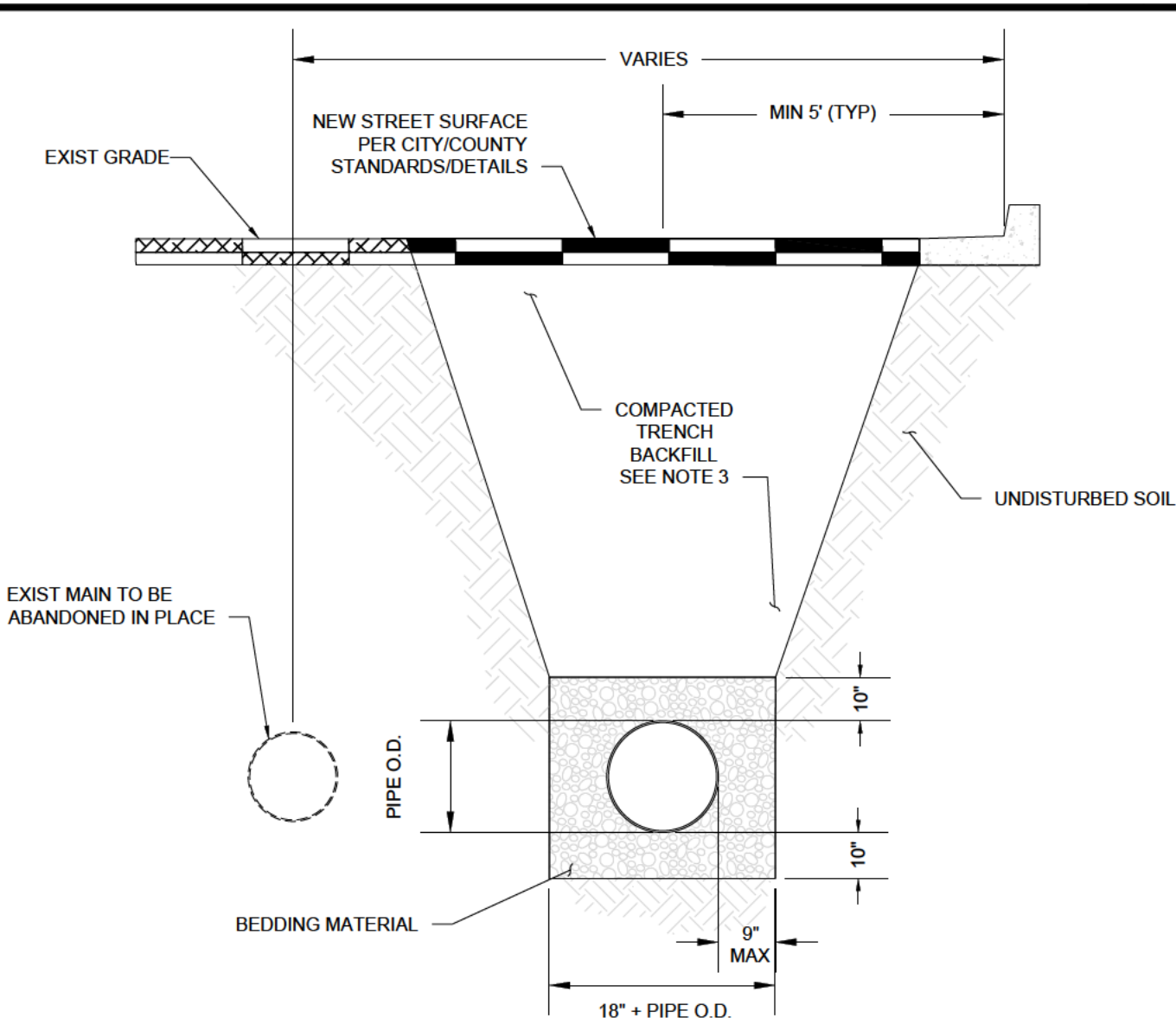


NOTES:

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.

| | | | |
|----------------|------|---|----------------------------|
| REVISED | |  | SCALE |
| BY | DATE | | NOT TO SCALE |
| | | TYPICAL TRENCH DETAIL WITHOUT CURB | ISSUE DATE |
| | | | JULY 2021 |
| | | | APPROVED |
| | | | DRAW NG NO. W-01 |

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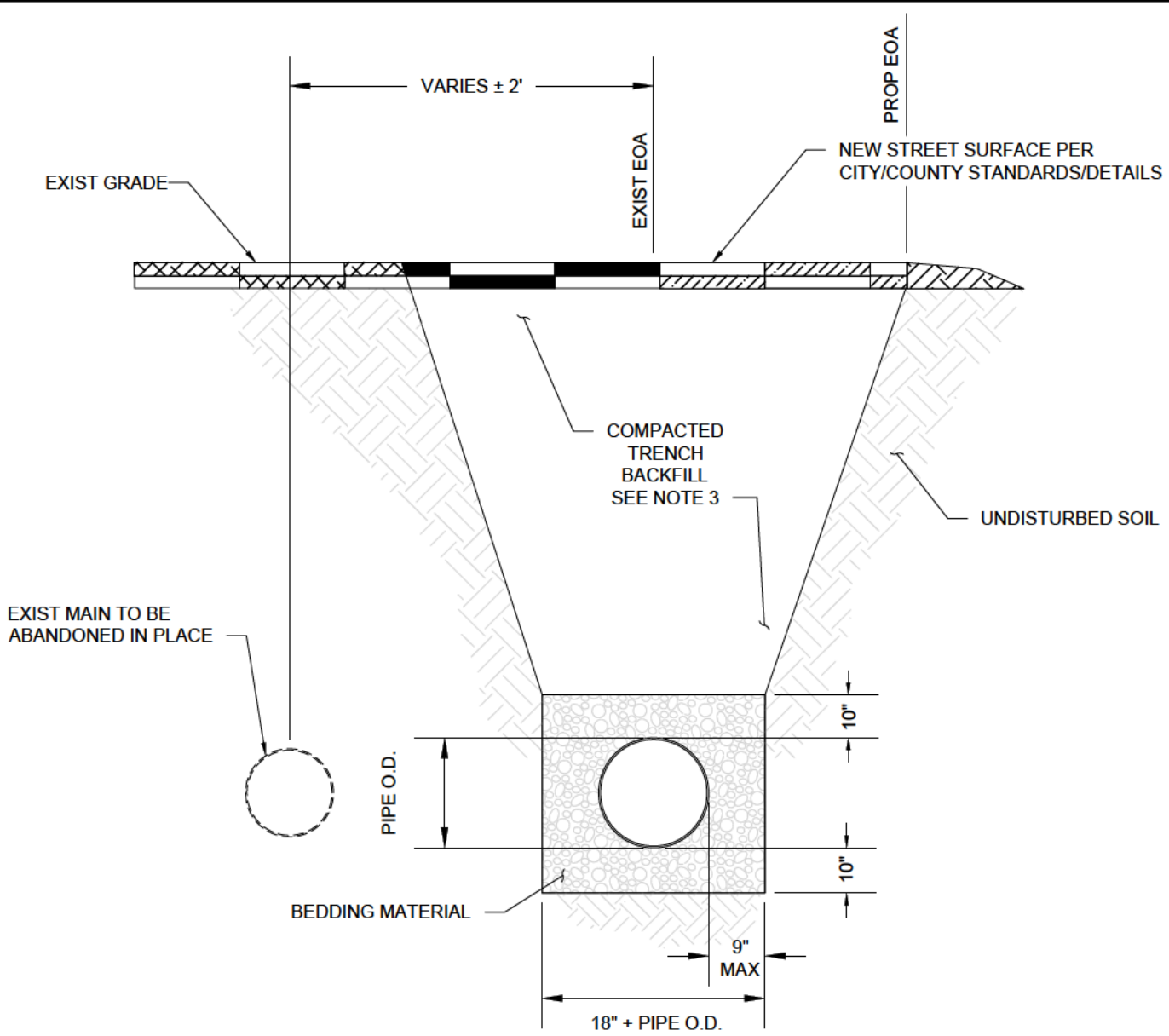


NOTES:

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.

| | | | | |
|----------------|------|---|---------------------|-------------|
| REVISED | |  | SCALE | |
| BY | DATE | | NOT TO SCALE | |
| | | TYPICAL TRENCH DETAIL WITH CURB | ISSUE DATE | |
| | | | JULY 2021 | |
| | | | APPROVED | DRAW NG NO. |
| | | | W-02 | |

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NOTES:

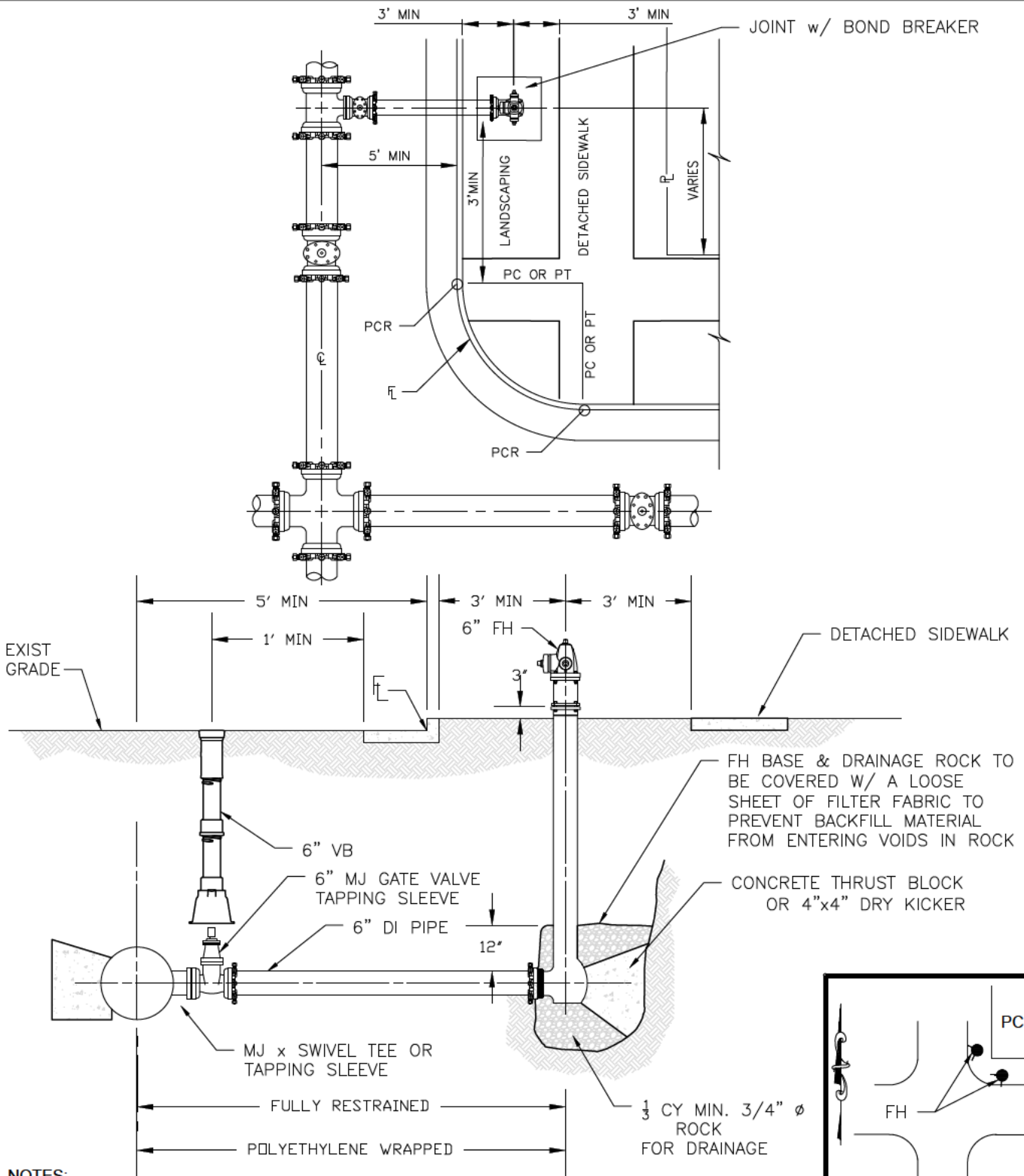
1. MINIMUM COVER SHALL BE 4'-6" BELOW OFFICIAL STREET GRADE.
2. TRENCH SHALL CONFORM TO APPLICABLE OSHA REQUIREMENTS.
3. COMPACTION SHALL BE IN ACCORDANCE WITH DENVER WATER ENGINEERING STANDARDS CHAPTER 7.

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| REVISED | |
| BY | DATE |
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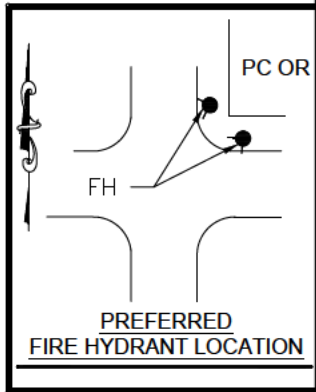
**TYPICAL TRENCH DETAIL
WITHOUT CURB**

| | |
|---------------------|-------------|
| SCALE | |
| NOT TO SCALE | |
| ISSUE DATE | |
| JULY 2021 | |
| APPROVED | DRAW NG NO. |
| | W-01 |




NOTES:

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

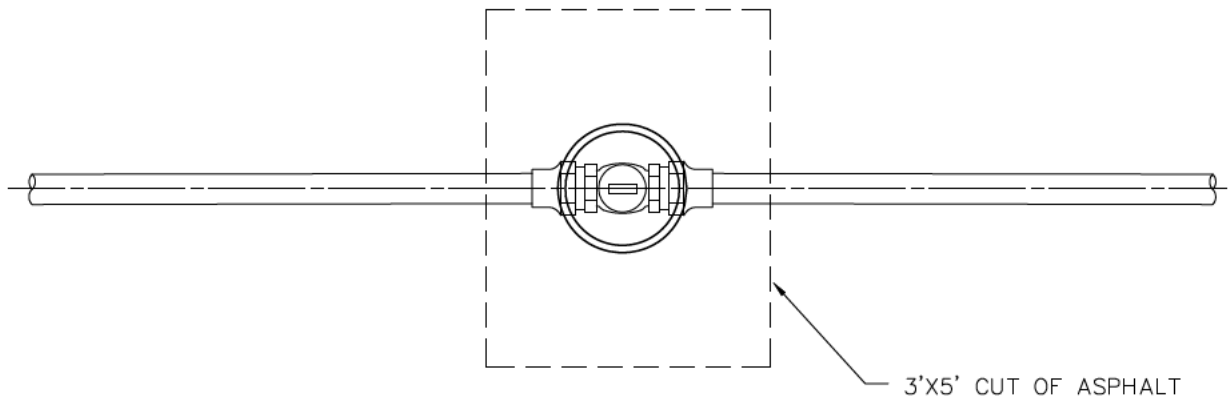


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| BY | DATE |
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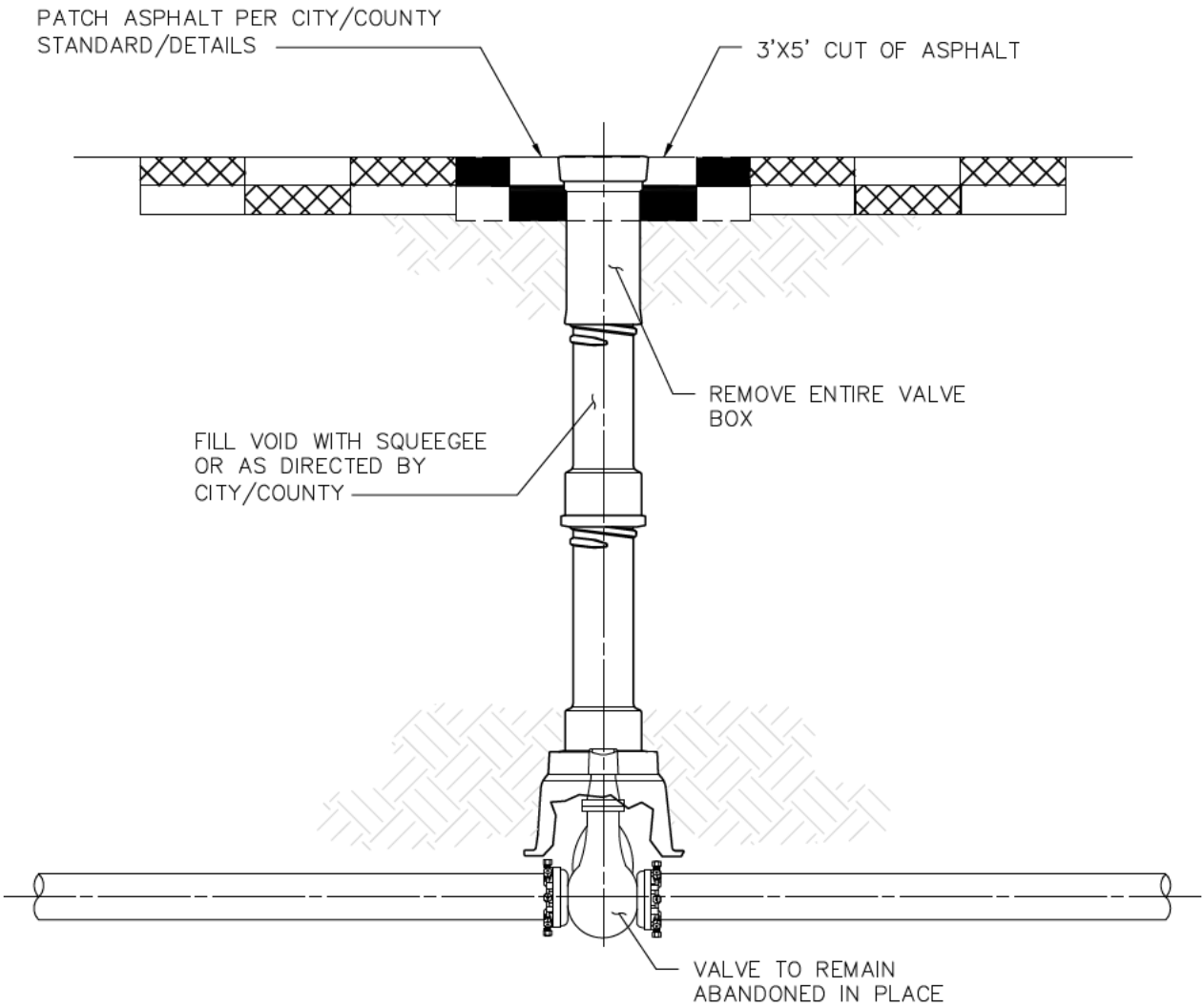


**PLAN, PROFILE & LOCATION FOR
FIRE HYDRANTS, MAINS, & VALVES**

| | |
|---------------------|-------------|
| SCALE | |
| NOT TO SCALE | |
| ISSUE DATE | |
| JUNE 2021 | |
| APPROVED | DRAW NG NO. |
| | W-04 |




PLAN



ELEVATION

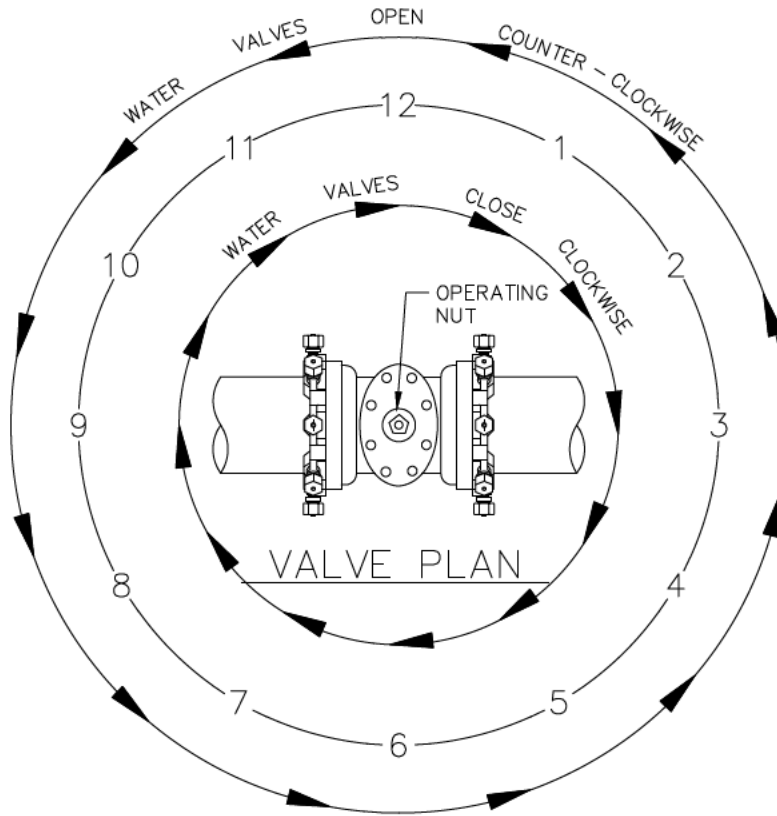
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| BY | DATE |
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VALVE ABANDONMENT

| | |
|------------|---------------------|
| SCALE | NOT TO SCALE |
| ISSUE DATE | JUNE 2021 |
| APPROVED | DRAW NG NO. |
| | W-05 |




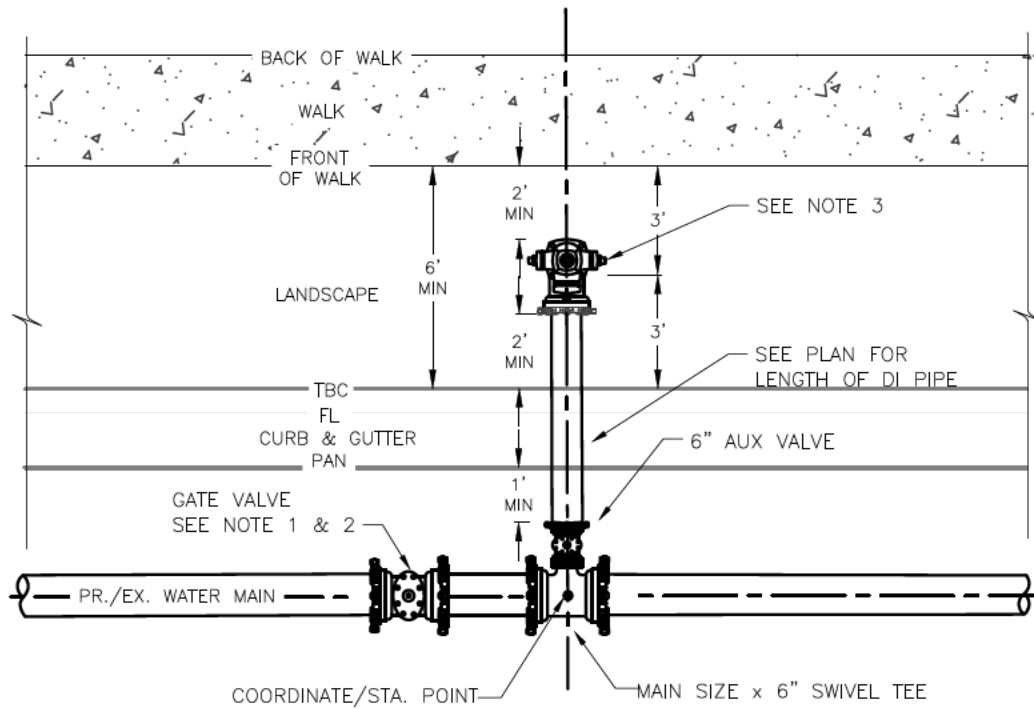
TREATED/POTABLE
VALVE OPENING & CLOSING DIRECTION

NOTES:

1. CONSOLIDATED MUTUAL WATER VALVES ARE OPEN LEFT.

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| | | | |
|----------------|------|---|---------------------|
| REVISED | |  | SCALE |
| BY | DATE | | NOT TO SCALE |
| | | VALVE OPERATION | ISSUE DATE |
| | | | JUNE 2021 |
| | | | APPROVED |
| | | | W-06 |

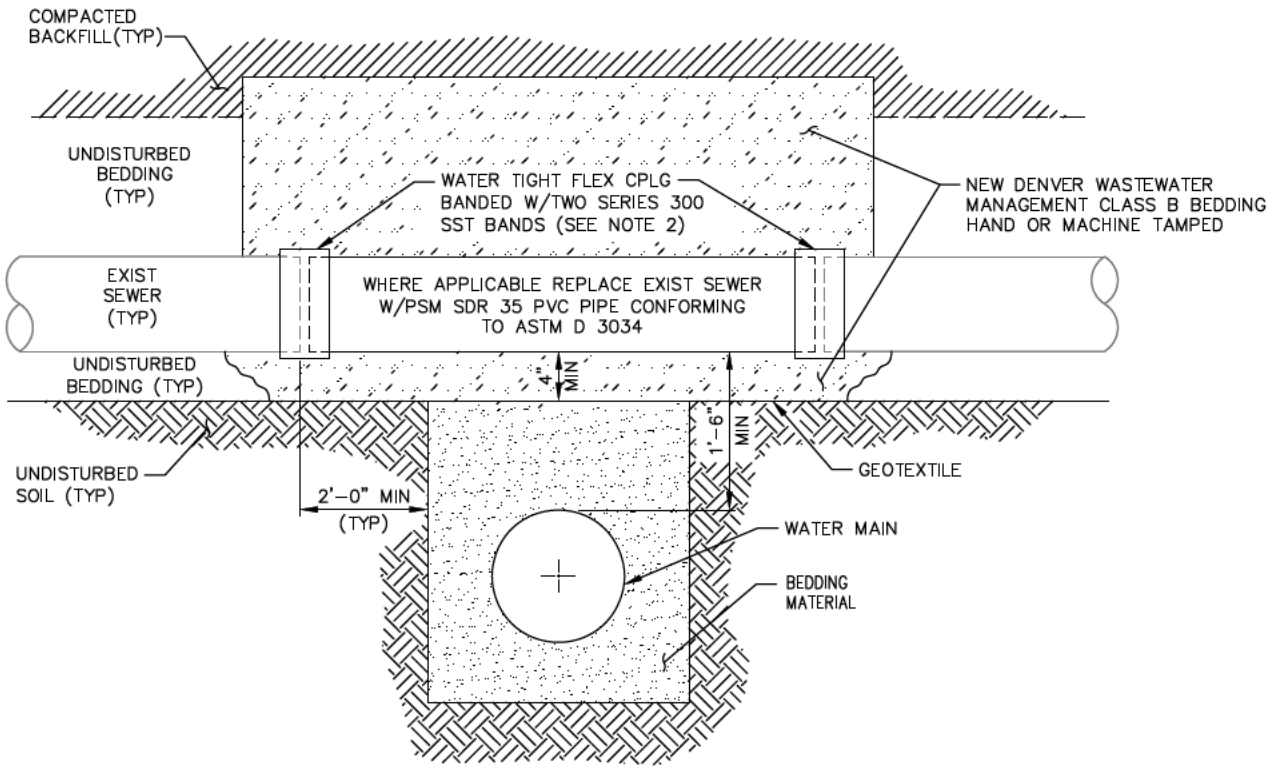


NOTES:

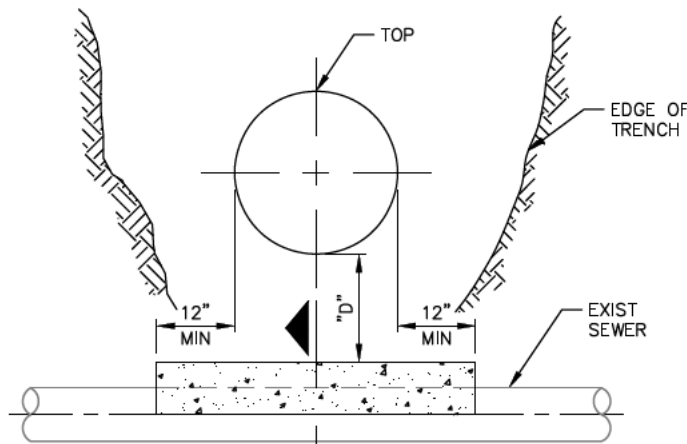
1. MAIN LINE ISOLATION VALVE'S LOCATION RELATIVE TO FH TEE VARIES, SEE PLAN SHEET FOR LOCATION.
2. ANCHOR COUPLING OR SHORT SECTION (3' MIN) OF MAIN TO BE USED TO TIE ISOLATION VALVE TO FH TEE.
3. FIRE HYDRANT TO BE WATEROUS PACER WB-67-250 (DENVER STD 5'6") DANA KEPNER COMPANY MODEL #56LWP25056DENMR.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

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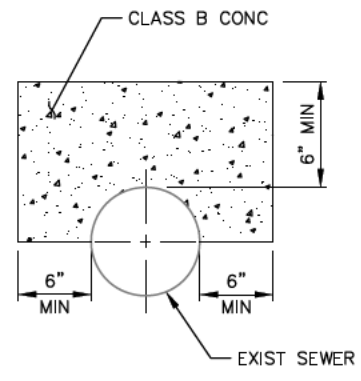
| | | | |
|----------------|-----------|---|---------------------|
| REVISED | |  | SCALE |
| BY | DATE | | NOT TO SCALE |
| HEY | SEPT-2023 | TYPICAL FIRE HYDRANT | ISSUE DATE |
| | | | JUNE 2021 |
| | | | APPROVED |
| | | | W-07 |



SEWER CROSSING OVER



SEWER CROSSING UNDER
WITH "D" LESS THAN 2'




SECTION A
THIS SHT

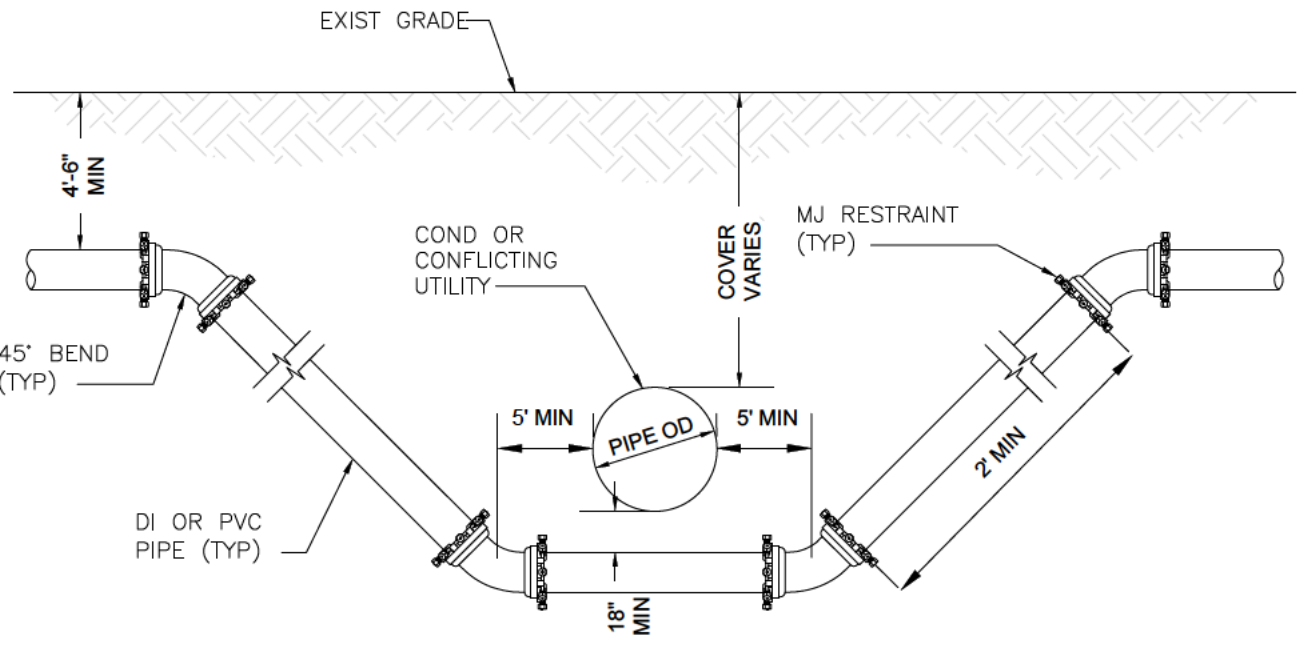
NOTES:

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.

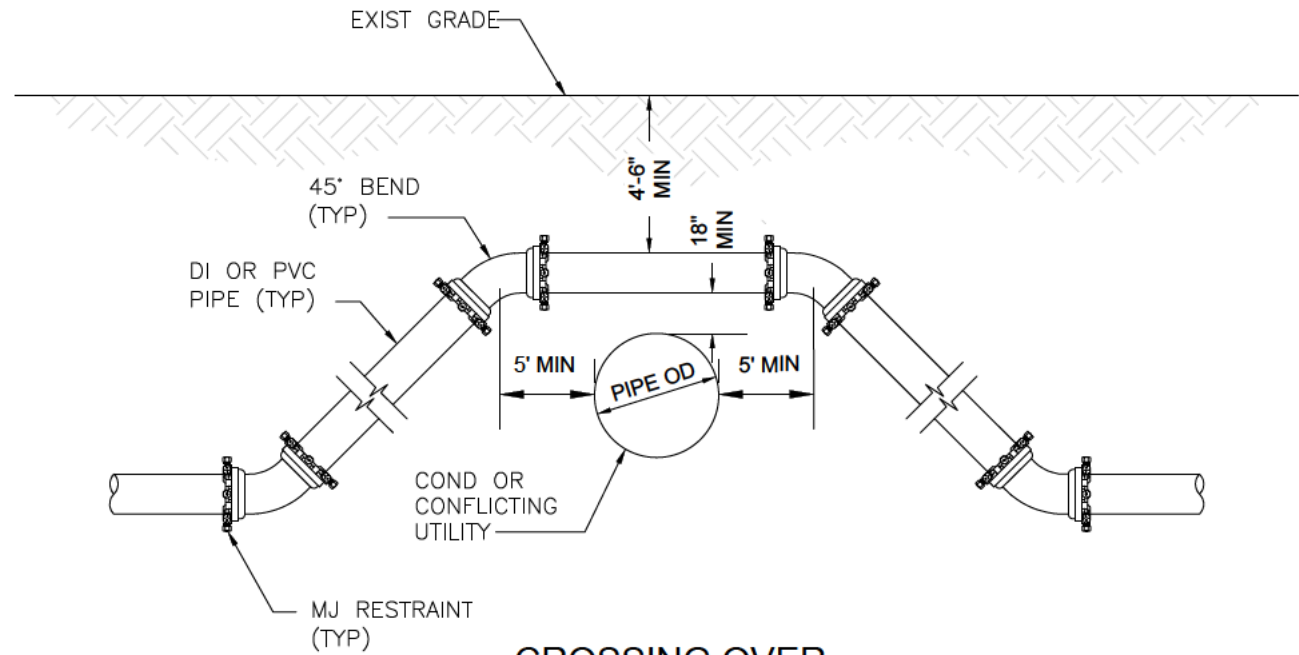
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| | | | |
|----------------|------|---|---------------------|
| REVISED | |  | SCALE |
| BY | DATE | | NOT TO SCALE |
| | | STORM AND SANITARY SEWER CROSSING | ISSUE DATE |
| | | | JUNE 2021 |
| | | | APPROVED |

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CROSSING UNDER

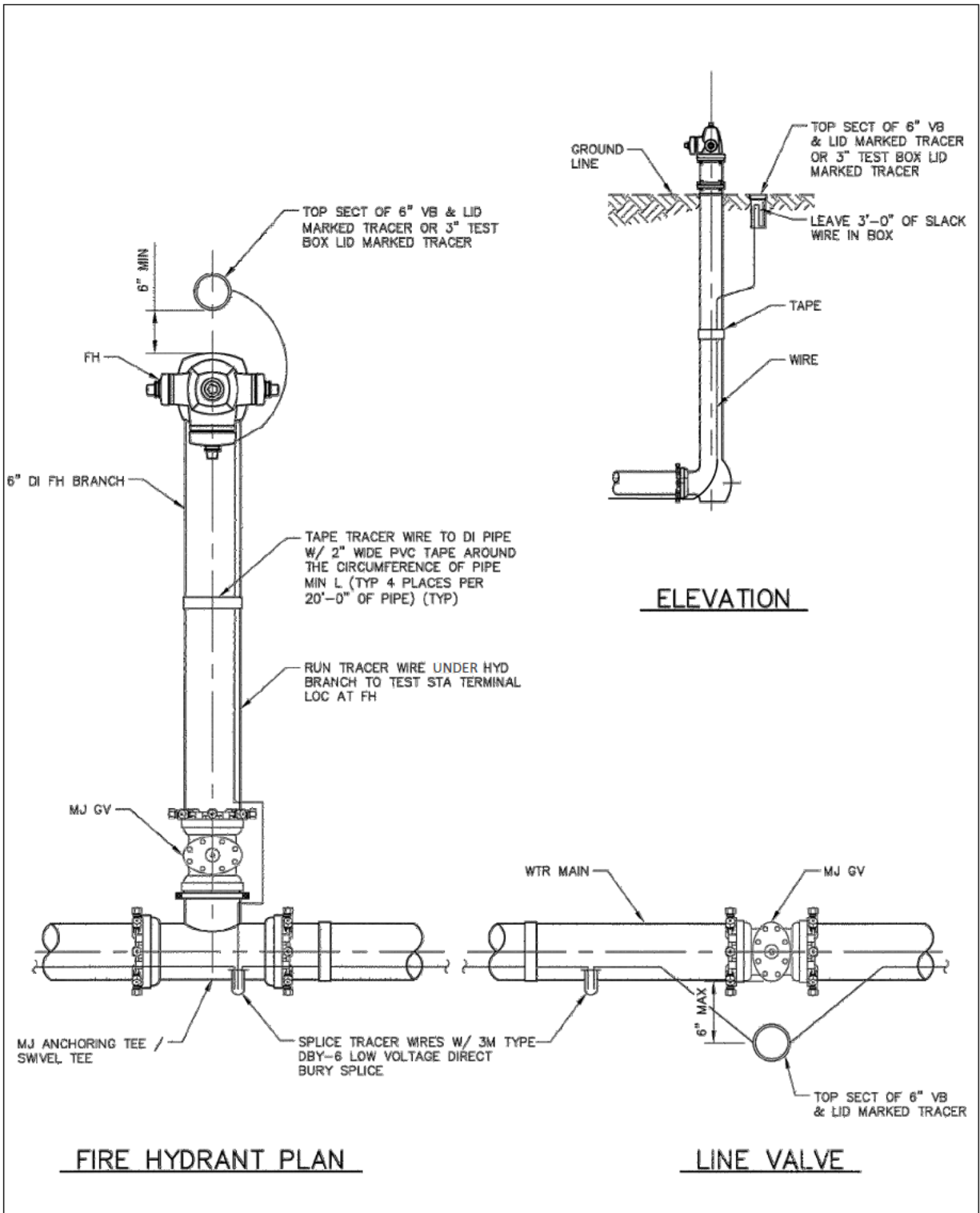


CROSSING OVER

NOTES:

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


| | | | | |
|----------------|------|---|---------------------|-------------|
| REVISED | |  | SCALE | |
| BY | DATE | | NOT TO SCALE | |
| | | OPEN CUT CROSSING OVER OR UNDER CONDUIT OR CONFLICTING UTILITY | ISSUE DATE | |
| | | | JUNE 2021 | |
| | | | APPROVED | DRAW NG NO. |
| | | | W-09 | |



NOTES:

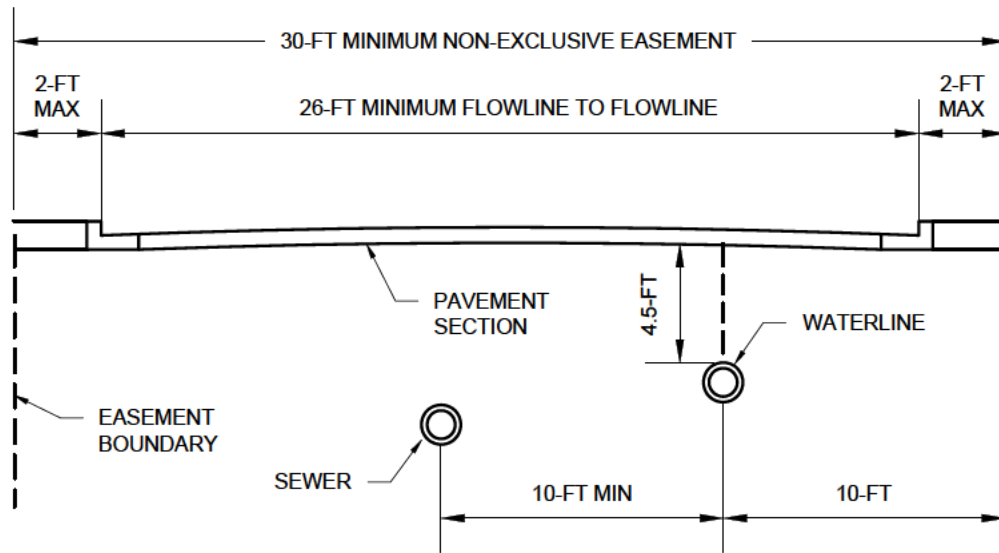
1. TRACER WIRE TO BE INSTALLED ON BOTTOM SIDE OF WATER MAIN

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|----------------|------|
| REVISED | |
| BY | DATE |
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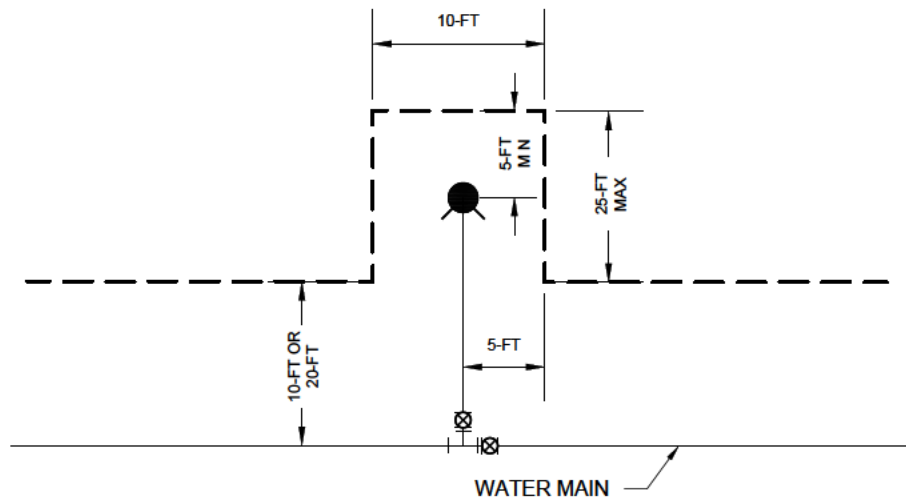


**TRACER WIRE INSTALLATION
FOR PVC WATER MAIN**

| | |
|---------------------|-------------|
| SCALE | |
| NOT TO SCALE | |
| ISSUE DATE | |
| JUNE 2021 | |
| APPROVED | DRAW NG NO. |
| | W-10 |



TYPICAL CROSS SECTION WATER MAIN IN EASEMENT




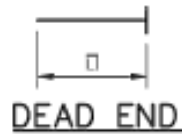
FIRE HYDRANT EASEMENT PLAN

NOTES:

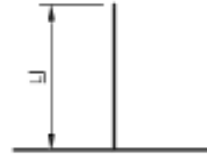
1. WATER MAIN TO BE AT 10' FROM EDGE OF EASEMENT. ANY MODIFICATIONS MUST BE PRE-APPROVED BY CMWC.
2. WATER TO BE AT 4.5' BELOW GRADE. ANY MODIFICATIONS MUST BE PRE-APPROVED BY CMWC.

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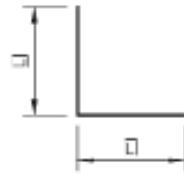
| | | | |
|----------------|-----------|---|---------------------|
| REVISED | |  | SCALE |
| BY | DATE | | NOT TO SCALE |
| HEY | SEPT-2023 | TYPICAL CROSS SECTION IN EASEMENT AND FIRE HYDRANT EASEMENT | ISSUE DATE |
| | | | JULY 2021 |
| | | | APPROVED |
| | | | W-11 |



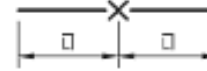
DEAD END



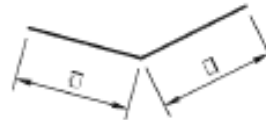
TEE



90° BEND



VALVE



BENDS

LENGTH OF RESTRAINED PIPE

| NOMINAL PIPE Ø | 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' | 28' | 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.

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REVISED

BY

DATE



LENGTH OF RESTRAINED PIPE

SCALE

NOT TO SCALE

ISSUE DATE

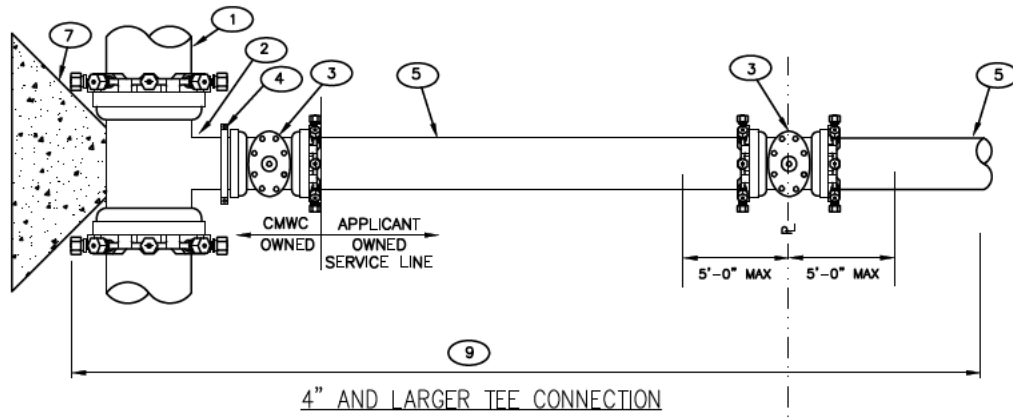
SEPTEMBER 2023

APPROVED

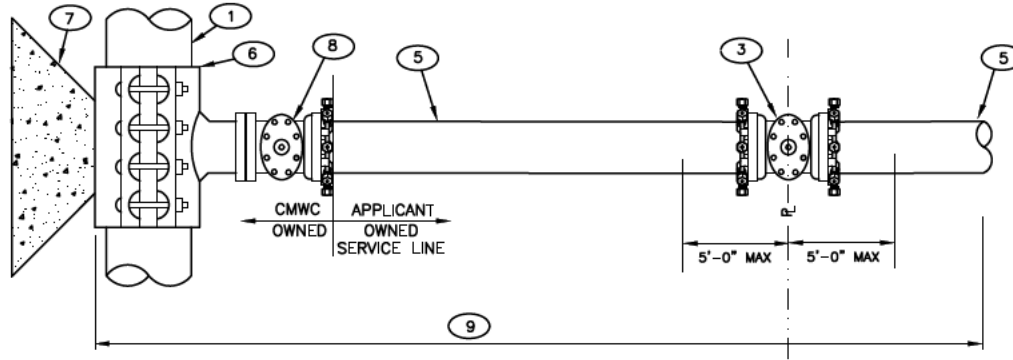
DRAWING NO.

W-12

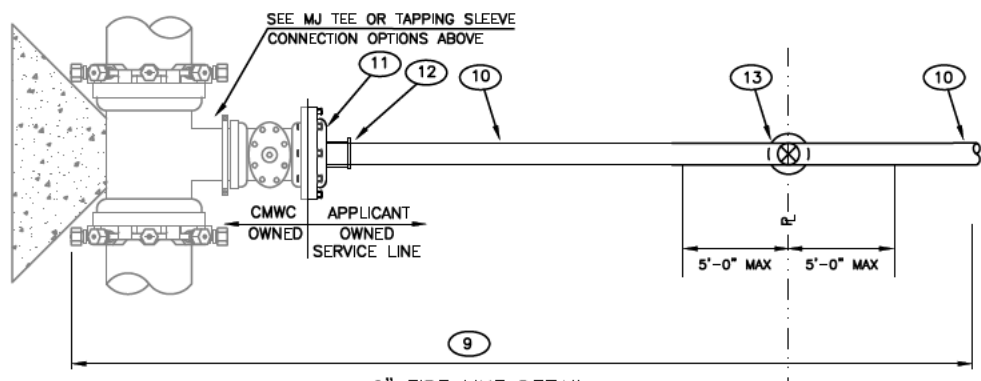
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4" AND LARGER TEE CONNECTION



4" & LARGER TAPPING TEE CONNECTION



2" FIRE LINE DETAIL

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

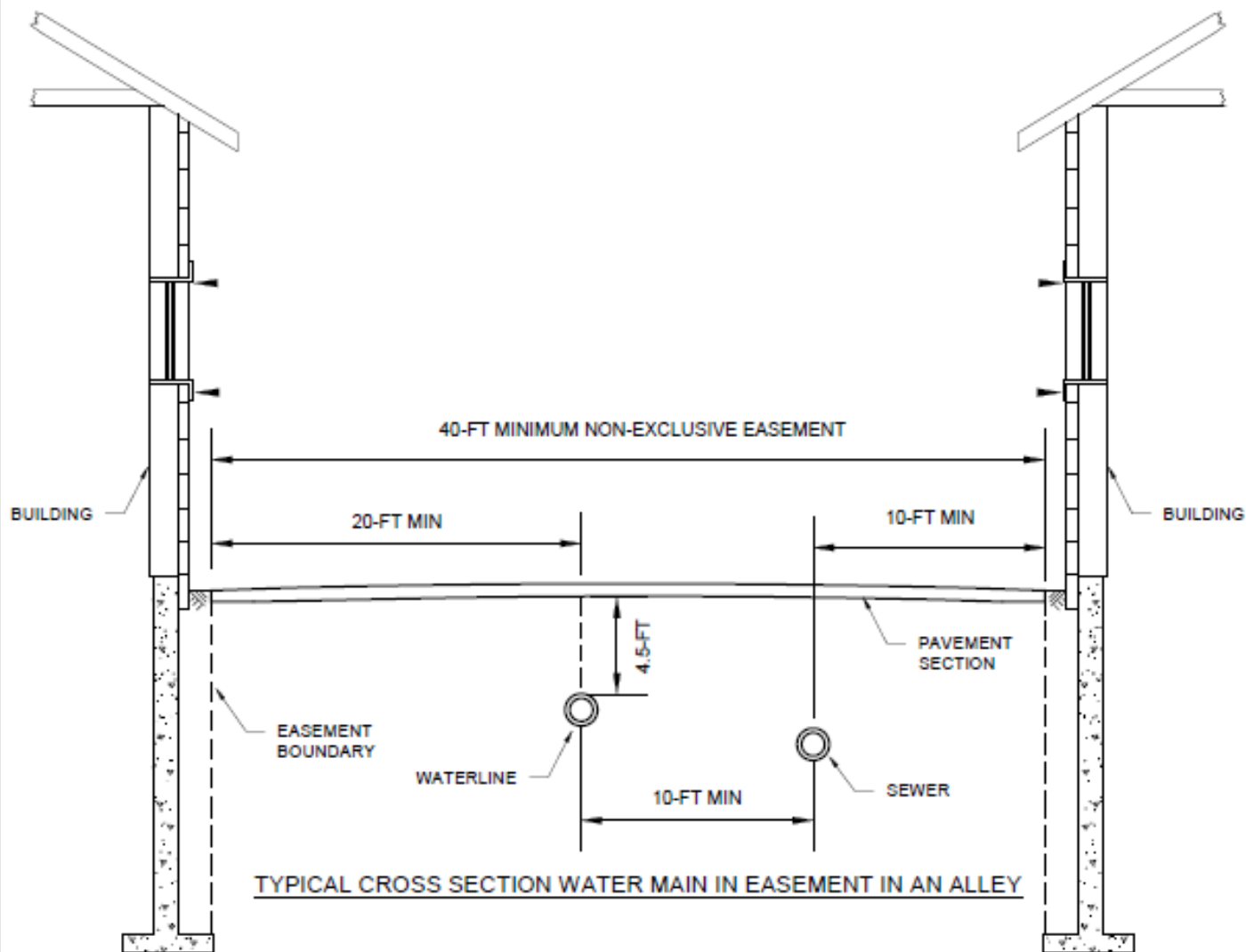
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| REVISED | |
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| HEY | 1/9/2024 |
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CONSOLIDATED
mutual water

CMWC FIRE LINE CONNECTION


| | |
|------------|-----------------------|
| SCALE | NOT TO SCALE |
| ISSUE DATE | SEPTEMBER 2023 |
| APPROVED | DRAW NG NO. |
| | W-13 |



TYPICAL CROSS SECTION WATER MAIN IN EASEMENT IN AN ALLEY

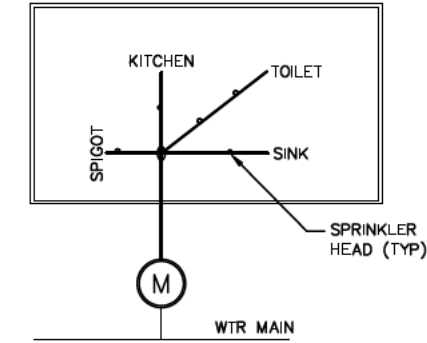
NOTES:

1. WATER MAIN TO BE AT 20' 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.

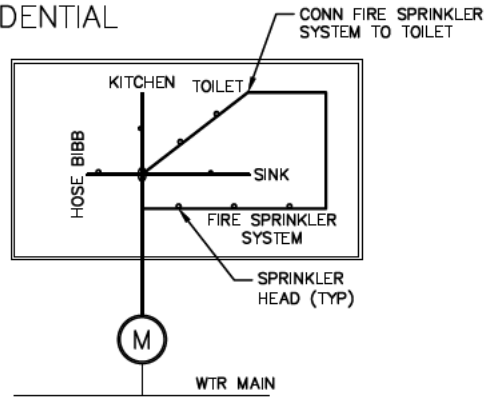
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|--|------|---|-------------------------------|----------------------------|
| REVISED | |  | SCALE NOT TO SCALE | |
| BY | DATE | | ISSUE DATE JAN 2024 | |
| TYPICAL CROSS SECTION IN EASEMENT IN ALLEYWAY | | APPROVED | | DRAWING NO. W-14 |

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SINGLE FAMILY RESIDENTIAL

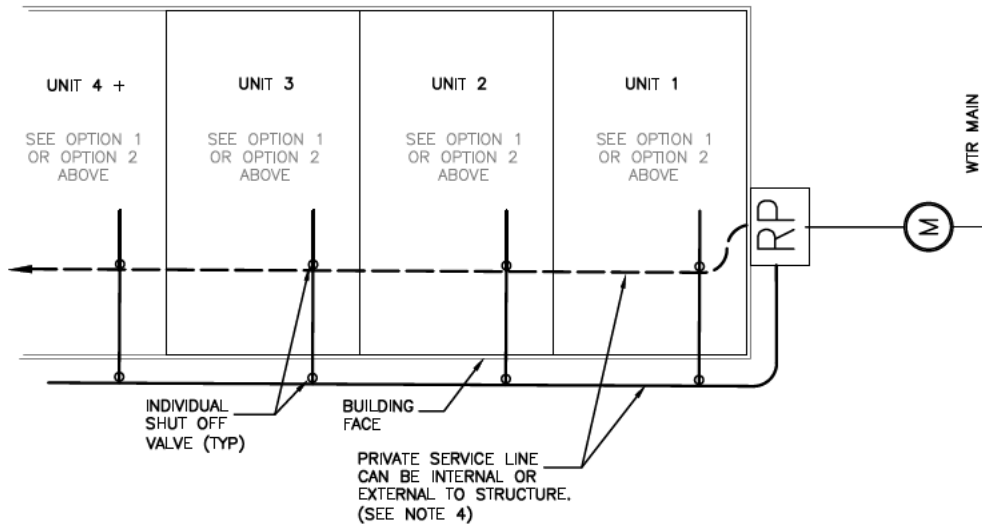


OPTION 1
MULTI-PURPOSE PIPING SYSTEM
(PREFERRED)



OPTION 2
MULTI-PURPOSE PIPING SYSTEM
(PASSIVE PURGE)

MULTI-FAMILY RESIDENTIAL



NOTES:

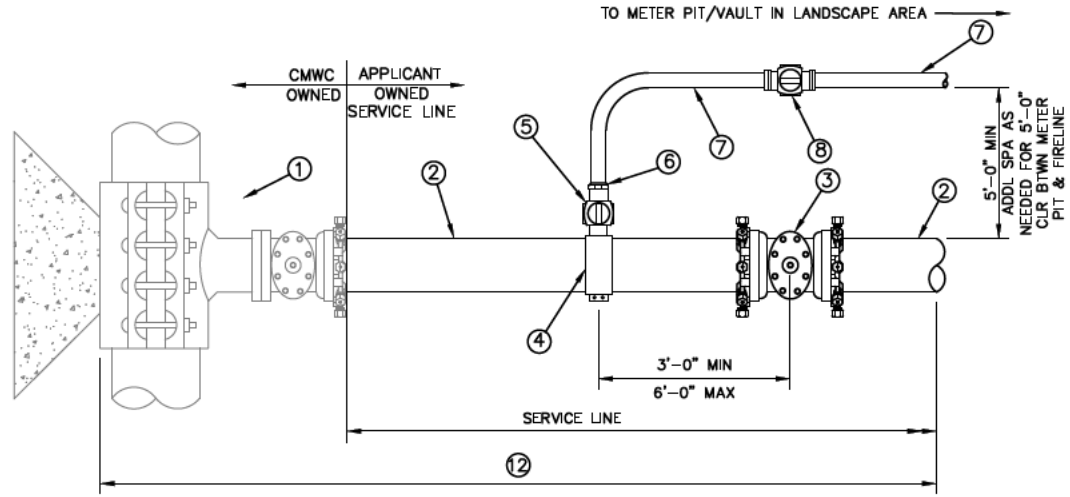
1. CMWC ONLY ALLOWS TWO OPTIONS FOR THE NATIONAL FIRE PROTECTION ASSOCIATION'S 13D OR P2904 SPRINKLER SYSTEMS.
 - a. OPTION 1 SYSTEM SHALL HAVE ALL BRANCH LINES TERMINATE AT A FIXTURE.
 - b. OPTION 2 SYSTEM SHALL HAVE NO DEAD-END LINES, SYSTEM PIPING SHALL BE CONSTRUCTED TO MOVE WATER THROUGH THE ENTIRE SYSTEM TO THE FIXTURE END POINT.
2. FOR ALL RESIDENTIAL FIRE PROTECTION SYSTEMS CMWC WILL REQUIRE A LETTER FROM THE JURISDICTION'S BUILDING DEPARTMENT THAT STATES THE SPRINKLER SYSTEM HAS BEEN APPROVED.
4. INTERNAL OR EXTERNAL PRIVATE DOMESTIC MAIN AS REQUIRED BY JURISDICTION'S BUILDING REQUIREMENT.

LEGEND:

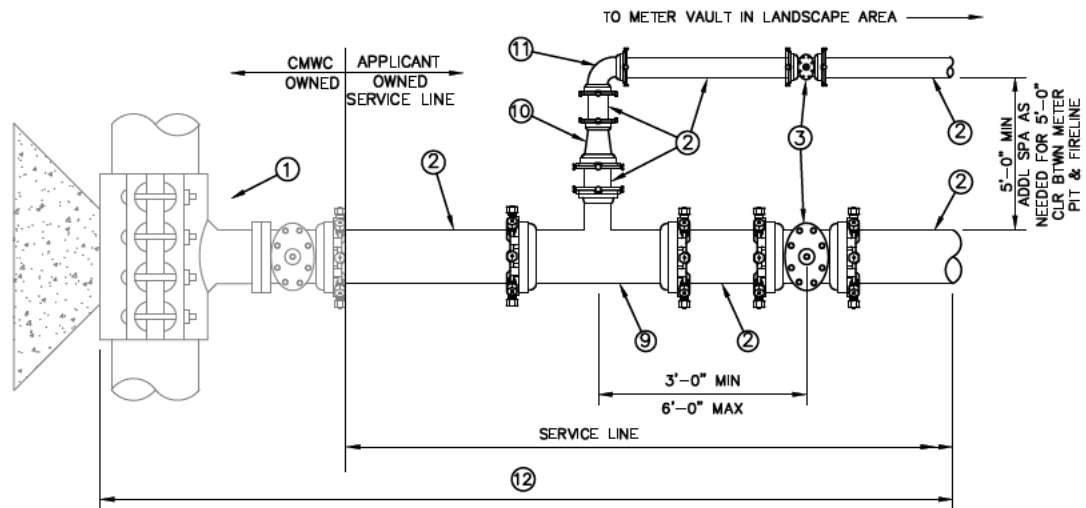
- WATER METER PER CMWC METER SPECIFICATIONS AND DETAILS
- APPROVED REDUCED PRESSURE (RP) BACKFLOW PREVENTION ASSEMBLY PER CMWC'S BACKFLOW STANDARDS

| | | | | |
|--|------|-----------------------|-------------------------------|----------------------------|
| REVISED | | | SCALE NOT TO SCALE | |
| BY | DATE | | ISSUE DATE JAN 2024 | |
| RESIDENTIAL FIRE PROTECTION SERVICE LINE DETAIL | | APPROVED SM | | DRAW NG NO. M-10 |

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2" & SMALLER DOMESTIC



3" DOMESTIC

KEYED NOTES:

- 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

- 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.

| | | | | |
|----------------|------|---|---------------------|-----------------|
| REVISED | |  | SCALE | |
| BY | DATE | | NOT TO SCALE | |
| | | FIRELINE CONNECTION WITH DOMESTIC SERVICE TAP | | ISSUE DATE |
| | | | | JAN 2024 |
| | | | | APPROVED |
| | | | | SM |
| | | | | DRAW NG NO. |
| | | | | M-11 |