Appendix A

Details
## Appendix A – Standard Details

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**300 Series**

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<td>Roadway Edge Drain Connection Type R Inlet</td>
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CLASS A
CONCRETE CRADLE

CLASS B
ALTERNATE COMPACTED GRANULAR BEDDING

CLASS B
COMPACTED GRANULAR BEDDING

CLASS C
COMPACTED GRANULAR BEDDING

NOTE: FOR WATER AND SANITARY SEWER PIPES THERE SHALL BE A MINIMUM OF 12" OF BACKFILL OVER THE PIPE BEFORE OTHER THAN HAND COMPACTION EQUIPMENT IS USED IN THE TRENCH.

* SEE SECTION 9.04 FOR COMPACTION REQUIREMENTS
SANITARY SEWER WITH PRIVATE UNDERDRAIN

ENCASEMENT

CLASS B UNSTABLE TRENCH

NOTE: FOR WATER AND SANITARY SEWER PIPES THERE SHALL BE A MINIMUM OF 12" OF BACKFILL OVER THE PIPE BEFORE OTHER THAN HAND COMPACTION EQUIPMENT IS USED IN THE TRENCH.

* SEE SECTION 9.04 FOR COMPACTION REQUIREMENTS
NOTES
1. FLEXIBLE PLASTIC SEALING COMPOUND BETWEEN RING AND CONE OR FLAT LID, OR CONCRETE RING.
2. MINIMUM OF 3 INCHES CLEARANCE BETWEEN ANY PIPE PENETRATION AND THE ECCENTRIC CONE SECTION OR FLAT LID.
3. SEE SECTION 10.01.09 FOR FRAME AND COVER SIZING
4. DEPRESS RING 3/8" TO 3" BELOW ADJACENT FINISH STREET GRADE.

AURORA WATER

03/15/2021

03/01/2021
SECTION A-A

NOTES:
1. STRAIGHT PIPE SECTIONS MAY BE LAID THROUGH THE MANHOLE WITH CROWN REMOVED.
2. UNIFORM PIPE SIZE SECTION NOT LAID THROUGH THE MANHOLE SHALL DROP A MIN. OF 0.2 FEET.
3. BENCHES SHALL SLOPE 1 INCH/FT.
4. THERE SHALL BE A JOINT MADE AT THE EDGE OF MANHOLE BASE.

SECTION B-B

MONOLITHIC BASE

5. THE OUTSIDE WALLS SHALL BE FORMED TO THE DESIGNED SHAPE.
6. THE TOP OF THE BASE SHALL BE LEVEL IN ALL CASES.
7. PRECAST MANHOLE BASES SHALL HAVE A 6" COMPACTED LAYER OF 3/4" COARSE AGGREGATE (#57).
DROP MANHOLE ALTERNATE
POLYLINE DUCTILE IRON FITTINGS AND PIPE WITH
MECHANICAL JOINTS MAY BE USED IN PLACE OF
CONCRETE ENCASEMENT.

SECTION B-B

NOTES:
1. STRAIGHT PIPE SECTIONS MAY BE LAID
THROUGH THE MANHOLE WITH CROWN
REMOVED WITH APPROVAL.
2. UNIFORM PIPE SIZE SECTION NOT LAID
THROUGH THE MANHOLE SHALL DROP A MIN.
OF 0.2 FEET, 0.3 FEET AT DEFLECTED MANHOLES.
3. BENCHES SHALL SLOPE 1 INCH/FT.
4. THERE SHALL BE A JOINT MADE AT THE EDGE OF
MANHOLE BASE.
5. THE OUTSIDE WALLS SHALL BE FORMED TO THE
DESIGNED SHAPE.
6. THE TOP OF THE BASE SHALL BE LEVEL IN ALL
CASES.
7. ENCASEMENT SHALL BE EXTENDED TO THE
SPRINGLINE OF PIPE.
8. INSIDE DROP MANHOLES ARE NOT ALLOWED.
NOTES
1. MAINTAIN PIPE CURVATURE THROUGHOUT THE CHANNEL.
2. APRON SHOULD BE SLIGHTLY SLOPED TO ALLOW FOR COMFORTABLE STANDING BY A WORKER.
### NOTES:
1. THE ALIGNMENT OF PIPES INTO THE M.H. WILL DETERMINE THE BARREL SIZE FOR THE SIZE OF PIPE USED.
2. IF MINIMUM DISTANCES CANNOT BE OBTAINED DUE TO PIPE DIAMETERS, A SPECIAL CONCRETE VAULT SHALL BE USED IN PLACE OF A STANDARD M.H.
3. MANHOLES LARGER THAN 72” WILL BE ALLOWED WITH SPECIAL WRITTEN PERMISSION OF THE ENGINEER.

### Plan View

![Plan View Diagram](image)

**Minimum Distance Between Holes:**
- 1/2 pipe O.D. (approx.) or 12" minimum

**MH Concrete Barrel Section**

**Optional Concrete Vault**

### The Internal Diameter of the M.H. Barrel Shall Be:

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<thead>
<tr>
<th>Sanitary Sewer</th>
<th>Storm Sewer</th>
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<tbody>
<tr>
<td><strong>Pipe Size</strong></td>
<td><strong>Barrel Size</strong></td>
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<tr>
<td>12&quot; or LESS</td>
<td>48&quot;</td>
</tr>
<tr>
<td>15&quot; to 27&quot;</td>
<td>60&quot;</td>
</tr>
<tr>
<td>30&quot; to 48&quot;</td>
<td>72&quot;</td>
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</tbody>
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**Aurora Water**

**City Engineer**

**Date: 09/25/2019**

**Aurora Water**

**Date: 09/23/2019**

**Manhole Base Detail**

*101-5*
NOTES:
2. ALL BEARING SURFACES TO BE MACHINED.
3. LETTERING ON COVER AS REQUIRED (WATER, SANITARY, OR STORM).
4. AURORA STANDARD-NEENAH R-1706, OR EQUAL, TOTAL MINIMUM WEIGHT APPROXIMATELY 224 LBS, MINIMUM FRAME WEIGHT 114 LBS, MINIMUM LID WEIGHT 110 LBS.
5. LIFTING NOTCH SHALL NOT EXTEND PAST INSIDE FACE OF RING SEAT.
6. SEE SECTION 10.00 FOR SPECIFICATIONS.
7. CITY OF AURORA LABELING IS NOT TO BE INCLUDED ON PRIVATE INFRASTRUCTURE.

DETAIL-COVER DESIGN
TYPE "C" DESIGN: 1" X 1" SCORED 1/32" DEEP

STANDARD

RING & COVER

DETAIL-LIFTING NOTCH

24" MANHOLE or INLET RING & COVER

AURORA WATER

CITY ENGINEER

DATE

09/25/2019

09/23/2019

1 of 3

102-1
NOTES

1. DIMENSION SHOWN IN BOLD SHALL HAVE A TOLERANCE OF ± $1/16$" 
2. DIMENSION a (RISE HEIGHT) = $1 \frac{9}{16}$", $1 \frac{11}{16}$", $2"$, $2 \frac{1}{2}$", $3$" or $4"$ 
3. ALL OTHER DIMENSIONS SHALL HAVE A TOLERANCE OF ± $1/8$" 
4. OUTSIDE DIMENSION OF $23 \frac{3}{4}$" ON LOWER SECTION OF RING SHALL BE MAINTAINED TO A MINIMUM OF $1 \frac{1}{4}$" FROM THE BOTTOM BEARING SURFACE OF THE RING

SPECIFICATION FOR GRAY CAST IRON RISERS

1. CAST IRON RISERS SHALL CONFORM TO ASTM A48, CLASS 35B AND AASHTO M306 
2. BEARING SURFACES BETWEEN MANHOLE RINGS AND COVERS AND FRAMES SHALL BE MACHINED TO PREVENT ROCKING 
3. RISERS TO BE OF UNIFORM QUALITY FREE FROM SAND HOLES, GAS HOLES, SHRINKAGE, CRACKS OR OTHER DEFECTS 
4. RISERS SHALL BE GROUND SMOOTH AND WELL CLEANED BY SHOT BLASTING 
5. EACH RISER SHALL BE STAMPED WITH THE SIZE, NAME OF PRODUCING FOUNDRY, ASTM MATERIAL DESIGNATION, INDIVIDUAL PART NUMBER AND MANUFACTURE DATE

SPECIFICATION FOR STEEL RISERS

1. STEEL RISERS TO BE MANUFACTURED WITH U.S. MILLED CARBON STEEL CONFORMING TO ASTM A36 
2. PROVIDE CONTINUOUS FILLET OR GROOVE WELDS CONFORMING TO AWS D1.1 STRUCTURAL WELDING GUIDE 
3. ALL WELDING SHALL BE PERFORMED BY CERTIFIED WELDERS 
4. BEARING SURFACES BETWEEN MANHOLE RINGS AND COVERS AND FRAMES SHALL BE MACHINED TO PREVENT ROCKING 
5. RISERS TO BE OF UNIFORM QUALITY FREE FROM SHRINKAGE, CRACKS OR OTHER DEFECTS 
6. RISERS SHALL BE SMOOTH AND WELL CLEANED 
7. EACH RISER SHALL BE STAMPED WITH THE SIZE, NAME OF PRODUCING MILL, ASTM MATERIAL DESIGNATION, INDIVIDUAL PART NUMBER AND MANUFACTURE DATE 
8. SET SCREWS TO BE PROVIDED WITH RISERS
NOTES:

2. ALL BEARING SURFACES TO BE MACHINED.
3. LETTERING ON COVER AS REQUIRED (WATER, SANITARY, OR STORM).
4. AURORA STANDARD-NEENAH R-1798, OR EQUAL, TOTAL MINIMUM WEIGHT APPROXIMATELY 575 LBS, MINIMUM FRAME WEIGHT -295 LBS., MINIMUM LID WEIGHT-280 LBS. LOAD REQUIREMENTS MUST BE IN CONFORMANCE WITH HS20 STANDARDS.
5. LIFTING NOTCH SHALL NOT EXTEND PAST INSIDE FACE OF RING SEAT.
6. SEE SECTION 10.00 FOR SPECIFICATIONS.
7. CITY OF AURORA LABELING IS NOT TO BE INCLUDED ON PRIVATE INFRASTRUCTURE.
36" LID W/ 22" ACCESS LID
NEENAH R-1741D OR APPROVED EQUAL

RING & COVER

NOTES:
2. ALL BEARING SURFACES TO BE MACHINED.
3. LETTERING ON COVER AS REQUIRED (WATER, SANITARY, OR STORM).
4. AURORA STANDARD-NEENAH R-1741-D, OR EQUAL., TOTAL MINIMUM WEIGHT APPROXIMATELY 350 LBS, MINIMUM FRAME WEIGHT -170 LBS., MINIMUM LID WEIGHT-180 LBS.
5. LIFTING NOTCH SHALL NOT EXTEND PAST INSIDE FACE OF RING SEAT.
6. SEE SECTION 10.00 FOR SPECIFICATIONS.
7. CITY OF AURORA LABELING IS NOT TO BE INCLUDED ON PRIVATE INFRASTRUCTURE.
NOTES:
1. AS MANUFACTURED BY M.A.INDUSTRIES. PART NO. PS2-PF OR PS2-PFS
2. CAPACITY: 2,500 LBS. WITH STEP EXTENDED 6-3/8" FROM WALL.
3. MATERIAL: COPOLYMER POLYPROPYLENE PLASTIC, WITH 1/2"Ø GRADE 60 STEEL REINFORCEMENT.

IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO REPLACE TOP STEPS AS NECESSARY WITH MODEL NO. PS2-PF-H (SEE DETAIL 105-2) IF 20" OF CLEARANCE CANNOT BE MAINTAINED.
COPOLYMER POLYPROPYLENE PLASTIC

NOTES:
1. THIS STEP, PART NO. PS2-PF-HH, AS MANUFACTURED BY M. A. INDUSTRIES, INC. SHALL BE USED WHENEVER 20 INCHES OF CLEARANCE CANNOT BE MAINTAINED AT THE TOP STEP, USING DETAIL 105-1. MEASUREMENT SHALL BE TAKEN FROM THE FACE OF THE STEP TO THE INNER WALL OF THE MANHOLE.
ANCHOR GRATING TO "Zs WITH 3/8" BOLTS (PLATFORM IS TO BE REMOVABLE)

SUPPORT CHANNEL
3"x3"x3/8" GALVANIZED STEEL "ANCHORED WITH 8-1/2" STAINLESS STEEL BOLTS & RAMSETS INTO MH WALL.

24"x30" ACCESS DOOR WITH RECESSED HANDLE AND WALL FASTENER

PLATEFORM DETAIL

USE FIBERGLASS OR ALUMINUM SERRATED GRATING
BEARING BARS 3/16"x1-1/4"
HEAVY DUTY GENERAL USE

PLATFORM LOCATED AT THE MIDPOINT

NOTES
1. LANDING PLATFORMS SHALL ONLY BE PROVIDED AT LOCATIONS AS SPECIFIED ON APPROVED PROJECT DRAWINGS.

ELEVATION

LANDING PLATFORM
106-1
**NOTES:**

1. JOINT RESTRAINT PIPE SHALL BE USED FOR CARRIER PIPE THROUGH ALL BORES. P.V.C. (A.S.T.M.-D3034-SDR35 OR C900) MAY BE USED FOR SANITARY SEWERS ON BORES OF 100' OR LESS IN LENGTH. DUCTILE IRON PIPE SHALL BE POLYWRAPPED.
2. IF THE BORE IS NOT CONSTRUCTED TO THE PROPER GRADE, AN ADDITIONAL MANHOLE SHALL BE INSTALLED AT THE GRADE CHANGE.
3. THE CASING SHALL BE SEALED WITH CONCRETE COLLARS OR ENDSSEALS. NO SPIRAL WELDED STEEL CASING PIPE SHALL BE USED.
4. THE PIPE AND CASING SHALL BE INSULATED BY USE OF CASING CHOCKS. ALL POLYETHYLENE CHOCKS ARE NOT ALLOWED.
5. STEEL CASING SHALL BE FACTORY COATED FOR DIRECT BURY APPLICATIONS. 48 lb ANODES SHALL BE INSTALLED AT BOTH ENDS OF CASING FOR BORED APPLICATIONS.
STANDARD

NOTES:

1. SEE "TYPICAL STREET CROSS SECTION" IN ROADWAY SPECIFICATIONS.

2. ALL FIRE HYDRANTS TO BE LOCATED AT POINTS OTHER THAN CORNER INTERSECTIONS SHALL BE INSTALLED AT A LOT LINE EXTENDED.

ADAM ESTATES FILING NO. 3

BAHAMA ST.

LOCAL STREET TYPE I

P.L. = PROPERTY LINE
F.L. = FLOW LINE

AURORA WATER

DISTRIBUTION SYSTEM
TYPICAL PLAN

09/25/2019
09/23/2019

1 of 1

108-1
NOTE: CURVILINEAR WATERLINE IS NOT PERMITTED.
"A" - STRAIGHT LINE CUL-DE-SAC:
LAY WATER PIPE TO 18' BEYOND THE CENTER (RADIUS POINT) OF CUL-DE-SAC.

"B" - OFFSET CUL-DE-SAC
LAY WATER PIPE TO 5' BEYOND P.L. THEN TO 18' BEYOND CENTER (RADIUS POINT) OF CUL-DE-SAC.

LOCAL STREET TYPE 2 ALTERNATIVE

NOTE:
1. RESIDENTIAL CUL-DE-SAC LESS THAN 250' IN LENGTH SEE C.O.A. ROADWAY SPECIFICATIONS FOR TYPICAL STREET CROSS SECTIONS.
CALL PDS INSPECTIONS AT 303-739-7385 BEFORE 3:30pm 24 HOURS PRIOR TO TAPPING THE MAIN FOR INSPECTION OF TAPS 2" AND SMALLER. CITY PERFORMS TAPS FOR 3" AND LARGER METERS-ALL EXCAVATION SUBJECT TO BACK SLOPING OR SHORING AND PROVIDE 18" OF CLEARANCE AROUND MAIN. CALL OPERATIONS SERVICE CENTER AT 303-326-8645 TO SCHEDULE TAPS FOR 3" AND LARGER.

CALL PDS INSPECTIONS AT 303-739-7385 TO OBTAIN A PERMIT AND SCHEDULE INSPECTION FOR SERVICE LINE FROM METER PIT TO BUILDING.

PASS

INSPECTION BY PROJECT DELIVERY SERVICES

PASS

FAIL

CALL OPERATIONS SERVICE CENTER FOR METER SETTING BY 3:30pm FOR NEXT DAY INSTALLATION @ 303 326-8645.

CUSTOMER SERVICE WILL INSTALL METER UPON ACCEPTANCE OF METER PIT OR VAULT. IF REJECTED, A NOTICE OF DISCREPENCY WILL BE LEFT NEXT TO THE BUILDING PERMIT, IN VAULT, OR WITH CONSTRUCTION SUPERINTENDANT.

PASS

FAIL

METER SET

THE OWNER/DEVELOPER IS REQUIRED TO ADJUST THE GRADE OF THE PIT, YOKE OR LATERAL AS NECESSARY PRIOR TO METER SET IN ACCORDANCE WITH APPLICABLE STANDARDS.

THE ACCEPTANCE AND WARRANTY OF THE SERVICE LATERAL FROM THE POINT OF CONNECTION TO THE METER PIT, INCLUDING THE PIT, BEGINS AT TIME OF METER SET, WHENEVER THAT OCCURS.

AURORA WATER

03/15/2021
03/01/2021

METER INSTALLATION PROCEDURE

1 of 1

200-1
STANDARD

DESCRIPTION:
1. CORPORATION STOP AND INSULATOR - LOCATED AT 10 OR 2 O'CLOCK ON CIRCUMFERENCE OF PIPE. FURNISHED AND INSTALLED BY DEVELOPER AND POLYWRAPPED ACCORDING TO DPRS SPECIFICATIONS.
2. LOCKING SHUT OFF VALVE.
3. SERVICE LINE - COPPER TUBING (TYPE "K")
4. METER PIT: 24" I.D. x 28" O.D. x 4'. SEE APPROVED PRODUCTS LIST.
5. METER PIT HOOD (SEE DETAIL 202).

NOTES:
1. WATER METER FURNISHED AND INSTALLED BY AURORA WATER.
2. SERVICE LINE MUST HAVE A MINIMUM COVER OF 4 1/2 FEET.
3. METER PIT MUST BE AT LEAST 2' FROM ANY HARDSCAPE AS MEASURED FROM EDGE OF LID; HARDSCAPE TO BE INSTALLED PRIOR TO METER SET.
4. CALL PDS INSPECTIONS AT 303-739-7385 FOR WATER SERVICE LINES INSPECTIONS PRIOR TO BACKFILLING.
5. "VALVE BOX AND CURB STOP ARE OPTIONAL FOR RESIDENTIAL - MANDATORY FOR COMMERCIAL, IRRIGATION, AND ALL SERVICES TAPPED OFF 16" MAINS AND LARGER. CURB STOP SHALL NOT BE LOCATED IN STREET, GUTTER OR SIDEWALK.
6. THE OWNER/DEVELOPER IS REQUIRED TO ADJUST THE GRADE OF THE PIT, YOKE, OR LATERAL IF NECESSARY PRIOR TO METER SET IN ACCORDANCE WITH APPLICABLE STANDARDS.
7. METER SETTER MUST HAVE INTEGRAL OUTLET SPRING CHECK VALVE.
8. METER PIT SHALL NOT BE LOCATED BEHIND AND NO CLOSER THAN 3 FEET FROM RETAINING WALLS.

AURORA WATER

METER INSTALLATION
¾" & 1" SERVICE

Holly Johnson
03/15/2021
CITY ENGINEER
DATE

Veronica Adam
03/01/2021
AURORA WATER
DATE

1 of 1

201-1
3 ALIGNMENT LUGS @ 120°

PIT COVER

SECTION A-A

NOTES:
1. THE HOOD MAY BE COMPOSITE OR CAST IRON
2. THE LIDS SHALL BE COMPOSITE MATERIAL MANUFACTURED FROM CITY PRE-APPROVED VENDORS
3. ADDRESS TAGS ARE REQUIRED FOR BANKED METER PITS. TAGS SHALL BE ATTACHED TO THE YOKE AND THE LID

METER PIT COVER
NOTE: ADDRESS TAGS ARE REQUIRED FOR BANKED METER PITS. TAGS SHALL BE ATTACHED TO THE YOKE AND THE LID
MATERIALS:
1. 24 INCH METER PIT (SEE DETAIL 201 AND 202)
2. ¾ INCH SECONDARY CURB STOP AND BOX
3. ¾ INCH FTG x MIP ADAPTER
4. 2 INCH FTG x ¾ INCH C REDUCER
5. 2 INCH C x C 90 ELBOW
6. 2 x ¾ C x C x CTEE
7. 2 INCH MIP ADAPTER
8. 2 INCH CURB STOP AND BOX

NOTES:
1. METER PITS PLACED IN LINE SHALL BE SPACED 36 INCHES APART. METER PITS PLACED STAGGERED (AS SHOWN) SHALL BE SPACED 30 INCHES APART.
2. SEE DETAIL 201 FOR ADDITIONAL INFORMATION ON METER PIT.
3. ALL FITTINGS USED OUTSIDE OF MANIFOLD SHALL BE COMPRESSION TYPE
4. THERE SHALL BE A MAXIMUM OF FOUR PITS PLACED FOR EACH MANIFOLD
5. ADDRESS TAGS ARE REQUIRED FOR BANK METERS. TAGS SHALL BE ATTACHED TO BOTH THE YOKE AND THE LID.
NOTES:
1. WATER METER FURNISHED AND INSTALLED BY AURORA WATER.
2. SERVICE LINE MUST HAVE A MINIMUM COVER OF 4-1/2 FEET.
3. PAB INSPECTIONS WILL INSPECT THE SERVICE LINE PRIOR TO BACK-FILLING.
4. NO JUMPING ARE ALLOWED IN IRRIGATION METERS THAT DO NOT UTILIZE THE OUTLET CHECK VALVE. ALL CONSTRUCTION SOURCES SHOULD BE DOWNSTREAM OF THE OUTLET CHECK VALVE. CONTRACTORS SHALL BE RESPONSIBLE FOR ANY CHANGES OR DAMAGES DUE TO SHUT-OFF.
5. CONCRETE SHALL NOT BE LAID IN FLOOR OF METER PIT.
6. FOOTINGS ARE TO BE INSTALLED UNDER METER PIT.
7. FIELD SOLDER JOINTS OR PLASTIC PIPE NOT ALLOWED IN METER PIT.
8. IRRIGATION METERS REQUIRE RP DEVICE.
9. TOP STEP TO BE 10'-24' BELOW SURFACE, STEPS TO BE 5'-8' APART HORIZONTALLY.
10. CURB STOP VALVE ON UPSTREAM SIDE SHOULD BE LOCATED NO FURTHER THAN 3 FEET FROM OUTSIDE OF VAULT.
11. NO SHRUBS ALLOWED WITHIN 5' OF LID & VALVE BOXES.
12. CONCRETE COLLARS ARE REQUIRED WHEN A CURB BOX IS LUALA 50' WITHIN A LANDSLAP AREA.
13. METER PIT SHALL NOT BE LOCATED BEHIND AND NO CLOSER THAN 3 FEET FROM RETAINING WALLS.

MATERIALS:
1. CORPORATION STOP AND INSULATING COUPLING.
2. FULLY ENCLOSED SWING CHECK VALVE ON OUTLET REQUIRED.
3. WATER SERVICE LINE - COPPER TUBING, (TYPE K) - 4 1/2' MIN. COVER.
4. WATER METER.
5. RUI VALVES WITH 1/2'' WITH 1/2'' WING AND TFF HEAD.
6. PVC FLEX WITH 1/2'' WING AND TFF HEAD.
7. PRECAST 60'' VAULT ASTMC 478 WITH MANHOLE STEPS, DIGEST FLAT TOP AND CONCRETE ADJUSTMENT RINGS.
8. COPPER TO BRASS FITTINGS MUST BE EXPOSED.
9. FLANGE COUPLINGS ON INLET SIDE OF METER MUST BE EXPOSED.
10. CALL 203-326-8645 FOR DIMENSIONS.
11. SEE APPENDIX 'B' FOR APPROVED MATERIALS.

1 1/2'' DISC & 2'' TURBINE IRRIGATION METER VAULT INSTALLATION
NOTES:
1. WATER METER FURNISHED AND INSTALLED BY AURORA WATER.
2. SERVICE LINE MUST HAVE A MINIMUM COVER OF 4-1/2 FEET.
3. PDS INSPECTIONS WILL INSPECT THE SERVICE LINE PRIOR TO BACK-FILLING.
4. NO JUMPERS ARE ALLOWED IN IRRIGATION METERS.
5. CONCRETE SHALL NOT BE LAID IN FLOOR OF METER PIT.
6. FOOTINGS ARE TO BE INSTALLED UNDER METER PIT.
7. FIELD CASTED JOINTS OR PLASTIC PIPE NOT ALLOWED.
8. IRRIGATION METERS REQUIRE RP DEVICE.
9. 1-1/2" TO 2" IRRIGATION METERS REFER TO 204-
10. TAPS (SIPS) TO BE 18" - 24" BELOW SURFACE. SIPS TO BE SPACED 12" APART VERTICALLY.
11. GATE VALVE ON UPSTREAM SIDE SHOULD BE LOCATED NO FURTHER THAN 3 FEET FROM OUTSIDE OF VAULT.
12. NO SHRUBS ALLOWED WITHIN 5' OF LID & VALVE BOXES.
13. CONCRETE COLLARS ARE REQUIRED WHEN A VALE BOX IS LOCATED WITHIN A LANDSCAPED AREA.
14. METER PIT SHALL NOT BE LOCATED RIGHT靠 AND NO CLOSER THAN 3 FEET FROM RETAINING WALLS.

MATERIALS:
A. TAPPING TEE AND VALVE (4 INCH MIN.) FURNISHED AND INSTALLED BY AURORA WATER, ACCORDING TO LATEST FAA SCHEDULE. (SEE DETAIL OF TAPPING SLEEVE ALLOWED IF NEW MAIN IS BEING CONSTRUCTED.)
B. WATER SERVICE LINE - DUCTILE IRON, (PRESSURE CLASS 350) - 4 1/2" MIN. COVER.
C. WATER METER.
D. DRESSER STYLE COMPRESSION COUPLING.
E. SEE DETAIL 205 FOR ADDITIONAL INFORMATION ON RING AND COVER.
F. PRECAST 72" MANHOLE 5" HIGH - ASTM C-477 WITH MANHOLE STEPS, OFFSET SLAB TOP AND CONCRETE ADJUSTMENT RINGS.
G. CALL 303-776-8645 FOR DIMENSION LAY Length (INCLUDING GASKETS)
   5" - 12 1/2"
   4" - 12 1/2"
   6" - 18 1/2"
H. SWING CHECK VALVE REQUIRED TO BE FULLY ENCLOSSED.

ELEVATION

1/2" ROCK SHALL EXTEND 4" BELOW FOOTING TO TOP OF BRICK SUPPORT. SEE PRE-QUALIFIED MATERIALS LIST.
NOTES:
1. IF THE SURFACE IS NOT TO FINAL GRADE AT THE TIME OF THE METER INSTALLATION, THE OWNER SHALL RAISE OR LOWER THE PIT TO MATCH THE FINAL GRADE.
2. METER AND VALVE SERVICE UNIT MUST BE INSPECTED BY CITY INSPECTORS PRIOR TO BACKFILLING.
3. NO CONCRETE TO BE LAID IN A FLOOR OF METER PIT.
4. FOOTINGS TO BE INSTALLED UNDER METER PIT.
5. FIELD SOLDERED JOINTS OR PLASTIC PIPE NOT ALLOWED IN PIT.
6. CITY INSPECTORS SHALL INSPECT THE SERVICE UNIT PRIOR TO BACKFILLING.
7. SUMP NO. 2 TO BE 12" ABOVE SURFACE OF STEPS TO BE SPACED 12" APART VERTICALLY.
8. CURB STOP VALVE ON UPSTREAM SIDE SHOULD BE LOCATED NO FURTHER THAN 3 FEET FROM OUTSIDE OF VERTICAL
9. NO SHRUBS ALLOWED WITHIN 5' OF LID & VALVE BOXES.
10. CONCRETE COLLARS ARE REQUIRED WHEN A VALVE BOX IS LOCATED WITHIN A LANDSCAPED AREA.
11. IF THE PIT SHALL NOT BE LOCATED ADJACENT TO A ROAD, OR OTHER THAN 3 FEET FROM A RETURNING WALL.

MATERIALS:
1. MATERIALS: TOP AND INSULATING COUPLING - TUMBLE-INSULATED AND INSTALLED BY THE CONTRACTOR.
2. SWING CHECK VALVE FULLY ENCLOSURE REQUIRED.
3. WATER SERVICE LINE - COPPER TUBING, TYPE K 0.75" (2 FEET MIN. COVER).
4. METER - FURNISHED AND INSTALLED BY AURORA WATER.
5. SEE DETAIL 205-1 FOR ADDITIONAL INFORMATION ON RING & COVER.
6. PRECAST 90° MANHOLE - ASTM C-472 WITH MANHOLE STEPS, OFFSET FLAT TOP AND CONCRETE.
7. AURORA MINI HINGED COPPER INSULATION, LUMBER, LUMBER, LUMBER (MUST BE EXPOSED).
8. PRECAST 90° MANHOLE - CEMENT MANHOLE (MUST BE EXPOSED).
9. BYPASS VALVE WITH WINGED LOCKING VALVE.
10. CALL (800) 272-6455 FOR DIMENSIONS, LAY LENGTH (INCLUDING GASKETS) 1 1/2" = 13 1/4" 2" = 17 1/4"
11. BALL VALVE WITH LOCK WINGS.

AURORA WATER

City Engineer
03/15/2021

Date
03/01/2021

1 1/2" & 2" DISC METER CUSTOM SETTER INSTALLATION FOR DOMESTIC SERVICE

1 of 1

205-1
MATERIALS.
1. VAULT-WALL THICKNESS 6", FLOOR THICKNESS 6".
2. SEE DETAIL 206-2 AND 206-3 FOR ADDITIONAL INFORMATION ON RING & COVER.
3. TAPPING TEE & VALVE FURNISHED AND INSTALLED BY THE CITY OF AURORA WATER IN ACCORDANCE WITH LATEST ILL. SCD. (TRELLIS MAIN IN LUG OF TAPPING SLEEVE ALLOWED IF NEW MAIN IS BEING LINED H I.E.U.)
4. ALL PIPING SHALL BE DUCTILE IRON CONFORMING TO AWWA-C155.
5. ALL MECHANICAL JOINTS SHALL BE RESTRAINED.
6. RESILIENT SEAT GATE VALVES (4" MIN.) & VALVE BOX TO BE USED, CLASS 150 CONFORMING TO AWWA C500.
7. COUPLING SHALL BE COMPRESSION TYPE SMITH-GLADD, DREGER OR EQUAL ON OUTLET SIDE.
8. SWING CHECK VALVE FULLY ENCLOSED REQUIRED.
9. FLANGED OR COMPRESSION TYPE FITTINGS ONLY IN METER PIT.
10. BYPASS LINE SHALL BE THE SAME DIAMETER AS THE SERVICE LINE.
11. PIPE STANDS (2 REQUIRED)
12. 1-1/2" CRUSHED ROCK 4" DEEP BELOW PRECAST SLAB

A**  B**  C**  D
72"  60"  26"  =

* CALL (803) 226-8845 FOR DIMENSIONS
** MINIMUM DIMENSIONS

NOTES:
1. TOP STEP TO BE 18"-24" BELOW SURFACE. MANHOLE STEPS TO BE SPACED 12" APART VERTICALLY.
2. PDS INSPECTIONS SHALL INSPECT THE SERVICE LINE PRIOR TO BACKFILLING.
3. METER FURNISHED & INSTALLED BY AURORA WATER.
4. 72" ID DIA. ROUND VAULT IS AN ACCEPTABLE ALTERNATIVE. LID TO BE 2 INCHES ABOVE FINISHED GRADE.
5. EIGHT VALVES FOR CONNECTION OF SHRED (6"") NOT FURTHER THAN 2 FEET FROM OUTSIDE OF VAULT.
6. NO SHRUBS ALLOWED WITHIN 3' OF LID & VALVE BOXES.
7. CONCRETE COLLARS ARE REQUIRED WHEN VALVE BOX IS LOCATED WITHIN LANDSCAPED AREA.
8. METER PIT SHALL NOT BE LOCATED BEHIND, AND NO CLOSER THAN 3 FEET FROM, RETAINING WALLS.

AURORA WATER

03/15/2021
03/01/2021
03/15/2021

METER VAULT INSTALLATION
3", 4" & 6" COMPOUND METER
FOR DOMESTIC SERVICE

1 of 3

206-1
SECTION A-A

MATERIALS:
1. 23.75" x 1" LID (SMC)
2. BRASS THREADED INSERT
3. WORM GEAR, STYLE B (DI)
4. WORM GEAR, STYLE B (UHMWPE)
5. FLANGED SLEEVE, HD
6. BEARING WASHER
7. METRIC PLAIN WASHER
8. HEX CAP SCREWS
9. MACHINE SCREWS
10. BRONZE PENTAGON BOLT

NOTES:
1. FRAMES SHALL BE COMPOSITE (MAX WEIGHT: 35.21)
2. LIDS ARE REQUIRED TO BE COMPOSITE MATERIAL (MAX WEIGHT: 46.34 lb)
3. SEE APPENDIX B FOR APPROVED MODELS
4. LIDS SHOWN ARE ONLY TO BE ALLOWED FOR COMPOUND METERS (3" AND LARGER)
5. LIDS SHOWN ARE ONLY ALLOWED IN LANDSCAPED AREAS
MATERIALS:
1. 23.75" x 1" LID (SMC)
2. RETAINER PLATE
3. WORM GEAR, STYLE B (DI)
4. WORM GEAR, STYLE B (UHMWPE)
5. FLANGED SLEEVE, HD
6. BEARING WASHER
7. METRIC PLAIN WASHER
8. HEX CAP SCREWS
9. MACHINE SCREW
10. BRONZE PENTAGON BOLT
11. THREADED INSERT

NOTES:
1. FRAMES SHALL BE COMPOSITE (MAX WEIGHT 35.21)
2. LIDS SHALL BE COMPOSITE (MAX WEIGHT: 46.74)
3. SEE APPENDIX B FOR APPROVED MODELS
4. LIDS SHOWN ARE ONLY TO BE ALLOWED FOR COMPOUND METERS (3" AND LARGER)
5. LIDS SHOWN ARE ONLY ALLOWED IN HARD SURFACE AREAS
6. LIDS SHALL BE HS-20 TRAFFIC RATED

COMPOSITE METER PIT LID & FRAME FOR COMPOUND METERS (HARDSCAPE ONLY)
MATERIALS:
1. 23.75" x 1" LID (SMC)
2. BRASS THREADED INSERT
3. WORM GEAR, STYLE B (DI)
4. WORM GEAR, STYLE B (UHMWPE)
5. FLANGED SLEEVE, HD
6. BEARING WASHER
7. METRIC PLAIN WASHER
8. HEX CAP SCREWS
9. MACHINE SCREWS
10. BRONZE PENTAGON BOLT

NOTES:
1. FRAMES SHALL BE COMPOSITE (MAX WEIGHT: 35.21 kg)
2. LIDS ARE REQUIRED TO BE COMPOSITE MATERIAL (MAX WEIGHT: 46.54 lb)
3. SEE APPENDIX B FOR APPROVED MODELS
4. LIDS SHOWN ARE ONLY TO BE ALLOWED FOR 1.5" AND 2" METERS
   (Disc and Turbine)
STANDARD

HYDRANT MUST BE PLUMB IN ALL DIRECTIONS

FINISHED FLANGE ELEVATION MUST BE 2'-6" ABOVE FINAL GRADE. ELEVATION SHALL BE SHOWN ON PLANS & STAKED IN THE FIELD.

2" MIN 6" MAX

BURY LINE

COVER ROCK WITH APPROVED FILTER BLANKET OR 8 MIL POLYETHYLENE SHEET PRIOR TO PLACING BACKFILL

0.33 CU. YD. STABILIZATION MATERIAL (SEC. 19.03.1)

FIRE HYDRANT LATERAL

NOTES:
1. FIRE HYDRANTS TO BE UNOBSERVED TO THE STREET AND A MINIMUM CLEARANCE OF 5' ON ALL OTHER SIDES.
2. WHEN ADJUSTMENTS ARE REQUIRED TO EXISTING FIRE HYDRANTS IN NO CASE SHALL THE BURY DEPTH EXCEED 7.0 FEET (5.5' BARREL WITH 18" EXTENSION). IF ADJUSTMENTS TO THE FIRE HYDRANT LATERAL ARE REQUIRED, (I.E. VERTICAL BENDS) THEN THE HYDRANT SHALL BE ADJUSTED TO A 5'-6" BURY DEPTH.
3. FOR NEW HYDRANTS, THE MAXIMUM BURY DEPTH IS 5'-6" DEEP.
4. HYDRANTS OLDER THAN 5 YEARS MUST BE REPLACED; LESS THAN 5 YEARS CAN BE RELOCATED.

FIRE HYDRANT ASSEMBLY

AURORA WATER

09/25/2019 DATE

208-1
6" DIA. DIP GUARD POST FILLED WITH CONCRETE (TYP. OF 4)

FIRE HYDRANT

PLAN VIEW

AS SHOWN ON PLANS

6' MAX.

FIRE LANE

6" DIA DIP GUARD POST FILLED WITH CONCRETE (TYP. OF 4)
PAINITED YELLOW

3'-0"

15"

ELEVATION
REDUCE TO 4" GATE VALVE IN MAIN LINE
MJ PLUG W/ 2" THREADED OUTLET
ENCASE ENTIRE ASSEMBLY IN 8 mil. POLYETHYLENE PLASTIC

90° THREADED BRASS STREET ELBOW
CONCRETE THRUST BLOCK

2" COUPLING WITH SCREWED PLUG
NOTE: PLUG TO BE WELL GREASED

CAST IRON LID WITH "WATER" CAST INTO TOP
STANDARD AURORA VALVE BOX
2" RISER
2" PIPE TO GRADE

24" MIN.

CONCRETE THRUST BLOCK

1 CU.FT. MIN
OF 1½" WASHED GRAVEL

LINE BASIN WITH 1 LAYER OF MIRAFI 140
DRAIN HOLE

2" 90° ELBOW
2" NIPPLE

SECTION A-A

NOTES:
1. ALL 2" PIPE & FITTINGS TO BE THREADED BRASS.
2. MAINLINE ISOLATION VALVE SHALL BE PROVIDED WHERE TEMPORARY BLOW OFF IS REQUIRED.
NOTES:
1. ALL BLOW-OFF PIPING SHOWN SHALL BE PRESSURE CLASS 350 D.I.P. AND POLYWRAPPED
2. REF. PLAN AND PROFILE SHEETS FOR BLOWOFF LOCATIONS AND ELEVATIONS.
3. MEG-A-LUG RESTRAINT IS REQUIRED FOR ALL PIPING.
4. CATHODIC PROTECTION SHALL BE PROVIDED BY ATTACHING A 17 lb. ANODE AND TEST SITE (32 Lb. ANODE FOR RUNS EXCEEDING 50 FEET) TO THE 6" PIPING BETWEEN THE VALVE AND 90° BEND, PER DETAIL NO. 219.
5. IF "L" IS GREATER THAN 20 FEET ON A D.I.P. MAIN, GATE VALVE MUST BE FLANGED WITH INSULATING FLANGE KIT.
6. IF DEPTH OF VALVE IS GREATER THAN OR EQUAL TO 12 FEET, REPLACE VALVE BOX WITH 6 INCH DIP.
NOTES:
1. ALL DUCTILE IRON PIPE SHOWN SHALL BE PRESSURE CLASS 350 AND POLYWRAPPED.
2. REF. PLAN AND PROFILE SHEETS FOR BLOWOFF LOCATIONS AND ELEVATIONS.
3. MEG-A-LUG restrain is required for all piping.
4. CATHODIC PROTECTION SHALL BE PROVIDED BY ATTACHING A 17lb. ANODE AND TEST SITE (32 lb. ANODE FOR RUNS EXCEEDING 50 FEET) TO THE 6" PIPING BETWEEN THE VALVE AND 90° BEND PER DETAIL No. 219.
5. INSULATOR FLANGE BOLTS WILL BE EITHER STAINLESS STEEL #304 OR CORTEN.
6. WAX TAPE OR PETROLEUM TAPE AND PRIMER REQUIRED ON INSULATING FLANGE AND ALL BOLTS.
STANDARD

CONCRETE EXTENSION COLLARS
GROUND LINE

72" Ø PRECAST CONC.
FLAT M.H. COVER
(ASTM C 478)

24" NEENAH R-1758-C OR EQUAL
(FROST RETARDANT) WITH AURORA
STANDARD COVER (WATER)

BRACE ≤ 2"x 2"x 1/4"

72" Ø PRECAST
CONC. M.H.
(ASTM C 478)

APPROVED MASTIC (TYP.)
2" THREADED BALL VALVE

6" Ø VENT PIPE
(SEE DETAIL)

6" Ø 90 BEND

2" 9'-0" MIN.

8'-0" MIN.

FABRICATED SCREEN
(SEE DETAIL 216)
THD'D END

BREAK-AWAY COUPLING

SECTION A-A

FOOTING DETAIL

3'-0" CONT. (TYP.)

#4 @ 18"

72" Ø PRECAST CONCRETE MANHOLE

NOTE: USE 2-2" AIR VALVES ON
30" OR SMALLER DUCTILE PIPE

CONC. M.H. BASE BEAMS 9"x 1'-0"x
8'-0" REINF. WITH BAR STEEL AS
SHOWN.

PLAN

VENT PIPE

AURORA WATER

NOTES:
1. TOP 6" IN VAULT SHALL BE CRUSHED ROCK.
2. THE DISTANCE BETWEEN RUNGS, CLEATS, AND STEPS
   SHALL NOT EXCEED 12 INCHES AND SHALL BE UNIFORM
   THROUGHOUT THE LENGTH OF THE LADDER.
3. LADDER RUNGS ARE REQUIRED IN PRECAST CONCRETE
   MANHOLES.
4. WELD ON STEEL WILL USE THREAD-O-LETS
5. INSTALL VENT PIPE OPPOSITE OF ACCESS OPENING.
6. TURN DISCHARGE PORT AWAY FROM VALVES AND ACCESS
   OPENING.
7. SEE SECTION 20.00 FOR COATING REQUIREMENTS.

AURORA WATER

CITY ENGINEER
09/25/2019
DATE

2" AIR VACUUM
VALVE INSTALLATION

1 of 3

211-1
**SECTION A-A**

**NOTE:**
USE 2-2" AIR VALVE ASSEMBLY ON 30"
OR SMALLER DUCTILE IRON PIPE.

**DETAIL A**

- 2" IP THR'D NIPPLE (BRASS)
  - 2" IP THR'D OUTLET (MUELLER #H9968)
  - DUCTILE IRON ONLY
- 2" THR'D BALL VALVE WITH HAND LEVER.
- EXIST PIPE
- STEEL PIPE WELDON'S WILL REQUIRE THREAD-O-LETS. PVC DIP REQUIRES DOUBLE STRAP SADDLE PER APPROVED PRODUCTS LIST.

**NOTES:**
1. TURN DISCHARGE PORT AWAY FROM VALVES AND ACCESS OPENING.
2. 3" AND LARGER AIR VACS BY SPECIAL DESIGN.
**STANDARD**

24" NEENAH R-1758-C OR EQUAL (FROST RETARDANT) WITH AURORA STANDARD COVER (WATER)

60" Ø PRECAST CONC. M.H.

STATION LOCATION

20" O.D. ACCESS M.H.

CONC. BASE BEAMS

GROUND LINE

FOR VENT PIPE DETAILS SEE SHEET NO. 215 & 216.

**ACCESS MANHOLE**

NOTE: USE 2" AIR VALVE ASSEMBLY ON 30" OR SMALLER DUCTILE IRON PIPE

8'-0" MIN.

STATION LOCATION

BREAK-AWAY COUPLING

72" Ø PRECAST CONC. M.H. INSTALLED OPPOSITE LADDER RUNGS.

20" O.D. ACCESS M.H.

AIR/VACUUM VALVES

12" 9" 9" 2'-0" 1'-5"

CONC. BASE FOOTING

**AIR VALVE ASSEMBLY WITH ACCESS MANHOLE**

NOTE:
1. LADDER RUNGS ARE REQUIRED IN PRECAST MANHOLES. THE DISTANCE BETWEEN RUNGS, CLEATS AND STEPS SHALL NOT EXCEED 12" AND SHALL BE UNIFORM THROUGHOUT THE LENGTH OF THE LADDER.
NOTES:
1. 2 - 2" INSULATED CORPS INSTALLED ON TOP OF PIPE WITH 2" THREADED BALL VALVES INSTALLED
2. LINK SEAL FOR ALL PIPE PENETRATIONS
3. ALL INSTALLATIONS LARGER THAN 12", OR REQUIRING A BYPASS, ARE BY SPECIAL DESIGN ONLY
4. ALL PIPE INSTALLED THROUGH THE VALVE SHALL ADHERE TO STANDARD 220-1 FOR TIED PIPE AND CONSIDER THE VALVE A DEAD END
5. PRV or Check Valve will be installed by AW personnel
6. Installations larger than 12" or those that require a bypass need a special design approved by AW Engineering
7. Sump pit is 12"x12"x12" cast in place sump pit with rebar reinforcement
8. Vault will be installed to prevent inflow and infiltration
9. Installation must complete water quality testing before installation of PRV/Check valve

AURORA WATER

CITY ENGINEER  09/25/2019

AURORA WATER  09/23/2019
VENT PIPE INSTALLATION

NOTES:
1. VENT PIPES TO BE LOCATED IN FIELD AT THE NEAREST INTERSECTION OF THE STREET PROPERTY LINE AND THE SIDE LOT LINE.

VENT PIPE AND BREAK-AWAY COUPLING DETAILS
ELEVATION
SCREEN FOR 6" VENT PIPE

METAL SCREEN

NOTE: BUG SCREEN TO BE INSTALLED ON INTERIOR OF METAL SCREEN.
ADJUSTABLE-SUPPORT
(STANDARD)

TO MATCH VALVE BODY, PIPE OR METER.
5/8" R x 2-1/2" x 6" BAR BENT AS SHOWN.

1-1/4" DIA. THREADED ROD
1-1/4" STANDARD HEX NUT

1/2" R x 2-1/2" x 2-1/2"
1-1/2" DIA. STEEL PIPE

6" MIN.

1/2" R x 5" x 5"

ADJUSTABLE-SUPPORT
(HEAVY DUTY)

TO MATCH VALVE BODY, PIPE OR METER.
3/4" R x 2-1/2" x 6" BAR BENT AS SHOWN.

2" DIA. THREADED ROD
2" HEAVY HEX NUT

5/8" R x 4" x 4" BAR
3" DIA. STEEL PIPE

6" MIN.

5/8" R x 9" x 9"
NOTE:
INSTALL ANODES A MINIMUM OF 3 FEET OR ONE (1) PIPE DIAMETER (WHICHER IS GREATER) FROM THE PIPELINES AND ANY OTHER UNDERGROUND METALLIC STRUCTURES AND A MINIMUM OF 5 FEET FROM NEIGHBORING ANODES.

NOTES:
1. CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY DISCREPANCIES BETWEEN THE PLANS FOR THIS PROJECT AND ACTUAL FIELD CONDITIONS WHICH MAY INTERFERE WITH THIS PROJECT.
2. NO BELOW GRADE SPLICING OF WIRES IS ALLOWED WITHOUT PRIOR APPROVAL FROM THE ENGINEER. CONTRACTOR SHALL ENSURE THAT ALL WIRES ARE OF SUFFICIENT LENGTH FOR EACH INTENDED APPLICATION.
3. REMOVE ANODES FROM PLASTIC OR OTHER SHIPPING BAG AND POSITION ACCORDING TO DETAIL DRAWINGS. DO NOT REMOVE CLOTH SACK.
4. INSTALL ANODES A MINIMUM OF 3 FEET FROM EDGE OF PIPE OR ANY OTHER METALLIC OBJECT AND PLACE BELOW THE SPRINGLINE OF THE PIPE.
5. BACKFILL WITH NATIVE SOIL. A MINIMUM OF 12 INCHES AROUND ANY COUPONS, OR ANODES THEN FLOOD EACH WITH A MINIMUM OF 5 GALLONS FRESH WATER. AFTER WATER ABSORPTION, CONTINUE BACKFILLING AS PER SPECIFICATIONS.
6. PIPELINE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ELECTRICAL ISOLATION OF THE NEW PIPELINE FROM EXISTING PIPELINES, CONCRETE REBAR, ELECTRICAL GROUNDING, CASINGS, PIPE SUPPORTS, PIPE LATERALS, OR OTHER METALLIC STRUCTURES.
7. DURING BACKFILL, INSTALL CATHODIC PROTECTION WARNING TAPE 12"-18" ABOVE ANY CATHODIC PROTECTION WIRES OR DEVICES.
8. TYPICAL WIRE INSTALLATION COLORS:
   BLUE = PROTECTED STRUCTURE
   WHITE = INSULATED OR BONDED STRUCTURE
   RED = FOREIGN STRUCTURE
   YELLOW = REFERENCE ELECTRODE
   ORANGE = CASING
   GREEN = METALLIC COUPON
   BLACK = CONTINUITY BOND/ANODE
STANDARD

PIPE LEAD #1 & COUPON LEAD #1
NOTE: INSTALL WIRE LABEL TAGS ON ALL WIRES. SHUNTS TO BE INSTALLED BY ENGINEER DURING FINAL TESTING

PIPE LEAD #2
COUPON LEAD #2

IR-FREE TERMINAL BOARD LAYOUT

TESTOX 713 7 TERMINAL TEST STATION
C7 C-METAL
1-1/4" SCH 40 GALV. STEEL PIPE ATTACHED TO C-METAL WITH U-BOLTS

MINIMUM 18" OF SLACK IN WIRES FOR SETTLEMENT AND MOVEMENT

PVC CONDUIT (SEE NOTE 5)

THERMITE WELD
SEE DETAIL 218-4

PIPELINE
(2) #12 AWG SOLID BLACK FOR PIPE TEST LEADS. WRAP LEADS AROUND PIPE FOR STRAIN RELIEF.

METALLIC COUPON
(SAME MATERIAL AS PIPE)
SEE DETAIL 218-4

NOTES:
1. CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY DISCREPANCIES BETWEEN THE PLANS FOR THIS PROJECT AND ACTUAL FIELD CONDITIONS WHICH MAY INTERFERE WITH THIS PROJECT.
2. NO BELOW GRADE SPlicing OF WIRES IS ALLOWED WITHOUT PRIOR APPROVAL FROM THE ENGINEER. CONTRACTOR SHALL ENSURE ALL WIRES ARE OF SUFFICIENT LENGTH FOR EACH INTENDED APPLICATION.
3. INSTALL COUPONS 6 INCHES FROM EDGE OF PIPE AND PLACE BELOW THE SPRINGLINE OF THE PIPE. COUPONS SHALL CONSIST OF THE SAME MATERIAL AS THE PIPE AT THE LOCATION OF INSTALLATION.
4. BACKFILL WITH NATIVE SOIL. A MINIMUM OF 12 INCHES AROUND ANY COUPONS, OR ANODES THEN FLOOD EACH WITH A MINIMUM OF 5 GALLONS FRESH WATER. AFTER WATER ABSORPTION, CONTINUE BACKFILLING AS PER SPECIFICATIONS.
5. ROUTE ALL TEST LEADS AND COUPON WIRES IN APPROPRIATELY SIZED CONDUIT BETWEEN THE PIPE AND THE TEST STATION BASE. THE CONDUIT WILL ALSO BE THE INSTALLER AS THE PIPELINE IS PADDED AND BACKFILLED BY PROVIDING MEANS TO LEAN THE TEST STATION AGAINST THE TRENCH WALL.
6. TEST STATION BOXES SHALL BE MOUNTED ON A MINIMUM 5 FOOT LONG THREADED 1-1/4" RIGID STEEL GALVANIZED CONDUIT AND INSTALLED WITH A GALVANIZED STEEL CHANNEL FOR SUPPORT AND PROTECTION. THE GALVANIZED STEEL C-METAL SHALL BE A MINIMUM 6 FEET LONG AND 7 INCHES WIDE BY 2 INCHES DEEP. THE CONDUIT SHALL BE ATTACHED TO THE CHANNEL WITH U-BOLTS SET A MINIMUM 1-1/2 FEET APART.
7. IF POSSIBLE, INSTALL TEST STATIONS OVER CENTERLINE OF PIPE. PLACE TEST STATIONS ON PROTECTED LOCATIONS (NEXT TO FENCES, APPURTENANCES, OUT OF ROADWAYS, ETC.) OR OTHER EASILY ACCESSIBLE AREAS.
8. PIPELINE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ELECTRICAL ISOLATION OF THE NEW PIPELINE FROM EXISTING PIPELINES, CONCRETE REBAR, ELECTRICAL GROUNDING, CASINGS, PIPE SUPPORTS, PIPE LATERALS, OR OTHER METALLIC STRUCTURES.
9. DURING BACKFILL, INSTALL CATHODIC PROTECTION WARNING TAPE 12"-18" ABOVE ANY CATHODIC PROTECTION WIRES OR DEVICES.
10. TYPICAL WIRE INSTALLATION COLORS:
   BLUE = PROTECTED STRUCTURE
   RED = FOREIGN STRUCTURE
   ORANGE = CASING
   BLACK = CONTINUITY BOND/ANODE
   WHITE = INSULATED OR BONDED STRUCTURE
   YELLOW = REFERENCE ELECTRODE
   GREEN = METALLIC COUPON

AURORA WATER

03/15/2021
CITY ENGINEER
DATE

03/01/2021
AURORA WATER
DATE

IR-FREE TEST STATION
218-2
NOTES:
1. CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY DISCREPANCIES BETWEEN THE PLANS FOR THIS PROJECT AND ACTUAL FIELD CONDITIONS WHICH MAY INTERFERE WITH THIS PROJECT.
2. NO BELOW GRADE SPLICING OF WIRES IS ALLOWED WITHOUT PRIOR APPROVAL FROM THE ENGINEER. CONTRACTOR SHALL ENSURE ALL WIRES ARE OF SUFFICIENT LENGTH FOR EACH INTENDED APPLICATION.
3. INSTALL COUPONS 6 INCHES FROM EDGE OF PIPE AND PLACE BELOW THE SPRINGLINE OF THE PIPE. COUPONS SHALL CONSIST OF THE SAME MATERIAL AS THE PIPE AT THE LOCATION OF INSTALLATION.
4. BACKFILL WITH NATIVE SOIL. A MINIMUM OF 12 INCHES AROUND ANY COUPONS, OR ANODES THEN FLOOD EACH WITH A MINIMUM OF 5 GALLONS FRESH WATER. AFTER WATER ABSORPTION, CONTINUE BACKFILL AS PER SPECIFICATIONS.
5. ROUTE ALL TEST LEADS AND COUPON WIRES IN APPROPRIATELY SIZED CONDUIT BETWEEN THE PIPE AND THE TEST STATION BASE. THE CONDUIT WILL ALSO AID THE INSTALLER AS THE PIPELINE IS PADDED AND BACKFILLED BY PROVIDING MEANS TO LEAN THE TEST STATION AGAINST THE TRENCH WALL.
6. TEST STATION BOXES SHALL BE MOUNTED ON A MINIMUM 5 FOOT LONG THREADED 1-1/4" RIGID STEEL GALVANIZED CONDUIT AND INSTALLED WITH A GALVANIZED STEEL CHANNEL FOR SUPPORT AND PROTECTION. THE GALVANIZED STEEL C-CHANNEL SHALL BE A MINIMUM 6 FEET LONG AND 7 INCHES WIDE BY 2 INCHES DEEP. THE CONDUIT SHALL BE ATTACHED TO THE CHANNEL WITH U-BOLTS SET A MINIMUM 1-1/2 FEET APART.
7. IF POSSIBLE, INSTALL TEST STATIONS OVER CENTERLINE OF PIPE. PLACE TEST STATIONS ON PROTECTED LOCATIONS (NEXT TO FENCES, APPURTENANCES, OUT OF ROADWAYS, ETC.) OR OTHER EASILY ACCESSIBLE AREAS.
8. PIPELINE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ELECTRICAL ISOLATION OF THE NEW PIPELINE FROM EXISTING PIPELINES, CONCRETE REBAR, ELECTRICAL GROUNDING, CASINGS, PIPE SUPPORTS, PIPE LATERALS, OR OTHER METALLIC STRUCTURES.
9. DURING BACKFILL, INSTALL CATHODIC PROTECTION WARNING TAPE 12"-18" ABOVE ANY CATHODIC PROTECTION WIRES OR DEVICES.
10. TYPICAL WIRES INSTALLATION COLORS:
    - BLUE = PROTECTED STRUCTURE
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    - ORANGE = CASING
    - WHITE = INSULATED OR BONDED STRUCTURE
    - YELLOW = REFERENCE ELECTRODE
    - GREEN = METALLIC COUPON
    - BLACK = CONTINUITY BOND/ANODE

AURORA WATER

03/15/2021
CITY ENGINEER

03/01/2021
DATE

ISOLATION TEST STATION
INSTALLATION

3 of 7

218-3
THERMITE WELDING INSTRUCTIONS:
1. REMOVE APPROXIMATELY 4" DIAMETER CIRCLE OF PIPELINE COATING AT STRUCTURE CONNECTION LOCATION.
2. CLEAN AREA APPROXIMATELY 2" DIAMETER TO BRIGHT METAL.
3. REMOVE 2" OF INSULATION FROM END OF WIRE.
4. WELD CONDUCTOR TO PIPE. USE APPROPRIATE GRAPHITE MOLD AND CARTRIDGE CHARGE SIZE. SLEEVES ARE REQUIRED FOR ALL WIRES.
5. TEST THE THERMITE WELD CONNECTION BY STRIKING THE COMBINATION SEVERAL BLOWS ON THE SIDE USING A ONE POUND HAMMER. TOP OF WELD MAY BE HAMMERED FLAT IF REQUIRED.
6. APPLY HANDY-CAP. SEE DETAIL 218-4

HANDY-CAP INSTALLATION

HANDY-CAP APPLICATION PROCEDURES:
1. CLEAN ALL MUD, DIRT, GREASE, OIL, AND OTHER CONTAINMENTS FROM THE METAL SURFACE AND ANY PART OF THE MILL APPLIED COATING WHICH IS TO BE COVERED.
2. APPLY A COAT OF ROYSTON 747 PRIMER (if required) AND ALLOW TO DRY TO A NON-GLOSSY APPEARANCE, WHICH WILL TAKE APPROXIMATELY 5 MINUTES DEPENDING ON HUMIDITY AND TEMPERATURE.
3. REMOVE THE RELEASE PAPER FROM THE BOTTOM OF THE ROYSTON HANDY CAP. BEND THE PLASTIC SHEET INWARD AT THE SERRATIONS WHEN APPLYING TO A SMALL DIAMETER PIPE. POSITION AND PLACE THE HANDY CAP ON THE WELDED AREA WITH THE TUNNEL OVER THE LEAD WIRE.

NO FURTHER PROTECTION IS NECESSARY IF THE ROYSTON HANDY CAP COVERS THE ENTIRE EXPOSED METAL AREA. UNCOVERED AREAS SHOULD BE PROTECTED BY APPLYING TAPE OR MASTIC SUCH AS TRENTON PIPELINE TAPE CP OR ROYSTON ROSKOTE MASTIC.

WHEN COATING OR WRAPPING THE ROYSTON HANDY CAP, REMOVE THE NARROW STRIPS OF PLASTIC RELEASE FILM ON THE TOP OF THE CAP. THIS WILL ASSURE MAXIMUM PROTECTION BY EFFECTING A POSITIVE WATERPROOF SEAL.
CONTINUITY BONDING NOTES:
1. TYPICAL FOR NON-WELDED PIPING.
2. CLEAN PIPE PRIOR TO WELDING.
3. ENSURE ALL BLOW-OFF AND HYDRANT PIPING ARE BONDED AND ELECTRICALLY CONTINUOUS WITH ADJACENT WATER MAIN.
4. ALL FOLLOWER RINGS SHALL HAVE A SINGLE #8 AWG JOINT BOND WIRE ATTACHED WHERE POSSIBLE.
5. HMWPE INSULATED WIRE STRANDED COPPER BOND WIRES SHALL BE SIZED ACCORDING TO THE FOLLOWING TABLE UNLESS OTHERWISE NOTED.

<table>
<thead>
<tr>
<th>NOMINAL PIPE Ø</th>
<th>WIRE SIZE</th>
<th>NUMBER OF WIRES</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/4&quot; OR LESS</td>
<td>#8</td>
<td>2</td>
</tr>
<tr>
<td>1&quot; - 3/4&quot;</td>
<td>#6</td>
<td>2</td>
</tr>
<tr>
<td>&gt; 3/4&quot;</td>
<td>#4</td>
<td>3</td>
</tr>
</tbody>
</table>

NOTE:
DO NOT INSTALL CONTINUITY BONDS OVER INSULATING COUPLINGS, ISOLATING FLANGES, NON-METALLIC PIPING, AND ISOLATING FITTINGS.
FLANGE ISOLATION KIT
(DOUBLE WASHER SET FOR ABOVE GRADE OR VAULTED APPLICATIONS)

FLANGE ISOLATION KIT
(SINGLE WASHER SET FOR BURIED APPLICATIONS)

NOTE:
THE INSULATING WASHER AND INSULATING SLEEVE ON THE EXISTING PIPE SIDE OF THE INSTALLATION MUST BE A SOLID PIECE.
NOTE:
IF COUPLING WILL BE RESTRAINED, INSULATING BOLT SLEEVES AND WASHERS MUST BE INSTALLED ON EACH RESTRAINING BOLT ON THE EXISTING PIPE SIDE OF THE CONNECTION.

CONTINUITY BONDING NOTES:
1. TYPICAL FOR NON-WELDED PIPING.
2. CLEAN PIPE PRIOR TO WELDING.
3. HMWPE INSULATED WIRE STRANDED COPPER BOND WIRES SHALL BE Sized ACCORDING TO THE FOLLOWING TABLE UNLESS OTHERWISE NOTED.
4. ALL FOLLOWER RINGS SHALL HAVE A SINGLE #8 AWG JOINT BOND WIRE ATTACHED WHERE POSSIBLE.

<table>
<thead>
<tr>
<th>NOMINAL PIPE Ø</th>
<th>WIRE SIZE</th>
<th># OF WIRES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 1/2&quot; OR LESS</td>
<td>#8</td>
<td>2</td>
</tr>
<tr>
<td>1 3/4&quot; - 36&quot;</td>
<td>#4</td>
<td>2</td>
</tr>
<tr>
<td>&gt; 36&quot;</td>
<td>#2</td>
<td>3</td>
</tr>
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</table>

NOTE: CONSULT ENGINEER IF WAX-TAPE IS TO BE APPLIED TO COUPLING HARDWARE.

MECHANICAL COUPLING BONDING

THERMITE WELD SEE DETAIL 218-4

MECHANICAL COUPLING

RHW/USE-2 STRANDED JOINT BOND WIRES (SEE NOTES 1-4)

THERMITE WELD SEE DETAIL 218-4
NOTE:
VALVE BOXES LOCATED OUTSIDE OF PAVEMENT SHALL BE PROVIDED AN 18" SQUARE BY 4" DEEP CONCRETE COLLAR.

IDENTIFICATION MARKS ON POSTS SHALL BE 3" DIA. CIRCLES BROKEN IN VERTICAL CENTER ( ) POINTING TO APPURtenANCE, WITH 1" STENCILS INSIDE CIRCLE INDICATING TYPE OF APPURtenANCE (MH, 12" GATE VALVE, ETC.) AND THE DISTANCE IN FEET AND INCHES FROM POST.

MARKER POSTS SHALL BE LOCATED NO FURTHER THAN 3 FEET FROM THE APPURtenANCE.
# STANDARD

## BEARING THRUST BLOCKS

**MINIMUM BEARING SURFACE AREA (A_B)**

**IN SQUARE FEET**

*(BASED ON A MINIMUM SOIL BEARING CAPACITY OF 2000PSF)*

<table>
<thead>
<tr>
<th>SIZE OF PIPE DIA</th>
<th>11 1/4&quot;</th>
<th>22 1/2&quot;</th>
<th>45°</th>
<th>90°</th>
<th>TEE OR DEAD END</th>
</tr>
</thead>
<tbody>
<tr>
<td>6&quot;</td>
<td>1.0</td>
<td>1.5</td>
<td>3.0</td>
<td>5.3</td>
<td>4.0</td>
</tr>
<tr>
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<td>2.5</td>
<td>5.0</td>
<td>9.5</td>
<td>6.5</td>
</tr>
<tr>
<td>12&quot;</td>
<td>3.0</td>
<td>5.5</td>
<td>10.5</td>
<td>19.5</td>
<td>14.0</td>
</tr>
<tr>
<td>16&quot;</td>
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<td>7.0</td>
<td>14.0</td>
<td>25.5</td>
<td>18.0</td>
</tr>
<tr>
<td>24&quot;</td>
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<td>15.5</td>
<td>30.0</td>
<td>56.0</td>
<td>40.0</td>
</tr>
</tbody>
</table>

**Pp=2000 PSF**

### LENGTH OF TIED PIPE (ft)

<table>
<thead>
<tr>
<th>SIZE OF PIPE DIA</th>
<th>11 1/4&quot;</th>
<th>22 1/2&quot;</th>
<th>90°</th>
<th>TEE OR DEAD END</th>
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<tbody>
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<td>42.0</td>
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<td>23.0</td>
<td>54.0</td>
</tr>
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<td>16&quot;</td>
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<td>103.0</td>
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<tr>
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<td>149.0</td>
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</table>

**HORIZONTAL BENDS**

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<th>SIZE OF PIPE DIA</th>
<th>11 1/4&quot;</th>
<th>22 1/2&quot;</th>
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<th>90°</th>
<th>TEE OR DEAD END</th>
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</thead>
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<td>17.0</td>
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<td>30.0</td>
<td>62.0</td>
<td>149.0</td>
<td>207.0</td>
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</tbody>
</table>

### NOTES:

1. ALL METAL SHALL BE WRAPPED IN POLYETHYLENE IN ACCORDANCE WITH THESE SPECIFICATIONS.
2. LARGE DIAMETER LINES WILL REQUIRE ENGINEERING DESIGN AND CALCULATIONS SUBMITTED AND APPROVED. LARGER THAN 24" BY DESIGN.
3. IF THE BRANCH OF A TEE OR WET-TAP IS LESS THAN ONE HALF THE DIAMETER OF THE MAIN, THRUST BLOCK IS NOT REQUIRED.
**STANDARD**

ALL JOINTS TO BE FULLY RESTRAINED WITH MEGALUG OR APPROVED BELL RESTRAINT PER THRUST RESTRAINT DETAIL #220

**WATERLINE LOWERING DETAIL**

**GRAVITY BLOCKS**

**MINIMUM VOLUME (IN CUBIC FEET)**

<table>
<thead>
<tr>
<th>SIZE OF PIPE</th>
<th>11 1/4&quot;</th>
<th>22 1/2&quot;</th>
<th>45°</th>
</tr>
</thead>
<tbody>
<tr>
<td>6&quot;</td>
<td>10.5</td>
<td>20.5</td>
<td>40.0</td>
</tr>
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<td>189.0</td>
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<tr>
<td>24&quot;</td>
<td>106.0</td>
<td>211.0</td>
<td>414.0</td>
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</table>

LARGER THAN 24" BY SPECIAL DESIGN

**NOTES:**

1. VERTICAL 90° BENDS ARE NOT ALLOWED.
2. ALL LINES 12" AND LARGER WILL REQUIRE BODY CLAMPS (NATIONAL PIPE HANGER HEAVY TWO-BOLT PIPE CLAMP OR APPROVED EQUAL) APPROPRIATLY SIZED ALL-THREAD AND DOUBLE NUT.
3. THERE SHALL BE A MINIMUM CLEARANCE OF 24" BETWEEN WATERLINE AND ANY NEW CONSTRUCTION.
4. ALL JOINTS SHALL BE RESTRAINED PER DETAIL 220-1.
5. ANCHORS SHALL BE SLEEVED TO PREVENT CORROSION OF THE PIPE AND/OR BAR. THIS COULD INCLUDE, BUT NOT LIMITED TO, REINFORCED GARDEN HOSE, CURVED FIBERGLASS BOARD, ETC.
6. CONCRETE STRENGTH TO BE AT LEAST 3,000 PSI AT 28 DAYS, AND YIELD STRENGTH OF ANCHOR ROD (REBAR) TO BE 60,000 PSI.

**AURORA WATER**
**STANDARD**

**EXISTING MAIN**

**M.J. ANCHORING TEE**

(SWIVEL TEE WHERE APPLICABLE)

**PRIVATE (FIRE LINE ONLY)**

**DUCTILE IRON PIPE OR PVC**

**TIE RODS**

(MEGALUGS MAY BE USED IN PLACE OF RODDING)

**FIRELINE OR 4 INCH DOMESTIC CONNECTION**

**EXISTING MAIN**

**TAPPING VALVE (4" MIN.) INSULATOR FOR D.I.P.**

**4" BLIND FLANGE W/ 2" OR SMALLER THREADED PLUG**

**SERVICE INSULATOR**

**TYPE 'K' COPPER**

**FLARED COPPER CONNECTION**

**COPPER SERVICE THREADED UNION WITH IRON PIPE THREADS WITH INSULATION FOR D.I.P.**

**TAPPING SLEEVE**

**2" OR SMALLER FIRELINE**

**EXISTING MAIN**

**TAPPING SLEEVE**

**TAPPING VALVE (4" MIN.)**

**4" X 3" REDUCER (IF NECESSARY)**

**DUCTILE IRON PIPE OR PVC**

**TIE RODS**

(MEGALUGS MAY BE USED IN PLACE OF RODDING)

**PRIVATE**

**3" OR LARGER FIRELINE CONNECTION**

**NOTE:**

1. ALL PIPE SHALL BE WRAPPED IN POLYETHYLENE AND RESTRAINED
2. PVC PIPE IS ALLOWED WITH APPROVAL BASED ON SOIL RESISTIVITY TESTING.

**AURORA WATER**

**09/25/2019**

**DATE**

**09/23/2019**

**DATE**

**THRUST BLOCK & TIE BACK DETAIL (FIRE SUPPRESSION SYSTEMS ONLY)**

**222-1**
REstrained joint ductile iron

SECTION A-A

Note: Such devices should be torqued to manufacturers recommendations.

Flange spigot

Note:
1. PVC pipe is allowed with approval based on soil resistivity testing.

Aurora Water

Thrust block & tie back detail (fire suppression systems only)
DESCRIPTION:

THE REDUCED PRESSURE BACKFLOW PREVENTER OPERATES ON THE PRINCIPLE THAT WATER WILL NOT FLOW FROM A ZONE OF LOWER PRESSURE TO ONE OF HIGHER PRESSURE. IT PROVIDES MAXIMUM PROTECTION AGAINST BACKFLOW CAUSED BY BOTH BACKPRESSURE AND BACKSIPHONAGE.

THE DEVICE CONSISTS OF TWO SPRING-LOADED CHECK VALVES (A AND B) AND A SPRING-LOADED DIAPHRAGM ACTUATED DIFFERENTIAL PRESSURE RELIEF VALVE (C) LOCATED IN THE ZONE BETWEEN THE CHECK VALVES.

OPERATION:

THE FIRST CHECK VALVE (A) CAUSES ALL WATER PASSING THROUGH IT TO BE AUTOMATICALLY REDUCED IN PRESSURE.

THE SECOND CHECK VALVE (B) IS LIGHTLY SPRING-LOADED AND FORMS THE "DOUBLE CHECK" FEATURE OF THE DEVICE. IT ACTS TO PREVENT UNNECESSARY DRAINAGE OF THE DOMESTIC SYSTEM IN CASE A BACKFLOW CONDITION OCCURS.

THE RELIEF VALVE (C) IS SPRING-LOADED TO REMAIN OPEN, AND DIAPHRAGM ACTUATED TO CLOSE BY MEANS OF DIFFERENTIAL PRESSURE.

SEE DETAIL 224 FOR FLOOR DRAIN CAPACITIES.

SEE SECTION 19.00 FOR ADDITIONAL REQUIREMENTS.
STANDARD

ZONE PRESSURE (PSIG)

FLOW RATE (GPM)

3/4", 1", 1-1/4, 1-1/2", 2, 2-1/2", 3, 4", 6", 8"-10"

TYPICAL FLOW RATES
AS SIZED BY FLOOR
DRAIN MANUFACTURES

2" 55 GPM
3" 112 GPM
4" 170 GPM
5" 350 GPM
6" 450 GPM
8" 760 GPM

NOTE:
FLOOR DRAIN CAPACITIES ARE ESTABLISHED BY THE FLOOR
DRAIN MANUFACTURERS.

AURORA WATER

BACKFLOW PREVENTOR
DRAIN FLOW CHART

224-1
STANDARD

NOTE:
OUTSIDE COVERS MUST HAVE DOORS FOR ACCESS TO TEST COCKS FOR TESTING AND MAINTENANCE

SEE SECTION 20.00 FOR COATING REQUIREMENTS.

CLIMATE CONTROLLED ‘HOT BOX’

FLOOR DRAIN - LOCATED NEAR RELIEF VALVE OPENING
(SEE SIZING CHART DETAIL #224)

TYPICAL INSTALLATION OF REDUCED PRESSURE PRINCIPLE DEVICE (OUTSIDE)

FLOOR DRAIN - LOCATED NEAR RELIEF VALVE OPENING TIED INTO SANITARY SEWER SERVICE

TYPICAL INSTALLATION OF REDUCED PRESSURE PRINCIPLE DEVICE (IN BUILDING)

Backflow Prevention Installation

AURORA WATER

City Engineer: [Signature]
Date: 09/25/2019

225-1
TYPICAL DOUBLE CHECK VALVE ASSEMBLY
FIRE LINES ONLY
TYPICAL PRESSURE TYPE VACUUM BREAKER

1. PRESSURE VACUUM BREAKERS SHOULD BE INSTALLED A MINIMUM OF 12" ABOVE THE HIGHEST OUTLET THEY ARE PROTECTING, BUT NO MORE THAN 5 FEET ABOVE GROUND.

2. PRESSURE VACUUM BREAKERS MAY BE INSTALLED UNDER CONTINUOUS LINE PRESSURE FOR LIMITED PERIODS OF TIME.

3. THE PRESSURE VACUUM BREAKER CANNOT BE INSTALLED WHERE THERE CAN BE BACKPRESSURE ANYWHERE DOWNSTREAM OF DEVICE.
STANDARD

NOTE:
The location relative to the canal, height and length of the cut-off wall will be shown on the civil drawings. Reinforcement bar is not allowed to touch pipe.

10" MIN.

3" CL.
MIN.
(TYP)

#4 @ 12"
HORIZONTAL

#4 @ 12"
VERTICAL
LINK-SEAL MASTIC
OR APPROVED
EQUAL

3" MIN.

3" MIN.

#4 OF
PIPE

CASING PIPE
MAY BE
REQUIRED

SIDE VIEW

UNDISTURBED
SOIL

CUTOFF
WALL

#4

MASTIC

1' MIN.

MASTIC

1' MIN.

FRONT VIEW

TOP VIEW

NOTE: REINFORCEMENT NOT SHOWN.

AURORA WATER

TYPICAL CUT-OFF WALL FOR DITCH OR CANAL CROSSING

09/25/2019
DATE

CITY ENGINEER

09/23/2019
DATE
1. SAMPLING STATION SHALL BE 4.5' BURY, WITH A 3/4" FI Pipe INLET, AND 7/16" UNTHEADED BLOW OFF AND SAMPLING BIBB.
2. STATION SHALL BE ENCLOSED IN A LOCKABLE, NON-REMOVABLE 6" SQUARE ALUMINUM BOX WITH HINGED OPENINGS.
3. WHEN OPEN, THE STATION SHALL REQUIRE NO KEY FOR OPERATION, AND ALL WATER FLOW SHALL PASS THRU AN ALL STAINLESS STEEL WATERWAY.
4. ALL WORKING PARTS SHALL BE OF STAINLESS STEEL AND SERVICEABLE FROM ABOVE GROUND WITH NO DIGGING OR REPLACEMENT NEEDED.
5. A STAINLESS STEEL PET COCK WILL BE LOCATED BELOW THE SAMPLING BIBB TO ALLOW PUMPING OF ANY WATER REMAINING INSIDE THE STATION TO INSURE NON-FREEZING.
6. THE STATION SHALL BE MODEL #66 AS MANUFACTURED BY THE KUPFERLE FOUNDRY, OR APPROVED EQUAL.
7. SAMPLING STATION SHALL BE LOCATED 5 FEET FROM THE ADJACENT HYDRANT AND EQUIDISTANT FROM THE CURB AS SPECIFIED ON APPROVED PROJECT DRAWINGS.
NOTES:

1. BELLS SHALL NOT TOUCH THE SIDES OR THE BOTTOM OF THE BELL HOLE.

2. THE BARREL SECTION SHALL BE SUPPORTED THROUGHOUT ITS LENGTH.

3. SERVICE TAPS SHALL BE IN LINE TEE OR MACHINE TAPPED. HAND TAPS SHALL NOT BE ALLOWED.

4. SERVICE LINES SHALL BE LOCATED 5' DOWNHILL FROM CENTERLINE OF LOT.

5. MINIMUM SERVICE LINES GRADES
   4" SERVICE LATERALS @ 2%
   6" SERVICE LATERALS @ 0.62%

6. JOINTS SHALL BE WATER TIGHT.

7. CLEANOUTS REQUIRED FOR ALL NEW SERVICES AND SERVICE REPAIRS, TO BE LOCATED OUTSIDE OF PUBLIC ROADWAY

RESIDENTIAL SEWER SERVICE
NOTES:

1. CLEAN-OUT SHALL BE CONSTRUCTED SO THAT THE SURFACE LOAD WILL NOT BE TRANSFERRED TO THE MAIN.
2. CONCRETE PAD SHALL BE INSTALLED SO THAT THE WATER WILL RUN AWAY FROM THE INSTALLATION.
3. WHENEVER POSSIBLE, LOCATE CLEAN-OUTS WITHIN LANDSCAPED AREAS.
4. CLEANOUTS REQUIRED FOR ALL NEW SERVICES AND SERVICE REPAIRS, TO BE LOCATED OUTSIDE PUBLIC ROADWAY.
NOTES:
1. PIPE SHALL BE NON-PERFORATED WITHIN 5 FEET OF SANITARY SEWER MANHOLES.
2. PIPE SHALL BE WRAPPED WITH MIRAFI FABRIC SO THAT SOIL CANNOT INFILTRATE THE UNDERDRAIN SYSTEM
3. ALL NON-PERFORATED PVC PIPE SHALL CONFORM TO ASTM 3034-SDR-35. PERFORATED PVC SHALL HAVE PERFORATIONS IN THE LOWER QUADRANT AND BE INSTALLED IN FULL COMPLIANCE WITH ASTM D2321.
4. HDPE PIPE IS AN ACCEPTABLE SUBSTITUTION. ALL NON-PERFORATED PIPE SHALL CONFORM TO AASHTO M252 TYPE "S". ALL PERFORATED HDPE PIPE SHALL CONFORM TO AASHTO M252 TYPE "SP". COLOR SHALL BE BLACK AND RESISTANT TO ULTRAVIOLET RAYS.
5. CLEANOUT VALVE BOXES SHALL BE RATED FOR HS-20 TRAFFIC LOADING.
6. CITY OF AURORA WILL NOT BE RESPONSIBLE FOR MAINTENANCE NOR OWNERSHIP OF UNDERDRAIN SYSTEMS.
1. SECONDARY TANK TO BE 1/3 OF TOTAL VOLUME.
2. BAFFLE WALL INSERTS TO BE SEALED IN PLACE.
3. OUTLET PIPE INVERT TO BE 2" LOWER THAN INLET.
4. SUPPORT BRACKETS AND CLEAN-OUT CAPS SHALL BE GALVANIZED STEEL.
5. TANK AND LID TO BE TRAFFIC RATED (Hi-20 LOADING)
6. MANHOLE COVERS AND CLEAN-OUT CAPS MUST NOT FALL BELOW GRADE.
7. MANHOLE RING & COVER SHALL BE NEENAH R-1706, OR APPROVED EQUAL.
8. ALL JOINTS IN PRECAST JOINT SECTIONS TO BE SEALED RAMEKIN.
9. ALL PIPING TO BE DUCTILE IRON OR SCHEDULE 40 PVC WITH A MINIMUM DIAMETER OF 4" UNLESS OTHERWISE NOTED.
10. NO BOLT DOWN COVERS ALLOWED WITHOUT WRITTEN AUTHORIZATION FROM AURORA WATER ENGINEERING.
11. VENT PIPES SHALL BE CAST IRON OR SCHEDULE 40 PVC AND CAN JOIN TOGETHER AT 1" ABOVE GRADE.
12. INLET AND OUTLET RISER PIPES SHALL BE ANCHORED TO WALL AT 4" BELOW PIPE OPENING.
13. SEE APPENDIX C FOR ADDITIONAL WASTEWATER CONTROL REGULATIONS.
14. CLASS B BEDDING REQUIRED FOR PIPES.
1. ALL PIPE AND FITTINGS ARE TO BE SCHEDULE 40 PVC OR DUCTILE IRON. MINIMUM 4" DIAMETER.
2. SMALL COMPARTMENT HAS 1/3 TOTAL CAPACITY.
3. TANK AND LID TO BE TRAFFIC RATED (H-6-20 LOADING).
4. MANHOLE RING & COVER SHALL BE NEENAH-R-1706, OR APPROVED EQUAL.
5. NO BOLT DOWN COVERS ALLOWED WITHOUT WRITTEN AUTHORIZATION FROM AURORA WATER ENGINEERING. SEE APPENDIX C FOR ADDITIONAL WASTEWATER CONTROL REGULATIONS.
6. ALL JOINTS TO BE SEALED WITH RAMNEK.

STANDARD ACCEPTED TANK SIZES (GALLONS)
320
500
800
1000
1500
2000
2500
3000
LARGER BY SPECIAL DESIGN APPROVED BY AURORA WATER ENGINEERING

Aquora Water
1. INTERVAL "X" PROVIDES A KEY SO THAT COVER WILL FIT ONLY WHEN SAMPLING PORT IS IN CORRECT POSITION. SUITABLE ALTERNATIVES WILL BE CONSIDERED.

2. ALL OTHER INTERVALS ARE "A".

3. MOST MANUFACTURERS WILL PLACE THE RISER TO SUIT THE NEEDS OF THE CUSTOMER. THE RISER MUST BE IN ONE LOCATION OR THE OTHER - NOT BOTH.

4. ALL UNITS MUST BE INSTALLED SO THEY ARE EASILY ACCESSIBLE FOR MAINTENANCE AND TESTING.

5. WHERE A UNIT IS TO BE LOCATED UNDERGROUND, A CONCRETE VAULT WITH HATCH ACCESS MUST BE PROVIDED AND SAMPLING PORT MUST BE EXTENDED TO A POINT NO LESS THAN 6" AND NO MORE THAN 12" BELOW THE LEVEL OF THE FINISHED FLOOR OR GROUND.

6. MATERIALS - SPECIFIC MATERIALS MUST BE SELECTED FOR SPECIFIC APPLICATIONS. HIGH DENSITY POLYETHYLENE AND POLYPROPYLENE MATERIALS ARE RECOMMENDED IN MOST CASES. CONCRETE UNITS LINED WITH "ACID RESISTANT" MATERIAL WILL NOT BE APPROVED.

7. ACID NEUTRALIZATION TANKS AND INSTALLATIONS MUST BE INSPECTED AND APPROVED BY AURORA WATER ENGINEERING.

8. SEE APPENDIX C FOR ADDITIONAL WASTEWATER CONTROL REGULATIONS.
INLET RING & COVER TO CONFORM TO DETAIL 102-1.

NOTE: CHANNEL AND ALL OTHER EXPOSED STEEL SHALL BE GALVANIZED (AASHTO M111). CHANNEL SHALL BE EXTENDED 5" INTO THE WALL ON EACH SIDE.

BENDING DIAGRAM

1. ALL STEEL SHALL BE CAST IN PLACE. PRECAST INLETS ALLOWED WITH PREAUTHORIZATION ONLY.
2. TIGHTEN LOCK NUT AFTER TOP SLAB CURES.
3. NO STEPS REQUIRED IN INLETS LESS THAN 36" DEEP, TOP OF DECK TO INVERT.
4. SEE CDT M STANDARDS FOR ALL INFORMATION NOT SHOWN ON THIS DRAWING.
5. EDGE OF ACCESS OPENING SHALL BE LOCATED NO MORE THAN 18" FROM THE INSIDE FACE OF THE OUTFALL PIPE.
6. FOR ON GRADE INLETS, THE DECK TOP SHALL MATCH THE STREET GRADE.
7. INLETS OVER 10 FEET IN LENGTH REQUIRE TWO ACCESS OPENINGS.
SECTION A-A
REGULAR INLET
NOT TO SCALE

NOTE:
ALL CONSTRUCTION JOINTS SHALL HAVE A 2"X 4" KEYWAY.

TOP SHALL BE MONOLITHIC POUR TO BACK OF WALK

FOR 5' WALK EXTEND EVERY THIRD #5 BAR FROM INLET TOP INTO WALK TO WITHIN 3" FROM BACK OF WALK.

8' & 10' SIDEWALKS SHALL BE POURED SEPARATE FROM INLET DECKS AND BE SEPARATED BY 1/2" EXPANSION JOINT.

(SEE DETAILS 12.9 & 12.10 FOR DIMENSIONS OF INLET & WALK)
**NOTES:**

1. INLET RING AND COVER TO CONFORM TO DETAIL 400-1
2. STEPS SHALL BE AS SPECIFIED IN DETAILS 105 AND 106 OF CITY OF AURORA PUBLIC UTILITY IMPROVEMENTS RULES AND REGULATIONS REGARDING STANDARDS AND SPECIFICATIONS: WATER, SANITARY, STORM SEWER.
3. ALL #4 REBAR SHALL BE GRADE 40.
4. ALL #5 AND LARGER REBAR SHALL BE GRADE 60.
TYPICAL END VIEW
REFER TO DETAIL 400-4 FOR REINFORCING INFORMATION AND NOTES
STANDARD

BACK OF WALK (BW)

TRANSITION PER S12.2

WARP CURB FACE TO
VERTICAL IN GUTTER
TRANSITION LENGTH

TOP OF CURB (TC)

2'-0"

LIP

2'-8"

PLAN
TRANSITION MOUNTABLE CURB &
GUTTER TO CURB OPENING INLET

SEE NOTE

MOUNTABLE CURB &
GUTTER - BEYOND

12

30.5

7

1-1/2"

SEE NOTE

THROAT ELEVATION

8"

7"

THROAT CONFIGURATION DETAIL
CURB OPENING INLET WITH
MOUNTABLE CURB & GUTTER

NOTE:
REFER TO S 400-1 THRU 400-7 FOR
COMPLETE CONSTRUCTION DETAILS.

THROAT ELEVATION

8"

7"

THROAT CONFIGURATION DETAIL
CURB OPENING INLET WITH
VERTICAL CURB & GUTTER

AURORA WATER

CURB OPENING INLET
TYPE 'R' MODIFIED

400-6
INLET DECK IS SHOWN WITHOUT CURB OPENING

NOTES:

1. PROVIDE A 1 1/2" DEEP CONTROL JOINT THROUGH THE INLET DECK AT EACH INTERMEDIATE WALL PER 57.3 OF THE "ROADWAY DESIGN & CONSTRUCTION SPECIFICATIONS". THE JOINT SHALL EXTEND FROM THE BACK OF THE DECK TO THE FACE OF THE GUTTER PAN.

2. INLET DECK REINFORCEMENT STEEL SHALL BE CONTINUOUS WITH SPLICE LENGTHS OF NO LESS THAN 18". INTERMEDIATE WALL STEEL SHALL TIE INTO THE OUTSIDE WALLS AND FLOOR PER STANDARD DETAILS.

3. ALL INTERMEDIATE WALL CONSTRUCTION SHALL CONFORM TO STANDARD CONSTRUCTION SPECIFICATION AS SHOWN IN STANDARD DETAILS #400, 1 THRU 7 UNLESS OTHERWISE NOTED.
NOTE:
1. END OF PIPE SHALL NOT EXTEND PAST INSIDE WALL OF STORM SEWER PIPE.
2. THIS CONNECTION IS PERMISSIBLE WHEN THE INSIDE DIAMETER OF THE CONNECTING PIPE IS LESS THAN ONE-HALF THE INSIDE DIAMETER OF THE MAIN. OTHERWISE, A MANHOLE IS REQUIRED PER DETAIL 102 AT THE POINT OF CONNECTION.
3. THE AURORA WATER DEPT. RESERVES THE RIGHT TO REQUIRE A MANHOLE AT THE POINT OF CONNECTION WHEN DEEMED NECESSARY.
1. AT NO TIME SHALL THE DISTANCE BETWEEN BOLLARDS BE GREATER THAN 5'.
2. ALL BOLLARDS, EXCEPT FOR REMOVABLE POST, SHALL BE FILLED WITH CONCRETE.
3. ALL BOLLARDS SHALL BE GALVANIZED STEEL.
4. BOLLARDS ARE TO BE SET 5' TO 7' BACK OF SIDEWALK.
5. CHANNEL WIDTH = TRACT WIDTH (UNLESS OTHERWISE APPROVED.)
6' MIN.

6"

2%

2%

HEIGHT VARIES

6x6-W4xW4 OR POLYPROPYLENE FIBER MESH
1-1/2#CY - 7/8" LONG FIBERS

A) 0.4% MINIMUM LONGITUDINAL SLOPE
NOTES:
1. CONNECTION SHALL BE CORED INTO EXISTING INLET WALL AND NON SHRINK GROUT PLACED AROUND SDR-35.
2. IF INLET IS TO BE CAST IN PLACE, CONTRACTOR HAS THE OPTION TO PLACE SDR-35 BLOCKOUT WITHIN THE WALL PRIOR TO PLACING CONCRETE.
3. WATERSTOP GASKET SHALL BE USED AT THE CONNECTION.
4. FOR EDGE DRAINS RUNNING PARALLEL TO STORM, A MINIMUM OF 6" IS REQUIRED BETWEEN BOTTOM OF EDGE DRAIN PIPE AND TOP OF STORM PIPE.
5. SEE COA ROADWAY SPECIFICATIONS S1.19 FOR EDGE DRAIN CONSTRUCTION.
6. LOCATION OF STEPS TO BE COORDINATED.
7. EDGE DRAIN TO BE NON-PERFORATED WITHIN 5 FEET OF TIE-IN STRUCTURE AND A CUTOFF WALL SHALL BE PROVIDED 5 FEET UPSTREAM OF THE TIE-IN.

TYPICAL END VIEW
REFER TO DETAIL 400-5 FOR REINFORCING INFORMATION AND NOTES