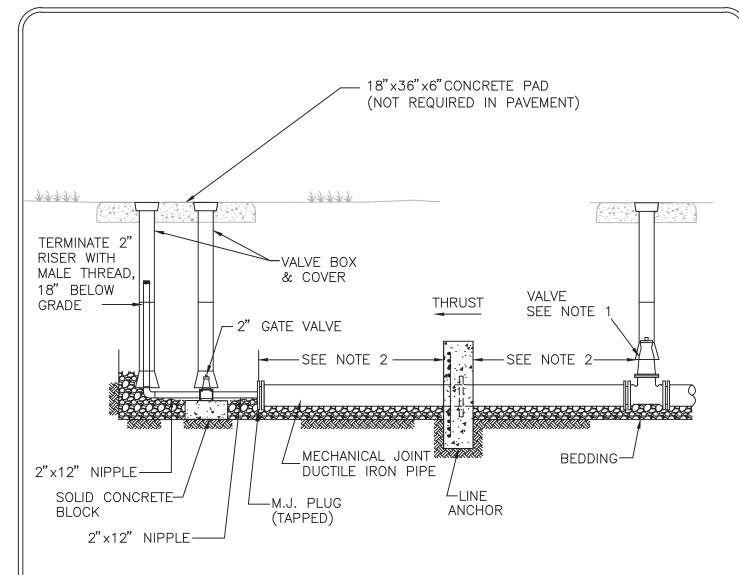


- 1. FOR GATE VALVE INSTALLATIONS, PROVIDE VALVE BOX ADAPTER MADE TO FIT SPECIFIC SIZE AND MANUFACTURE OF VALVE. NOT TO BE USED WITH BUTTERFLY VALVES.
- 2. PROVIDE EXTENSION OF VALVE STEM WHERE OPERATING NUT IS MORE THAN 5' BELOW GRADE. USE SINGLE, ONE PIECE STEM EXTENSION. TELESCOPING TYPE PROHIBITED.
- 3. STACKING OF BOTTOM SECTIONS OR EXTENSIONS IS PROHIBITED. FOR DEEPER BURY, USE 5" CAST IRON DWV PIPE AS RISER MATERIAL. TOP ADJUSTMENT BY RISER RINGS PROHIBITED.
- 4. VALVE BOXES OUTSIDE OF PAVEMENT REQUIRE 18"X18"X6" CONCRETE PAD.
- 5. REFER TO THE APPROVED MATERIALS LIST FOR APPROVED MANUFACTURERS & PART NUMBERS.

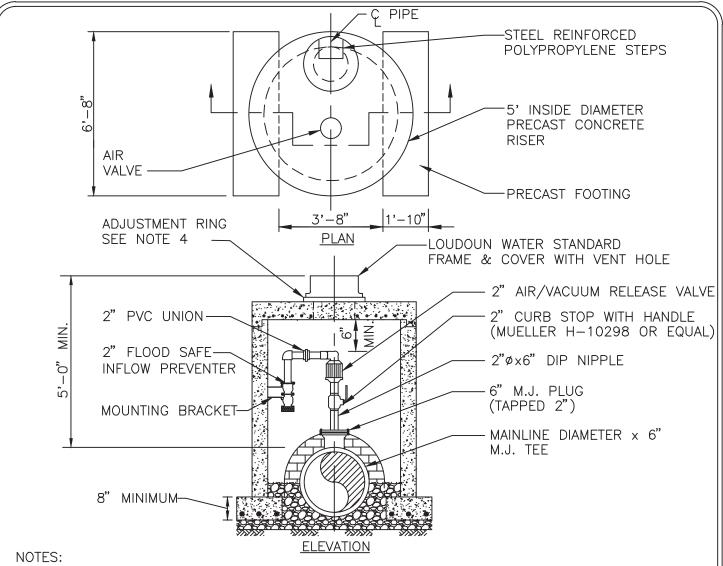
OCT. 2016 VALVE BOX W-1



- 1. WHERE PLANS DO NOT SPECIFY A MAINLINE VALVE WITHIN 50 FEET, OR WHERE A SERVICE CONNECTION OCCURS DOWNSTREAM OF NEAREST MAINLINE VALVE, PROVIDE MAINLINE VALVE UPSTREAM OF LINE ANCHOR.
- 2. 4' TO ANCHOR ON LINE 12" Ø AND SMALLER. 8' TO ANCHOR ON LINE 16" Ø AND LARGER.
- 3. ALL 2" PIPE AND ELBOW TO BE DUCTILE IRON WITH N.P.T. THREADS AND FUSION BONDED EPOXY COATING.
- 4. ALL MATERIALS MUST CONFORM TO APPLICABLE SECTIONS OF LOUDOUN WATER'S APPROVED MATERIALS LIST.

OCT. 2016

TEMPORARY BLOW-OFF



- 1. CONFINED SPACE: ATMOSPHERE MUST BE VENTED AND TESTED PRIOR TO ENTRY.
- 2. PROVIDE 2" FLOOD SAFE INFLOW PREVENTER BY VAL-MATIC WITH MOUNTING BRACKET. MOUNT TO WALL OF STRUCTURE.
- 3. FROM MAIN TO AIR RELEASE PIPE WITH 2" THREADED DUCTILE IRON PIPE. FROM AIR VALVE TO INFLOW PREVENTER, PIPE IN 2" PVC SCH 80 (ASTM D1785) WITH SOLVENT WELDED JOINTS.
- 4. MAXIMUM FRAME ADJUSTMENT BY GRADE RINGS IS 12" IN PAVEMENT AND 6" ELSEWHERE.
- 5. ALL MATERIALS MUST CONFORM TO APPLICABLE SECTIONS OF LOUDOUN WATER'S APPROVED MATERIALS LIST.
- 6. ALL PRECAST CONCRETE SHALL CONFORM TO AASHTO M199 AND ASTM A615.
- 7. IF OUTSIDE PAVEMENT BOLT FRAME TO CONE.

AUG. 2018

AIR RELEASE



### WATER LINE TEST

### ALLOWABLE LEAKAGE FOR TWO HOUR TEST

LENGTH OF PIPE (FT)	DIAMETER OF PIPE (IN)	AVG TEST PRESSURE (PSI)	ALLOWABLE LEAKAGE (GAL/2 HR)
1	6	150	0.0010
1	8	150	0.0013
1	10	150	0.0017
1	12	150	0.0020
1	16	150	0.0026
1	20	150	0.0033
1	24	150	0.0040
1	30	150	0.0050
1	36	150	0.0060

OCT. 2016

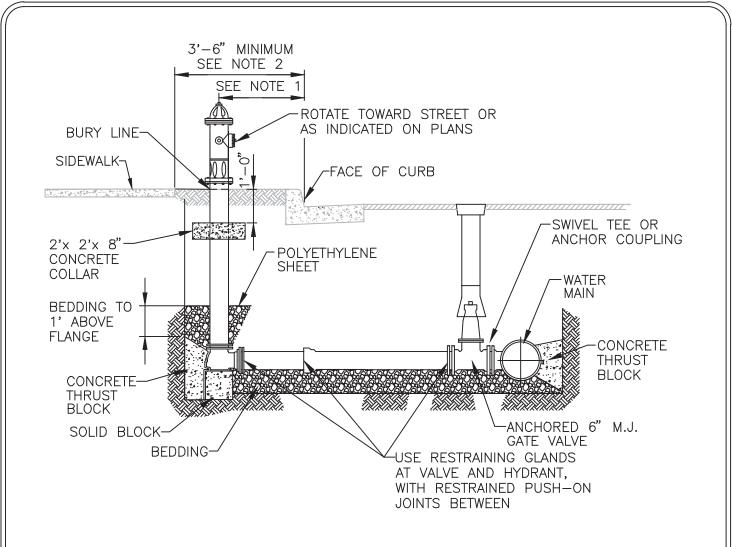
TABLE OF ALLOWABLE LEAKAGE



- 1. TANGENT TEE REQUIRED WHERE SPECIFIED ON CONSTRUCTION PLANS.
- 2. TYPICAL HYDRANT HEIGHT IS 5'. INSTALLATION OF SHORTER BARREL REQUIRES APPLICATION SPECIFIC APPROVAL BY LOUDOUN WATER.
- 3. MAXIMUM HYDRANT HEIGHT IS 7' BURY. FOR DEEPER MAIN, PROVIDE VERTICAL OFFSET IN LEAD.
- 4. HYDRANT MUST BE AT LEAST 5' FROM DRIVEWAY ENTRANCES.
- 5. CONCRETE & POLYETHYLENE MUST BE CLEAR OF WEEP HOLES.
- 6. VERTICAL ADJUSTMENT OF BARREL LIMITED TO ONE EXTENSION.
- 7. FIELD PAINTING REQUIRED PRIOR TO ACCEPTANCE.
- 8. LANDSCAPE PLANTINGS ARE PROHIBITED WITHIN 5' OF HYDRANT.

OCT. 2016

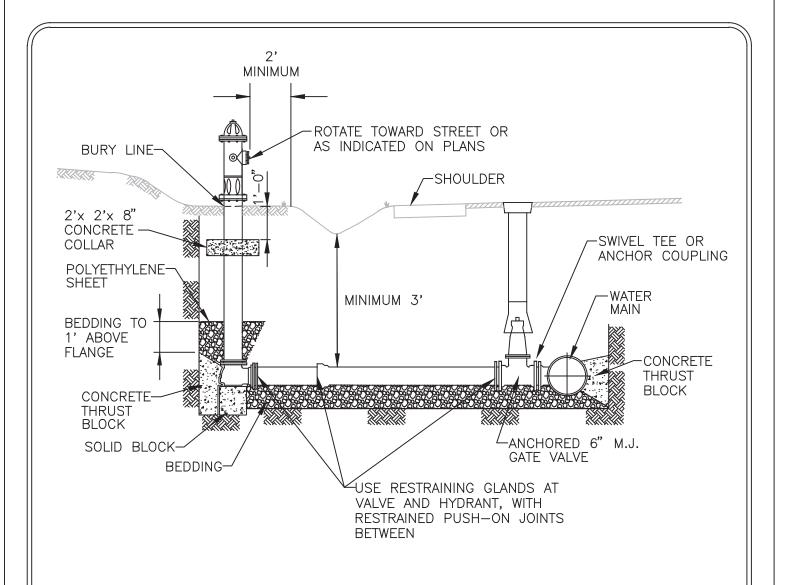
HYDRANT NOTES



- 1. MINIMUM 2' FROM FACE OF CURB TO CENTER OF HYDRANT.
- 2. WHERE LESS THAN 3'-6" IS AVAILABLE BETWEEN FACE OF CURB AND SIDEWALK, CENTER HYDRANT AT LEAST 2' BEHIND SIDEWALK.
- 3. ALONG STREETS OF DESIGN SPEED 45 MPH AND ABOVE, LOCATE HYDRANT A MINIMUM OF 6' FROM EDGE OF PAVEMENT OR FACE OF CURB.

OCT. 2016

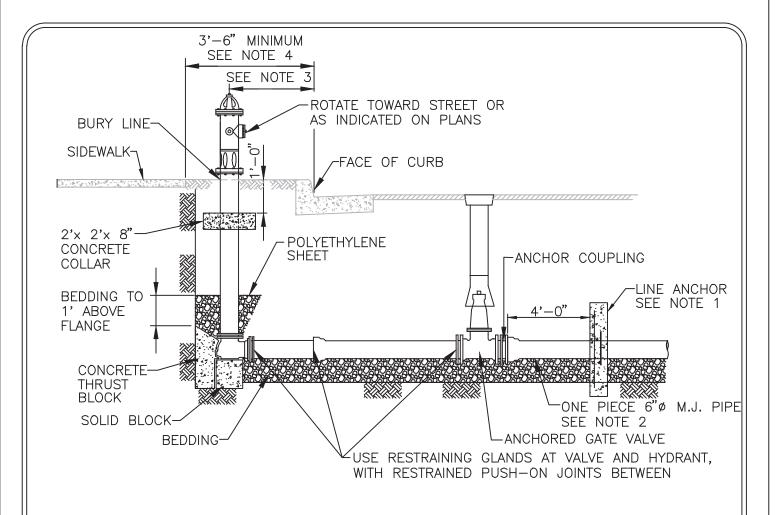
FIRE HYDRANT ALONG STREET



1. LOCATE HYDRANT AT LEAST 2' BEHIND DITCH. GRADE TO A MAXIMUM 10% SLOPE WITHIN 2' OF HYDRANT. VALVE MUST NOT BE IN DITCH OR SHOULDER.

OCT. 2016

FIRE HYDRANT BEHIND DITCH

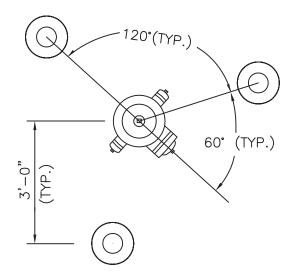


#### NOTES:

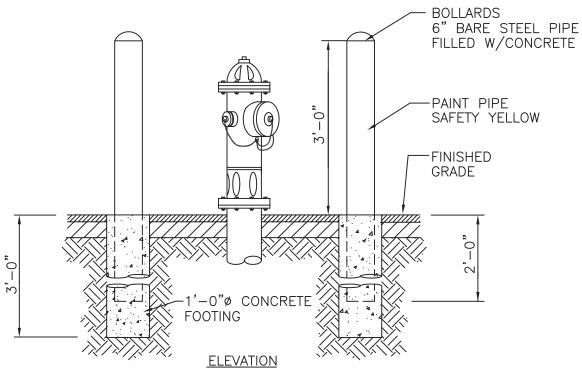
- 1. WHERE LOUDOUN WATER DETERMINES THAT LINE ANCHOR IS NOT FEASIBLE, PROVIDE LOCKING GASKETS OR RESTRAINED JOINT PIPING SYSTEM FOR 60' UPSTREAM OF VALVE.
- 2. SERVICE CONNECTIONS PROHIBITED DOWNSTREAM OF LINE ANCHOR.
- 3. MINIMUM 2' FROM FACE OF CURB TO CENTER OF HYDRANT.
- 4. WHERE LESS THAN 3'-6" IS AVAILABLE BETWEEN FACE OF CURB AND SIDEWALK, CENTER HYDRANT AT LEAST 2' BEHIND SIDEWALK.
- 5. ALONG STREETS OF DESIGN SPEED 45 MPH AND ABOVE, LOCATE HYDRANT A MINIMUM OF 6' FROM EDGE OF PAVEMENT OR FACE OF CURB.

OCT. 2016

DEAD END HYDRANT



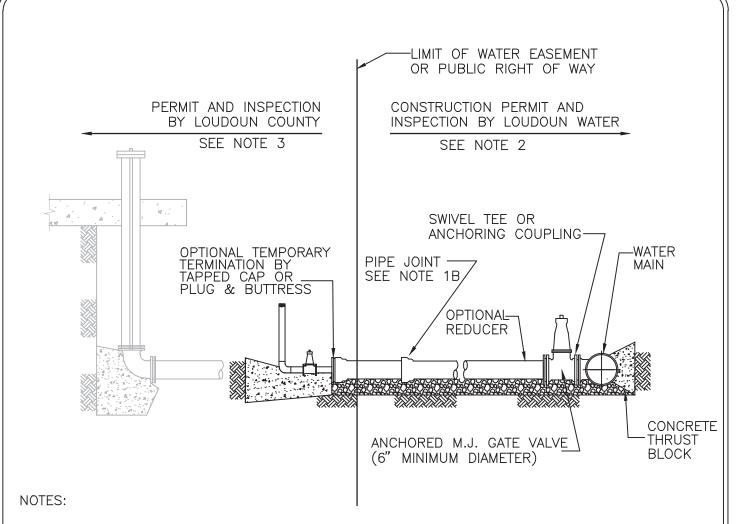
TYPICAL 3 BOLLARD PLACEMENT-PLAN



- 1. QUANTITY & PLACEMENT OF BOLLARDS TO BE DETERMINED BY PLANS OR FIELD INSPECTION AS WARRANTED.
- 2. CONCRETE TO BE CLASS A3.

APR. 2010

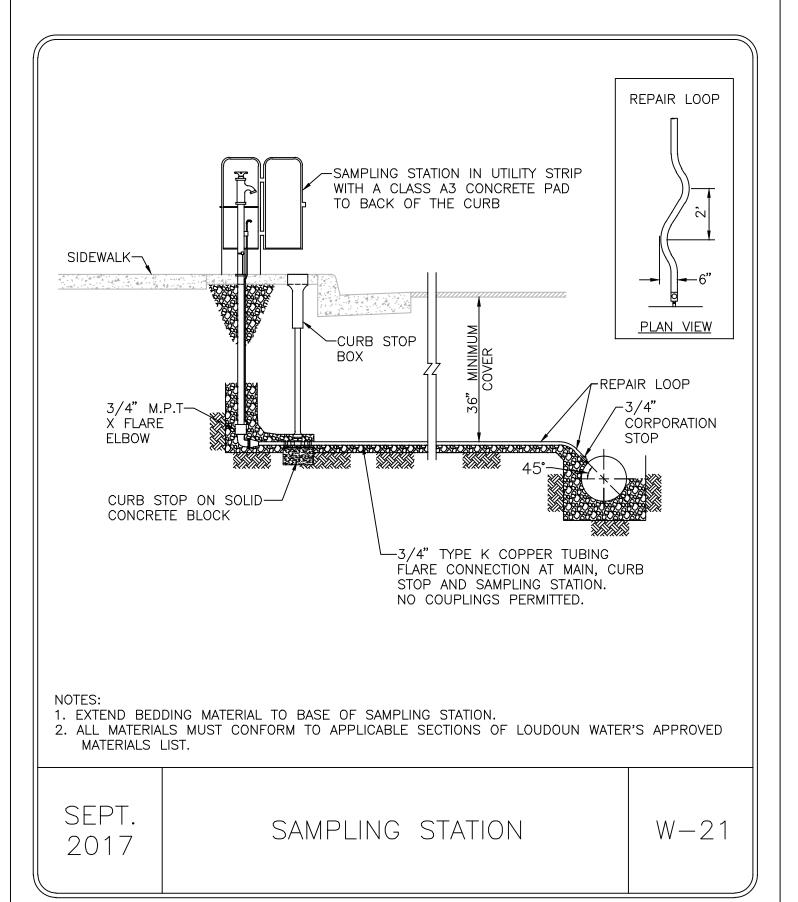
HYDRANT BOLLARDS

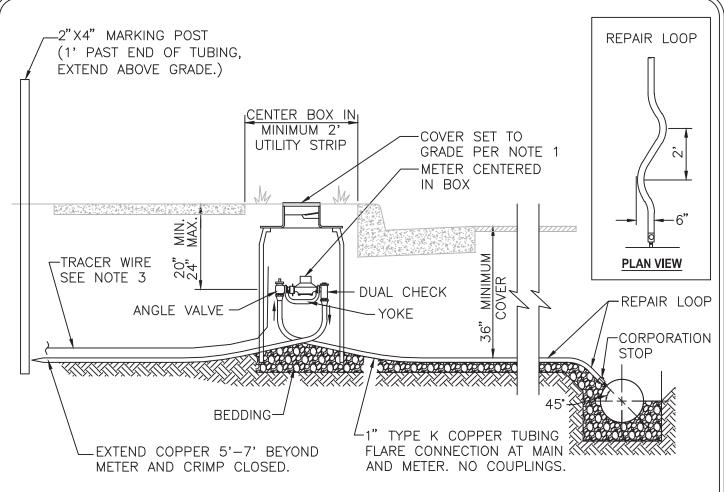


- 1. WITHIN WATER EASEMENT OR PUBLIC RIGHT OF WAY:
  - A) FIRE LINE TO BE MINIMUM 4" DIAMETER DUCTILE IRON PIPE, CLASS 52 OR BETTER.
  - B) USE APPROVED RESTRAINING GLAND AT VALVE. RESTRAIN ALL PIPE JOINTS WITH LOCKING GASKET OR APPROVED RESTRAINED JOINT PIPING SYSTEM.
  - C) ALL MATERIALS MUST CONFORM TO APPLICABLE SECTIONS OF LOUDOUN WATER'S APPROVED MATERIALS LIST.
- 2. LOUDOUN WATER MUST INSPECT AND APPROVE THE INSTALLATION AND HYDROSTATIC TEST AT 200 PSI TO THE LIMIT OF PUBLIC WATER EASEMENT OR RIGHT OF WAY.
- 3. FOR CONTINUATION TO THE BUILDING, ACQUIRE UNDERGROUND FIRE SERVICE PERMIT AND INSPECTIONS FROM THE LOUDOUN COUNTY DEPARTMENT OF BUILDING AND DEVELOPMENT.
- 4. FOR DRAWS OF WATER FROM THE PUBLIC MAIN, CONTACT LOUDOUN WATER INSPECTIONS DEPARTMENT.

MAY 2016

FIRE SERVICE CONNECTION

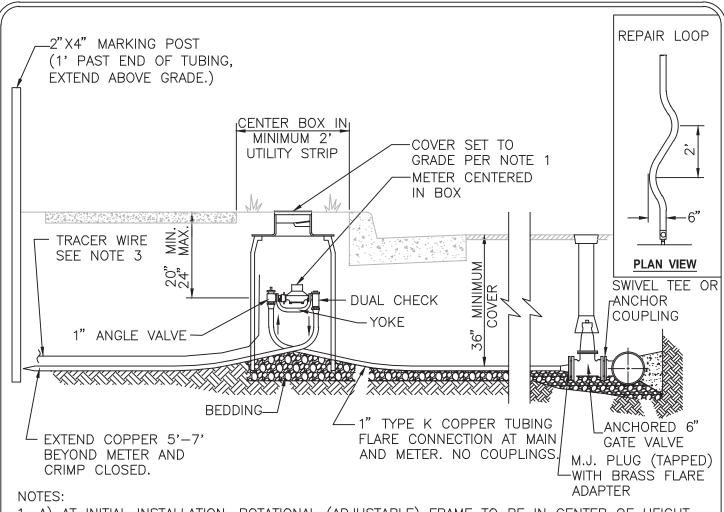




### NOTES:

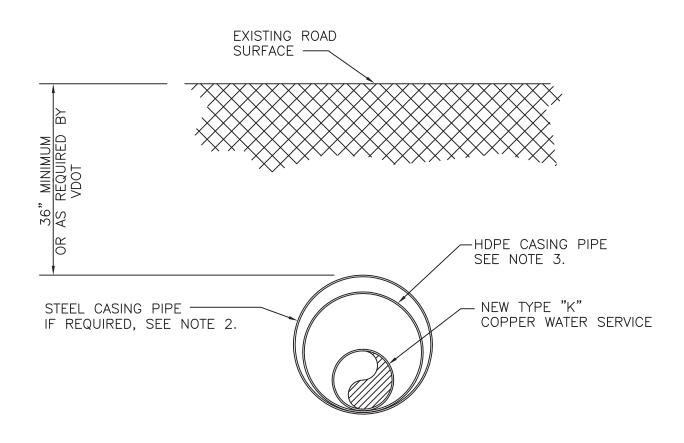
- 1. A) AT INITIAL INSTALLATION, ROTATIONAL (ADJUSTABLE) FRAME TO BE IN CENTER OF HEIGHT RANGE.
  - B) WHERE AT CURB, SET COVER FLUSH TO 1" ABOVE TOP OF CURB.
  - C) WHERE NO CURB, SET COVER 1" ABOVE FINAL GRADE.
  - D) IN SLOPE, PROVIDE TIMBER RETAINING WALL 3' FROM COVER.
- 2. WHERE TAP IS ON 4" MAIN, CORPORATION STOP SHALL HAVE 3/4" INLET AND 1" FLARE OUTLET. ON 3" WATER MAIN, USE 3"X3/4" BRASS SADDLE.
- 3. WHERE SERVICE BETWEEN METER AND BUILDING IS PLASTIC TUBING, PROVIDE TRACER WIRE OF AWG #12 SOLID COPPER WITH 45 MIL POLYETHYLENE INSULATION. TURN TRACER WIRE UP INSIDE METER BOX. TERMINATE TRACER WIRE INDOORS OR AT EXTERIOR WALL WITH A BLUE SOIL MARKER.
- 4. ALL MATERIALS MUST CONFORM TO LOUDOUN WATER'S APPROVED MATERIALS LIST.
- 5. METER FURNISHED AND INSTALLED BY LOUDOUN WATER.

AUG. 2018 SERVICE CONNECTION FOR RESIDENTIAL



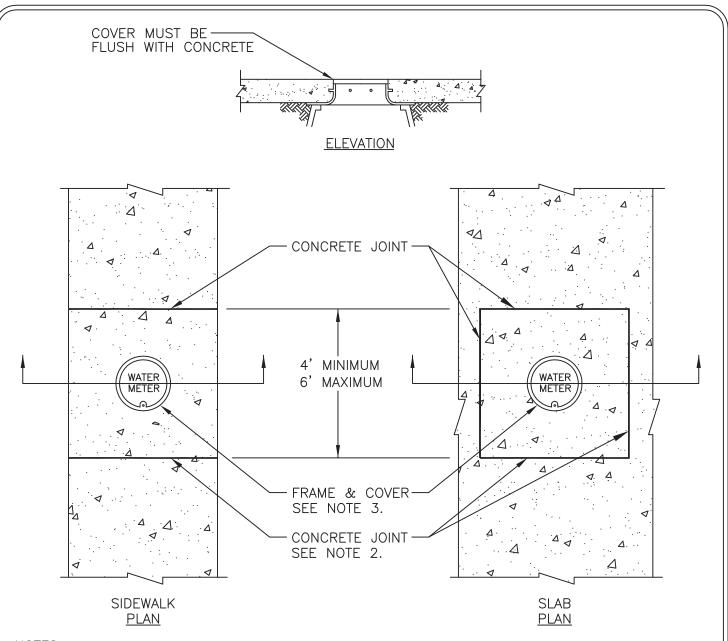
- 1. A) AT INITIAL INSTALLATION, ROTATIONAL (ADJUSTABLE) FRAME TO BE IN CENTER OF HEIGHT RANGE.
  - B) WHERE AT CURB, SET COVER FLUSH TO 1" ABOVE TOP OF CURB.
  - C) WHERE NO CURB, SET COVER 1" ABOVE FINAL GRADE.
  - D) IN SLOPE, PROVIDE TIMBER RETAINING WALL 3' FROM COVER.
- 2. WHERE SERVICE BETWEEN METER AND BUILDING IS PLASTIC TUBING, PROVIDE TRACER WIRE OF AWG #12 SOLID COPPER WITH 45 MIL POLYETHYLENE INSULATION. TURN TRACER WIRE UP INSIDE METER BOX. TERMINATE TRACER WIRE INDOORS OR AT EXTERIOR WALL WITH A BLUE SOIL MARKER.
- 3. ALL MATERIALS MUST CONFORM TO LOUDOUN WATER'S APPROVED MATERIALS LIST.
- 4. METER FURNISHED AND INSTALLED BY LOUDOUN WATER.

AUG. 2018 SERVICE CONNECTION FOR 3/4" AND 1" METERS — COMMERCIAL



- 1. A PERMIT FROM THE VIRGINIA DEPARTMENT OF TRANSPORTATION IS REQUIRED FOR ALL WORK WITHIN AN EXISTING PUBLIC RIGHT-OF-WAY.
- 2. IF ROADWAY OWNER REQUIRES CASING TO BE STEEL, INSERT PLASTIC CASING PIPE INTO STEEL CASING TO INSULATE THE WATER SERVICE FROM STEEL. OTHERWISE USE PLASTIC CASING ONLY.
- 3. FOR 1" WATER SERVICE USE 3" HIGH DENSITY POLYETHYLENE (HDPE). FOR 1-1/2" SERVICE OR 2" WATER SERVICE USE 4" HDPE. POLYVINYL CHLORIDE (PVC) NOT ACCEPTABLE.
- 4. SEAL BOTH ENDS OF CASING.

APR. 2010 WATER SERVICE BY JACK AND BORE

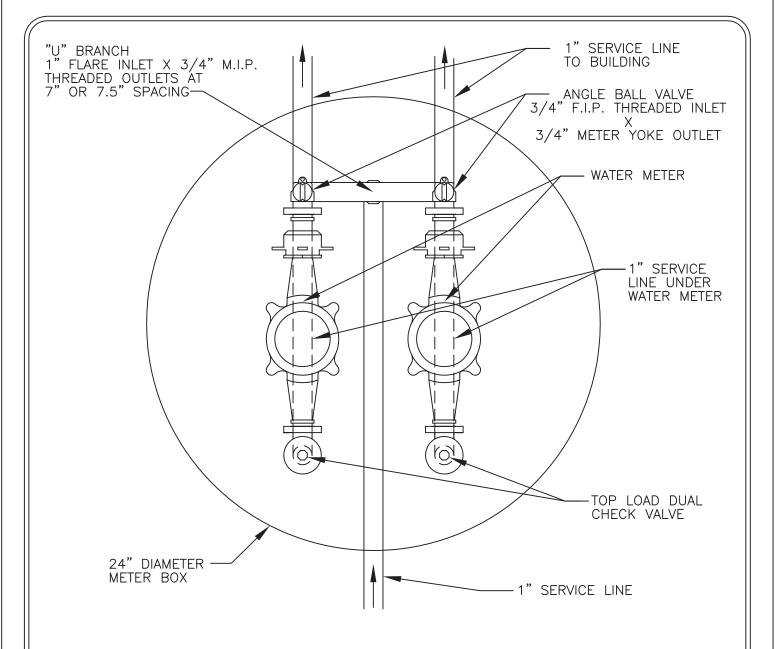


### NOTES:

- 1. FOR USE ONLY WHERE SPECIFICALLY APPROVED BY LOUDOUN WATER. METER NOT PERMITTED WITHIN DIRECT WHEEL PATH OF VEHICLES.
- 2. EXTEND JOINTS IN CONCRETE TO A DEPTH OF AT LEAST 1".
- 3. FRAME AND COVER FOR "SPECIAL APPLICATIONS" REQUIRED. SEE LOUDOUN WATER'S APPROVED MATERIALS LIST FOR MANUFACTURERS AND PART NUMBERS.

SEPT. 2010

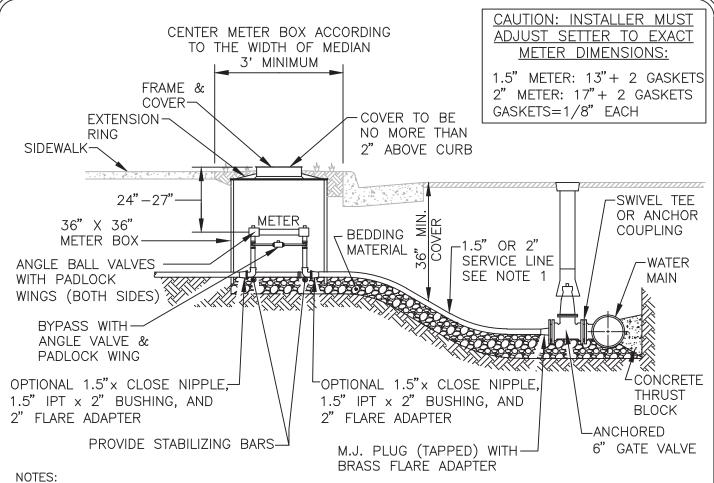
WATER METER IN SIDEWALK OR SLAB



- 1. FOR USE ONLY WHERE SPECIFICALLY APPROVED BY LOUDOUN WATER. CANNOT SUPPLY RESIDENTIAL FIRE SUPPRESSION SYSTEMS.
- 2. SEE FIGURE W-23 FOR SERVICE LINE AND METER BOX PLACEMENT.
- 3. SEE LOUDOUN WATER'S APPROVED MATERIALS LIST FOR MANUFACTURERS AND PART NUMBERS.

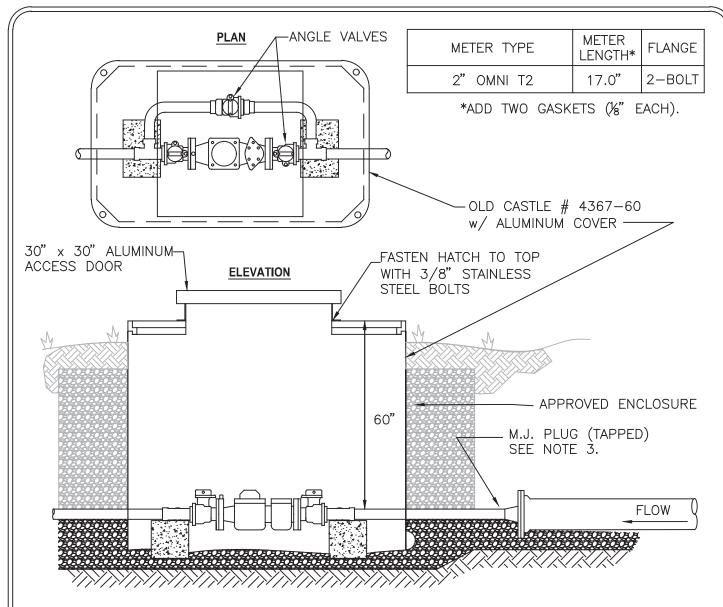
APR. 2010

DUAL WATER METER SETTING



- 1. SERVICE LINE TO BE TYPE K COPPER TUBING WITH FLARED CONNECTIONS AT MAIN AND SETTER. NO COUPLINGS PERMITTED. TYPICAL MAXIMUM DESIGN LENGTH IS 50'.
- 2. SEE LOUDOUN WATER'S APPROVED MATERIALS LIST FOR APPROVED MANUFACTURERS & PART NUMBERS.
- 3. ALL PARTS EXCEPT METER TO BE SUPPLIED BY CONTRACTOR. LOUDOUN WATER WILL SUPPLY METER FOR INSTALLATION BY CONTRACTOR.
- 4. THIS FIGURE APPLICABLE TO OMNI C2 METERS ONLY. FOR OMNI T2 OR ACCUMAG METER SEE W-28.
- 5. THE BUILDING'S INTERNAL PLUMBING SHALL INCLUDE A BACK FLOW PREVENTER (CERTIFIED BY A.S.S.E. OR C.S.A.). INSTALLATION & TESTING SHALL BE IN ACCORDANCE WITH THE INTERNATIONAL PLUMBING CODE (INCLUDING BUT NOT LIMITED TO SECTIONS 312.9.2 & 608.2 & 608.3) & LOUDOUN WATER'S CROSS CONNECTION / BACKFLOW PREVENTION MANUAL. SYSTEMS THAT REQUIRE AN R.P.Z. BACK FLOW PREVENTER SHALL HAVE, AT MINIMUM, AN EQUIVALENTLY SIZED DRAIN. FOR MORE DETAILS CALL LOUDOUN WATER'S BACK FLOW SPECIALIST AT 571-291-7878.

APR. 2017 SERVICE CONNECTION FOR 1 1/2" OR 2" OMNI C2 METER

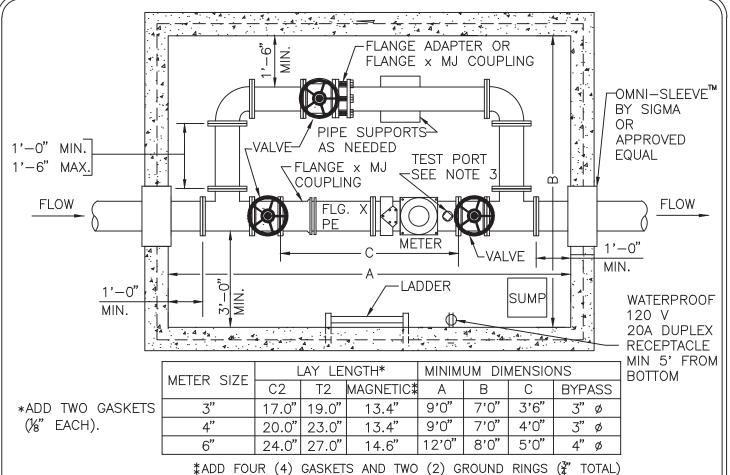


### NOTES:

- 1. METER PIT MUST BE LOCATED IN A MINIMUM 8' x 8' UNPAVED AREA.
- 2. CONNECTION AT MAIN TO BE 6"Ø WITH RESTRAINED BRANCH VALVE. CONTINUE SERVICE IN 4" DIP OR 2" COPPER. RESTRAIN ALL IRON SERVICE LINE BETWEEN MAIN AND METER. USE APPROVED RESTRAINING GLAND AT EACH MECHANICAL JOINT. RESTRAIN ALL PIPE JOINTS WITH LOCKING GASKET OR APPROVED RESTRAINED JOINT PIPING SYSTEM.
- 3. TRANSITION 4" DIP SERVICE TO 2" COPPER WITH BRASS FLARE ADAPTER.
- 4. CONTINUE BEDDING MATERIAL AS BACKFILL AROUND ENCLOSURE TO 1' BELOW GRADE.

AUG. 2018

2" OMNI T2 METER

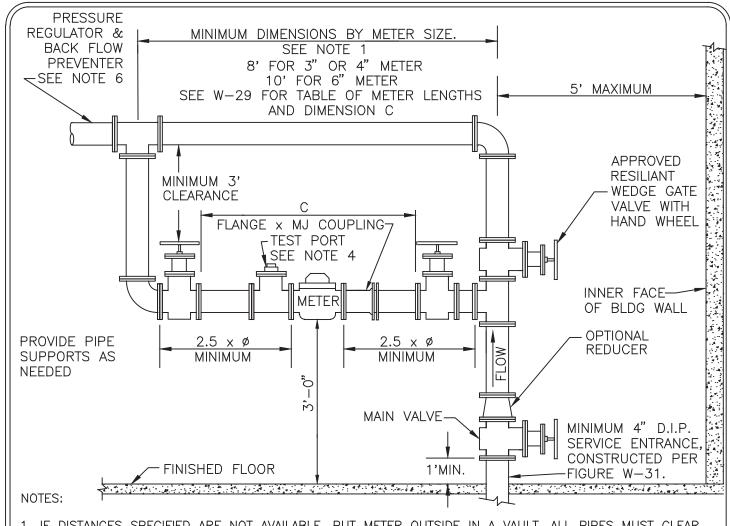


NOTES:

BETWEEN MAIN AND BUILDING.

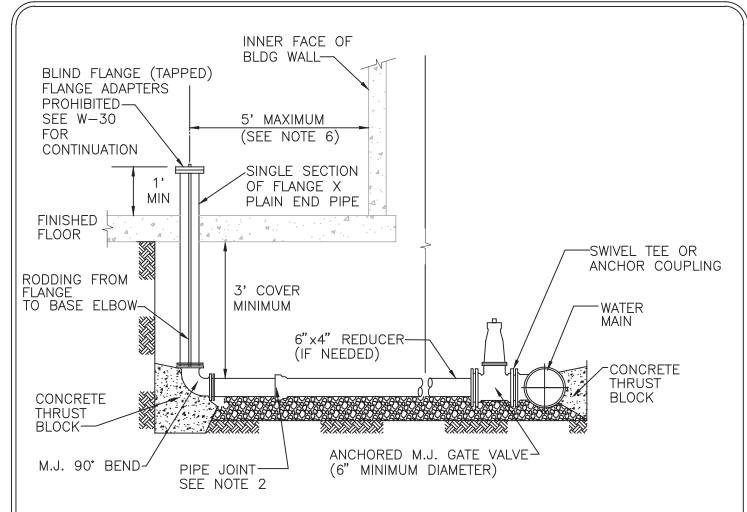
- FOR MAGNETIC METERS. 1. CONNECTION AT MAIN TO BE 6" MINIMUM WITH RESTRAINED BRANCH VALVE. RESTRAIN ALL SERVICE LINE
- 2. ALL PIPE IN VAULT TO BE FLANGED DUCTILE IRON. ALL VALVES TO BE RESILIANT WEDGE WITH HAND WHEEL OPERATOR.
- 3. DOWNSTREAM OF MAGNETIC METER ADD 3"X3", 4"X4" OR 6"X4" TEE WITH BLIND FLANGE (TAPPED 2") TO SERVE AS TEST PORT.
- 4. CEILING HEIGHT TO BE 6'-6" MINIMUM. PIPE CENTER LINE 2'-6" ABOVE FLOOR. MANWAY TO BE COVERED WITH 36"X36" HINGED FRAME AND COVER.
- 5. SUBMITTAL REQUIRED FOR VAULT. STRUCTURAL DESIGN TO BE CERTIFIED BY A VIRGINIA PROFESSIONAL ENGINEER. SEE G-20 THROUGH G-23 FOR ADDITIONAL REQUIREMENTS.
- THE BUILDING'S INTERNAL PLUMBING SHALL INCLUDE A BACK FLOW PREVENTER (CERTIFIED BY A.S.S.E. OR C.S.A.). INSTALLATION & TESTING SHALL BE IN ACCORDANCE WITH THE INTERNATIONAL PLUMBING CODE (INCLUDING BUT NOT LIMITED TO SECTIONS 312.9.2 & 608.2 & 608.3) & LOUDOUN WATER'S CROSS CONNECTION / BACKFLOW PREVENTION MANUAL. SYSTEMS THAT REQUIRE AN R.P.Z. BACK FLOW PREVENTER SHALL HAVE, AT MINIMUM, AN EQUIVALENTLY SIZED DRAIN.

AUG. 2018 3", 4" AND 6" OMNI C2, OMNI T2 OR MAGNETIC MFTFR IN VAULT



- 1. IF DISTANCES SPECIFIED ARE NOT AVAILABLE, PUT METER OUTSIDE IN A VAULT. ALL PIPES MUST CLEAR WALLS BY 1'. FLOOR DRAIN REQUIRED. WATER ROOM MUST HAVE A LOCKED EXTERIOR DOOR. LOUDOUN WATER SHALL BE PROVIDED A KEY.
- 2. ALL MATERIALS MUST CONFORM TO LOUDOUN WATER'S APPROVED MATERIALS LIST.
- 3. METER WITH INTEGRAL STRAINER SUPPLIED BY LOUDOUN WATER, FOR INSTALLATION BY CONTRACTOR. MAGNETIC METERS DO NOT USE STRAINERS.
- 4. DOWNSTREAM OF MAGNETIC METER ADD 3"X3", 4"X4" OR 6"X4" TEE WITH BLIND FLANGE (TAPPED 2") TO SERVE AS TEST PORT.
- 5. MOUNT METER'S TRANSMITTER ON EXTERIOR OF BUILDING, ORIENTED TOWARD READING TOWER. PROVIDE 1"0 PVC CONDUIT FROM METER TO TRANSMITTER. MAXIMUM RUN IS 300'.
- 6. THE BUILDING'S INTERNAL PLUMBING SHALL INCLUDE A BACK FLOW PREVENTER (CERTIFIED BY A.S.S.E. OR C.S.A.). INSTALLATION & TESTING SHALL BE IN ACCORDANCE WITH THE INTERNATIONAL PLUMBING CODE (INCLUDING BUT NOT LIMITED TO SECTIONS 312.9.2 & 608.2 & 608.3) & LOUDOUN WATER'S CROSS CONNECTION / BACKFLOW PREVENTION MANUAL. SYSTEMS THAT REQUIRE AN R.P.Z. BACK FLOW PREVENTER SHALL HAVE, AT MINIMUM, AN EQUIVALENTLY SIZED DRAIN.

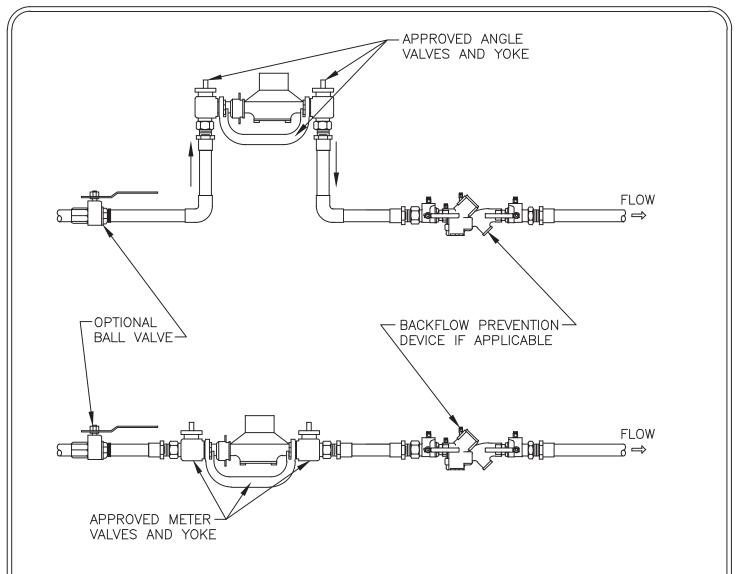
AUG. 2018 3", 4" OR 6" OMNI C2, OMNI T2 OR MAGNETIC METER INDOORS



### NOTES:

- 1. SERVICE TO BE MINIMUM 4" DIAMETER DUCTILE IRON PIPE, CLASS 52 OR BETTER.
- 2. USE APPROVED RESTRAINING GLAND AT EACH MECHANICAL JOINT. RESTRAIN ALL PIPE JOINTS WITH LOCKING GASKET OR OTHER APPROVED RESTRAINING SYSTEM.
- 3. THREADED RODS SHALL BE 3/4" DIAMETER, BITUMASTIC COATED. USE DOG-EAR, DUC LUGS, OR TWISTED EYE BOLTS FOR RODDING.
- 4. ALL MATERIALS MUST CONFORM TO APPLICABLE SECTIONS OF LOUDOUN WATER'S APPROVED MATERIALS LIST.
- 5. SERVICE INSTALLATION & HYDROSTATIC TESTING TO BE WITNESSED BY LOUDOUN WATER PERSONNEL (150 PSI FOR 2 HOURS WITH NO LEAKAGE).
- 6. PIPING SHALL NOT BE EXTENDED UNDER SLAB MORE THAN MAX DISTANCE SHOWN. IF PIPE CANNOT TURN UP INTO BUILDING WITHIN 5' OF WALL, AN OUTDOOR METER MUST BE INSTALLED.

AUG. 2018 SERVICE ENTRANCE WITH INDOOR METER



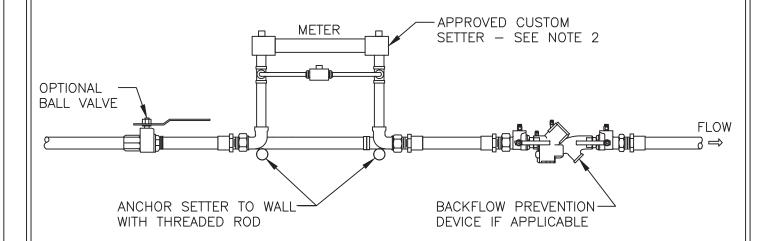
#### NOTES:

- 1. THIS DETAIL FOR USE WHERE INDOOR METERING HAS BEEN APPROVED. COMMON USES ARE WHERE FLOW QUALIFIES FOR SUBTRACTION METERING OR WHERE SUPPLY TO OR DISCHARGE FROM AN INDUSTRIAL PROCESS IS TO BE METERED.
- 2. MOUNT METER'S TRANSMITTER ON EXTERIOR OF BUILDING, OREINTED TOWARD READING TOWER. PROVIDE 1" PVC CONDUIT FROM METER TO TRANSMITTER. MAXIMUM RUN IS 300'.
- 3. SEE LOUDOUN WATER'S APPROVED MATERIALS LIST FOR APPROVED MANUFACTURERS AND MODEL NUMBERS. ANGLE VALVES MAY HAVE THREADED OR COMPRESSION CONNECTION TO TUBING.
- 4. LOUDOUN WATER WILL PROVIDE METER ONLY.

OCT. 2016 3/4" OR 1"
SUBTRACTION OR INDUSTRIAL
PROCESS METER

CAUTION: INSTALLER MUST ADJUST SETTER TO EXACT METER DIMENSIONS:

1.5" METER: 13" + 2 GASKETS 2" METER: 17" + 2 GASKETS GASKETS=1/8" EACH



### NOTES:

- 1. THIS DETAIL FOR USE WHERE INDOOR METERING HAS BEEN APPROVED. COMMON USES ARE WHERE FLOW QUALIFIES FOR SUBTRACTION METERING OR WHERE SUPPLY TO OR DISCHARGE FROM AN INDUSTRIAL PROCESS IS TO BE METERED.
- 2. MOUNT METER'S TRANSMITTER ON EXTERIOR OF BUILDING, ORIENTED TOWARD READING TOWER. PROVIDE 1"Ø PVC CONDUIT FROM METER TO TRANSMITTER. MAXIMUM RUN IS 300'.
- 3. SEE LOUDOUN WATER'S APPROVED MATERIALS LIST FOR APPROVED MANUFACTURERS AND MODEL NUMBERS. SETTER MAY HAVE THREADED OR COMPRESSION CONNECTION AT INLET AND OUTLET.
- 4. LOUDOUN WATER WILL PROVIDE METER ONLY.

OCT. 2016 1 1/2" OR 2" OMNI C2 SUBTRACTION OR INDUSTRIAL PROCESS METER