Appendix A

Details
Appendix A – Standard Details

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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

PIECE BEDDING CLASSES

AURORA WATER

CITY ENGINEER

DATE

09/25/2019

09/23/2019

09/23/2019

AURORA WATER

DATE

100-2
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.

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 (#67).
DROP MANHOLE ALTERNATE
POLYLINE DUCTILE IRON FITTINGS AND PIPE WITH
MECHANICAL JOINTS MAY BE USED IN PLACE OF
CONCRETE ENCASEMENET.

SECTION A-A

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. ENCASEMENET 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.

AURORA WATER

CITY ENGINEER
09/25/2019
DATE

09/23/2019
DATE
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.

THE INTERNAL DIAMETER OF THE M.H. BARREL SHALL BE:

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<tr>
<td>PIPE SIZE</td>
<td>BARREL SIZE</td>
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<td>12&quot; or LESS</td>
<td>48&quot;</td>
</tr>
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<td>15&quot; to 27&quot;</td>
<td>60&quot;</td>
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<tr>
<td>30&quot; to 48&quot;</td>
<td>72&quot;</td>
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</table>
**STANDARD**

**TOP VIEW**

**FINDORY NAME**

**FINDORY LOCATION**

CITY, STATE

**2" TALL, FLUSH LETTERS**

SEE NOTE 3

**UNDERSIDE VIEW OF COVER**

**3/4"**

**6"**

**2"**

**RINGS & COVER**

**COVER**

**RING**

**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-LIFTING NOTCH**

**DETAIL-COVER DESIGN**

TYPE "C" DESIGN: 1"X 1" SCORED 1/32" ± DEEP

**AURORA WATER**

**CITY ENGINEER**

09/25/2019

DATE

09/23/2019

DATE

24" MANHOLE or INLET RING & COVER 1 of 3

102-1
NOTES

1. DIMENSION SHOWN IN **BOLD** SHALL HAVE A TOLERANCE OF \( \pm \frac{1}{16}'' \)
2. DIMENSION **a** (RISE HEIGHT) = \( 1\frac{5}{16}'' \), \( 1\frac{1}{2}'' \), \( 2'' \), \( 2\frac{1}{2}'' \), \( 3'' \) or \( 4'' \)
3. ALL OTHER DIMENSIONS SHALL HAVE A TOLERANCE OF \( \pm \frac{1}{8}'' \)
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.

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

AURORA WATER
36" LID W/ 22" ACCESS LID
NEENAH R-1741D OR APPROVED EQUAL

2" TALL, FLUSH LETTERS
SEE NOTE 3

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 POLYPOLYPROPYLENE 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-HH (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 "Z's 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

PLATFORM DETAIL

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

GRATE DETAIL

DOOR IN OPEN POSITION

PLATFORM LOCATED AT THE MIDPOINT

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

TYPICAL STEEL ENCASEMENT CONSTRUCTION

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<tr>
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<tr>
<td>NOMINAL DIA.</td>
<td>MIN. I.D.</td>
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<tr>
<td>4&quot;</td>
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<td>6&quot;</td>
<td>16&quot;</td>
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<td>16&quot;</td>
<td>30&quot;</td>
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<tr>
<td>24&quot;</td>
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CASING CHOCKS SHALL MEET OR EXCEED
PSI MODEL CBG-2 OR C12G-2
APS MODEL SI
POWERSEAL 4810
RESTRANED CASING SPACER BY UNI-FLANGE

RUNNER CONFIGURATION

ROADWAY

STEEL CASING INFORMATION
REQUIRED ON CONSTRUCTION PLANS
1. LENGTH AND TIES TO ENDS OF CASING
2. THICKNESS IN INCHES
3. INSIDE DIAMETER

NOTES:
1. JOINT RESTRAINT PIPE SHALL BE USED FOR CARRIER PIPE THROUGH ALL BORES. PVC (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.

AURORA WATER

CITY ENGINEER

DATE 03/15/2021

TYPICAL STEEL ENCASEMENT CONSTRUCTION

1 of 1

107-1
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.
"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.
PROCEDURES TO BE FOLLOWED BY THE CONTRACTOR FOR CONSTRUCTION AND INSTALLATION OF WATER METERS

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 (SEE APPENDIX A DETAIL 206 FOR 3" AND LARGER DETAILS).

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 (PDS)

PASS

AFTER CONNECTION FEES HAVE BEEN PROCESSED AND THE SITE MEETS CERTIFICATE OF OCCUPANCY REQUIREMENTS, CONTACT AURORA WATER TO SCHEDULE A METER INSTALLATION.

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

PASS

METER SET

CONTRACTOR MUST MAKE REPAIRS BEFORE RE-SCHEDULING.

FAIL

CONTRACTOR MUST MAKE FINAL REPAIRS BEFORE RE-SCHEDULING. REINSPECTION FEE WILL BE ASSESSED FOR EACH RE-INSPECTION.

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.
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 DUCTILE IRON PIPE RESEARCH ASSOCIATION 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).

SERVICE TYPE | YOKE SIZE
---|---
3/4” RESIDENTIAL | 3/4” X 3/4”
3/4” COMMERCIAL | 3/4” X 3/4”
1” COMMERCIAL | 1” X 1”

NOTES:
1. WATER METER FURNISHED AND INSTALLED BY AURORA WATER.
2. SERVICE LINE MUST HAVE A MINIMUM COVER OF 4 1/2 FEET.
3. CALL PDS INSPECTIONS AT 303-739-7385 FOR WATER SERVICE LINES INSPECTIONS PRIOR TO BACKFILLING.
4. *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. THE METER PIT MUST BE INSTALLED WITH THE MAINLINE TO PIT OR PIT TO HOME INSPECTION. AN INSPECTION FEE WILL BE CHARGED FOR ANY ADDITIONAL INSPECTIONS.
5. 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.
6. METER SETTER MUST HAVE INTEGRAL OUTLET SPRING CHECK VALVE.
7. CURB STOP AND METER PIT LIDS SHALL BE FLUSH WITH THE FINAL GRADE OF THE LANDSCAPE I.E., TURF, MULCH, ROCK, WHICH MUST INCLUDE PROPER DEPTH OF THE YOKE AND METER. ENSURE THE ITEMS SCHEDULED FOR INSPECTION ARE READILY VISIBLE PER AURORA WATER STANDARDS & SPECIFICATIONS.
8. A PASSING INSPECTION ON THE WATER SERVICE LINE INSTALLATION MUST BE COMPLETED PRIOR TO THE METER SET REQUEST. THIS WILL BE CHECKED DURING THE SCHEDULING PROCESS AND THE METER SET WILL BE CANCELED IF IT WAS NOT COMPLETE.
9. WATER METERS MUST BE INSTALLED BEFORE A CERTIFICATE OF OCCUPANCY CAN BE ISSUED. THE WATER METER SETTING MUST PASS INSPECTION BEFORE THE CERTIFICATE OF OCCUPANCY, OR A TEMPORARY CERTIFICATE OF OCCUPANCY WILL BE ISSUED.
10. RESIDENCE MUST BE IN A CONDITION SUITABLE FOR OCCUPANCY PRIOR TO A METER BEING SET.
11. THE METER PIT SHALL BE PROTECTED FROM DAMAGE DURING CONSTRUCTION ACTIVITIES.
12. METER PIT MUST BE AT LEAST 2’ FROM ANY HARDSCAPE AS MEASURED FROM EDGE OF LID; HARDSCAPE TO BE INSTALLED PRIOR TO METER SET.
13. PLANTINGS, SHRUBS, AND BRANCHES MUST REMAIN 2 FEET CLEAR OF THE METER PIT LID.
14. PERMANENT OBSTRUCTIONS MUST BE 3 FEET CLEAR OF THE METER PIT, I.E., UTILITIES, STREETLIGHTS, FOUNDATIONS, FENCE LINES, RETAINING WALLS, BACKFLOW PREVENTION ASSEMBLIES.
15. FINAL GRADE IS INCLUSIVE OF MULCH, ROCK, TURF. FINISHED GRADE IS THE GRADE WITHOUT MULCH, ROCK, OR TURF.
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.
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. 3/4 INCH SECONDARY CURB STOP AND BOX
3. 3/4 INCH FTG x MIP ADAPTER
4. 2 INCH FTG x 1-3/4 INCH C REDUCER
5. 2 INCH C x C 90 ELBOW
6. 2 x 3/4 C x C x C TEE
7. 2 INCH MIP ADAPTER
8. 2 INCH CURB STOP AND BOX

NOTES:
1. METER PITS PLACED INLINE 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.
6. THIS USE OF BANKED METERS WITH A SINGLE POINT OF CONNECTION AND HEADER IS ALLOWED ONLY WITH AUTHORIZATION FROM AURORA WATER AND MUST BE CONTAINED IN A VAULT. OTHERWISE, INDIVIDUAL POINTS OF CONNECTION FROM THE MAIN TO EACH METER SHALL BE REQUIRED.
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 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 SOLDERED JOINTS OR PLASTIC PIPE NOT ALLOWED IN METER PIT.
8. IRRIGATION METERS REQUIRE RP DEVICE.
9. TOP STEP TO BE 18"-24" BELOW SURFACE. STEPS TO BE SPACED 12" APART VERTICALLY.
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
12. CONCRETE COLLARS ARE REQUIRED WHEN A CURB BOX IS LOCATED WITHIN A LANDSCAPE 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. BALL VALVES-CLASS 125 WITH LOCK WING AND TEE HEAD
6. LOK-PAK ON OUTLET SIDE OF METER.
7. PRECAST 60" VAULT - ASTM C-478 WITH MANHOLE STEPS, OFFSET FLAT TOP AND CONCRETE ADJUSTMENT RINGS.
8. COPPER TO BRASS FITTINGS MUST BE EXPOSED.
9. COMPRESSION COUPLING ON INLET SIDE OF METER MUST BE EXPOSED.
10. CALL 303-326-8645 FOR DIMENSION.
11. SEE APPENDIX 'B' FOR APPROVED MATERIALS

1 1/2" DISC & 2" TURBINE IRRIGATION METER VAULT INSTALLATION

1 of 2

204-1
NOTE:
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. Contractors shall be responsible for all 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 soldered joints or plastic pipe not allowed.
8. Irrigation meters require RP device.
9. 1 1/2" to 2" irrigation meters refer to 204.
10. Top steps to be 18" - 24" below surface. Steps 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.
13. Concrete collars are required when a valve box is located within a landscaped area.
14. Meter pit shall not be located behind, 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 fee schedule. (Tee in lieu 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 206 for additional information on ring and cover.
F. Precast 72" manhole 5' high - ASTM C-478 with manhole steps, offset flat top and concrete adjustment rings.
G. Call 303-326-8645 for dimension.
H. Swing check valve required to be fully restrained.

1 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 pit and related service unit must be inspected by PDS inspections prior to backfilling.
3. No concrete to be laid in floor of meter pit.
4. Footings to be installed under meter pit.
5. Field soldered joints or plastic pipe not allowed in pit.
6. PDS inspections shall inspect the service line prior to backfilling.
7. Top steps to be 18" - 24" below surface. 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 vault.
9. No shrubs allowed within 5' of lid.
10. Concrete collars are required when a valve box is located within a landscaped area.
11. Meter pit shall not be located behind, and no closer than 3-feet, retaining walls.

MATERIALs:
1. Corporation stop and insulating coupling - furnished and installed by the contractor.
2. Swing check valve on outlet required.
3. Water service line - copper tubing, type 'K' - 4-1/2" min. cover.
4. Meter - furnished and installed by Aurora Water.
5. See detail 207-1 for additional information on ring & cover.
6. Precast 60" manhole - ASTM C-478 with manhole steps, offset flat top and concrete adjustment rings.
7. Copper to brass compression fittings (must be exposed).
8. Compression coupling on inlet side of meter (must be exposed).
10. Call (303)326-8645 for dimensions. Lay length (including gaskets) 6" = 13 1/4" 2" = 17 1/4".
11. Ball valves with lock wings.
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 FEE SCHEDULE. (SEE IN MAIN IN LIEU OF TAPPING SLEEVE ALLOWED IF NEW MAIN IS BEING CONSTRUCTED.)
4. ALL PIPING SHALL BE DUCTILE IRON CONFORMING TO AWWA-C151.
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-BLAIR, DRESSER OR EQUAL ON OUTLET SIDE.
8. SWING CHECK VALVE FULLY ENCLODED 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. 3" COARSE AGGREGATE (#67) TO BE PLACED 4" THICK BELOW PRECAST

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" INSIDE DIAMETER ROUND VAULT IS AN ACCEPTABLE ALTERNATIVE. LID TO BE 2 INCHES ABOVE FINISHED GRADE.
5. GATE VALVE ON UPSTREAM SIDE SHOULD BE LOCATED NO FURTHER THAN 3 FEET FROM OUTSIDE OF VAULT.
6. NO SHRUBS ALLOWED WITHIN 5' OF LID.
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.
STANDARD

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

LID - TOP VIEW

LID - BOTTOM VIEW

COMPOSITE METER PIT LID
FOR COMPOUND METER (LANDSCAPE ONLY)
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
STANDARD

LID - TOP VIEW

LID - BOTTOM VIEW

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: 46.54 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)
FIRE HYDRANT ASSEMBLY

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

2" MIN 6" MAX

HYDRANT MUST BE PLUMB IN ALL DIRECTIONS

CONCRETE THRUST BLOCK
2.5'wX2.5'h X 1.0' THICK

SUPPORT BLOCKING FOR LATERALS

UNDISTURBED GROUND

5'-6" BURY DEPTH

BURY LINE

7' MAX.

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 UNOBSTRUCTED 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.
5. INSTALLATIONS IN CONCRETE REQUIRE A 24"x24" BLOCK OUT WITH EXPANSION MATERIAL.
SECTION A-A

CONCRETE THRUST BLOCK

24" MIN.

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

CAST IRON LID WITH "WATER" CAST INTO TOP

REST BOX ON BRICK

2" 90° ELBOW

DRAIN HOLE TO BE DRILLED AFTER TESTING

2" NIPPLE

1 CU.FT. MIN OF 1½" WASHED GRAVEL

LINE BASIN WITH 1 LAYER OF MIRAFI 140

NOTES:
1. ALL 2" PIPE & FITTINGS TO BE THREADED BRASS.
2. MAINLINE ISOLATION VALVE SHALL BE PROVIDED WHERE TEMPORARY BLOW OFF IS REQUIRED.

2" BLOWOFF

1 of 1
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 RESTRAINT 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

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

CONCRETE EXTENSION COLLARS

GROUND LINE

72" Ø PRECAST CONC. FLAT M.H. COVER

(ASTM C 478)

BRACE \( \angle 2'' \times 2'' \times 1/4'' \)

72" Ø PRECAST CONC. M.H.

(ASTM C 478)

APPROVED MASTIC (TYP.)

2" THREADED BALL VALVE

SEE DETAIL A, STANDARD No. 211, 2 OF 3.

SECTION A-A

FOOTING DETAIL

8'-0"

4'-0"

4'-0"

5'-0"

1'-0"

1'-0"

72" Ø PRECAST CONCRETE MANHOLE

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

VENT PIPE

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

PLAN

SECTION A-A

#4 @ 18"

3-#6 CONT. (TYP.)

FOOTING DETAIL

72" Ø PRECAST CONCRETE MANHOLE

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

VENT PIPE

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

PLAN

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

09/25/2019

CITY ENGINEER

09/23/2019

DATE

AURORA WATER

DATE

2" AIR VACUUM VALVE INSTALLATION

1 of 3
NOTE:
USE 2-2" AIR VALVE ASSEMBLY ON 30" OR SMALLER DUCTILE IRON PIPE.

SEE STANDARD DETAIL #215

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

MORTAR
0-3 CONC. RINGS

VARES
72"

SEE DETAIL 'A'

6" CRUSHED ROCK
#4-12" (TYP.)

SPRING LINE
CONCRETE FOOTING

SECTION A-A

DETAIL A

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)

GROUND LINE

60" Ø PRECAST CONC. M.H.

STATION LOCATION

20" O.D. ACCESS M.H.

CONC. BASE BEAMS

ACCESS MANHOLE

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

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

BREAK-AWAY COUPLING

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

20" O.D. ACCESS M.H.

CONC. BASE FOOTING

12" 9" 9" 2'-0" 1'-6"

GROUND LINE

AIR/VACUUM VALVES

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.

AIR VALVE ASSEMBLY WITH ACCESS MANHOLE

AURORA WATER

CITY ENGINEER DATE

09/25/2019 09/23/2019

AURORA WATER

AURORA WATER 3 of 3

211-3
**NOTEs:**

1. **The Distance Between Rungs, Cleats, and Steps Shall Not Exceed 12 Inches and Shall Be Uniform Throughout the Length of the Ladder.**

2. 8" I.D. Min. Diameter Manhole for 16" & 24" Valves. 9" I.D. Min. Square Vault for 30" & 36" Valves.

3. 3/4" Coarse Aggregate (#67) to Be Placed 4" Thick Below Precast Base.

4. **Valve Is a Dead End When Closed. Refer to Detail 220-1 for Joint Restraint on Both Sides of Vault.**
STANDARD

SECTION "A"-"A"

BEND TO FIT AROUND 2" Ø RISER SHAFT

1/2" Ø HOLE FOR 3/8"x 2" WEJ-IT (TYP.)

6-5/8"Ø TOP SECTION

5-3/4"Ø EXT. PIECE

5" Ø OPENING

TOP SECTION

EXTENSION PIECE

HOLE FOR WEJ-IT

TOP SECTION OF VALVE BOX

1/2" ØHOLE FOR 3/8"x 2" WEJ-IT (TYP.)

12"x 12"x 3/16" STEEL PLATE

5" Ø OPENING

STOP PLATE 1" x 1" x 3/16" (TYP.)

PLAN

1-3/8" Ø HOLE

1/4" IP WASHER

VALVE OPERATOR EXTENSION CENTERING WASHER

1/4" RING

1 1/4" SQ. NUT

5/8" HEX NUT

5/8" LOCK WASHER

SWEDGE 1-1/4" BAR TO FIT OPERATING NUT

1/4" P WASHER

1-1/4" MILD STEEL BAR

2" VALVE OPERATING NUT

5/8" FLAT WASHER

3" x 3" x 3/8" SQ. SEAMLESS TUBING x 3-3/4" LONG.

EXTENSION GUIDE

UNIVERSAL EXTENSION KEY NOT ALLOWED

VALVE BOX SUPPORT PLATE & VALVE OPERATOR EXTENSION GUIDE

09/23/2019

09/25/2019

2 of 2

212-2
1. TWO 2" INSULATED CORPS INSTALLED ON TOP OF PIPE WITH 2" THREADED BALL VALVES INSTALLED.
2. LINK SEAL FOR ALL PIPE PENETRATIONS
3. ALL PIPE INSTALLED THROUGH THE VALVE SHALL ADHERE TO STANDARD 220-1 FOR TIED PIPE AND CONSIDER THE VALVE AS A DEAD END.
4. PRV OR CHECK VALVE WILL BE INSTALLED BY AURORA WATER PERSONNEL.
5. INSTALLATIONS LARGER THAN 12" OR THOSE THAT REQUIRE A BYPASS NEED A SPECIAL DESIGN APPROVED BY AURORA WATER ENGINEERING.
6. SUMP PIT IS 12"x12"x12" CAST IN PLACE SUMP PIT WITH REBAR REINFORCEMENT.
7. VAULT WILL BE INSTALLED TO PREVENT INFLOW AND INFILTRATION.
8. INSTALLATION MUST COMPLETE WATER QUALITY TESTING BEFORE INSTALLATION OF PRV/CHECK VALVE.
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

FABRICATED VENT SCREEN

6-5/8" O.D. GALVANIZED STEEL PIPE, SCHEDULE 40.

PVC GLUED BY THREADED FEMALE ADAPTER.

CENTER OF ADAPTER AT GROUND LEVEL.

6" PVC PIPE
ELEVATION
SCREEN FOR 6" VENT PIPE

METAL SCREEN

NOTE: BUG SCREEN TO BE INSTALLED ON INTERIOR OF METAL SCREEN.
6" VENT PIPE
CONCRETE PAD
20 GA. VENT BODY

BASE DETAIL

8" O.D. SEAMLESS ALUMINUM PIPE

2 1/2" X 2 1/2" X 1/8" STEEL OR ALUMINUM ANGLE (SEE DETAIL THIS SHEET)

POP RIVETS
GROUND LINE

6" VENT PIPE PVC SCHEDULE 40

1 1/2" X 1 1/2" X 6" CONCRETE PAD

ROUND VENT SCREEN

NOTE: COLOR SHALL BE OLIVE GREEN OR FLAT BLACK TO MATCH SURROUNDINGS.

8" VENT BODY

POP RIVETS

1/8" X 1" STEEL OR ALUMINUM (3 REQUIRED)

90°

2 1/2"

3 1/2"

3 1/2"

3 1/2"

2 1/2"

STEEL OR ALUMINUM ANGLE DETAIL
ADJUSTABLE-SUPPORT
(STANDARD)

ADJUSTABLE-SUPPORT
(HEAVY DUTY)

TO MATCH VALVE BODY,
PIPE OR METER.

5/8" Ø x 2-1/2" x 6" BAR
BENT AS SHOWN.

1-1/4" DIA. THREADED ROD

1-1/4" STANDARD HEX NUT

1/2" Ø x 2-1/2" x 2-1/2"

1-1/2" DIA. STEEL PIPE

1/2" Ø x 5" x 5"

6" MIN.

3/4" Ø x 2-1/2" x 6" BAR
BENT AS SHOWN.

2" DIA. THREADED ROD

2" HEAVY HEX NUT

5/8" Ø x 4" x 4" BAR

3" DIA. STEEL PIPE

5/8" Ø x 9" x 9"

6" MIN.
NOTE: INSTALL ANODES A MINIMUM OF 3 FEET OR ONE (1) PIPE DIAMETER (WHICHERVER 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
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 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.
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    - WHITE = INSULATED OR BONDED STRUCTURE
    - YELLOW = REFERENCE ELECTRODE
    - GREEN = METALLIC COUPON

AURORA WATER

03/15/2021  03/01/2021

IR-FREE TEST STATION

2 of 7

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 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 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費 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
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   YELLOW = REFERENCE ELECTRODE
   GREEN = METALLIC COUPON

AURORA WATER

03/15/2021

CITY ENGINEER

DATE

03/01/2021

AURORA WATER

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 COMMON 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 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 WIRE 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>12&quot; OR LESS</td>
<td>#8</td>
<td>2</td>
</tr>
<tr>
<td>12&quot; - 36&quot;</td>
<td>#4</td>
<td>2</td>
</tr>
<tr>
<td>&gt; 36&quot;</td>
<td>#2</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.

INSULATED COUPLING BONDING

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.

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<thead>
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<tbody>
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<td>#8</td>
<td>2</td>
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<tr>
<td>13&quot;-36&quot;</td>
<td>#4</td>
<td>2</td>
</tr>
<tr>
<td>&gt;36&quot;</td>
<td>#2</td>
<td>3</td>
</tr>
</tbody>
</table>

MECHANICAL COUPLING BONDING
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>BENDS</th>
<th>TEE OR DEAD END</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>11 1/4''</td>
<td>22 1/2''</td>
</tr>
<tr>
<td>6''</td>
<td>1.0</td>
<td>1.5</td>
</tr>
<tr>
<td>8''</td>
<td>1.5</td>
<td>2.5</td>
</tr>
<tr>
<td>12''</td>
<td>3.0</td>
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<td>16''</td>
<td>4.0</td>
<td>7.0</td>
</tr>
<tr>
<td>24''</td>
<td>8.0</td>
<td>15.5</td>
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</table>

Pp=2000 PSF

LENGTH OF TIED PIPE (ft)

<table>
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<tr>
<th>SIZE OF PIPE DIA</th>
<th>HORIZONTAL BENDS</th>
<th>TEE OR DEAD END</th>
</tr>
</thead>
<tbody>
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<td>10.0</td>
<td>20.0</td>
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<tr>
<td>24''</td>
<td>15.0</td>
<td>30.0</td>
</tr>
</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.
DETAIL B

GRAVITY BLOCKS SHALL BE CONICAL IN SHAPE

WATERLINE LOWERING DETAIL

GRAVITY BLOCKS

MINIMUM VOLUME (IN CUBIC FEET)

<table>
<thead>
<tr>
<th>SIZE OF PIPE</th>
<th>BENDS</th>
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<tbody>
<tr>
<td></td>
<td>11 1/4&quot;</td>
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<tr>
<td>6&quot;</td>
<td>10.5</td>
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<td>8&quot;</td>
<td>17.5</td>
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<tr>
<td>12&quot;</td>
<td>37.0</td>
</tr>
<tr>
<td>16&quot;</td>
<td>48.5</td>
</tr>
<tr>
<td>24&quot;</td>
<td>106.0</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) APPROPRIATELY 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.
NOTE:
1. ALL PIPE SHALL BE WRAPPED IN
   POLYETHYLENE AND RESTRAINED
2. PVC PIPE IS ALLOWED WITH
   APPROVAL BASED ON SOIL
   RESISTIVITY TESTING.

PRIVATE (FIRE LINE ONLY)

M.J. ANCHORING TEE
(SWIVEL TEE WHERE APPLICABLE)

PRIVATE

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

TAPPING VALVE (4" MIN.)

TIE RODS
(MEGALUGS MAY
BE USED IN PLACE
OF RODDING)

PRIVATE

CONCRETE
KICKBLOCK

CONCRETE
KICKBLOCK

FLARED COPPER CONNECTION

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

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

SERVICE INSULATOR

TYPE 'K' COPPER

2" OR SMALLER FIRELINE

3" OR LARGER FIRELINE CONNECTION

4" X 3" REDUCER (IF NECESSARY)

4" MIN.

DUCTILE IRON PIPE OR PVC

THRUITE BLOCK & TIE BACK
DETAIL (FIRE SUPPRESSION
SYSTEMS ONLY)
FLANGE SPIGOT

NOTE:
1. PVC PIPE IS ALLOWED WITH APPROVAL BASED ON SOIL RESISTIVITY TESTING.
STANDARD

TYPICAL REDUCED PRESSURE
BACKFLOW PREVENTION DEVICE

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.
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.
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)
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.
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.
STANDARD

TRENCH

MEGALUG (OPTIONAL)

3 ~ #4

#4 @ 12" O.C.

3 ~ #1

NO PIPE JOINTS ARE ALLOWED BETWEEN ANCHOR & CAP

ASTM A-36 THREADED STEEL RODS

MEGALUG TIE RODS MAY BE THREADED TO MEGALUG OR THROUGH BLOCK.

TIE ROD DIAMETERS

<table>
<thead>
<tr>
<th>D</th>
<th>ROD</th>
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<tbody>
<tr>
<td>4&quot;</td>
<td>2 ~ 3/4&quot;</td>
</tr>
<tr>
<td>6&quot;</td>
<td>2 ~ 3/4&quot;</td>
</tr>
<tr>
<td>8&quot;</td>
<td>2 ~ 3/4&quot;</td>
</tr>
<tr>
<td>12&quot;</td>
<td>2 ~ 1&quot; OR 4 ~ 3/4&quot;</td>
</tr>
<tr>
<td>16&quot;</td>
<td>4 ~ 7/8&quot;</td>
</tr>
<tr>
<td>24&quot;</td>
<td>4 ~ 7/8&quot;</td>
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</tbody>
</table>

NOTES:
1. 2" B.O. FOR ≤ 12" Ø
2. 6" B.O. FOR > 12" Ø

<table>
<thead>
<tr>
<th>D</th>
<th>a</th>
<th>b</th>
<th>c</th>
<th>e</th>
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<td>40&quot;</td>
<td>73&quot;</td>
<td>64&quot;</td>
<td>186&quot;</td>
</tr>
</tbody>
</table>

AURORA WATER
NOTES:

1. SAMPLING STATION SHALL BE 4.5' BURY, WITH A 3/4" FIP 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.

ITEM | ITEM / DESCRIPTION
--- | ---
1 | TOP ACCESS DOOR
2 | PADLOCK EYE
3 | PADLOCK HASP
4 | FRONT ACCESS DOOR
5 | BLOW OFF & SAMPLING BIBB
6 | 6" ALUMINUM SQUARE BOX
7 | PET COCK
8 | 1/2" S.S. WATERWAY
9 | 1/4" S.S. TUBING
10 | VALVE BOX & CURB STOP
11 | 3/4" S.S. NIPPLE
12 | 3/8" TYPE K COPPER PIPE
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

AURORA WATER

SANITARY SEWER SERVICE DETAIL

1 of 1
300-1
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.
STANDARD

VALVE BOX W/ LID LABELED "PRIVATE STORM"
(VALVE BOX SHALL BE 1/8" TO 1/2" BELOW
THE PAVEMENT SURFACE)

MANHOLE LID FLUSH WITH GRADE

ASPHALT
SUBGRADE

RISER TO BE STRAPPED
TO MANHOLE USING
STAINLESS STEEL STRAPS
WITH NO PENETRATION INTO
BARREL PRIOR TO BACKFILL

MAXIMIZE DIST
FROM VALVE BOX
TO MH ACCESS

6" PVC
RISER

EXPANSION JOINT
MATERIAL PLACED
BETWEEN RISER &
MANHOLE BARREL

45° BEND

8" MANHOLE BASE

8" MIN

WYE

6" PVC UNDERDRAIN

MANHOLE BASE

45° BEND

WYE

DEFLECT 6" UNDERDRAIN AROUND MANHOLE BASE

FLOW

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.

AURORA WATER

CITY ENGINEER
09/25/2019
DATE
09/23/2019
DATE

PRIVATE UNDERDRAIN
CLEANOUT CONNECTION

1 of 1

302-1
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 (H-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 RAMMEK.
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.

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

AURORA WATER

RECOMMENDED
GREASE INTERCEPTOR
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 (H6-20 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 Ramneen.
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

NOTES
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 CDOT 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)
SECTION B-B
TYPICAL END VIEW

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)

LIP

PLAN
TRANSITION MOUNTABLE CURB & GUTTER TO CURB OPENING INLET

SEE NOTE

MOUNTABLE CURB & GUTTER - BEYOND

2'-0"

8"

1-1/2"

THROAT ELEVATION

SEE NOTE

THROAT CONFIGURATION DETAIL
CURB OPENING INLET WITH MOUNTABLE CURB & GUTTER

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

THROAT CONFIGURATION DETAIL
CURB OPENING INLET WITH VERTICAL CURB & GUTTER

CURB OPENING INLET
TYPE 'R' MODIFIED

AURORA WATER

CITY ENGINEER
09/25/2019
DATE

09/23/2019
DATE

400-6
NOTES:

1. PROVIDE A 1 1/2" DEEP CONTROL JOINT THROUGH THE INLET DECK AT EACH INTERMEDIATE WALL PER S7.3 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.
BEND EXPOSED REINFORCING STEEL IN CONCRETE COLLAR AND TIE TO RING BARS

2 - #4 RING BARS

6" MIN.

CONCRETE COLLAR ALL AROUND F = 2000 PSI MIN.

1' MIN.

GROUT AND SHAPE OPENING ALL AROUND CONNECTOR PIPE WITH NON-SHRINK GROUT (A.S.T.M. C-827)

RCP MAIN

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.)
A) 0.4% MINIMUM LONGITUDINAL SLOPE

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

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