

APPENDIX 10A BACKFLOW PREVENTION ASSEMBLIES

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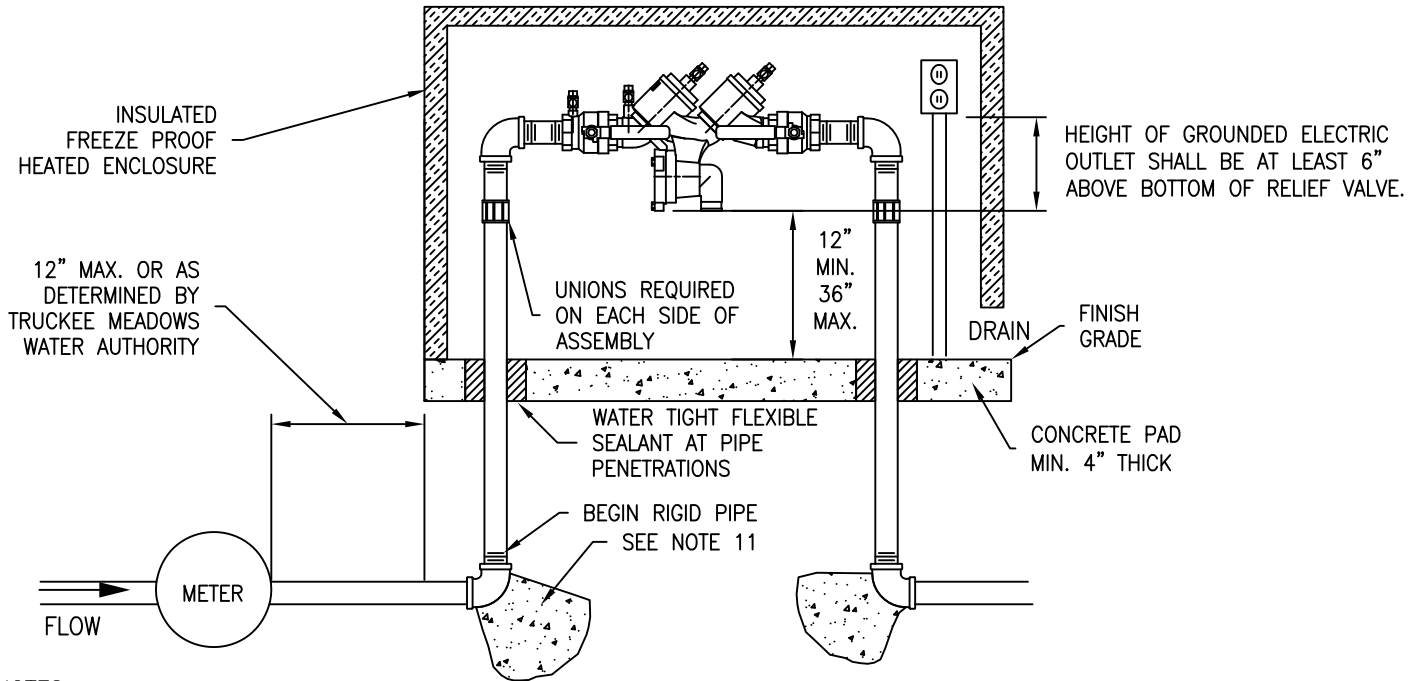
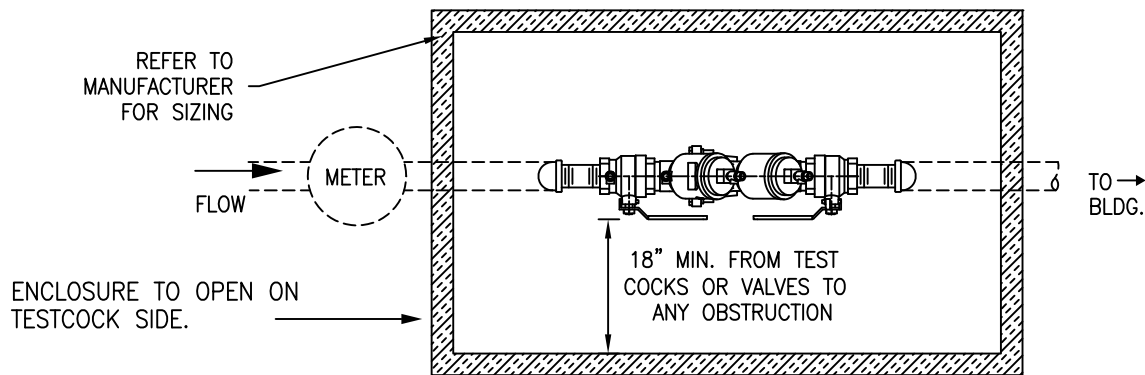


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APPENDIX 10A
BACKFLOW PREVENTION ASSEMBLIES
INDEX

DRAWING NUMBER
10A-1

PLAN VIEW



NOTES:

1. ASSEMBLY SHALL BE A USC APPROVED LEAD FREE DEVICE.
2. THE RP SHALL BE INSTALLED ABOVE GRADE.
3. GROUNDED ELECTRIC SUPPLY SHALL BE A MINIMUM OF 6" ABOVE BOTTOM OF RELIEF VALVE AND STUBBED TO THE OUTSIDE.
4. NO STOP AND WASTE VALVES.
5. FREEZE PROOF INSULATED BOX AND 1 SOURCE OF HEAT ARE REQUIRED. 2 SOURCES OF HEAT ARE STRONGLY RECOMMENDED.
6. INSULATED BOX SHALL SWING CLEAR OF ASSEMBLY TO PROVIDE CLEARANCES SHOWN OR INSULATED BOX SHALL BE SIZED TO PROVIDE CLEARANCES SHOWN.
7. SPRING LOADED LID REQUIRED ON LARGE BOXES.
8. THERMAL EXPANSION PROTECTION IS REQUIRED IN ANY DOMESTIC WATER SUPPLY SYSTEM THAT IS DOWNSTREAM FROM A BACKFLOW PREVENTION DEVICE. REFERENCE: UNIFORM PLUMBING CODE & NAC 445A.67235.
9. INSPECTION BY TMWA BACKFLOW PREVENTION GROUP PERSONNEL REQUIRED BEFORE METER IS SET OR SERVICE IS ACTIVATED.
10. IF INITIAL TEST DONE BY TMWA FIELD PERSONNEL FAILS, RETESTING OF BACKFLOW ASSEMBLY IS REQUIRED WITHIN 7 DAYS AFTER METER IS SET OR SERVICE ACTIVATION. COPY OF TEST RESULTS TO BE FORWARDED TO TMWA BACKFLOW PREVENTION GROUP BY A CERTIFIED ASSEMBLY TESTER WITHIN THAT SAME TIMEFRAME.
11. MINIMUM DIMENSIONS FOR THE THRUST BLOCK BEARING AREA FOR PIPE 2" AND SMALLER SHALL BE 8" X 8" AND 12" IN DEPTH. ALL OTHER SIZES TO BE DETERMINED BY ENGINEER.



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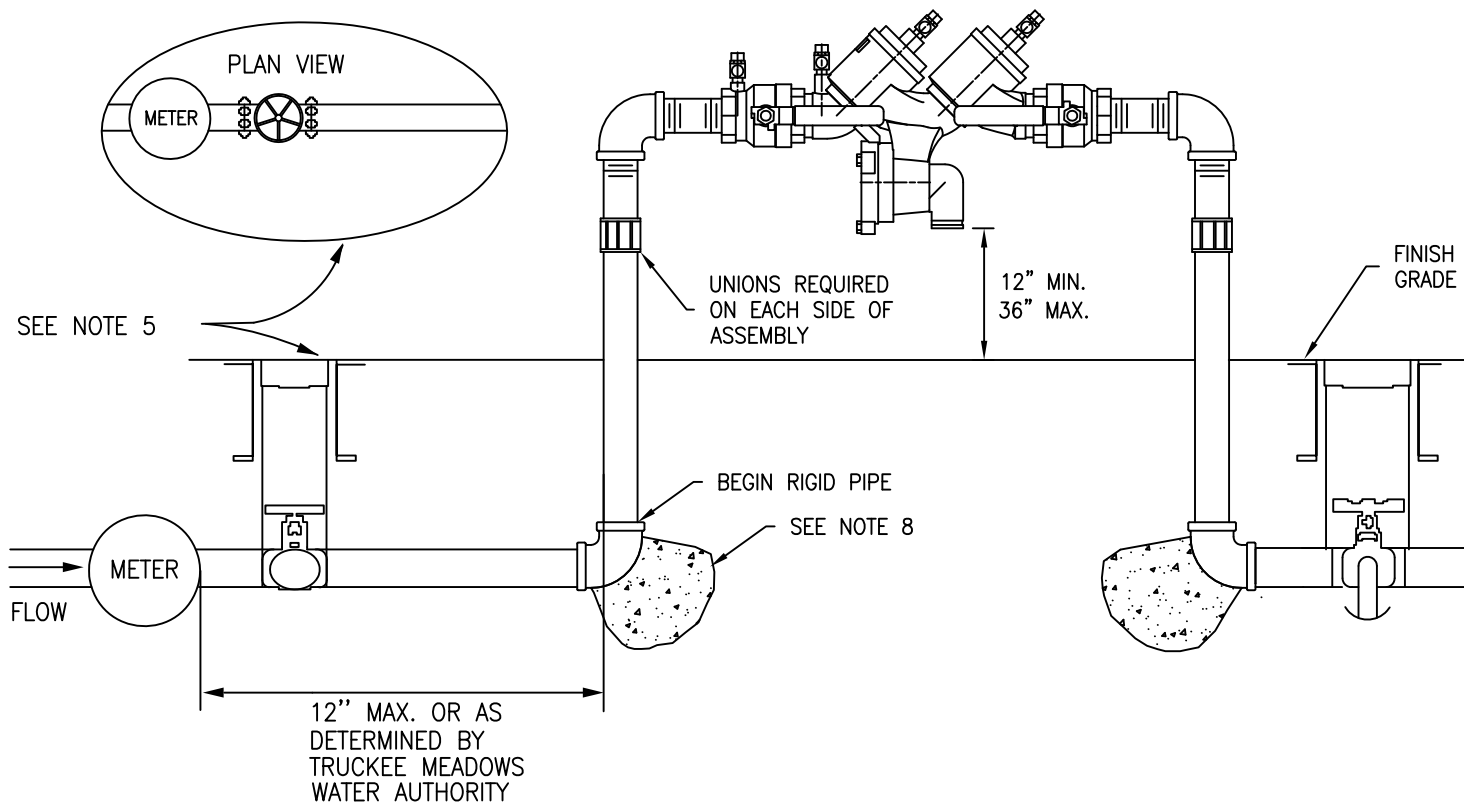
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APPENDIX 10A BACKFLOW PREVENTION ASSEMBLIES

REDUCED PRESSURE PRINCIPLE
ASSEMBLY FOR DOMESTIC USE
EXTERNAL - HORIZONTAL

DRAWING NUMBER

10A-2



NOTES:

1. ASSEMBLY SHALL BE A USC APPROVED LEAD FREE DEVICE.
2. THE RP SHALL BE INSTALLED ABOVE GRADE.
3. EITHER VALVE BOXES OR PIPE RISERS MAY BE USED FOR THE 2 BELOW GRADE SHUT OFF VALVES.
4. MANUAL SHUT OFF VALVE: INLINE BRASS GLOBE OR CURB VALVE SIZED SAME AS MAINLINE.
5. NO STOP AND WASTE VALVES.
6. INSPECTION BY TMWA BACKFLOW PREVENTION GROUP PERSONNEL REQUIRED BEFORE METER IS SET OR SERVICE IS ACTIVATED.
7. IF INITIAL TEST DONE BY TMWA FIELD PERSONNEL FAILS, RETESTING OF BACKFLOW ASSEMBLY IS REQUIRED WITHIN 7 DAYS AFTER METER IS SET OR SERVICE ACTIVATION. COPY OF TEST RESULTS TO BE FORWARDED TO TMWA BACKFLOW PREVENTION GROUP BY A CERTIFIED ASSEMBLY TESTER WITHIN THAT SAME TIMEFRAME.
8. MINIMUM DIMENSIONS FOR THE THRUST BLOCK BEARING AREA FOR PIPE 2" AND SMALLER SHALL BE 8" X 8" AND 12" IN DEPTH. ALL OTHER SIZES TO BE DETERMINED BY ENGINEER.
9. FOR YEAR-ROUND USE REFER TO 10A-2.



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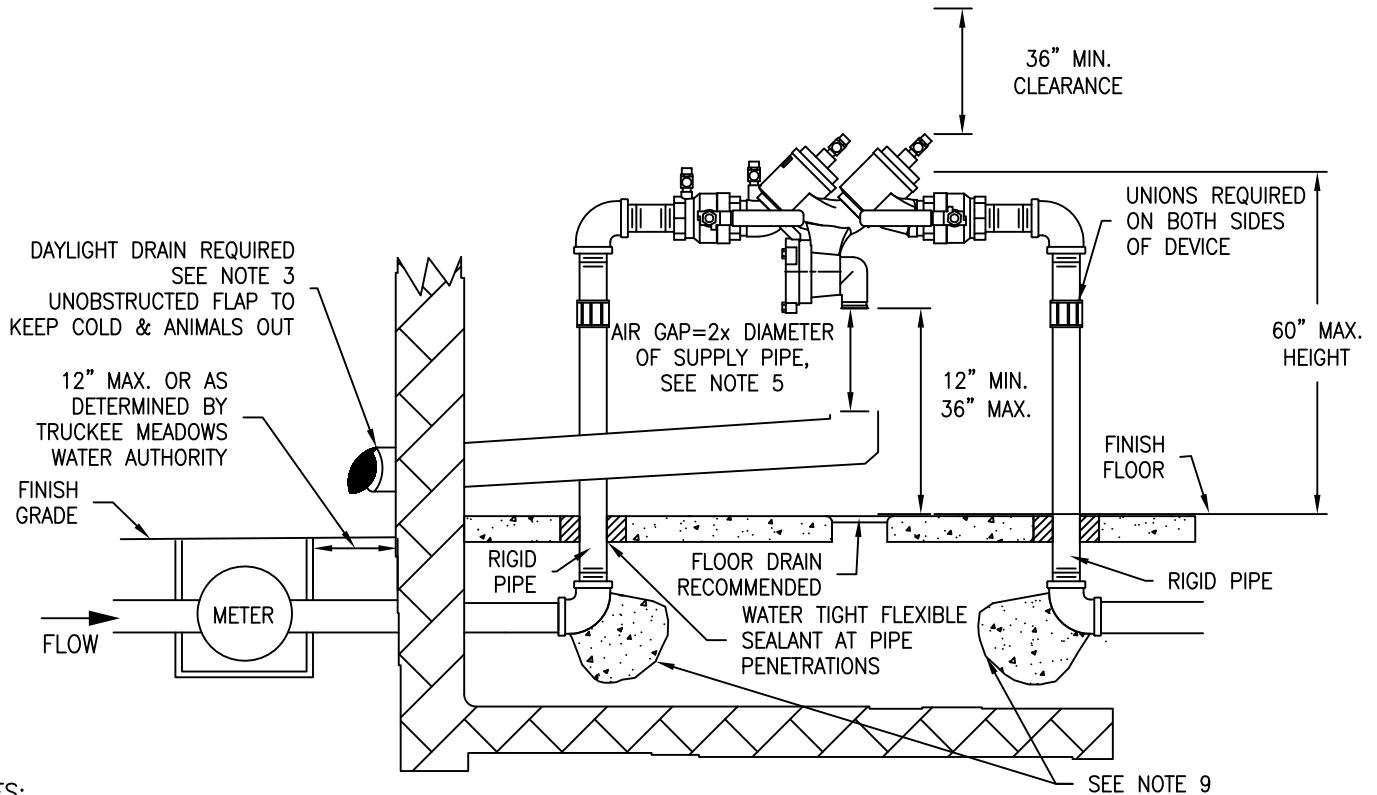
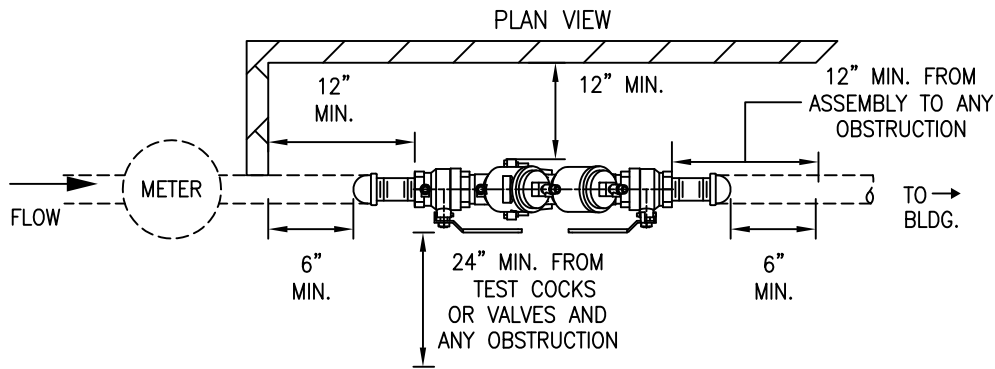
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BACKFLOW PREVENTION ASSEMBLIES

REDUCED PRESSURE PRINCIPLE
ASSEMBLY FOR IRRIGATION AND
CONSTRUCTION WATER USE - HORIZONTAL

DRAWING NUMBER

10A-3



NOTES:

1. ASSEMBLY SHALL BE A USC APPROVED LEAD FREE DEVICE.
2. THE RP SHALL BE INSTALLED ABOVE GRADE AND NOT IN A BASEMENT.
3. A DAYLIGHT DRAIN IS REQUIRED AND A FLOOR DRAIN IS RECOMMENDED. DAYLIGHT DRAIN SHOULD BE NO SMALLER THAN THE RP DEVICE THAT IS INSTALLED.
4. NO STOP AND WASTE VALVES.
5. AN AIR GAP (VERTICAL PHYSICAL SEPARATION) OF AT LEAST 2 TIMES THE DIAMETER OF THE RELIEF VALVE OPENING, IF THE PIPE IS AFFECTED BY SIDE WALLS, CLEARANCE SHALL BE AT LEAST THREE TIMES THE EFFECTIVE DIAMETER OF THE PIPE, A MINIMUM OF 1" SHALL BE MAINTAINED BETWEEN THE WATER DISCHARGE POINT ON THE RELIEF VALVE AND THE DRAIN OR MAXIMUM FLOOD LEVEL, WHICHEVER IS HIGHEST.
6. CALL LOCAL BUILDING AND/OR FIRE DEPARTMENTS FOR DEPTH AND TYPE OF PIPE TO BE USED.
7. INSPECTION BY TMWA BACKFLOW PREVENTION GROUP PERSONNEL REQUIRED BEFORE METER IS SET OR SERVICE IS ACTIVATED.
8. TESTING OF BACKFLOW ASSEMBLY REQUIRED WITHIN 7 DAYS AFTER METER IS SET OR SERVICE ACTIVATION. COPY OF TEST RESULTS TO BE FORWARDED TO TMWA BACKFLOW PREVENTION GROUP PERSONNEL BY A CERTIFIED ASSEMBLY TESTER WITHIN THAT SAME TIMEFRAME.
9. MINIMUM THRUST BLOCK DIMENSIONS FOR PIPE 2" AND SMALLER SHALL BE 8" X 8" AND 12" IN DEPTH. ALL OTHER SIZES TO BE DETERMINED BY ENGINEER.
10. THERMAL EXPANSION PROTECTION IS REQUIRED IN ANY DOMESTIC WATER SUPPLY SYSTEM THAT IS DOWNSTREAM FROM A BACKFLOW PREVENTION DEVICE. REFERENCE: UNIFORM PLUMBING CODE AND NAC 445A.67235.



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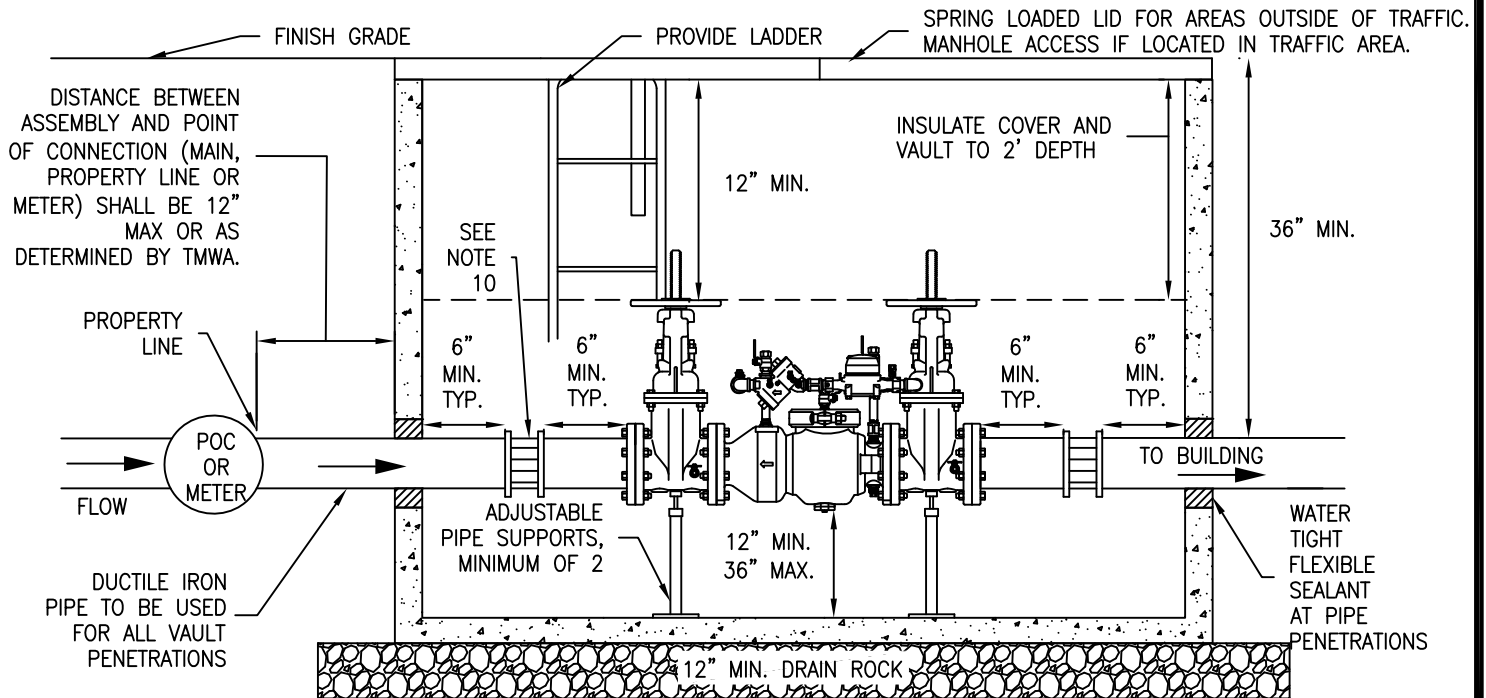
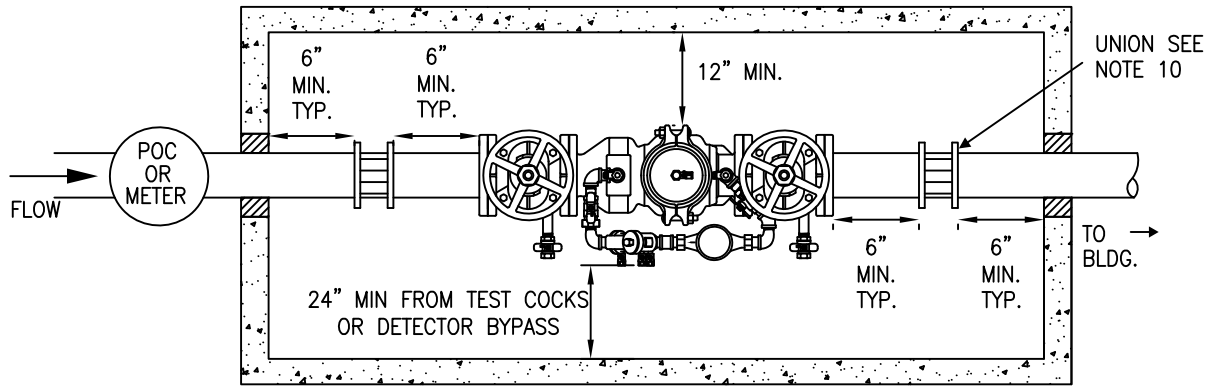
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REDUCED PRESSURE PRINCIPLE
ASSEMBLY
INTERNAL - RETROFIT ONLY

DRAWING NUMBER

10A-4

PLAN VIEW



NOTES:

1. ASSEMBLY SHALL BE A USC APPROVED LEAD FREE DEVICE.
2. FREEZE PROOF INSULATED VAULT REQUIRED.
3. BELOW GROUND VAULT SHALL BE SIZED TO PROVIDE CLEARANCES AS SHOWN ABOVE.
4. BELOW GROUND VAULT SHALL REMAIN DRY THROUGHOUT THE YEAR, CONTRACTOR SHALL ENSURE THERE IS PROPER DRAINAGE AROUND THE VAULT
5. SPRING LOADED LID REQUIRED ON LARGE VAULTS WITH ASSEMBLIES LARGER THAN 2 INCHES. MANHOLE ACCESS IS REQUIRED IN AREAS SUBJECT TO VEHICULAR TRAFFIC.
6. NO STOP AND WASTE VALVES.
7. CALL LOCAL BUILDING AND/OR FIRE DEPARTMENTS FOR DEPTH AND TYPE OF PIPE TO BE USED.
8. INSPECTION BY TMWA BACKFLOW PREVENTION GROUP PERSONNEL REQUIRED BEFORE METER IS SET OR SERVICE IS ACTIVATED.
9. TESTING OF THE ASSEMBLY REQUIRED WITHIN 7 DAYS AFTER METER IS SET OR SERVICE ACTIVATION. COPY OF TEST RESULTS TO BE FORWARDED TO TMWA BACKFLOW PREVENTION GROUP PERSONNEL BY A CERTIFIED ASSEMBLY TESTER WITHIN THAT SAME TIMEFRAME.
10. UNIONS TO BE INSTALLED WITH ALL ASSEMBLIES ON BOTH SIDES OF ASSEMBLY.
11. VALVES ON DETECTOR BYPASS SHALL REMAIN OPEN AT ALL TIMES.



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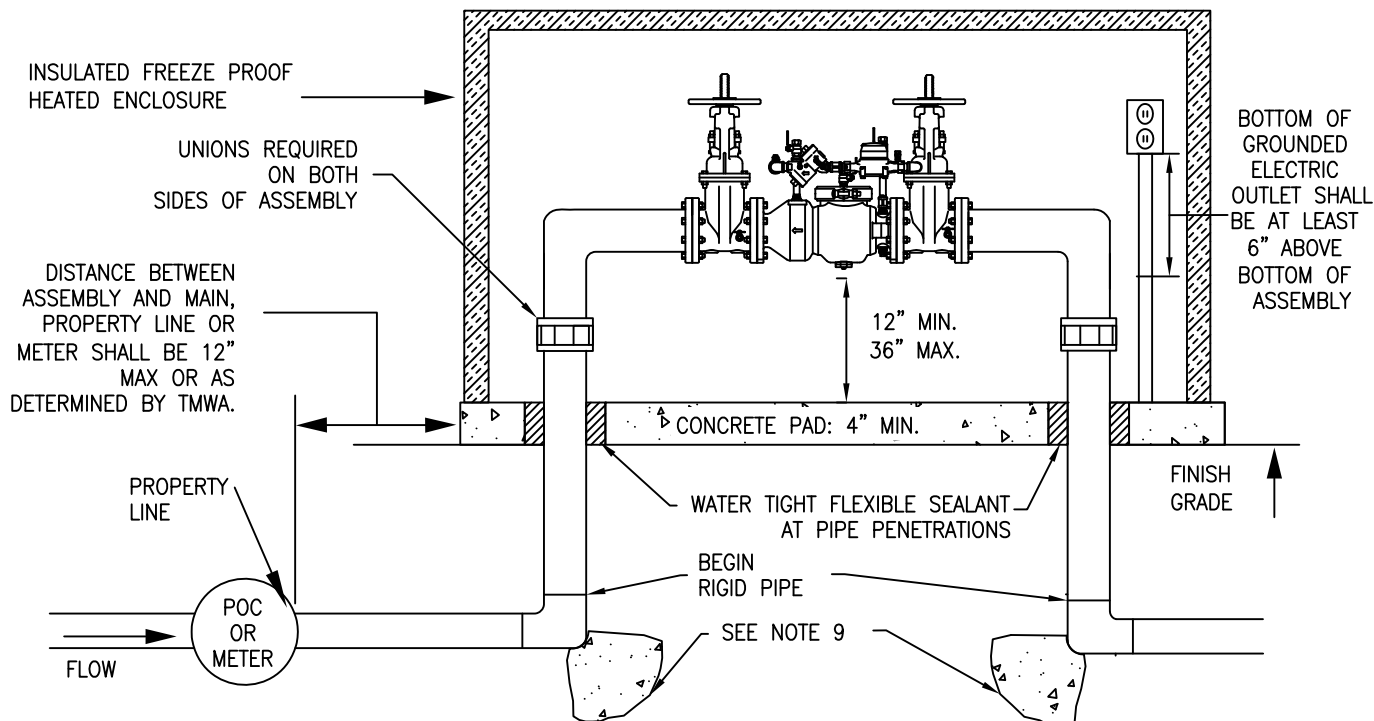
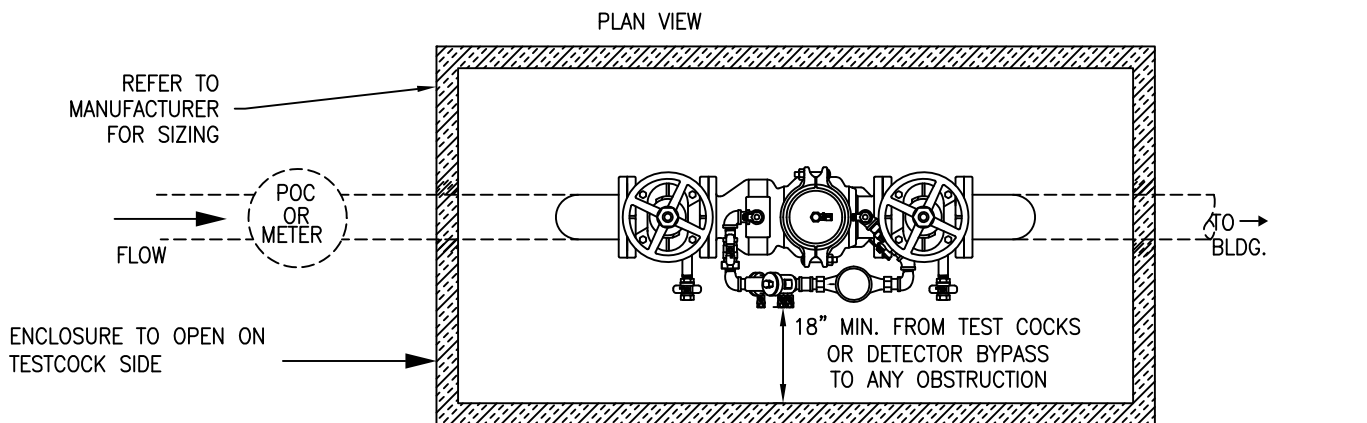
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APPENDIX 10A
BACKFLOW PREVENTION ASSEMBLIES
FIRE - CLASS 1, 2 & 3 DOUBLE CHECK VALVE
DETECTOR ASSEMBLY
EXTERNAL - HORIZONTAL BELOW GRADE

DRAWING NUMBER

10A-5



NOTES:

1. ASSEMBLY SHALL BE A USC APPROVED LEAD FREE DEVICE.
2. GROUNDED ELECTRIC SUPPLY SHALL BE A MINIMUM OF 6" ABOVE BOTTOM OF RELIEF VALVE AND STUBBED TO THE OUTSIDE.
3. FREEZE PROOF INSULATED BOX AND 1 SOURCE OF HEAT ARE REQUIRED. 2 SOURCES OF HEAT ARE STRONGLY RECOMMENDED.
4. INSULATED BOX SHALL SWING CLEAR OF ASSEMBLY TO PROVIDE CLEARANCES SHOWN IN PLAN VIEW OR INSULATED BOX SHALL BE SIZED TO PROVIDE CLEARANCES
5. NO STOP AND WASTE VALVES.
6. CALL LOCAL BUILDING AND/OR FIRE DEPARTMENT FOR DEPTH AND TYPE OF PIPE TO BE USED.
7. INSPECTION BY TMWA BACKFLOW PREVENTION GROUP PERSONNEL REQUIRED BEFORE METER IS SET OR SERVICE IS ACTIVATED.
8. TESTING OF BACKFLOW ASSEMBLY REQUIRED WITHIN 7 DAYS AFTER METER IS SET OR SERVICE ACTIVATION. COPY OF TEST RESULTS TO BE FORWARDED TO TMWA BACKFLOW PREVENTION GROUP PERSONNEL BY A CERTIFIED ASSEMBLY TESTER WITHIN THAT SAME TIMEFRAME.
9. MINIMUM DIMENSIONS FOR THE THRUST BLOCK BEARING AREA FOR PIPE 2" AND SMALLER SHALL BE 8" X 8" AND 12" IN DEPTH. ALL OTHER SIZES TO BE DETERMINED BY ENGINEER.
10. UNIONS TO BE INSTALLED WITH ALL ASSEMBLIES ON BOTH SIDES OF ASSEMBLY.
11. VALVES ON DETECTOR BYPASS SHALL REMAIN OPEN AT ALL TIMES.



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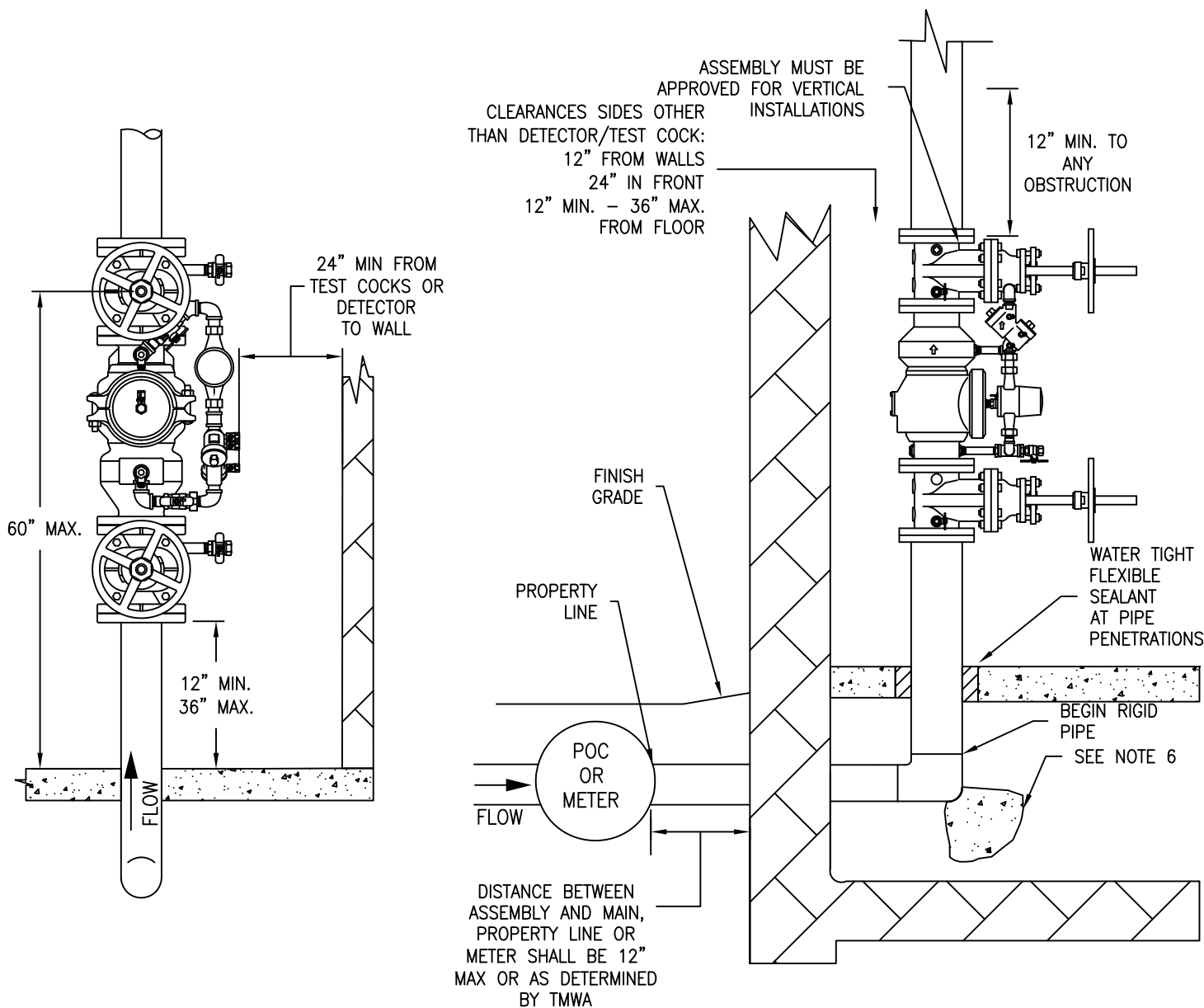
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APPENDIX 10A
BACKFLOW PREVENTION ASSEMBLIES
FIRE CLASS 1, 2 & 3 DOUBLE CHECK VALVE
DETECTOR ASSEMBLY
EXTERNAL - HORIZONTAL ABOVE GRADE

DRAWING NUMBER

10A-6



NOTES:

1. ASSEMBLY SHALL BE A USC APPROVED DEVICE.
2. NO STOP AND WASTE VALVES.
3. CALL LOCAL BUILDING AND/OR FIRE DEPARTMENTS FOR DEPTH AND TYPE OF PIPE TO BE USED.
4. INSPECTION BY TMWA BACKFLOW PREVENTION GROUP PERSONNEL REQUIRED BEFORE METER IS SET OR SERVICE IS ACTIVATED.
5. TESTING OF BACKFLOW ASSEMBLY REQUIRED WITHIN 7 DAYS AFTER METER IS SET OR SERVICE ACTIVATION. COPY OF TEST RESULTS TO BE FORWARDED TO TMWA BACKFLOW PREVENTION GROUP PERSONNEL BY A CERTIFIED ASSEMBLY TESTER WITHIN THAT SAME TIMEFRAME.
6. MINIMUM DIMENSIONS FOR THE THRUST BLOCK BEARING AREA FOR PIPE 2" AND SMALLER SHALL BE 8" X 8" AND 12" IN DEPTH. ALL OTHER SIZES TO BE DETERMINED BY ENGINEER.
7. TMWWA'S BACKFLOW DEPARTMENT MUST APPROVE THE USE OF INTERNAL BACKFLOW ASSEMBLIES.
8. VALVES ON DETECTOR BYPASS SHALL REMAIN OPEN AT ALL TIMES.



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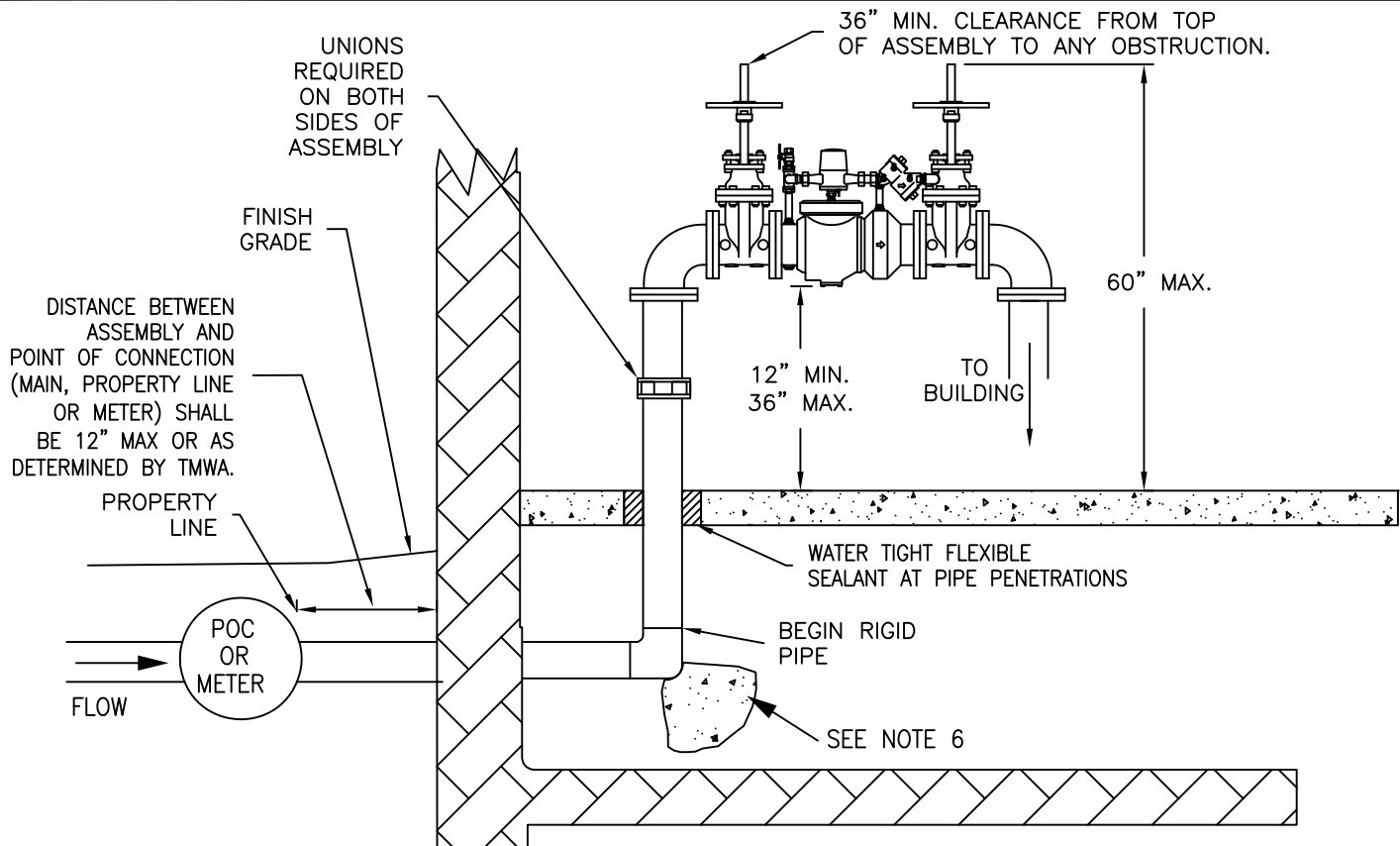
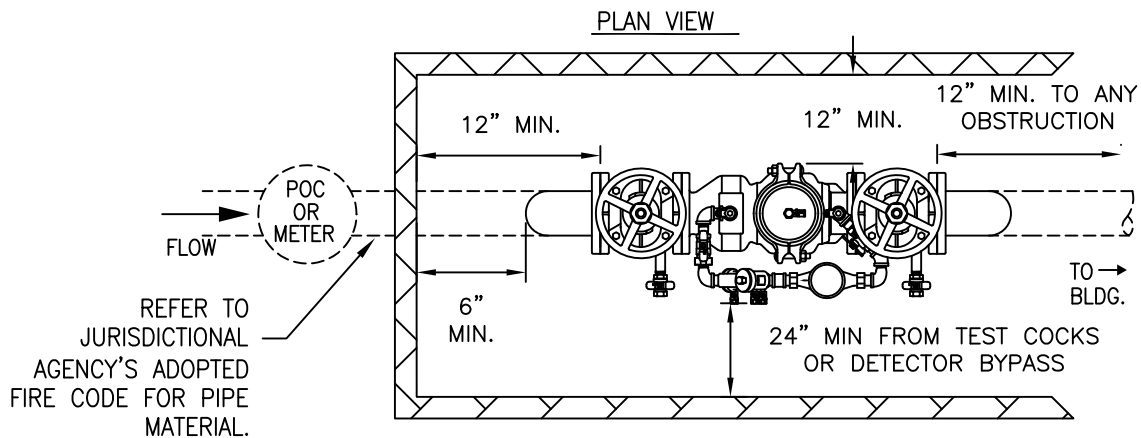
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APPENDIX 10A
BACKFLOW PREVENTION ASSEMBLIES
FIRE - CLASS 1, 2 & 3 DOUBLE CHECK VALVE
DETECTOR ASSEMBLY INTERNAL
VERTICAL INSTALLATION

DRAWING NUMBER

10A-7



NOTES:

1. ASSEMBLY SHALL BE A USC APPROVED DEVICE.
2. NO STOP AND WASTE VALVES.
3. CALL LOCAL BUILDING AND/OR FIRE DEPARTEMENTS FOR DEPTH AND TYPE OF PIPE TO BE USED.
4. INSPECTION BY TMWA BACKFLOW PREVENTION GROUP PERSONNEL REQUIRED BEFORE METER IS SET OR SERVICE IS ACTIVATED.
5. TESTING OF BACKFLOW ASSEMBLY REQUIRED WITHIN 7 DAYS AFTER METER IS SET OR SERVICE ACTIVATION. COPY OF TEST RESULTS TO BE FORWARDED TO TMWA BACKFLOW PREVENTION GROUP PERSONNEL BY A CERTIFIED ASSEMBLY TESTER WITHIN THAT SAME TIMEFRAME.
6. MINIMUM DIMENSIONS FOR THE THRUST BLOCK BEARING AREA FOR PIPE 2\" AND SMALLER SHALL BE 8\" X 8\" AND 12\" IN DEPTH. ALL OTHER SIZES TO BE DETERMINED BY ENGINEER.
7. VALVES ON DETECTOR BYPASS SHALL REMAIN OPEN AT ALL TIMES.
8. TMWA'S BACKFLOW DEPARTMENT MUST APPROVE THE USE OF INTERNAL BACKFLOW ASSEMBLIES.



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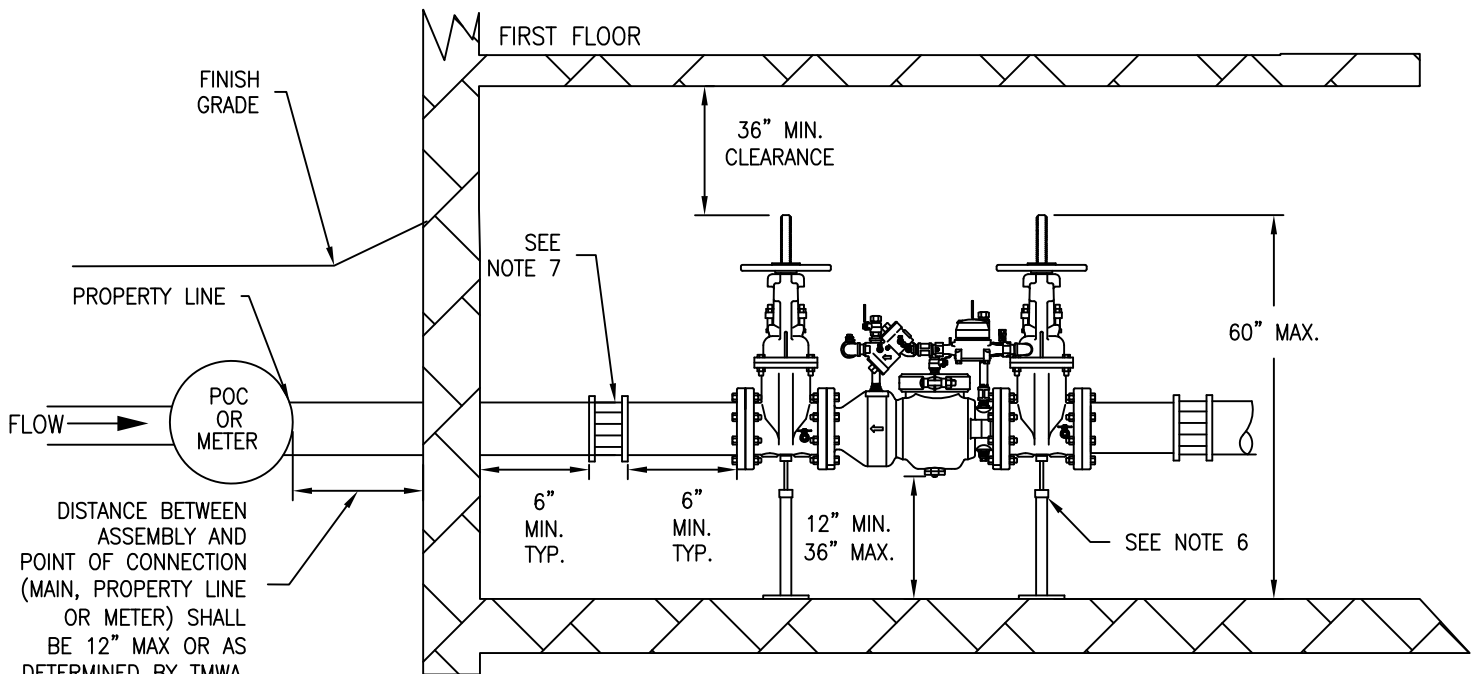
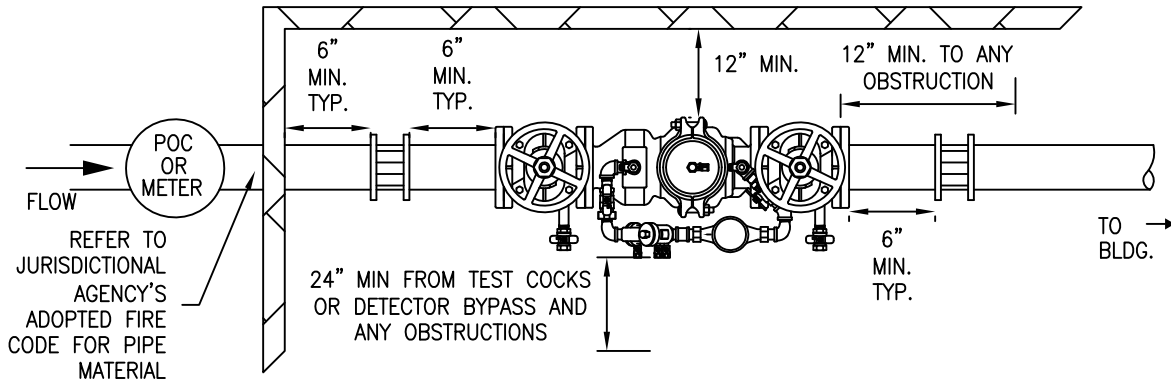
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APPENDIX 10A
BACKFLOW PREVENTION ASSEMBLIES
FIRE - CLASS 1, 2 & 3 DOUBLE CHECK VALVE
DETECTOR ASSEMBLIES INTERNAL - HORIZONTAL
INSTALLATION

DRAWING NUMBER

10A-8

PLAN VIEW



NOTES:

1. ASSEMBLY SHALL BE A USC APPROVED DEVICE.
2. NO STOP AND WASTE VALVES.
3. CALL LOCAL BUILDING AND/OR FIRE DEPARTMENTS FOR DEPTH AND TYPE OF PIPE TO BE USED.
4. INSPECTION BY TMWA BACKFLOW PREVENTION GROUP PERSONNEL REQUIRED BEFORE METER IS SET OR SERVICE IS ACTIVATED.
5. TESTING OF BACKFLOW ASSEMBLY REQUIRED WITHIN 7 DAYS AFTER METER IS SET OR SERVICE ACTIVATION. COPY OF TEST RESULTS TO BE FORWARDED TO TMWA BACKFLOW PREVENTION GROUP PERSONNEL BY A CERTIFIED ASSEMBLY TESTER WITHIN THAT SAME TIMEFRAME.
6. A MINIMUM OF 2 ADJUSTABLE PIPE STANDS TO BE USED.
7. UNIONS TO BE INSTALLED WITH ALL ASSEMBLIES ON BOTH SIDES OF ASSEMBLY.
8. VALVES ON DETECTOR BYPASS SHALL REMAIN OPEN AT ALL TIMES.
9. TMWA'S BACKFLOW DEPARTMENT MUST APPROVE THE USE OF INTERNAL BACKFLOW ASSEMBLIES.



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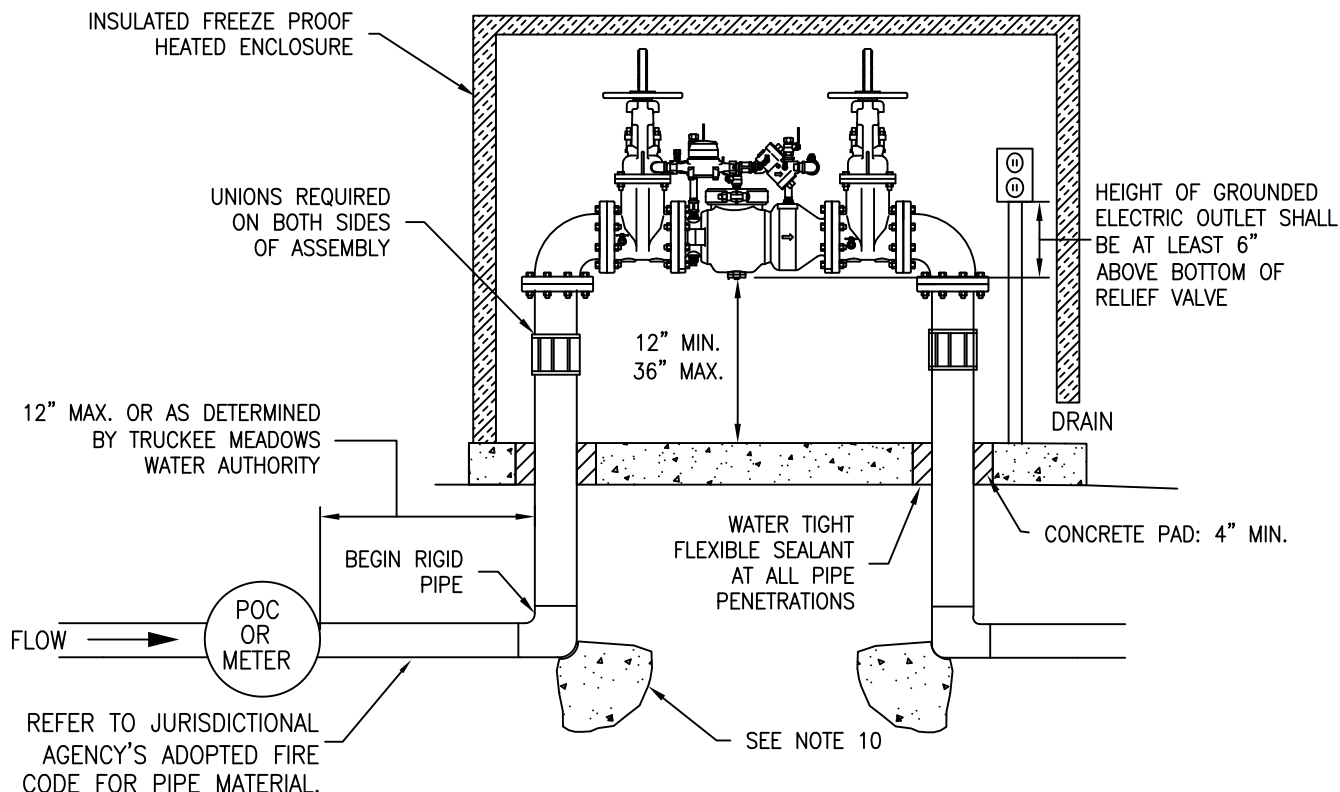
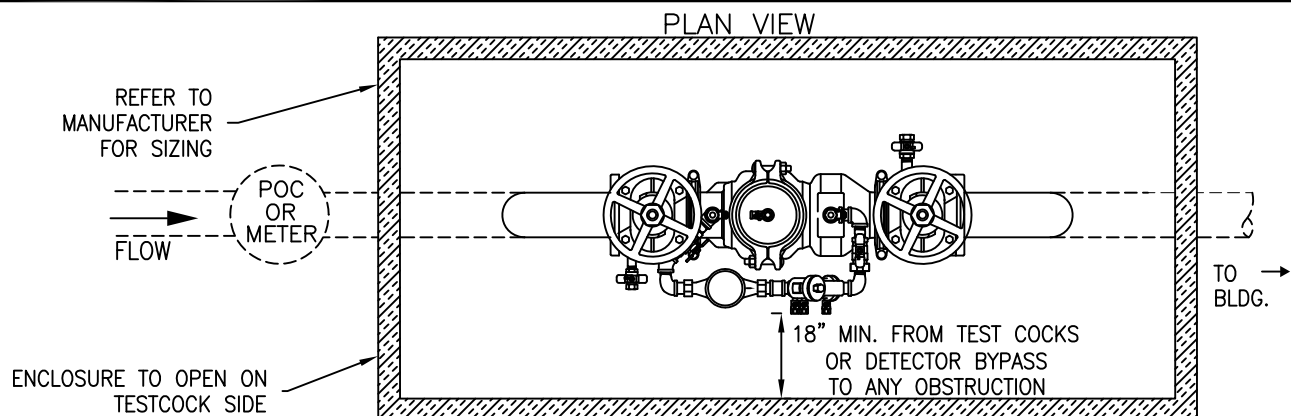
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APPENDIX 10A
BACKFLOW PREVENTION ASSEMBLIES
FIRE - CLASS 1, 2 & 3 DOUBLE CHECK VALVE
DETECTOR ASSEMBLY INTERNAL BASEMENT
INSTALLATION

DRAWING NUMBER

10A-9



NOTES:

1. ASSEMBLY SHALL BE A USC APPROVED LEAD FREE DEVICE.
2. THE RP SHALL BE INSTALLED ABOVE GRADE.
3. FREEZE PROOF INSULATED BOX AND 1 SOURCE OF HEAT ARE REQUIRED. 2 SOURCES OF HEAT ARE STRONGLY RECOMMENDED.
4. NO STOP AND WASTE VALVES.
5. INSULATED BOX SHALL SWING CLEAR OF ASSEMBLY TO PROVIDE CLEARANCES SHOWN IN PLAN VIEW OR INSULATED BOX SHALL BE SIZED TO PROVIDE CLEARANCES SHOWN IN PLAN VIEW.
6. SPRING LOADED LID REQUIRED ON LARGE BOXES.
7. CALL LOCAL BUILDING AND/OR FIRE DEPARTMENTS FOR DEPTH AND TYPE OF PIPE TO BE USED.
8. INSPECTION BY TMWA BACKFLOW PREVENTION GROUP PERSONNEL REQUIRED BEFORE METER IS SET OR SERVICE IS ACTIVATED.
9. TESTING OF BACKFLOW ASSEMBLY REQUIRED WITHIN 7 DAYS AFTER METER IS SET OR SERVICE ACTIVATION. COPY OF TEST RESULTS TO BE FORWARDED TO TMWA BACKFLOW PREVENTION GROUP PERSONNEL BY A CERTIFIED ASSEMBLY TESTER WITHIN THAT SAME TIMEFRAME.
10. MINIMUM DIMENSIONS FOR THE THRUST BLOCK BEARING AREA FOR PIPE 2" AND SMALLER SHALL BE 8" X 8" AND 12" IN DEPTH. ALL OTHER SIZES TO BE DETERMINED BY ENGINEER.



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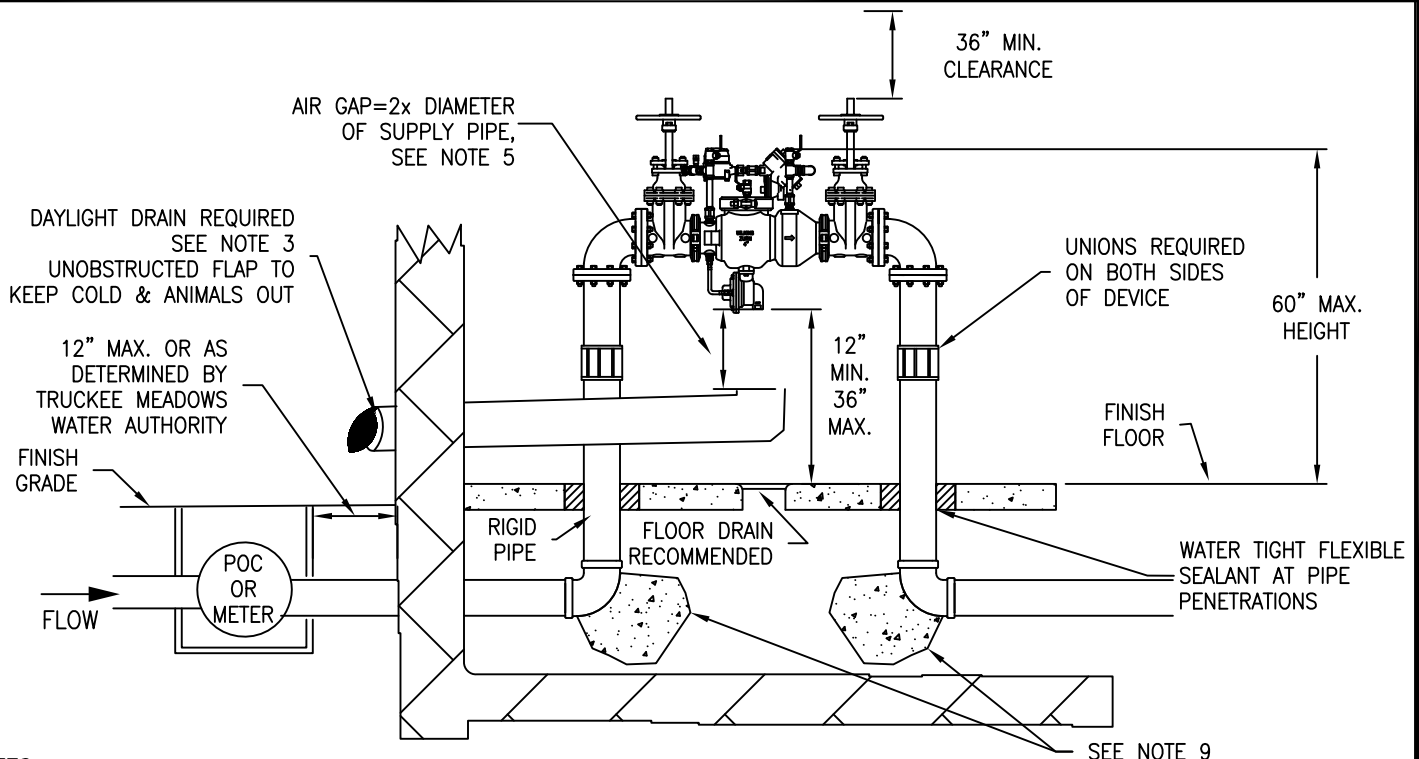
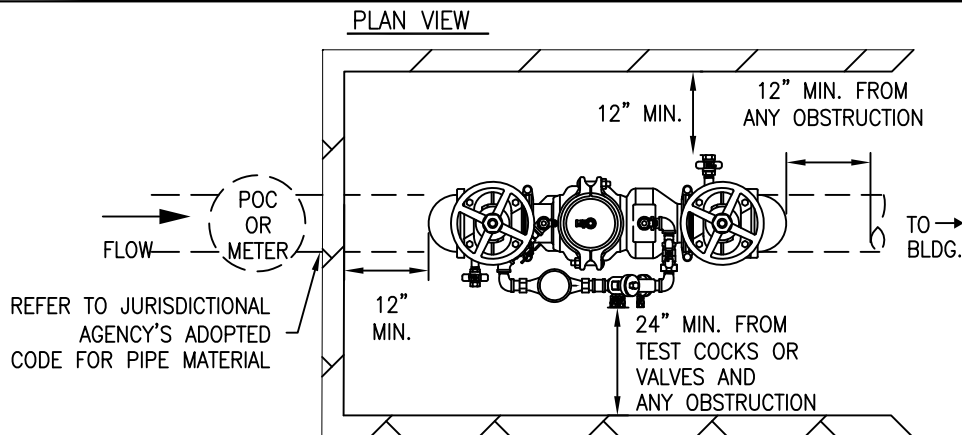
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APPENDIX 10A
BACKFLOW PREVENTION ASSEMBLIES
FIRE - CLASS 4, 5 & 6 REDUCED PRESSURE
PRINCIPLE DETECTOR ASSEMBLY
EXTERNAL - HORIZONTAL

DRAWING NUMBER

10A-10



NOTES:

1. ASSEMBLY SHALL BE A USC APPROVED LEAD FREE DEVICE.
2. THE RP SHALL BE INSTALLED ABOVE GRADE AND NOT IN A BASEMENT.
3. A DAYLIGHT DRAIN IS REQUIRED AND A FLOOR DRAIN IS RECOMMENDED. DAYLIGHT DRAIN SHOULD BE NO SMALLER THAN THE RP DEVICE THAT IS INSTALLED.
4. NO STOP AND WASTE VALVES.
5. AN AIR GAP (VERTICAL PHYSICAL SEPARATION) OF AT LEAST TWICE THE DIAMETER OF THE RELIEF VALVE OPENING, IF THE PIPE IS AFFECTED BY SIDE WALLS, CLEARANCE SHALL BE AT LEAST THREE TIMES THE EFFECTIVE DIAMETER OF THE PIPE, A MINIMUM OF 1" SHALL BE MAINTAINED BETWEEN THE WATER DISCHARGE POINT ON THE RELIEF VALVE AND THE DRAIN OR MAXIMUM FLOOD LEVEL, WHICHEVER IS HIGHEST.
6. CALL LOCAL BUILDING AND/OR FIRE DEPARTMENTS FOR DEPTH AND TYPE OF PIPE TO BE USED.
7. INSPECTION BY TMWA BACKFLOW PREVENTION GROUP PERSONNEL REQUIRED BEFORE METER IS SET OR SERVICE IS ACTIVATED.
8. TESTING OF BACKFLOW ASSEMBLY REQUIRED WITHIN 7 DAYS AFTER METER IS SET OR SERVICE ACTIVATION. COPY OF TEST RESULTS TO BE FORWARDED TO TMWA BACKFLOW PREVENTION GROUP PERSONNEL BY A CERTIFIED ASSEMBLY TESTER WITHIN THAT SAME TIMEFRAME.
9. MINIMUM DIMENSIONS FOR THE THRUST BLOCK BEARING AREA FOR PIPE 2" AND SMALLER SHALL BE 8" X 8" AND 12" IN DEPTH. ALL OTHER SIZES TO BE DETERMINED BY ENGINEER.



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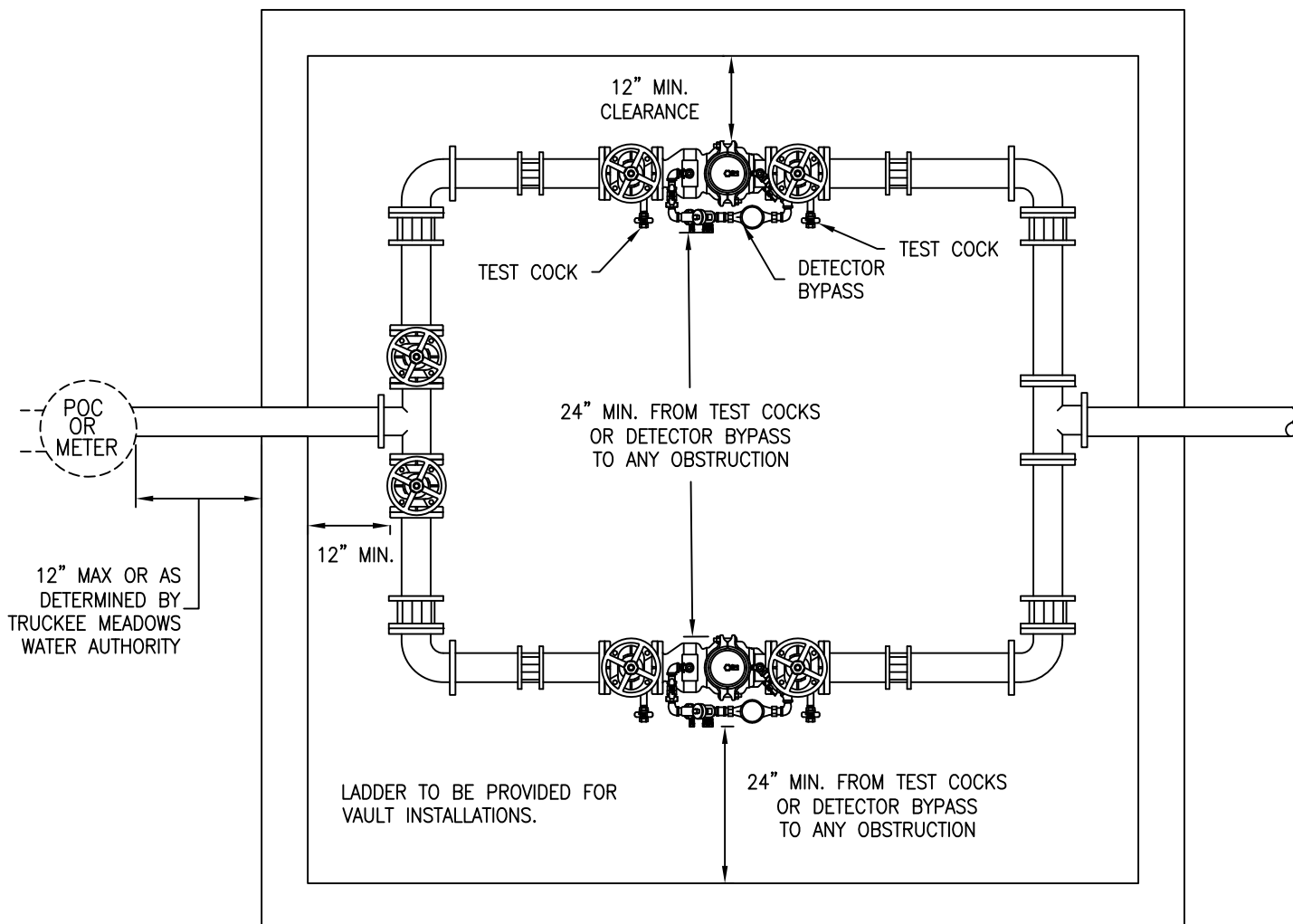
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APPENDIX 10A
BACKFLOW PREVENTION ASSEMBLIES
FIRE - CLASS 4, 5 & 6 REDUCED PRESSURE
PRINCIPLE DETECTOR ASSEMBLY
INTERNAL - HORIZONTAL

DRAWING NUMBER

10A-11



NOTES:

1. ASSEMBLY SHALL BE A USC APPROVED DEVICE.
2. THE ENTIRE MANIFOLD SHALL BE EXPOSED WITHIN THE ABOVE GROUND BOX OR BELOW GROUND VAULT.
3. REFER TO THE RP OR DC STANDARD FOR INSTALLATION DETAILS.
4. SUPPORTS SHALL BE PROVIDED AS NECESSARY.
5. FOR VAULT INSTALLATION REFER TO 10A-5 FOR DEPTH, PIPING, LADDER, VAULT AND PENETRATION REQUIREMENTS.
6. NO STOP AND WASTE VALVES.
7. CALL LOCAL BUILDING AND/OR FIRE DEPARTMENTS FOR DEPTH AND TYPE OF PIPE TO BE USED.
8. INSPECTION BY TMWA BACKFLOW PREVENTION GROUP PERSONNEL REQUIRED BEFORE METER IS SET OR SERVICE IS ACTIVATED.
9. TESTING OF BACKFLOW ASSEMBLY REQUIRED WITHIN 7 DAYS AFTER METER IS SET OR SERVICE ACTIVATION. COPY OF TEST RESULTS TO BE FORWARDED TO TMWA BACKFLOW PREVENTION GROUP PERSONNEL BY A CERTIFIED ASSEMBLY TESTER WITHIN THAT SAME TIMEFRAME.
10. THRUST BLOCKS ARE REQUIRED AT ALL BELOW GRADE ELBOWS (TO BE SIZED BY ENGINEER).



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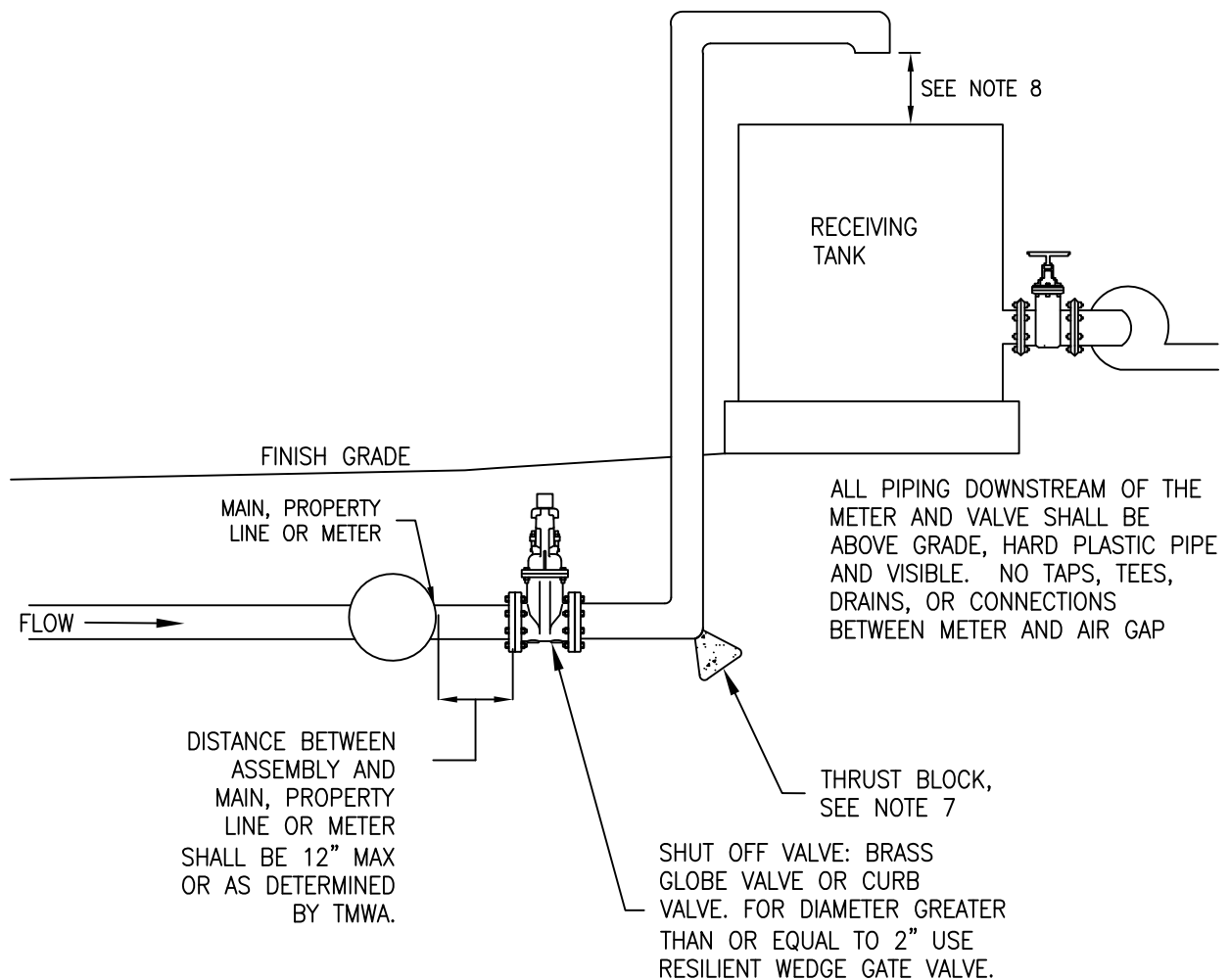
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APPENDIX 10A
BACKFLOW PREVENTION ASSEMBLIES
FIRE-CLASS 1 TO 6 CONTINUOUS FLOW SERVICES
MANIFOLD FOR PARALLEL BACKFLOW
ASSEMBLIES

DRAWING NUMBER

10A-12



NOTES:

1. IF THE AIR GAP IS INSTALLED IN AN AREA WHERE CORROSIVE FUMES OR GASES COULD RENDER THE ASSEMBLY INEFFECTIVE, AN RP MAY BE REQUIRED UPSTREAM ON THE SERVICE LINE.
2. NO STOP AND WASTE VALVES.
3. THE AIR GAP SHALL BE READILY ACCESSIBLE FOR INSPECTION.
4. THE AIR GAP SHALL REMAIN OPERATIVE AND EFFECTIVE THROUGHOUT THE YEAR WITHOUT BEING BYPASSED. TMWA SHALL BE NOTIFIED OF ANY BYPASS INSTALLED.
5. CALL LOCAL BUILDING AND/OR FIRE DEPARTMENTS FOR DEPTH AND TYPE OF PIPE TO BE USED.
6. INSPECTION BY TMWA BACKFLOW PREVENTION GROUP PERSONNEL REQUIRED BEFORE METER IS SET OR SERVICE IS ACTIVATED.
7. THRUST BLOCKS REQUIRED ON ALL BELOW GRADE ELBOWS. SIZE TO BE VERIFIED BY ENGINEER.
8. AIR GAP MUST BE AT LEAST TWICE THE EFFECTIVE DIAMETER OF THE PIPE OR IF THE PIPE IS AFFECTED BY SIDE WALLS, AT LEAST THREE TIMES THE EFFECTIVE DIAMETER OF THE PIPE. IN NO CASE SHALL THE AIR GAP BE LESS THAN 1".



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APPENDIX 10A
BACKFLOW PREVENTION ASSEMBLIES

AIR GAP SEPARATION

DRAWING NUMBER

10A-13