

**NOTES:**

1. MINIMUM COVER SHALL BE 4'-6" BELOW OFFICIAL STREET GRADE.
2. TRENCH SHALL CONFORM TO APPLICABLE OSHA REQUIREMENTS.
3. COMPACTION SHALL BE IN ACCORDANCE WITH DENVER WATER ENGINEERING STANDARDS CHAPTER 7.

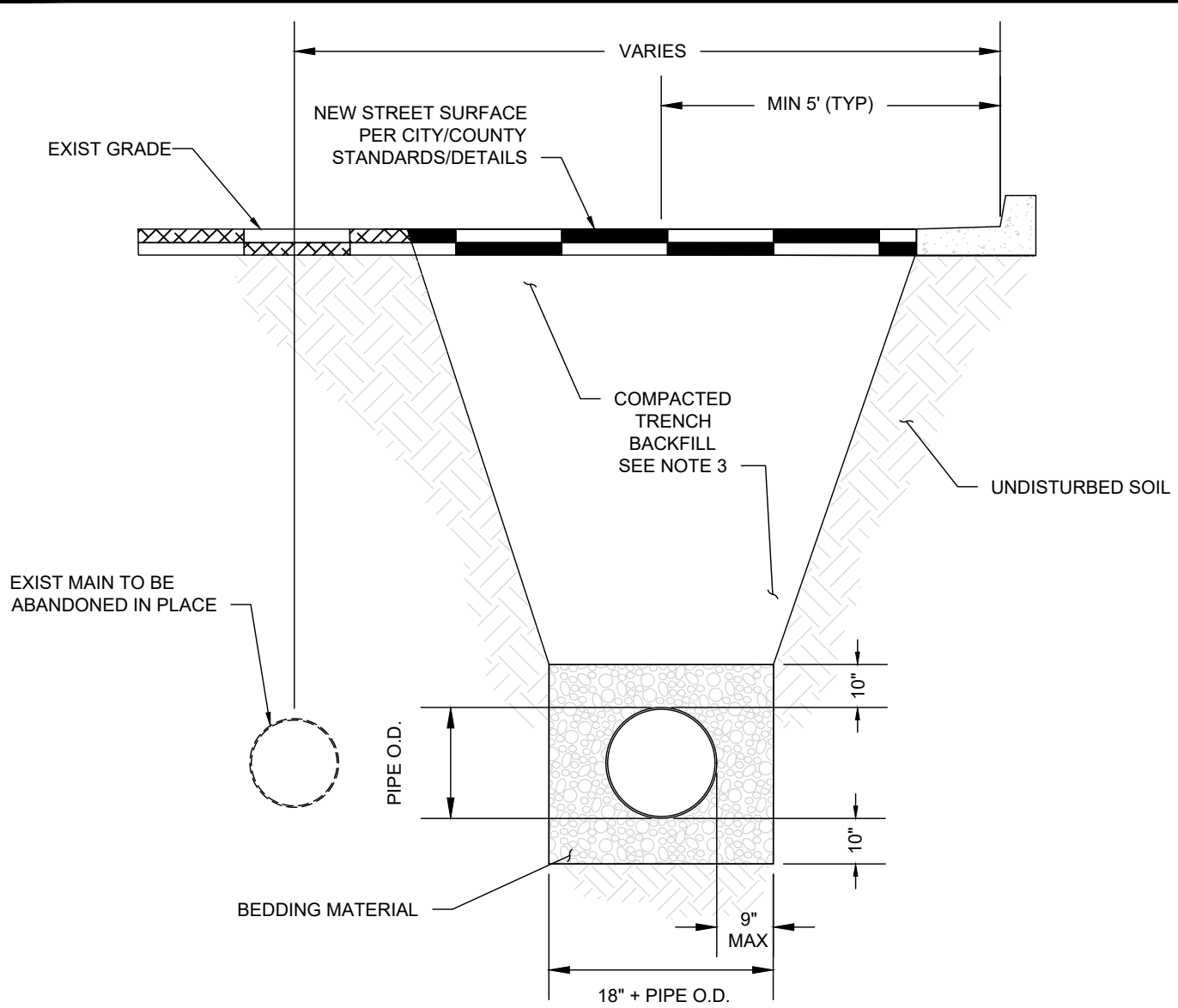
<b>REVISED</b>	
BY	DATE



**TYPICAL TRENCH DETAIL  
WITHOUT CURB**

SCALE	<b>NOT TO SCALE</b>
ISSUE DATE	<b>JULY 2021</b>
APPROVED	DRAWING NO. <b>W-01</b>

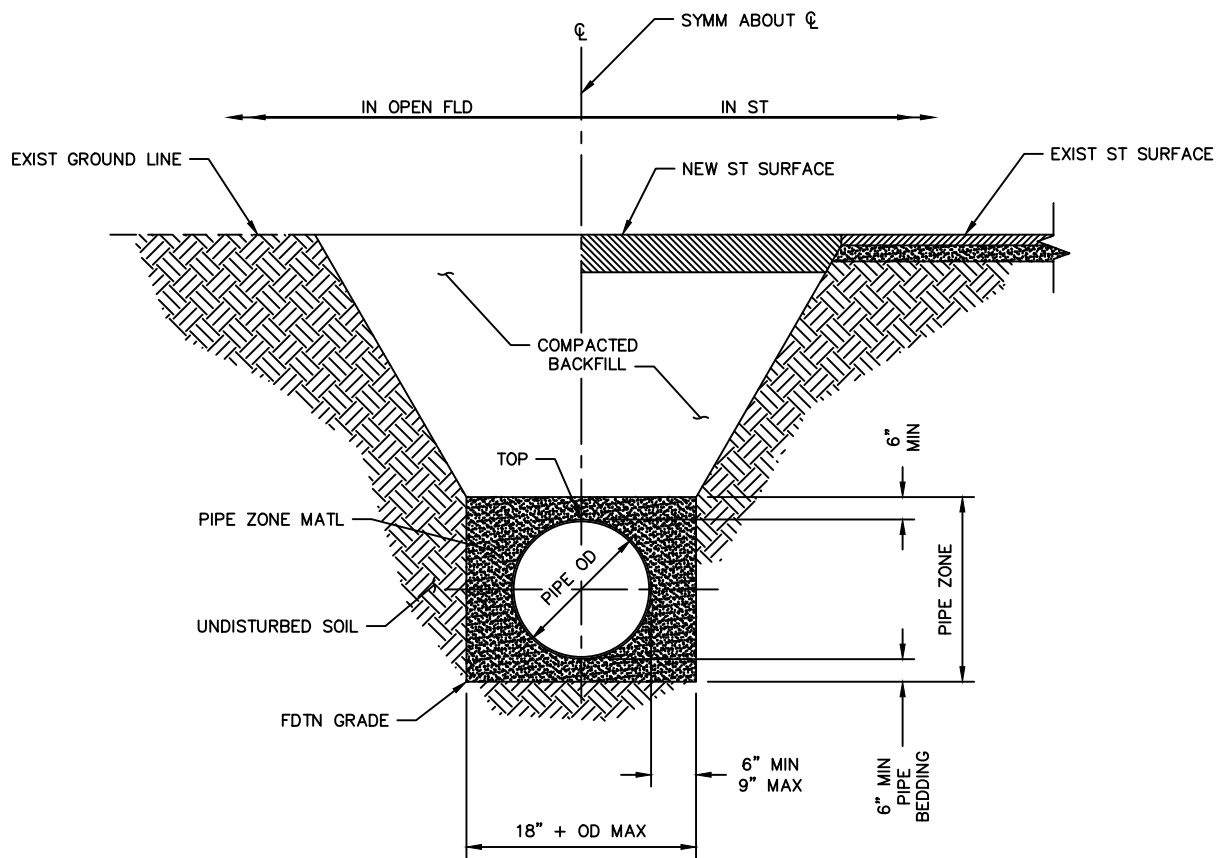
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**NOTES:**

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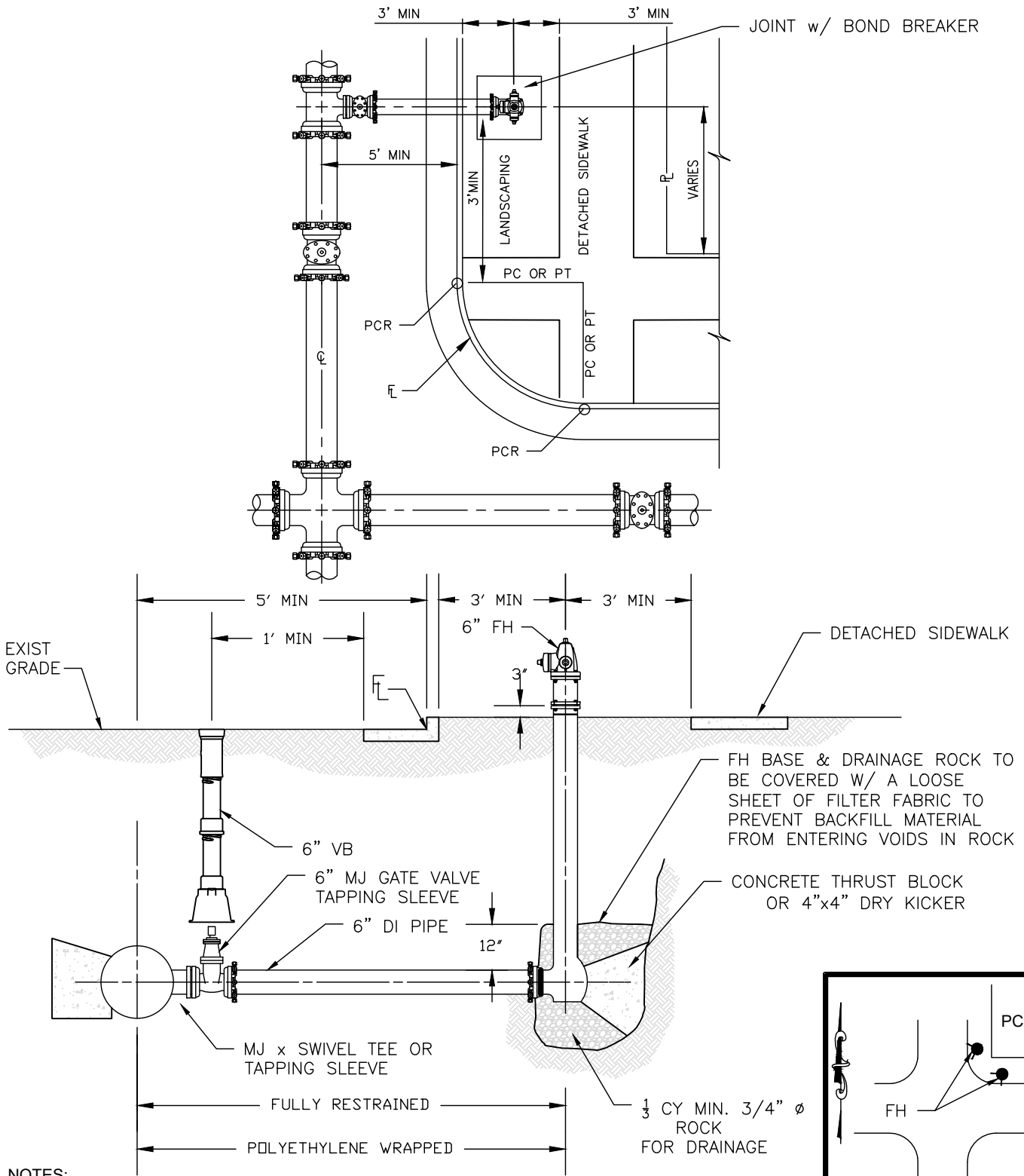
<b>REVISED</b>			SCALE
BY	DATE		<b>NOT TO SCALE</b>
		<b>TYPICAL TRENCH DETAIL WITH CURB</b>	ISSUE DATE
			<b>JULY 2021</b>
			APPROVED
			<b>W-02</b>



**NOTES:**

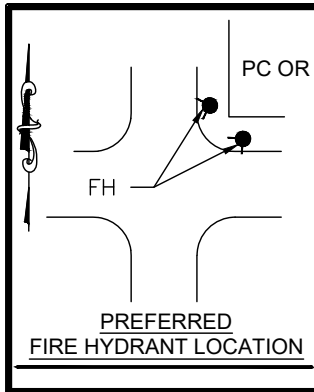
1. MINIMUM COVER SHALL BE 4 FEET 6 INCHES BELOW THE GROUND LINE.
2. TRENCH SHALL CONFORM TO APPLICABLE OSHA REQUIREMENTS.

<b>REVISED</b>			SCALE
BY	DATE		<b>NOT TO SCALE</b>
		<b>TYPICAL TRENCH SECTION</b>	ISSUE DATE
			<b>SEPTEMBER 2023</b>
			APPROVED
			DRAWING NO.
			<b>W-03</b>



**NOTES:**

1. NO HORIZONTAL OR VERTICAL BENDS ARE ALLOWED ON THE FIRE HYDRANT BRANCH..
2. DO NOT COVER OR PLUG DRAIN HOLES WITH CONCRETE..

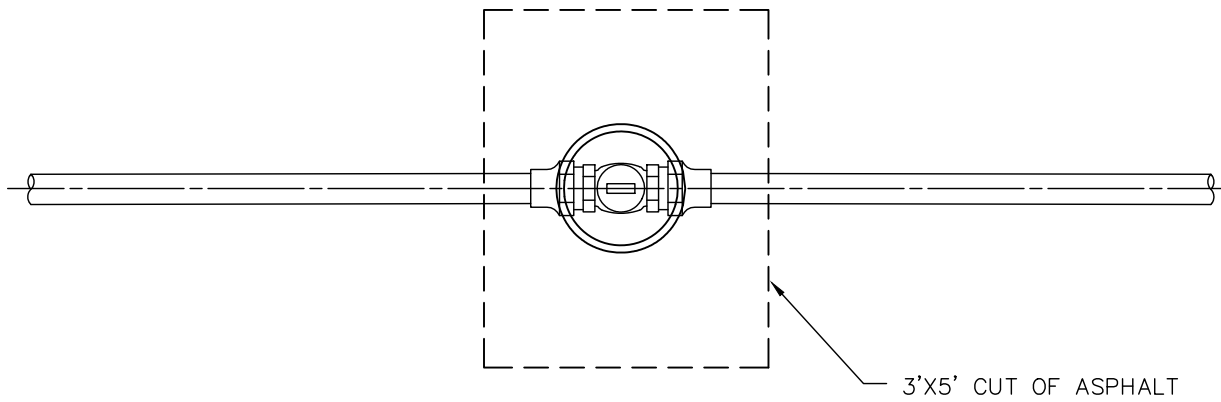


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BY	DATE

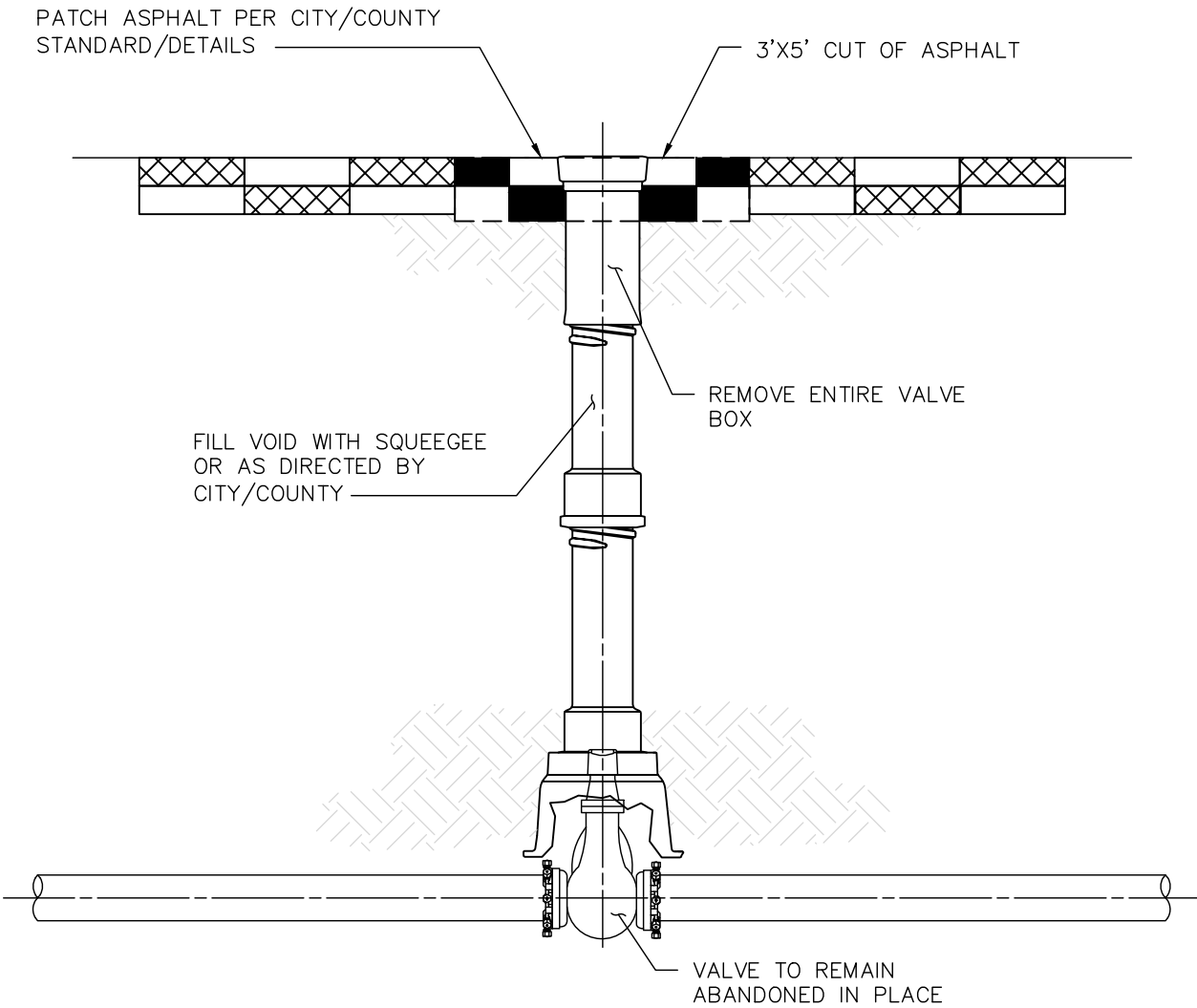


**PLAN, PROFILE & LOCATION FOR  
FIRE HYDRANTS, MAINS, & VALVES**

SCALE	<b>NOT TO SCALE</b>
ISSUE DATE	<b>JULY 2021</b>
APPROVED	DRAWING NO. <b>W-04</b>



**PLAN**



**ELEVATION**

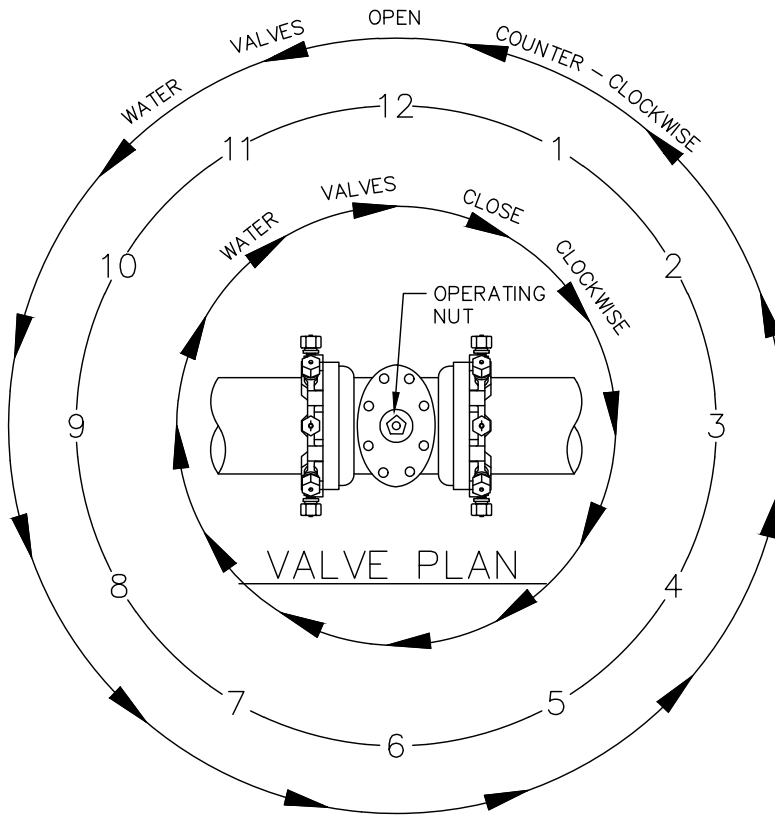
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<b>REVISED</b>	
BY	DATE



**VALVE ABANDONMENT**

SCALE	<b>NOT TO SCALE</b>
ISSUE DATE	<b>JULY 2021</b>
APPROVED	DRAWING NO.
	<b>W-05</b>



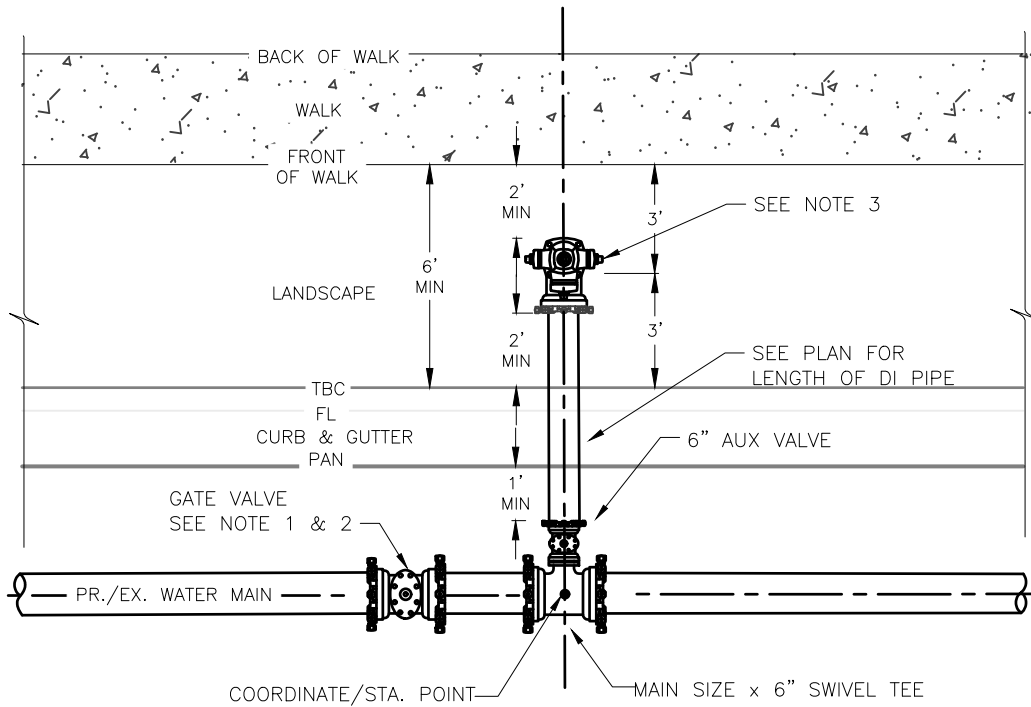
TREATED/POTABLE  
VALVE OPENING & CLOSING DIRECTION

NOTES:

1. CONSOLIDATED MUTUAL WATER VALVES ARE OPEN LEFT.

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BY	DATE		<b>NOT TO SCALE</b>
		<b>VALVE OPERATION</b>	ISSUE DATE
			<b>JULY 2021</b>
			APPROVED
			DRAWING NO.
			<b>W-06</b>

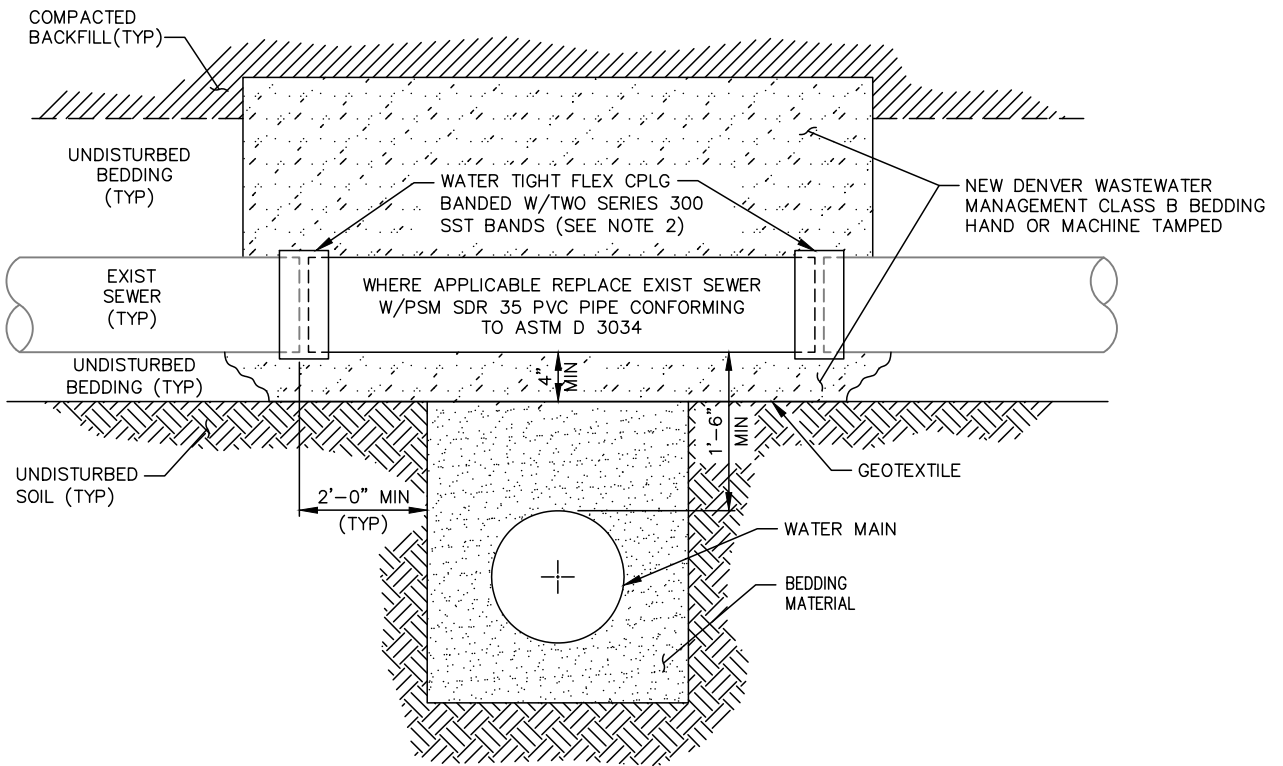


**NOTES:**

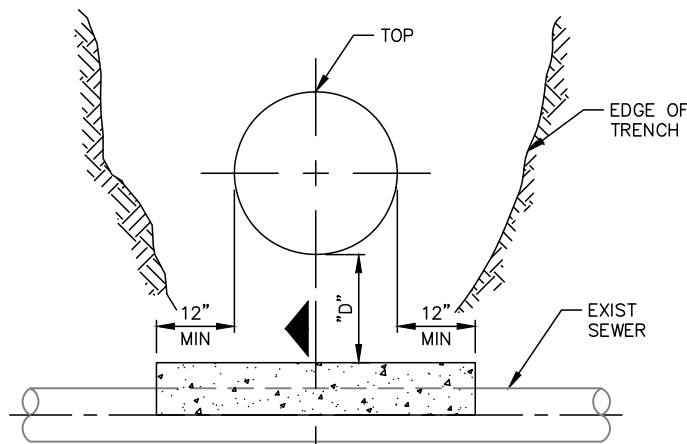
1. MAIN LINE ISOLATION VALVE'S LOCATION RELATIVE TO FH TEE VARIES, SEE PLAN SHEET FOR LOCATION.
2. ANCHOR COUPLING OR SHORT SECTION (3' MIN) OF MAIN TO BE USED TO TIE ISOLATION VALVE TO FH TEE.
3. FIRE HYDRANT TO BE WATEROUS PACER WB-67-250 (DENVER STD 5'6") DANA KEPNER COMPANY MODEL #56LWP25056DENMR.
4. NO VERTICAL OR HORIZONTAL BENDS ARE ALLOWED ON FIRE HYDRANT LATERALS.

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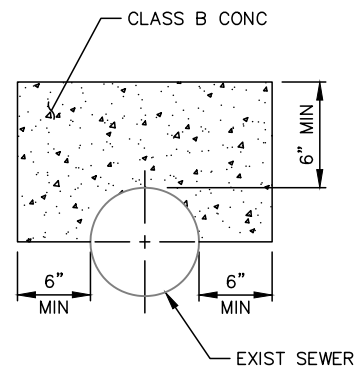
<b>REVISED</b>			SCALE
BY	DATE		<b>NOT TO SCALE</b>
HEY	SEPT-2023	<b>TYPICAL FIRE HYDRANT</b>	ISSUE DATE
			<b>JUNE 2021</b>
			APPROVED
			<b>W-07</b>



SEWER CROSSING OVER



SEWER CROSSING UNDER  
WITH "D" LESS THAN 2'



SECTION A  
THIS SHT

NOTES:

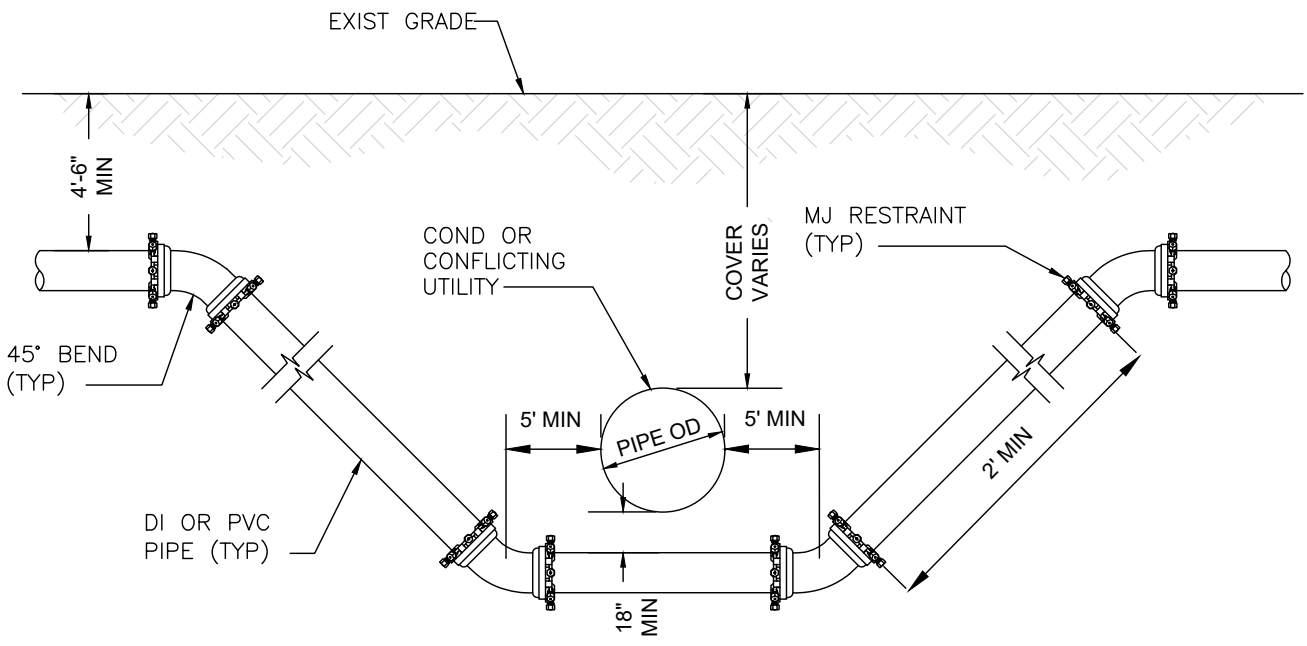
1. ANY EXISTING SEWER DAMAGED DURING INSTALLATION MUST BE REPLACED WITH PVC PIPE.
2. IN THE CITY AND COUNTY OF DENVER, WASTEWATER MANAGEMENT APPROVED FLEX COUPLING SHALL BE USED: FERNCO 5000 SERIES REPAIR COUPLING, MISSION FLEX-SEAL ADJUSTABLE REPAIR COUPLING, ONSET SHEAR GUARD.
3. ANY SUBDRAIN UNDER THE SEWER SHALL BE REPLACED SUCH THAT NO FLOW SHALL ENTER THE WATER LINE TRENCH.

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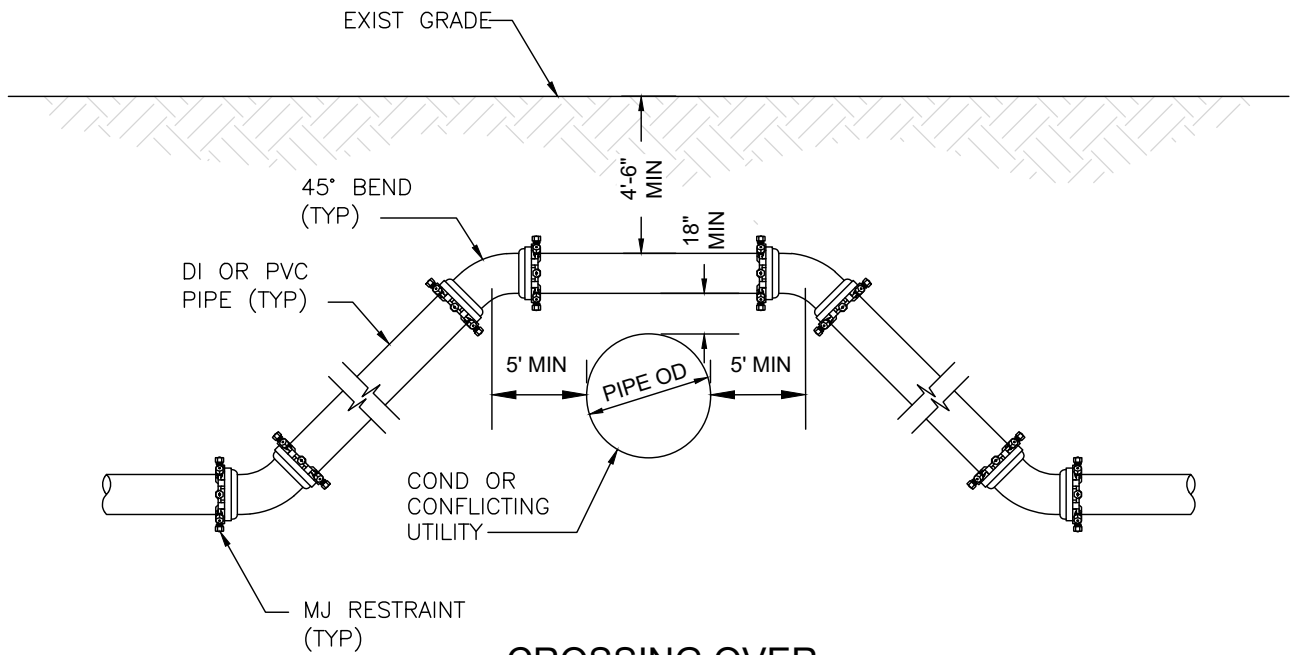
<b>REVISED</b>			SCALE
BY	DATE		NOT TO SCALE
			ISSUE DATE
			JULY 2021
		<b>STORM AND SANITARY SEWER CROSSING</b>	APPROVED
			DRAWING NO. <b>W-08</b>



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**CROSSING UNDER.**

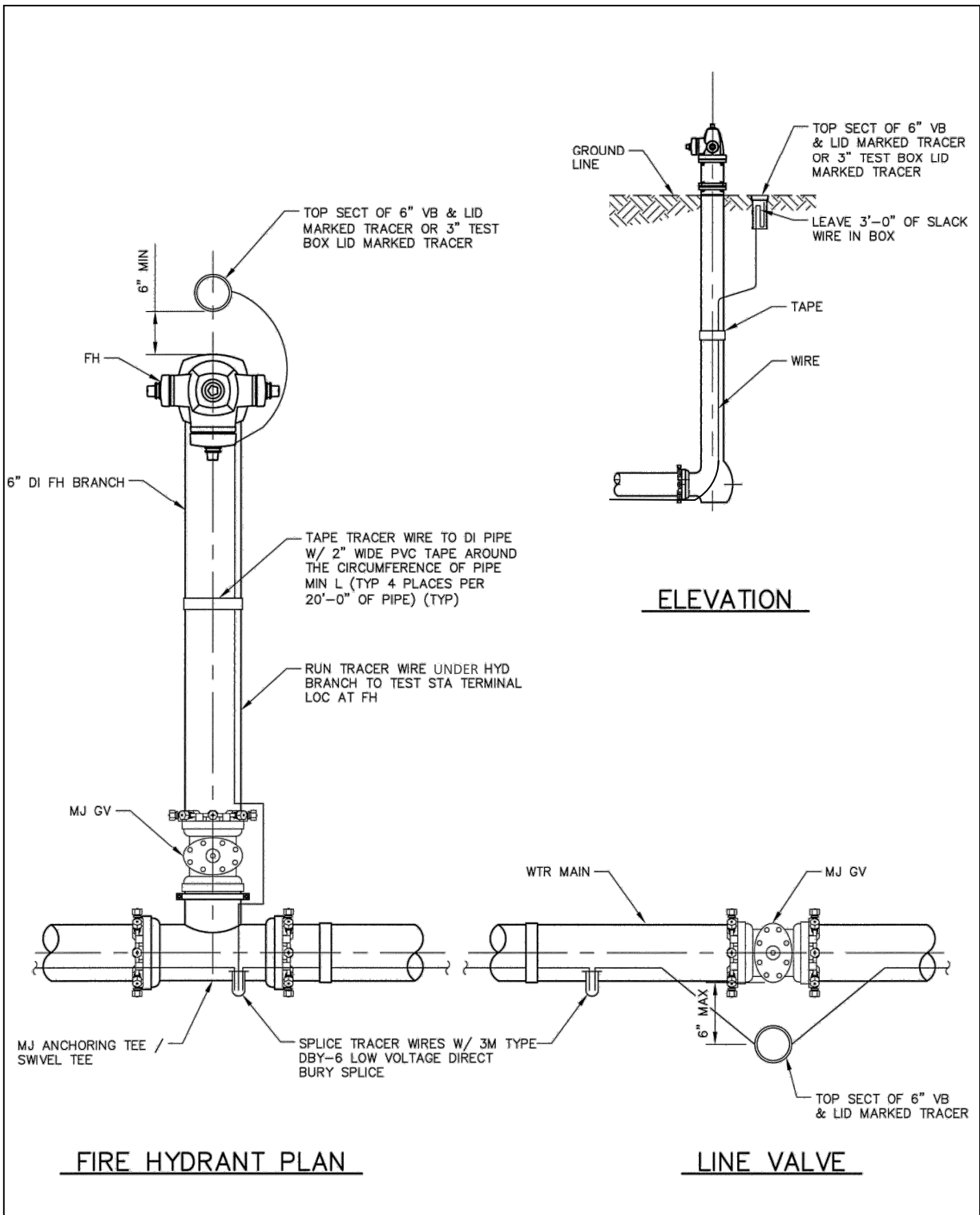


**CROSSING OVER**

**NOTES:**

- 1. THRUST BLOCK & RESTRAINT PER DENVER WATER SPECIFICATION (THRUST BLOCKS & RESTRAINTS NOT SHOWN FOR DETAIL CLARITY)

<b>REVISED</b>			SCALE
BY	DATE		NOT TO SCALE
			ISSUE DATE
			JULY 2021
		<b>OPEN CUT CROSSING OVER OR UNDER CONDUIT OR CONFLICTING UTILITY</b>	APPROVED
			DRAWING NO. <b>W-09</b>



**NOTES:**

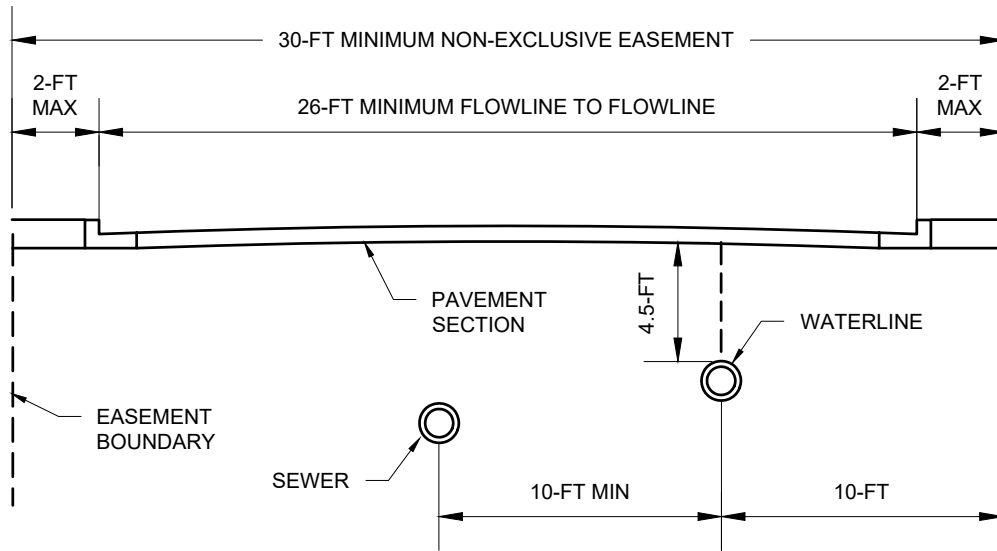
1. TRACER WIRE TO BE INSTALLED ON BOTTOM SIDE OF WATER MAIN

<b>REVISED</b>	
BY	DATE

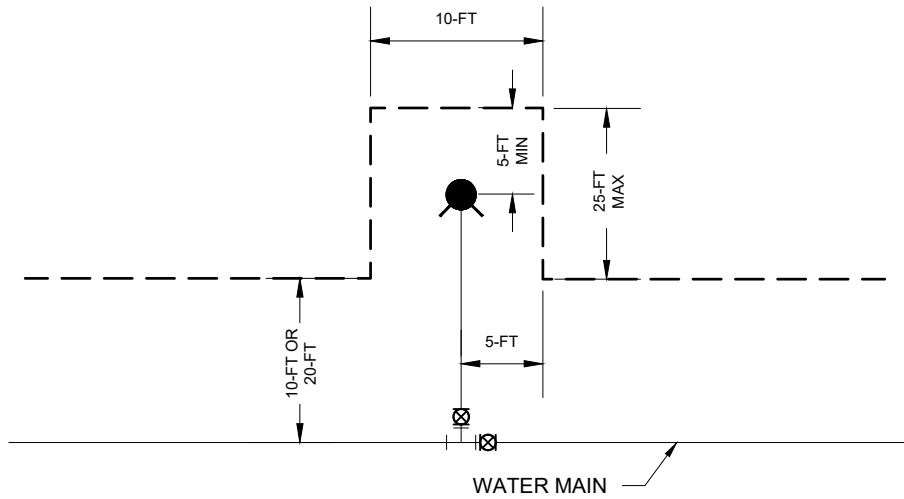


**TRACER WIRE INSTALLATION  
FOR PVC WATER MAIN**

SCALE	
NOT TO SCALE	
ISSUE DATE	
JULY 2021	
APPROVED	DRAWING NO.
	<b>W-10</b>



TYPICAL CROSS SECTION WATER MAIN IN EASEMENT



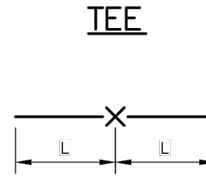
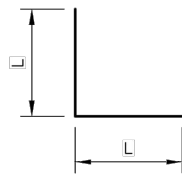
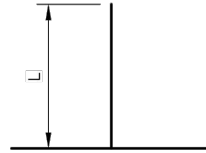
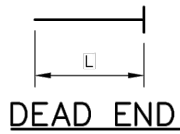
FIRE HYDRANT EASEMENT PLAN

NOTES:

1. WATER MAIN TO BE AT 10' FROM EDGE OF EASEMENT. ANY MODIFICATIONS MUST BE PRE-APPROVED BY CMWC.
2. WATER TO BE AT 4.5' BELOW GRADE. ANY MODIFICATIONS MUST BE PRE-APPROVED BY CMWC.

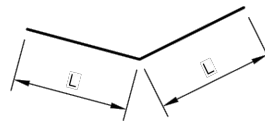
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<b>REVISED</b>			SCALE
BY	DATE		NOT TO SCALE
HEY	SEPT-2023	<b>TYPICAL CROSS SECTION IN EASEMENT AND FIRE HYDRANT EASEMENT</b>	ISSUE DATE
			JULY 2021
			APPROVED
			<b>W-11</b>



90° BEND

VALVE



BENDS

LENGTH OF RESTRAINED PIPE

NOMINAL PIPE ∅	FITTING			
	90° BEND, TEE, DEAD END, VALVE	45° BEND	22 1/2° BEND	11 1/4° BEND
4"	30'	9'	2'	1'
6"	46'	13'	3'	1'
8"	61'	18'	5'	1'
12"	90'	26'	7'	2'
16"	116'	34'	9'	2'
20"	141'	41'	11'	3'

NOTES:

1. LENGTH OF RESTRAINED PIPE IS MEASURED DISTANCE EACH WAY FROM VALVES AND BENDS.
2. MINIMUM 4 FEET 6 INCH BURY DEPTH REQUIRED.
3. BASED ON 150 POUNDS PER SQUARE INCH WORKING PRESSURE.
4. RESTRAIN CROSSES IN ALL DIRECTIONS.
5. WHEN REDUCERS ARE USED ON A VALVE INSTALLATION THE LENGTH OF RESTRAINT SHALL BE BASED ON THE SIZE OF THE PIPE NOT THE SIZE OF THE VALVE.

REVISED

BY

DATE



LENGTH OF RESTRAINED PIPE

SCALE

NOT TO SCALE

ISSUE DATE

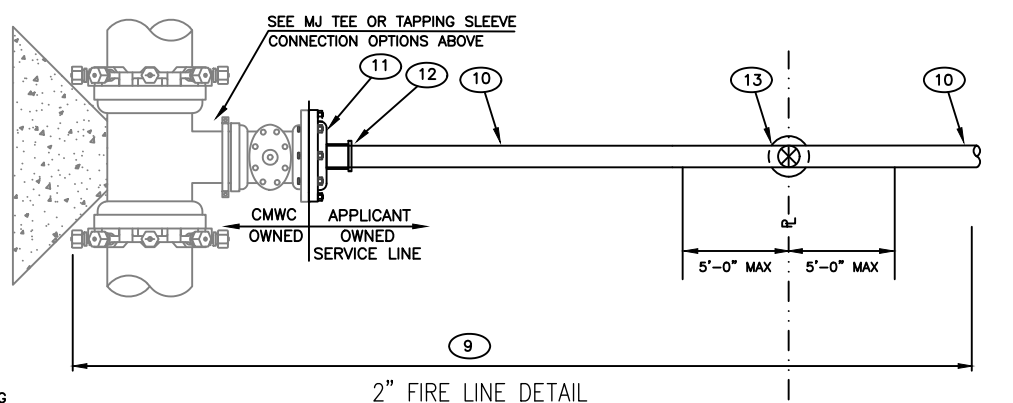
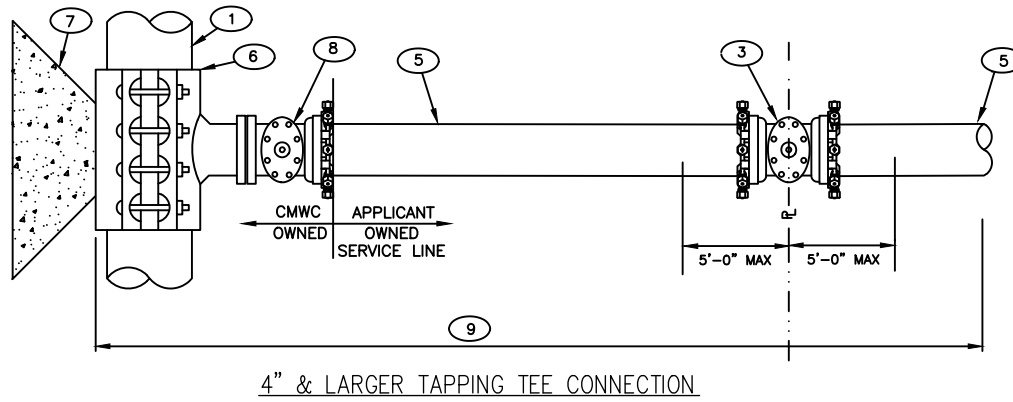
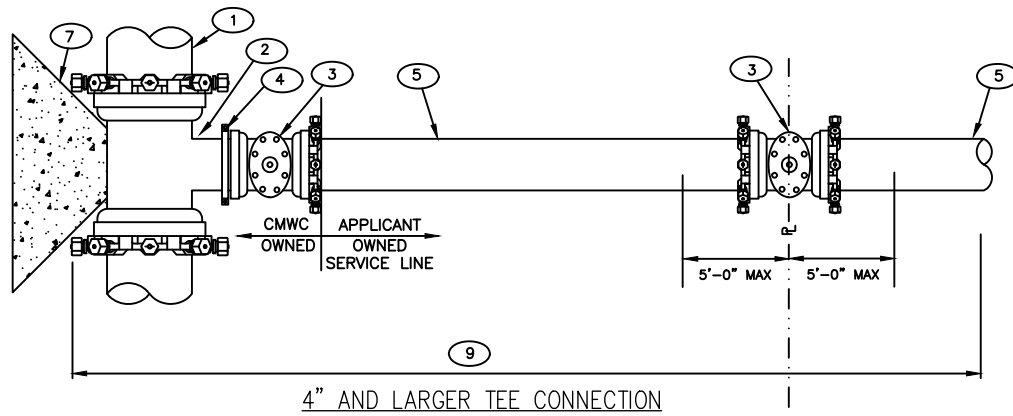
SEPTEMBER 2023

APPROVED

DRAWING NO.

**W-12**

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KEY NOTES:

- ① WTR MAIN
- ② MJ TEE
- ③ MJ GV
- ④ ANCHOR COUPLING
- ⑤ DI PIPE FULLY RESTRAINED
- ⑥ TAPPING SLV
- ⑦ CONC KB PER DENVER WATER DETAIL
- ⑧ TAPPING VALVE FLG X MJ
- ⑨ POLYETHYLENE WRAPPED
- ⑩ 2" TYPE K COPPER
- ⑪ 4" x 2" MJ TAPPED PLUG
- ⑫ 2" MIP x COMPRESSION
- ⑬ 2" CURB STOP

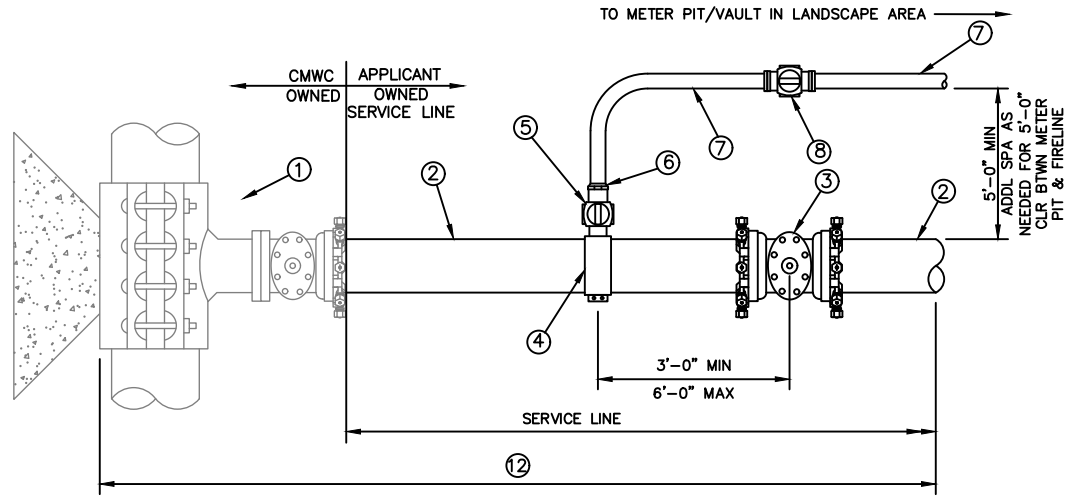
REVISED	
BY	DATE
HEY	1/9/2024



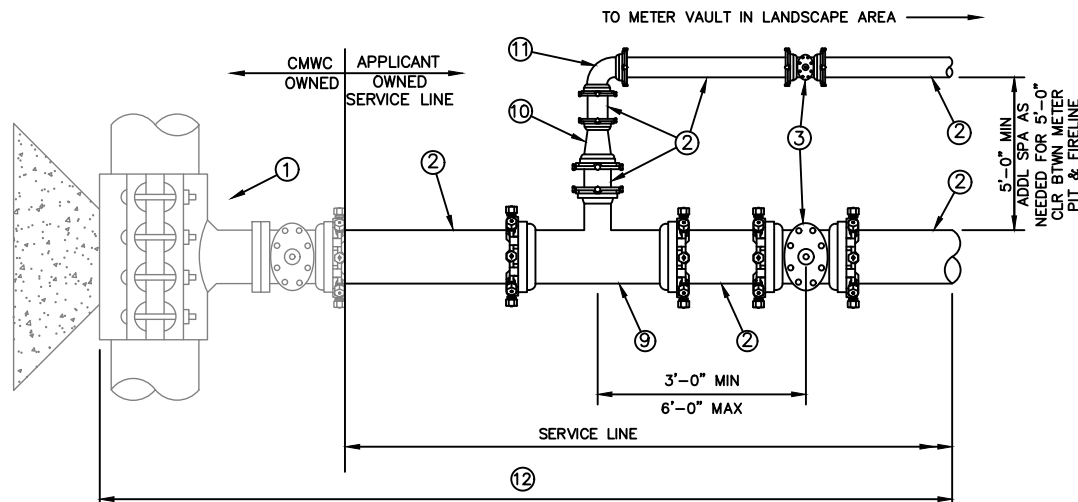
**CMWC FIRE LINE CONNECTION**

SCALE	
NOT TO SCALE	
ISSUE DATE	
SEPTEMBER 2023	
APPROVED	DRAWING NO.
	<b>W-13</b>

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**2" & SMALLER DOMESTIC**



**KEYED NOIES:**

- ① SEE CMWC FIRE LINE CONNECTION DETAIL W-13 FOR MAIN LINE CONNECTION REQUIREMENTS.
- ② DIP FULLY RESTRAINED
- ③ MJ GV  
SEE CMWC FIRE LINE CONNECTION DETAIL FOR VALVE LOCATION REQUIREMENTS
- ④ TAPPING SADDLE
- ⑤ CORP STOP
- ⑥ SERVICE INSULATOR
- ⑦ TYPE "K" Cu PIPE

**3" DOMESTIC**

- ⑧ CURB STOP  
SEE CMWC METER DETAIL FOR CURB STOP LOCATION REQUIREMENTS
- ⑨ MJ TEE
- ⑩ 4"x 3" MJ RDCR
- ⑪ 90° MJ ELB
- ⑫ PE WRAPPED

**NOTE:**

THE MINIMUM LINE SIZE RATIO FOR THE FIRE SERVICE LINE TO DOMESTIC SERVICE LINE IS 4:1, RESPECTIVELY.

<b>REVISED</b>			SCALE
BY	DATE		<b>NOT TO SCALE</b>
			ISSUE DATE
			<b>JAN 2024</b>
			APPROVED
			<b>SM</b>
			DRAWING NO.
			<b>M-11</b>

**FIRELINE CONNECTION WITH DOMESTIC SERVICE TAP**