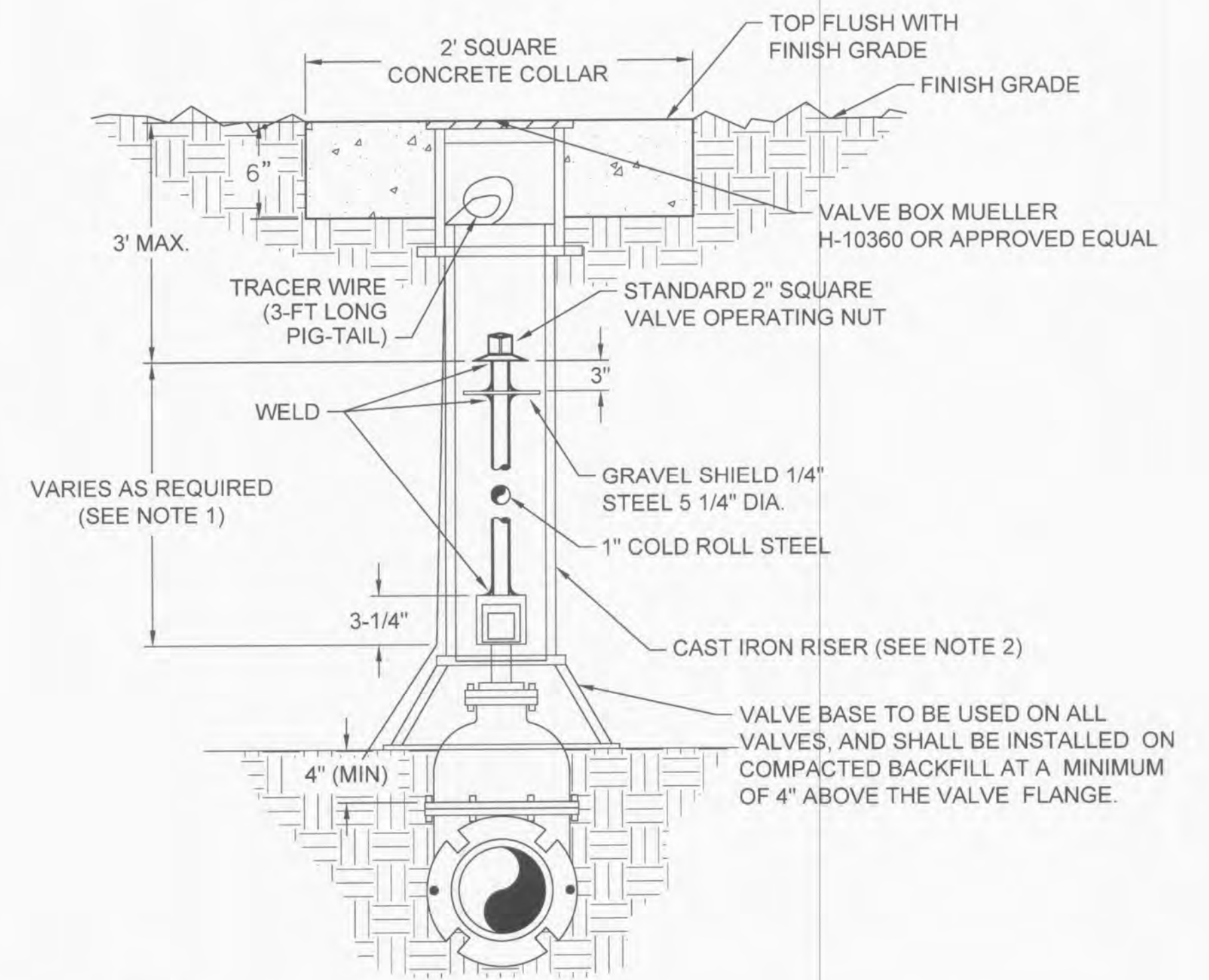
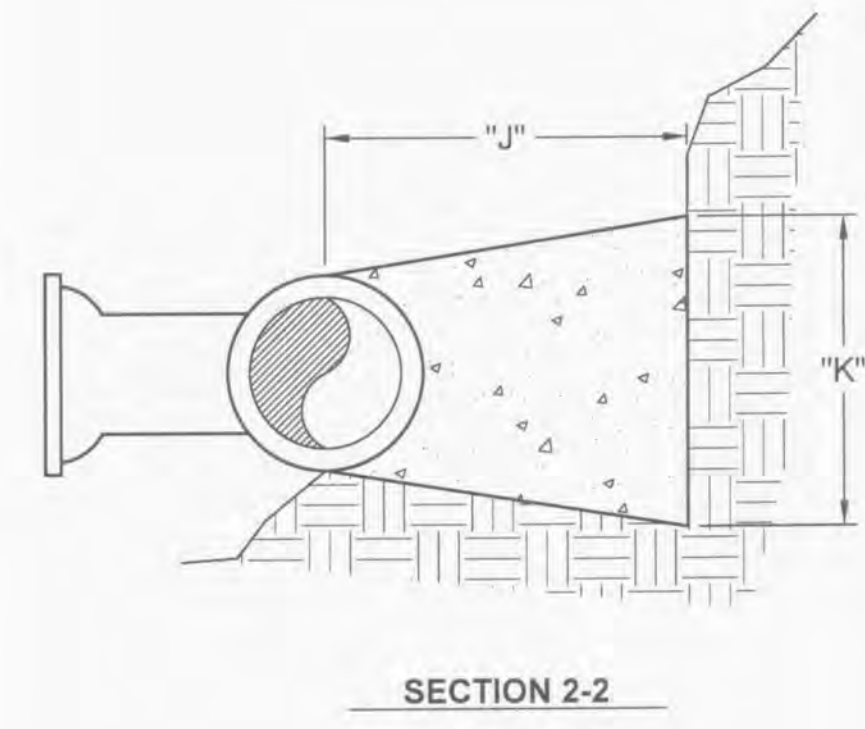
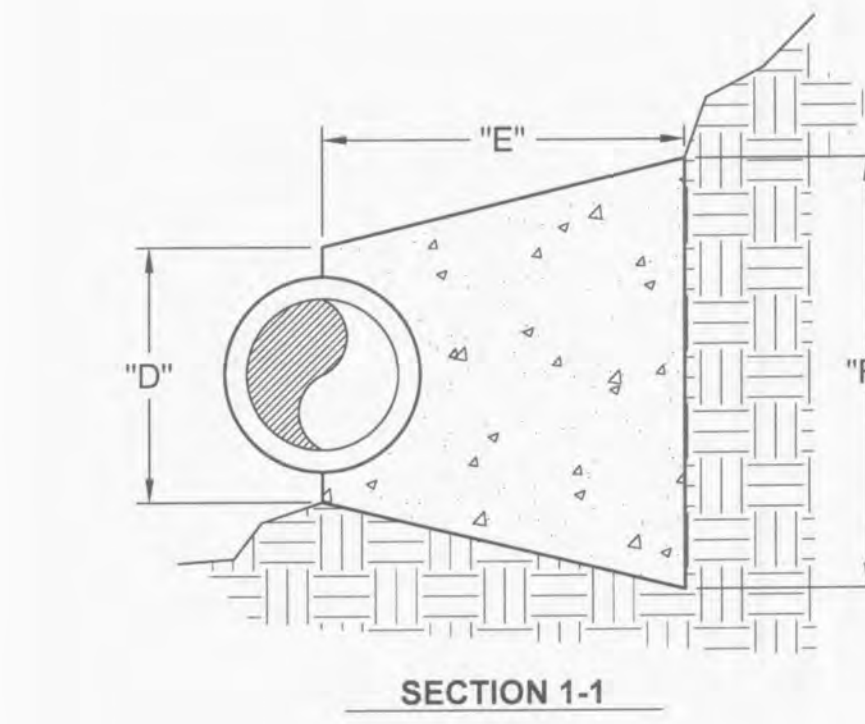
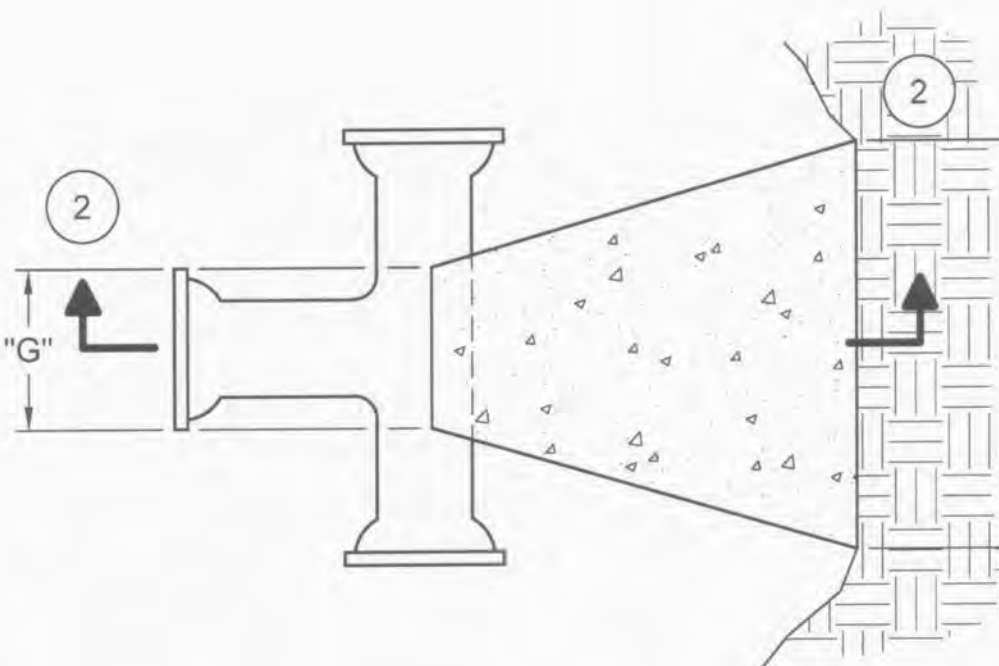
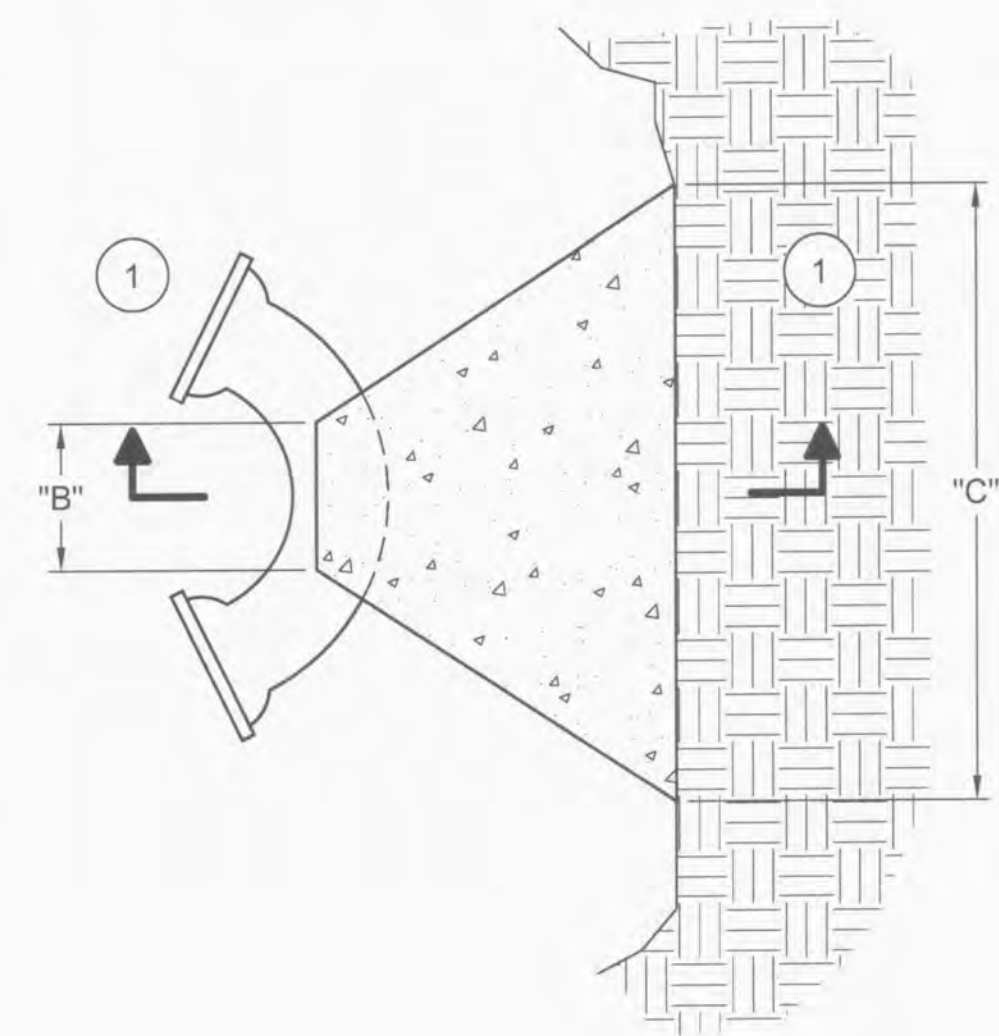


BENDS	"B"	"C"	"D"	"E"	"F"
6"-11 1/4"	8"	15"	12"	24"	10"
6"-22 1/2"	8"	19"	12"	24"	13"
6"-45"	8"	30"	12"	24"	15"
6"-90"	8"	30"	12"	24"	28"
8"-11 1/4"	8"	20"	12"	24"	10"
8"-22 1/2"	8"	22"	12"	24"	18"
8"-45"	8"	31"	12"	24"	24"
8"-90"	8"	38"	12"	24"	36"
12"-11 1/4"	8"	30"	12"	24"	15"
12"-22 1/2"	8"	35"	12"	24"	25"
12"-45"	8"	40"	12"	24"	40"
12"-90"	8"	60"	12"	24"	52"
16"-11 1/4"	TL	28"	20"	24"	28"
16"-22 1/2"	TL	39"	20"	24"	39"
16"-45"	TL	55"	20"	24"	55"
16"-90"	TL	91"	20"	24"	60"
20"-11 1/4"	TL	34"	24"	26"	28"
20"-22 1/2"	TL	48"	24"	26"	39"
20"-45"	TL	74"	24"	26"	55"
20"-90"	TL	136"	24"	26"	60"
24"-11 1/4"	TL	40"	28"	28"	40"
24"-22 1/2"	TL	56"	28"	28"	56"
24"-45"	TL	101"	28"	28"	60"
24"-90"	TL	186"	28"	28"	60"
30"-11 1/4"	TL	49"	34"	30"	49"
30"-22 1/2"	TL	79"	34"	30"	60"
30"-45"	TL	154"	34"	30"	60"
30"-90"	TL	285"	34"	30"	60"

TEES	"G"	"H"	"J"	"K"
6"X6"X6"	12"	24"	24"	18"
8"X8"X6"	12"	24"	24"	18"
8"X8"X8"	12"	27"	24"	27"
12"X12"X6"	12"	24"	24"	18"
12"X12"X8"	12"	27"	24"	27"
12"X12"X12"	12"	38"	24"	38"
24"X24"X16"	16"	53"	28"	53"

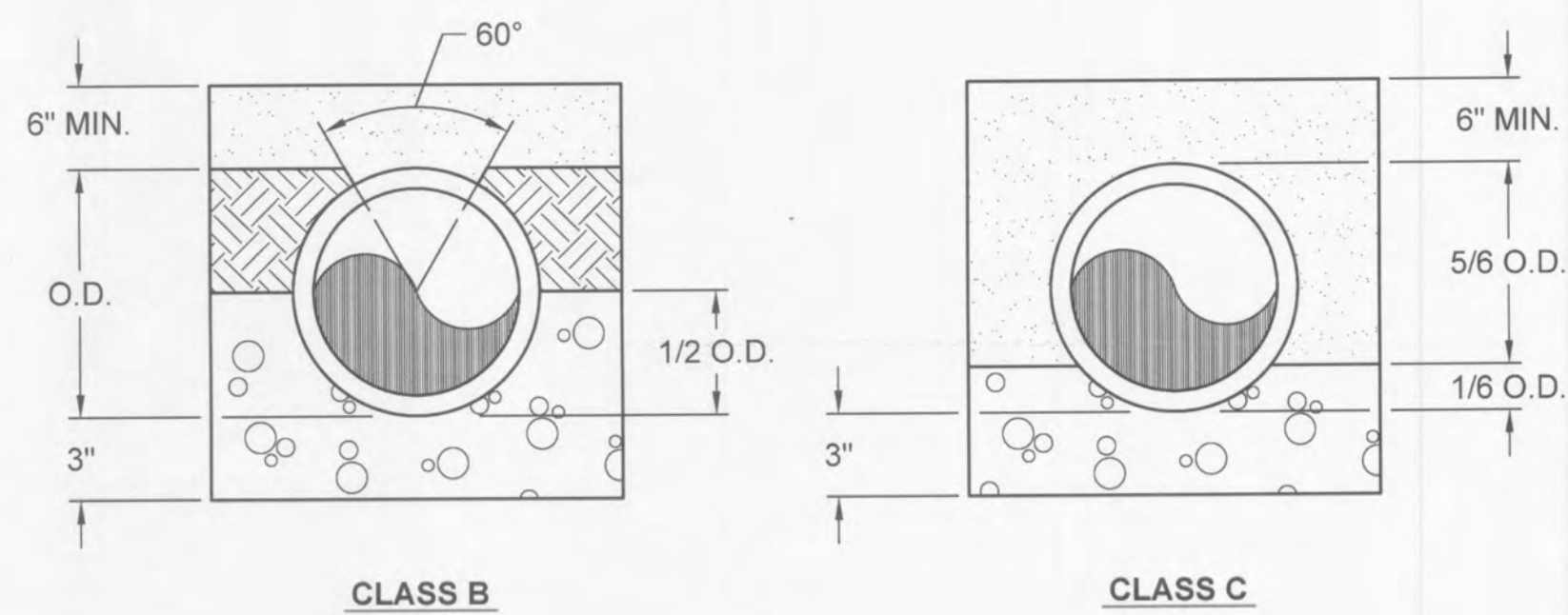
- NOTES:**
- THE 2" FITTINGS SHALL BE CONSIDERED EQUIVALENT TO 8" FITTINGS.
 - TAPPING SLEEVES SHALL HAVE THRUST BLOCKS THE SAME SIZE AS REQUIRED FOR TEES.
 - "TL" IS TOTAL LENGTH OF FITTING MINUS CLEARANCE FOR BELLS.



- NOTES:**
- THE 1" STEEL ROD EXTENSION IS ONLY REQUIRED WHERE THE VALVE OPERATING NUT IS GREATER THAN 3 FEET BELOW FINISH GRADE.
 - VALVE BOXES SHALL BE CAST IRON ADJUSTABLE SCREW TYPE (5-1/4" SHAFT) WITH BASE, WATER COVER, AND SKIRT.

WATER VALVE AND VALVE BOX DETAIL
NOT TO SCALE

CONCRETE THRUST BLOCKS
NOT TO SCALE



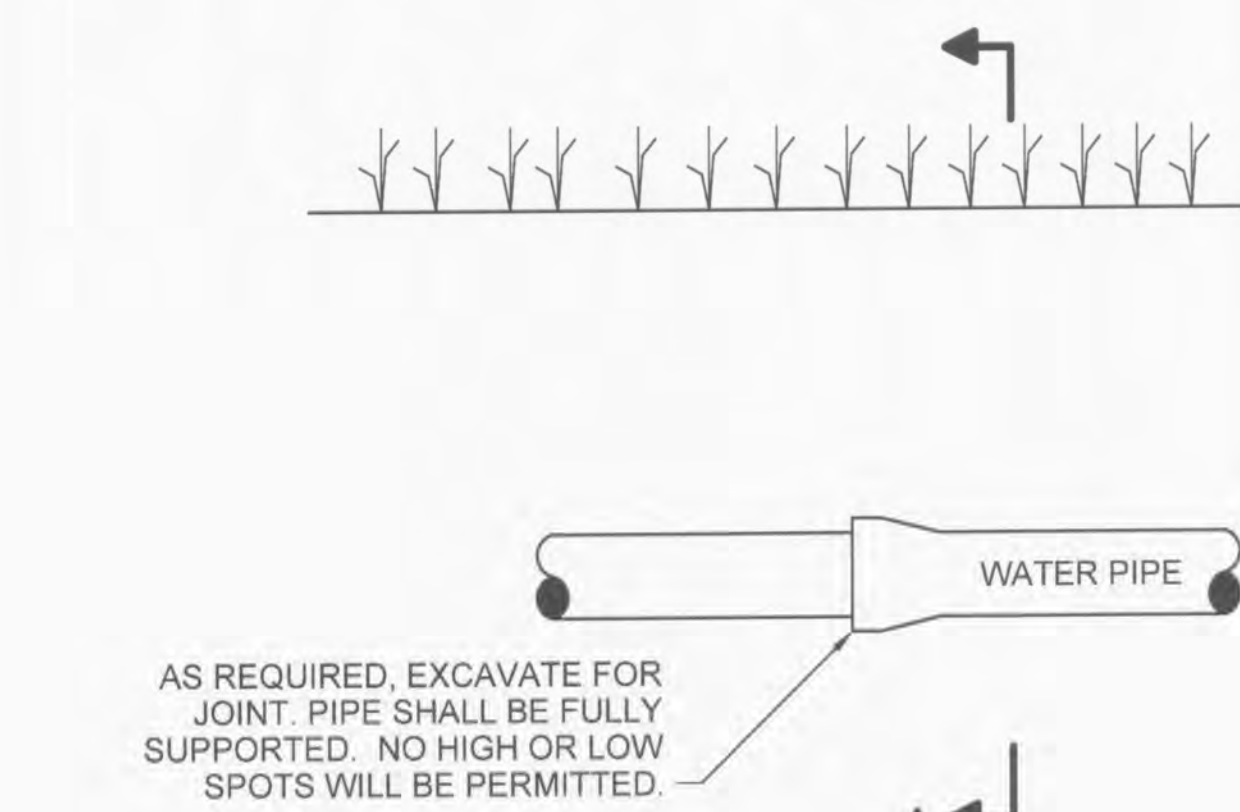
- LEGEND**
- O.D. - OUTSIDE DIAMETER OF PIPE
 - TAMPED BACKFILL
 - COMPACTED BACKFILL
 - GRANULAR BEDDING

- NOTES:**
- GRANULAR BEDDING SHALL BE CRUSHED ROCK OR PEA GRAVEL WITH NOT LESS THAN 95% PASSING 1/2" AND NOT LESS THAN 95% RETAINED ON A #4, TO BE PLACED IN NOT MORE THAN 6" LAYERS AND COMPACTED BY SLICING WITH A SHOVEL OR VIBRATING.
 - COMPACTED BACKFILL SHALL BE FINELY DIVIDED JOB EXCAVATED MATERIAL FREE FROM DEBRIS, ORGANIC MATERIAL AND STONES, PLACED IN UNIFORM LAYERS NOT MORE THAN 6" THICK, COMPACTED TO 95% MAXIMUM DENSITY AS DETERMINED BY ASTM D698, OR GRADED AGGREGATE. GRANULAR BACKFILL MATERIAL MAY BE SUBSTITUTED FOR ALL OR PART OF COMPACTED BACKFILL.
 - TAMPED BACKFILL SHALL BE FINELY DIVIDED JOB EXCAVATED MATERIAL FREE FROM DEBRIS, ORGANIC MATERIAL AND STONES, HAND PLACED IN UNIFORM LAYERS NOT MORE THAN 8" THICK AND TAMPED AROUND PIPE. GRANULAR BACKFILL MATERIAL MAY BE SUBSTITUTED FOR ALL OR PART OF TAMPED BACKFILL.
 - CLASS B EMBEDMENT SHALL BE UTILIZED UNDER ROADWAYS AND DRIVEWAYS AND CLASS C EMBEDMENT SHALL BE USED AT ALL OTHER LOCATIONS.
 - DISTURBED AREAS SHALL BE RE-SEEDED OR RE-ROCKED TO MATCH THE EXISTING GROUND CONDITIONS.

WATER MAIN EMBEDMENT
NOT TO SCALE



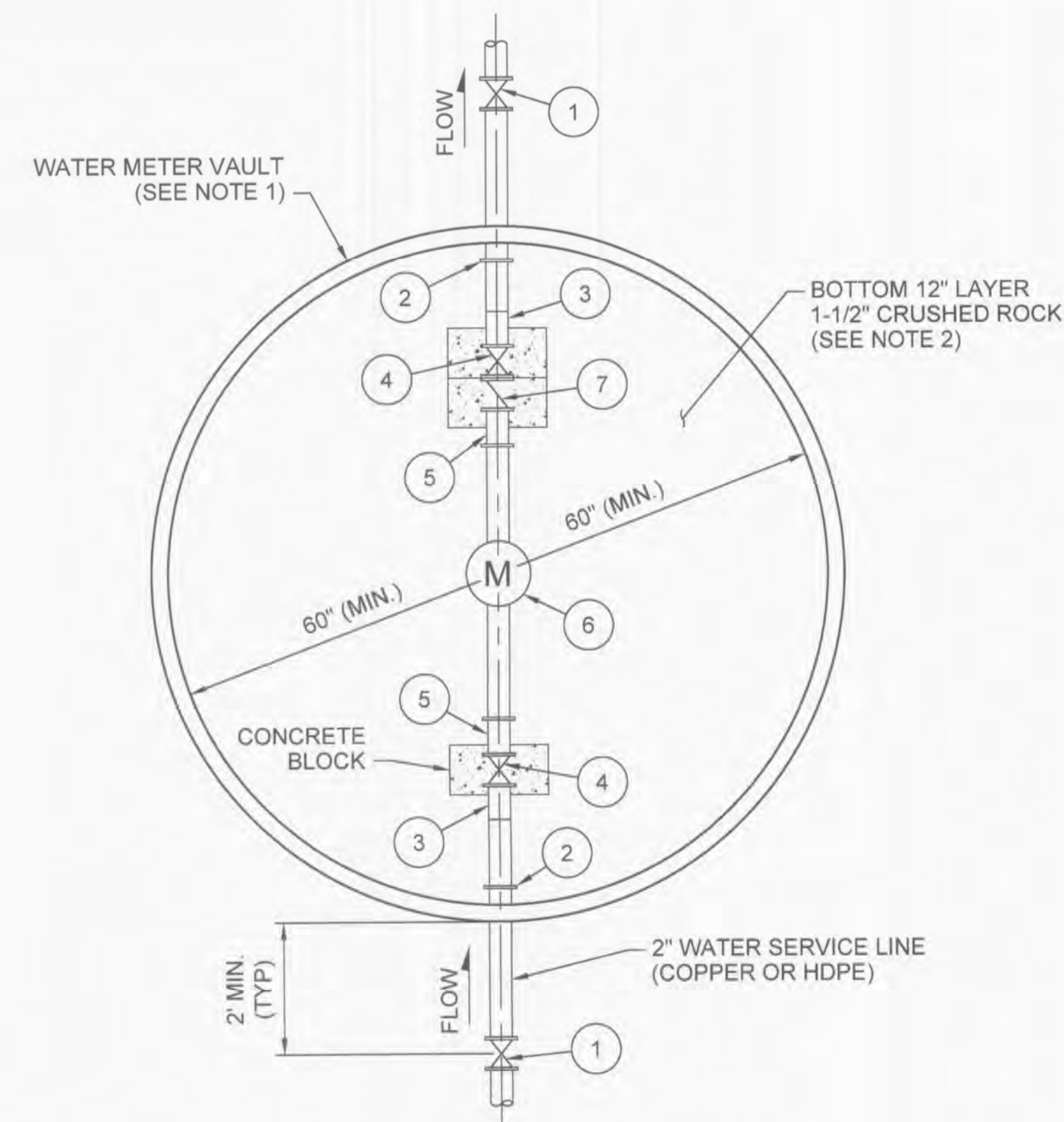
TYPICAL WATER AND SEWER SEPARATION
NOT TO SCALE



EARTH EXCAVATION
SECTION A-A

- NOTE:**
- UNDER ROADWAYS AND DRIVEWAYS, BACKFILL SHALL BE CRUSHED STONE OR GRAVEL COMPACTED IN TEN (10) INCH LAYERS.
 - EARTHEN BACKFILL SHALL BE WATER JETTED FOR COMPACTION.

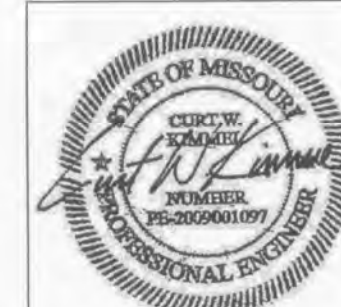
TYPICAL WATER MAIN INSTALLATION DETAIL
NOT TO SCALE



- 1 VALVE AND VALVE BOX
- 2 MECHANICAL COUPLING
- 3 CONNECTOR
- 4 BALL VALVE
- 5 SPOOL PIECE
- 6 WATER METER, SEE NOTE 3
- 7 SWING CHECK VALVE

WATER METER VAULT DETAIL
NOT TO SCALE

- WATER METER VAULT NOTES:**
- METER VAULT SHALL BE A PRECAST CONCRETE MANHOLE SECTION WITH A FLAT TOP SLAB, A PREFABRICATED RIGID PVC VAULT SUCH AS MUELLER EZ-VAULT, OR AN APPROVED EQUAL.
 - IF CONTRACTOR PROPOSES A VAULT WITH NO BOTTOM SLAB, THE METER VAULT SHALL BE PLACED ON A 12-INCH LAYER OF CRUSHED ROCK. THE CRUSHED ROCK LAYER SHALL EXTEND ONE (1) FOOT BEYOND THE OUTSIDE DIMENSIONS OF THE VAULT IN ALL DIRECTIONS.
 - WATER METER SHALL BE A 2-INCH METER MEETING THE REQUIREMENTS OF THE APPLICABLE AWWA STANDARD (AWWA C700, AWWA C710, ETC). CONTRACTOR SHALL SUBMIT THE METER MAKE AND MODEL TO THE ENGINEER FOR APPROVAL PRIOR TO INSTALLATION OF THE METER.
 - METER VAULT SHALL BE MINIMUM 60-INCH DIAMETER AND SHALL BE SIZED SUCH THAT 12 INCHES OF CLEARANCE IS ESTABLISHED BETWEEN THE METER VAULT WALLS AND ALL VALVE AND FITTINGS.
 - METER VAULT SHALL BE WATER TIGHT, INCLUDING PIPE PENETRATIONS.
 - ALL VALVES SHALL BE SUPPORTED WITH CONCRETE BLOCKS OR ADJUSTABLE PIPE SUPPORTS.
 - ALL VALVES NOT SHOWN WITHIN THE METER VAULT SHALL BE DIRECT-BURIED WITH VALVE BOXES.
 - METER VAULT SHALL BE EQUIPPED WITH STEPS/RUNGS SPACED 16 INCHES ON CENTER FOR ACCESS.
 - METER VAULT SHALL BE INSTALLED WITH A 24-INCH DIAMETER MANHOLE COVER THAT IS CENTERED OVER THE STEPS/RUNGS.
 - CONTRACTOR SHALL SUBMIT THE METER VAULT TO THE ENGINEER FOR APPROVAL PRIOR TO INSTALLATION OF THE METER VAULT.



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Professional Engineer
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Date: 06/27/2014
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REV	PROJ ID	DATE	DRWN	RW	APPR

O'FALLON RENEWABLE ENERGY CENTER

WATER LINE DETAILS

CP15

REV 0