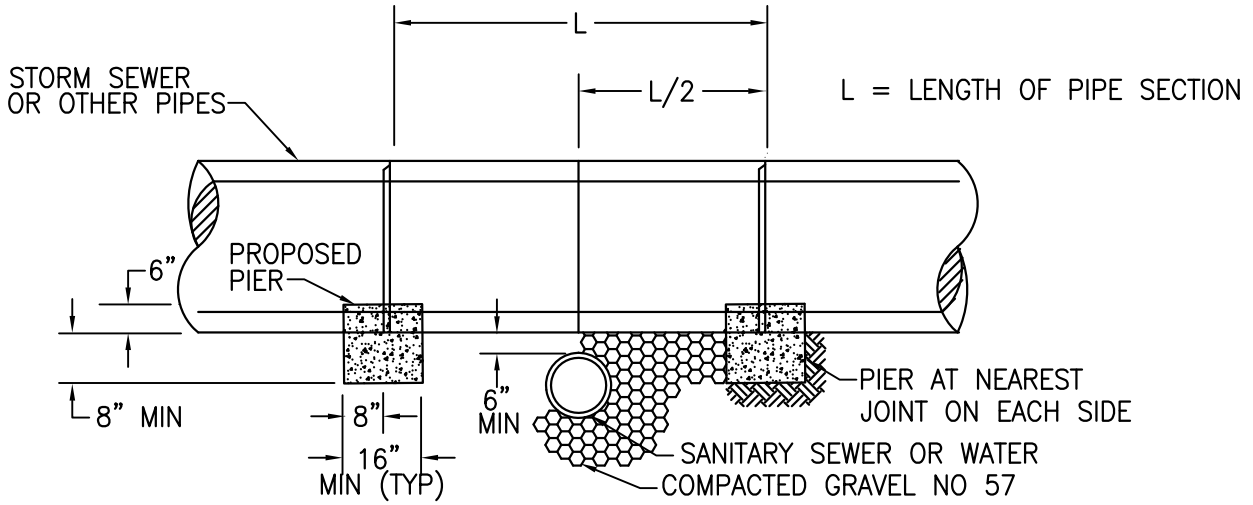
CITY STANDARDS

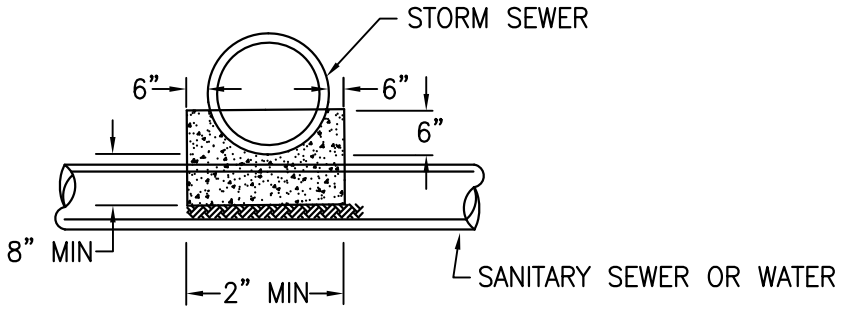
TYPICAL SPRINKLER SERVICE

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