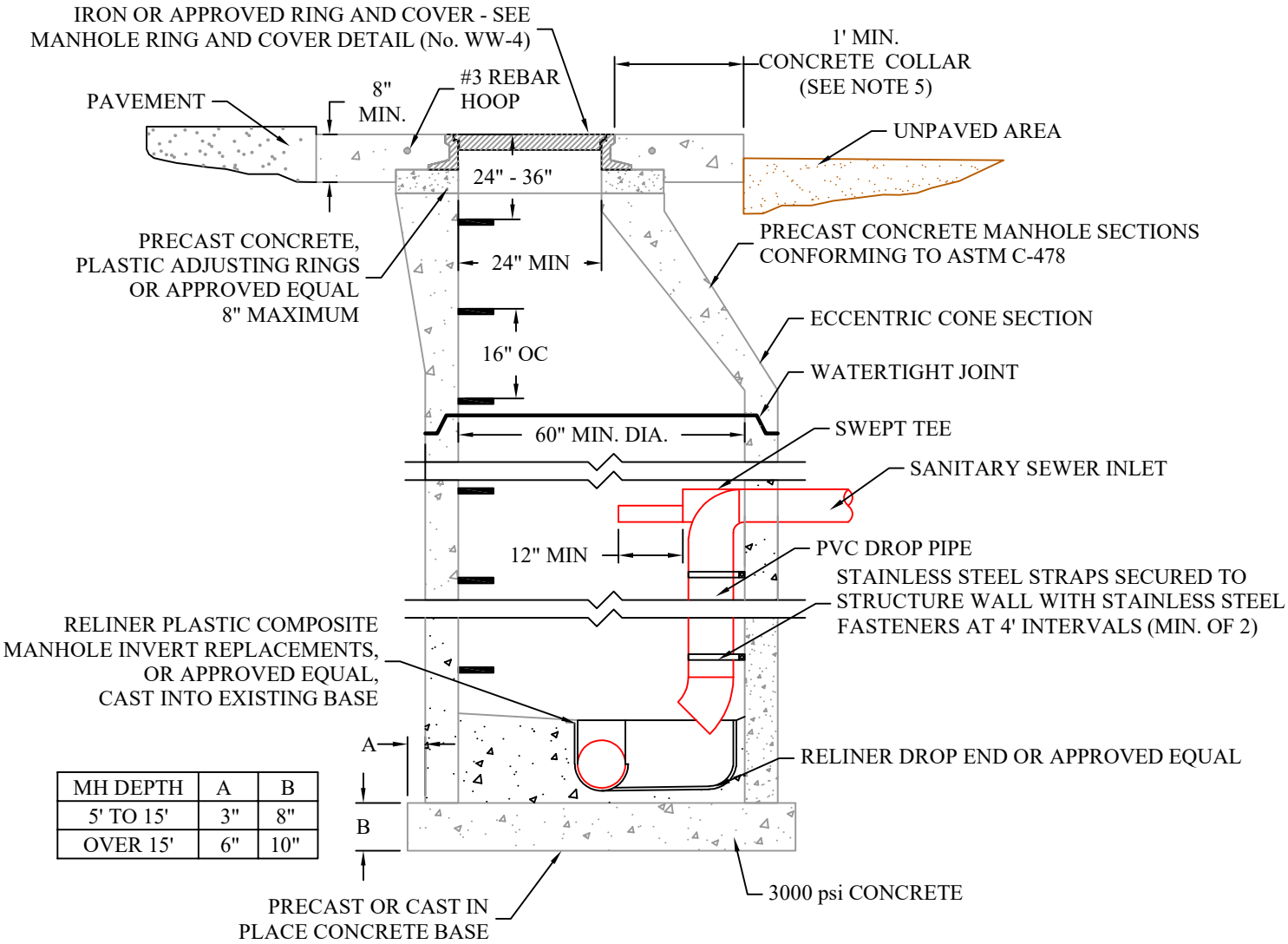
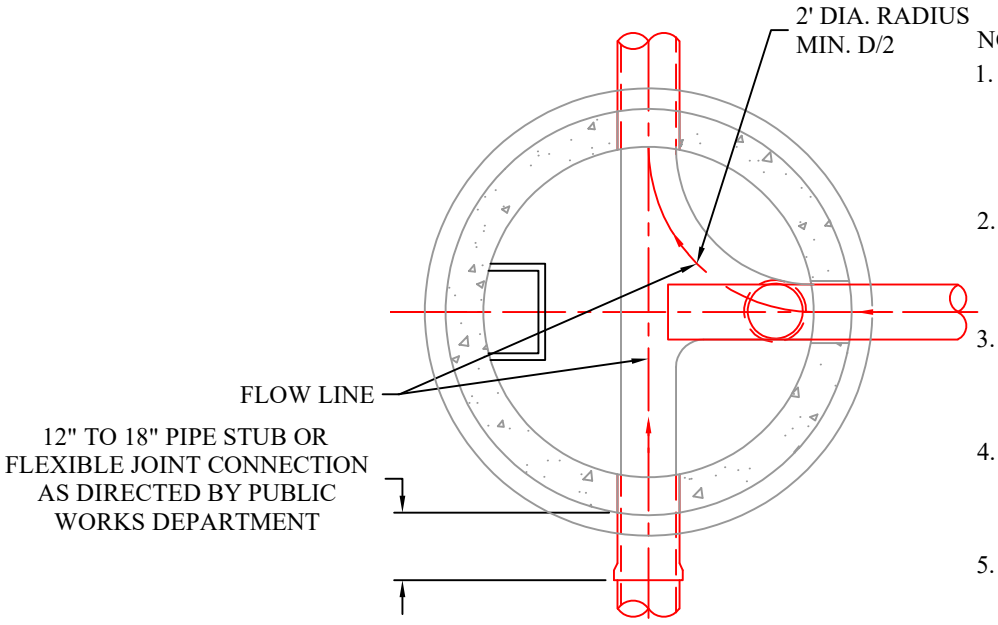


MH DEPTH	A	B
5' TO 15'	3"	8"
OVER 15'	6"	10"



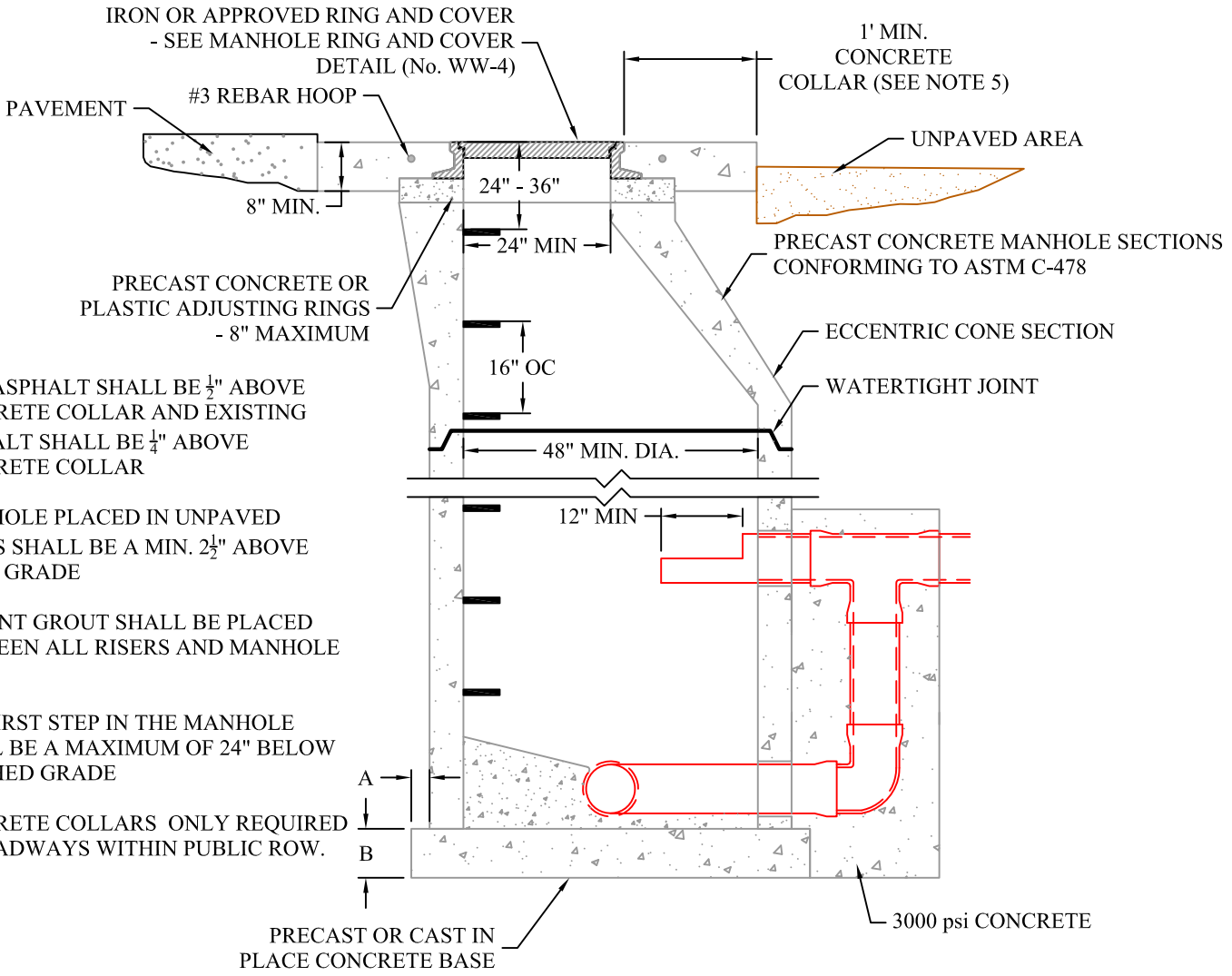
NOTE:

1. NEW ASPHALT SHALL BE $\frac{1}{2}$" ABOVE CONCRETE COLLAR AND EXISTING ASPHALT SHALL BE $\frac{1}{4}$" ABOVE CONCRETE COLLAR
2. MANHOLE PLACED IN UNPAVED AREAS SHALL BE A MIN. $2\frac{1}{2}$" ABOVE FINAL GRADE
3. CEMENT GROUT SHALL BE PLACED BETWEEN ALL RISERS AND MANHOLE RING
4. THE FIRST STEP IN THE MANHOLE SHALL BE A MAXIMUM OF 24" BELOW FINISHED GRADE
5. CONCRETE COLLARS ONLY REQUIRED IN ROADWAYS WITHIN PUBLIC ROW.

City of Evans, Colorado
Public Works Department

DROP MANHOLE DETAIL
INSIDE DROP

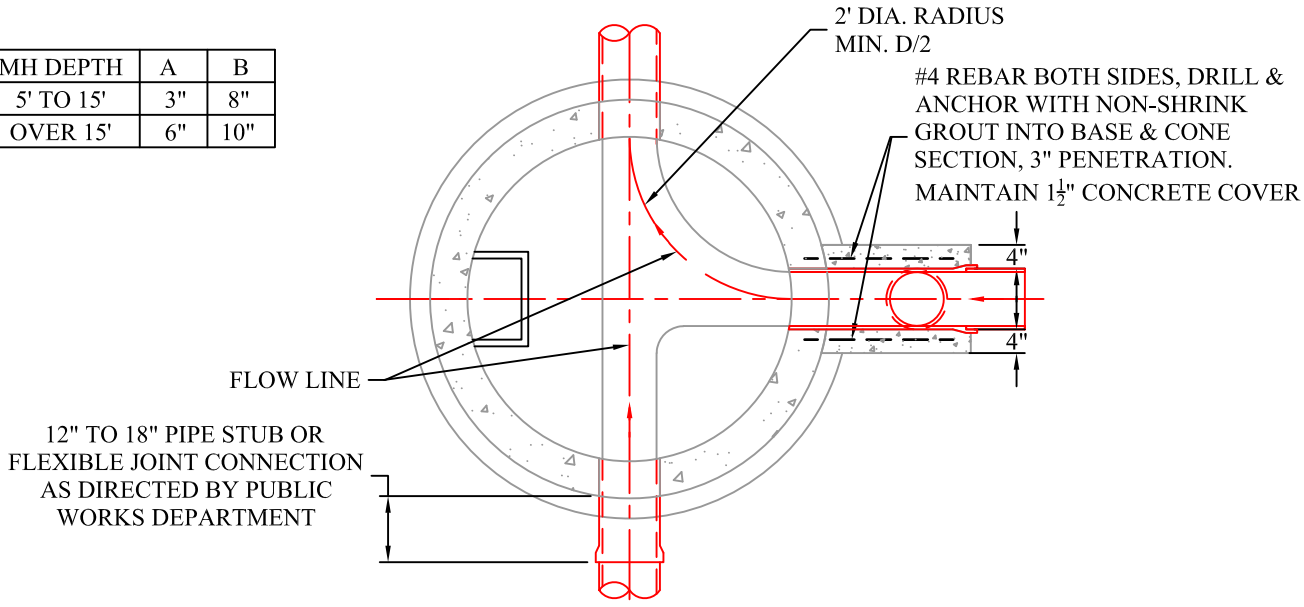
Scale: N.T.S. WW-1 AUGUST 2019



NOTE:

1. NEW ASPHALT SHALL BE $\frac{1}{2}$" ABOVE CONCRETE COLLAR AND EXISTING ASPHALT SHALL BE $\frac{1}{4}$" ABOVE CONCRETE COLLAR
2. MANHOLE PLACED IN UNPAVED AREAS SHALL BE A MIN. $2\frac{1}{2}$" ABOVE FINAL GRADE
3. CEMENT GROUT SHALL BE PLACED BETWEEN ALL RISERS AND MANHOLE RING
4. THE FIRST STEP IN THE MANHOLE SHALL BE A MAXIMUM OF 24" BELOW FINISHED GRADE
5. CONCRETE COLLARS ONLY REQUIRED IN ROADWAYS WITHIN PUBLIC ROW.

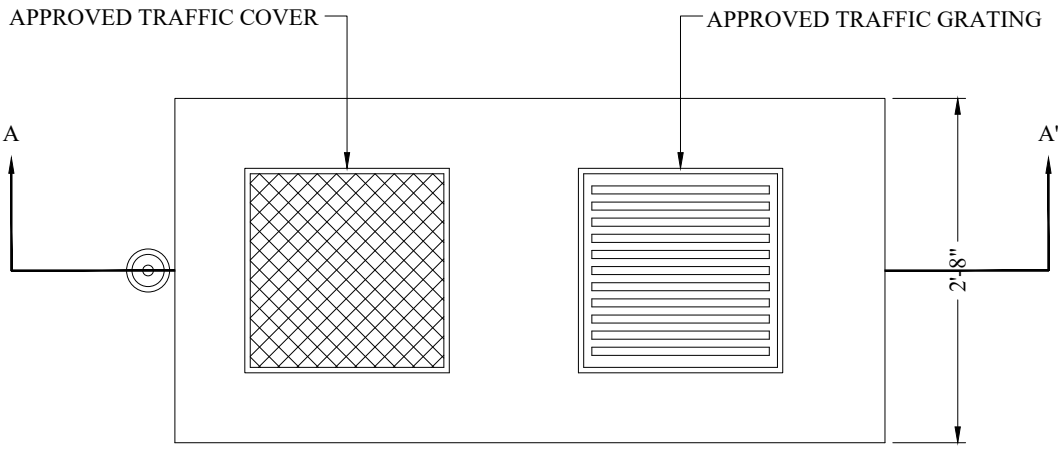
MH DEPTH	A	B
5' TO 15'	3"	8"
OVER 15'	6"	10"



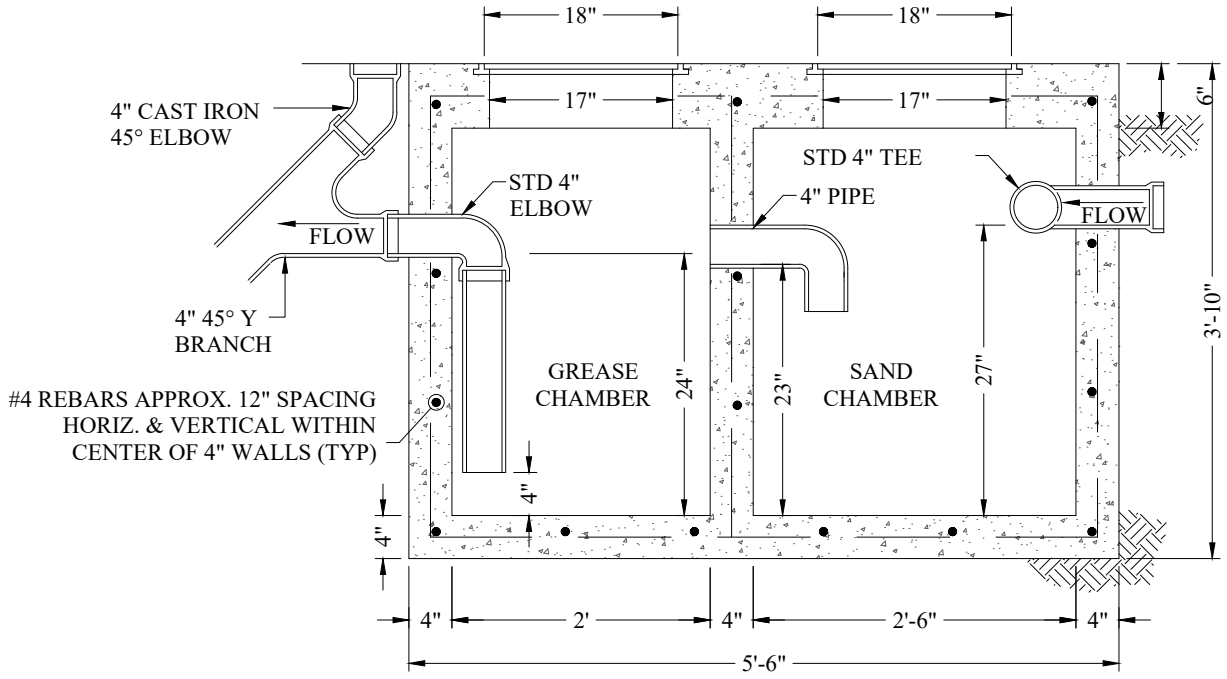
City of Evans, Colorado
Public Works Department

DROP MANHOLE DETAIL
OUTSIDE DROP

Scale: N.T.S. WW-2 August 2019



PLAN



SECTION A-A'

NOTES:

1. DIMENSIONS SHOWN ARE MINIMUM. PROPER SIZING TO BE DETERMINED BY CALCULATION, SUBJECT TO APPROVAL OF CITY ENGINEER
2. RESPONSIBILITY FOR CLEANING & MAINTENANCE BELONGS TO THE PROPERTY OWNER
3. AN ALTERNATE GREASE INTERCEPTOR DEVICE OF STANDARD MANUFACTURE MAY BE SUBSTITUTED FOR THAT SHOWN ABOVE, SUBJECT TO APPROVAL OF THE CITY CHIEF BUILDING OFFICIAL

THIS STANDARD APPLIES TO:

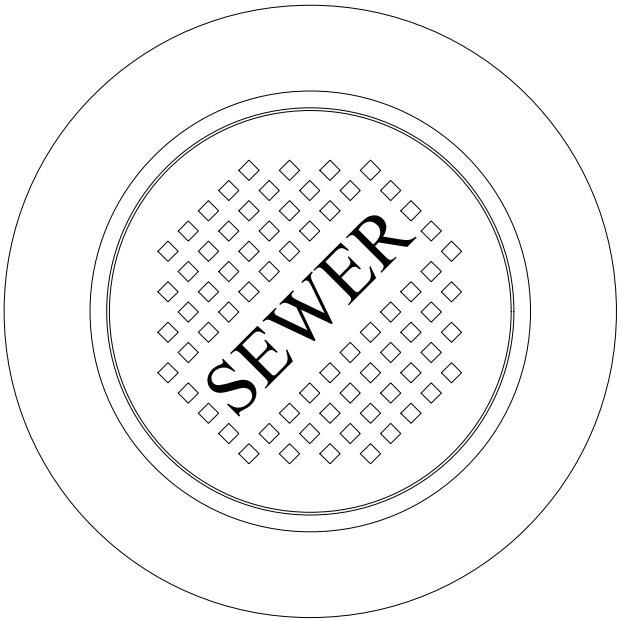
1. RESTAURANTS
2. AUTOMOTIVE GARAGES
3. CAR WASHES
4. OTHER, AS DETERMINED BY THE CITY ENGINEER

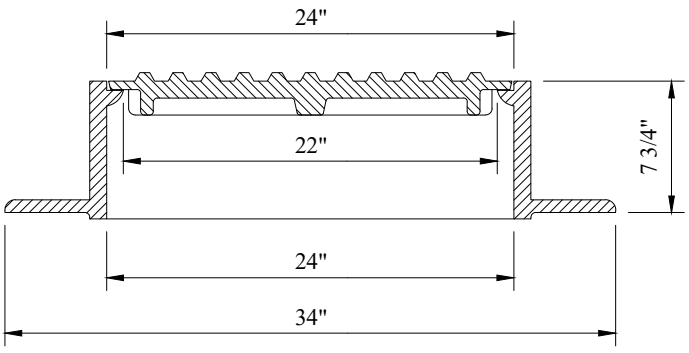
City of Evans, Colorado

Public Works Department

GREASE AND SAND INTERCEPTOR DETAIL

Scale: N.T.S. | WW-3 | May 2019





NOTES:

1. RING AND COVER SHALL BE IRON (AS MANUFACTURED FOR CURRENT AWWA STANDARD) AND AS APPROVED BY THE PUBLIC WORKS DEPARTMENT

2. COVER SHALL BE NON-PERFORATED WITH "SEWER" CAST ON THE TOP OF THE LID FOR SANITARY SEWER MANHOLES

3. COVER SHALL BE BOLTED, WATER RESISTANT IF LOCATED IN 100 YEAR FLOOD PLAIN

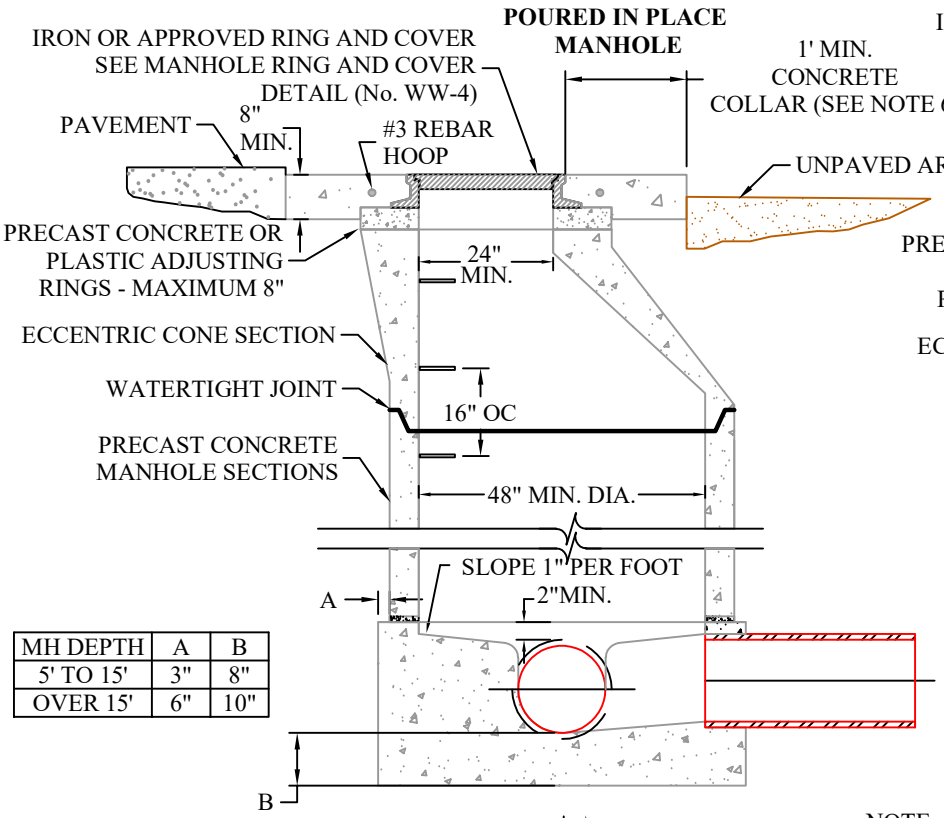
City of Evans, Colorado

Public Works Department

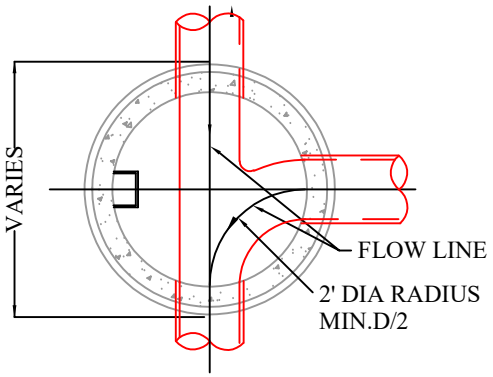
MANHOLE RING AND COVER DETAIL

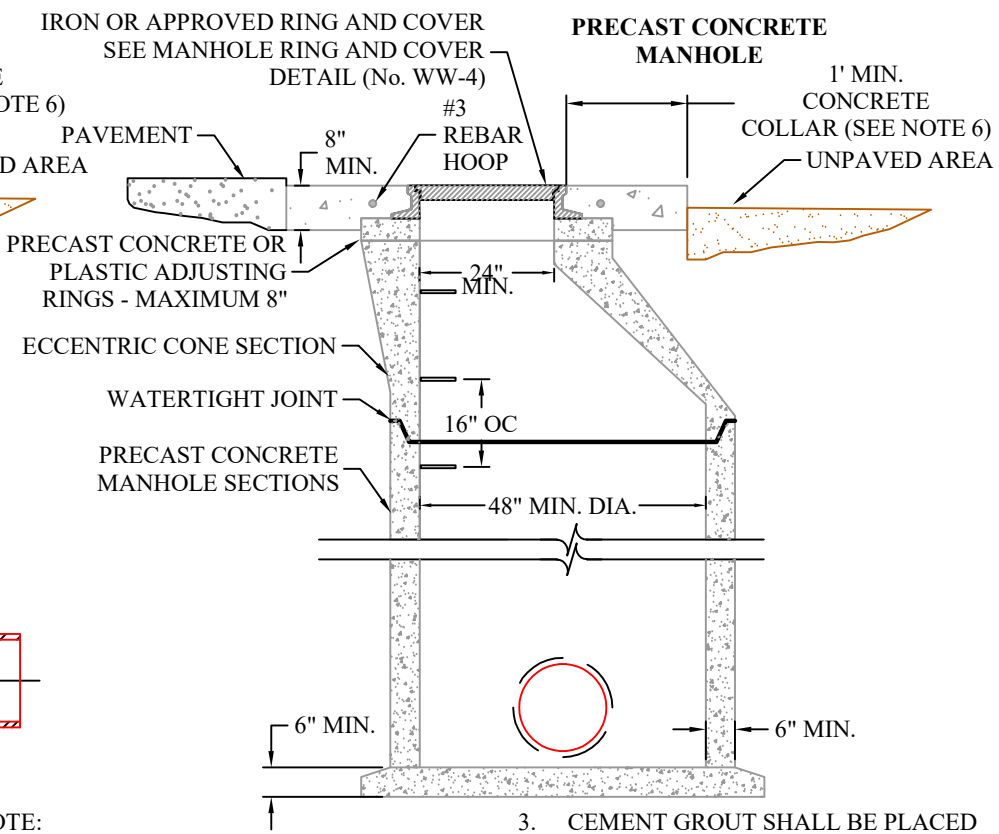
SANITARY SEWER

Scale: N.T.S. | WW-4 | May 2019



MH DEPTH	A	B
5' TO 15'	3"	8"
OVER 15'	6"	10"





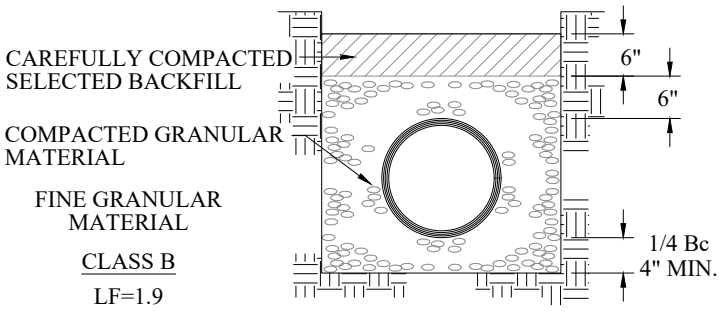
NOTE:

1. NEW ASPHALT SHALL BE $\frac{1}{2}$" ABOVE CONCRETE COLLAR AND EXISTING ASPHALT SHALL BE $\frac{1}{4}$" ABOVE CONCRETE COLLAR
2. MANHOLE PLACED IN UNPAVED AREAS SHALL BE A MIN. OF $2\frac{1}{2}$" ABOVE FINAL GRADE. MANHOLE PLACED IN CULTIVATED AREAS SHALL BE A MIN. OF 3' BELOW GRADE WITH 6" BALLARD INDICATING OFFSET DISTANCE AND DIRECTION
3. CEMENT GROUT SHALL BE PLACED BETWEEN ALL RISERS AND MANHOLE RING
4. THE FIRST STEP IN THE MANHOLE SHALL BE A MAXIMUM OF 24" BELOW FINISHED GRADE
5. BARREL JOINTS TO BE WRAPPED WITH A SELF STICK ALL WEATHER BUTYL SEALANT TO PROTECT FROM OUTSIDE FILTRATION. E-2 STIK OR SIMILAR
6. CONCRETE COLLARS ONLY REQUIRED IN ROADWAYS WITHIN PUBLIC ROW.

City of Evans, Colorado
Public Works Department

MANHOLE DETAIL

Scale: N.T.S. | WW-5 | August 2019



GRANULAR BEDDING

NOTES:

1. MINIMUM DENSITY FOR CAREFULLY COMPACTED SELECT BACKFILL SHALL BE 95% OF MAXIMUM OR AS SPECIFIED FOR THE TRENCH BACKFILL - WHICHEVER IS GREATER

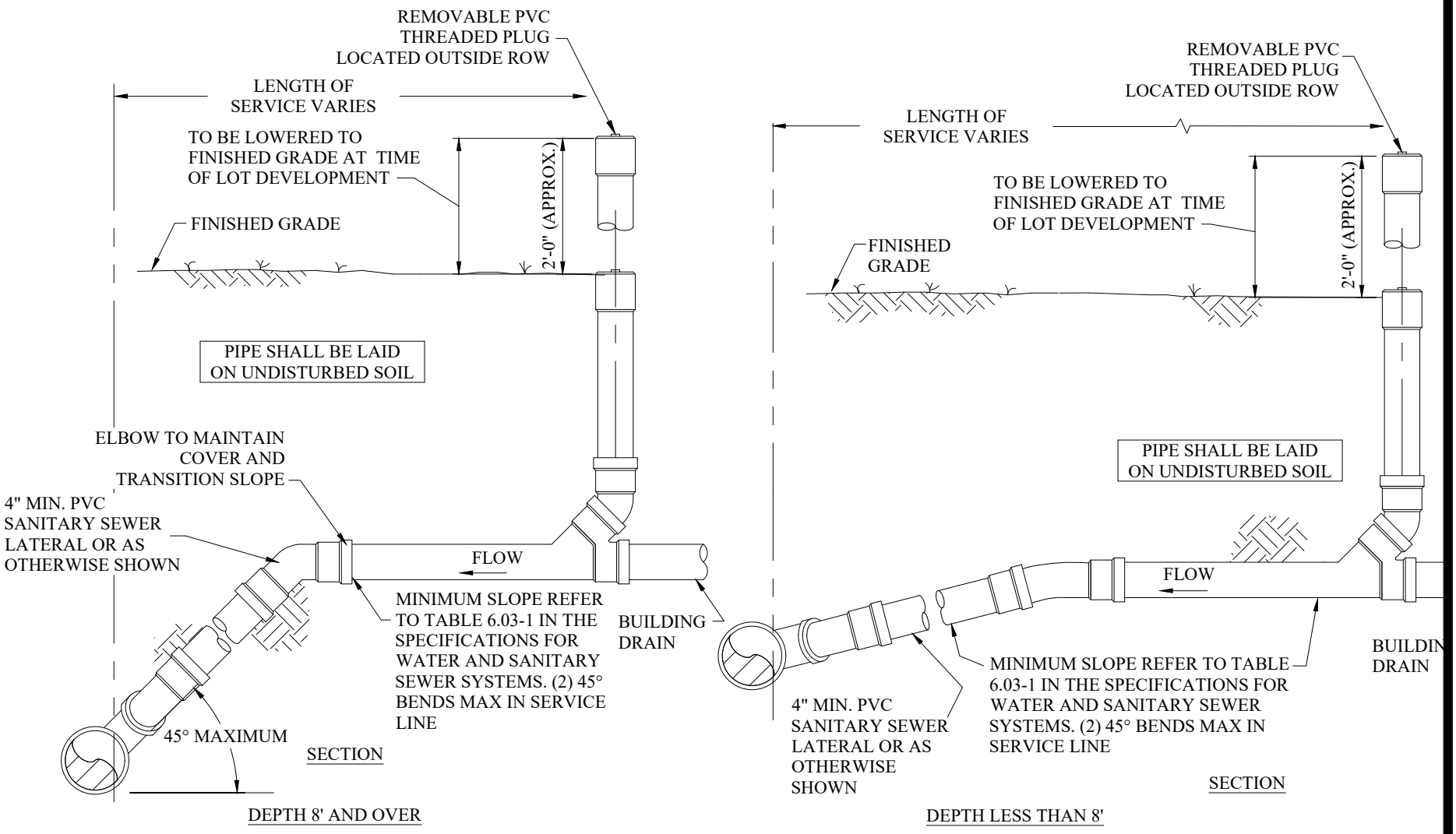
2. COMPACT GRANULAR MATERIAL BY SLICING WITH A SHOVEL AROUND PIPE. WHEN BEDDING IS 6" OVER PIPE, COMPACT WITH VIBRATING COMPACTOR

City of Evans, Colorado

Public Works Department

SANITARY SEWER
BEDDING DETAIL

Scale: N.T.S. WW-6 May 2019

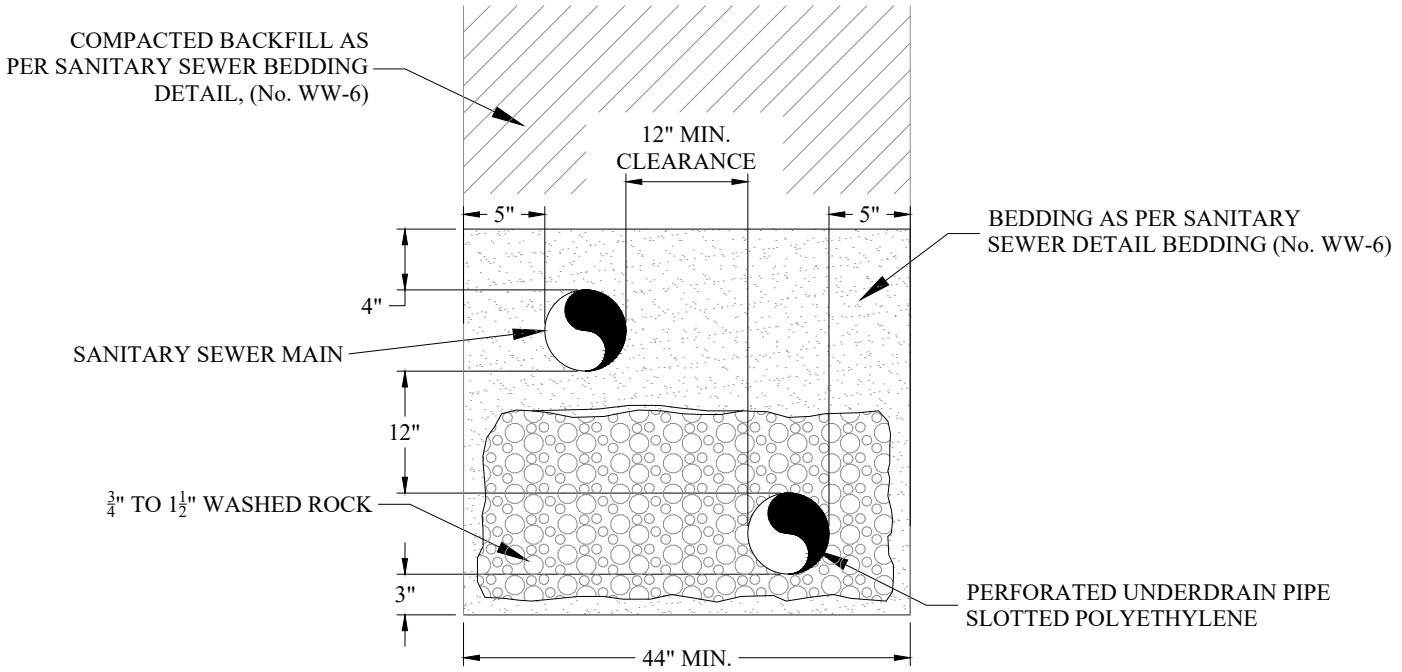


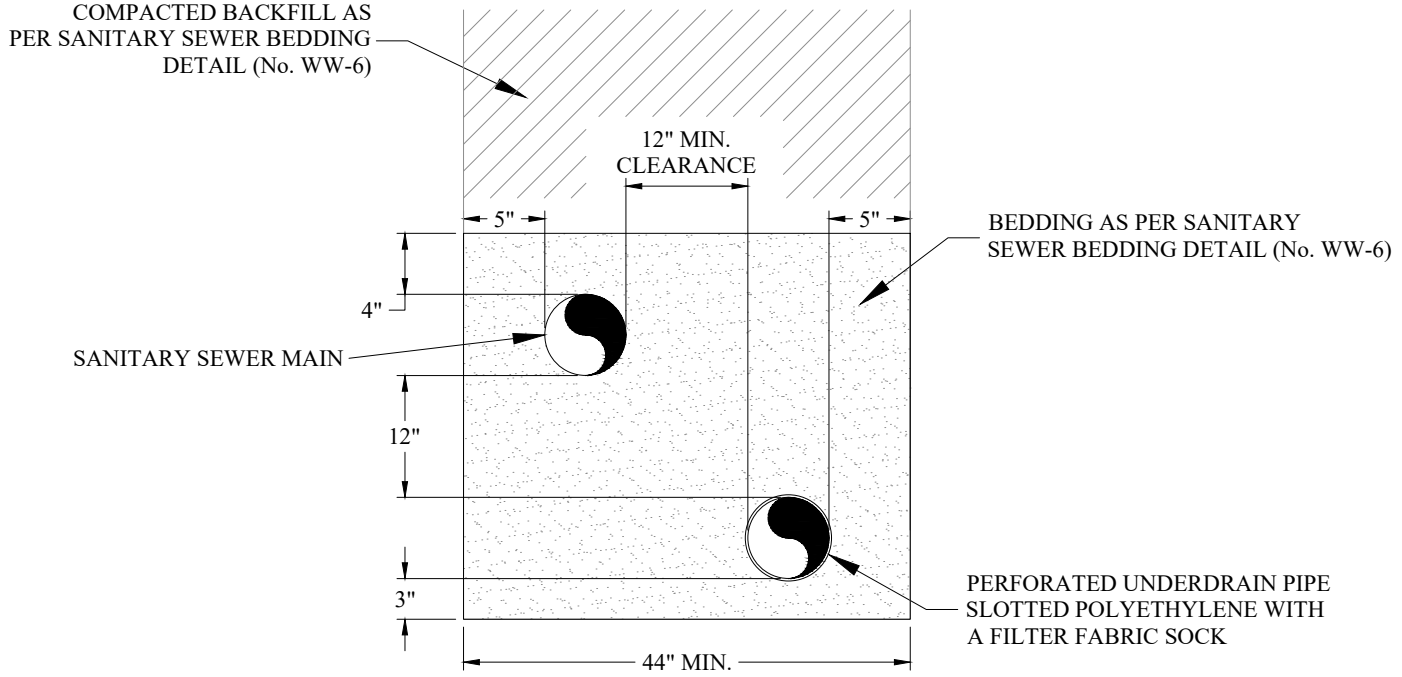
City of Evans, Colorado

Public Works Department

SANITARY SEWER SERVICE CONNECTION DETAIL

Scale: N.T.S. | WW-7 | May 2019





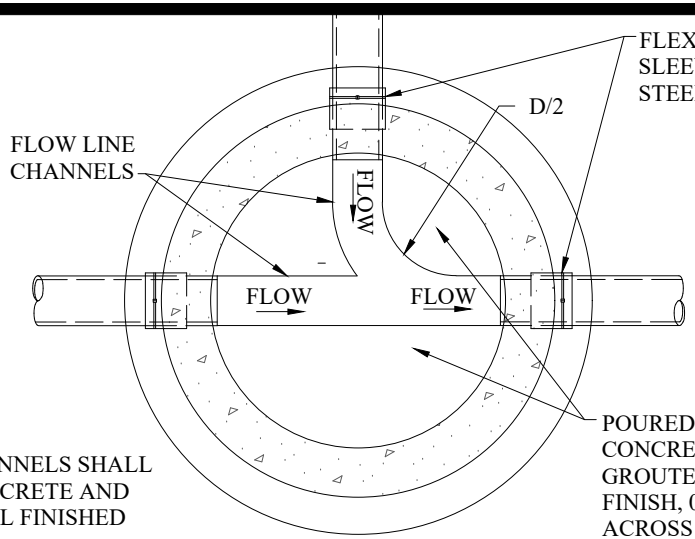
City of Evans, Colorado

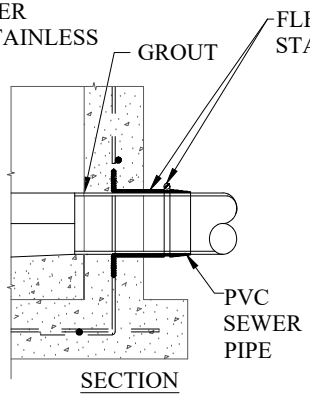
Public Works Department

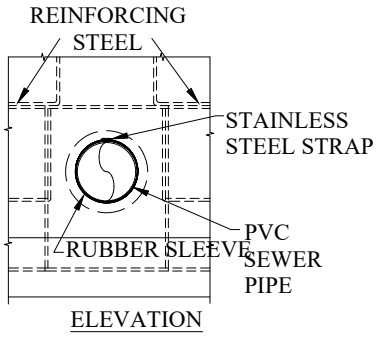
SANITARY SEWER LINE & UNDERDRAIN TRENCH CROSS-SECTION

SHOWING HORIZONTAL AND VERTICAL OFFSETS

Scale: N.T.S. | WW-8 | May 2019

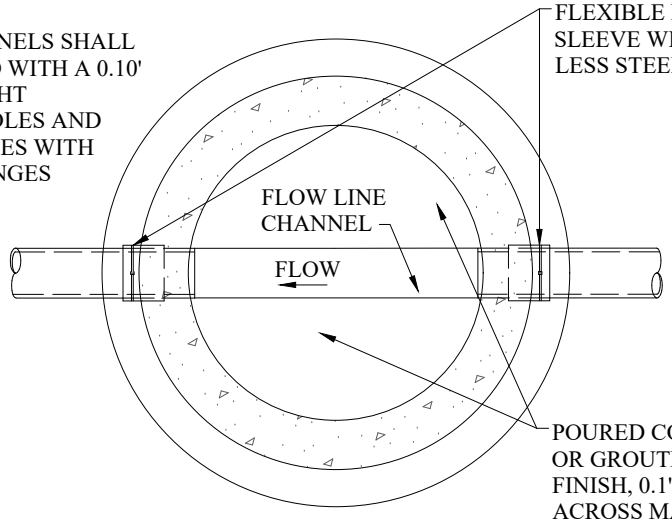


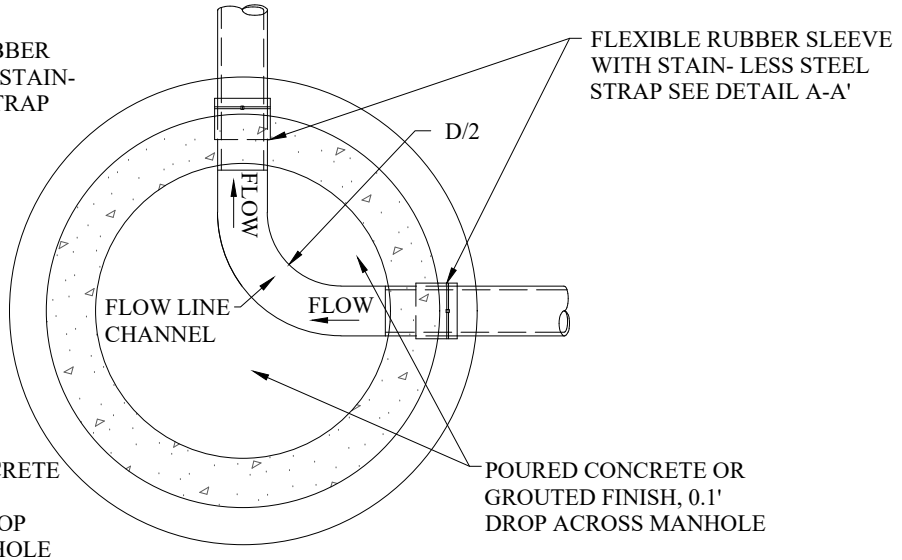




NOTES:

1. FLOW LINE CHANNELS SHALL BE POURED CONCRETE AND SHALL BE TRAWL FINISHED
2. ALL BENCHES SHALL BE BROOM FINISHED
3. FLOW LINE CHANNELS SHALL BE CONSTRUCTED WITH A 0.10' FALL FOR STRAIGHT THROUGH MANHOLES AND 0.20' FOR MANHOLES WITH ALIGNMENT CHANGES



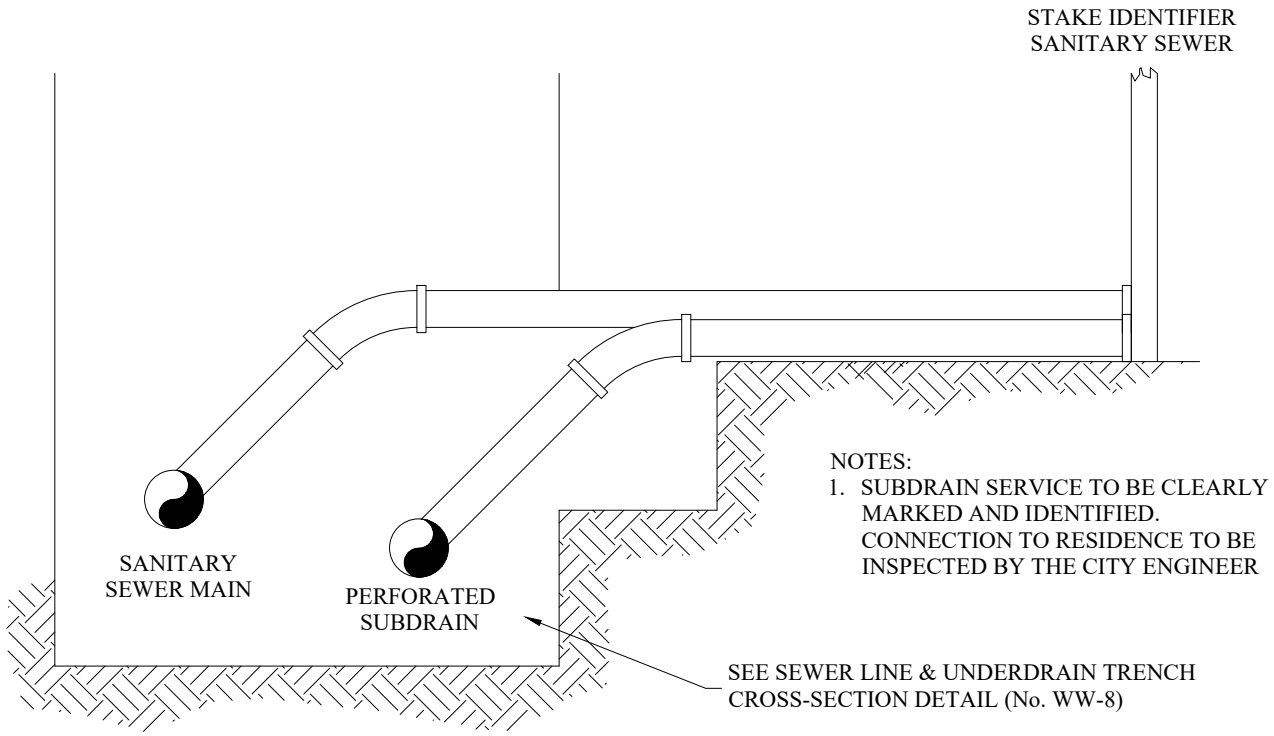


City of Evans, Colorado

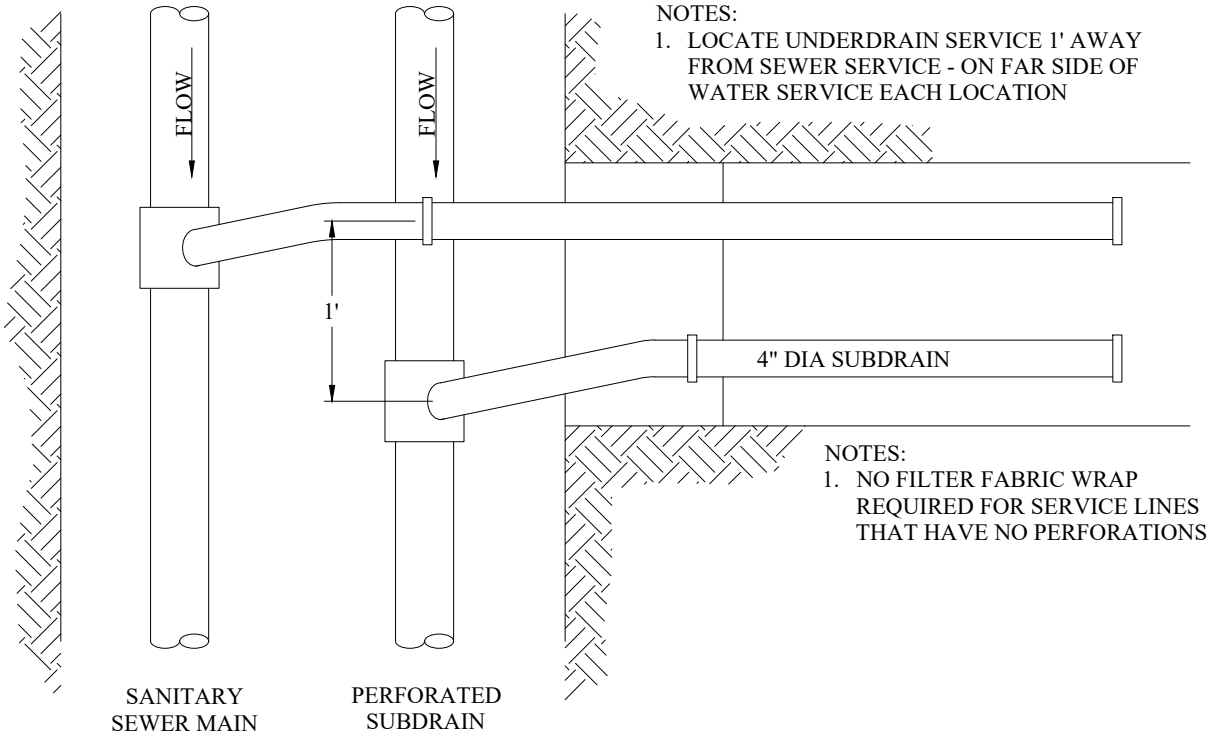
Public Works Department

SANITARY SEWER FLOW LINE CHANNEL DETAIL

Scale: N.T.S. | WW-9 | May 2019



CROSS-SECTION VIEW



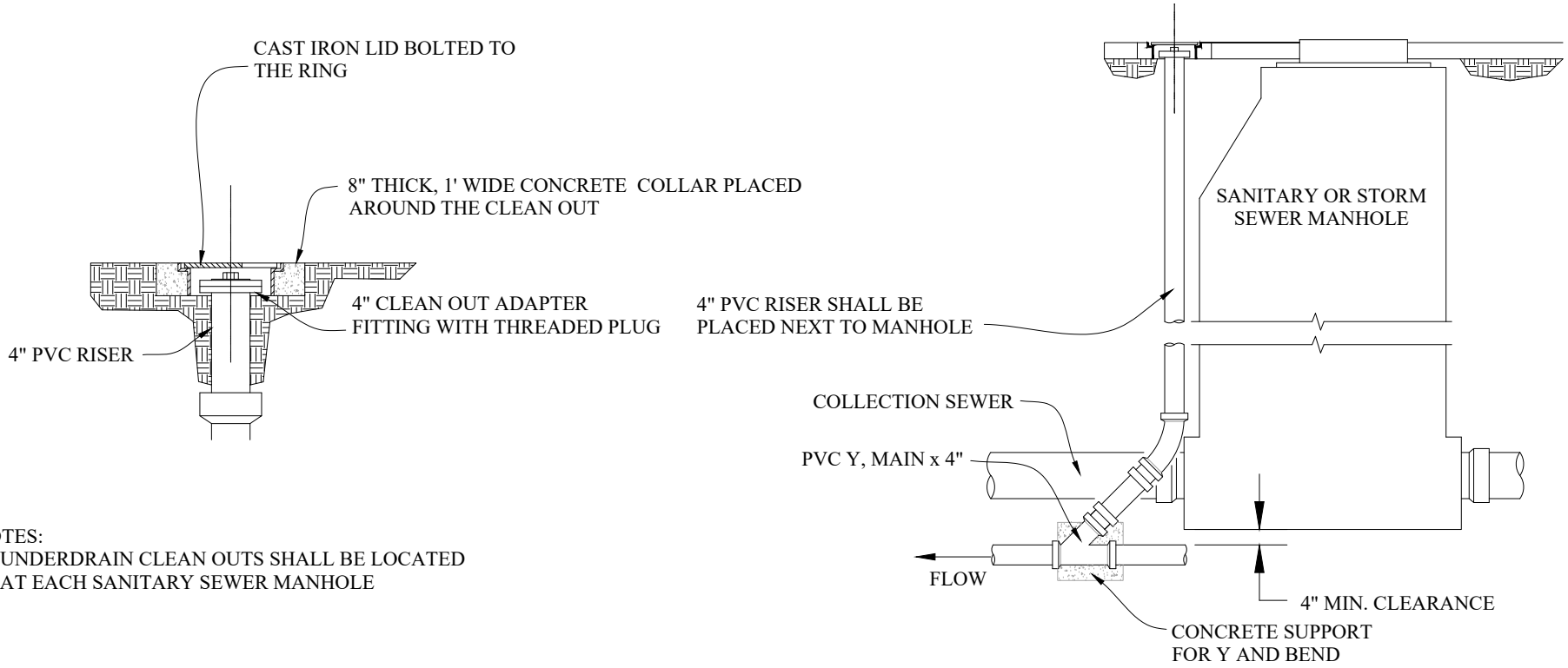
PLAN VIEW

City of Evans, Colorado

Public Works Department

SERVICE Y DETAIL

Scale: N.T.S. | WW-10 | May 2019



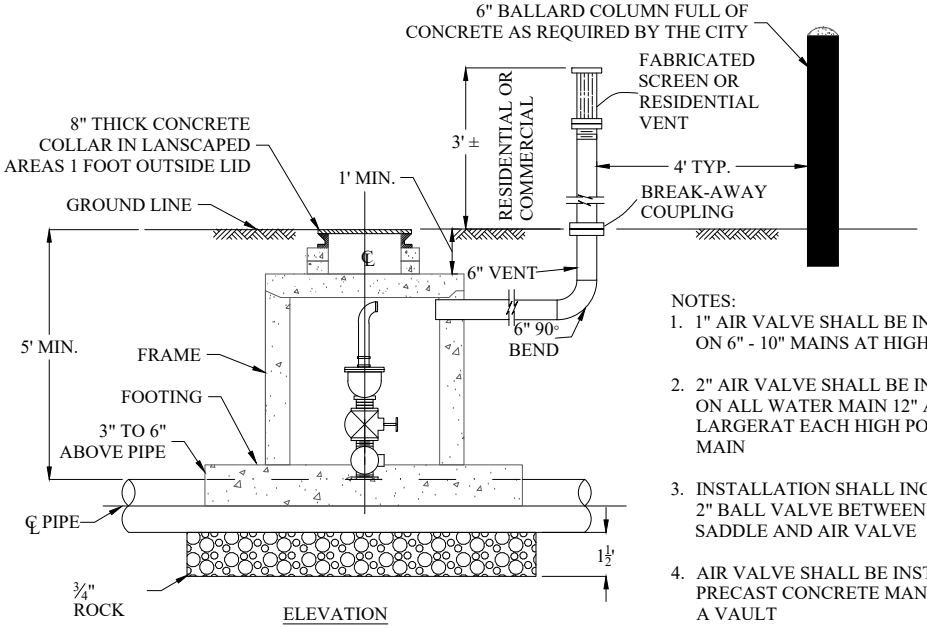
NOTES:
1. UNDERDRAIN CLEAN OUTS SHALL BE LOCATED AT EACH SANITARY SEWER MANHOLE

City of Evans, Colorado

Public Works Department

UNDERDRAIN CLEANOUT DETAIL

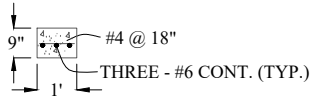
Scale: N.T.S. | WW-11 | May 2019



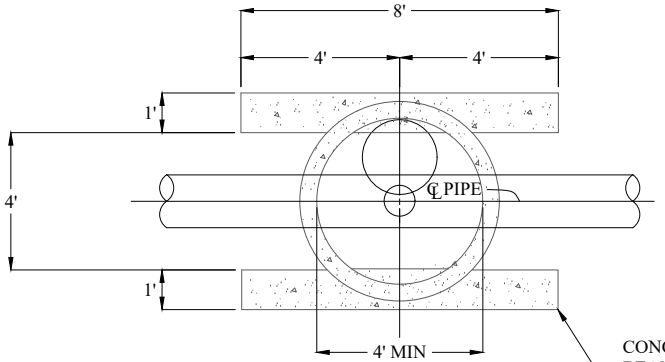
ELEVATION

NOTES:

1. 1" AIR VALVE SHALL BE INSTALLED ON 6" - 10" MAINS AT HIGH POINTS
2. 2" AIR VALVE SHALL BE INSTALLED ON ALL WATER MAIN 12" AND LARGERAT EACH HIGH POINT ON THE MAIN
3. INSTALLATION SHALL INCLUDE 1" OR 2" BALL VALVE BETWEEN THE SADDLE AND AIR VALVE
4. AIR VALVE SHALL BE INSTALLED IN PRECAST CONCRETE MANHOLE OR A VAULT



FOOTING DETAIL



PLAN

CONCRETE MANHOLE BASE BEAMS 9"x 1'-0"x 8'-0" REINF. WITH BAR STEEL AS SHOWN IN THE FOOTING DETAIL

City of Evans, Colorado

Public Works Department

AIR & VACUUM RELIEF VALVE DETAIL

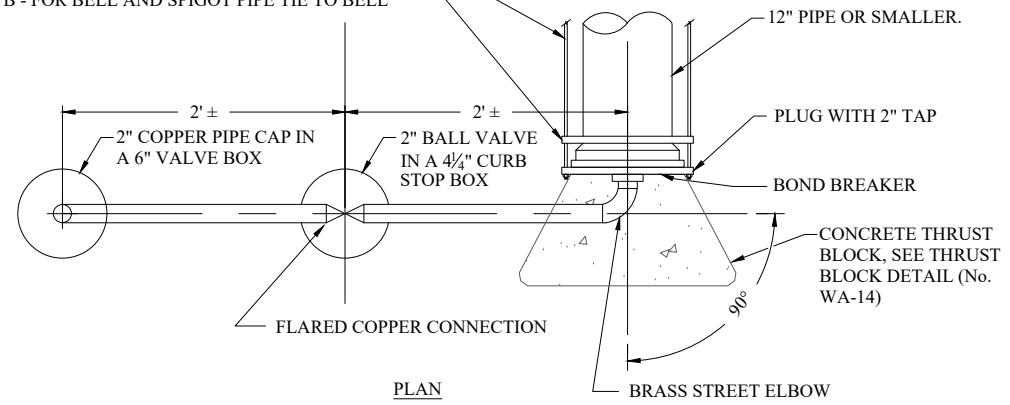
Scale: N.T.S. | WA-1 | May 2019

NOTE:

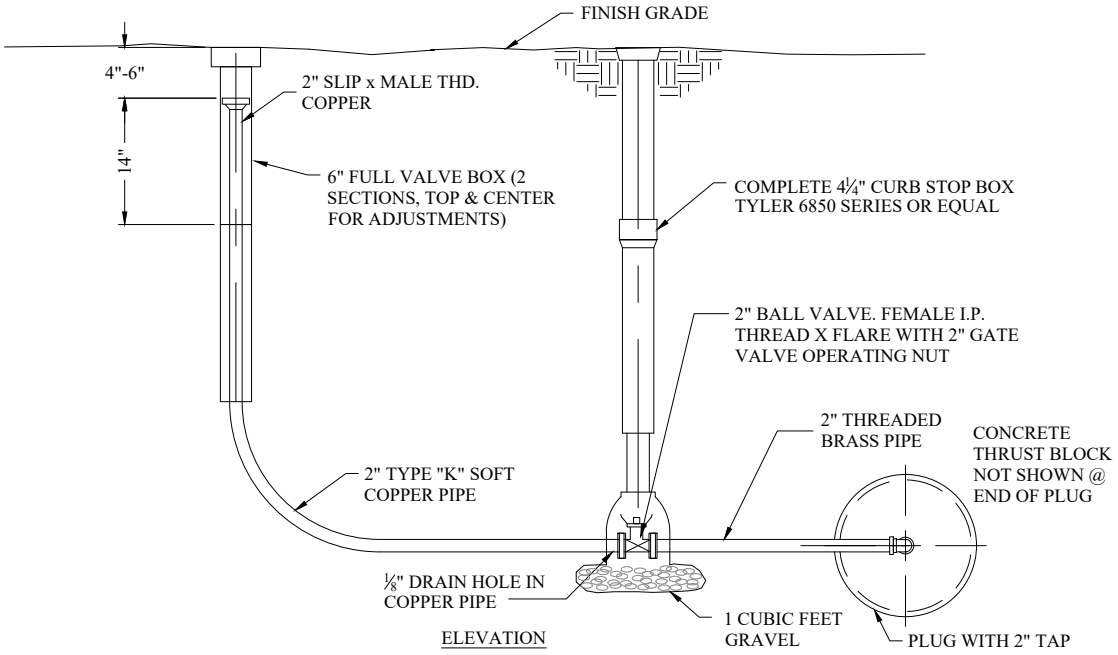
PLUG SHALL BE MECHANICALLY RESTRAINED:

A - FOR SLEEVE TYPE MACHINED COUPLING PIPE TIE BACK TO NEXT COUPLING

B - FOR BELL AND SPIGOT PIPE TIE TO BELL



PLAN



ELEVATION

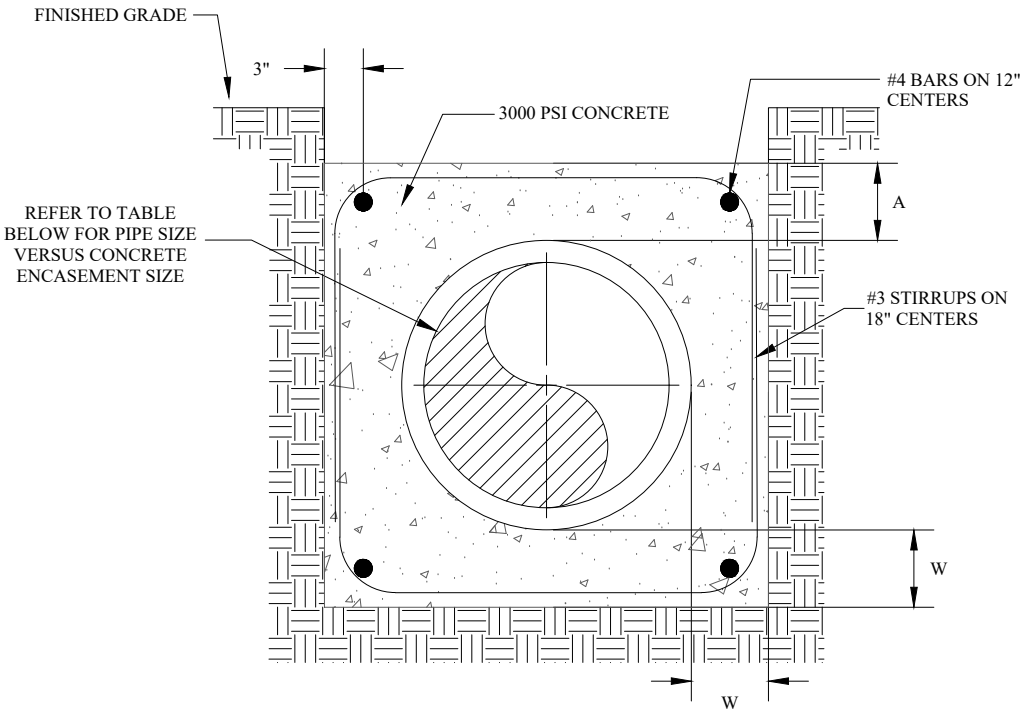
City of Evans, Colorado

Public Works Department

BLOWOFF ASSEMBLY INSTALLATION DETAIL

FOR 12" & SMALLER PIPE

Scale: N.T.S. WA-2 May 2019



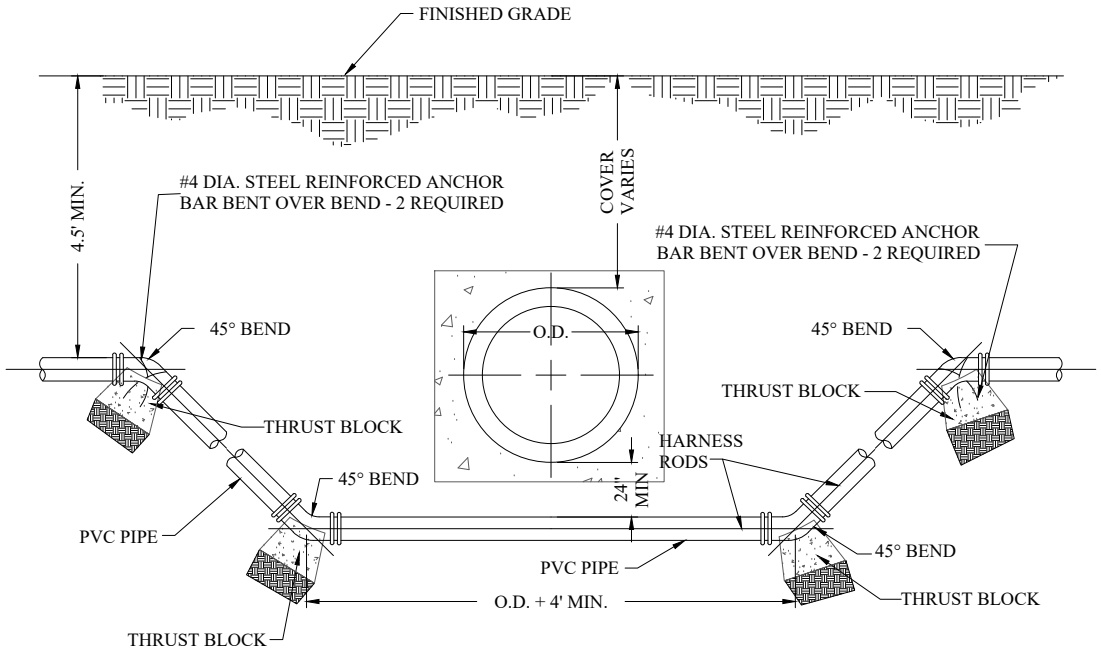
PIPE SIZE	W	A
6"	4"	4"
8"	4"	4"
10"	4"	4"
12"	4"	4"
15"	4"	4"
16"	4"	4"
18"	5"	5"
21"	5"	5"
24" +	6"	6"

NOTES:
1. REBAR & STIRRUPS SHALL BE EPOXY COATED IF THE ENCASEMENT IS UNDER A STREAM OR DRAINAGEWAY AND IF THE ENCASEMENT IS IN HIGH GROUND WATER

City of Evans, Colorado
Public Works Department

CONCRETE ENCASEMENT DETAIL

Scale: N.T.S. WA-3 May 2019



NOTES:

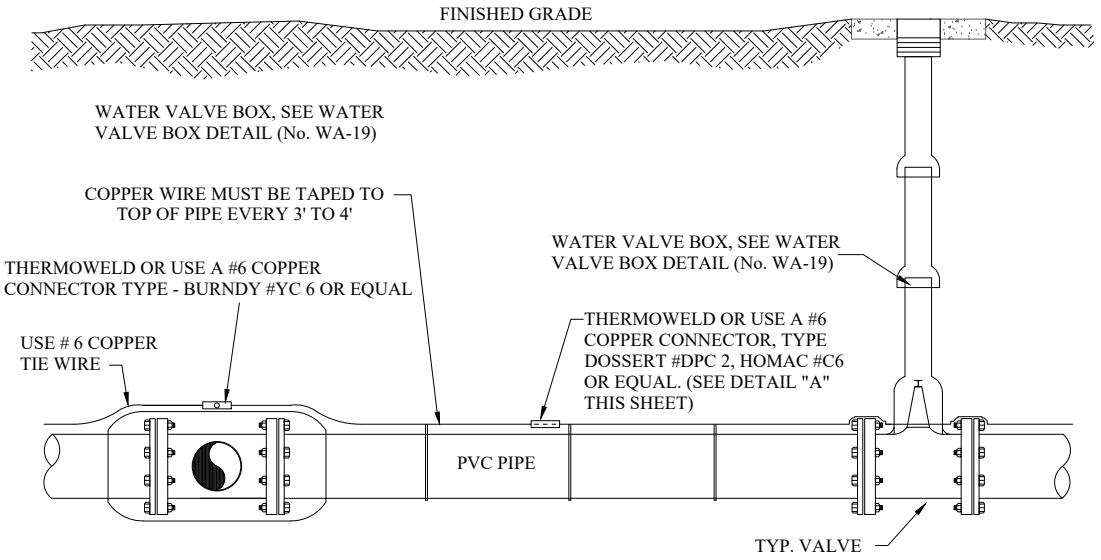
1. THE WATER LINE SHALL BE INSTALLED BELOW ANY SEWER UNDERDRAINS
2. LENGTH OF EXTENSION OF PIPE AND HARNESS RODS SHALL BE IN ACCORDANCE WITH THESE ENGINEERING STANDARDS. MEGA-LUG RESTRAINTS MAY BE USED FOR JOINT RESTRAINT IN PLACE OF HARNESS RODS
3. CATHODIC PROTECTION SHALL BE AS REQUIRED IN ACCORDANCE WITH THESE ENGINEERING STANDARDS
4. A BORED CROSSING MAY BE REQUIRED BY THE ENGINEER. TUNNELING UNDER EXISTING CURB GUTTER, SIDEWALK OR CROSS PANS WILL NOT BE ALLOWED
5. INSTALL THRUST BLOCKING AS PER THRUST BLOCK DETAIL (No. WA-14)

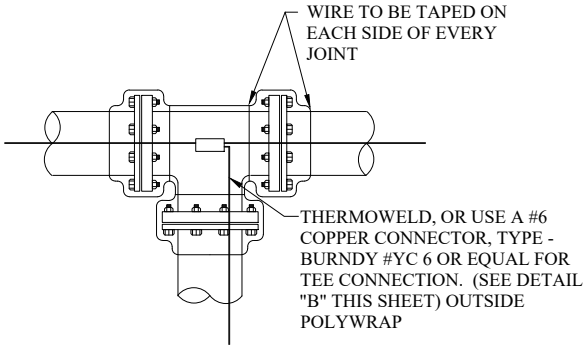
City of Evans, Colorado

Public Works Department

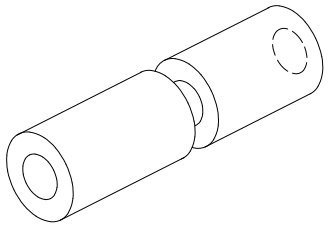
CONDUIT & SEWER CROSSING DETAIL

Scale: N.T.S. WA-4 May 2019

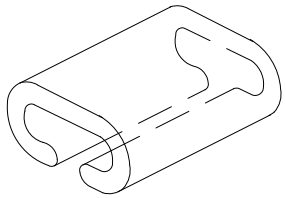




NOTE:
1. STRIP WIRE CASING TO EXPOSE WIRE FOR PROPER CONDUCTION
2. 12 GAUGE SOLID OR STRANDED WITH 3M DBY CONNECTORS
3. DAYLIGHT TRACER WIRE IN TEST BOXES BEHIND NEAREST FIRE HYDRANT (SEE DETAIL WA-6)



DETAIL "A"

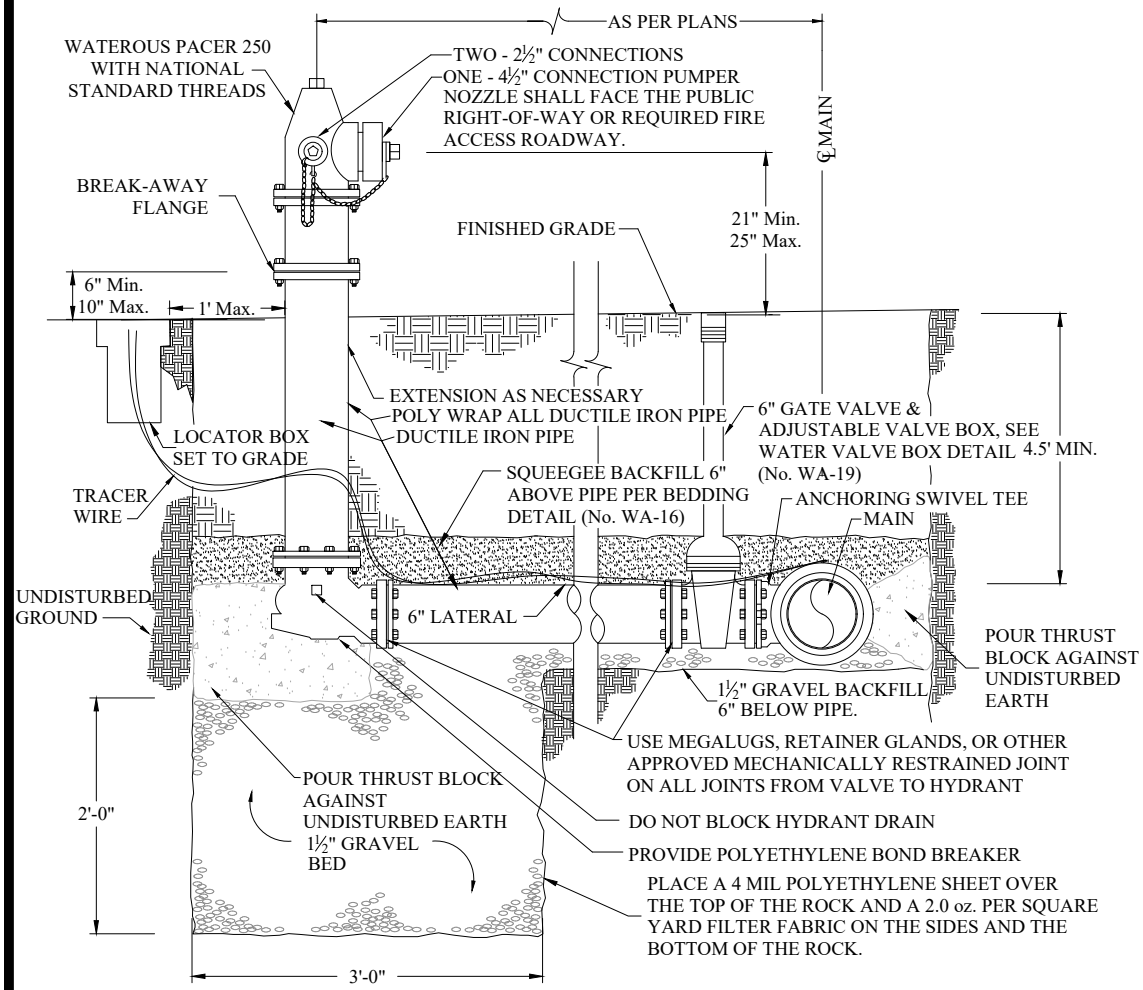


DETAIL "B"

City of Evans, Colorado
Public Works Department

COPPER TRACER WIRE DETAIL
ON PVC PIPE

Scale: N.T.S. WA-5 May 2019



NOTES:

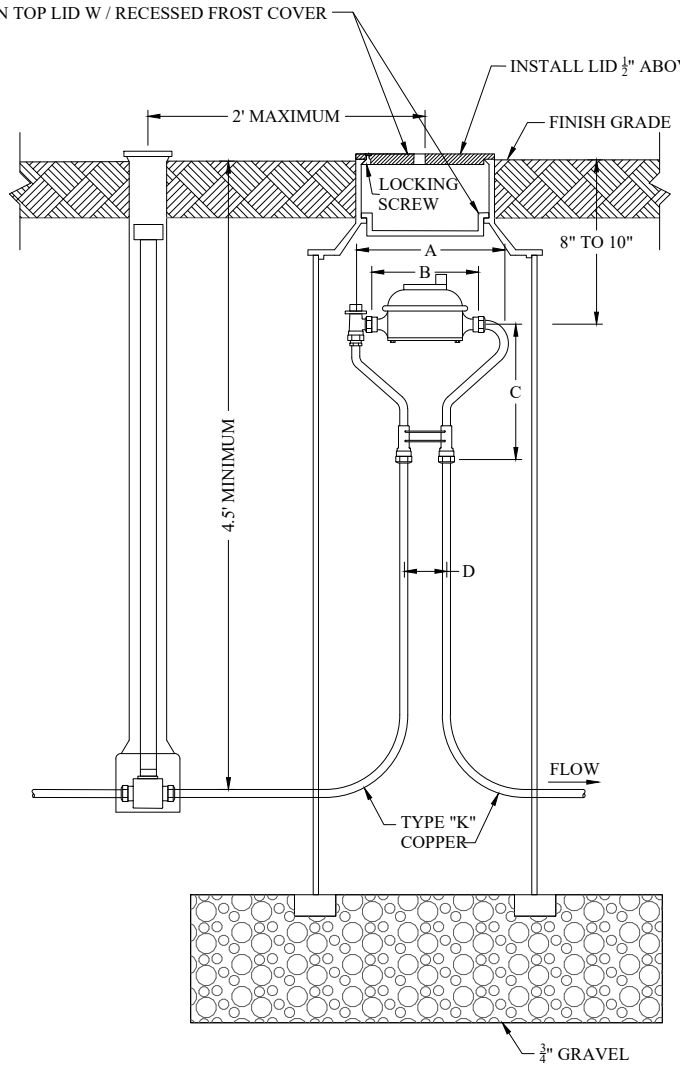
1. NOT FOR INSTALLATION IN ROADWAYS, DRIVEWAYS, OR PARKING AREAS
2. STANDARD COLOR WILL BE DES MOINES SAFETY YELLOW PRODUCT #6162
3. HEIGHT TO CENTER OF STEAMER - 21" MIN. to 25" MAX
4. PROVIDE 5' RADIUS CLEAR ZONE AROUND ALL HYDRANTS
5. DO NOT PLACE ANY HYDRANTS AT THE END OF CUL-DE-SACS
6. 4.5' MIN. DEPTH OF COVER FROM FINISHED GRADE TO TOP OF PIPE
7. ALL JOINTS FROM MAIN TO HYDRANT SHALL BE MECHANICALLY RESTRAINED
8. ALL PIPE AND FITTINGS FROM MAIN TO FIRE HYDRANT SHALL BE PVC PIPE
9. TRACER WIRE TO TERMINATE @ LOCATOR BOX LOCATED AT REAR OF HYDRANT
10. LOCATOR BOX TO BE SETBACK A MAX. OF 1' FROM THE REAR OF THE HYDRANT
11. ENSURE THAT THRUST BLOCK DOES NOT BLOCK WEEP HOLE FOR DRAINAGE
12. SEE THRUST BLOCK DETAIL (No. WA-14)

City of Evans, Colorado

Public Works Department

FIRE HYDRANT DETAIL
WATEROUS PACER 250
WITH NATIONAL STANDARD THREADS

Scale: N.T.S. | WA-6 | May 2019



METER SIZE	A	B	C	D
¾-INCH	14¼-INCH	7½-INCH	8 15/16-INCH	5-INCH
1-INCH	17¼-INCH	10¾-INCH	11¼-INCH	6-INCH

NOTES:

1. NOT FOR INSTALLATION IN ROADWAYS, DRIVEWAYS, OR PARKING AREAS
2. IF SURFACE IS NOT TO FINAL GRADE AT TIME OF INSTALLATION METER LID SHALL BE 2" ABOVE GRADE
3. METER LID SHALL BE CAST IRON. IT SHALL HAVE A 1 7/8 INCH HOLE FOR ANTENNA ATTACHMENT AND LOCK WITH A PENTAGON BOLT WITH WORMLOCK . METER FROST PLATE SHALL BE RECESSED DISH TYPE
4. METER YOKE SHALL BE LOCATED NOT LOWER THAN 12" BELOW THE TOP LID. IN THE EVENT THE METER PIT IS ADJUSTED TO FINAL GRADE, OWNER SHALL ENSURE THAT THE YOKE BE RAISED/LOWER AS REQUIRED
5. METER TO BE LOCATED A MINIMUM OF 2' FROM THE CURB STOP AND WITHIN THE UTILITY EASEMENT ADJACENT TO FRONT SIDEWALK, UNLESS OTHERWISE APPROVED BY THE DIRECTOR OF PUBLIC WORKS
6. METER PIT SHALL BE PLACED ON FREE-DRAINING GRAVEL BASE. CONCRETE SHALL NOT BE PERMITTED
7. METER PIT SHALL BE 20" INSIDE DIAMETER AND 48" DEEP DUROPIPE BITUMINIZED FIBER BY METRO-STATES PLASTICS OR APPROVED EQUAL
8. SPRINKLER SYSTEM CONNECTIONS SHALL BE LOCATED A MINIMUM OF 5' DOWNSTREAM FROM THE METER PIT. UNDER NO CIRCUMSTANCES ARE SPRINKLER CONNECTIONS PERMITTED IN THE METER PIT
9. NO STRUCTURES ARE TO BE LOCATED WITHIN 4' OF METER PIT. LANDSCAPING IS PERMITTED, HOWEVER ACCESS TO THE METER PIT MUST BE MAINTAINED
10. IF PRESSURE REDUCING VALVE IS REQUIRED BY THE PLUMBING CODE, IT SHALL BE INSTALLED INSIDE THE BUILDING IMMEDIATELY FOLLOWING THE MAIN SHUT OFF VALVE
11. SERVICE BOX FOR CURB STOP SHALL BE OF THE MUELLER TYPE WITH A COMBINATION LID AND PENTAGON PLUG (MODEL #H-10334) AND AN EXTENSION TYPE CURB BOX WITH ARCH PATTERN BASE AND SHUT-OFF ROD
12. CURB STOPS SHALL BE STRAIGHT AND CLEAN OF ANY DEBRIS

City of Evans, Colorado

Public Works Department

METER SETTING DETAIL

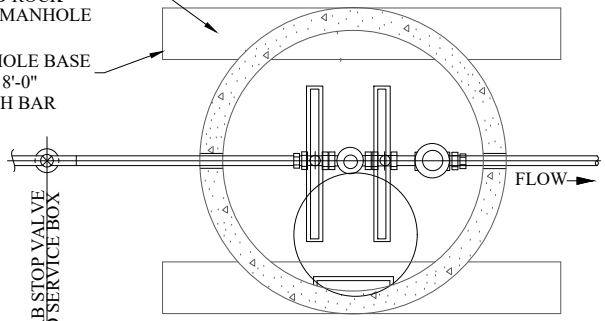
FOR ¾" AND 1" METERS

Scale: N.T.S. WA-7 May 2019

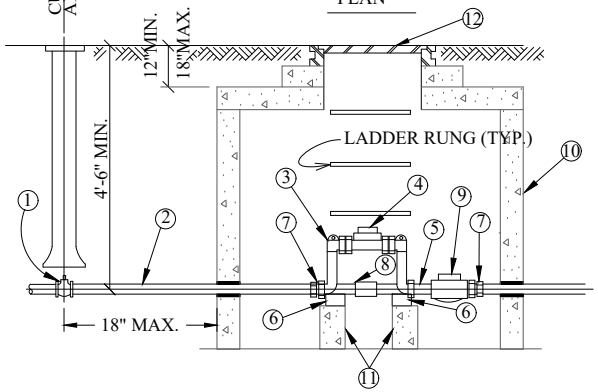
CONCRETE FOOTINGS SHALL REST ON A 5" THICK LAYER OF 1½" CRUSHED ROCK PLACED UNDER MANHOLE

CONCRETE MANHOLE BASE BEAMS 9" x 1'-0" x 8'-0" REINFORCED WITH BAR STEEL AS SHOWN

NO ADDITIONAL TAPS OR CONNECTIONS ALLOWED IN PIT



PLAN



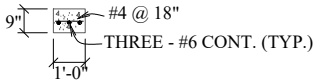
ELEVATION

DETAILS:

① CURB STOP
② TYPE K COPPER TUBING
③ 12" COPPER SETTER/METER YOKE
④ METER UNIT
⑤ 3" NIPPLE BETWEEN COPPER SETTER AND CHECK VALVE
⑥ PRESSURE TREATED WOOD BLOCKING 1" THICK
⑦ MECH. IRON PIPE TO FLARE COUPLING FROM INLET SIDE OF COPPER SETTER AND OUTLET SIDE OF CHECK VALVE.
⑧ BY-PASS WILL BE 1" FOR 1½" COPPER SETTERS AND 1½" OR 1¼" FOR 2" COPPER SETTERS.
⑨ CHECK VALVE
⑩ 48" CONE MANHOLE WITH 24" LID.
⑪ CONCRETE BLOCK SUPPORTS 4" X 4" X 24"
⑫ 24" STANDARD RING AND COVER

NOTES

1. MANHOLE BASE BEAMS SHALL BE REQUIRED
2. A 48" Ø MANHOLE PIT WILL ACCOMMODATE 1½" AND 2" SPLIT CASE METERS
3. JOINTS INSIDE METER VAULT SHALL BE EITHER THREADED OR SOLDERED WITH 95-5 TINANTIMONY SOLDER. IN ACCORDANCE WITH ASTM B32
4. NO CONCRETE TO BE LAID IN FLOOR OF METER MANHOLE
5. NO CONNECTIONS OR CHANGES IN PIPE DIAMETER SHALL BE MADE IN THE METER PIT OR IN THE DISTANCE OF 5' BEYOND THE METER PIT ON THE OUTLET SIDE. OTHER THAN THE APPROPRIATE COPPER SETTER
6. THE DISTANCE BETWEEN RUNGS, CLEATS, AND STEPS SHALL NOT EXCEED 12" AND SHALL BE UNIFORM THROUGHOUT THE LENGTH OF THE LADDER
7. VAULT WALL PENETRATIONS MUST BE GROUTED WITH CONCRETE
8. COPPERSETTER OR COPPER METER YOKE FOR 1½" AND 2" WILL BE NO HIGHER THAN 12" WITH A BY-PASS AND BOOT FOR BY-PASS PROVIDED WITH SETTER
9. THE SERVICE LINE THROUGH AND ON BOTH SIDES OF THE METER PIT MUST BE OF THE SAME MATERIAL
10. MANHOLE RING AND COVERS SHALL BE TO CITY OF EVANS STANDARDS
11. METER PITS AND COVERS SHALL BE TO CITY OF EVANS STANDARDS



FOOTING DETAIL

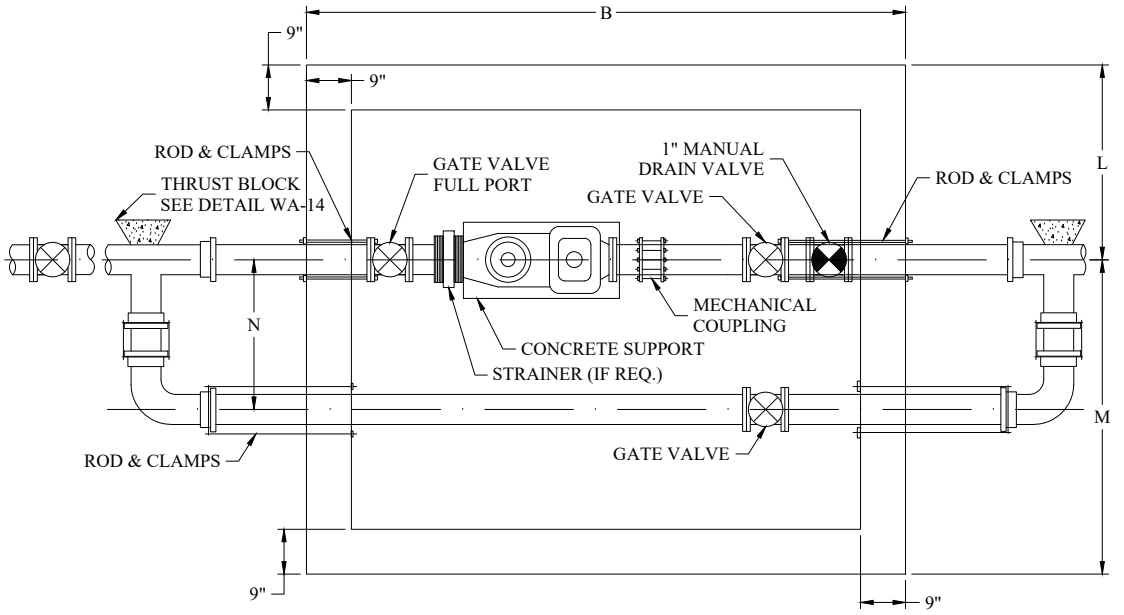
City of Evans, Colorado

Public Works Department

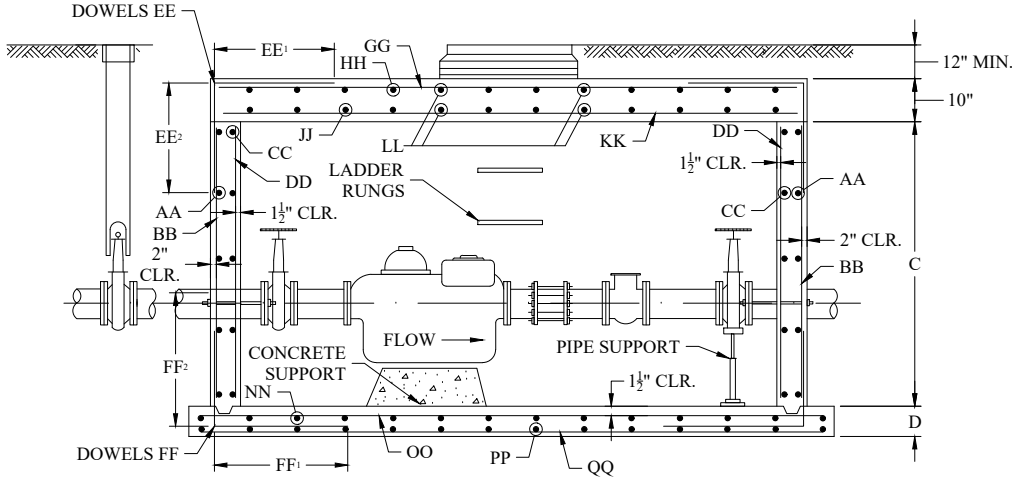
METER SETTING DETAIL

FOR 1½" & 2" METER W/ CHECKING VALVE & BYPASS IN MANHOLE

Scale: N.T.S. WA-8 May 2019



PLAN VIEW



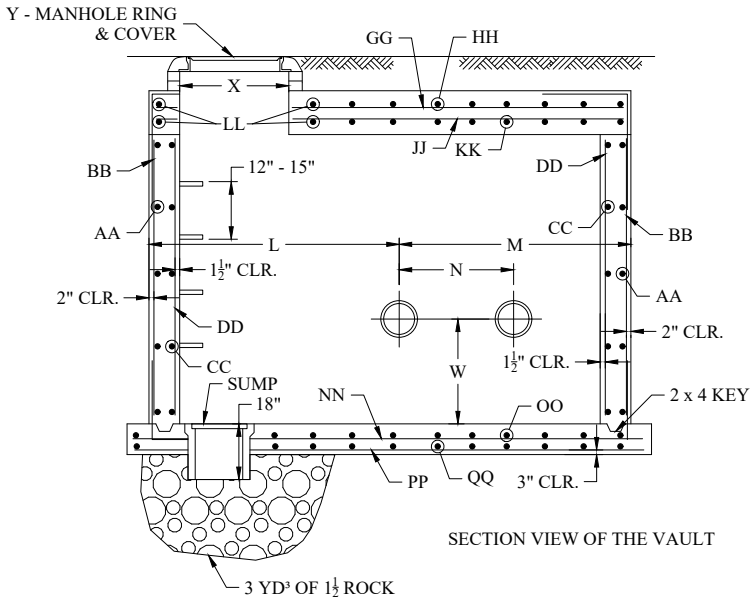
SECTION VIEW

City of Evans, Colorado

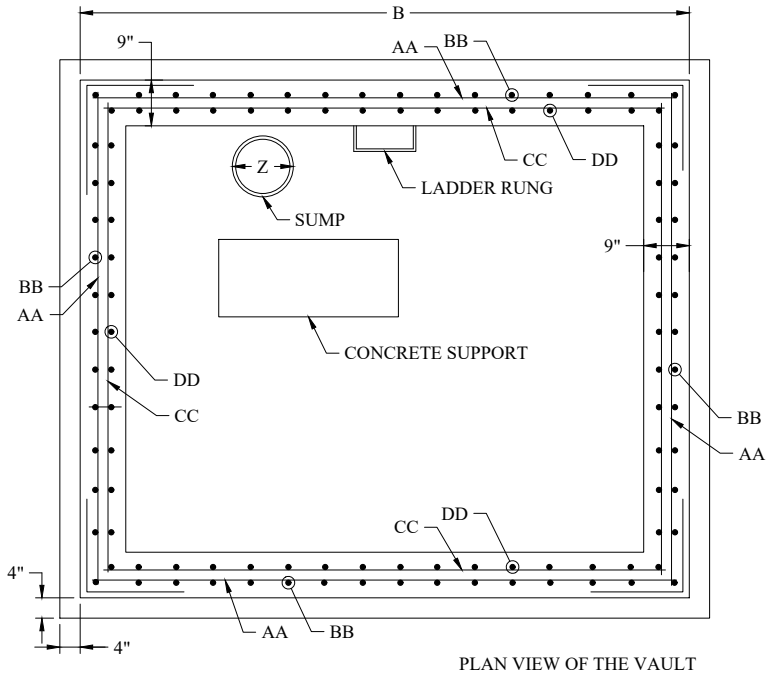
Public Works Department

METER SETTING DETAIL
FOR 3" AND LARGER
SHEET 1 OF 4

Scale: N.T.S. WA-9A May 2019



SECTION VIEW OF THE VAULT



PLAN VIEW OF THE VAULT

City of Evans, Colorado

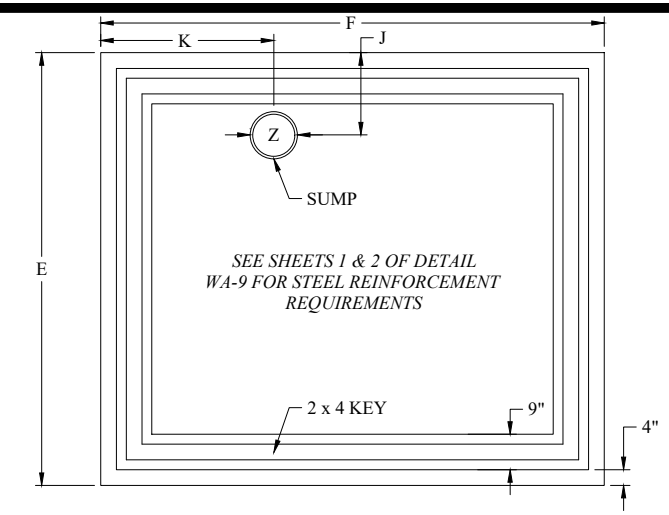
Public Works Department

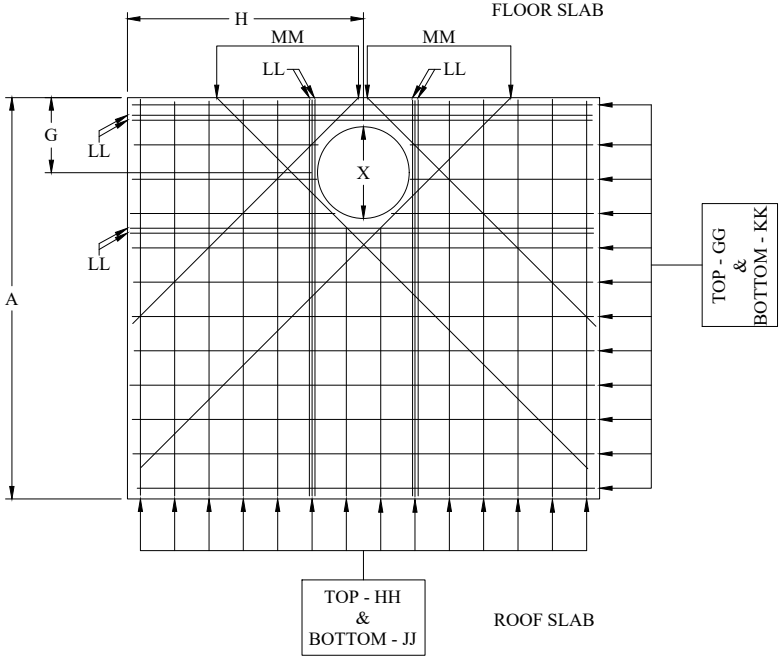
METER SETTING DETAIL

FOR 3" AND LARGER

SHEET 2 OF 4

Scale: N.T.S. WA-9B May 2019





NOTE:
1. THE ROOF SLAB MAY BE CAST IN SECTIONS FOR FUTURE ACCESS. THE SECTIONS SHALL BE CAST SUCH THAT THE INDIVIDUAL SECTION WEIGHT DOES NOT EXCEED 7,500 POUNDS.

2. BARS MM - BOTTOM ONLY & BARS LL - TOP AND BOTTOM

City of Evans, Colorado
Public Works Department

METER SETTING DETAIL
FOR 3" AND LARGER
SHEET 3 OF 4

Scale: N.T.S. WA-9C May 2019

METER SIZE	PIPE SIZE DIA.	VAULT DIMENSIONS															MANHOLE		SUMP	REMARKS
		A	B	C*	D	E	F	G	H	J	K	L	M	N	P	W	X	Y	Z	
3"	3"	8'-6"	10'-6"	6'-0"	0'-8"	9'-2"	11'-2"	2'-3"	4'-8"	1'-9"	2'-8"	3'-3"	5'-3"	2'-6"	0'-9"	2'-0"	36"	24"x36"	12"	USE 5/16"x 7" MIDDLE RING ON COUPLINGS.
4"	4"	8'-6"	11'-11"	6'-0"	0'-8"	9'-2"	12'-7"	2'-3"	5'-4"	1'-9"	3'-4"	3'-3"	5'-3"	2'-6"	1'-0"	2'-6"	36"	24"x36"	12"	USE 5/16"x 7" MIDDLE RING ON COUPLINGS.
6"	6"	8'-6"	13'-6"	6'-0"	0'-8"	9'-2"	14'-2"	2'-3"	5'-8"	1'-9"	3'-8"	3'-3"	5'-3"	2'-6"	1'-6"	2'-6"	36"	24"x36"	12"	USE 5/16"x 7" MIDDLE RING ON COUPLINGS.
8"	8"	8'-6"	15'-5"	6'-0"	0'-10"	9'-2"	16'-1"	2'-3"	5'-3"	2'-3"	3'-0"	3'-3"	5'-3"	2'-6"	2'-0"	2'-6"	36"	24"x36"	18"	USE 5/16"x 7" MIDDLE RING ON COUPLINGS.
10"	10"	8'-6"	17'-9"	6'-0"	0'-10"	9'-2"	17'-5"	2'-3"	4'-11"	2'-3"	3'-0"	3'-3"	5'-3"	2'-6"	2'-6"	2'-6"	36"	24"x36"	18"	USE 3/8"x 7" MIDDLE RING ON COUPLINGS.
12"	12"	8'-6"	19'-10"	6'-0"	0'-10"	9'-2"	20'-6"	2'-3"	5'-0"	2'-3"	3'-0"	3'-3"	5'-3"	2'-6"	3'-0"	2'-6"	36"	24"x36"	18"	USE 3/8"x 7" MIDDLE RING ON COUPLINGS.

METER SIZE	WALLS								WALL DOWELS						ROOF SLAB												FLOOR SLAB							
	AA		BB		CC		DD		EE & FF		EE_1	EE_2	FF_1	FF_2	GG		HH		JJ		KK		LL		MM		NN		OO		PP		QQ	
	BAR	DIST.	BAR	DIST.	BAR	DIST.	BAR	DIST.	BAR	DIST.					BAR	DIST.	BAR	DIST.	BAR	DIST.	BAR	DIST.	TOP	BOT.	BOT.	BAR	DIST.	BAR	DIST.	BAR	DIST.	BAR	DIST.
3"	No.4	16"	No.4	12"					No.5	12"	2'-6"	2'-0"	3'-0"	2'-0"					No.7	12"	No.7	12"		No.7	No.7	No.5	12"	No.5	12"				
4"	No.4	16"	No.4	12"					No.5	12"	2'-6"	2'-0"	3'-0"	2'-0"					No.7	12"	No.7	12"		No.7	No.7	No.5	12"	No.5	12"				
6"	No.4	16"	No.4	12"					No.5	12"	2'-6"	2'-0"	3'-0"	2'-0"					No.7	12"	No.7	12"		No.7	No.7	No.5	12"	No.5	12"				
8"	No.4	16"	No.5	12"	No.4	16"	No.5	12"	No.5	12"	3'-0"	2'-6"	3'-0"	2'-6"	No.5	12"	No.5	12"	No.7	12"	No.8	9"	No.5	No.7	No.7	No.5	12"	No.5	12"	No.5	12"	No.5	12"
10"	No.4	16"	No.5	12"	No.4	16"	No.5	12"	No.5	12"	3'-0"	2'-6"	3'-0"	2'-6"	No.5	12"	No.5	12"	No.7	12"	No.8	9"	No.5	No.7	No.7	No.5	12"	No.5	12"	No.5	12"	No.5	12"
12"	No.4	16"	No.5	12"	No.4	16"	No.5	12"	No.5	12"	3'-0"	2'-6"	3'-0"	2'-6"	No.5	12"	No.5	12"	No.7	12"	No.8	9"	No.5	No.7	No.7	No.5	12"	No.5	12"	No.5	12"	No.5	12"

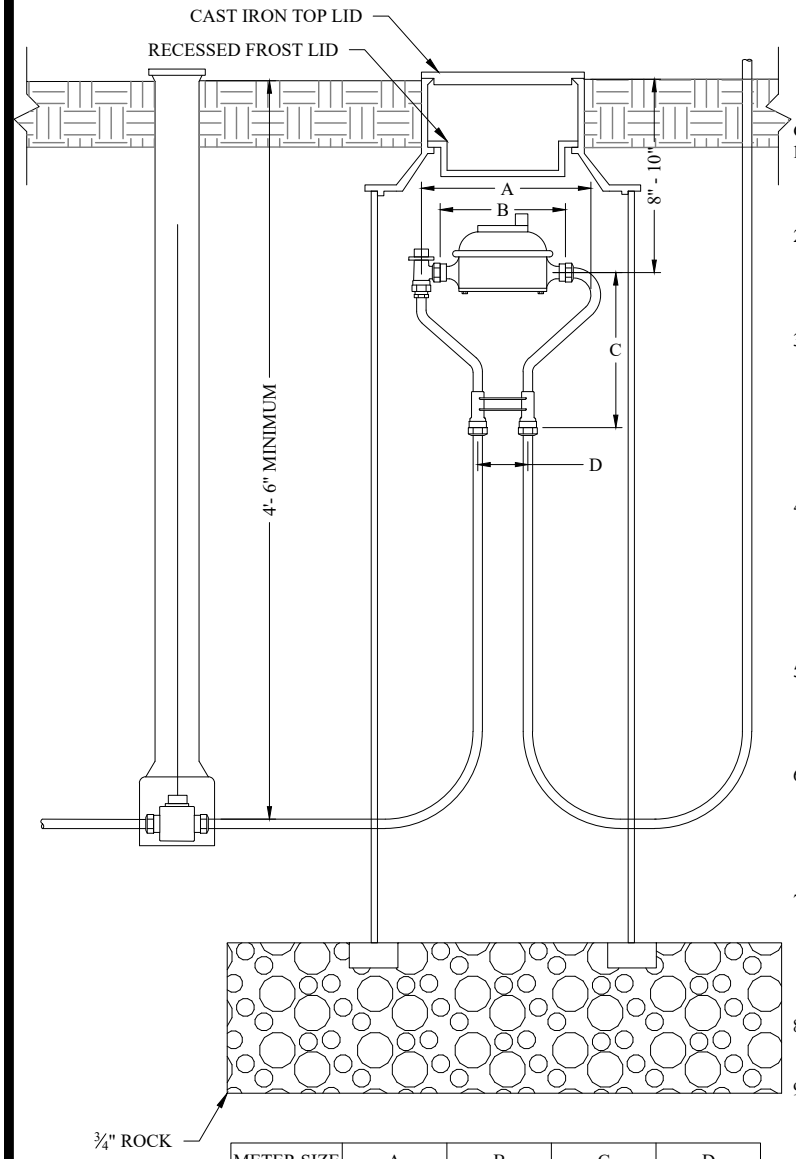
City of Evans, Colorado

Public Works Department

METER SETTING FOR 3" AND LARGER

SHEET 4 OF 4

Scale: N.T.S. WA-9D May 2019



METER SIZE	A	B	C	D
1-INCH	17¼-INCH	10¾-INCH	11¼-INCH	6-INCH

GENERAL NOTES

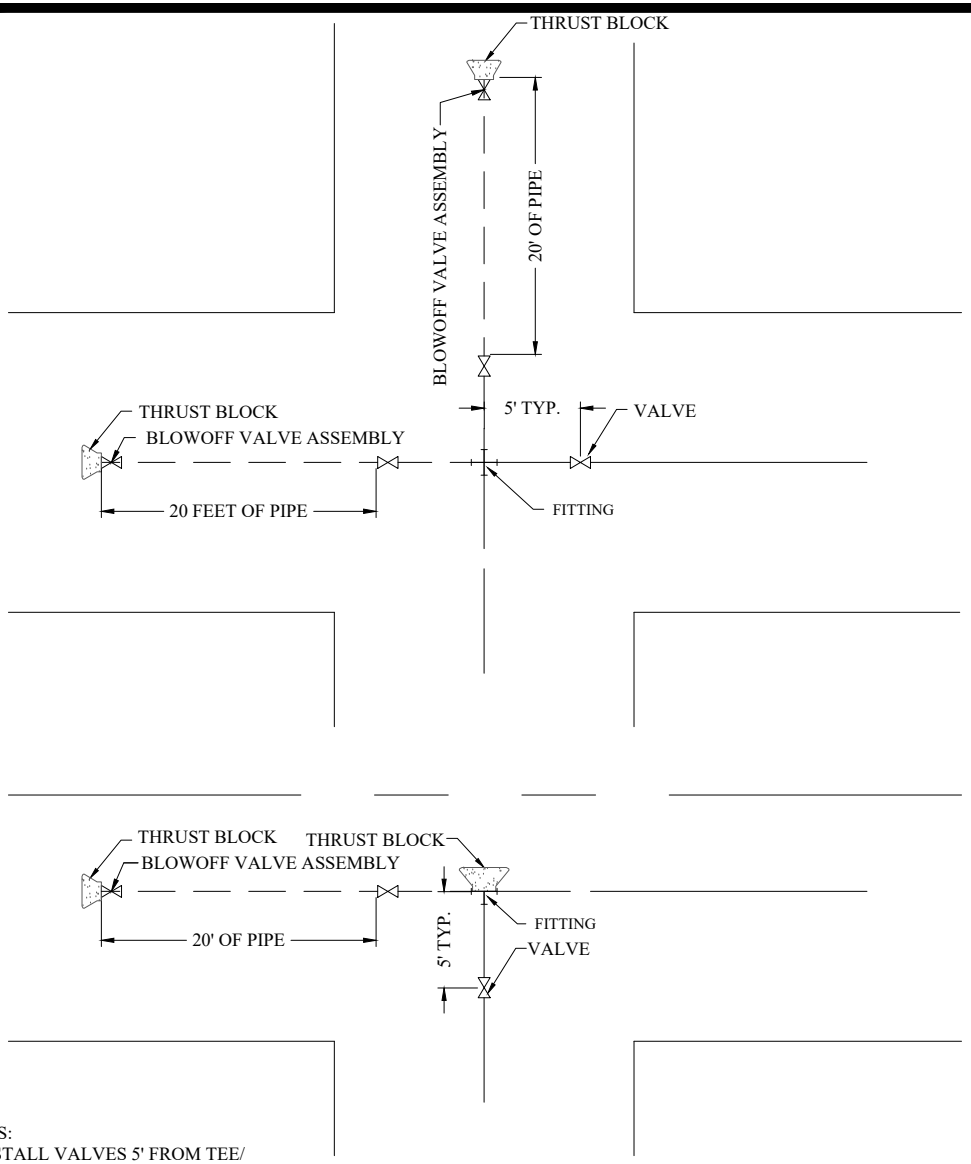
1. NOT FOR INSTALLATION IN ROADWAYS, DRIVEWAYS, OR PARKING AREAS
2. IF SURFACE IS NOT TO FINAL GRADE AT TIME OF INSTALLATION OF METER LID SHALL BE 2 INCHES ABOVE GRADE
3. METER YOKE SHALL BE LOCATED NOT LOWER THAN 12 INCHES BELOW THE TOP LID. IN THE EVENT THE METER PIT IS ADJUSTED TO FINAL GRADE, OWNER SHALL ENSURE THAT THE YOKE BE RAISED/LOWER AS REQUIRED
4. METER TO BE LOCATED A MINIMUM OF 2 FEET FROM THE CURB STOP AND WITHIN THE UTILITY EASEMENT ADJACENT TO FRONT SIDEWALK, UNLESS OTHERWISE APPROVED BY THE DIRECTOR OF PUBLIC WORKS
5. METER PIT SHALL BE PLACED ON FREE-DRAININGps GRAVEL BASE. CONCRETE SHALL NOT BE PERMITTED
6. METER PIT SHALL BE 20 INCH INSIDE DIAMETER DUROPIPE MODIFIED POLYETHYLENE BY METRO-STATES PLASTICS OR APPROVED EQUAL
7. NO STRUCTURES ARE TO BE LOCATED WITHIN 4 FEET OF METER PIT. LANDSCAPING IS PERMITTED, HOWEVER ACCESS TO THE METER PIT MUST BE MAINTAINED
8. CURB STOPS SHALL BE STRAIGHT AND CLEAN OF ANY DEBRIS
9. DAYLIGHT RESIDENT STUB OUT AS SHOWN ON DETAIL. CAP OR CRIMP END OF PIPE

City of Evans, Colorado

Public Works Department

METER SETTING FOR NONPOTABLE WATER LINE

Scale: N.T.S. WA-10 May 2019



NOTES:

1. INSTALL VALVES 5' FROM TEE/ CROSS (TYP.)
2. A MINIMUM OF 20' OF PIPE, TRACER WIRE A VALVE, AND A TEMPORARY BLOW-OFF ASSEMBLY SHALL BE PLACED FOR FUTURE CONNECTIONS AND/OR AT THE EDGE OF A PHASE/FILING BOUNDARY IN A SUBDIVISION
3. SEE BLOW-OFF ASSEMBLY INSTALLATION DETAIL (No. WA-2)
4. SEE THRUST BLOCK DETAIL (No. WA-14)
5. MECHANICALLY RESTRAIN STUB-OUT PIPE BACK TO NEAREST VALVE OR FITTING

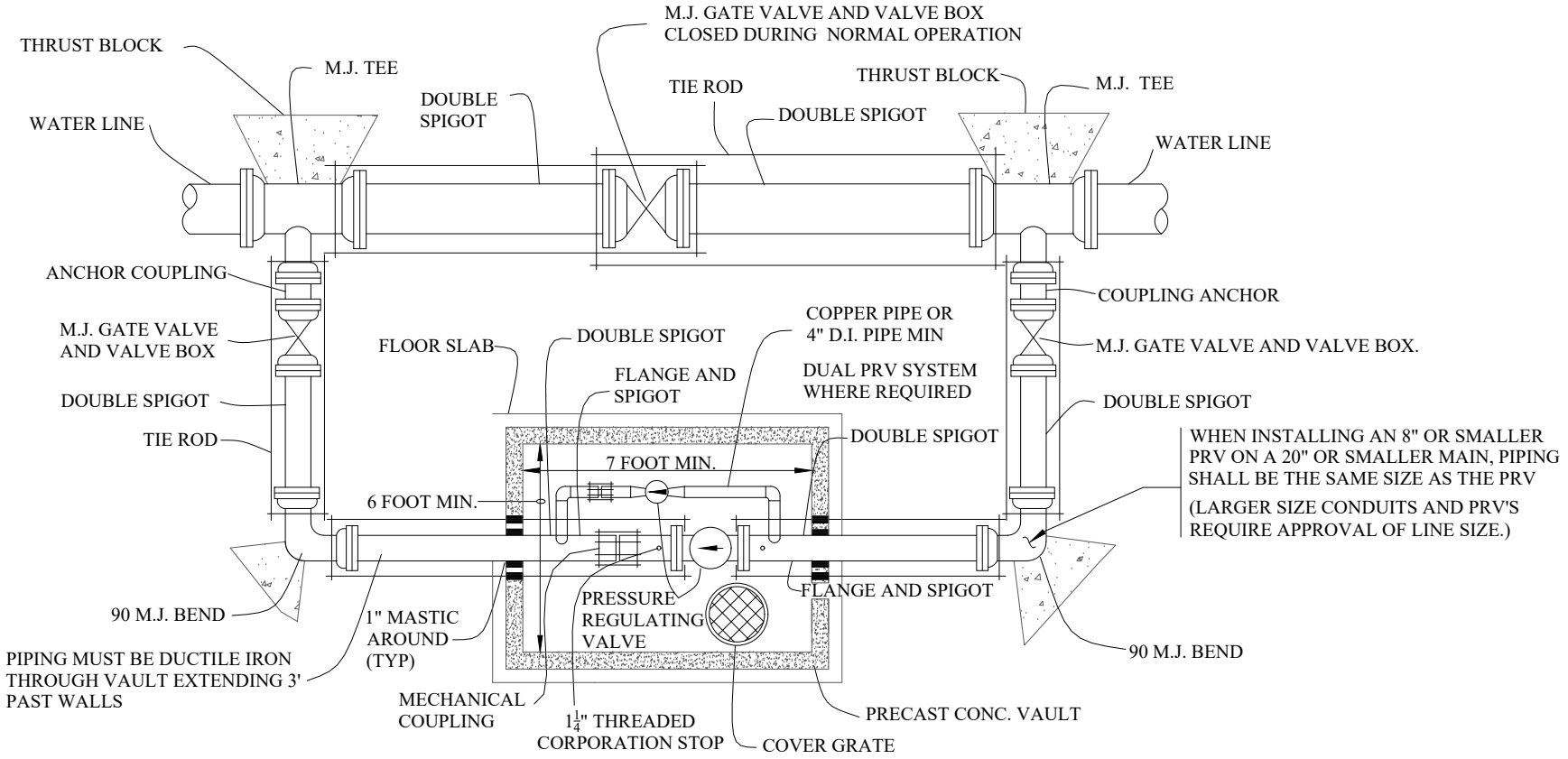
City of Evans, Colorado

Public Works Department

PIPE INTERSECTIONS & DEAD ENDS DETAIL

FOR FUTURE CONNECTIONS AND/OR PHASE/FILING BOUNDARY

Scale: N.T.S. WA-11 May 2019



NOTES:

1. A RECTANGULAR VAULT IS REQUIRED
2. ACCESS STAIRS WITH DOOR OUTSIDE OF PAVEMENT MAY BE REQUIRED ON STREETS WITH HEAVY TRAFFIC
3. M.J. - MECHANICAL JOINT
4. THIS MANHOLE IS SUITABLE FOR CHECK VALVE INSTALLATIONS
5. THREADED FITTINGS ON LOW FLOW
6. COUPLING ON LOW FLOW
7. SADDLE FOR TAP FOR LOW FLOW
8. ALL PIPING 4" IN DIAMETER OR GREATER IS D.I.P.
9. NO PVC ALLOWED

City of Evans, Colorado

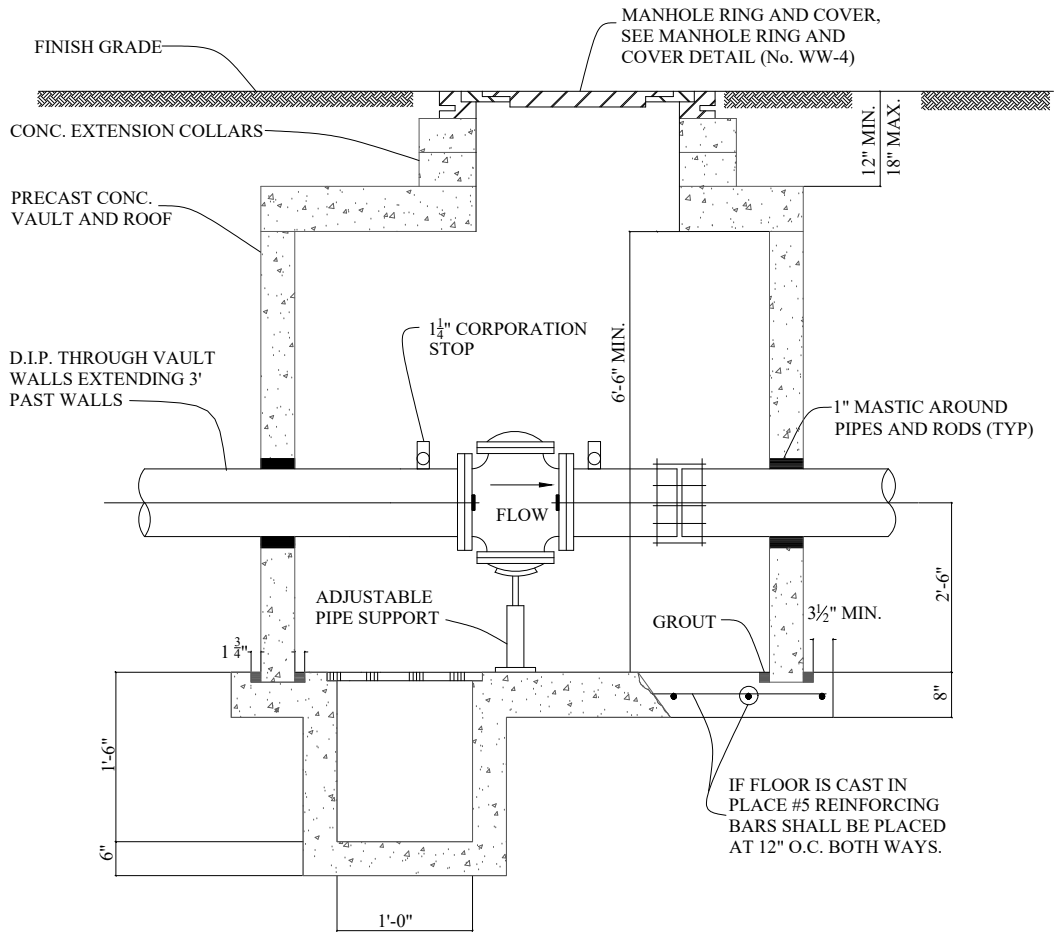
Public Works Department

PRESSURE RELIEF VALVE DETAIL

PLAN VIEW

SHEET 1 OF 2

Scale: N.T.S. | WA-12A | May 2019



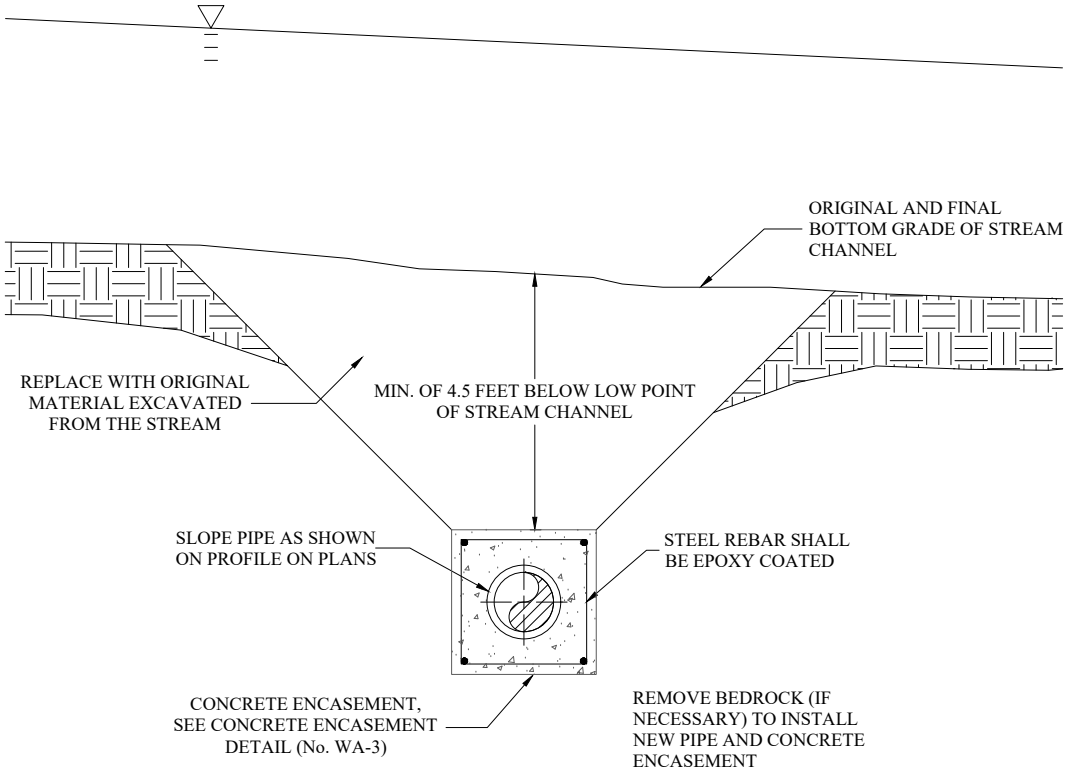
NOTES:
1. VAULTS SHALL BE PRECAST CONCRETE

2. A PERMIT IS REQUIRED FOR SUMP PUMP DISCHARGE TO STORM SEWERS

City of Evans, Colorado
Public Works Department

PRESSURE RELIEF VALVE DETAIL
SECTION VIEW
SHEET 2 OF 2

Scale: N.T.S. | WA-12B | May 2019

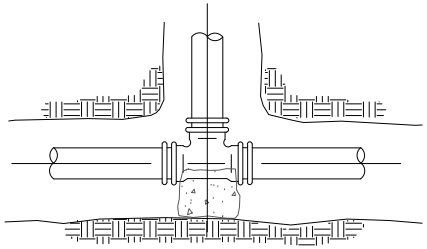


City of Evans, Colorado

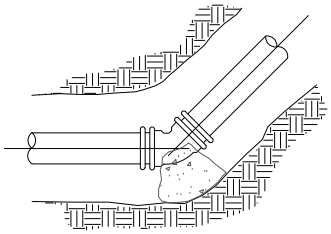
Public Works Department

STREAM OR DRAINAGEWAY CROSSING DETAIL

Scale: N.T.S. | WA-13 | May 2019

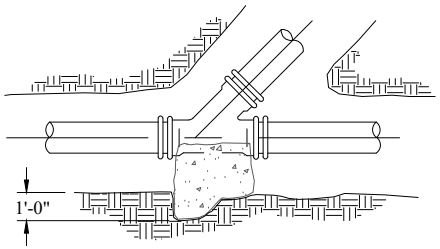


TEE

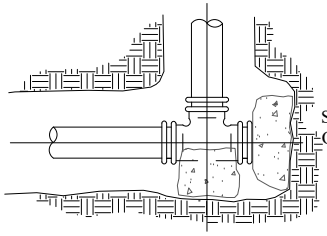


BEND-HORIZONTAL OR

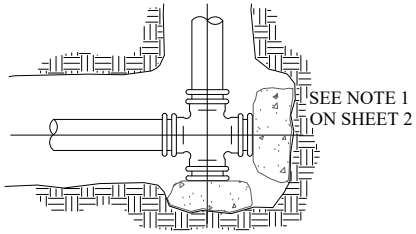
BOTTOM OF VERTICAL



Y

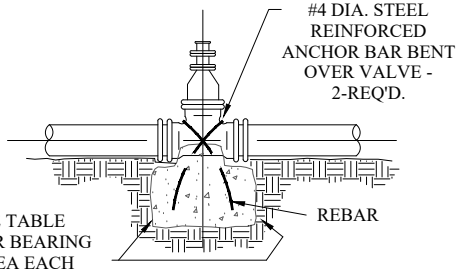


TEE W/DEAD END ON RUN



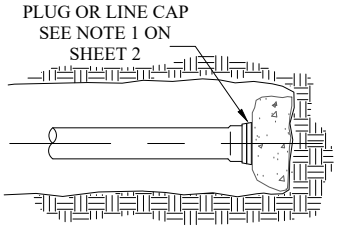
CROSS WITH

DEAD END BRANCHES

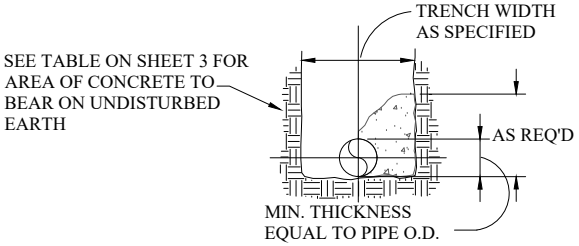


VALVE

(GATE OR BUTTERFLY)



DEAD END



SECTION (TYPICAL)

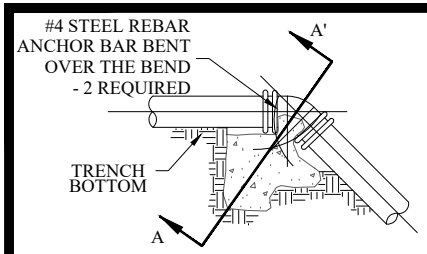
City of Evans, Colorado

Public Works Department

THRUST BLOCK DETAIL

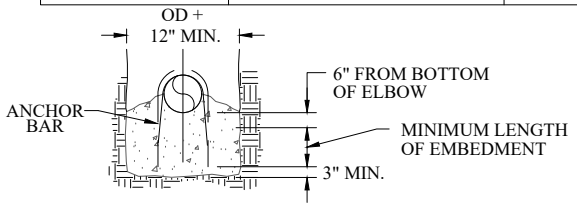
SHEET 1 OF 3

Scale: N.T.S. WA-14A May 2019



TOP OF VERT. BEND

BAR SIZES FOR 100 PSI		MIN. LENGTH OF EMBED-MENT
LESS THAN	NO. OF BARS & SIZE	
60 CUBIC FEET	TWO - #4	8"
90 CUBIC FEET	TWO - #5	12"
133 CUBIC FEET	TWO - #6	16"



SECTION A-A'

TABLE OF VOLUMES OF CONCRETE (IN CU. FT.)

REQ'D FOR VERT. BEND ANCHOR BLOCKS FOR 100 P.S.I. PRESSURE
ADJUST VOLUMES BY MULTIPLYING TABULATED VALUES BY A CORRECTION FACTOR "F".

F= ACTUAL SPECIFIED TEST PRESSURE
100

PIPE SIZE (INCHES)	BENDS		
	45°	22 1/2°	11 1/4°
3	3.7	1.9	1.4
4	6.5	3.3	1.7
6	14.6	7.5	3.7
8	26.0	13.2	6.6
10	40.5	20.7	10.3
12	58.5	30.0	14.8
14	79.5	40.7	20.2
15	91.0	46.6	23.2
16	104.0	53.0	26.5
18	SPECIAL DESIGN REQ'D.	67.3	33.4
20		83.0	41.0
21			45.5
22			50.0
24			59.5
30			
36			

NOTES FOR DRAWINGS:

1. AT DEAD ENDS, WRAP FITTINGS WITH TAR PAPER, FELT, OR HEAVY KRAFT PAPER TO PROVIDE BOND BREAK BETWEEN CONCRETE AND FITTINGS
2. ALL THRUST BLOCKING SHALL BE CAST-IN-PLACE CONCRETE HAVING A MINIMUM YIELD STRENGTH OF 3000 P.S.I. NO HAND MIXING OF CONCRETE ALLOWED
3. THRUST BLOCKING SHALL BE CAST AGAINST UNDISTURBED EARTH. FORMS SHALL BE USED AS REQUIRED TO OBTAIN ADEQUATE BEARING AREA AND TO CONFINE THE CONCRETE.THRUST BLOCKING SHALL BEAR ON THE FITTING OR END CAP ONLY AND SHOULD NOT BE ALLOWED TO SPILL OVER THE JOINT OR AGAINST THE PIPE
4. MEGA-LUGS OR OTHER JOINT RESTRAINT MAY BE USED ALONG WITH OR IN PLACE OF CONCRETE THRUST BLOCKS WITH DESIGN SUBMITTED BY PROFESSIONAL ENGINEER AND APPROVED BY PUBLIC WORKS DEPARTMENT
5. PIPE INSTALLED UNDER CONDITIONS DIFFERENT FROM THOSE NORMALLY ENCOUNTERED SHALL REQUIRE THRUST BLOCKS DESIGNED FOR THOSE PARTICULAR CONDITIONS

City of Evans, Colorado
Public Works Department

THRUST BLOCK DETAIL

SHEET 2 OF 3

Scale: N.T.S. WA-14B May 2019

TABLE OF BEARING AREAS IN SQ. FT. FOR CONCRETE

THRUST BLOCKING

FOR 100 P.S.I. INTERNAL STATIC PRESSURE AND 1000 LBS. PER SQ. FT. SOIL BEARING CAPACITY

PIPE SIZE (INCHES)	BENDS				TEES *	GATE VALVES	DEADENDS AND CROSSES WITH ONE OR TWO BRANCHES PLUGGED
	90°	45°	22 1/2°	11 1/4°			
3	1.0	0.6	0.3	0	0.7	0.5	0.7
4	1.8	1.0	0.5	0	1.3	0.5	1.3
6	4.0	2.2	1.1	0	2.8	0.7	2.8
8	7.1	3.8	2.0	1.0	5.0	2.4	5.0
10	11.1	6.0	3.0	1.5	7.8	4.5	7.8
12	16.0	8.6	4.4	2.2	11.3	7.3	11.3
14	21.7	11.8	6.0	3.0	15.4	11.0	15.4
15	25.0	13.5	7.0	3.5	17.6		17.6
16	28.4	15.3	8.0	4.0	20.0		20.0
18			10.0	5.0	25.4		25.4
20			12.2	6.1	31.4		31.4
21				6.8	34.6		34.6
22				7.4	38.0		38.0
24				8.8	45.0		45.0
30	SPECIAL DESIGN						71.0
36							102.0

* PIPE SIZES ARE THE SIZE OF THE BRANCH SIZE

BEARING AREAS FOR ANY PRESSURE AND SOIL BEARING CAPACITY MAY BE OBTAINED BY MULTIPLYING THE TABULATED VALUES BY A CORRECTION FACTOR "F"

$$F = \frac{\text{ACTUAL SPECIFIED TEST PRESSURE IN HUNDREDS OF LBS/SQ. IN.}}{\text{ACTUAL SOIL BEARING CAPACITY IN THOUSANDS OF LBS.}}$$

EXAMPLE:
- TO FIND BEARING AREA FOR 8"-90° BEND WITH A STATIC INTERNAL PRESSURE OF 150 P.S.I. AND WITH A SOIL BEARING CAPACITY OF 3000 LBS. PER SQ. FT.
- $F = \frac{1.5}{3} = 0.5$
- TABULATED VALUE = 7.1 SQ. FT.
- 0.5 * 7.1 = 3.56 OR ~ 4 SQ. FT. OR 2 FT. LONG BY 2 FT. HIGH

IN THE ABSENCE OF SOIL BEARING CAPACITY INFORMATION, USE ABOVE TABLE

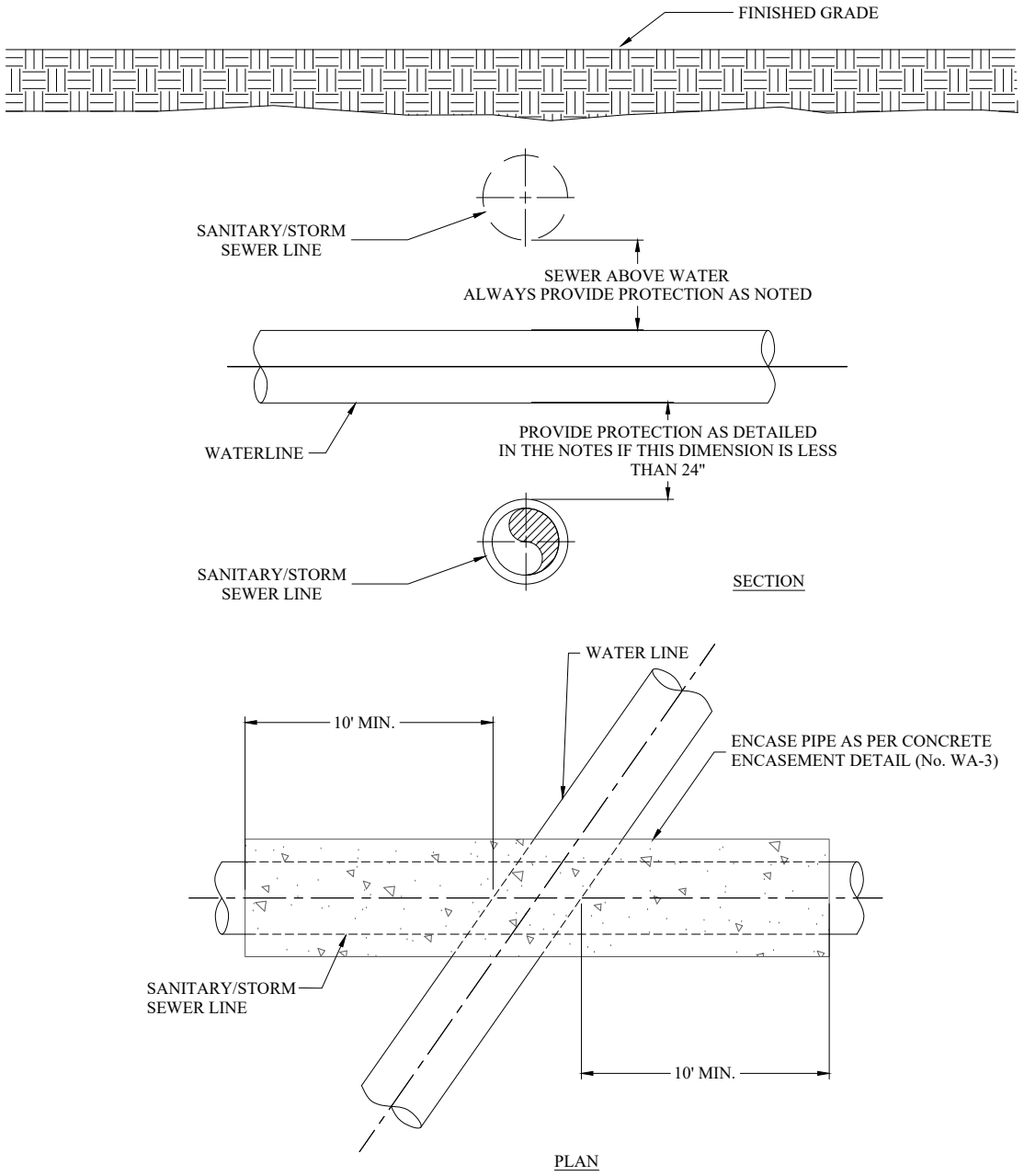
City of Evans, Colorado

Public Works Department

THRUST BLOCK DETAIL

SHEET 3 OF 3

Scale: N.T.S. WA-14C May 2019

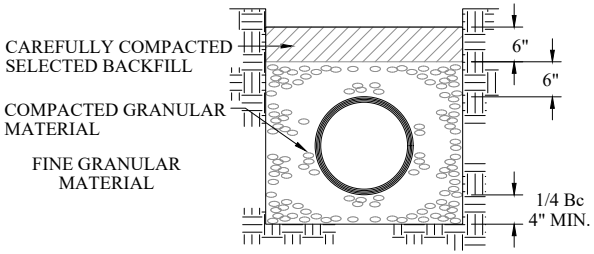


City of Evans, Colorado

Public Works Department

UTILITY CROSSING DETAIL

Scale: N.T.S. | WA-15 | May 2019



GRANULAR BEDDING

NOTES:

1. MINIMUM DENSITY FOR CAREFULLY COMPACTED SELECT BACKFILL SHALL BE 95% OF MAXIMUM OR AS SPECIFIED FOR THE TRENCH BACKFILL - WHICHEVER IS GREATER

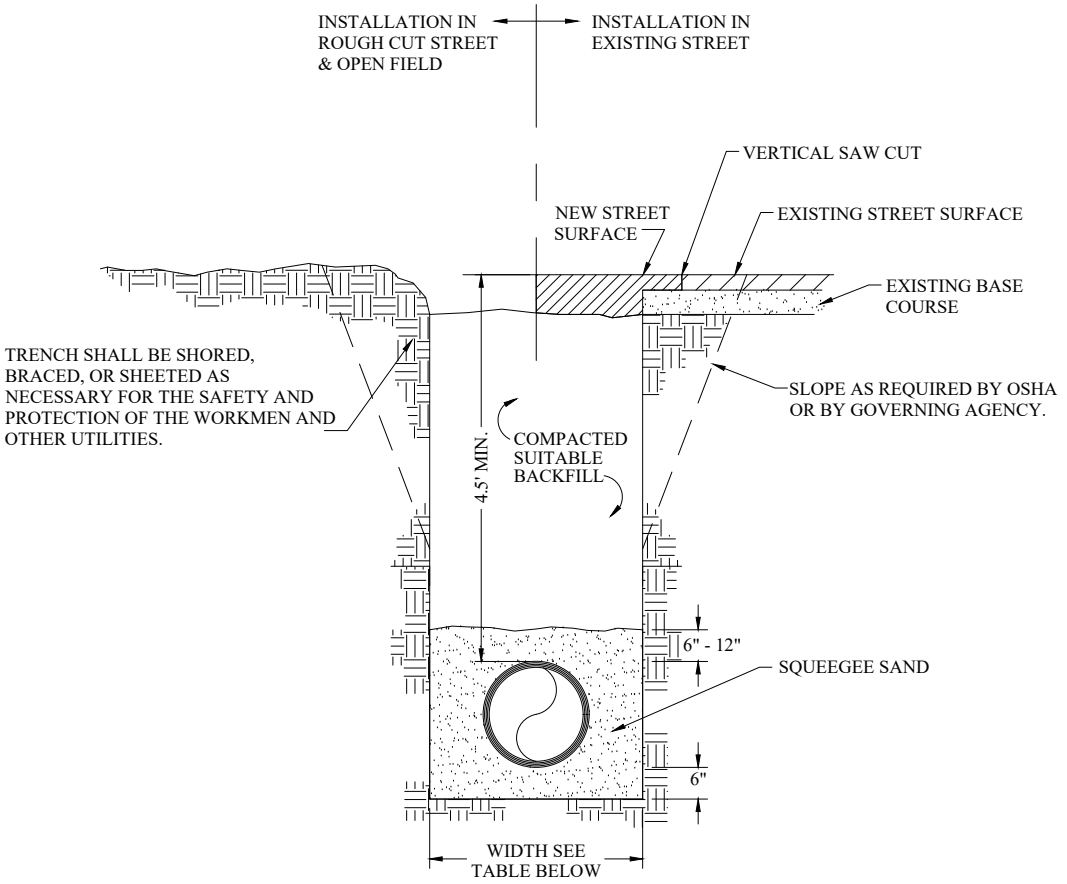
2. COMPACT GRANULAR MATERIAL BY SLICING WITH A SHOVEL AROUND PIPE. WHEN BEDDING IS 6" OVER PIPE, COMPACT WITH VIBRATING COMPACTOR

City of Evans, Colorado

Public Works Department

WATER LINE
BEDDING DETAIL

Scale: N.T.S. WA-16 May 2019



PIPE DIAMETER	MINIMUM WIDTH	MAXIMUM WIDTH
6"	1'-6"	2'-6"
8"	1'-8"	2'-8"
12"	2'-0"	3'-0"
16"	2'-4"	3'-4"
20"	2'-8"	3'-8"
24"	3'-0"	4'-0"
30"	3'-6"	4'-6"

NOTES:

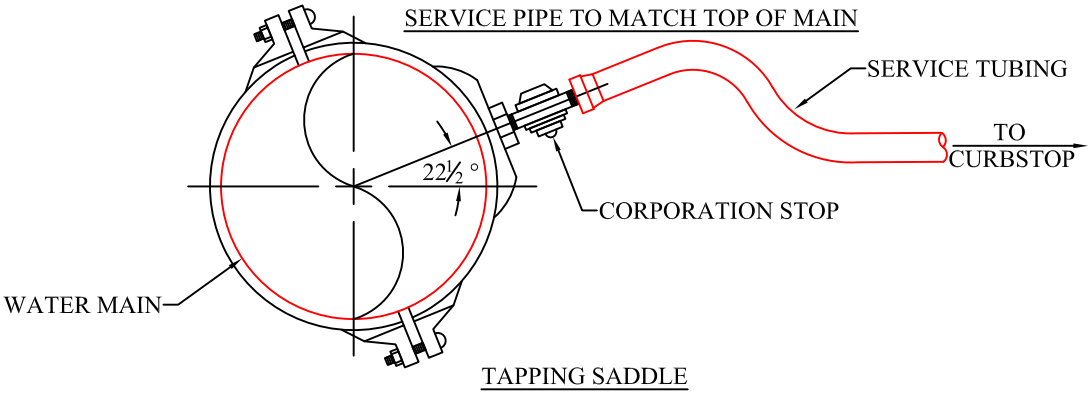
1. SQUEEGEE SAND IS DEFINED AS MATERIAL IN WHICH 100% PASSES THROUGH A $\frac{3}{8}$" SIEVE AND ONLY 0% TO 5% PASSES THROUGH A #200 SIEVE
2. AN OVER-EXCAVATED TRENCH SHALL BE REFILLED AND THOROUGHLY COMPACTED UNDER THE DIRECTION OF THE PUBLIC WORKS DEPARTMENT
3. UNDER NO CIRCUMSTANCES WILL PIPE BE LAID IN A PROPOSED FILL AREA PRIOR TO IT BEING COMPLETELY FILLED. THE FILL WILL BE PLACED FIRST TO PROPOSED GRADE AND COMPACTED AS REQUIRED. A TRENCH THEN WILL BE EXCAVATED AND THE PIPE INSTALLED IN THE PER CITY OF EVANS STANDARDS

City of Evans, Colorado

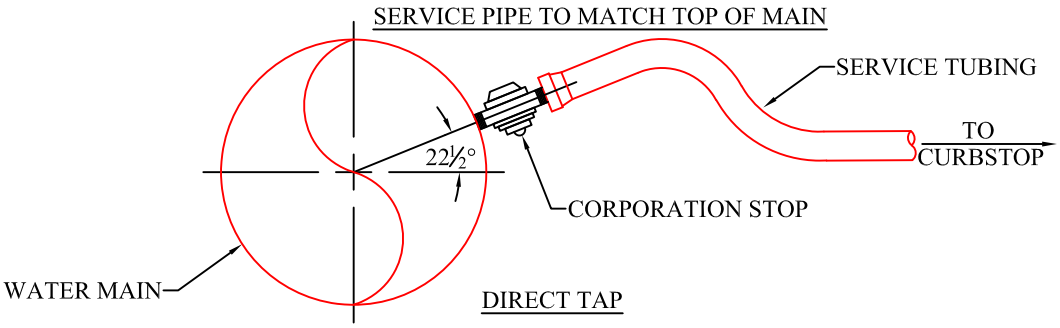
Public Works Department

WATER LINE TRENCH CROSS-SECTION DETAIL

Scale: N.T.S. WA-17 May 2019



TAPPING SADDLE



DIRECT TAP

TYPE OF MAIN LINE PIPE AND SIZE OF TAP

	CAST IRON					DUCTILE IRON					PVC C-900	
PIPE SIZE	3/4"	1"	1-1/2"	2"	3"& 4"	3/4"	1"	1-1/2"	2"	3"& 4"	< 2"	> 2"
3"	S	NO	NO	NO	TSV	NO	NO	NO	NO	TSV	S	TSV
4"	DT	S	NO	NO	TSV	S	S	NO	NO	TSV	S	TSV
6"	DT	DT	S	S	TSV	DT	S	S	S	TSV	S	TSV
8"	DT	DT	S	S	TSV	DT	DT	S	S	TSV	S	TSV
12"	DT	DT	S	S	TSV	DT	DT	S	S	TSV	S	TSV
16"	DT	DT	S	S	TSV	DT	DT	S	S	TSV		
20"	DT	DT	S	S	TSV	DT	DT	S	S	TSV		

"S" - TAPPING SADDLE REQUIRED, ALL SADDLES SHALL HAVE THE AWWA TAPER ON IT'S THREADS.
"DT" - DIRECT TAP REQUIRED
"NO" - NO TAP PERMITTED WITH OR WITHOUT A SADDLE, A TEE CONNECTION MAY BE PERMITTED IF SPECIFICALLY AUTHORIZED BY THE WATER DEPARTMENT
"TSV" - TAPPING SLEEVE AND VALVE REQUIRED

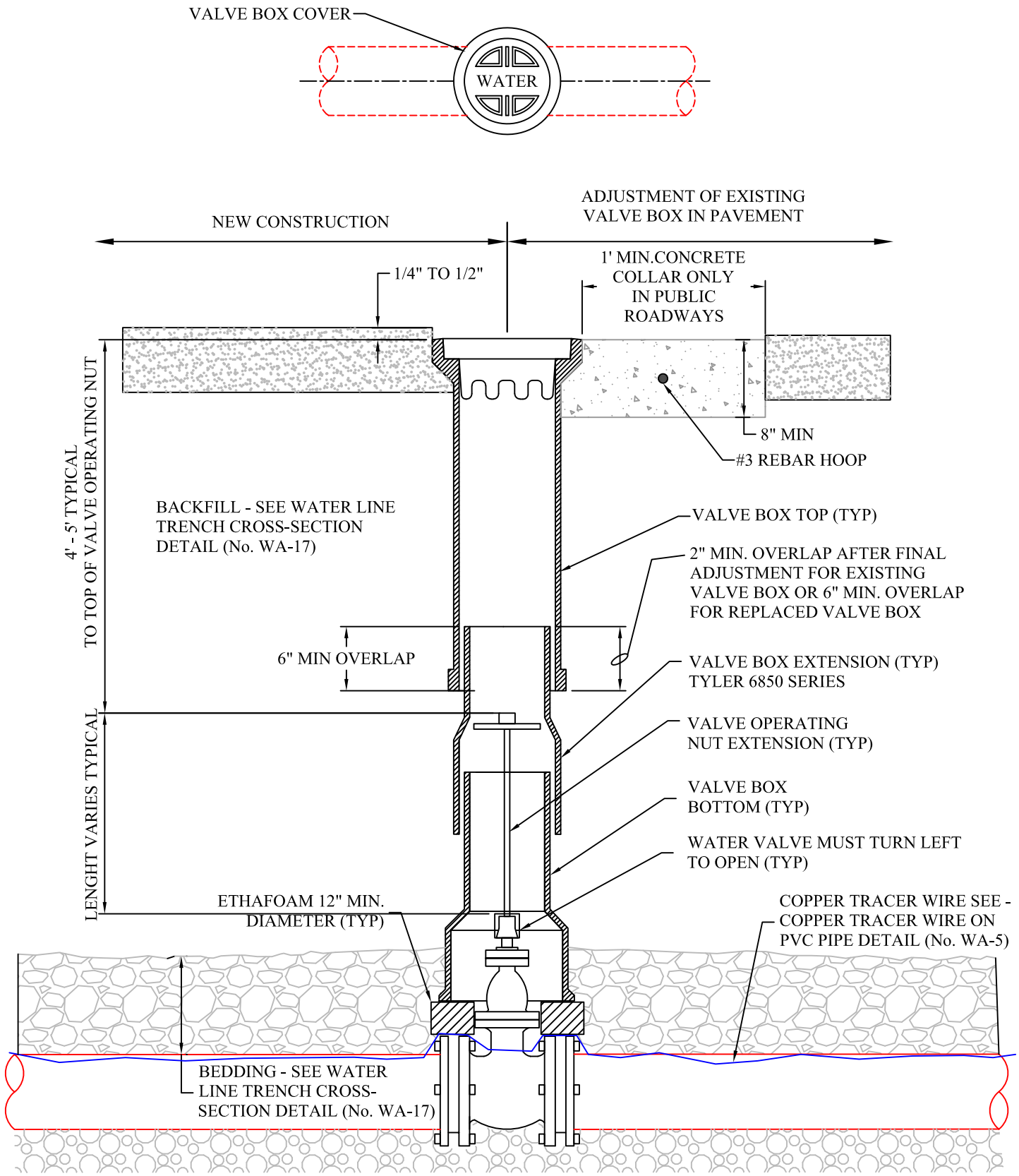
NOTE:

1. ALL TAPPING SADDLES 2" AND SMALLER, SHALL CONSIST OF A BRONZE BODY WITH TWO (2) BRONZE STRAPS
2. EXISTING STEEL MAINS 12" IN DIAMETER OR LESS, SHALL BE TAPPED USING AN APPROVED TAPPING SADDLE
3. ALL TAPS SHALL BE MADE WITH AN APPROVED TAPPING TOOL
4. NO COUPLINGS ARE ALLOWED BETWEEN CURB STOP AND METER SETTER. SEE STANDARDS FOR ADDITIONAL REQUIREMENTS
5. SERVICE SHALL BE TYPE K COPPER FROM MAIN TO METER

City of Evans, Colorado
Public Works Department

WATER SERVICE CONNECTION DETAIL

Scale: N.T.S. | WA-18 | July 2019

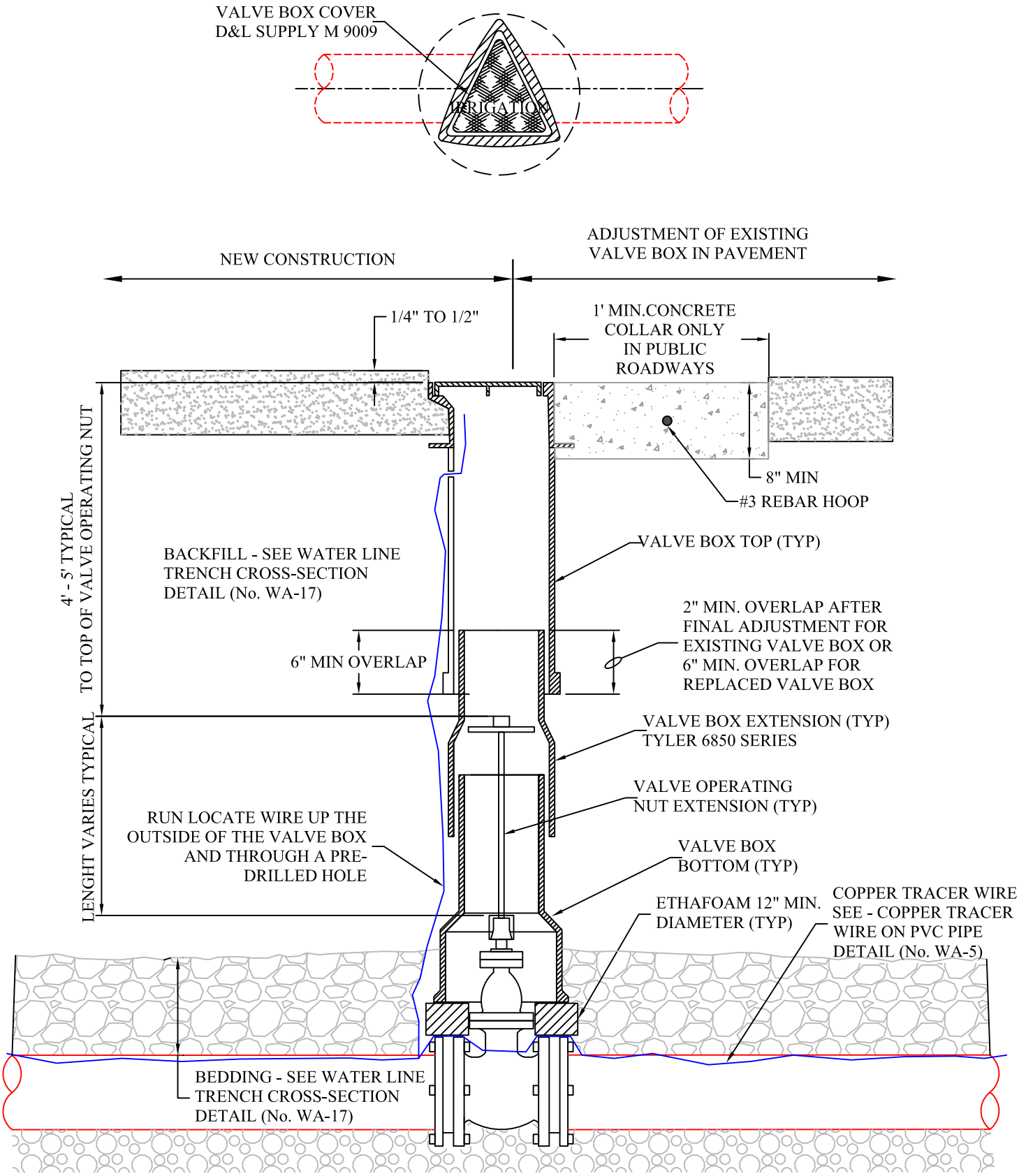


City of Evans, Colorado

Public Works Department

WATER VALVE BOX DETAIL

Scale: N.T.S. | WA-19 | August 2019



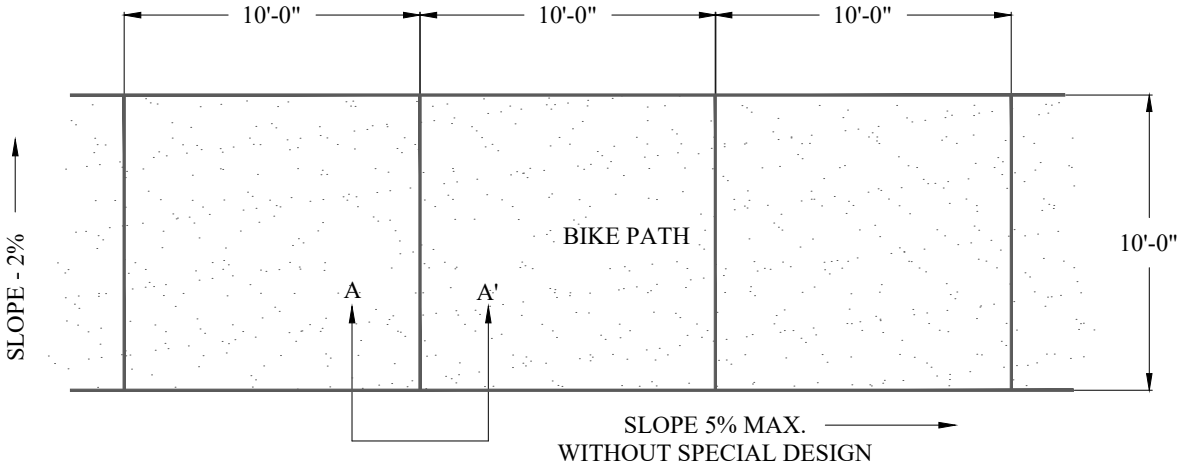
City of Evans, Colorado

Public Works Department

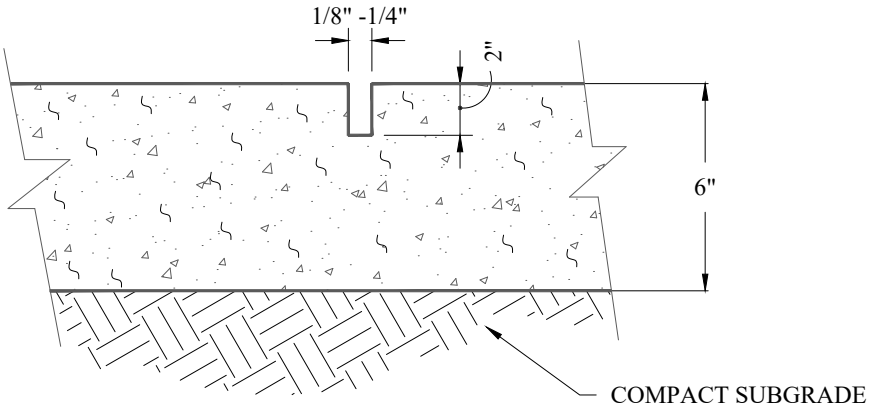
WATER VALVE BOX DETAIL

NONPOTABLE WATER

Scale: N.T.S. | WA-20 | AUGUST 2019



PLAN VIEW



SECTION A-A'

NOTES:

1. SAW CUT, REMOVABLE PLASTIC DUMMY JOINT STRIPS OR OTHER APPROVED JOINTS AT 10' ON CENTER.
2. EXPANSION JOINTS REQUIRED AT 400' SPACING. ADDITIONAL JOINTS MAY BE REQUIRED AT THE DISCRETION OF THE CITY. WHEN CONCRETE IS PLACED BY MACHINE, EXPANSION JOINTS ARE ONLY REQUIRED AT THE BEGINNING AND AT THE END OF THE POUR. ALL EXPANSION JOINTS TO BE CAULKED. SEE DETAIL S-4
3. CONCRETE SHALL BE 4500 PSI AND FIBER REINFORCED AS APPROVED BY THE CITY.
4. BIKE PATHS WITH GREATER THAN 5% SLOPE SHALL REQUIRE A SPECIAL DESIGN.

City of Evans, Colorado

Public Works Department

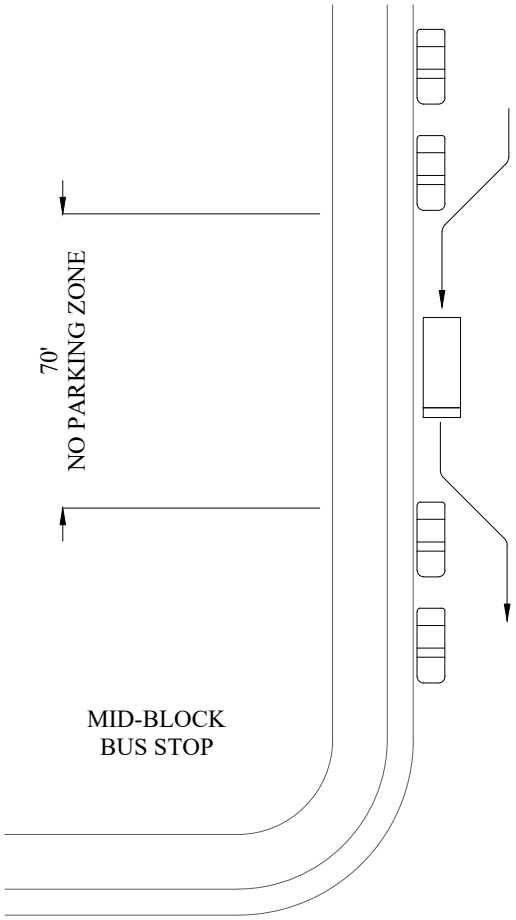
BIKE PATH DETAIL

Scale: N.T.S | Detail No. S-1 | May 2019

NOTES:

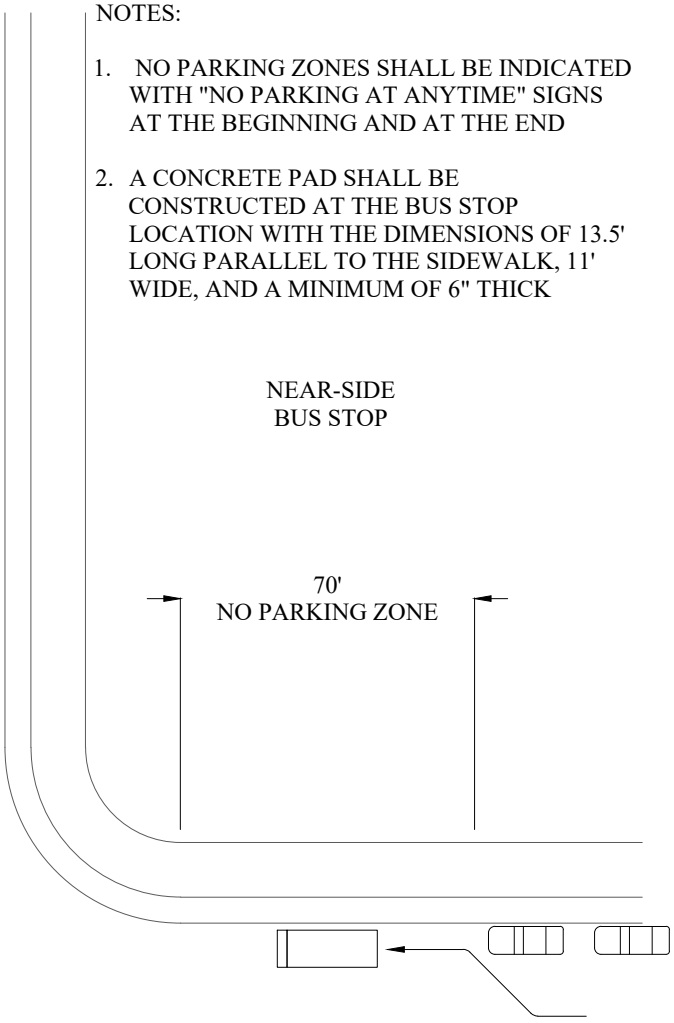
1. NO PARKING ZONES SHALL BE INDICATED WITH "NO PARKING AT ANYTIME" SIGNS AT THE BEGINNING AND AT THE END

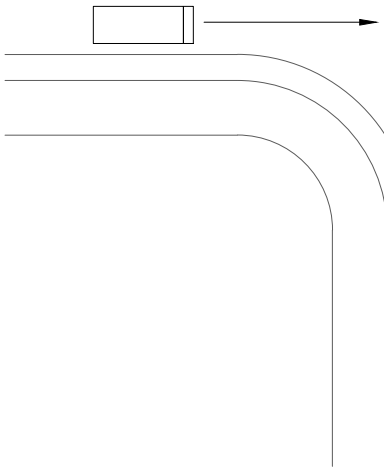
2. A CONCRETE PAD SHALL BE CONSTRUCTED AT THE BUS STOP LOCATION WITH THE DIMENSIONS OF 13.5' LONG PARALLEL TO THE SIDEWALK, 11' WIDE, AND A MINIMUM OF 6" THICK



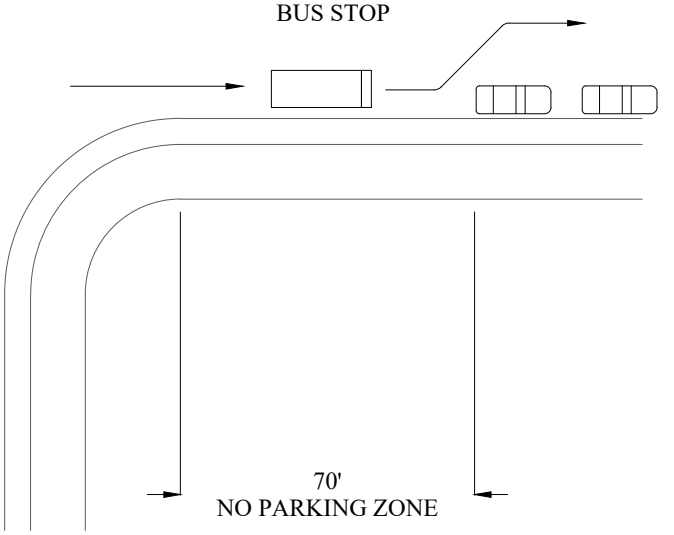
MID-BLOCK
BUS STOP

NEAR-SIDE
BUS STOP





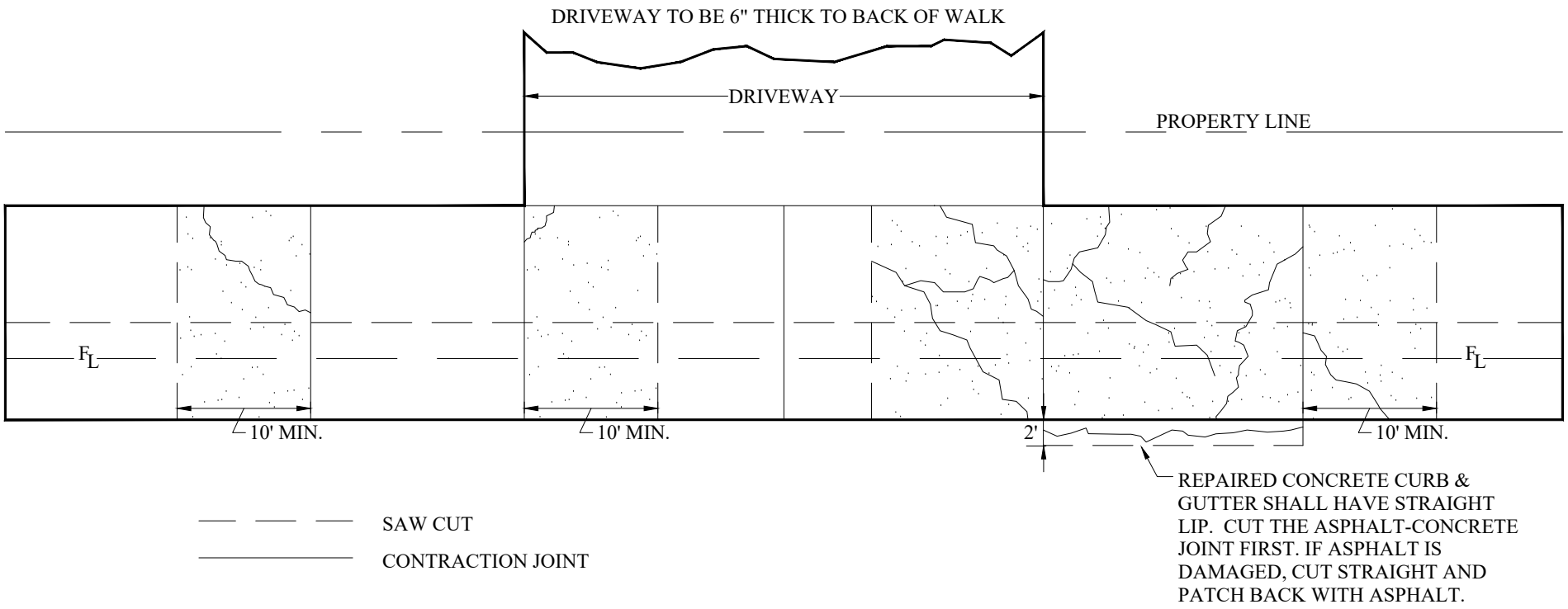
FAR-SIDE
BUS STOP



City of Evans, Colorado
Public Works Department

BUS STOP DETAIL

Scale: N.T.S | Detail No. S-2 | May 2019



CRITERIA FOR REPAIR OF CURB, GUTTER, SIDEWALKS & DRIVEWAY APPROACHES IN THE PUBLIC RIGHT OF WAY:

A. TWO SECTIONS HAVING AN ELEVATION DIFFERENCE OF 3/4" OR GREATER, AT ANY LOCATION ALONG THE TOOLED JOINT OR CRACK.

B. ANY SECTION WITH CRACKS 1/2" IN WIDTH, OR GREATER.

C. SPALLING (CRUMBLING OF CONCRETE SURFACE) OF DEPTHS GREATER THAN 3/4", OR ENCOMPASSING MORE THAN 50% OF THE CONCRETE SECTION.

D. ANY PORTION OF A CONCRETE SECTION MISSING.

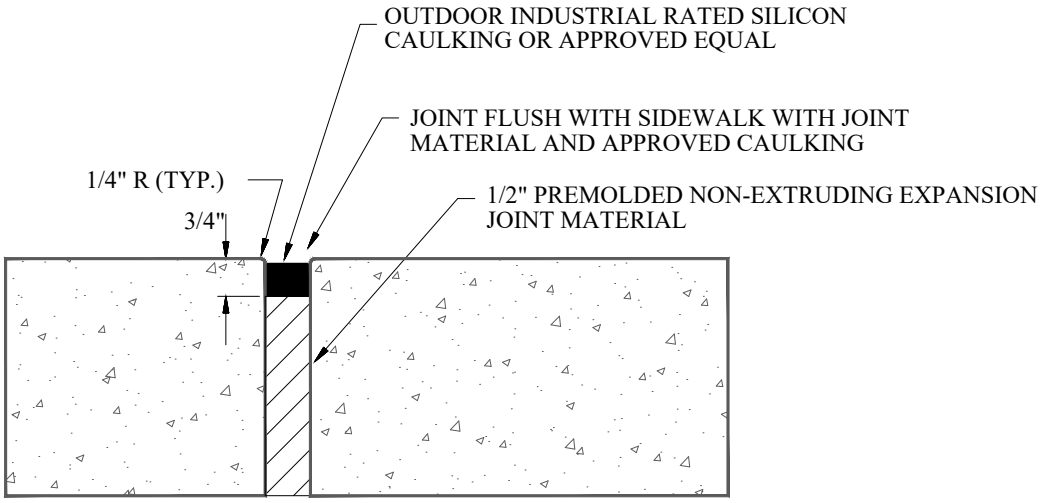
E. SECTIONS DISPLACED FROM ORIGINAL GRADE CAUSING MORE THAN 20:1 SLOPE.

City of Evans, Colorado

Public Works Department

CONCRETE REPAIR DETAIL
FOR SIDEWALK, CURB & GUTTER

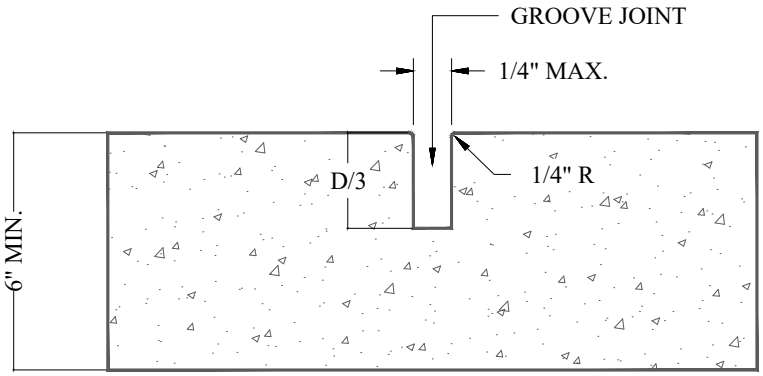
Scale: N.T.S | Detail No. S-3 | May 2019



EXPANSION JOINT

NOTES FOR EXPANSION JOINTS:

EXPANSION JOINTS REQUIRED AT 400' SPACING. ADDITIONAL JOINTS MAY BE REQUIRED AT THE DISCRETION OF THE CITY. WHEN CONCRETE IS PLACED BY MACHINE, EXPANSION JOINTS ARE ONLY REQUIRED AT THE BEGINNING AND AT THE END OF THE POUR



CONTRACTION JOINT

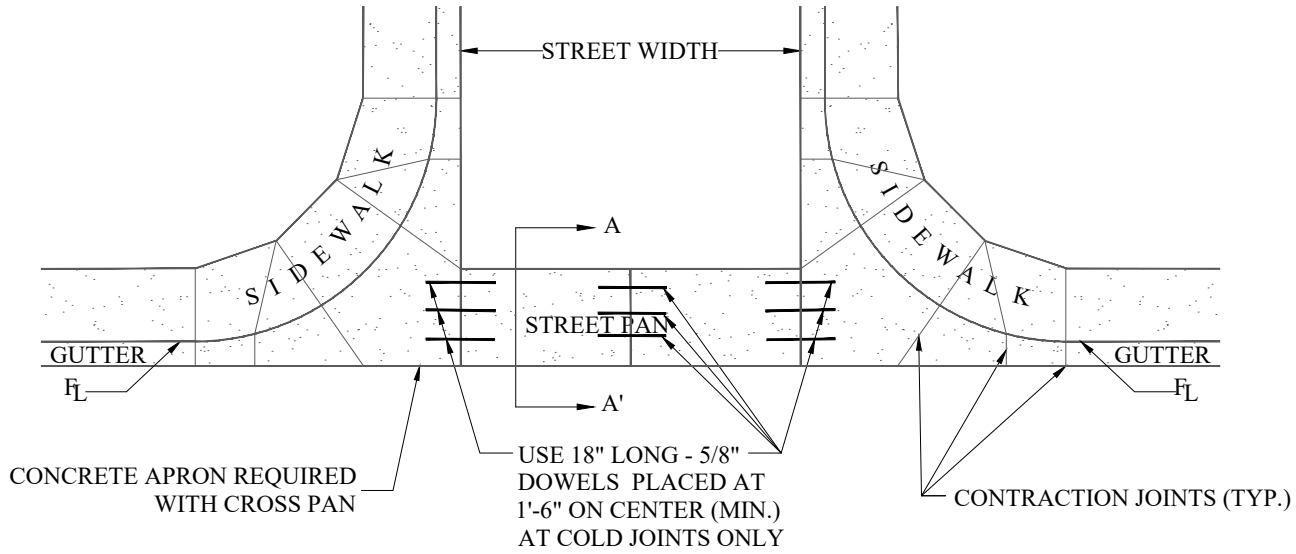
NOTES FOR CONTRACTION JOINTS:

1. FORM WITH TOOL TEMPLATE OR SAW CUT JOINTS.
2. SAW CUT JOINTS, IF USED, SHALL BEGIN AS SOON AS CONCRETE IS HARDENED SUFFICIENTLY TO PERMIT SAWING WITHOUT EXCESSIVE RAVELING AND BEFORE UNCONTROLLED CRACKING OCCURS.
3. MAXIMUM DISTANCE BETWEEN JOINTS IS 10' AND THE MINIMUM DISTANCE IS 5'.

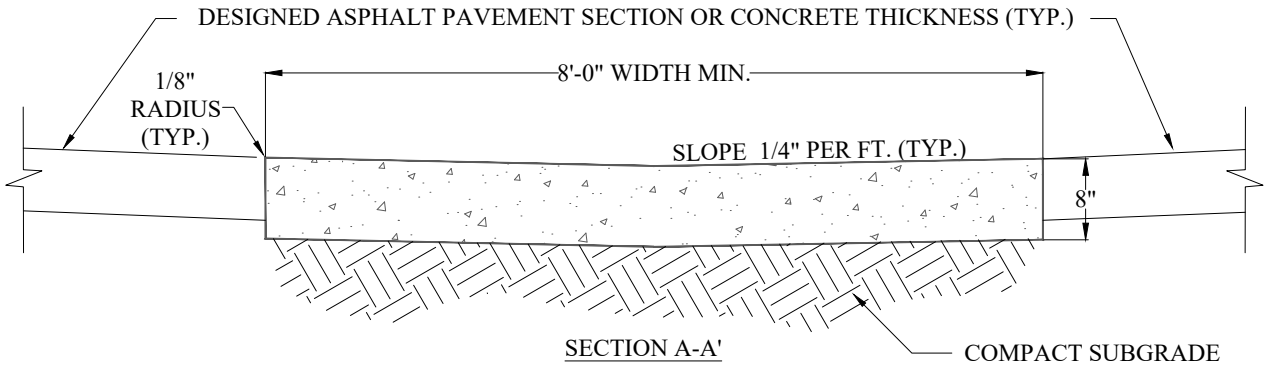
City of Evans, Colorado
Public Works Department

CONCRETE TRANSVERSE JOINT DETAIL FOR SIDEWALK, CURB, GUTTER, & CROSS PAN

Scale: N.T.S | Detail No. S-4 | May 2019



PLAN VIEW



SECTION A-A'

NOTES:

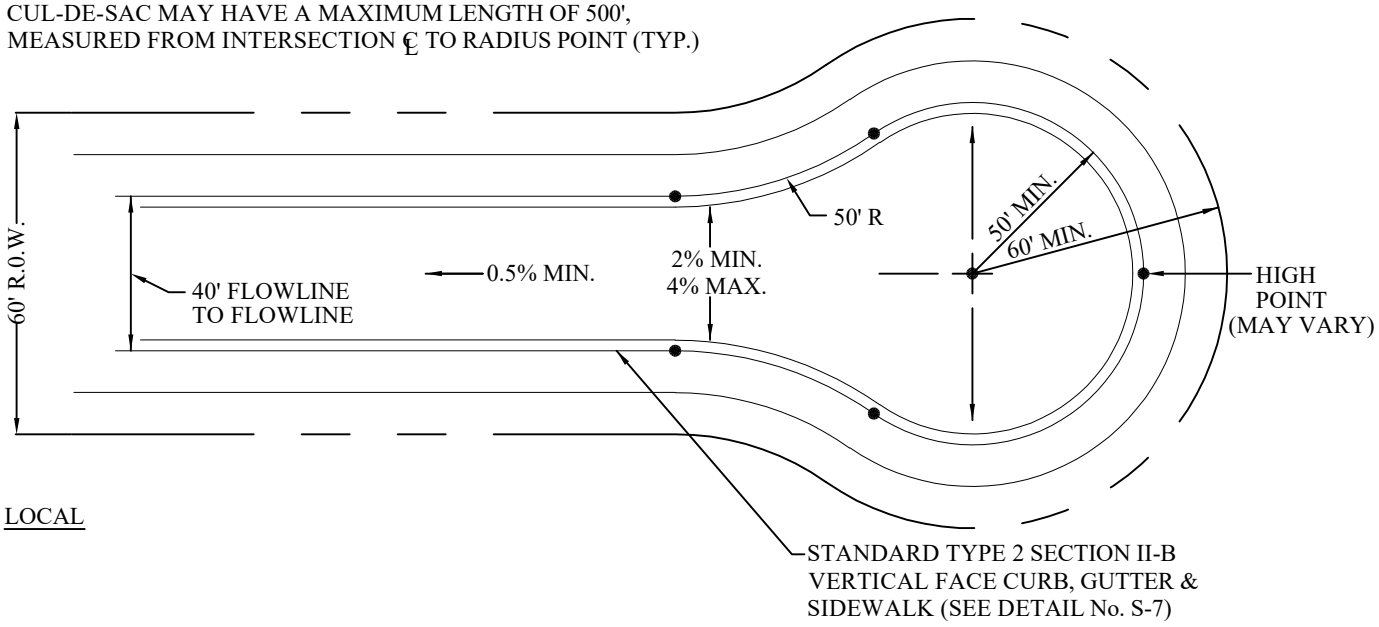
1. MINIMUM OF 0.6% LONGITUDINAL SLOPE FOR CROSS PANS.
2. MAXIMUM SPACING OF CONTRACTION JOINTS IS 10'.
3. CONCRETE APRON SHALL BE POURED MONOLITHICALLY WITH CURB/WALK AND SHALL BE 8" THICK (SEE DETAILS No. S-11 THROUGH S-14).
4. CROSS PAN AND APRON MAY BE POURED MONOLITHICALLY.
5. SEE THE SPECIFICATIONS FOR STREET DESIGN AND CONSTRUCTION FOR PERMISSIBLE LOCATIONS OF CROSS PANS.
6. MID-BLOCK CROSS PANS SHALL BE A MINIMUM OF 10' WIDE.
7. LARGER CROSS PAN WIDTH MAY BE REQUIRED BY THE CITY.
8. DOWELING MAY BE REQUIRED AT COLD JOINTS AT THE CITY'S DIRECTION.
9. CONCRETE SHALL BE 4500 PSI.

City of Evans, Colorado

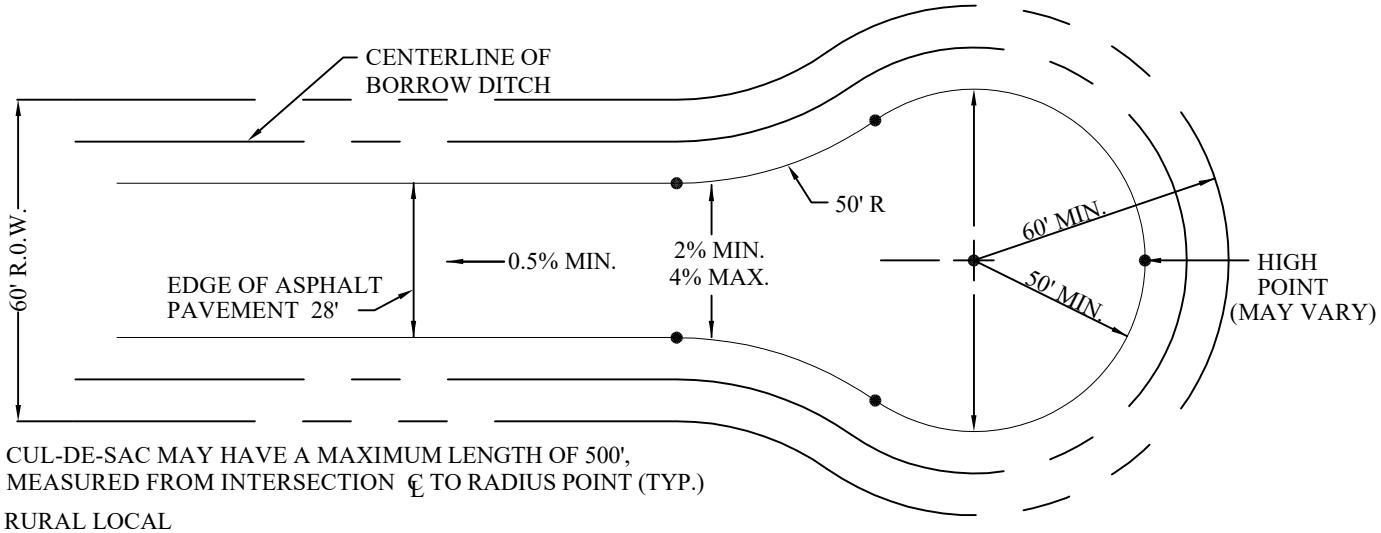
Public Works Department

CROSS PAN DETAIL

Scale: N.T.S | Detail No. S-5 | May 2019



LOCAL



RURAL LOCAL

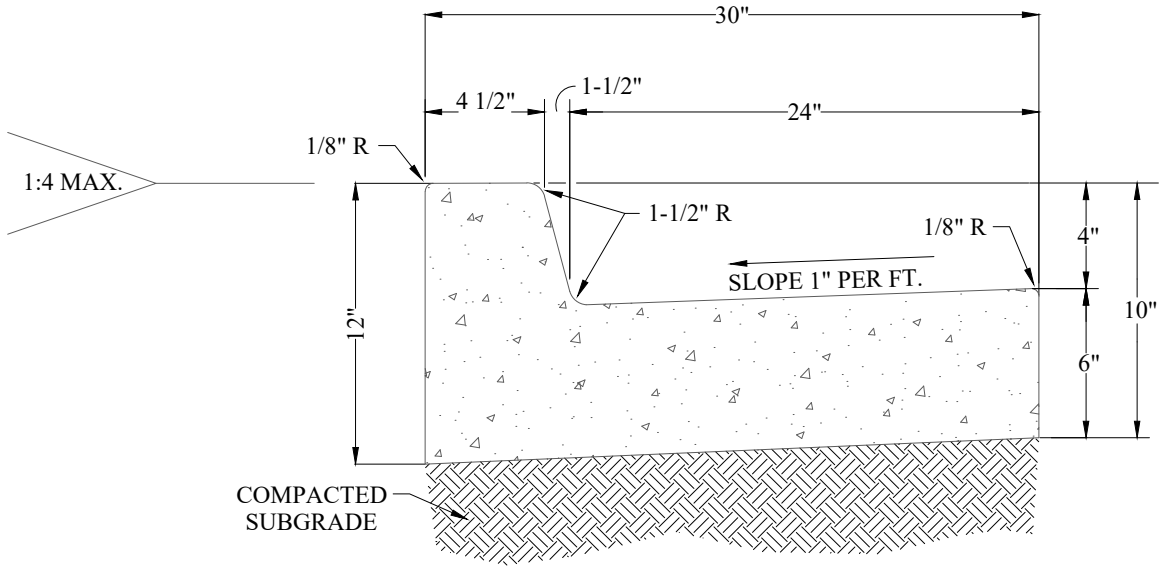
NOTE: THESE STANDARDS MAY BE APPLIED TO ASYMMETRICAL CUL-DE-SACS.

- DESIGN ENGINEER SHOW REFERENCE ELEVATIONS AT THESE POINTS

City of Evans, Colorado
Public Works Department

CUL-DE-SAC DETAIL

Scale: N.T.S | Detail No. S-6 | May 2019



TYPE 2-SECTION II-B

NOTES:

1. CONTRACTION JOINTS FOR CURB AND GUTTER SHALL MATCH SIDEWALKS MAXIMUM SPACING 10'.

2. EXPANSION JOINTS REQUIRED AT 400' SPACING. ADDITIONAL JOINTS MAY BE REQUIRED AT THE DISCRETION OF THE CITY. WHEN CONCRETE IS PLACED BY MACHINE, EXPANSION JOINTS ARE ONLY REQUIRED AT THE BEGINNING AND AT THE END OF THE POUR. SEE DETAIL No. S-4

3. AT ALLEYS, COMMERCIAL DRIVEWAYS AND GAS AND OIL ACCESSES, THE CURB & GUTTER THICKNESS SHALL BE INCREASED TO 8".

4. THE FOLLOWING SYMBOLS SHALL BE STAMPED ON THE FRONT OF THE CURB FACE TO INDICATE THE LOCATION OF SERVICE LINES INTO A LOT:

   I- IRRIGATION
   W - WATER
   S - SEWER
   NP - NONPOTABLE WATER
   G - GAS

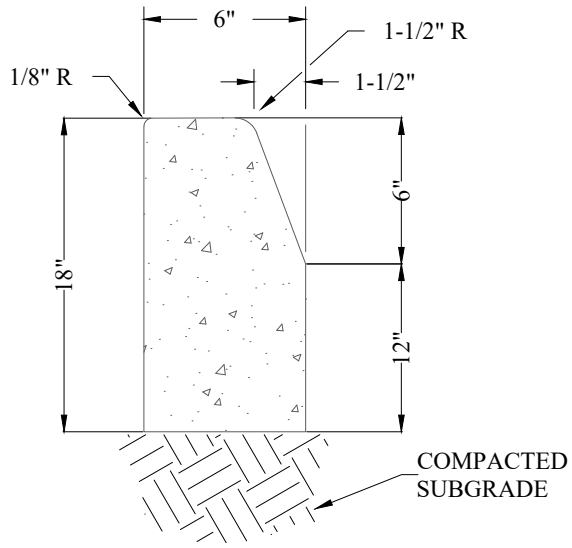
5. CONCRETE SHALL BE 4500 PSI.

City of Evans, Colorado

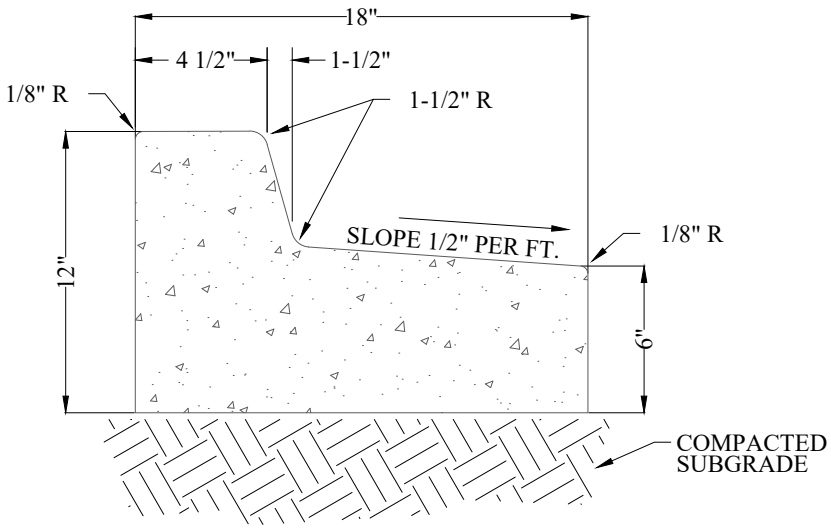
Public Works Department

CURB & GUTTER DETAIL
TYPE 2 SECTION II-B

Scale: N.T.S | Detail No. S-7 | May 2019



6" BARRIER CURB TYPE
2-SECTION B



6" VERTICAL CURB WITH REVERSE SLOPE GUTTER
TYPE 2-SECTION IB

NOTES:

1. CONTRACTION JOINTS FOR CURB AND GUTTER SHALL MATCH SIDEWALKS. MAXIMUM SPACING 10'.

2. EXPANSION JOINTS REQUIRED AT 400' SPACING. ADDITIONAL JOINTS MAY BE REQUIRED AT THE DISCRETION OF THE CITY. WHEN CONCRETE IS PLACED BY MACHINE, EXPANSION JOINTS ARE ONLY REQUIRED AT THE BEGINNING AND AT THE END OF THE POUR. SEE DETAIL No. S-4

3. THE FOLLOWING SYMBOLS SHALL BE STAMPED ON THE FRONT OF THE CURB FACE TO INDICATE THE LOCATION OF SERVICE LINES INTO A LOT:

   I- IRRIGATION
   W - WATER
   S - SEWER
   NP - NONPOTABLE WATER
   G - GAS

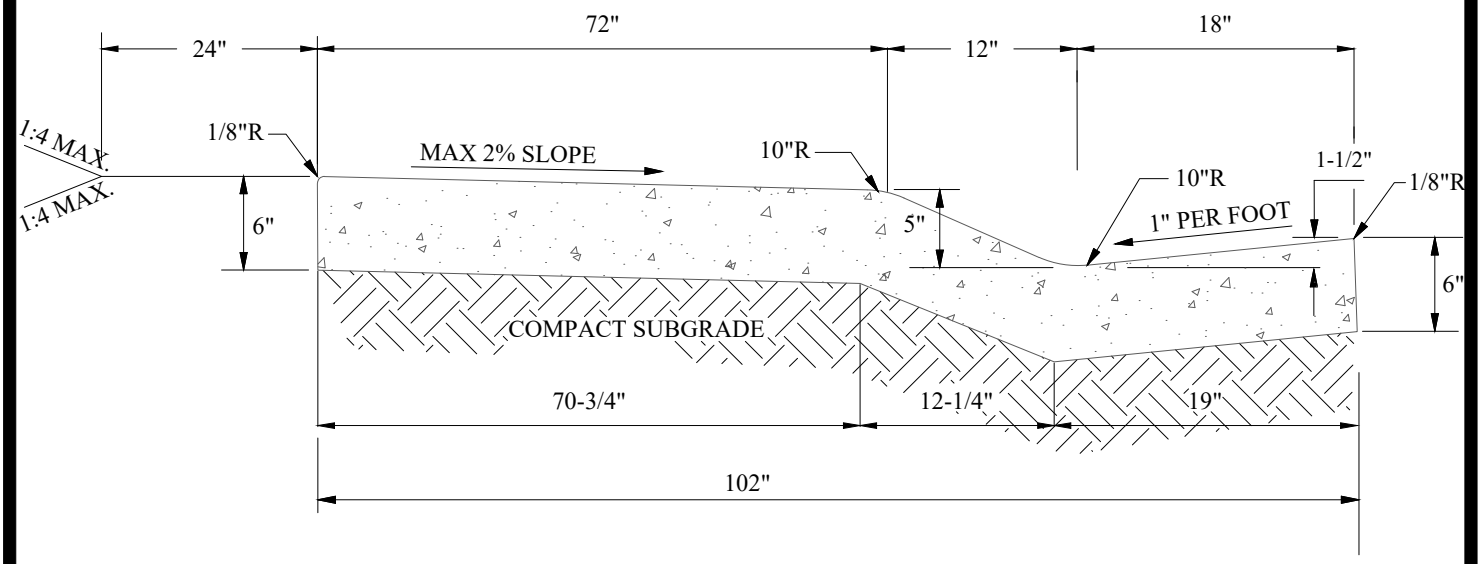
4. CONCRETE SHALL BE 4500 PSI.

City of Evans, Colorado

Public Works Department

CURB & GUTTER DETAIL
TYPE 2 - SECTION B & IB

Scale: N.T.S | Detail No. S-8 | May 2019



TYPE 2-SECTION MS MODIFIED

NOTES:

1. MAXIMUM SPACING OF CONTRACTION JOINTS IS 10'.

2. EXPANSION JOINTS REQUIRED AT 400' SPACING. ADDITIONAL JOINTS MAY BE REQUIRED AT THE DISCRETION OF THE CITY. WHEN CONCRETE IS PLACED BY MACHINE, EXPANSION JOINTS ARE ONLY REQUIRED AT THE BEGINNING AND AT THE END OF THE POUR. SEE DETAIL NO. S-4

3. THE FOLLOWING SYMBOLS SHALL BE STAMPED ON THE FRONT OF THE CURB FACE TO INDICATE THE LOCATION OF SERVICE LINES INTO A LOT:

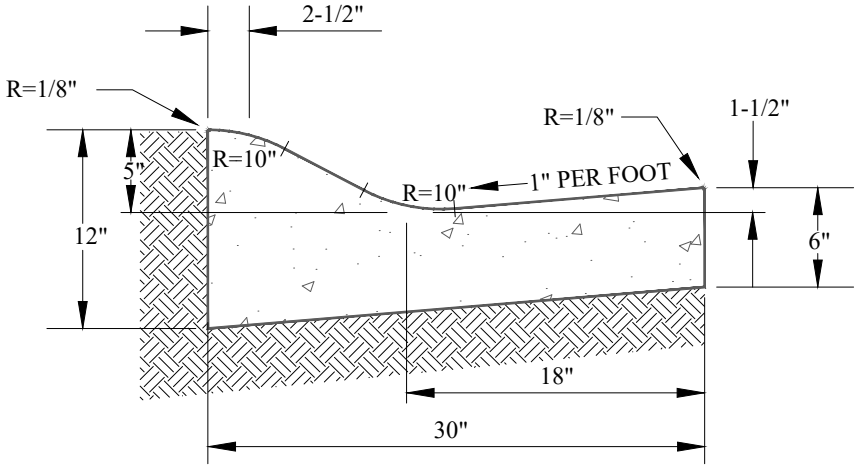
   I- IRRIGATION
   W - WATER
   S - SEWER
   NP - NONPOTABLE WATER
   G - GAS

4. CONCRETE SHALL BE 4500 PSI.

City of Evans, Colorado
Public Works Department

CURB & GUTTER DETAIL
TYPE 2-SECTION MS MODIFIED

Scale: N.T.S | Detail No. S-9 | May 2019



DRIVE-OVER CURB AND GUTTER SECTION D-1A

NOTES:

1. DETACHED SIDEWALK WHEN USED WITH THIS SECTION SHALL BE 6" MINIMUM THICKNESS.

2. MAXIMUM SPACING OF CONTRACTION JOINTS IS 10'.

3. EXPANSION JOINTS REQUIRED AT 400' SPACING. ADDITIONAL JOINTS MAY BE REQUIRED AT THE DISCRETION OF THE CITY. WHEN CONCRETE IS PLACED BY MACHINE, EXPANSION JOINTS ARE ONLY REQUIRED AT THE BEGINNING AND AT THE END OF THE POUR, SEE DETAIL NO. S-4

4. THE FOLLOWING SYMBOLS SHALL BE STAMPED ON THE FRONT OF THE CURB FACE TO INDICATE THE LOCATION OF SERVICE LINES INTO A LOT:

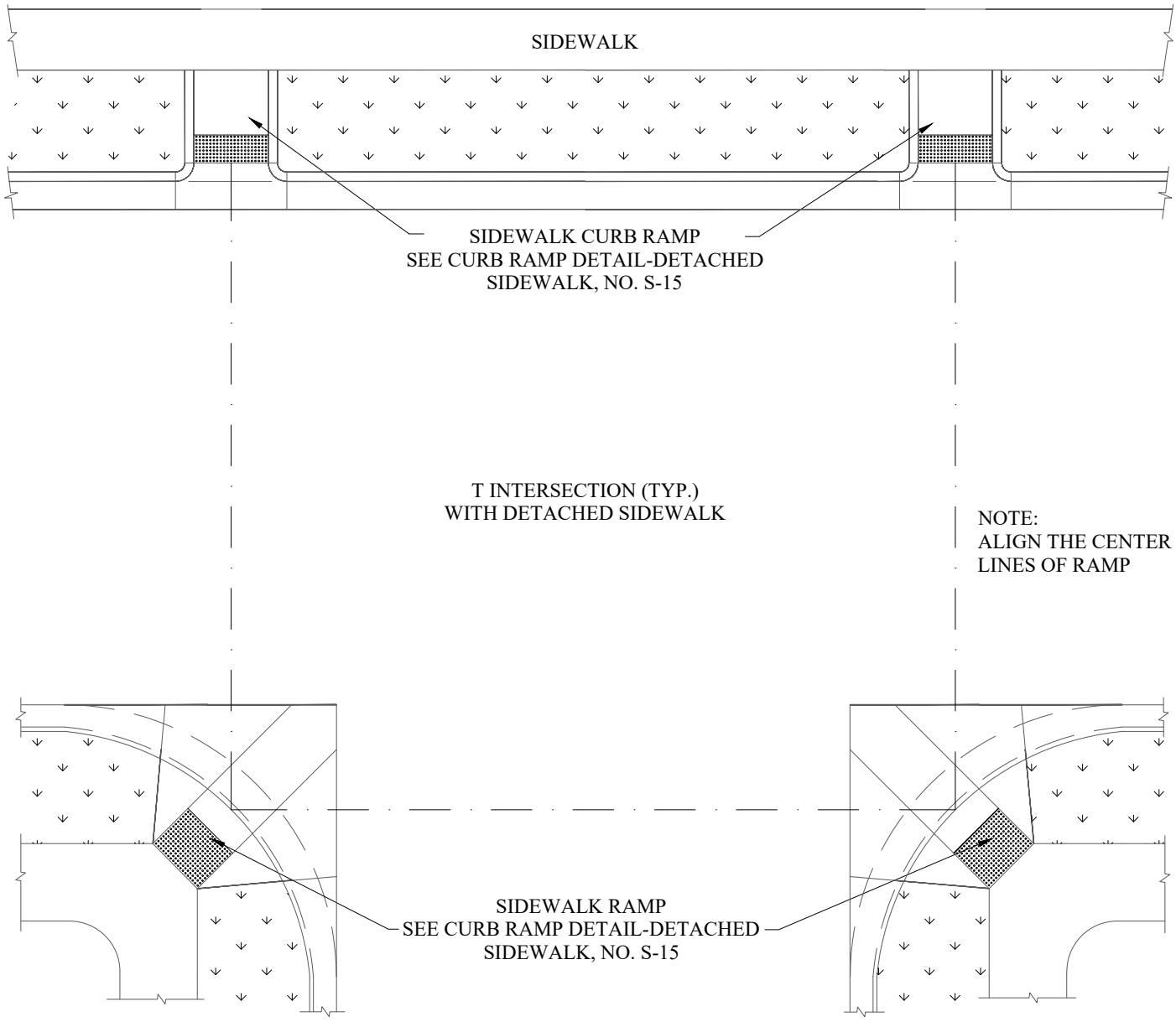
   I- IRRIGATION
   W - WATER
   S - SEWER
   NP - NONPOTABLE WATER
   G - GAS

5. CONCRETE SHALL BE 4500 PSI.

City of Evans, Colorado
Public Works Department

CURB & GUTTER DETAIL
D - 1A

Scale: N.T.S | Detail No. S-10 | May 2019

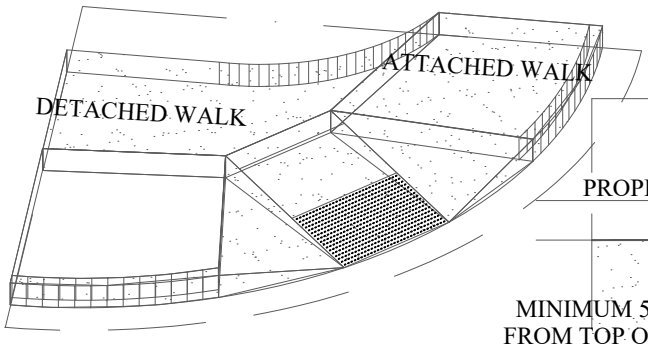


City of Evans, Colorado

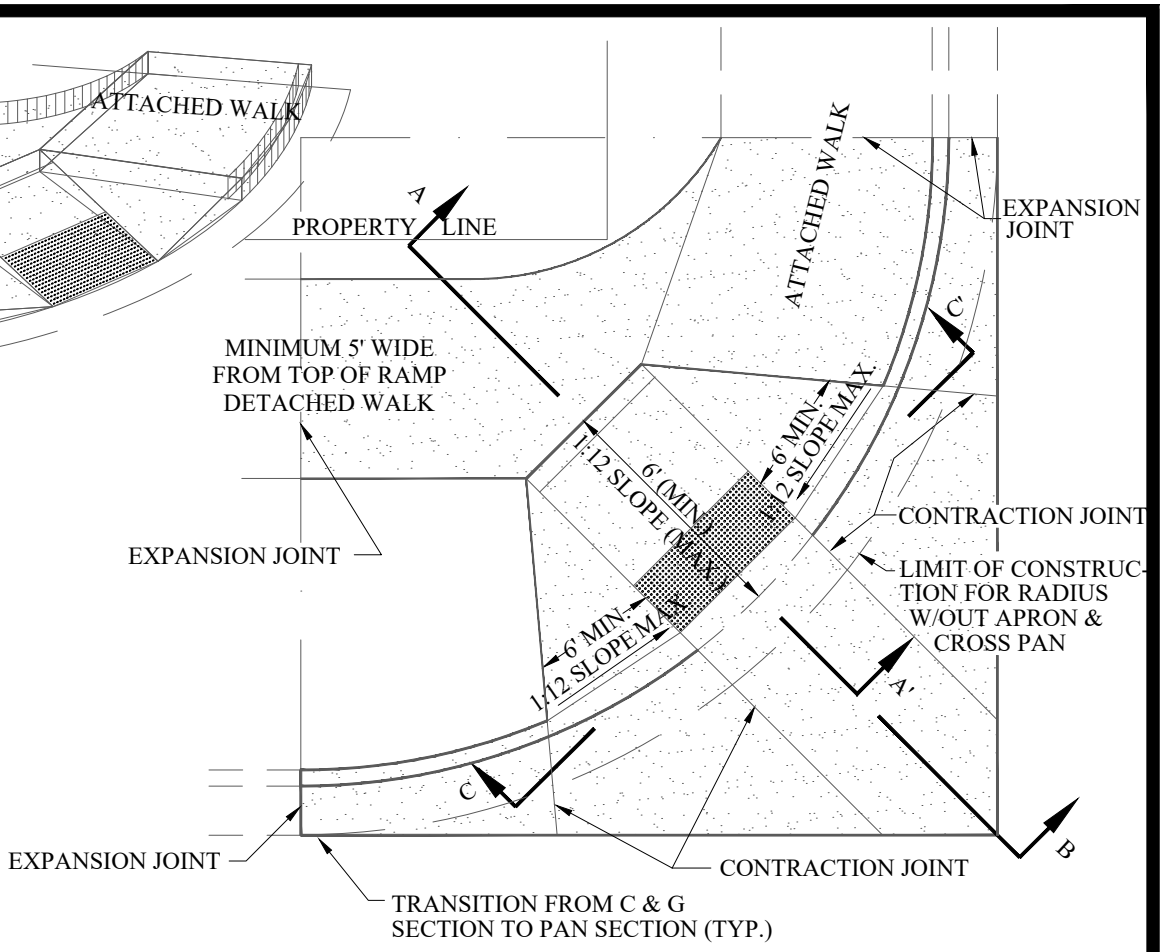
Public Works Department

CURB RAMP DETAIL
AT T INTERSECTION

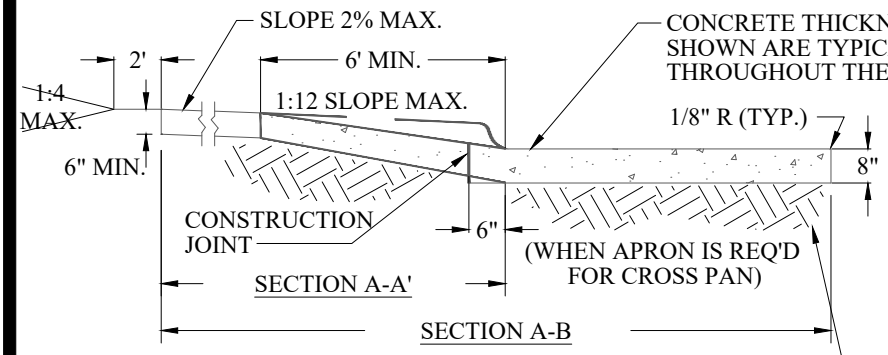
Scale: N.T.S | Detail No. S-11 | May 2019

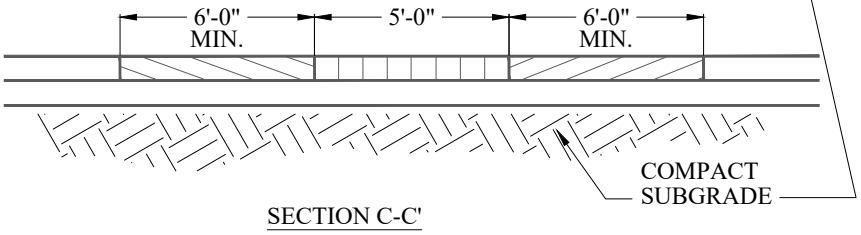


3-D VIEW



PLAN VIEW





SECTION C-C'

NOTES:

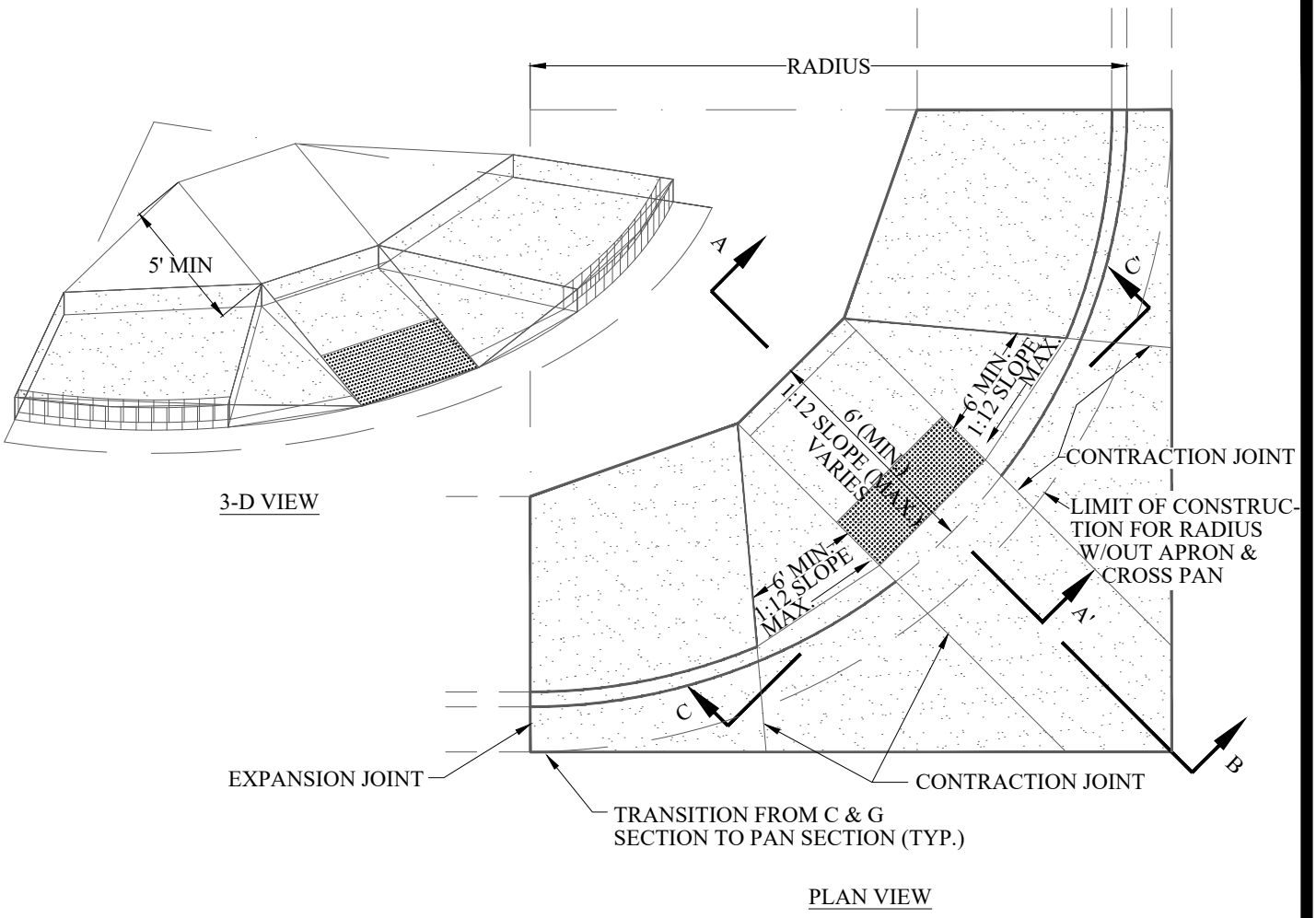
1. THE RAMP AREA SHALL RECEIVE A COARSER SURFACE TREATMENT THAN THE SIDEWALK.
2. 6" CONCRETE THICKNESS APPLIES TO RAMP, SIDE SLOPES & WALK AREAS.
3. CONSTRUCT CURB RAMPS AT ALL INTERSECTIONS.
4. CONCRETE SHOWN (EXCEPT FOR RAMPS AND WALKS) SHALL BE POURED MONOLITHICALLY.
5. CONCRETE SHALL BE 4500 PSI.

City of Evans, Colorado

Public Works Department

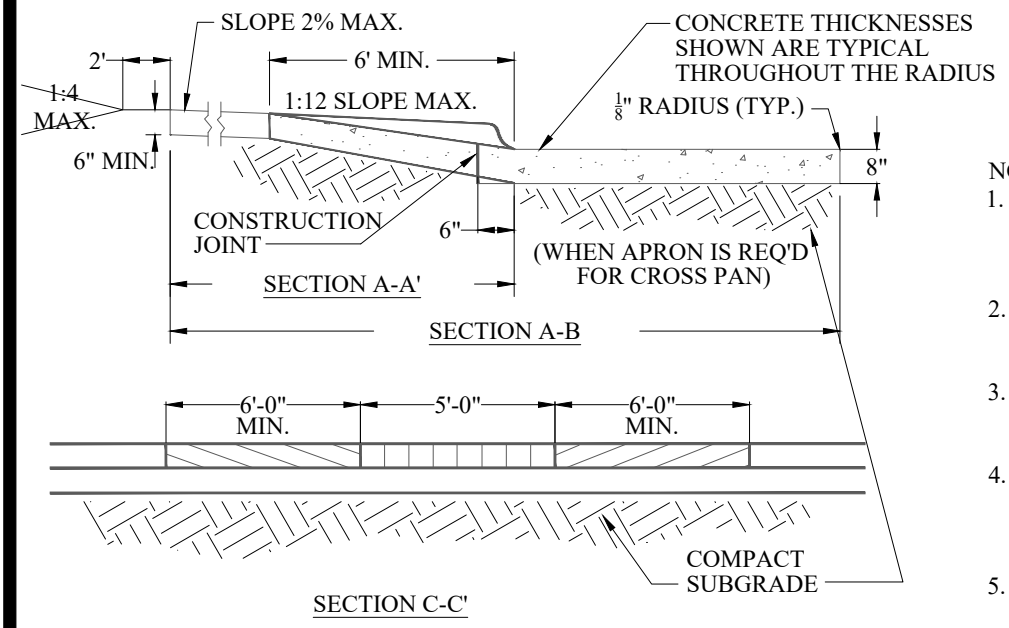
CURB RAMP DETAIL
DETACHED SIDEWALK
ADJOINING ATTACHED SIDEWALK

Scale: N.T.S | Detail No. S-12 | May 2019



3-D VIEW

PLAN VIEW



SECTION C-C'

NOTES:

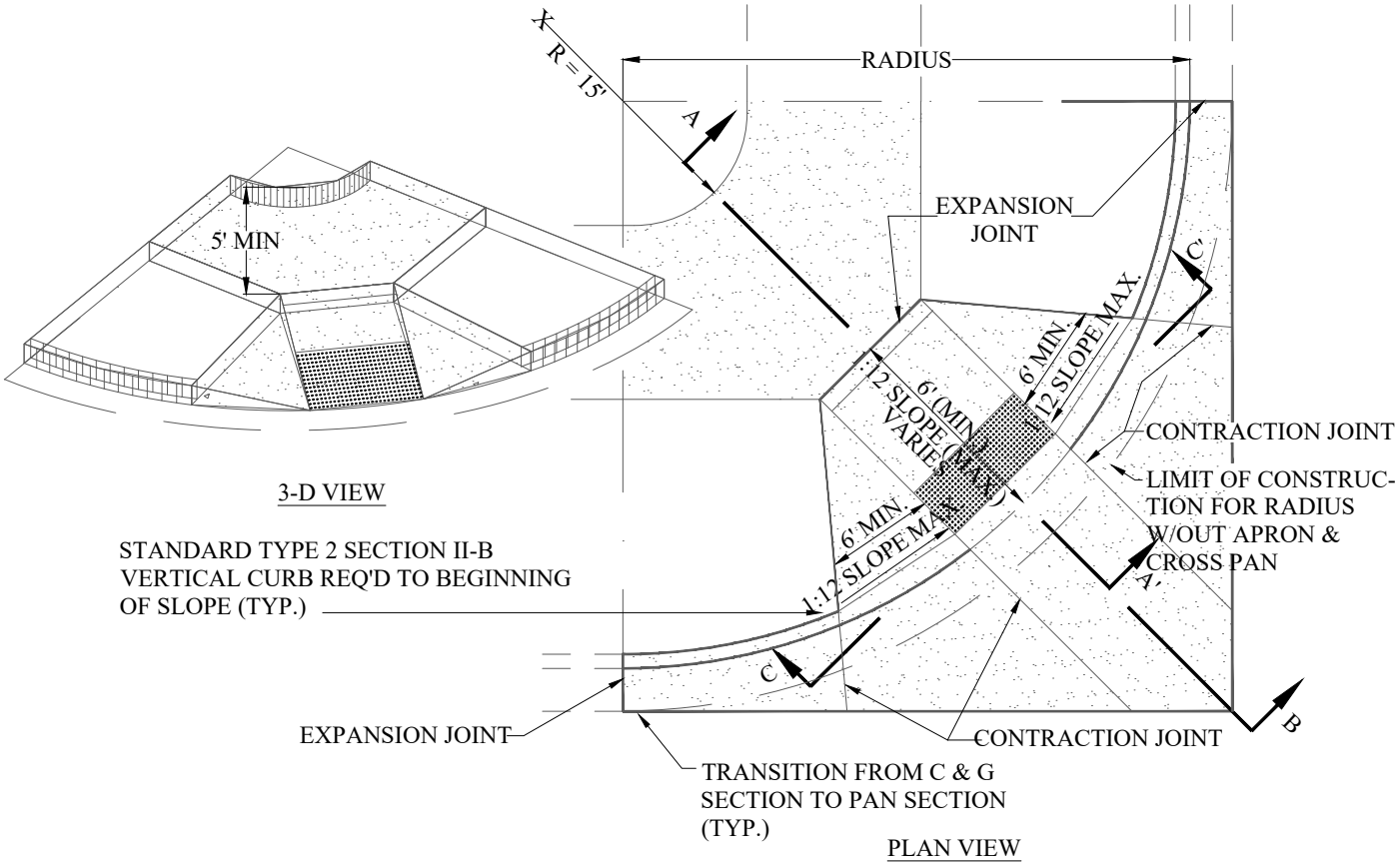
1. THE RAMP AREA SHALL RECEIVE A COARSER SURFACE TREATMENT THAN THE SIDEWALK.
2. 6" CONCRETE THICKNESS APPLIES TO RAMP, SIDE SLOPES & WALK AREAS.
3. CONSTRUCT CURB RAMPS AT ALL INTERSECTIONS.
4. CONCRETE SHOWN (EXCEPT FOR RAMPS AND WALKS) SHALL BE POURED MONOLITHICALLY.
5. CONCRETE SHALL BE 4500 PSI.

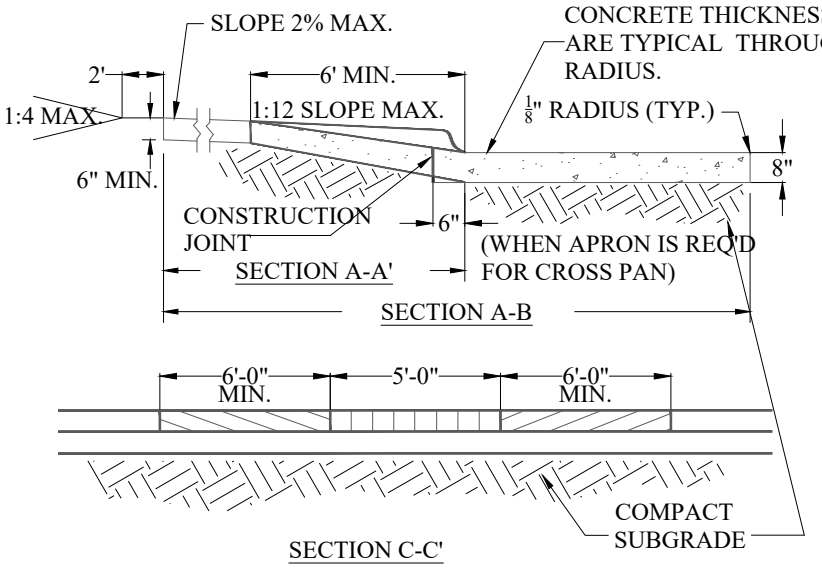
City of Evans, Colorado

Public Works Department

CURB RAMP DETAIL
ATTACHED SIDEWALK

Scale: N.T.S | Detail No. S-13 | May 2019





NOTES:

1. THE RAMP AREA SHALL RECEIVE A COARSER SURFACE TREATMENT THAN THE SIDEWALK.
2. 6" CONCRETE THICKNESS APPLIES TO RAMP AND SIDE SLOPE AREAS.
3. CONSTRUCT CURB RAMPS AT ALL INTERSECTIONS.
4. CONCRETE SHOWN (EXCEPT FOR RAMPS AND WALKS), SHALL BE POURED MONOLITHICALLY.
5. CONCRETE SHALL BE 4500 PSI.

City of Evans, Colorado

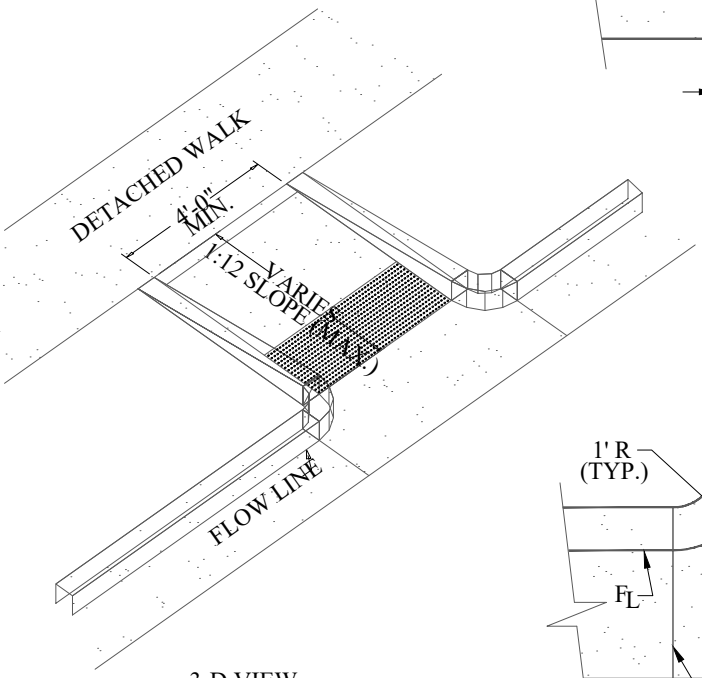
Public Works Department

CURB RAMP DETAIL

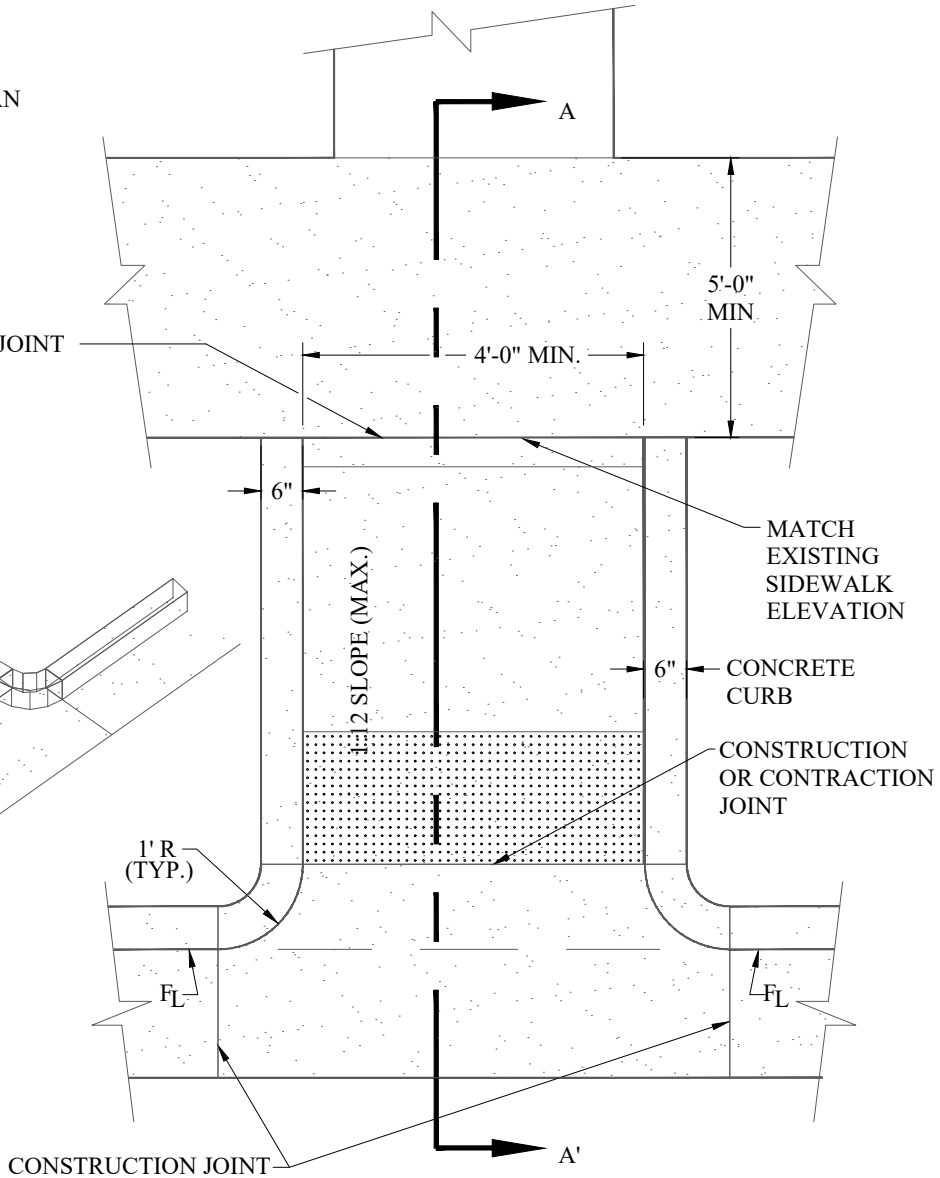
DETACHED SIDEWALK - STREET CORNER

Scale: N.T.S | Detail No. S-14 | May 2019

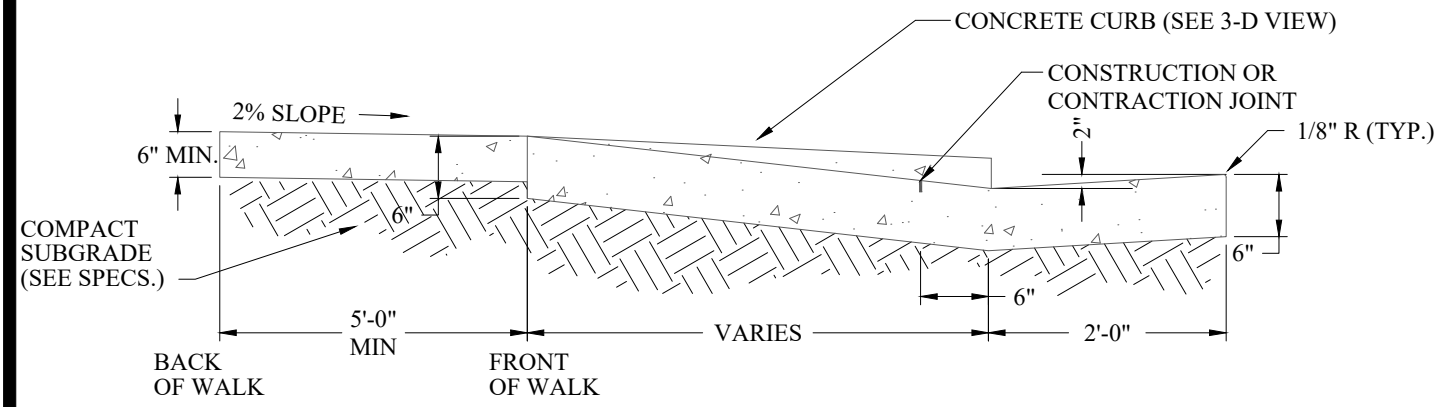
NOTES:
1. THE RAMP AREA SHALL RECEIVE A COARSER SURFACE TREATMENT THAN THE SIDEWALK.



3-D VIEW



PLAN VIEW

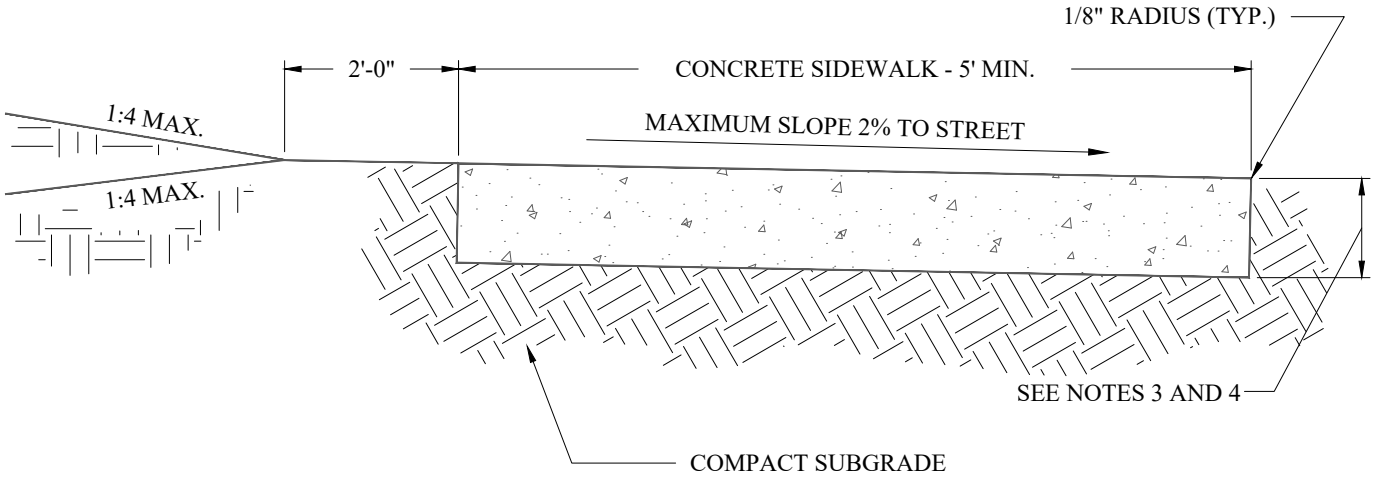


SECTION A-A'

City of Evans, Colorado
Public Works Department

CURB RAMP DETAIL
DETACHED SIDEWALK

Scale: N.T.S | Detail No. S-15 | May 2019



NOTES:

1. EXPANSION JOINTS REQUIRED AT 400' SPACING. ADDITIONAL JOINTS MAY BE REQUIRED AT THE DISCRETION OF THE CITY. WHEN CONCRETE IS PLACED BY MACHINE, EXPANSION JOINTS ARE ONLY REQUIRED AT THE BEGINNING AND AT THE END OF THE POUR. SEE DETAIL No. S-4

2. MAXIMUM SPACING OF CONTRACTION JOINTS - 10'.

3. THE SIDEWALK THICKNESS SHALL BE A MINIMUM OF 6".

4. AT ALLEYS, COMMERCIAL DRIVEWAYS, AND OIL/GAS ACCESS POINTS, THE SIDEWALK THICKNESS SHALL BE INCREASED TO 8".

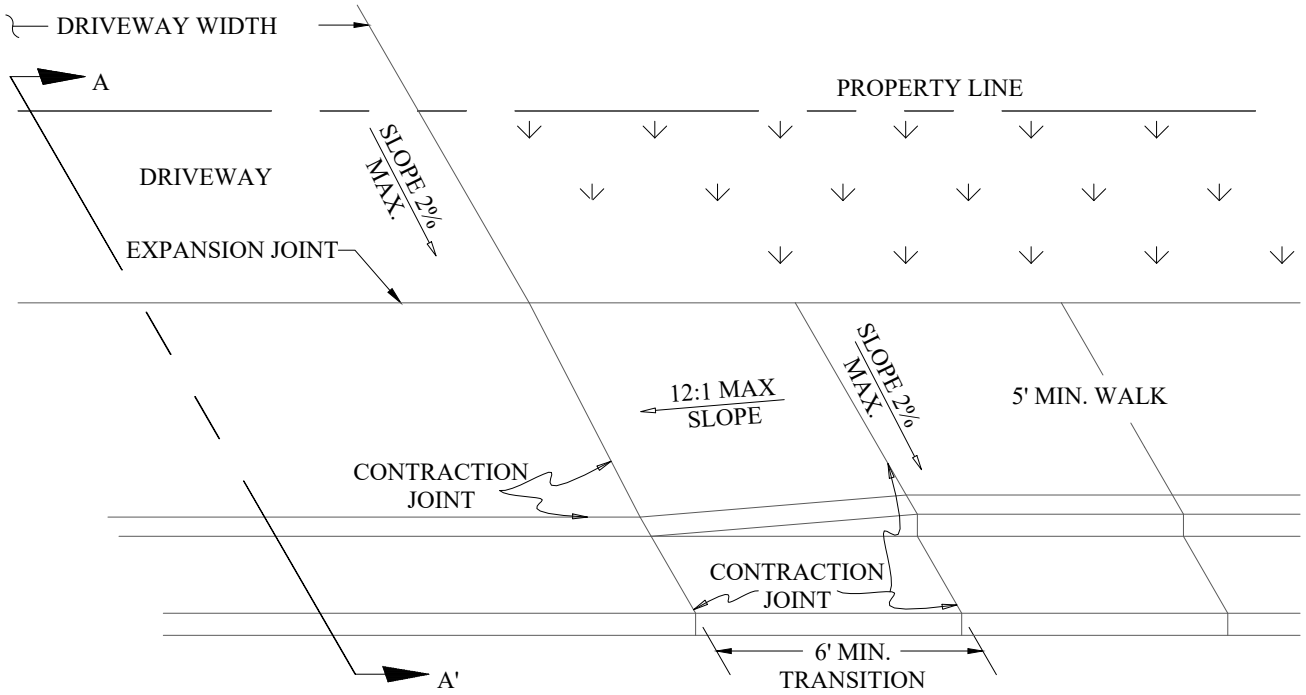
5. CONCRETE SHALL BE 4500 PSI.

City of Evans, Colorado

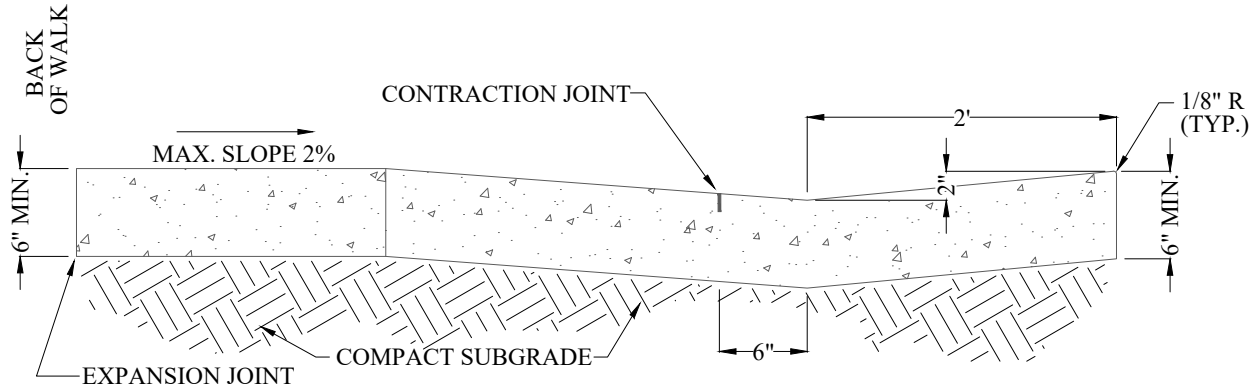
Public Works Department

DETACHED SIDEWALK DETAIL

Scale: N.T.S | Detail No. S-16 | May 2019



PERSPECTIVE VIEW



SECTION A-A'

NOTES:

1. CONTRACTION JOINTS ARE REQUIRED AT EACH END OF WARPED SECTION & SHOULD BE EVENLY SPACED.
2. APPLY BROOM FINISH TO SURFACE.
3. DRIVEWAY SECTION, INCLUDING TRANSITION, SHALL BE 6" THICK ON ALL RESIDENTIAL, MULTIFAMILY RESIDENTIAL, AND 8" THICK ON ALL COMMERCIAL, INDUSTRIAL, AND ALLEY DRIVEWAYS, AND OIL/GAS ACCESS POINTS.
4. DRIVEWAY WIDTHS: 10' (MIN.) & 20'(MAX.)
5. DRIVEWAY WIDTHS FOR COMMERCIAL/ INDUSTRIAL AREAS AS APPROVED BY THE CITY.
6. SHOW DIMENSIONS OF DRIVEWAY ON DETAILED CONSTRUCTION PLANS.
7. RETROFIT DRIVE APPROACHES SHALL MATCH EXISTING CONDITIONS, EXCEPT CONCRETE THICKNESSES SHALL CONFORM TO THIS DETAIL.

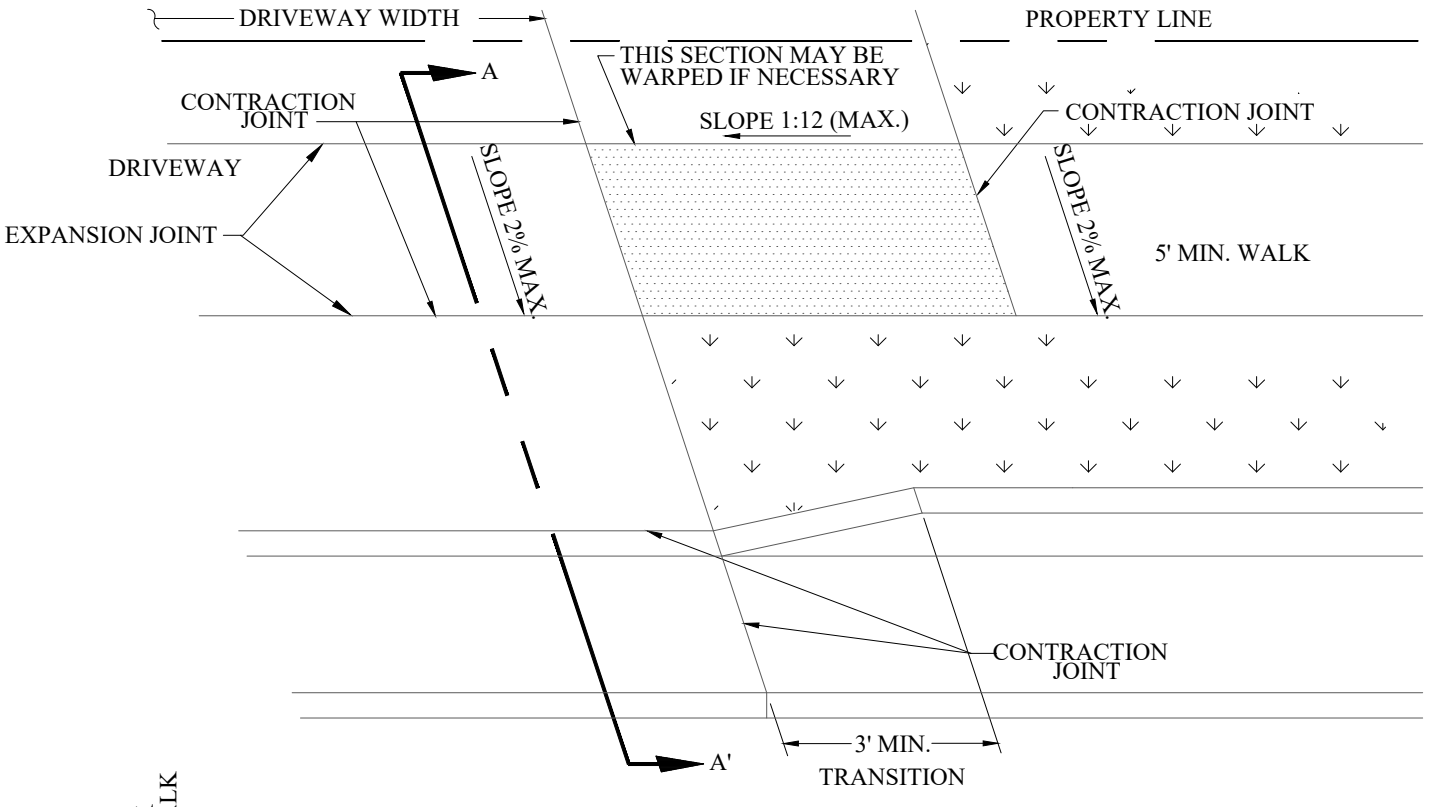
City of Evans, Colorado

Public Works Department

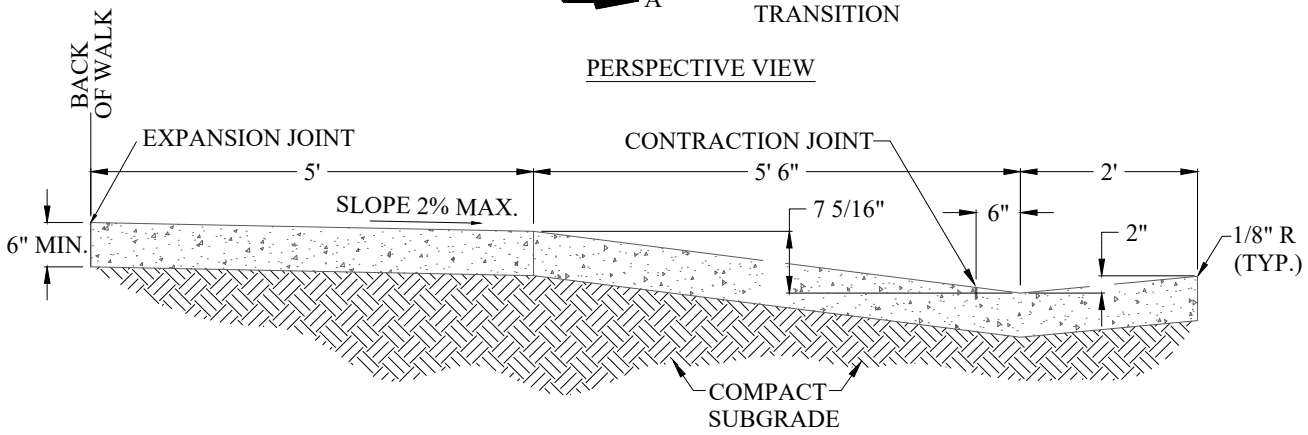
DRIVEWAY APPROACH DETAIL ATTACHED SIDEWALK

FOR VERTICAL CURB & GUTTER

Scale: N.T.S | Detail No. S-17 | May 2019



PERSPECTIVE VIEW



SECTION A-A'

NOTES:

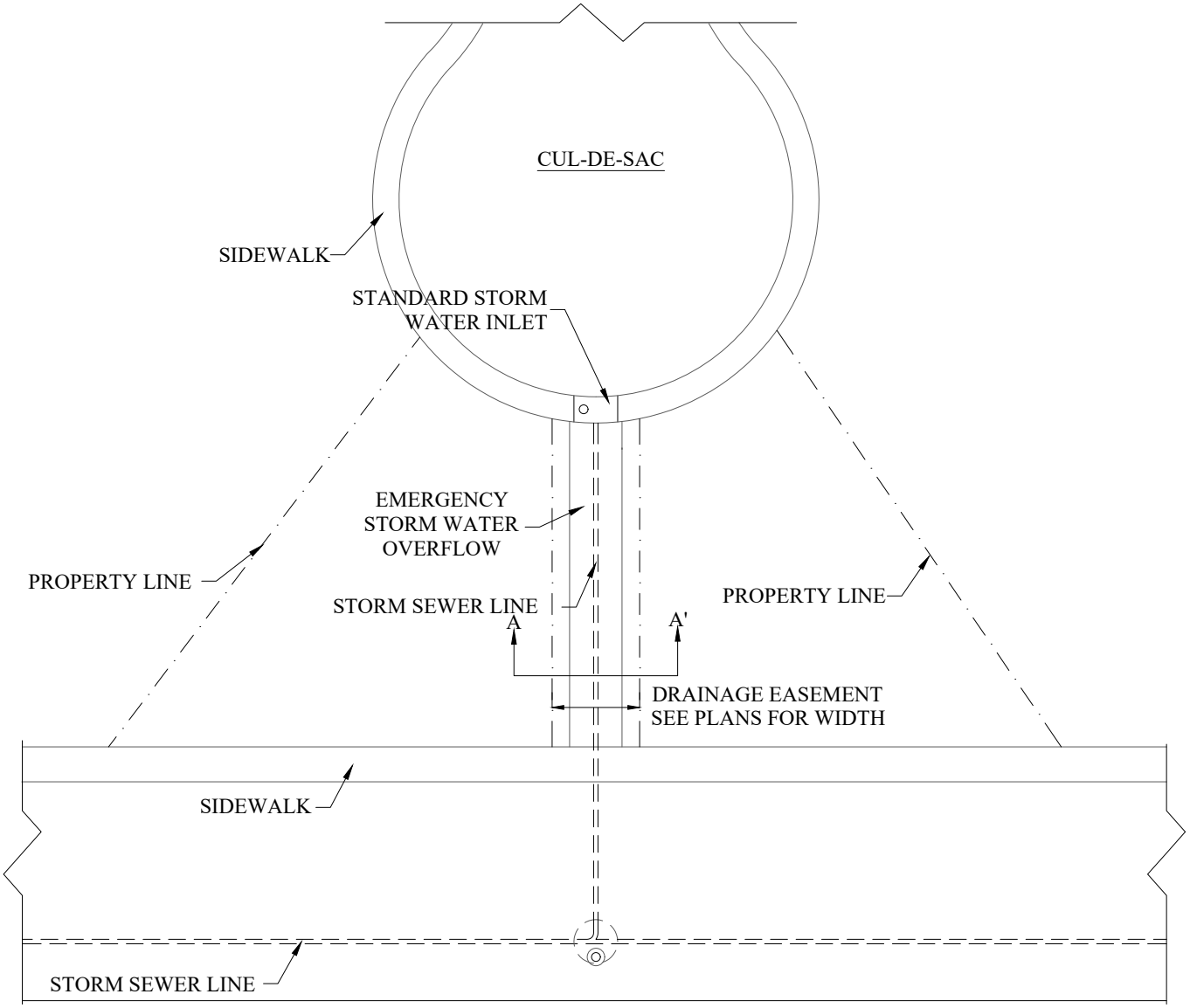
1. CONTRACTION JOINTS ARE REQUIRED AT EACH END OF RAMPED SECTION & SHOULD BE EVENLY SPACED.
2. APPLY BROOM FINISH TO SURFACE.
3. DRIVEWAY SECTION SHALL BE 6" THICK ON ALL RESIDENTIAL, MULTIFAMILY RESIDENTIAL, & 8" THICK ON ALL COMMERCIAL, INDUSTRIAL & ALLEY DRIVEWAYS.
4. DRIVEWAY WIDTHS: 10' (MIN.) & 20'(MAX.)
5. DRIVEWAY WIDTHS FOR COMMERCIAL/ INDUSTRIAL AREAS AS APPROVED BY THE CITY.
6. SHOW DIMENSIONS OF DRIVEWAY ON DETAILED CONSTRUCTION PLANS.
7. RETROFIT DRIVE APPROACHES SHALL MATCH EXISTING CONDITIONS EXCEPT CONCRETE THICKNESSES SHALL CONFORM TO THIS DETAIL.

City of Evans, Colorado

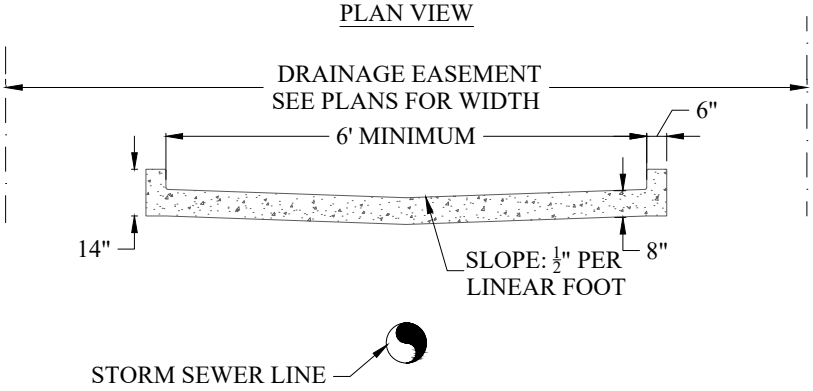
Public Works Department

DRIVEWAY APPROACH DETAIL DETACHED SIDEWALK FOR VERTICAL CURB & GUTTER

Scale: N.T.S | Detail No. S-18 | May 2019



PLAN VIEW



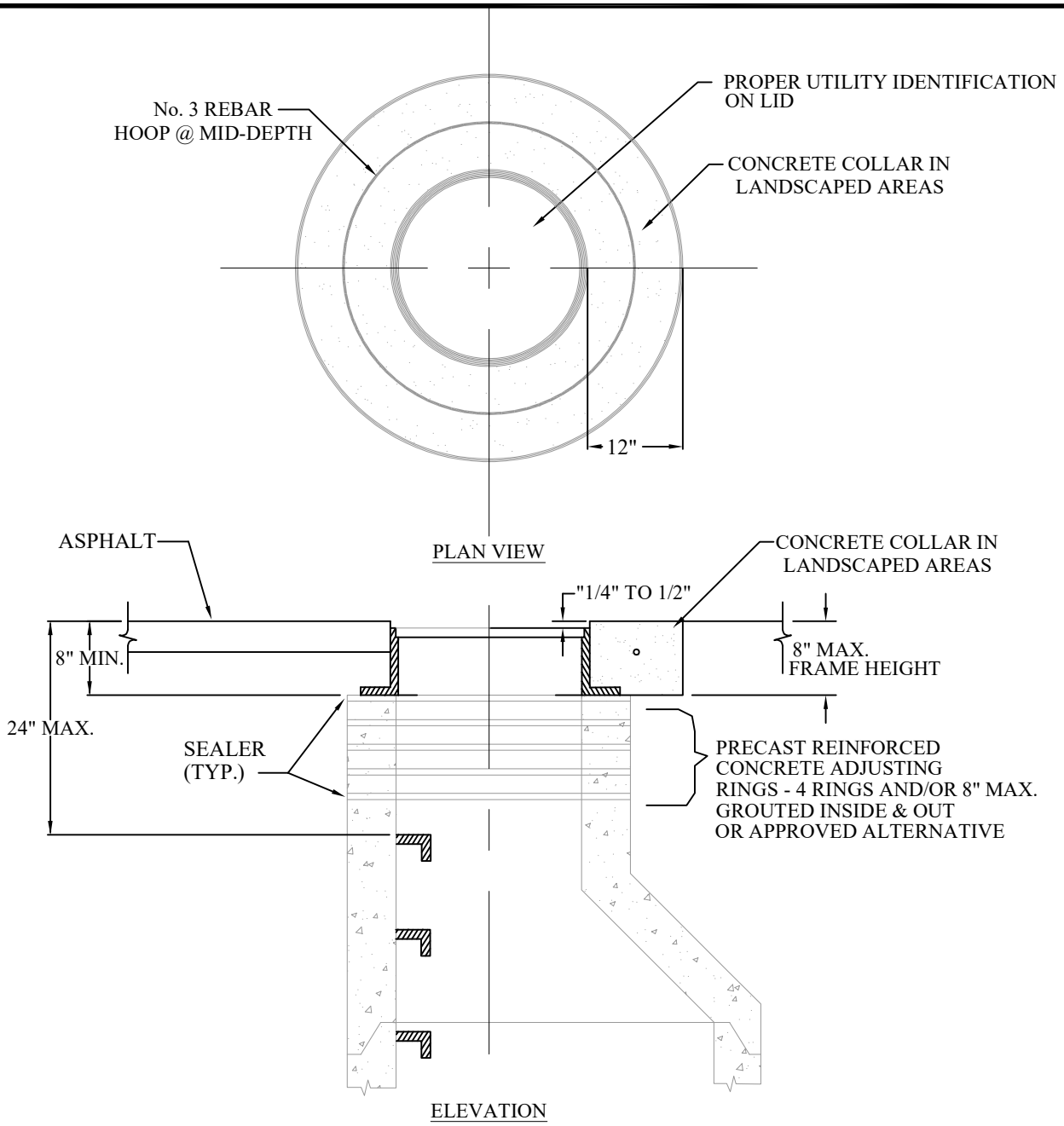
SECTION A-A'

City of Evans, Colorado

Public Works Department

EMERGENCY STORM WATER OVERFLOW STRUCTURE DETAIL

Scale: N.T.S | Detail No. S-19 | May 2019



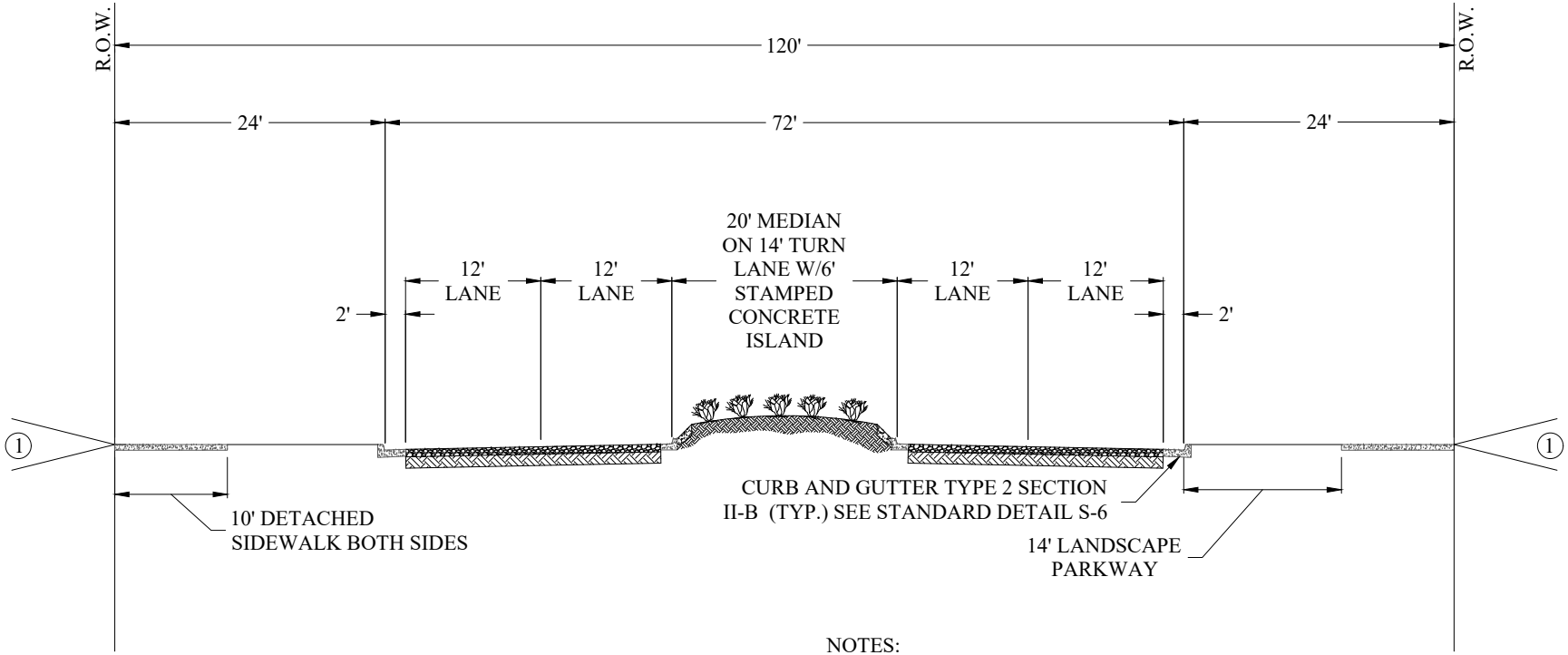
NOTES:

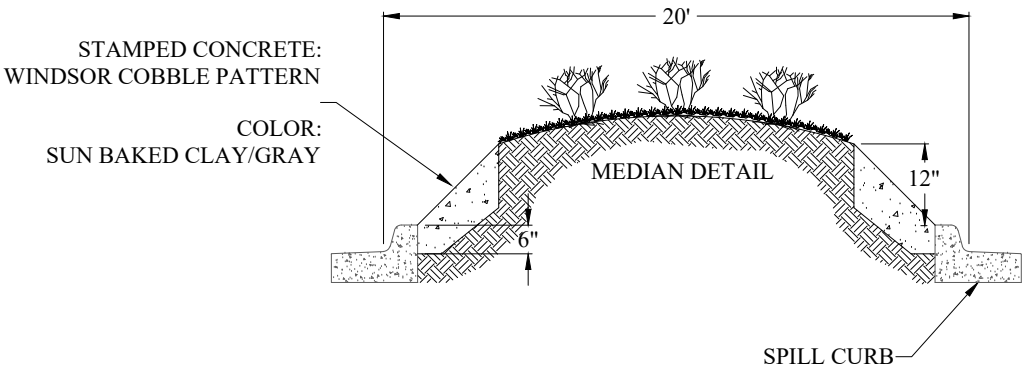
1. A SEALER SHALL BE USED BETWEEN ALL ADJUSTING RINGS AS REQUIRED.
2. DROP-IN RISER RINGS NOT ALLOWED.
3. SET & TILT RING & COVER TO MATCH SLOPE OF FINISHED STREET.
4. ALL CONCRETE SHALL BE MIN. 4500 PSI.

City of Evans, Colorado
Public Works Department

MANHOLE RAISING DETAIL

Scale: N.T.S | Detail No. S-20 | May 2019





NOTES:

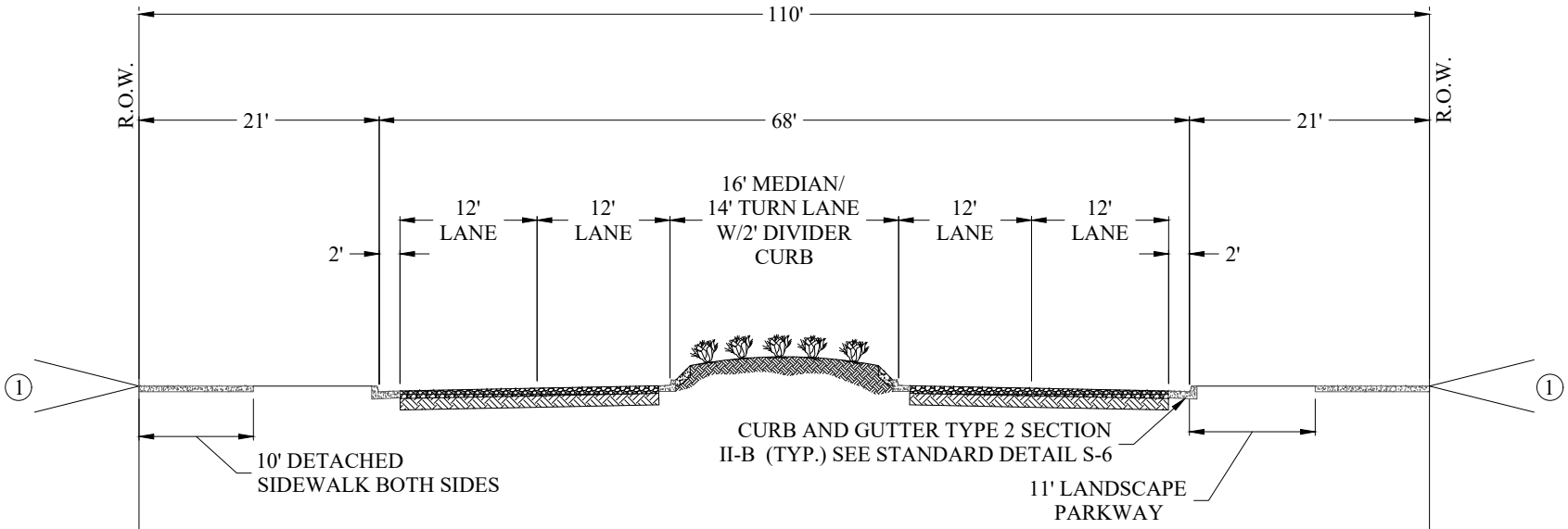
1. CUT AND FILL SLOPES SHALL BE A MAXIMUM OF 4:1.
2. RIGHT OF WAY AND EASEMENT AREAS SHALL BE GRADED (CUT & FILL) TO SUBGRADE ± 6" AT UTILITY LOCATIONS, INCLUDING SERVICES, PRIOR TO UTILITY INSTALLATION.
3. STANDARD CROWN SLOPE IS 2%. WITH SPECIAL DESIGN REVIEW, 1% TO 4% IS ALLOWABLE AT TRANSITION AND OTHER ATYPICAL SECTIONS.
4. LANDSCAPED PARKWAY OF EITHER MAINTAINED TURF OR XERISCAPE IS REQUIRED.
5. NO PARKING SIGNS REQUIRED, BOTH SIDES OF STREET.

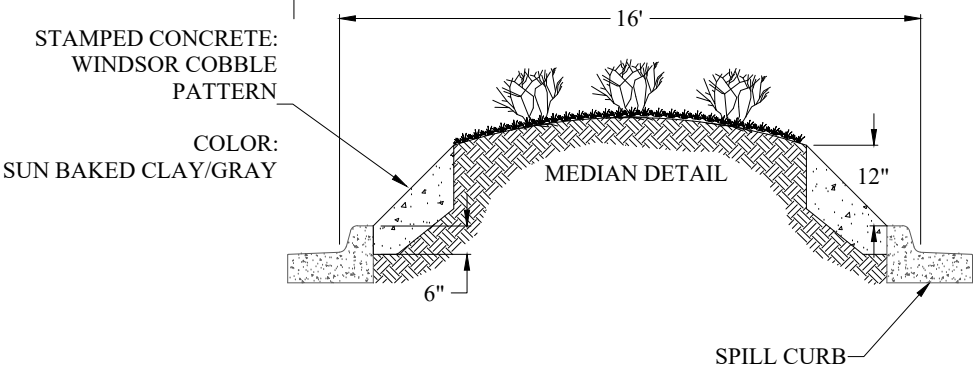
City of Evans, Colorado

Public Works Department

ROADWAY SECTION DETAIL
GATEWAY ARTERIAL

Scale: N.T.S | Detail No. S-21 | May 2019





NOTES:

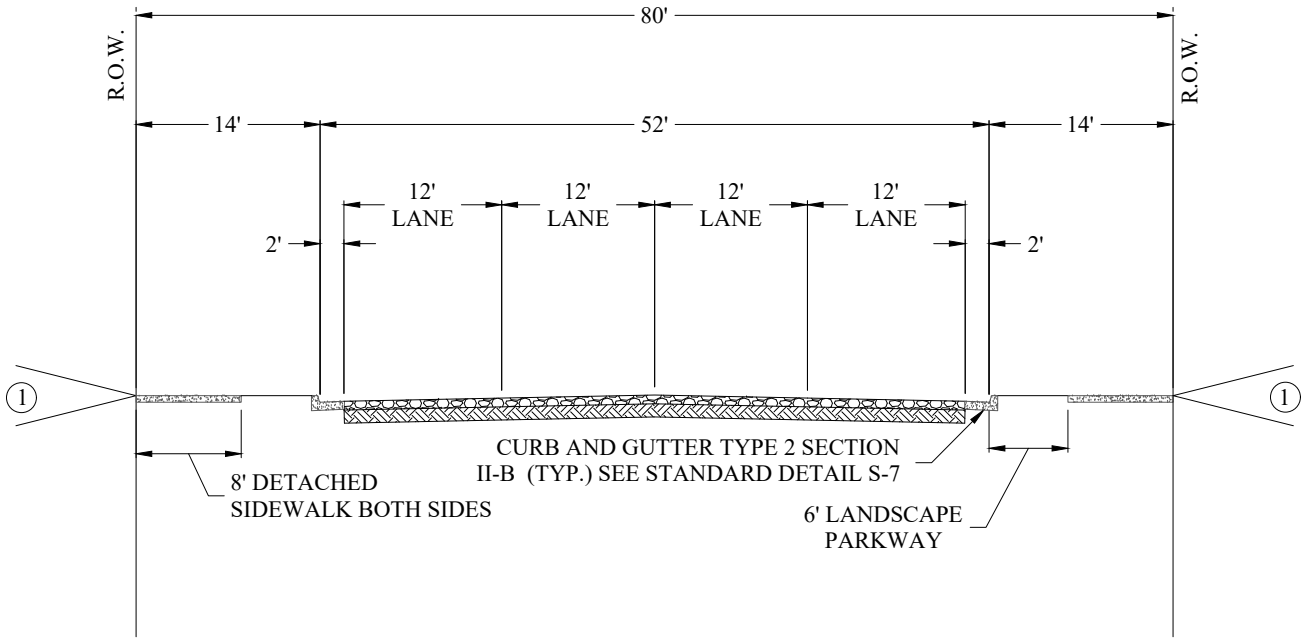
1. CUT AND FILL SLOPES SHALL BE A MAXIMUM OF 4:1.
2. RIGHT OF WAY AND EASEMENT AREAS SHALL BE GRADED (CUT & FILL) TO SUBGRADE ± 6" AT UTILITY LOCATIONS, INCLUDING SERVICES, PRIOR TO UTILITY INSTALLATION.
3. STANDARD CROWN SLOPE IS 2%. WITH SPECIAL DESIGN REVIEW, 1% TO 4% IS ALLOWABLE AT TRANSITION AND OTHER ATYPICAL SECTIONS.
4. LANDSCAPED PARKWAY OF EITHER MAINTAINED TURF OR XERISCAPE IS REQUIRED.
5. NO PARKING SIGNS REQUIRED, BOTH SIDES OF STREET.

City of Evans, Colorado

Public Works Department

ROADWAY SECTION DETAIL
ARTERIAL

Scale: N.T.S | Detail No. S-22 | May 2019



NOTES:

1. CUT AND FILL SLOPES SHALL BE A MAXIMUM OF 4:1.

2. RIGHT OF WAY AND EASEMENT AREAS SHALL BE GRADED (CUT & FILL) TO SUBGRADE ± 6" AT UTILITY LOCATIONS, INCLUDING SERVICES, PRIOR TO UTILITY INSTALLATION.

3. STANDARD CROWN SLOPE IS 2%. WITH SPECIAL DESIGN REVIEW, 1% TO 4% IS ALLOWABLE AT TRANSITION AND OTHER ATYPICAL SECTIONS.

4. LANDSCAPED PARKWAY OF EITHER MAINTAINED TURF OR XERISCAPE IS REQUIRED.

5. NO PARKING SIGNS REQUIRED, BOTH SIDES OF STREET.

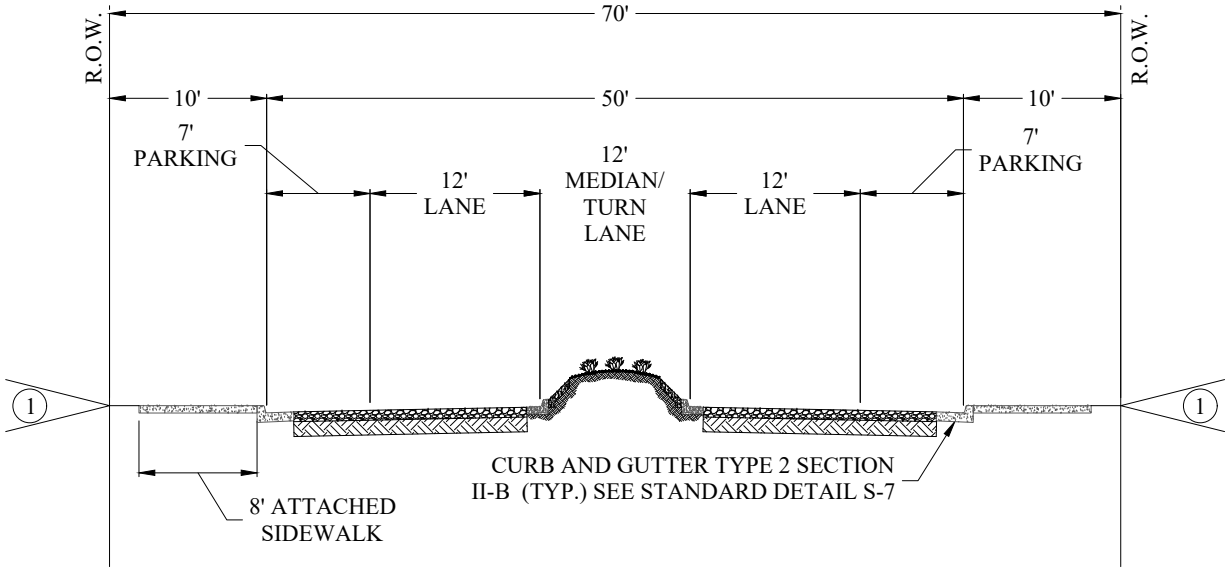
6. ALLOW FOR 6' BIKE LANE ON EACH SIDE WHERE APPROPRIATE.

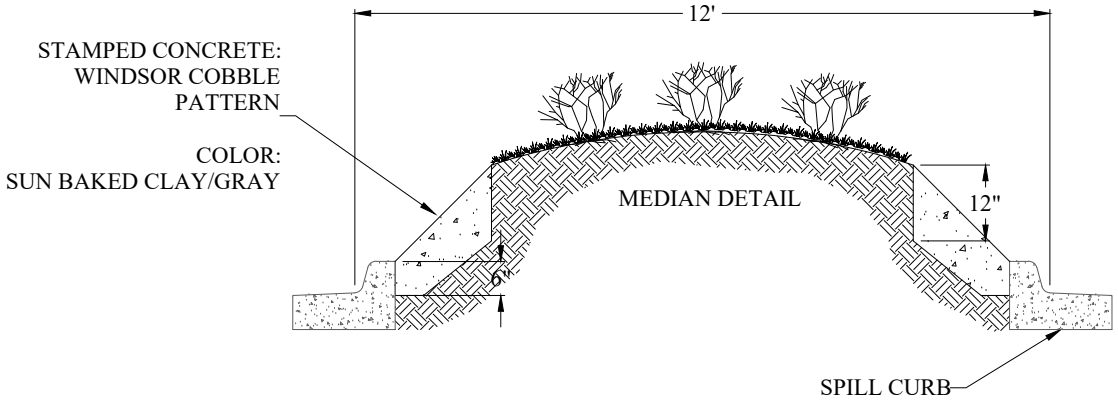
City of Evans, Colorado

Public Works Department

ROADWAY SECTION DETAIL
MAJOR COLLECTOR

Scale: N.T.S | Detail No. S-23 | May 2019





NOTES:

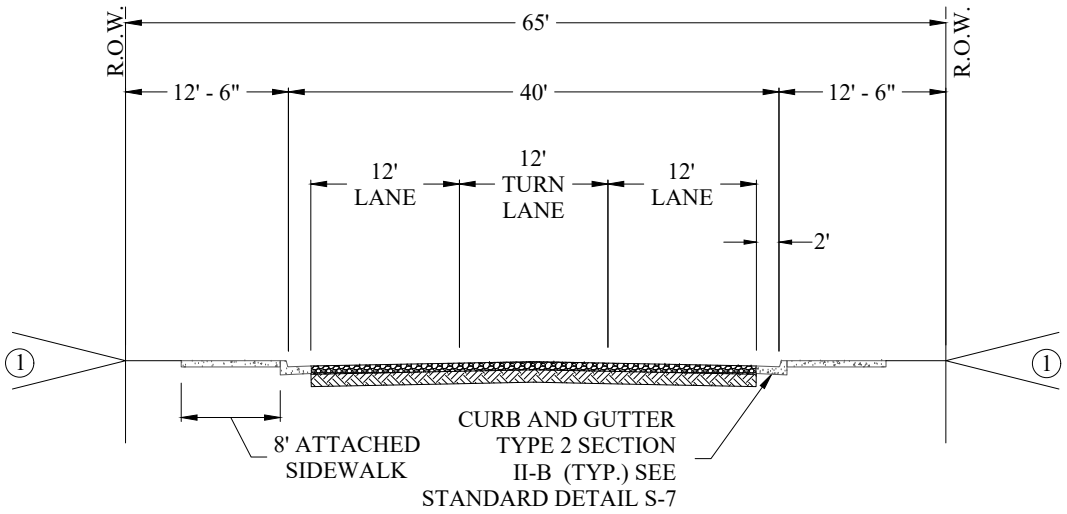
1. CUT AND FILL SLOPES SHALL BE A MAXIMUM OF 4:1
2. RIGHT OF WAY AND EASEMENT AREAS SHALL BE GRADED (CUT & FILL) TO SUBGRADE ± 6" AT UTILITY LOCATIONS, INCLUDING SERVICES, PRIOR TO UTILITY INSTALLATION
3. STANDARD CROWN SLOPE IS 2%. WITH SPECIAL DESIGN REVIEW, 1% TO 4% IS ALLOWABLE AT TRANSITION AND OTHER ATYPICAL SECTIONS
4. LANDSCAPED PARKWAY OF EITHER MAINTAINED TURF OR XERISCAPE IS REQUIRED

City of Evans, Colorado

Public Works Department

ROADWAY SECTION DETAIL
COMMERCIAL COLLECTOR

Scale: N.T.S | Detail No. S-24 | May 2019



NOTES:

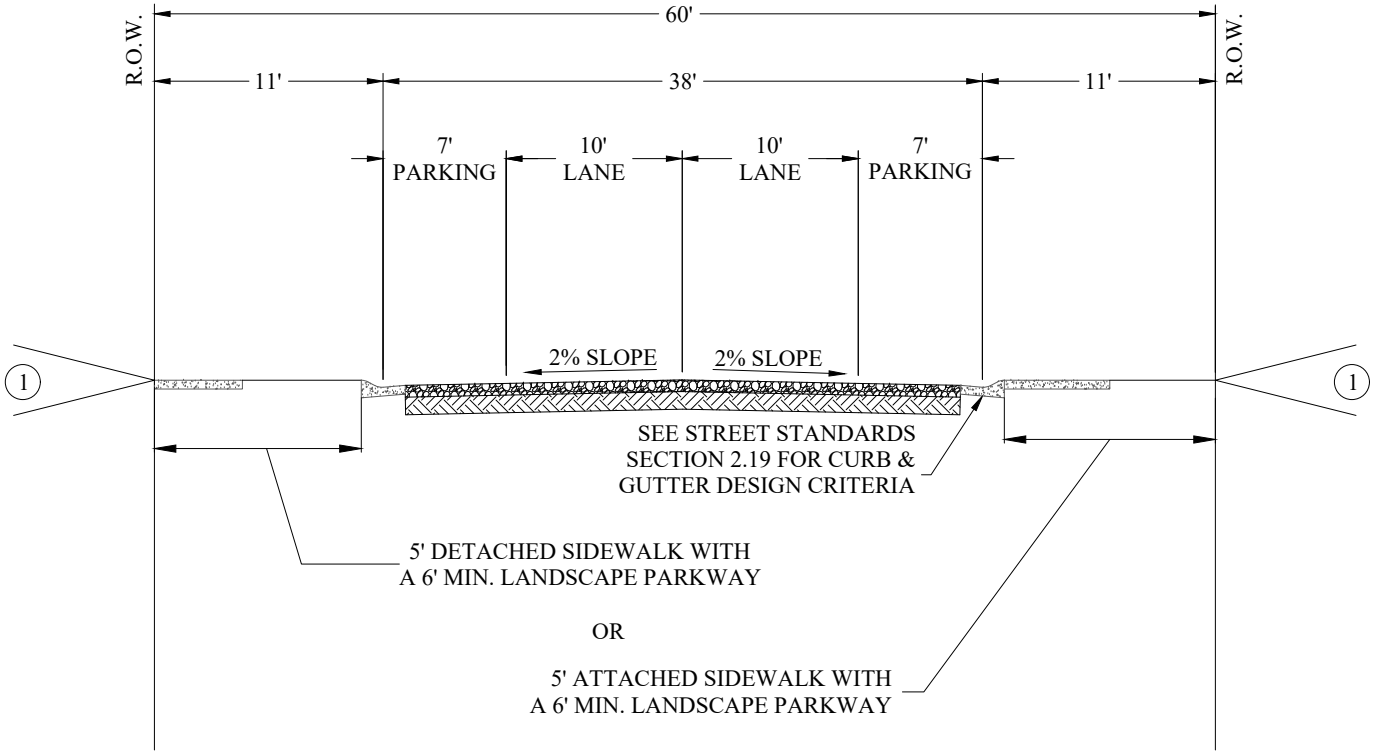
1. CUT AND FILL SLOPES SHALL BE A MAXIMUM OF 4:1.
2. RIGHT OF WAY AND EASEMENT AREAS SHALL BE GRADED (CUT & FILL) TO SUBGRADE ± 6" AT UTILITY LOCATIONS, INCLUDING SERVICES, PRIOR TO UTILITY INSTALLATION.
3. STANDARD CROWN SLOPE IS 2%. WITH SPECIAL DESIGN REVIEW, 1% TO 4% IS ALLOWABLE AT TRANSITION AND OTHER ATYPICAL SECTIONS.
4. LANDSCAPED PARKWAY OF EITHER MAINTAINED TURF OR XERISCAPE IS REQUIRED.
5. NO PARKING SIGNS REQUIRED, BOTH SIDES OF STREET.

City of Evans, Colorado

Public Works Department

ROADWAY SECTION DETAIL
MINOR COLLECTOR

Scale: N.T.S | Detail No. S-25 | May 2019



NOTES:

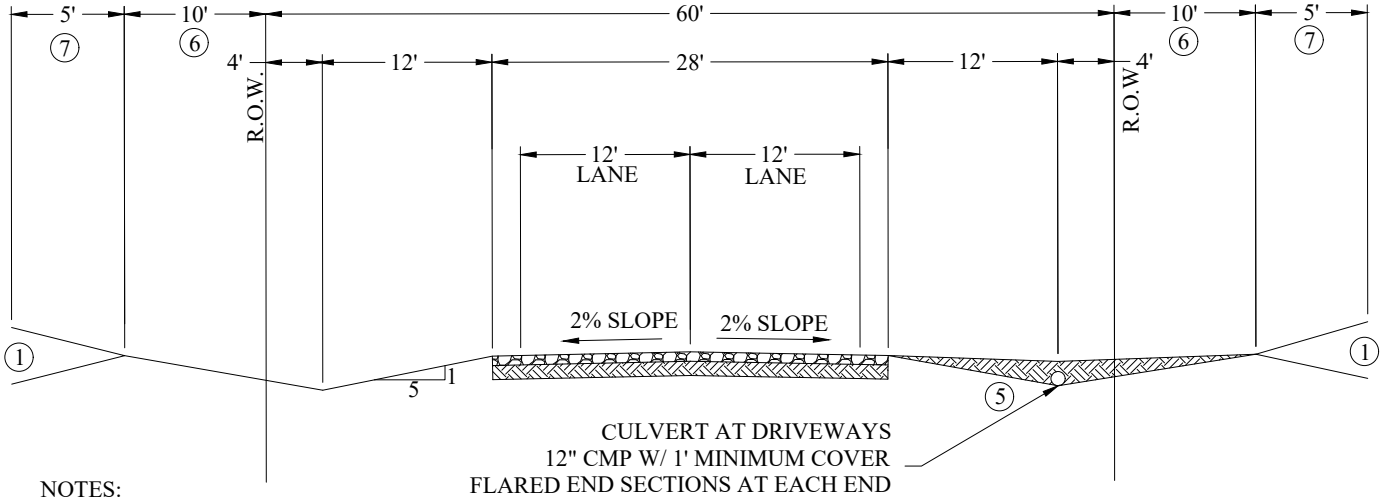
1. CUT AND FILL SLOPES SHALL BE A MAXIMUM OF 4:1.
2. RIGHT-OF-WAY AND EASEMENT AREAS SHALL BE GRADED (CUT & FILL) TO SUBGRADE ± 6" AT UTILITY LOCATIONS, INCLUDING SERVICES, PRIOR TO UTILITY INSTALLATION.
3. STANDARD CROWN SLOPE IS 2%. WITH SPECIAL DESIGN REVIEW, 1% TO 4% IS ALLOWABLE AT TRANSITION AND OTHER ATYPICAL SECTIONS.

City of Evans, Colorado

Public Works Department

ROADWAY SECTION DETAIL
LOCAL

Scale: N.T.S | Detail No. S-26 | May 2019



NOTES:

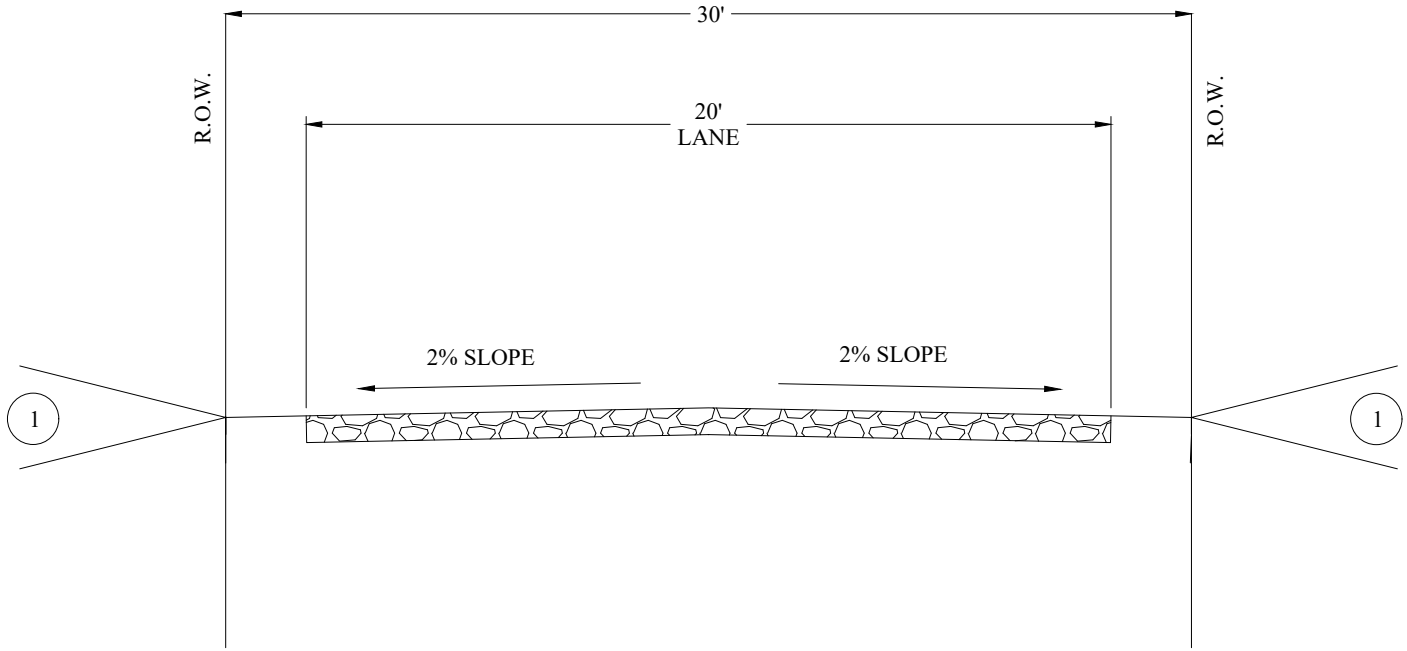
1. CUT AND FILL SLOPES SHALL BE A MAXIMUM OF 4:1.
2. RIGHT OF WAY AND EASEMENT AREAS SHALL BE GRADED (CUT & FILL) TO SUBGRADE ± 6" AT UTILITY LOCATIONS, INCLUDING SERVICES, PRIOR TO UTILITY INSTALLATION.
3. STANDARD CROWN SLOPE IS 2%. WITH SPECIAL DESIGN REVIEW, 1% TO 4% IS ALLOWABLE AT TRANSITION AND OTHER ATYPICAL SECTIONS.
4. DRAINAGE SWALES SHALL BE CONSTRUCTED ON EACH SIDE OF RIGHT OF WAY, AS SHOWN. MAXIMUM 5:1 SHOULDER SLOPE PERMITTED.
5. DRIVEWAY CROSSING PERMITTED AT APPROVED LOCATIONS ONLY. ALL CROSSINGS SHALL INCLUDE 12" CORRUGATED METAL PIPE (CMP) CULVERT WITH FLARED END SECTIONS ON EACH END. 12" MINIMUM COVER SHALL BE PLACED OVER CULVERT PIPE, AND DRIVEWAY SHALL BE GRADED TO PREVENT SURFACE FLOW DISCHARGE INTO THE STREET. ALL DRIVEWAYS AND CULVERTS ARE TO BE CONSTRUCTED AND MAINTAINED BY THE PROPERTY OWNER.
6. DRAINAGE EASEMENT REQUIRED, 10' MINIMUM.
7. UTILITY EASEMENT REQUIRED, 5' MINIMUM.
8. PERMITTED ONLY FOR RURAL AND LARGE LOT DEVELOPMENTS WITH LOT SIZES OF ONE ACRE OR GREATER.

City of Evans, Colorado

Public Works Department

ROADWAY SECTION DETAIL
RURAL LOCAL

Scale: N.T.S | Detail No. S-27 | May 2019



NOTES:

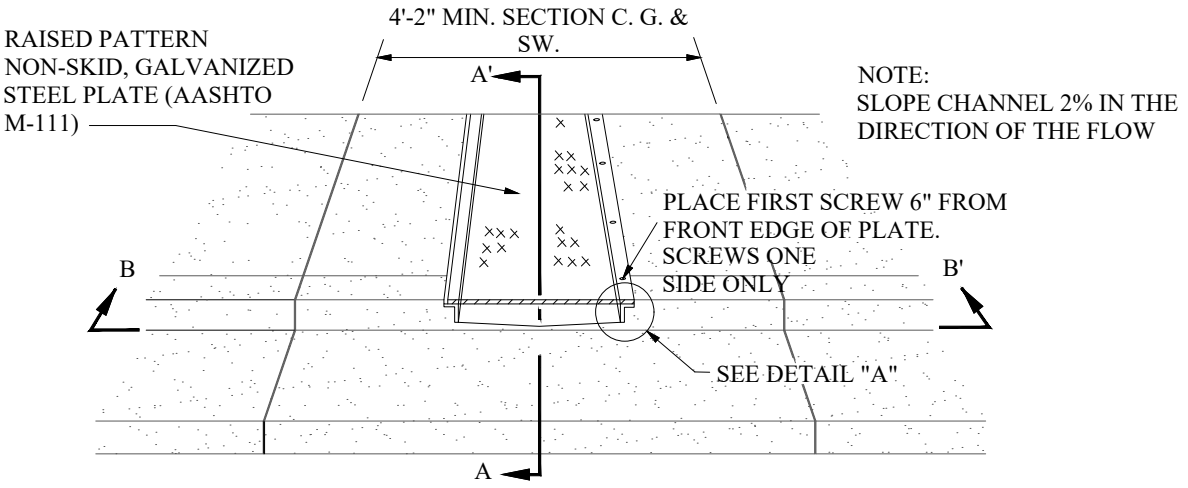
1. CUT AND FILL SLOPES SHALL BE A MAXIMUM OF 4:1.
2. RIGHT OF WAY AND EASEMENT AREAS SHALL BE GRADED (CUT & FILL) TO SUBGRADE ±6" AT UTILITY LOCATIONS, INCLUDING SERVICES, PRIOR TO UTILITY INSTALLATION.
3. STANDARD CROWN SLOPE IS 2%. WITH SPECIAL DESIGN REVIEW, 1% TO 4% IS ALLOWABLE AT TRANSITION AND OTHER ATYPICAL SECTIONS. INVERTED CROWN WITH CENTRAL VALLEY PAN MAY BE ALLOWED IF APPROVED BY THE CITY ENGINEER.
4. NO PARKING PERMITTED.
5. BITUMINOUS SURFACE COURSE REQUIRED.

City of Evans, Colorado

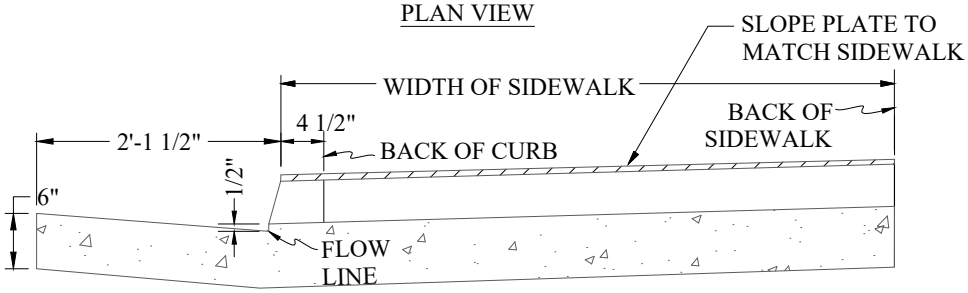
Public Works Department

ROADWAY SECTION DETAIL
ALLEY

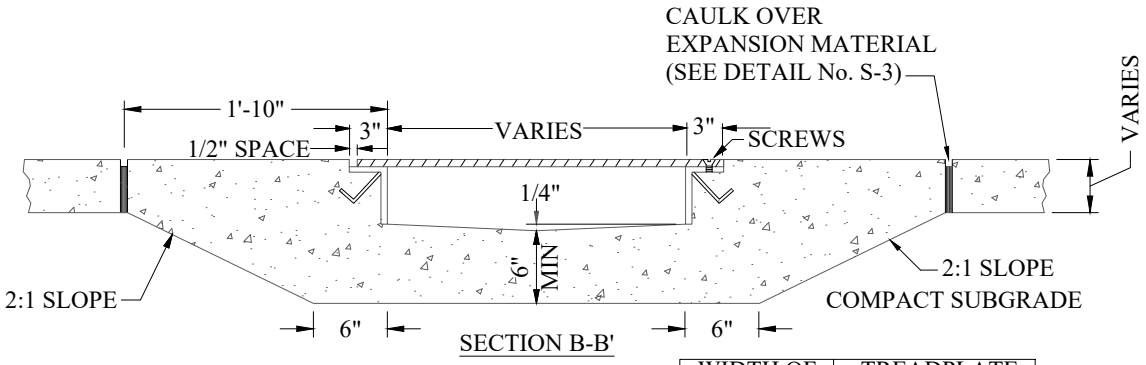
Scale: N.T.S | Detail No. S-28 | May 2019



PLAN VIEW

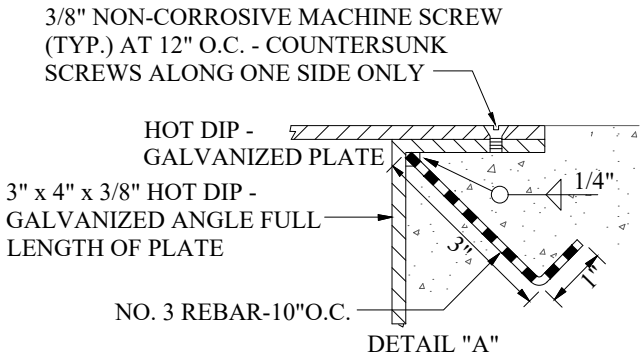


SECTION A-A'



SECTION B-B'

WIDTH OF OPENING	TREADPLATE THICKNESS
6"	3/8"
6"-12"	1/2"
12"-18"	9/16"
18"-24"	5/8"
>24"	SPECIAL DESIGN



DETAIL "A"

NOTES:

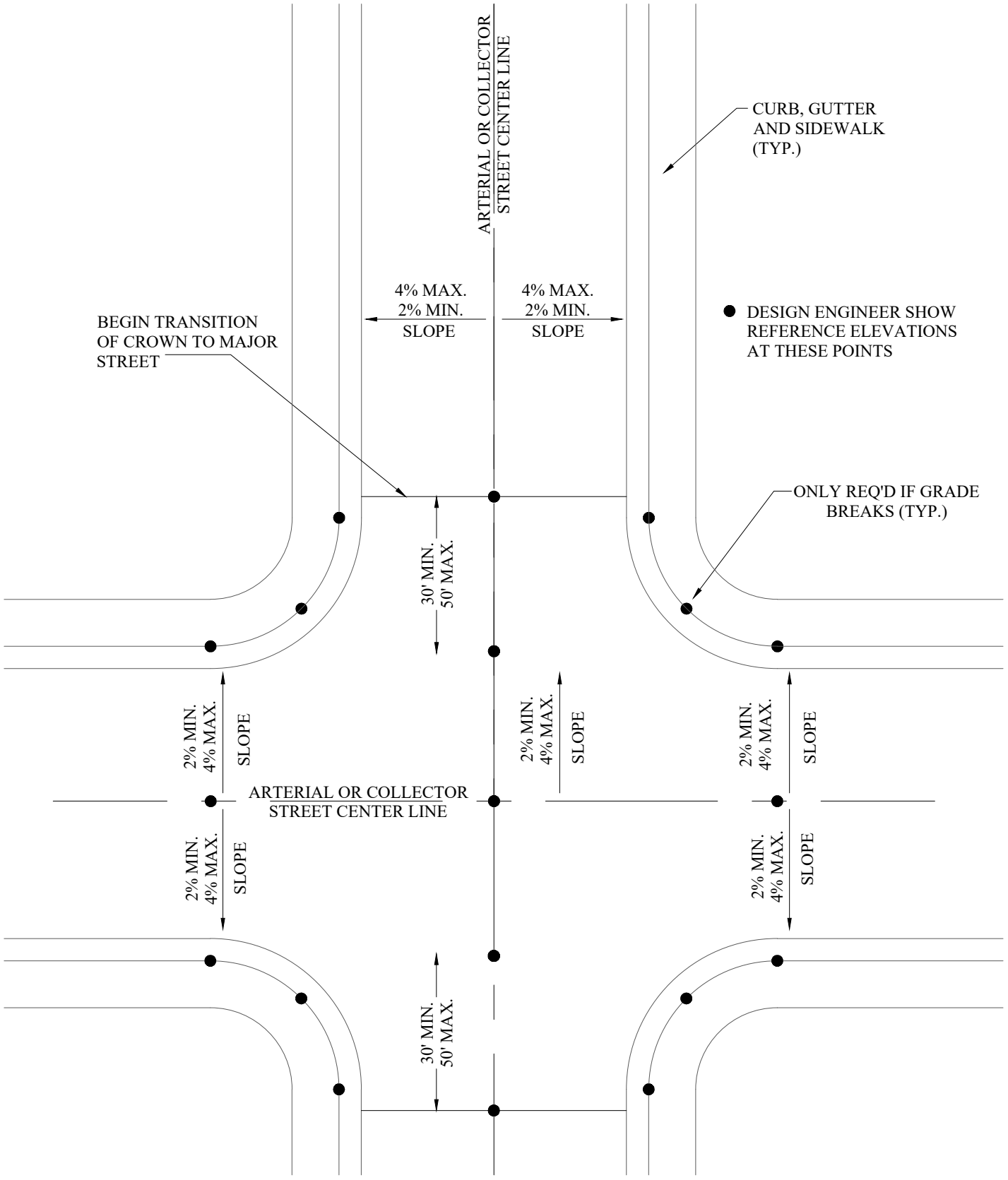
1. FOR TYPE 2 SECTION MS MODIFIED, TRANSITION (3' MIN.) TO TYPE 2 SECTION IIB FOR CHASE CONSTRUCTION.
2. WHEN THE CURB IS SEPARATED FROM THE SIDEWALK, THE STEEL PLATE SHALL BE PLACED ON THE SIDEWALK AND THE CONCRETE CHANNEL (WITH 6" THICK WALLS ON EACH SIDE) CONTINUED INTO THE CURB AND GUTTER.
3. NEENAH R-4999 SERIES BOLTED TRANSVERSE DRAINAGE STRUCTURE, SOLID CHECKERED TYPE D GRATE MAY BE SUBSTITUTED.

City of Evans, Colorado

Public Works Department

SIDEWALK CHASE DETAIL

Scale: N.T.S | Detail No. S-29 | May 2019

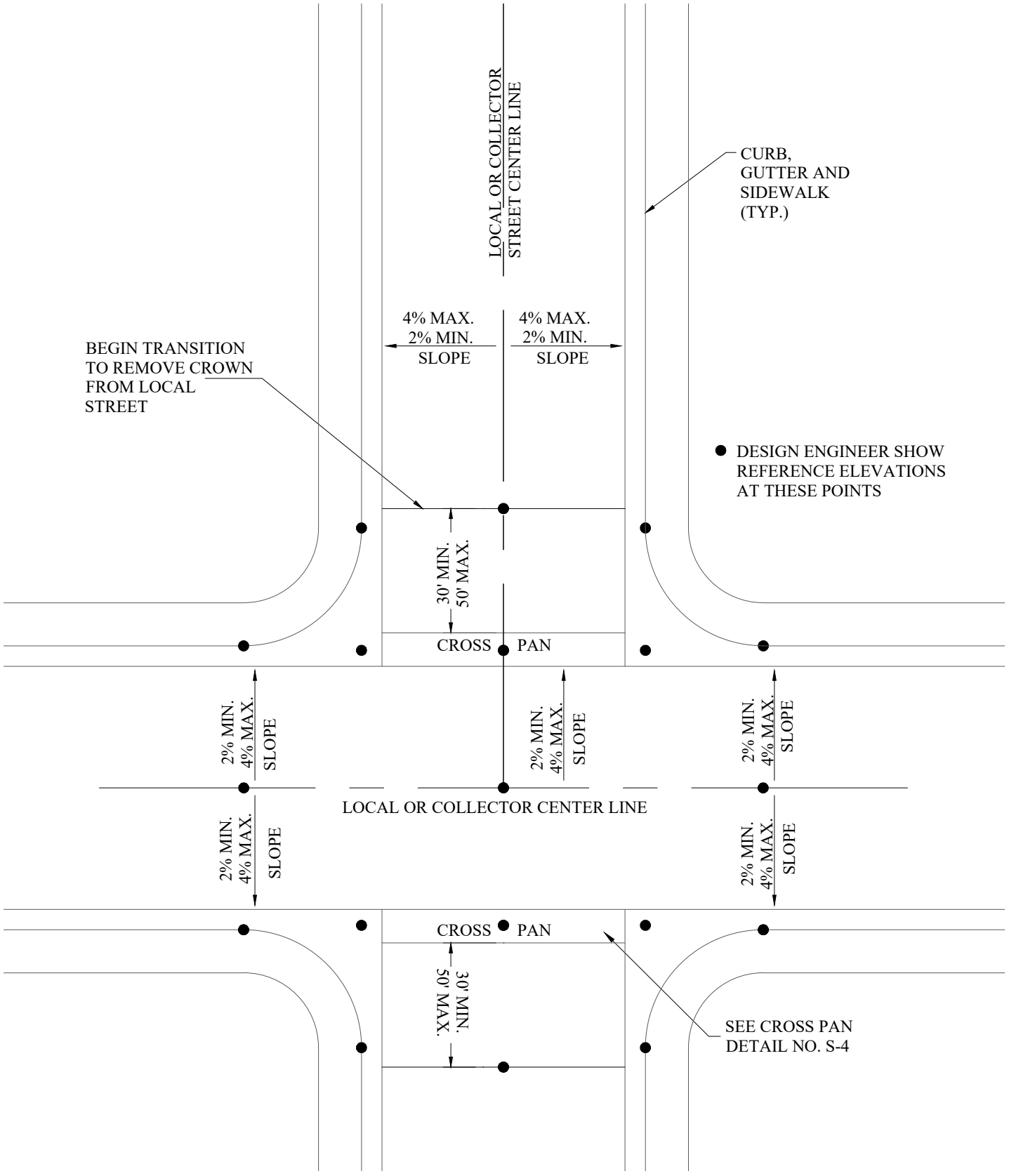


City of Evans, Colorado

Public Works Department

STREET INTERSECTION APPROACH DETAIL
COLLECTOR & ARTERIAL

Scale: N.T.S | Detail No. S-30 | May 2019

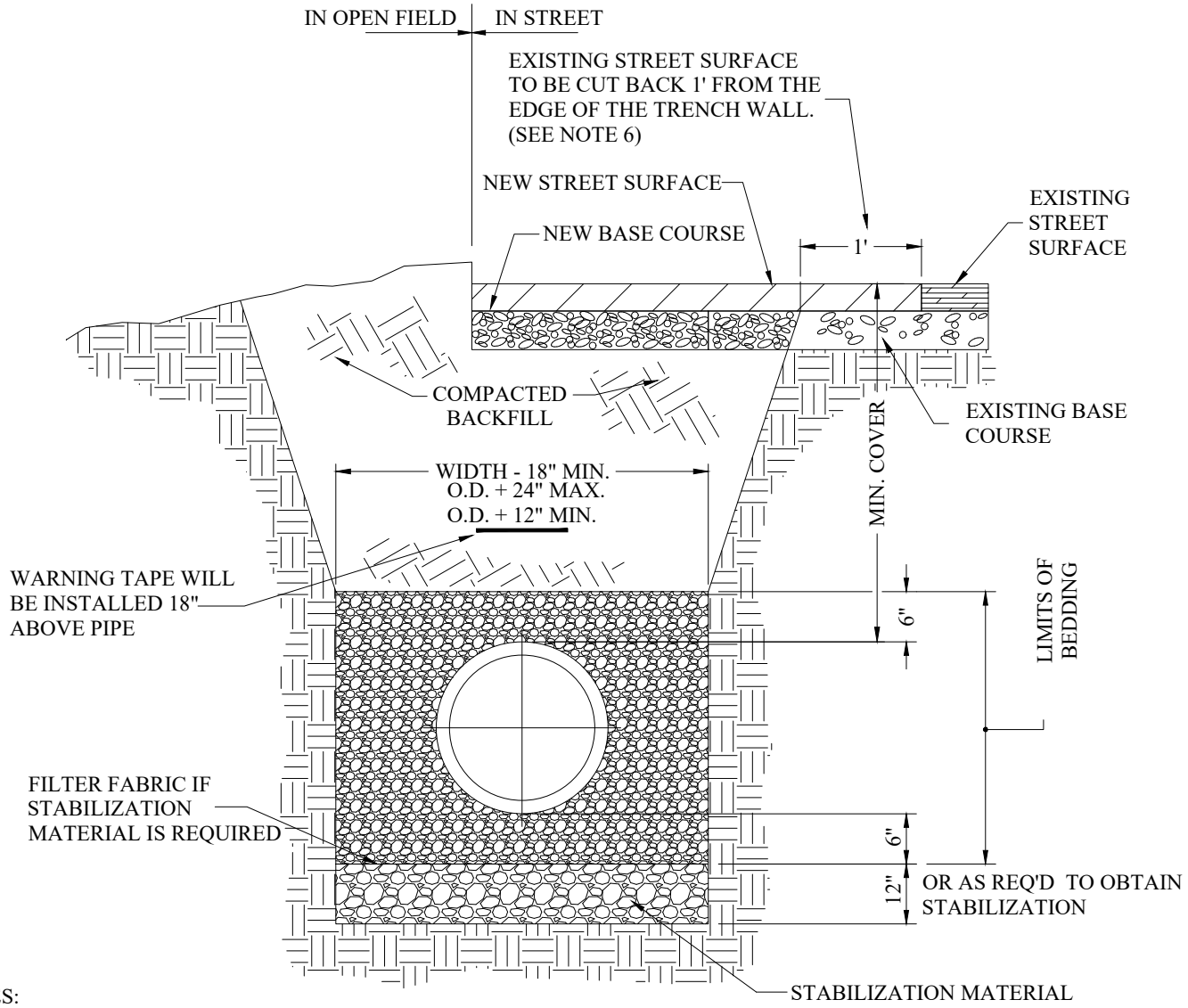


City of Evans, Colorado

Public Works Department

STREET INTERSECTION APPROACH DETAIL
LOCAL & COLLECTOR

Scale: N.T.S | Detail No. S-31 | May 2019



NOTES:

1. RIGHT OF WAY & EASEMENT AREAS SHALL BE GRADED (CUT & FILL) TO SUBGRADE AT UTILITY LOCATIONS INCLUDING SERVICES, PRIOR TO UTILITY INSTALLATION.

2. BACKFILL TO BE COMPACTED TO 95% WITH IN ±2% OF OPTIMUM MOISTURE CONTENT AS DETERMINED BY A.S.T.M. D-698 DENSITY IN ALL AREAS UNLESS OTHERWISE NOTED. ALL TRENCHES SHALL BE COMPACTED BY A METHOD APPROVED BY THE CITY.

3. TRENCH EXCAVATION SHALL COMPLY WITH ALL OSHA STANDARDS.

4. FILTER FABRIC IS REQUIRED IF STABILIZATION MATERIAL IS USED. THE FABRIC SHALL BE INSTALLED AS SHOWN IN THE DETAIL.

5. IF NOT SPECIFIED BY APPLICABLE UTILITY, AN APPROVED GRADE OF SAND BEDDING SHALL BE INSTALLED TO SPRINGLINE.

6. A 1-FOOT CUT BACK IS NOT REQUIRED IF FLOW FILL IS USED FOR BACKFILL.

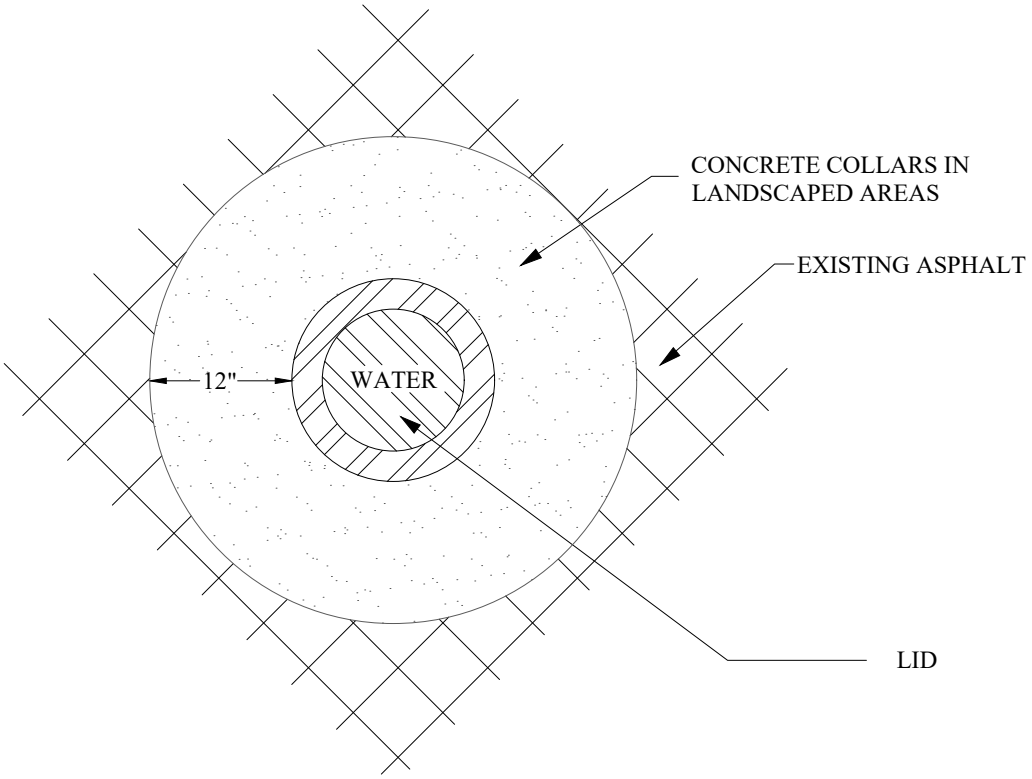
7. SEE WATER LINE TRENCH DETAIL CROSS-SECTION DETAIL IN THE SPECIFICATIONS FOR WATER AND SANITARY SEWER SYSTEMS FOR ADDITIONAL INFORMATION.

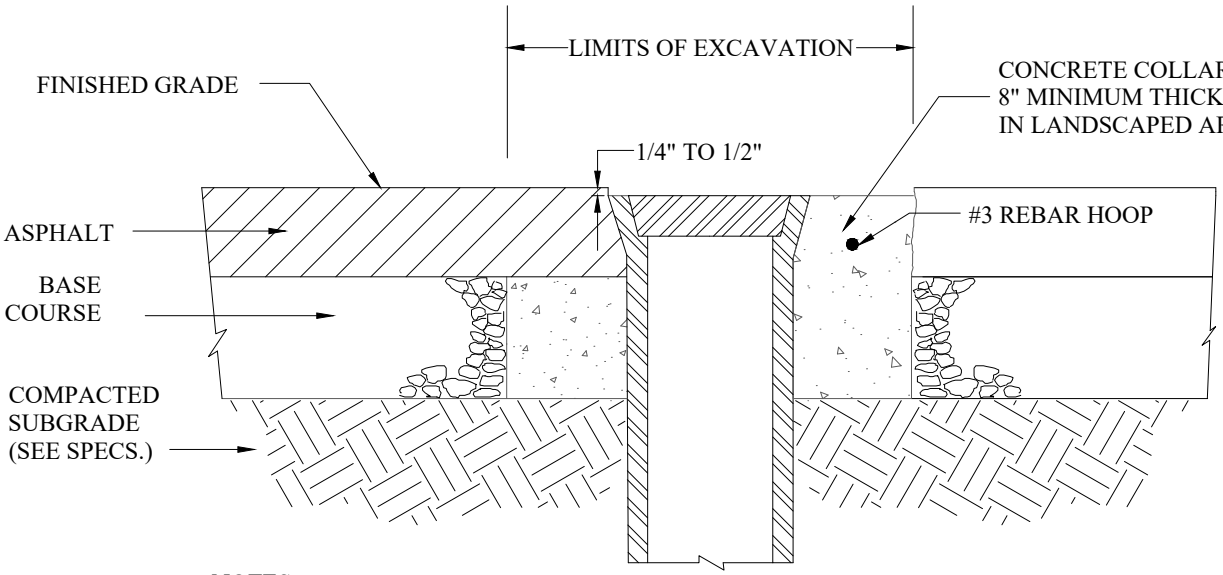
City of Evans, Colorado

Public Works Department

TRENCH EXCAVATION & BACKFILL DETAIL

Scale: N.T.S | Detail No. S-32 | May 2019





NOTES:

1. VALVE BOX MUST BE PLUMB AND CENTERED OVER THE VALVE NUT

2. THIS DETAIL APPLIES TO BOTH ASPHALT AND CONCRETE STREETS

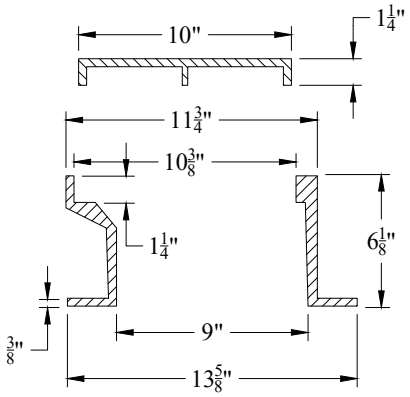
City of Evans, Colorado

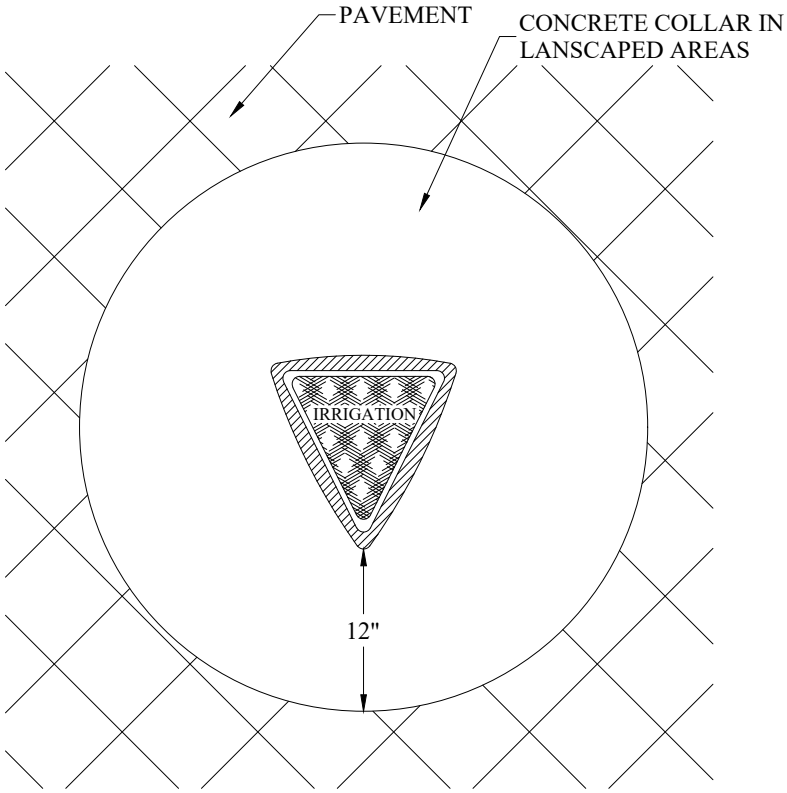
Public Works Department

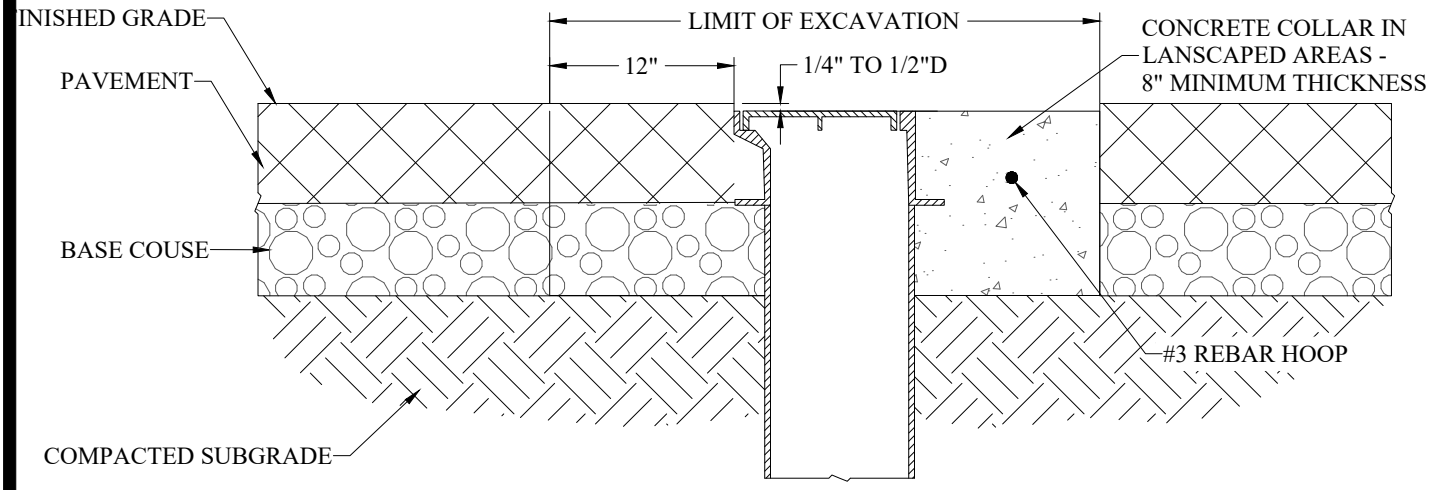
WATER VALVE RAISING DETAIL

POTABLE WATER VALVE

Scale: N.T.S | Detail No. S-33 | May 2019







NOTES:

1. VALVE BOX MUST BE PLUMB AND CENTERED OVER THE VALVE NUT
2. THIS DETAIL APPLES TO BOTH ASPHALT AND CONCRETE STREETS
3. VALVE SHALL BE D&L SUPPLY MODEL M9009 OR APPROVED EQUAL

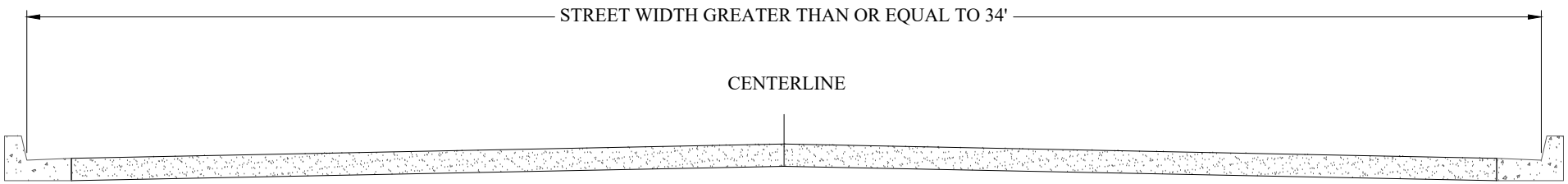
City of Evans, Colorado

Public Works Department

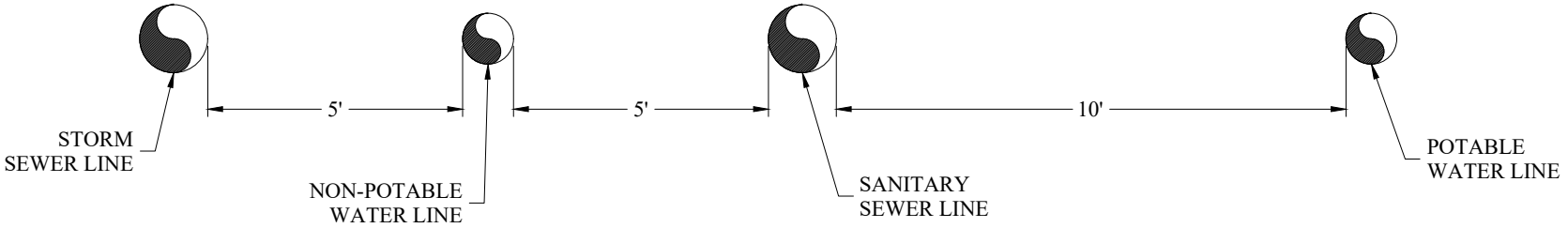
WATER VALVE RAISING DETAIL

NONPOTABLE WATER VALVE

Scale: N.T.S | Detail No. S-34 | May 2019



SEE PLAN AND PROFILE FOR
UTILITY DEPTHS



NOTES:

1. ALIGNMENTS MAY DEVIATE FROM WHAT IS SHOWN HERE WITH ROAD ALIGNMENT, BUT ALL UTILITIES SHOWN MUST BE WITHIN THE ROAD ROW.

2. SEE PLANS FOR FINAL ALIGNMENT.

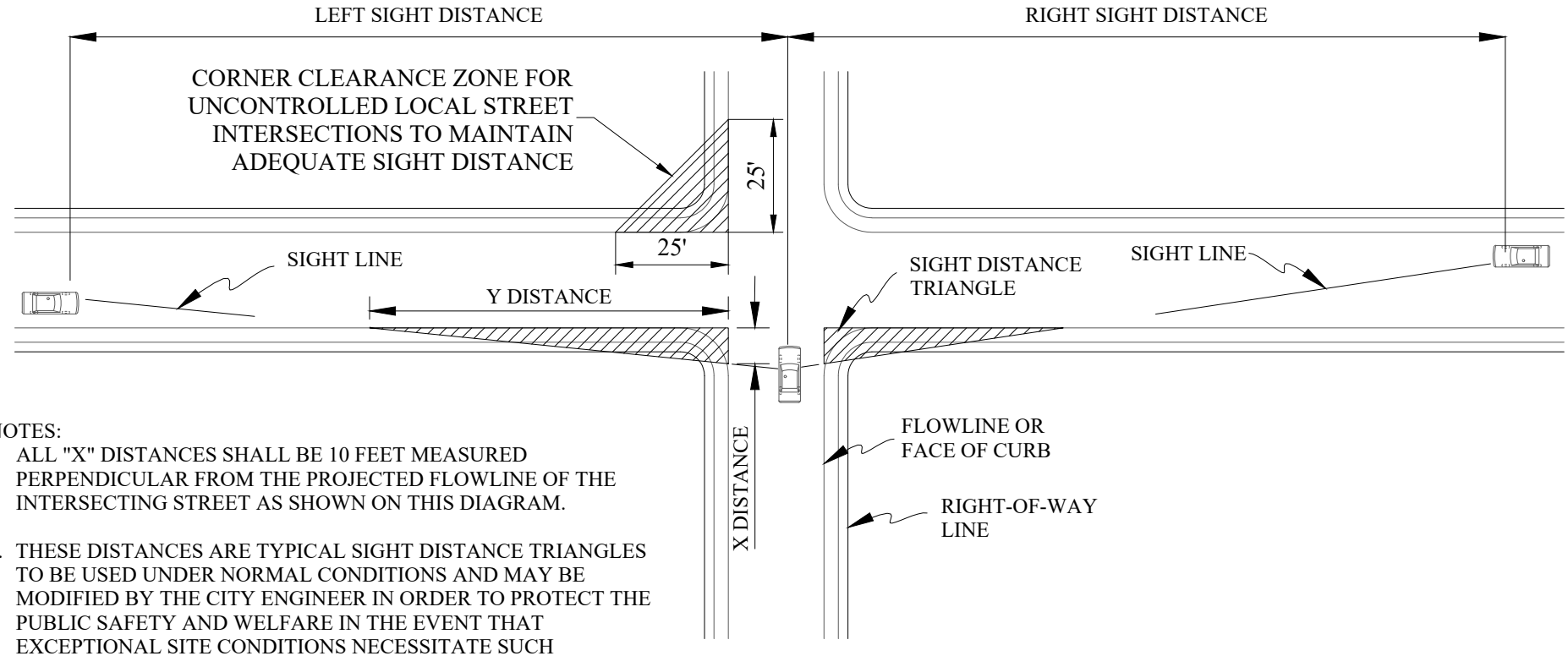
City of Evans, Colorado

Public Works Department

TYPICAL UTILITY LOCATION CROSS SECTION

Scale: N.T.S. | Detail No. S-35 | May 2019

Type of street	Speed of Major Street	Y distances (feet)	X distances (feet)
Arterial	35 - 50+	450	10
Collector	30 -35	350	10
Local	25 - 30	250	10



NOTES:

1. ALL "X" DISTANCES SHALL BE 10 FEET MEASURED PERPENDICULAR FROM THE PROJECTED FLOWLINE OF THE INTERSECTING STREET AS SHOWN ON THIS DIAGRAM.

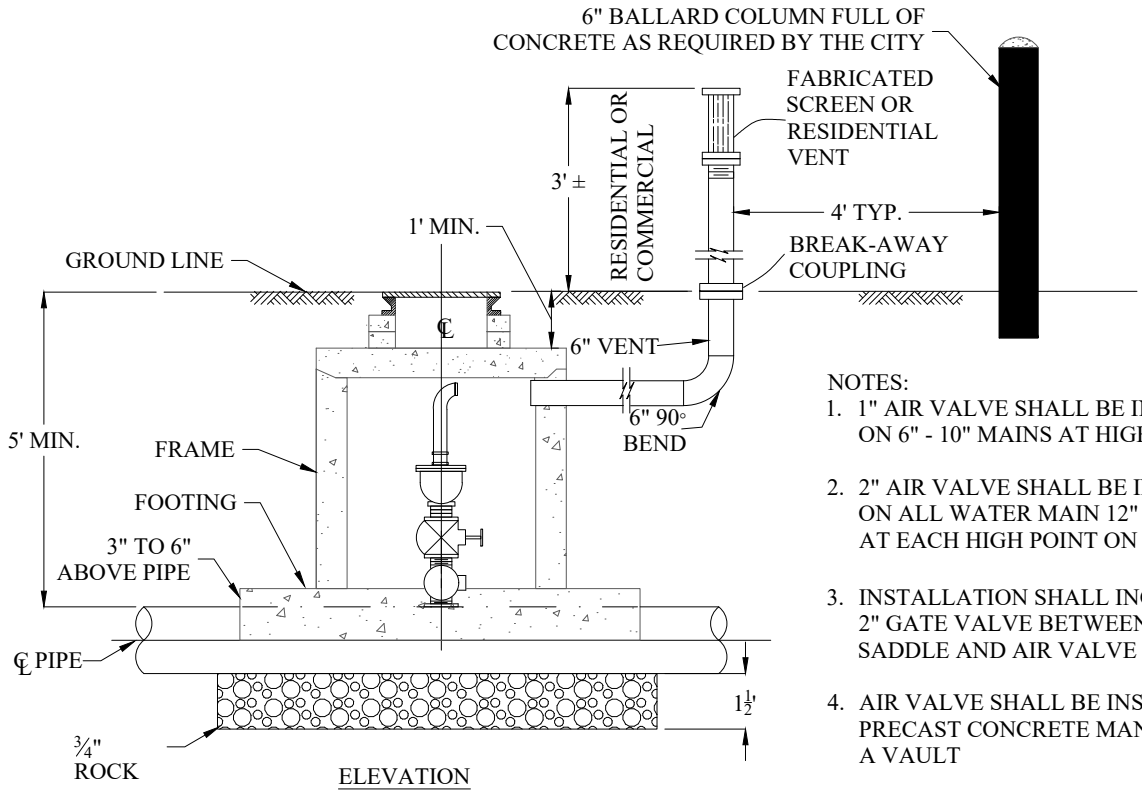
2. THESE DISTANCES ARE TYPICAL SIGHT DISTANCE TRIANGLES TO BE USED UNDER NORMAL CONDITIONS AND MAY BE MODIFIED BY THE CITY ENGINEER IN ORDER TO PROTECT THE PUBLIC SAFETY AND WELFARE IN THE EVENT THAT EXCEPTIONAL SITE CONDITIONS NECESSITATE SUCH MODIFICATION.

City of Evans, Colorado

Public Works Department

SIGHT DISTANCE TRIANGLE SETBACKS

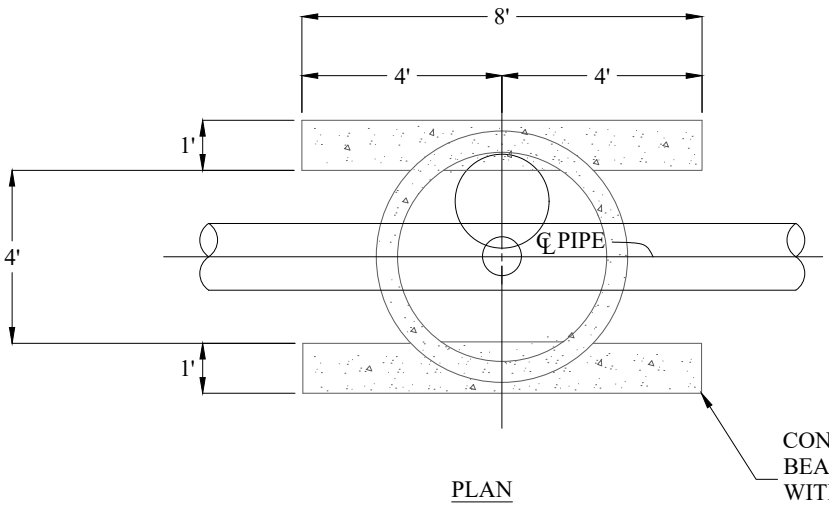
Scale: N.T.S. | Detail No. S-36 | May 2019



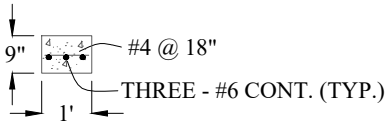
ELEVATION

NOTES:

1. 1" AIR VALVE SHALL BE INSTALLED ON 6" - 10" MAINS AT HIGH POINTS
2. 2" AIR VALVE SHALL BE INSTALLED ON ALL WATER MAIN 12" AND LARGER AT EACH HIGH POINT ON THE MAIN
3. INSTALLATION SHALL INCLUDE ¾" OR 2" GATE VALVE BETWEEN THE SADDLE AND AIR VALVE
4. AIR VALVE SHALL BE INSTALLED IN PRECAST CONCRETE MANHOLE OR A VAULT



PLAN



FOOTING DETAIL

City of Evans, Colorado

Public Works Department

AIR & VACUUM RELIEF VALVE DETAIL

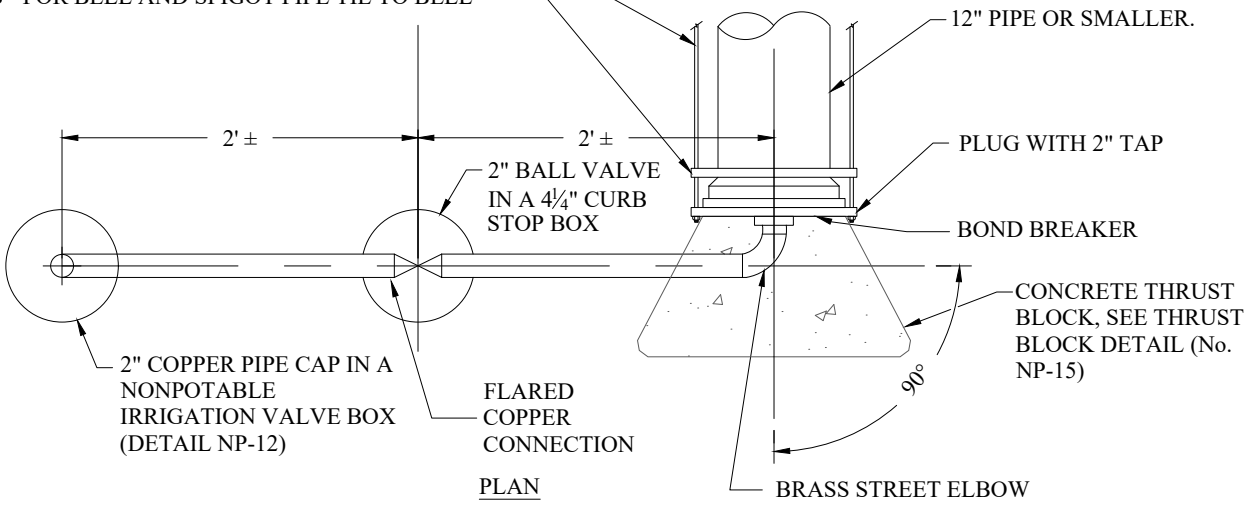
Scale: N.T.S. NP-1 May 2019

NOTE:

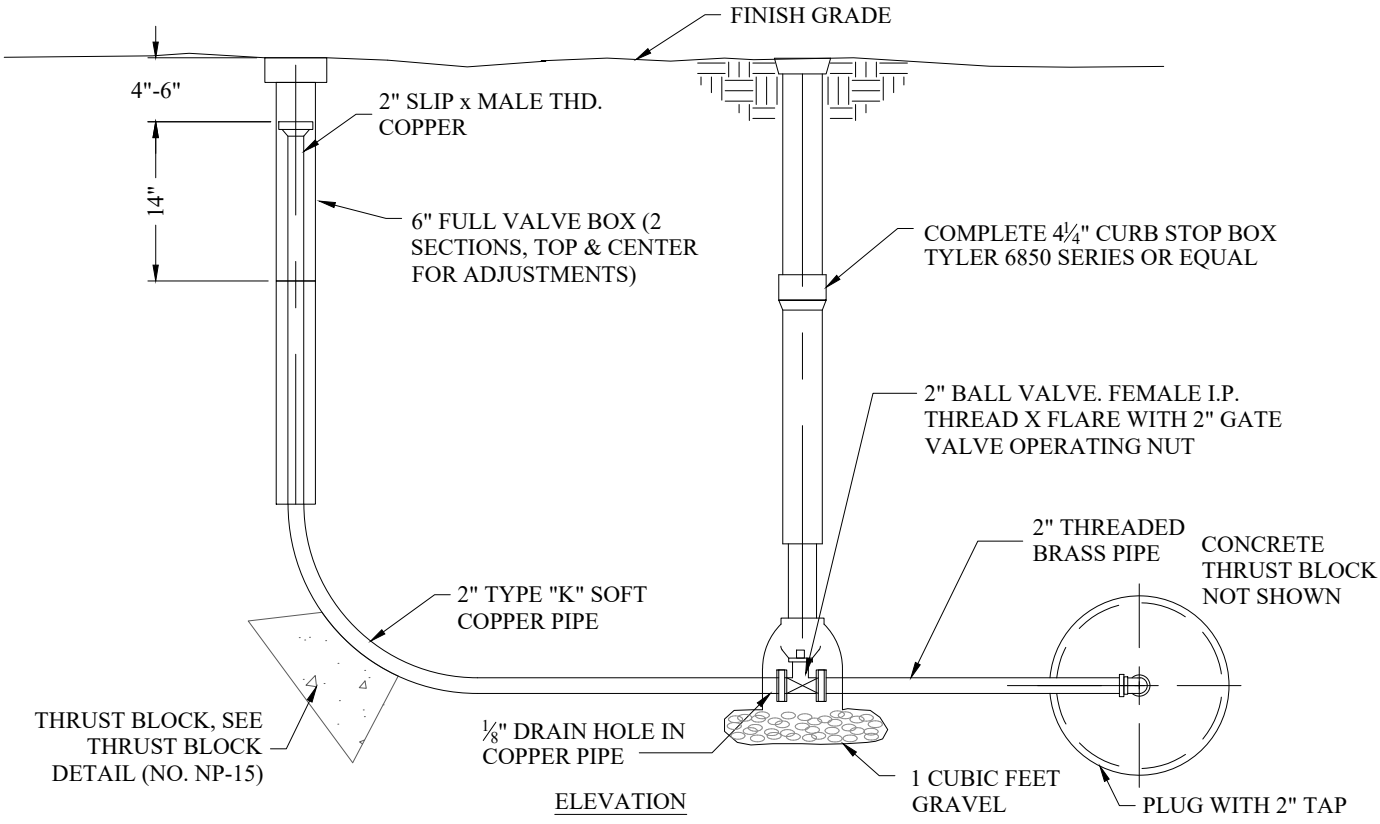
PLUG SHALL BE MECHANICALLY RESTRAINED:

A - FOR SLEEVE TYPE MACHINED COUPLING PIPE TIE BACK TO NEXT COUPLING

B - FOR BELL AND SPIGOT PIPE TIE TO BELL



PLAN



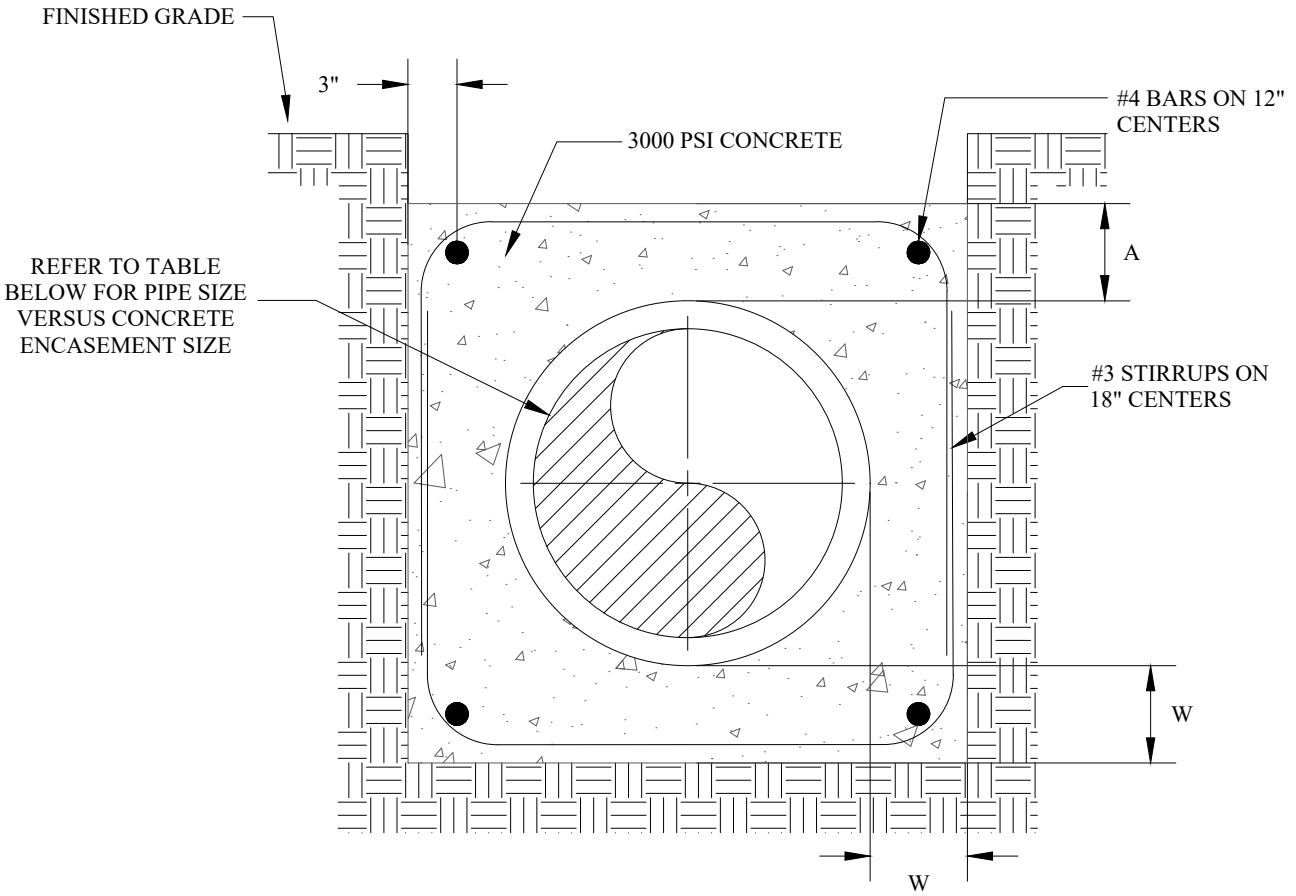
ELEVATION

City of Evans, Colorado

Public Works Department

BLOWOFF ASSEMBLY INSTALLATION DETAIL
FOR 12" & SMALLER PIPE

Scale: N.T.S. | NP-2 | May 2019



PIPE SIZE	W	A
6"	4"	4"
8"	4"	4"
10"	4"	4"
12"	4"	4"
15"	4"	4"
16"	4"	4"
18"	5"	5"
21"	5"	5"
24" +	6"	6"

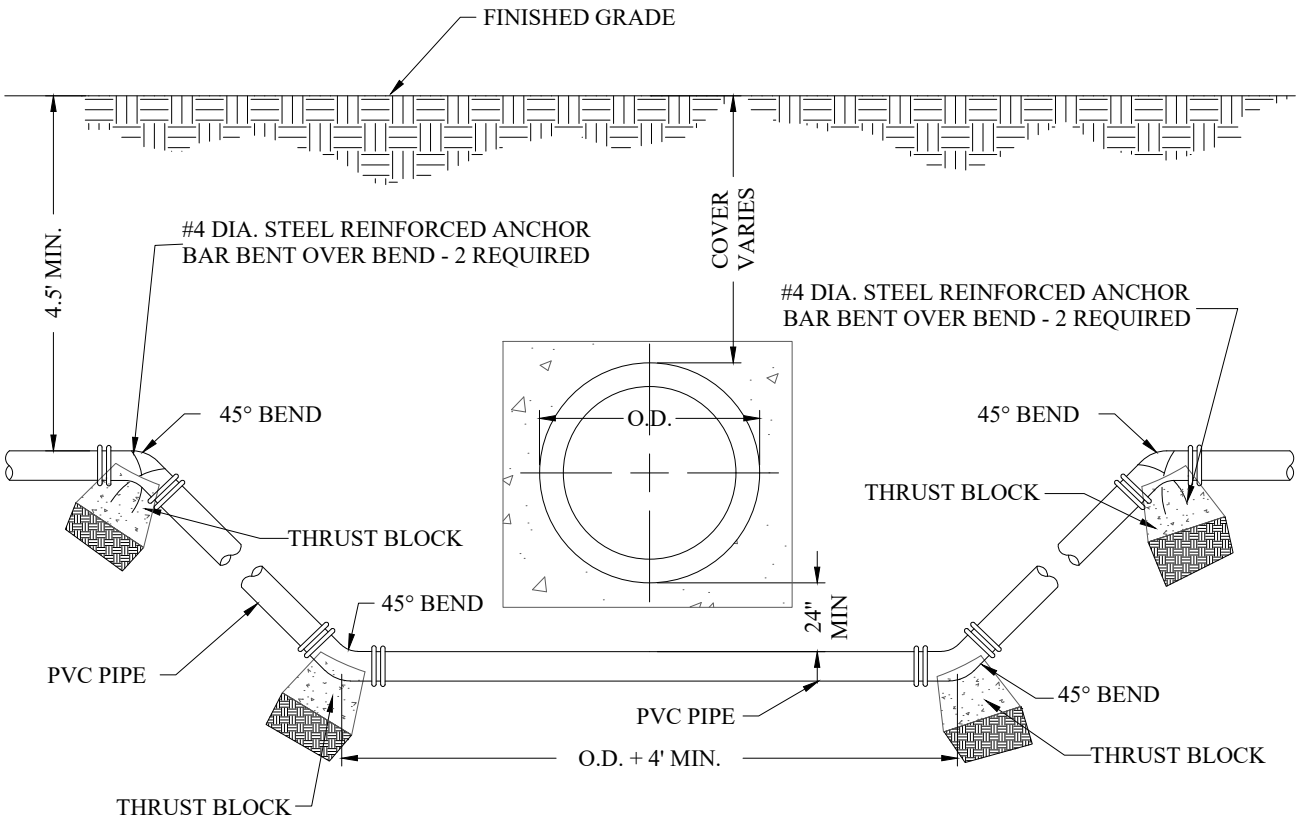
NOTE:
1. REBAR & STIRRUPS SHALL BE EPOXY COATED IF THE ENCASEMENT IS UNDER A STREAM OR DRAINAGEWAY AND IF THE ENCASEMENT IS IN HIGH GROUND WATER

City of Evans, Colorado

Public Works Department

CONCRETE ENCASEMENT DETAIL

Scale: N.T.S. NP-3 May 2019



NOTES:

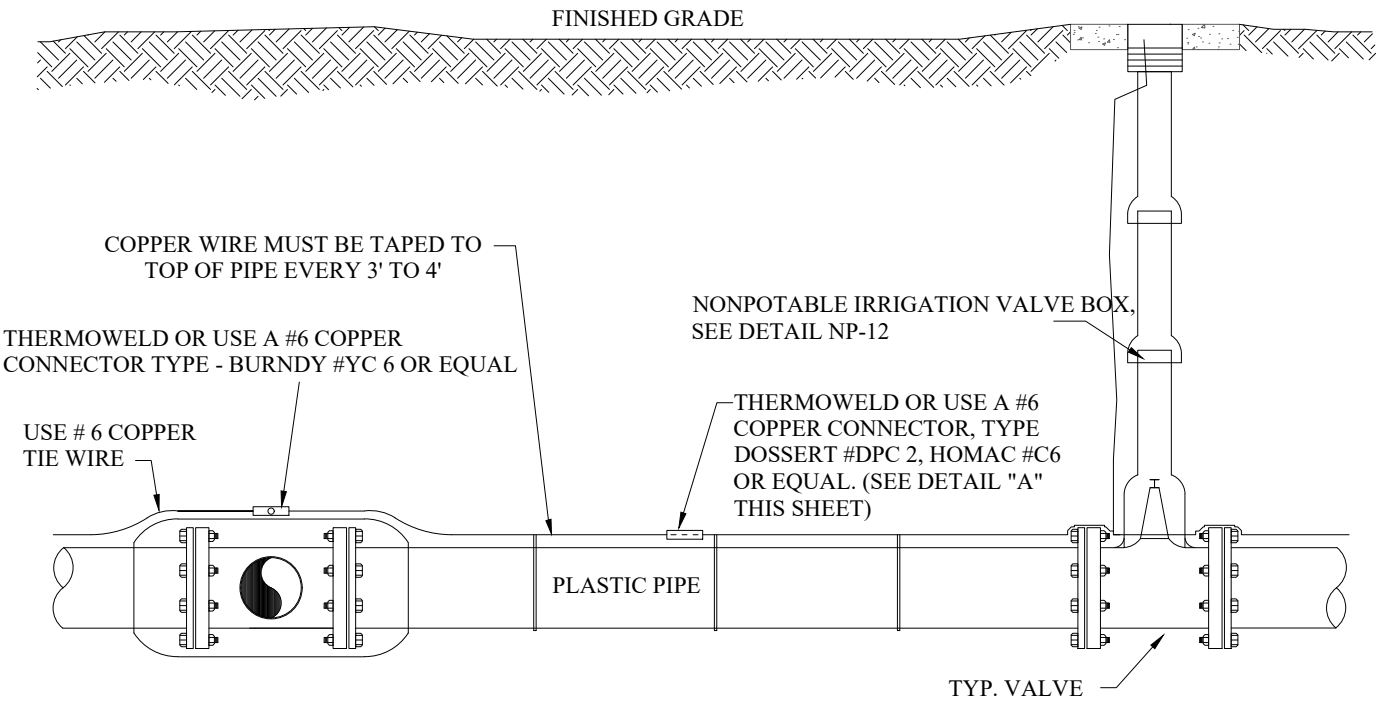
1. THE WATER LINE SHALL BE INSTALLED BELOW ANY SEWER UNDERDRAINS
2. LENGTH OF EXTENSION OF PIPE AND HARNESS RODS SHALL BE IN ACCORDANCE WITH THESE ENGINEERING STANDARDS. MEGA-LUG RESTRAINTS MAY BE USED FOR JOINT RESTRAINT IN PLACE OF HARNESS RODS
3. A BORED CROSSING MAY BE REQUIRED BY THE ENGINEER. TUNNELING UNDER EXISTING CURB GUTTER, SIDEWALK OR CROSS PANS WILL NOT BE ALLOWED
4. INSTALL THRUST BLOCKING AS PER THRUST BLOCK DETAIL (No. NP-15) IN SECTION 7
5. RESTRAIN ALL JOINTS FROM BEGINNING TO END

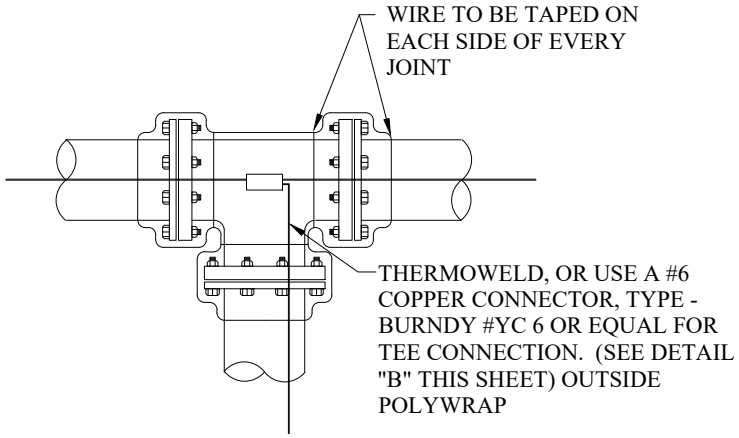
City of Evans, Colorado

Public Works Department

CONDUIT & SEWER CROSSING DETAIL

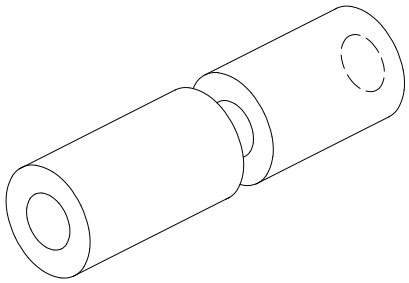
Scale: N.T.S. NP-4 May 2019



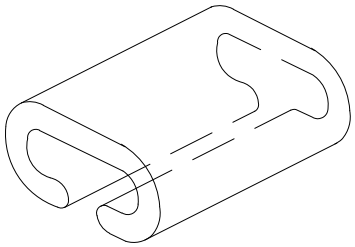


NOTE:
1. STRIP WIRE CASING TO EXPOSE WIRE FOR PROPER CONDUCTION

2. 12 GAUGE SOLID OR STRANDED WITH 3M DBY CONNECTORS



DETAIL "A"



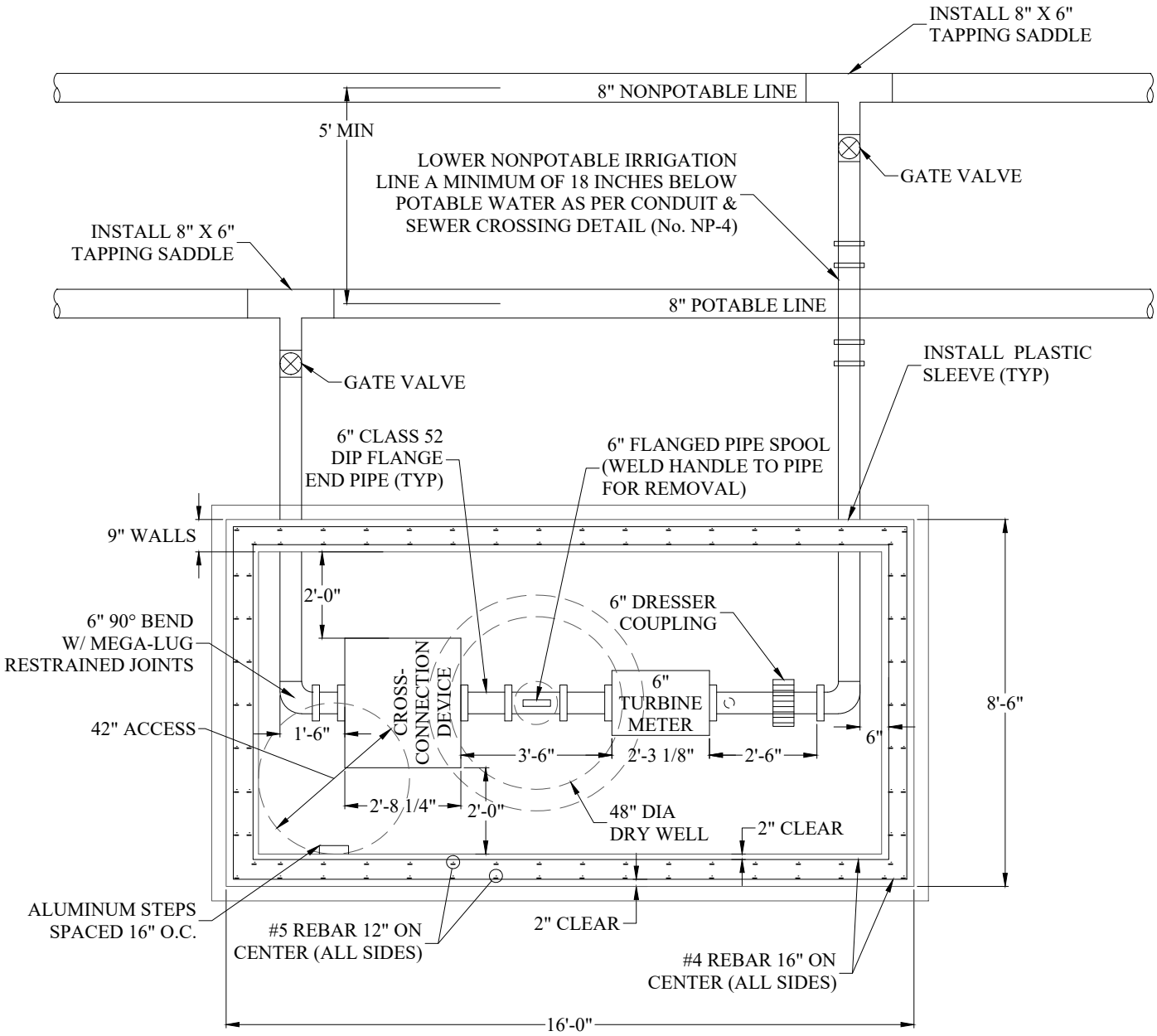
DETAIL "B"

City of Evans, Colorado

Public Works Department

COPPER TRACER WIRE DETAIL
ON PVC PIPE

Scale: N.T.S. NP-5 May 2019



NOTES:

1. MAINTAIN 4.5' OF COVER ABOVE POTABLE AND NON-POTABLE WATER LINES.
2. ALL PIPE FROM THE TAPPING SADDLES AND WITHIN THE VAULT SHALL BE 6" DUCTILE IRON PIPE CLASS 52 DIP WITH PROPER CORROSION PROTECTION (POLYWRAP REQUIRED ONLY WHERE IN CONTACT WITH SOIL)

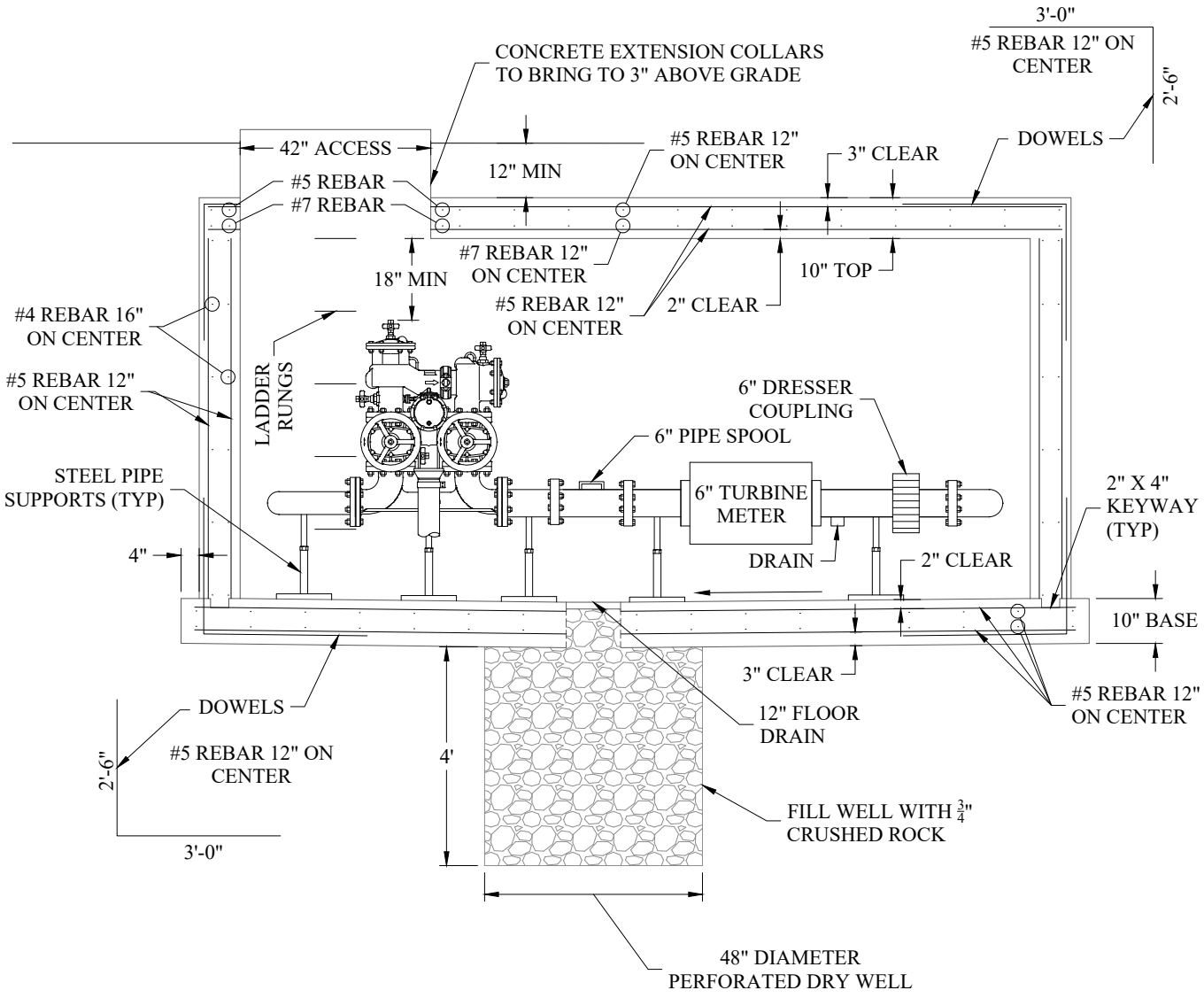
City of Evans, Colorado

Public Works Department

CROSS-CONNECTION DETAIL

SHEET 1 of 2

Scale: N.T.S. | NP-6A | May 2019



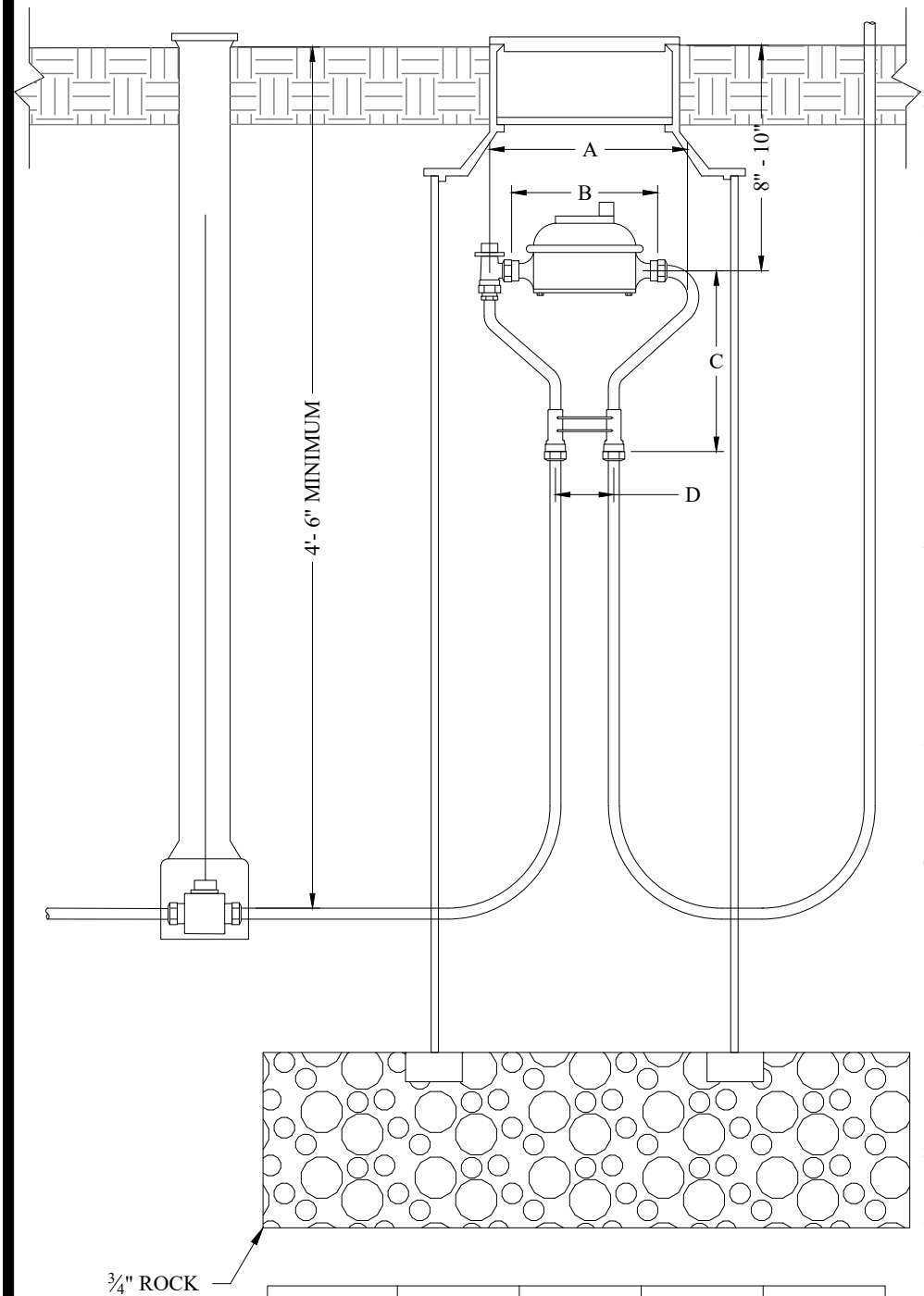
City of Evans, Colorado

Public Works Department

CROSS-CONNECTION DETAIL

SHEET 2 of 2

Scale: N.T.S. | NP-6B | May 2019



GENERAL NOTES

1. NOT FOR INSTALLATION IN ROADWAYS, DRIVEWAYS, OR PARKING AREAS
2. IF SURFACE IS NOT TO FINAL GRADE AT TIME OF INSTALLATION OF METER LID SHALL BE 2 INCHES ABOVE GRADE
3. METER YOKE SHALL BE LOCATED NOT LOWER THAN 12 INCHES BELOW THE TOP LID. IN THE EVENT THE METER PIT IS ADJUSTED TO FINAL GRADE, OWNER SHALL ENSURE THAT THE YOKE BE RAISED/LOWER AS REQUIRED
4. METER TO BE LOCATED A MINIMUM OF 2 FEET FROM THE CURB STOP AND WITHIN THE UTILITY EASEMENT ADJACENT TO FRONT SIDEWALK, UNLESS OTHERWISE APPROVED BY THE DIRECTOR OF PUBLIC WORKS
5. METER PIT SHALL BE PLACED ON FREE-DRAINING GRAVEL BASE. CONCRETE SHALL NOT BE PERMITTED
6. METER PIT SHALL BE 20 INCH INSIDE DIAMETER DUROPIPE MODIFIED POLYETHYLENE BY METRO-STATES PLASTICS OR APPROVED EQUAL
7. NO STRUCTURES ARE TO BE LOCATED WITHIN 4 FEET OF METER PIT. LANDSCAPING IS PERMITTED, HOWEVER ACCESS TO THE METER PIT MUST BE MAINTAINED
8. CURB STOPS SHALL BE STRAIGHT AND CLEAN OF ANY DEBRIS
9. DAYLIGHT RESIDENT STUB OUT AS SHOWN ON DETAIL. CAP OR CRIMP END OF PIPE

METER SIZE	A	B	C	D
1-INCH	$17\frac{1}{4}$-INCH	$10\frac{3}{4}$-INCH	$11\frac{1}{4}$-INCH	6-INCH

City of Evans, Colorado

Public Works Department

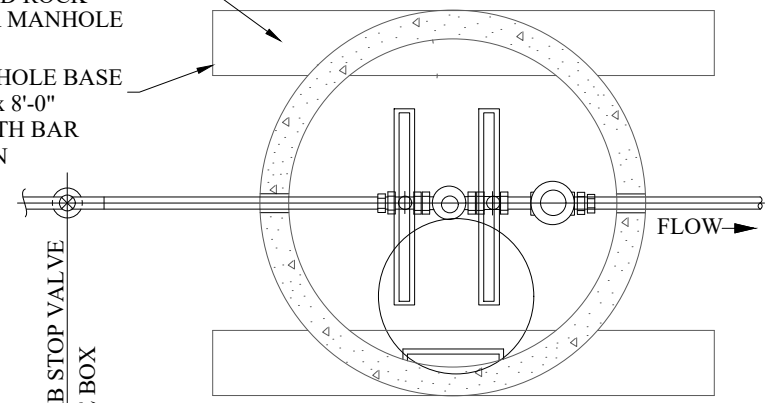
METER SETTING FOR NONPOTABLE WATER LINE

Scale: N.T.S. NP-7 May 2019

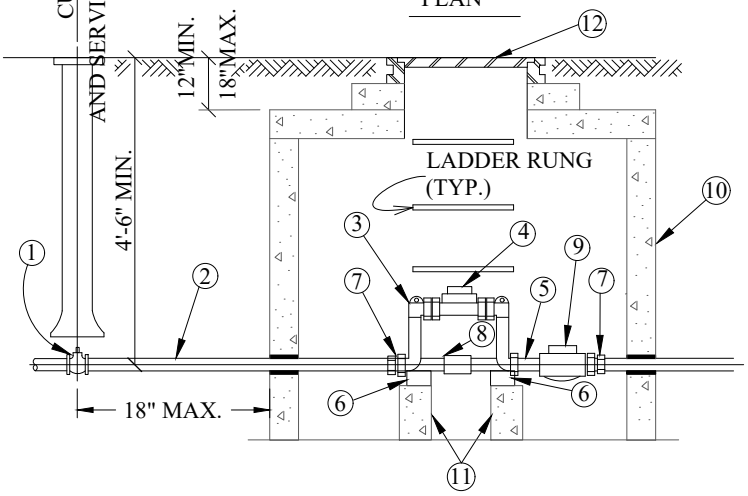
CONCRETE FOOTINGS SHALL REST ON A 5" THICK LAYER OF 1½" CRUSHED ROCK PLACED UNDER MANHOLE

CONCRETE MANHOLE BASE BEAMS 9" x 1'-0" x 8'-0" REINFORCED WITH BAR STEEL AS SHOWN

NO ADDITIONAL TAPS OR CONNECTIONS ALLOWED IN PIT



PLAN



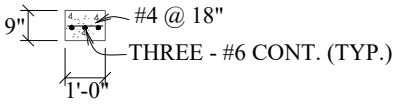
ELEVATION

DETAILS:

① CURB STOP
② TYPE K COPPER TUBING
③ 12" COPPER SETTER/METER YOKE
④ METER UNIT
⑤ 3" NIPPLE BETWEEN COPPER SETTER AND CHECK VALVE
⑥ PRESSURE TREATED WOOD BLOCKING 1" THICK
⑦ MECH. IRON PIPE TO FLARE COUPLING FROM INLET SIDE OF COPPER SETTER AND OUTLET SIDE OF CHECK VALVE.
⑧ BY-PASS WILL BE 1" FOR 1½" COPPER SETTERS AND 1½" OR 1¼" FOR 2" COPPER SETTERS.
⑨ CHECK VALVE
⑩ 48" CONE MANHOLE WITH 24" LID.
⑪ CONCRETE BLOCK SUPPORTS 4" X 4" X 24"
⑫ 24" STANDARD RING AND COVER

NOTES

1. MANHOLE BASE BEAMS SHALL BE REQUIRED
2. A 48" Ø MANHOLE PIT WILL ACCOMODATE 1½" AND 2" SPLIT CASE METERS
3. JOINTS INSIDE METER VAULT SHALL BE EITHER THREADED OR SOLDERED WITH 95-5 TINANTIMONY SOLDER. IN ACCORDANCE WITH ASTM B32
4. NO CONCRETE TO BE LAID IN FLOOR OF METER MANHOLE
5. NO CONNECTIONS OR CHANGES IN PIPE DIAMETER SHALL BE MADE IN THE METER PIT OR IN THE DISTANCE OF 5' BEYOND THE METER PIT ON THE OUTLET SIDE. OTHER THAN THE APPROPRIATE COPPER SETTER
6. THE DISTANCE BETWEEN RUNGS, CLEATS, AND STEPS SHALL NOT EXCEED 12" AND SHALL BE UNIFORM THROUGHOUT THE LENGTH OF THE LADDER
7. VAULT WALL PENETRATIONS MUST BE GROUTED WITH CONCRETE
8. COPPERSETTER OR COPPER METER YOKE FOR 1½" AND 2" WILL BE NO HIGHER THAN 12" WITH A BY-PASS AND BOOT FOR BY-PASS PROVIDED WITH SETTER
9. THE SERVICE LINE THROUGH AND ON BOTH SIDES OF THE METER PIT MUST BE OF THE SAME MATERIAL
10. MANHOLE RING AND COVERS SHALL BE TO CITY OF EVANS STANDARDS
11. METER PITS AND COVERS SHALL BE TO CITY OF EVANS STANDARDS



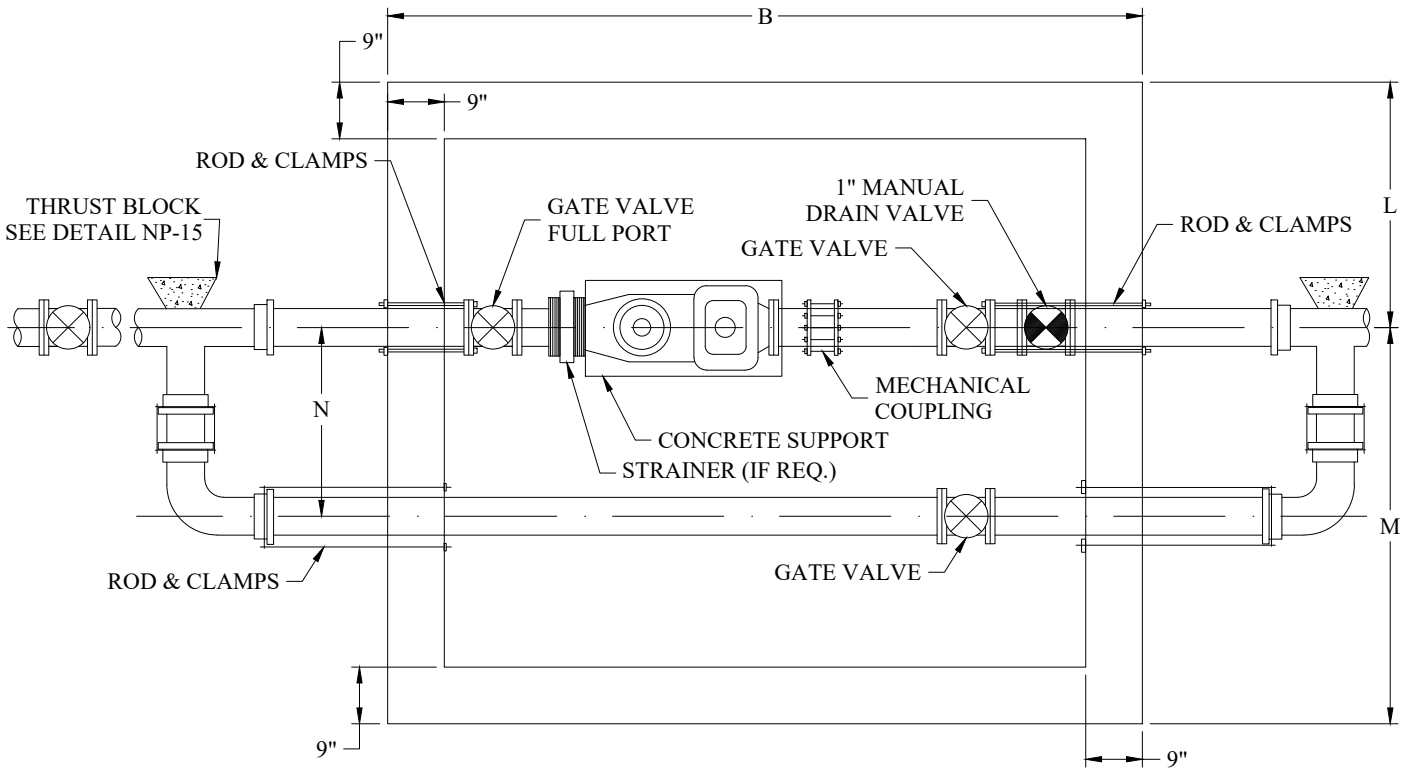
FOOTING DETAIL

City of Evans, Colorado

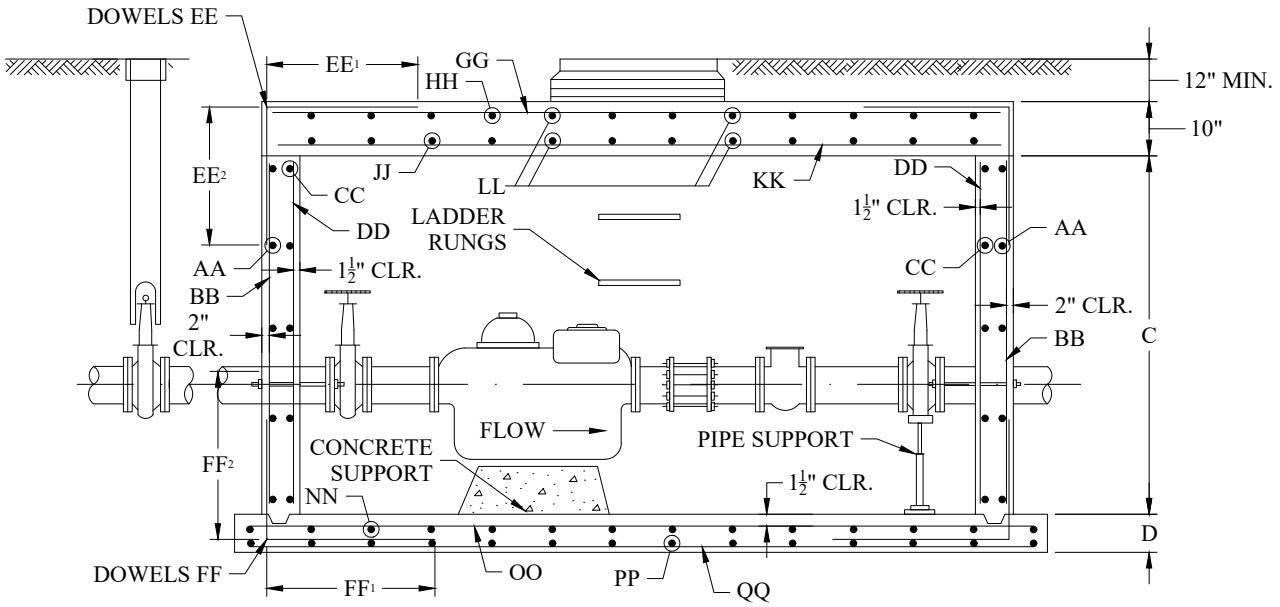
Public Works Department

METER SETTING DETAIL
FOR 1½" & 2" METER
W/ CHECKING VALVE & BYPASS IN MANHOLE

Scale: N.T.S. NP-8 May 2019



PLAN VIEW



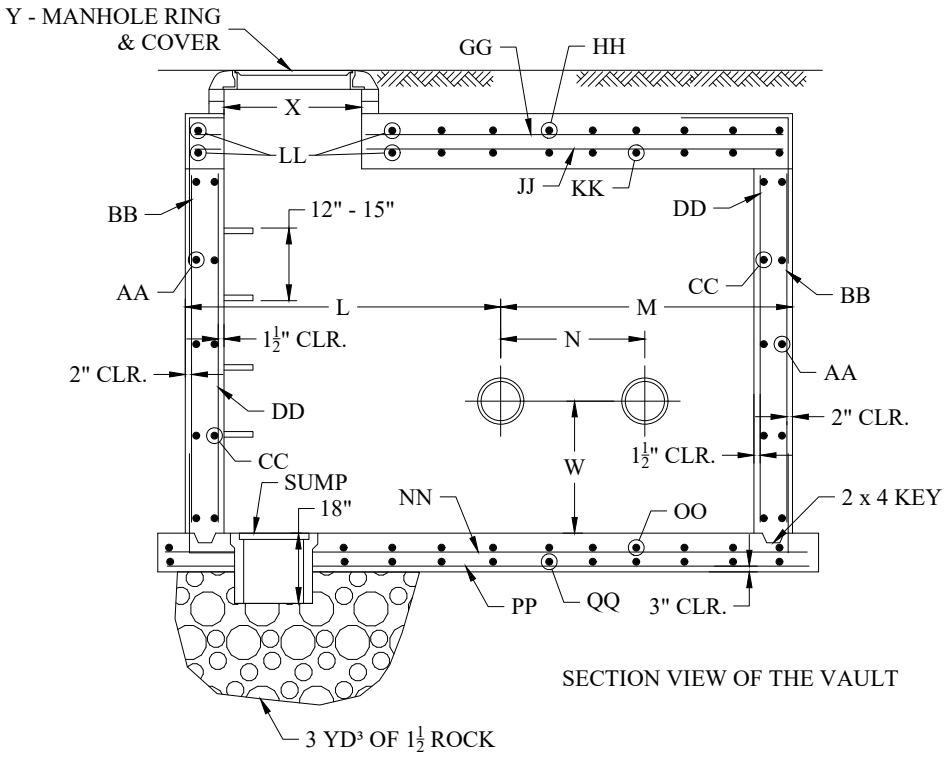
SECTION VIEW

City of Evans, Colorado

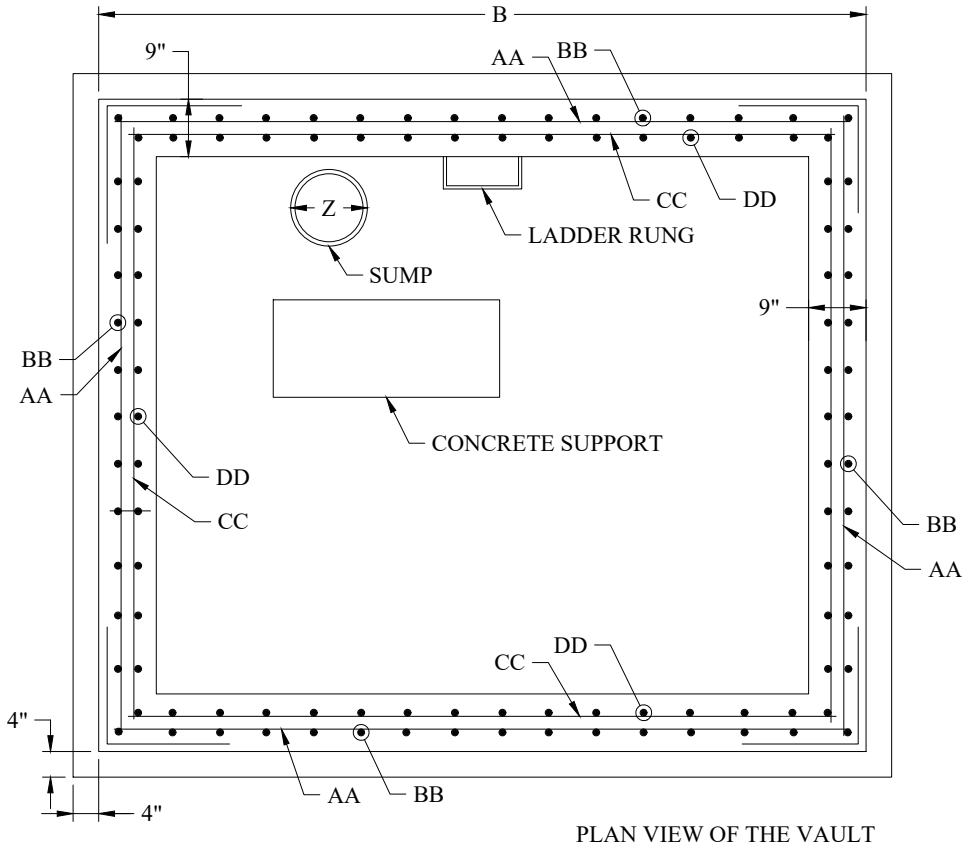
Public Works Department

METER SETTING DETAIL
FOR 3" AND LARGER
SHEET 1 OF 4

Scale: N.T.S. | NP-9A | May 2019



SECTION VIEW OF THE VAULT



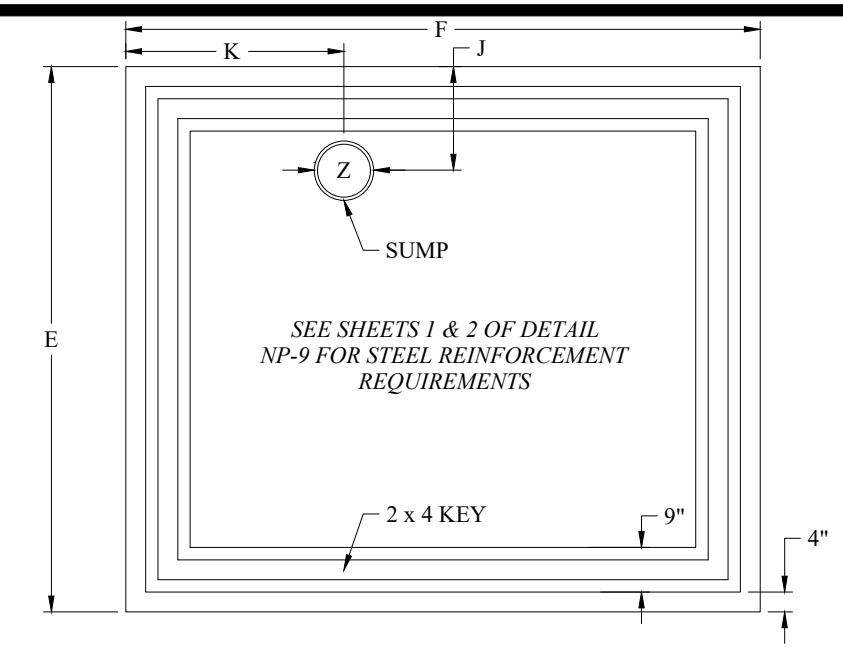
PLAN VIEW OF THE VAULT

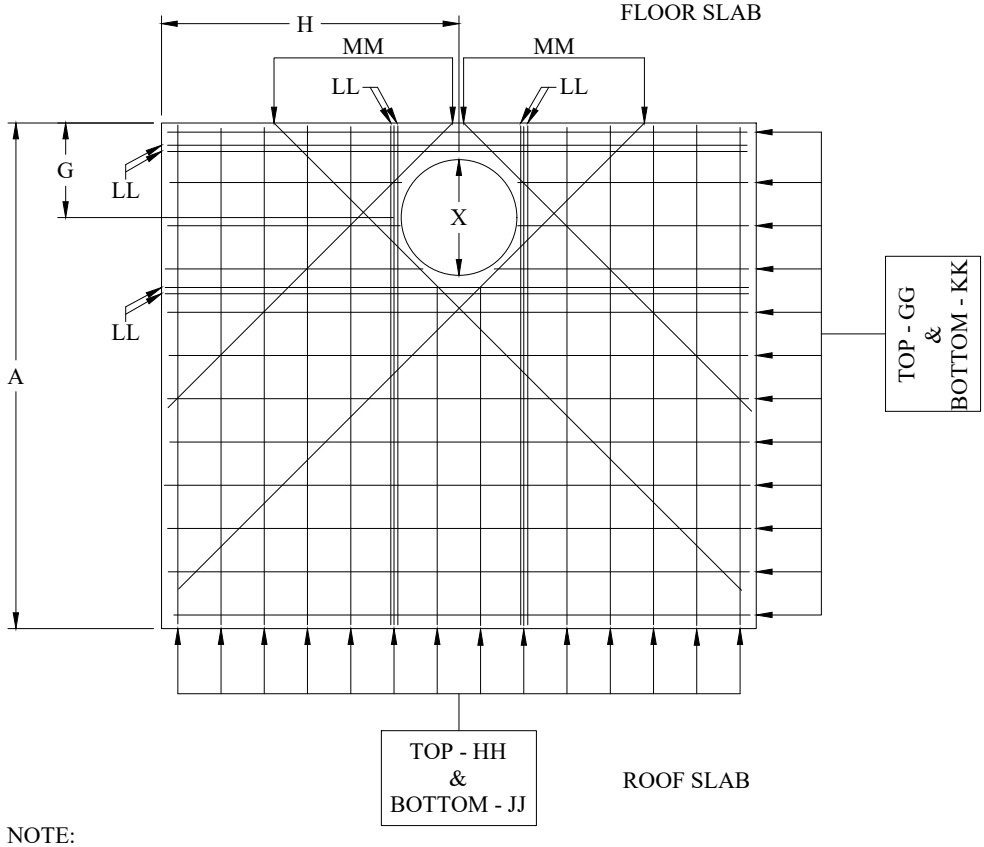
City of Evans, Colorado

Public Works Department

METER SETTING DETAIL
FOR 3" AND LARGER
SHEET 2 OF 4

Scale: N.T.S. | NP-9B | May 2019





NOTE:

1. THE ROOF SLAB MAY BE CAST IN SECTIONS FOR FUTURE ACCESS. THE SECTIONS SHALL BE CAST SUCH THAT THE INDIVIDUAL SECTION WEIGHT DOES NOT EXCEED 7,500 POUNDS.

2. BARS MM - BOTTOM ONLY & BARS LL - TOP AND BOTTOM

City of Evans, Colorado

Public Works Department

METER SETTING DETAIL
FOR 3" AND LARGER
SHEET 3 OF 4

Scale: N.T.S. NP-9C May 2019

METER SIZE	PIPE SIZE DIA.	VAULT DIMENSIONS															MANHOLE		SUMP	REMARKS
		A	B	C*	D	E	F	G	H	J	K	L	M	N	P	W	X	Y	Z	
3"	3"	8'-6"	10'-6"	6'-0"	0'-8"	9'-2"	11'-2"	2'-3"	4'-8"	1'-9"	2'-8"	3'-3"	5'-3"	2'-6"	0'-9"	2'-0"	36"	24"x36"	12"	USE 5/16"x 7" MIDDLE RING ON COUPLINGS.
4"	4"	8'-6"	11'-11"	6'-0"	0'-8"	9'-2"	12'-7"	2'-3"	5'-4"	1'-9"	3'-4"	3'-3"	5'-3"	2'-6"	1'-0"	2'-6"	36"	24"x36"	12"	USE 5/16"x 7" MIDDLE RING ON COUPLINGS.
6"	6"	8'-6"	13'-6"	6'-0"	0'-8"	9'-2"	14'-2"	2'-3"	5'-8"	1'-9"	3'-8"	3'-3"	5'-3"	2'-6"	1'-6"	2'-6"	36"	24"x36"	12"	USE 5/16"x 7" MIDDLE RING ON COUPLINGS.
8"	8"	8'-6"	15'-5"	6'-0"	0'-10"	9'-2"	16'-1"	2'-3"	5'-3"	2'-3"	3'-0"	3'-3"	5'-3"	2'-6"	2'-0"	2'-6"	36"	24"x36"	18"	USE 5/16"x 7" MIDDLE RING ON COUPLINGS.
10"	10"	8'-6"	17'-9"	6'-0"	0'-10"	9'-2"	17'-5"	2'-3"	4'-11"	2'-3"	3'-0"	3'-3"	5'-3"	2'-6"	2'-6"	2'-6"	36"	24"x36"	18"	USE 3/8"x 7" MIDDLE RING ON COUPLINGS.
12"	12"	8'-6"	19'-10"	6'-0"	0'-10"	9'-2"	20'-6"	2'-3"	5'-0"	2'-3"	3'-0"	3'-3"	5'-3"	2'-6"	3'-0"	2'-6"	36"	24"x36"	18"	USE 3/8"x 7" MIDDLE RING ON COUPLINGS.

METER SIZE	WALLS								WALL DOWELS						ROOF SLAB										FLOOR SLAB							
	AA		BB		CC		DD		EE & FF		EE_1	EE_2	FF_1	FF_2	GG		HH		JJ		KK		LL		MM	NN		OO		PP		QQ	
	BAR	DIST.	BAR	DIST.	BAR	DIST.	BAR	DIST.	BAR	DIST.					BAR	DIST.	BAR	DIST.	BAR	DIST.	BAR	DIST.	TOP	BOT.	BOT.	BAR	DIST.	BAR	DIST.	BAR	DIST.	BAR	DIST.
3"	No.4	16"	No.4	12"					No.5	12"	2'-6"	2'-0"	3'-0"	2'-0"					No.7	12"	No.7	12"		No.7	No.7	No.5	12"	No.5	12"				
4"	No.4	16"	No.4	12"					No.5	12"	2'-6"	2'-0"	3'-0"	2'-0"					No.7	12"	No.7	12"		No.7	No.7	No.5	12"	No.5	12"				
6"	No.4	16"	No.4	12"					No.5	12"	2'-6"	2'-0"	3'-0"	2'-0"					No.7	12"	No.7	12"		No.7	No.7	No.5	12"	No.5	12"				
8"	No.4	16"	No.5	12"	No.4	16"	No.5	12"	No.5	12"	3'-0"	2'-6"	3'-0"	2'-6"	No.5	12"	No.5	12"	No.7	12"	No.8	9"	No.5	No.7	No.7	No.5	12"	No.5	12"	No.5	12"	No.5	12"
10"	No.4	16"	No.5	12"	No.4	16"	No.5	12"	No.5	12"	3'-0"	2'-6"	3'-0"	2'-6"	No.5	12"	No.5	12"	No.7	12"	No.8	9"	No.5	No.7	No.7	No.5	12"	No.5	12"	No.5	12"	No.5	12"
12"	No.4	16"	No.5	12"	No.4	16"	No.5	12"	No.5	12"	3'-0"	2'-6"	3'-0"	2'-6"	No.5	12"	No.5	12"	No.7	12"	No.8	9"	No.5	No.7	No.7	No.5	12"	No.5	12"	No.5	12"	No.5	12"

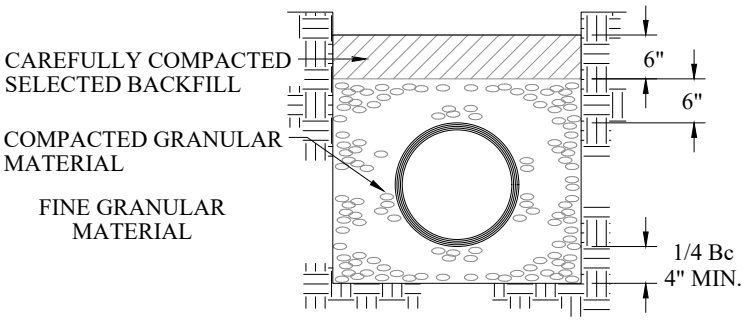
City of Evans, Colorado

Public Works Department

METER SETTING FOR 3" AND LARGER

SHEET 4 OF 4

Scale: N.T.S. NP-9D May 2019



GRANULAR BEDDING

NOTES:

1. MINIMUM DENSITY FOR CAREFULLY COMPACTED SELECT BACKFILL SHALL BE 95% OF MAXIMUM OR AS SPECIFIED FOR THE TRENCH BACKFILL - WHICHEVER IS GREATER

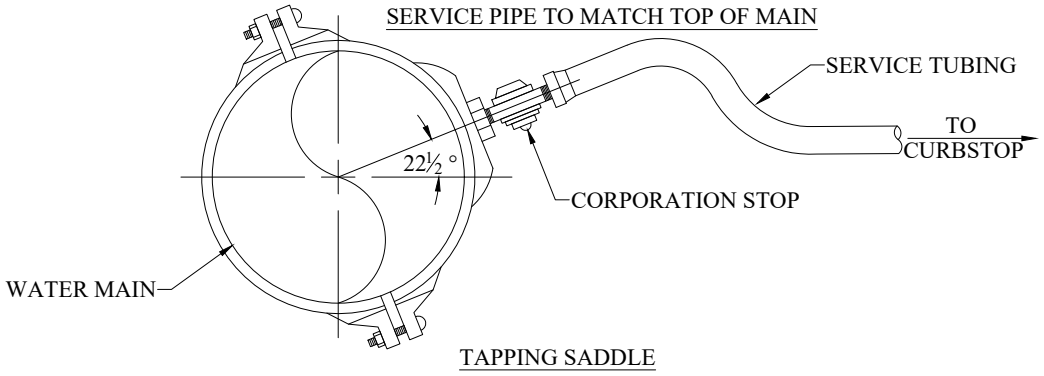
2. COMPACT GRANULAR MATERIAL BY SLICING WITH A SHOVEL AROUND PIPE. WHEN BEDDING IS 6" OVER PIPE, COMPACT WITH VIBRATING COMPACTOR

City of Evans, Colorado

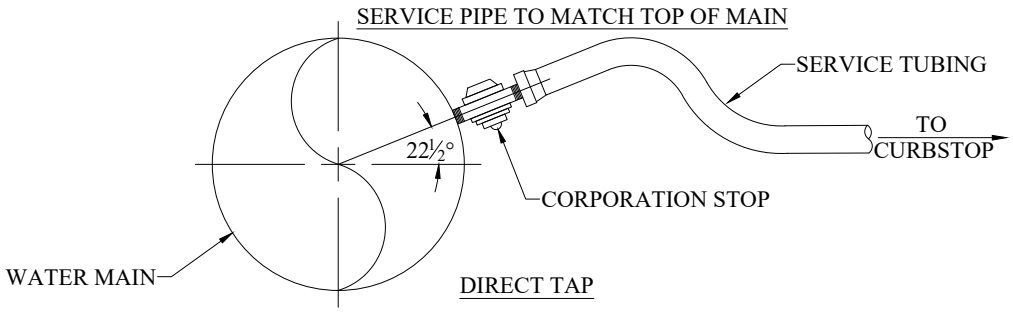
Public Works Department

NONPOTABLE IRRIGATION LINE BEDDING DETAIL

Scale: N.T.S. | NP-10 | May 2019



TAPPING SADDLE



DIRECT TAP

TYPE OF MAIN LINE PIPE AND SIZE OF TAP

	CAST IRON				DUCTILE IRON				PVC C-900	
PIPE SIZE	1"	1-1/2"	2"	3"& 4"	1"	1-1/2"	2"	3"& 4"	< 2"	> 2"
3"	NO	NO	NO	TSV	NO	NO	NO	TSV	S	TSV
4"	S	NO	NO	TSV	S	NO	NO	TSV	S	TSV
6"	DT	S	S	TSV	S	S	S	TSV	S	TSV
8"	DT	S	S	TSV	DT	S	S	TSV	S	TSV
12"	DT	S	S	TSV	DT	S	S	TSV	S	TSV
16"	DT	S	S	TSV	DT	S	S	TSV		
20"	DT	S	S	TSV	DT	S	S	TSV		

"S" - TAPPING SADDLE REQUIRED, ALL SADDLES SHALL HAVE THE AWWA TAPER ON IT'S THREADS.
"DT" - DIRECT TAP REQUIRED
"NO" - NO TAP PERMITTED WITH OR WITHOUT A SADDLE, A TEE CONNECTION MAY BE PERMITTED IF SPECIFICALLY AUTHORIZED BY THE WATER DEPARTMENT
"TSV" - TAPPING SLEEVE AND VALVE REQUIRED

NOTE:
1. ALL TAPPING SADDLES 2" AND SMALLER, SHALL CONSIST OF A BRONZE BODY WITH TWO (2) BRONZE STRAPS

2. EXISTING STEEL MAINS 12" IN DIAMETER OR LESS, SHALL BE TAPPED USING AN APPROVED TAPPING SADDLE

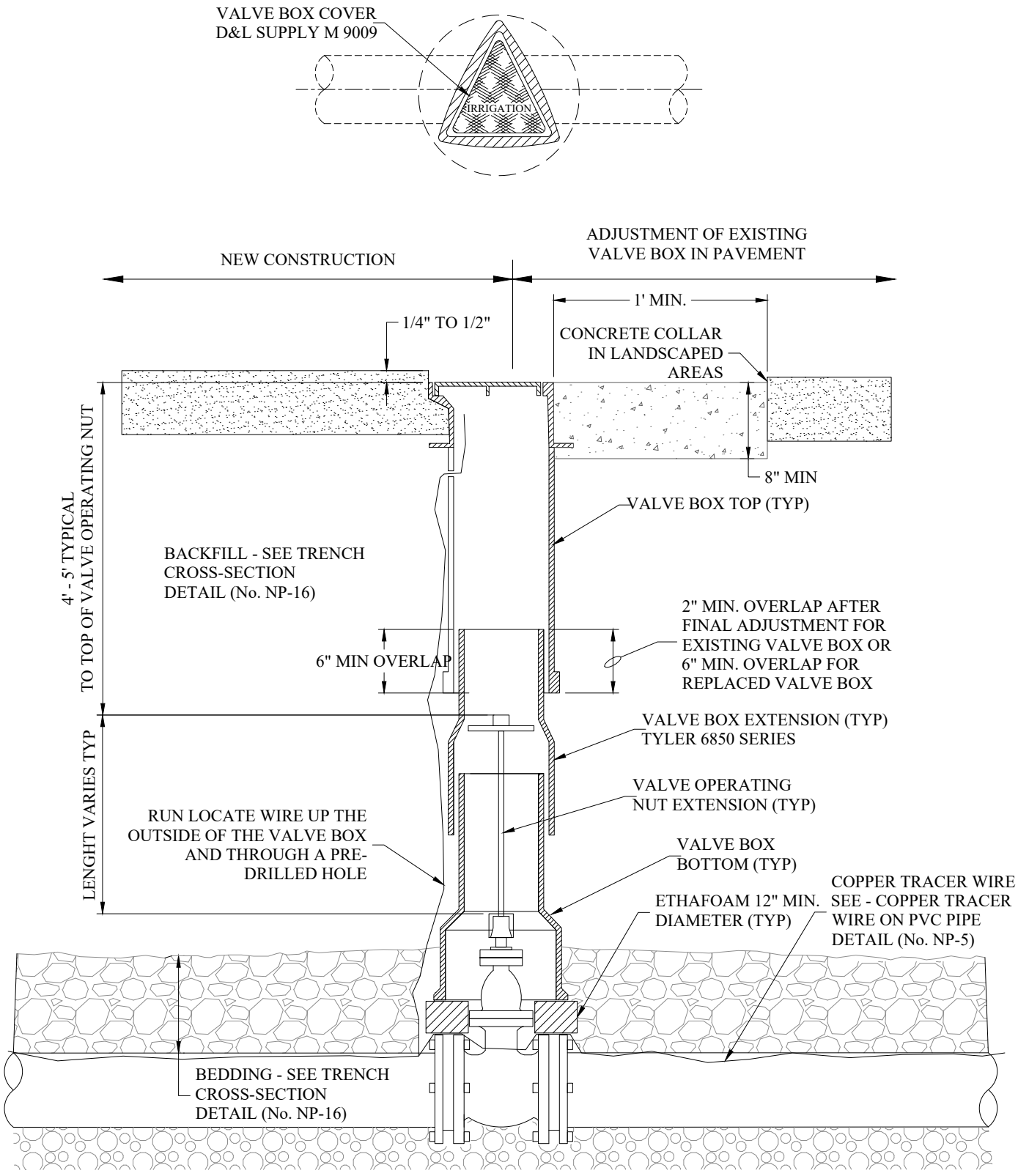
3. ALL TAPS SHALL BE MADE WITH AN APPROVED TAPPING TOOL

City of Evans, Colorado

Public Works Department

NONPOTABLE IRRIGATION SERVICE CONNECTION DETAIL

Scale: N.T.S. NP-11 May 2019

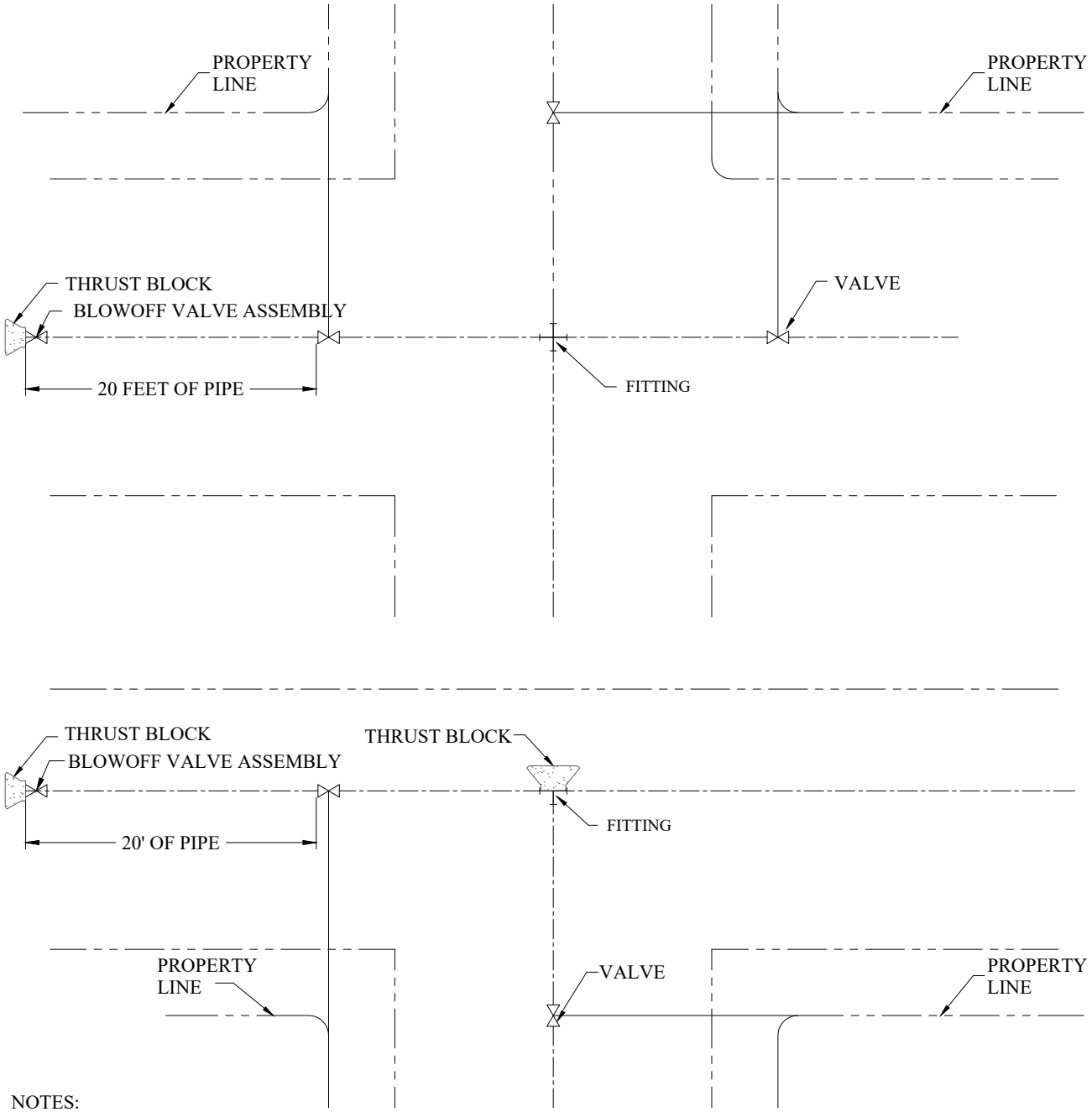


City of Evans, Colorado

Public Works Department

NONPOTABLE IRRIGATION VALVE BOX DETAIL

Scale: N.T.S. | NP-12 | May 2019



NOTES:

1. INSTALL VALVES 3' FROM TEE/ CROSS (TYP.)
2. INSTALL DUCTILE IRON PIPE BETWEEN THE TEE/CROSS AND THE VALVE
3. A MINIMUM OF 20' OF PIPE, TRACER WIRE A VALVE, AND A TEMPORY BLOWOFF ASSEMBLY SHALL BE PLACED FOR FUTURE CONNECTIONS AND/OR AT THE EDGE OF A PHASE/FILING BOUNDARY IN A SUBDIVISION
4. SEE BLOWOFF ASSEMBLY INSTALLATION DETAIL (No. NP-2)
5. SEE THRUST BLOCK DETAIL (No. NP-15)
6. MECHANICALLY RESTRAIN STUB-OUT PIPE BACK TO NEAREST VALVE OR FITTING

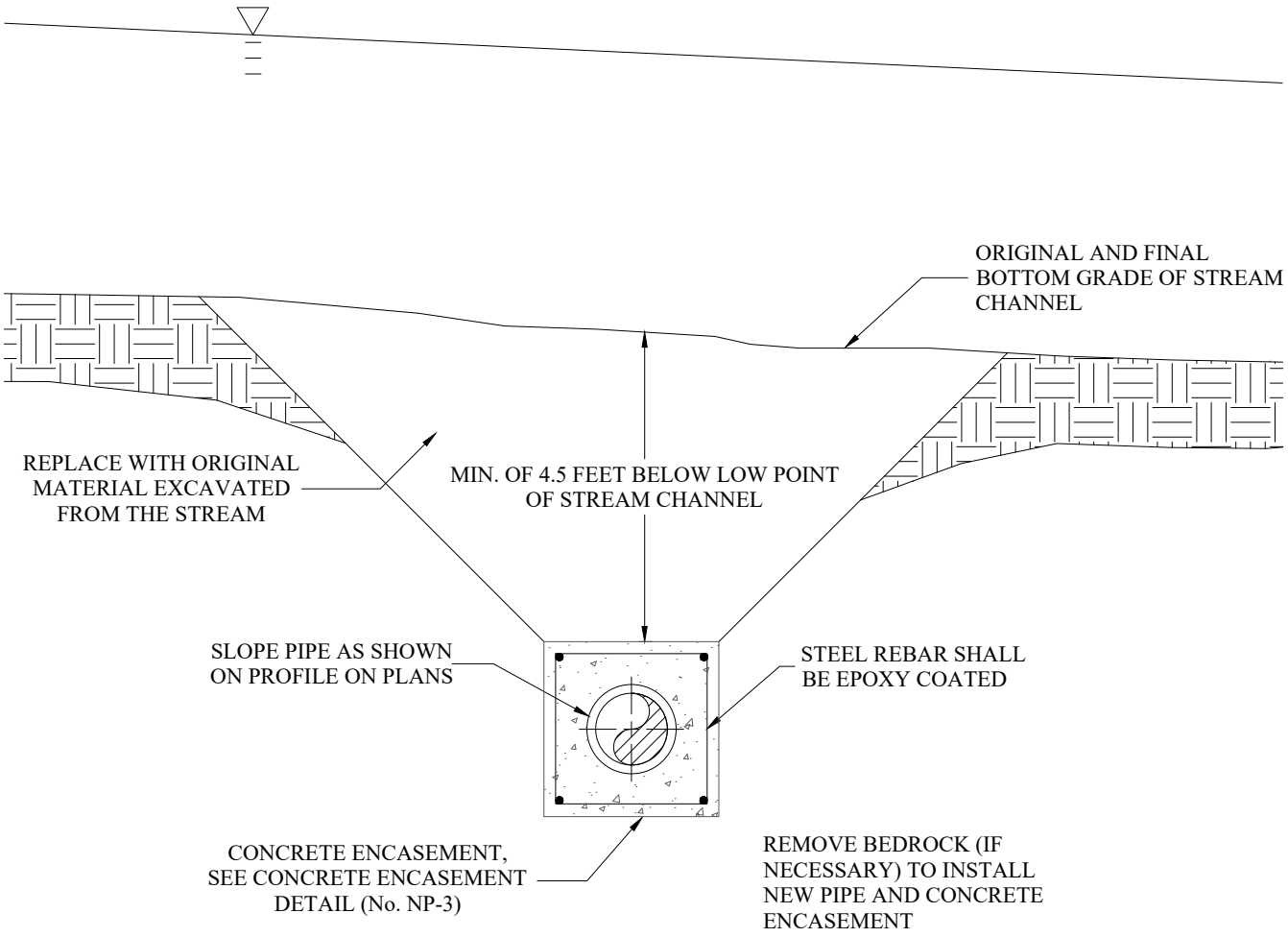
City of Evans, Colorado

Public Works Department

PIPE INTERSECTIONS & DEAD ENDS DETAIL

FOR FUTURE CONNECTIONS AND/OR PHASE/FILING BOUNDARY

Scale: N.T.S. | NP-13 | May 2019

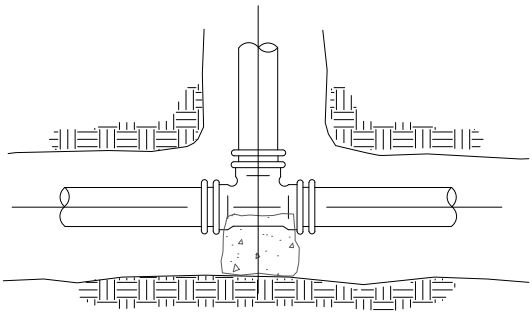


City of Evans, Colorado

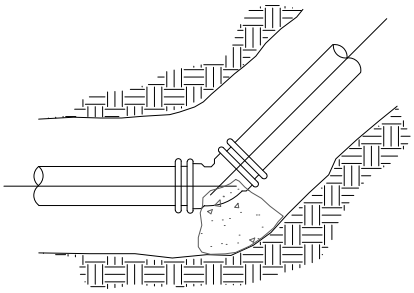
Public Works Department

STREAM OR DRAINAGEWAY CROSSING DETAIL

Scale: N.T.S. | NP-14 | May 2019

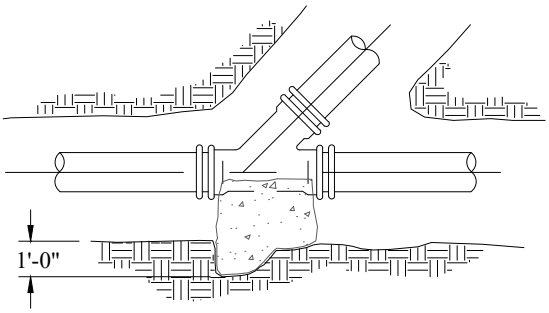


TEE

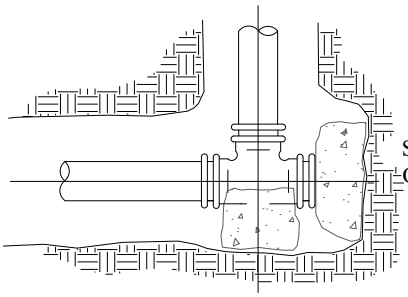


BEND-HORIZONTAL OR

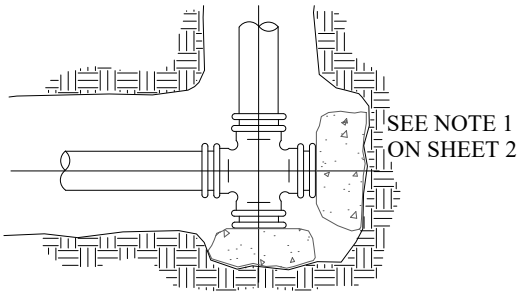
BOTTOM OF VERTICAL



Y

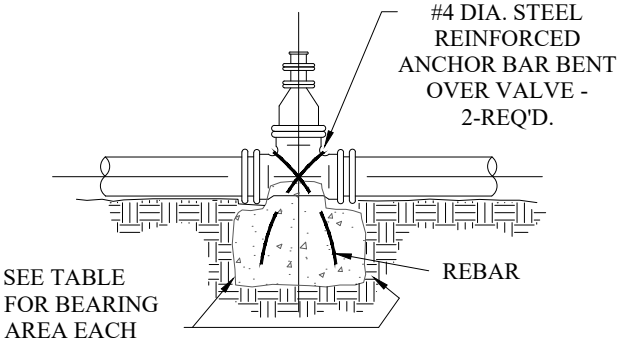


TEE W/DEAD END ON RUN



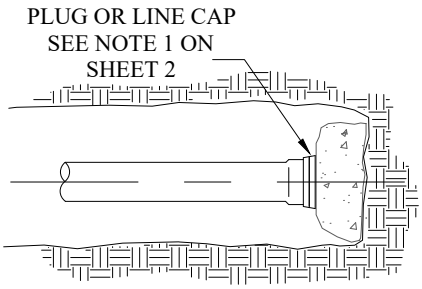
CROSS WITH

DEAD END BRANCHES

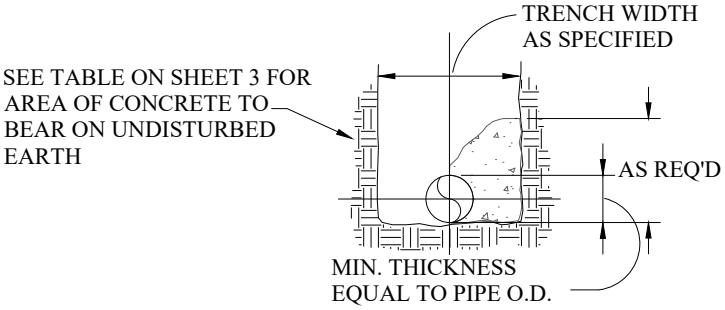


VALVE

(GATE OR BUTTERFLY)



DEAD END



SECTION (TYPICAL)

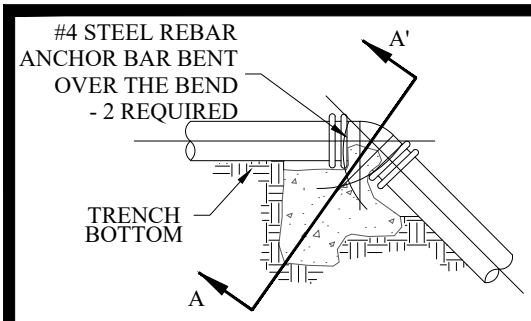
City of Evans, Colorado

Public Works Department

THRUST BLOCK DETAIL

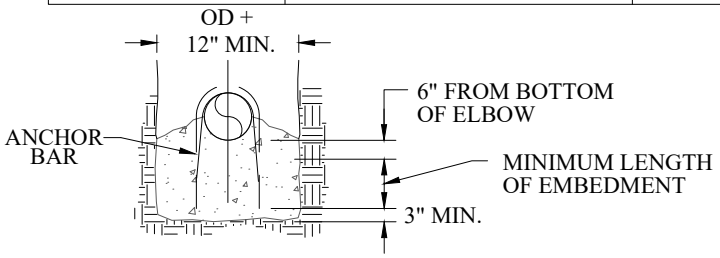
SHEET 1 OF 3

Scale: N.T.S. NP-15A May 2019



TOP OF VERT. BEND

BAR SIZES FOR 100 PSI		MIN. LENGTH OF EMBED-MENT
LESS THAN	NO. OF BARS & SIZE	
60 CUBIC FEET	TWO - #4	8"
90 CUBIC FEET	TWO - #5	12"
133 CUBIC FEET	TWO - #6	16"



SECTION A-A'

TABLE OF VOLUMES OF CONCRETE (IN CU. FT.)

REQ'D FOR VERT. BEND ANCHOR BLOCKS FOR 100 P.S.I. PRESSURE
ADJUST VOLUMES BY MULTIPLYING TABULATED VALUES BY A CORRECTION FACTOR "F".

F= ACTUAL SPECIFIED TEST PRESSURE
100

PIPE SIZE (INCHES)	BENDS		
	45°	22 1/2°	11 1/4°
3	3.7	1.9	1.4
4	6.5	3.3	1.7
6	14.6	7.5	3.7
8	26.0	13.2	6.6
10	40.5	20.7	10.3
12	58.5	30.0	14.8
14	79.5	40.7	20.2
15	91.0	46.6	23.2
16	104.0	53.0	26.5
18		67.3	33.4
20		83.0	41.0
21			45.5
22			50.0
24			59.5
30			
36			

SPECIAL DESIGN REQ'D.

NOTES FOR DRAWINGS:

1. AT DEAD ENDS, WRAP FITTINGS WITH TAR PAPER, FELT, OR HEAVY KRAFT PAPER TO PROVIDE BOND BREAK BETWEEN CONCRETE AND FITTINGS
2. ALL THRUST BLOCKING SHALL BE CAST-IN-PLACE CONCRETE HAVING A MINIMUM YIELD STRENGTH OF 3000 P.S.I. NO HAND MIXING OF CONCRETE ALLOWED
3. THRUST BLOCKING SHALL BE CAST AGAINST UNDISTURBED EARTH. FORMS SHALL BE USED AS REQUIRED TO OBTAIN ADEQUATE BEARING AREA AND TO CONFINE THE CONCRETE.THRUST BLOCKING SHALL BEAR ON THE FITTING OR END CAP ONLY AND SHOULD NOT BE ALLOWED TO SPILL OVER THE JOINT OR AGAINST THE PIPE
4. MEGA-LUGS OR OTHER JOINT RESTRAINT MAY BE USED ALONG WITH OR IN PLACE OF CONCRETE THRUST BLOCKS WITH DESIGN SUBMITTED BY PROFESSIONAL ENGINEER AND APPROVED BY PUBLIC WORKS DEPARTMENT
5. PIPE INSTALLED UNDER CONDITIONS DIFFERENT FROM THOSE NORMALLY ENCOUNTERED SHALL REQUIRE THRUST BLOCKS DESIGNED FOR THOSE PARTICULAR CONDITIONS

City of Evans, Colorado

Public Works Department

THRUST BLOCK DETAIL

SHEET 2 OF 3

Scale: N.T.S. NP-15B May 2019

TABLE OF BEARING AREAS IN SQ. FT. FOR CONCRETE

THRUST BLOCKING

FOR 100 P.S.I. INTERNAL STATIC PRESSURE AND 1000 LBS. PER SQ. FT. SOIL BEARING CAPACITY

PIPE SIZE (INCHES)	BENDS				* TEES	GATE VALVES	DEADENDS AND CROSSES WITH ONE OR TWO BRANCHES PLUGGED
	90°	45°	22 1/2°	11 1/4°			
3	1.0	0.6	0.3	0	0.7	0.5	0.7
4	1.8	1.0	0.5	0	1.3	0.5	1.3
6	4.0	2.2	1.1	0	2.8	0.7	2.8
8	7.1	3.8	2.0	1.0	5.0	2.4	5.0
10	11.1	6.0	3.0	1.5	7.8	4.5	7.8
12	16.0	8.6	4.4	2.2	11.3	7.3	11.3
14	21.7	11.8	6.0	3.0	15.4	11.0	15.4
15	25.0	13.5	7.0	3.5	17.6		17.6
16	28.4	15.3	8.0	4.0	20.0		20.0
18			10.0	5.0	25.4		25.4
20			12.2	6.1	31.4		31.4
21				6.8	34.6		34.6
22				7.4	38.0		38.0
24				8.8	45.0		45.0
30			SPECIAL DESIGN				71.0
36							102.0

* PIPE SIZES ARE THE SIZE OF THE BRANCH SIZE

BEARING AREAS FOR ANY PRESSURE AND SOIL BEARING CAPACITY MAY BE OBTAINED BY MULTIPLYING THE TABULATED VALUES BY A CORRECTION FACTOR "F"

$$F = \frac{\text{ACTUAL SPECIFIED TEST PRESSURE IN HUNDREDS OF LBS/SQ. IN.}}{\text{ACTUAL SOIL BEARING CAPACITY IN THOUSANDS OF LBS.}}$$

EXAMPLE:
- TO FIND BEARING AREA FOR 8"-90° BEND WITH A STATIC INTERNAL PRESSURE OF 150 P.S.I. AND WITH A SOIL BEARING CAPACITY OF 3000 LBS. PER SQ. FT.
- $F = \frac{1.5}{3} = 0.5$
- TABULATED VALUE = 7.1 SQ. FT.
- 0.5 * 7.1 = 3.56 OR ~ 4 SQ. FT. OR 2 FT. LONG BY 2 FT. HIGH

IN THE ABSENCE OF SOIL BEARING CAPACITY INFORMATION, USE ABOVE TABLE

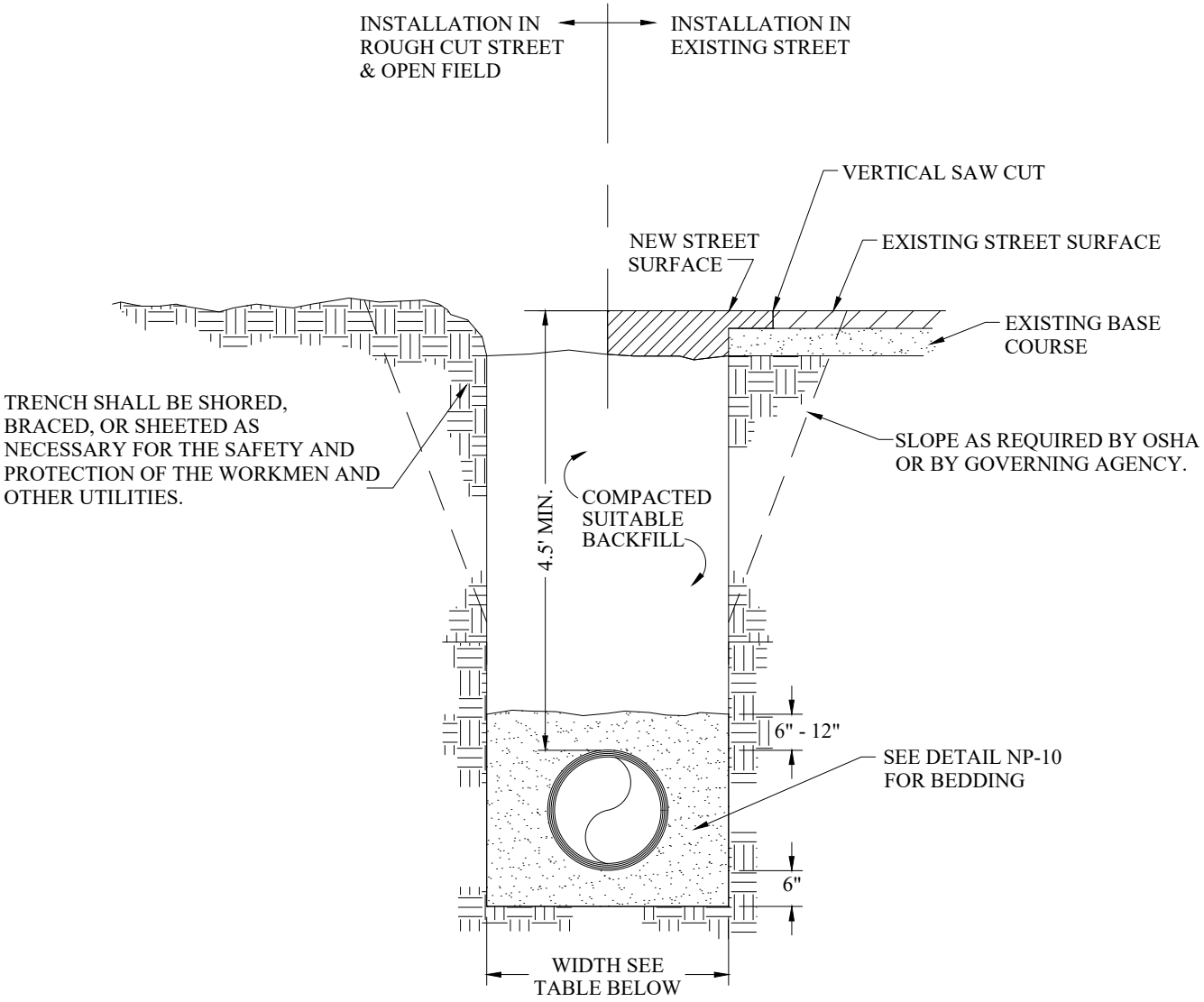
City of Evans, Colorado

Public Works Department

THRUST BLOCK DETAIL

SHEET 3 OF 3

Scale: N.T.S. NP-15C May 2019



PIPE DIAMETER	MINIMUM WIDTH	MAXIMUM WIDTH
6"	1'-6"	2'-6"
8"	1'-8"	2'-8"
12"	2'-0"	3'-0"
16"	2'-4"	3'-4"
20"	2'-8"	3'-8"
24"	3'-0"	4'-0"
30"	3'-6"	4'-6"

NOTES:

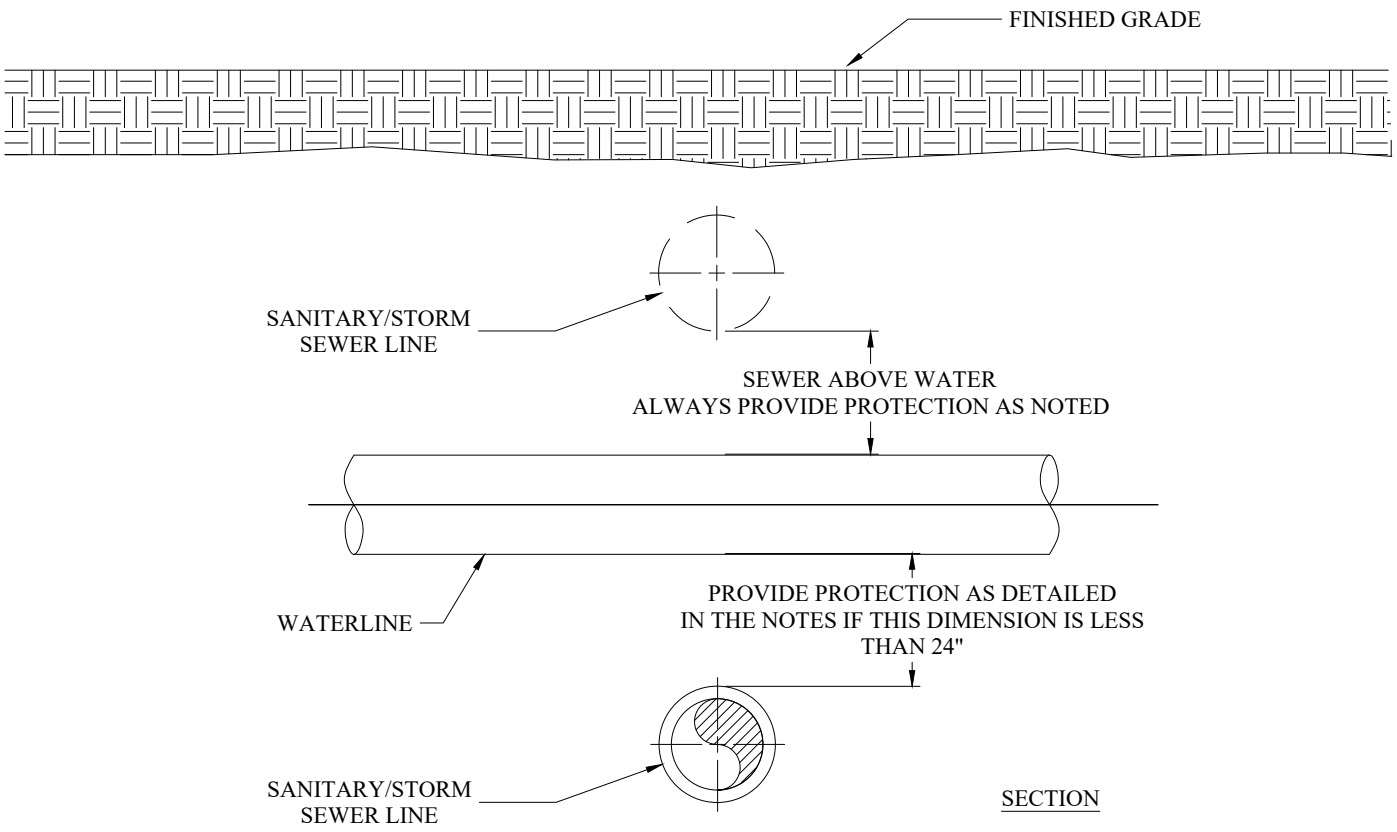
1. SQUEEGEE SAND IS DEFINED AS MATERIAL IN WHICH 100% PASSES THROUGH A $\frac{3}{8}$" SIEVE AND ONLY 0% TO 5% PASSES THROUGH A #200 SIEVE
2. AN OVER-EXCAVATED TRENCH SHALL BE REFILLED AND THOROUGHLY COMPACTED UNDER THE DIRECTION OF THE PUBLIC WORKS DEPARTMENT
3. UNDER NO CIRCUMSTANCES WILL PIPE BE LAID IN A PROPOSED FILL AREA PRIOR TO IT BEING COMPLETELY FILLED. THE FILL WILL BE PLACED FIRST TO PROPOSED GRADE AND COMPACTED AS REQUIRED. A TRENCH THEN WILL BE EXCAVATED AND THE PIPE INSTALLED IN THE USUAL MANNER

City of Evans, Colorado

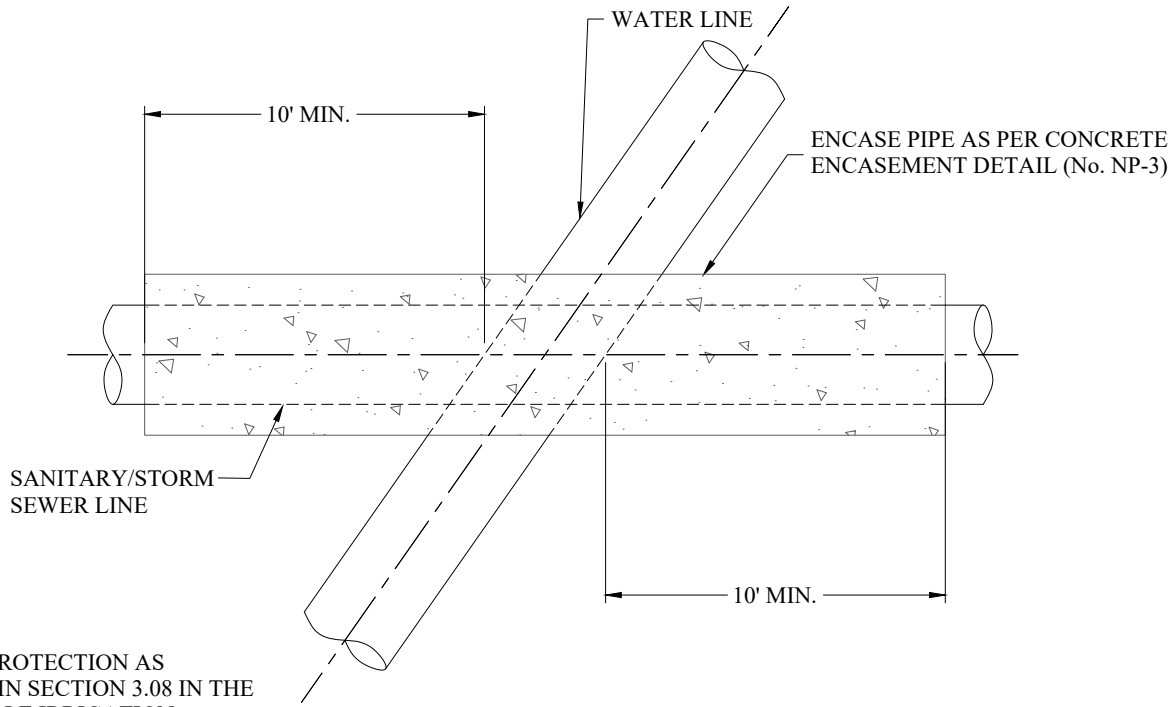
Public Works Department

TRENCH CROSS-SECTION DETAIL

Scale: N.T.S. NP-16 May 2019



SECTION



PLAN

NOTES:

1. PROVIDE PROTECTION AS SPECIFIED IN SECTION 3.08 IN THE NONPOTABLE IRRIGATION SPECIFICATIONS

City of Evans, Colorado

Public Works Department

UTILITY CROSSING DETAIL

Scale: N.T.S. | NP-17 | May 2019