INSTALL METER WIRE PROVIDED BY TOWN AT SIDE OF HOUSE NO MORE THAN 4' BACK FROM FRONT AND 4' ABOVE FINISHED GRADE AT EXTERIOR OF HOUSE. METER WIRE SHALL NOT BE BLOCKED BY FENCE, LANDSCAPING, FIXTURES, OR BACKFLOW ASSEMBLY. LEAVE WIRE LONG ENOUGH TO FREELY MOVE 2' IN AND OUT OF EXTERIOR WALL. WIRE CANNOT BE PINCHED AT EXTERIOR WALL. TOTAL LENGTH OF WIRE SHALL NOT EXCEED 50'.

METERS WILL NOT BE SET IF CURB STOP BOX IS NOT UP TO FINISHED GRADE, IF WIRE IS MISSING OR IN WRONG AREA, OR IF AN ASSEMBLY IS NOT IN PLACE.

NOTES:
1. METER SHALL BE SUPPLIED BY THE TOWN AND AVAILABLE FOR PICKUP AT CASTLE ROCK WATER. PROOF OF PERMIT AND PAID TAP FEES ARE REQUIRED IN ORDER TO OBTAIN METER.
2. TWO 2x4s MUST BE SECURED TO WALL WITH METER TREE SECURED TO 2x4s. BOTH 2x4s MUST BE 24" MIN. LENGTH. PIPE SHALL BE SECURED TO 2x4 WITH 3/4" STRAP SCREWED ON EITHER SIDE, OR WITH PIPE BRACKETS. IF SINGLE NAIL PIPE BRACKETS ARE USED, TWO MUST BE USED IN OPPOSING DIRECTION ON EACH 2x4. METER TREE SHOULD NOT MOVE AWAY FROM WALL OR 2x4s.
3. METER YOKE SHALL BE A NUMBER 2 COPPERHORN LEFT HAND ENTRANCE. A.Y. MCDONALD 7432Y2-DD33 OR AN APPROVED EQUAL (5/8" X 3/4" METER).
4. 3/4" TYPE K COPPER - INSTALLED CONTINUOUS FROM CURB STOP TO COPPERHORN.
5. CURB STOP SHALL BE LOCATED IN ACCORDANCE WITH DETAIL W-2 AND BE FREE OF DEBRIS TO ALLOW OPERATION.
6. CURB STOPS ARE NOT ALLOWED IN DRIVEWAYS WITHOUT AN APPROVED TECHNICAL CRITERIA VARIANCE. REFER TO DETAIL W-40.
7. THE P.R.V. MUST BE MAINTAINABLE AND ADJUSTABLE.
8. COMPRESSION FITTINGS ARE NOT ALLOWED ON METER TREE.
9. BACKFLOW PREVENTION ASSEMBLY INSTALLATION IS REQUIRED PRIOR TO CALLING IN A METER SET.
10. A DOUBLE CHECK VALVE ASSEMBLY IS REQUIRED. FOR OTHER INSTALLATION ORIENTATIONS, CALL CASTLE ROCK WATER. THERE SHALL BE NO TEES PRIOR TO THIS POINT.
11. ALL ASSEMBLIES, INCLUDING TESTABLE ISOLATION DEVICES, MUST BE TESTED BY A CERTIFIED COLORADO CROSS CONNECTION CONTROL TECHNICIAN, AND SUCCESSFULLY PASS PRIOR TO ISSUANCE OF THE CERTIFICATE OF OCCUPANCY AND TESTED ANNUALLY THEREAFTER.
NOTES:

1. BALL VALVE, PN: B21-333
2. IPEARL METER WILL BE PROVIDED BY THE TOWN AND INSTALLED BY THE CONTRACTOR.
3. BALL VALVE, PN: B11-333 (FORD)
4. PRV MUST BE INSTALLED PER PLUMBING CODE.
5. APPROVED BACKFLOW PREVENTION ASSEMBLY, HORIZONTAL INSTALLATION. CALL CASTLE ROCK WATER FOR OTHER INSTALLATION ORIENTATIONS. THERE SHALL BE NO TEES PRIOR TO THIS POINT.
6. NUMBER 2 COPPERHORN PN: CH88-233 (1" - V82 FORD METER BOX CO.)
7. CURB STOP SHALL BE PLACED IN THE UTILITY EASEMENT OR ROW.
8. EXPANSION TANK (2 GAL. MIN.), AS REQUIRED BY PLUMBING CODE.
9. 3/4" & 1" TYPE K COPPER - INSTALLED CONTINUOUS FROM CURB STOP TO COPPERHORN.
10. BACKFLOW PREVENTION ASSEMBLY INSTALLATION IS REQUIRED PRIOR TO CALLING IN A METER SET.
11. REQUIRED REDUCED PRESSURE BACKFLOW PREVENTION ASSEMBLY TYPE IS CONTINGENT ON TYPE OF WATER USE, AS DETERMINED BY TOWN OF CASTLE ROCK WATER.
12. METERS WILL NOT BE SET IF CURB STOP BOX IS NOT UP TO GRADE, IF WIRE IS MISSING OR IN WRONG AREA, OR IF AN ASSEMBLY IS NOT IN PLACE.

INSTALL METER WIRE PROVIDED BY TOWN NO MORE THAN 4' BACK FROM FRONT AND 4' ABOVE FINISHED GRADE AT EXTERIOR OF BUILDING. METER WIRE SHALL NOT BE BLOCKED BY FENCE OR LANDSCAPING. LEAVE WIRE LONG ENOUGH TO FREELY MOVE 2' IN AND OUT OF EXTERIOR WALL. TOTAL LENGTH OF WIRE SHALL NOT EXCEED 50'.
NOTES:

1. BALL VALVE, FORD B21-333
2. iPEARL METER SHALL BE SUPPLIED BY THE TOWN AND INSTALLED BY THE CONTRACTOR
3. PRV MUST BE ACCESSIBLE.
4. APPROVED REDUCED PRESSURE BACKFLOW PREVENTION ASSEMBLY SHALL BE INSTALLED HORIZONTAL. FOR OTHER ORIENTATIONS, CONTACT CASTLE ROCK WATER. THERE SHALL BE NO TEES PRIOR TO THIS POINT.
5. NUMBER 2 COPPERHORN PN: CH88-233 (1" - V82 FORD METER BOX CO.)
6. CURB STOP SHALL BE PLACED IN THE UTILITY EASEMENT OR ROW.
7. EXPANSION TANK (2 GAL. MIN.)
8. 3/4" & 1" TYPE K COPPER - INSTALLED CONTINUOUS FROM CURB STOP TO COPPERHORN.
9. BACKFLOW PREVENTION ASSEMBLY INSTALLATION IS REQUIRED PRIOR TO CALLING IN A METER SET.
10. REQUIRED BACKFLOW PREVENTION ASSEMBLY TYPE IS CONTINGENT ON TYPE OF WATER USE, AS DETERMINED BY TOWN OF CASTLE ROCK WATER.
11. METERS WILL NOT BE SET IF CURB STOP BOX IS NOT UP TO GRADE, IF WIRE IS MISSING OR IN WRONG AREA, OR IF AN ASSEMBLY IS NOT IN PLACE.

INSTALL METER WIRE INSIDE OF CONDUIT THROUGH FINISHED WALLS & CEILINGS 1/2" EMT

EXPANSION TANK

REDUCED PRESSURE BACKFLOW PREVENTION ASSEMBLY (AS REQUIRED BY TOWN)

NOTE: DUAL VALVE BOXES ARE REQUIRED WHEN CURBSTOP FALLS WITHIN ASPHALT

INSTALL METER WIRE PROVIDED BY TOWN NO MORE THAN 4' BACK FROM FRONT AND 4' ABOVE FINISHED GRADE AT EXTERIOR OF BUILDING. METER WIRE SHALL NOT BE BLOCKED BY FENCE OR LANDSCAPING. LEAVE WIRE LONG ENOUGH TO FREELY MOVE 2' IN AND OUT OF EXTERIOR WALL. TOTAL LENGTH OF WIRE SHALL NOT EXCEED 50'.
LOCATE CURB BOX/STOP 1' MIN. BEHIND SIDEWALK WHEN SIDEWALK IS ATTACHED. CURB BOX/STOP SHALL BE LOCATED IN TOWN R.O.W OR UTILITY EASEMENT. IF NOT, AN EASEMENT 10' WIDE FROM THE R.O.W., EXTENDING 3' BEHIND THE CURB BOX/STOP WILL BE REQUIRED (SEE DETAIL W-3 FOR CURB BOX & BALL VALVE SPECIFICATIONS).

Curb box (McDonald 5601 W/ 304 STAINLESS STEEL ROD)

Ball valve (3/4" B22-333, 1" B22-444)

Type K Copper - (Typ)

Frame & Recessed Lid Winner Frost Cover (with offset 1 7/8" Touch Read Pit Lid). Hole must be drilled in lid for MXU

Min. 12" Clearance
Max. 16" Clearance

Copper setter w/ Padlock Wings 3/4" & 1" V82 Ford Meter Box Co.

Reinforced Precast Concrete Rings W/ 2" Min. Wall Thickness (See Note 2)

Backflow Prevention and P.R.V. Required Before Meter Set

Standard Concrete Brick or Equal. Not to extend underneath service lines.

LOCATE CURB BOX/STOP 1' MIN. BEHIND SIDEWALK WHEN SIDEWALK IS ATTACHED, AND CENTERED BETWEEN THE CURB AND SIDEWALK WHEN SIDEWALK IS DETACHED. CURB BOX/STOP SHALL BE LOCATED IN TOWN R.O.W. OR UTILITY EASEMENT (SEE DETAIL W-3 FOR CURB BOX & BALL VALVE SPECIFICATIONS).

Curb box (McDonald 5601 Arch Pattern W/Lid)

Ball valve (3/4" B22-333, 1" B22-444)

Type K Copper - (Typ)

Water Main Tap w/ Double Bronze Service Clamp & Corp Stop (With Service Insulator If D.I.P. Main)

Type K Copper Service Line Shall Be Continuous From Main To Ball Valve At Curbs Box/Stop. No Coupled Fittings Allowed.

Any Variation or Deviation from this Standard Requires Approval Prior to Installation From Castle Rock Water.

3/4" = 7 3/4"
1" = 11 1/4"
*Lay Lengths Include Two 1/8" Gaskets

Water Meter Lay Lengths

REMOTE READ IN BUILDING

REMOTE READ IN METER PIT

3/4 Inch & 1 Inch Water Services

Town of Castle Rock
Development Services

Detail Plan No. W-2

Issued By: Town of Castle Rock, Development Services March 22, 2019

Sheet 1 of 1
NOTES:

1. ANY VARIATION OR DEVIATION FROM THIS STANDARD REQUIRES APPROVAL PRIOR TO INSTALLATION FROM CASTLE ROCK WATER.

2. METER PIT SHALL BE INSTALLED IN LANDSCAPED AREA WITHIN THE 10' UTILITY EASEMENT ALONG FRONT LOT LINE; A MINIMUM OF 3' WITHIN THE EASEMENT. PRIOR APPROVAL REQUIRES INSTALLATIONS IN ROADWAYS, DRIVEWAYS OR SIDEWALKS. ROAD LIDS OR OTHER SPECIAL MODIFICATIONS MAY BE REQUIRED.

3. CURB STOP SHALL BE A MINIMUM OF 24 INCHES FROM INLET SIDE OF METER PIT, LOCATED IN LANDSCAPED AREA IF POSSIBLE. CURB STOP SHALL NOT BE LOCATED IN PAVED AREAS UNLESS APPROVED BY VARIANCE.

4. ALL METER PITS SHALL BE FURNISHED WITH CI METER PIT LID WITH 7 1/2 INCH DEEP DEPRESSION AND 2 INCH CENTER HOLE FOR METER REMOTE UNIT, PLUS THREE DRAIN HOLES IN RECESSED AREA.

5. ALL METER PITS SHALL BE FURNISHED WITH PLASTIC FROST LID WITH 3-INCH DEEP TRENCH, FIVE DRAIN HOLES, LIFTING HANDLE, AND SLOT FOR SIGNAL WIRE RUNNING FULL DEPTH OF LIP.

6. METER PIT SHALL BE A TOTAL HEIGHT OF 48 INCHES AND 24 INCHES I.D. FOR BOTH 3/4" AND 1" SERVICES. PIT SHALL BE INSTALLED TO MAINTAIN PIT LID 3-INCH BELOW FINISHED GRADE. ALL REQUIRED INSTALLATIONS SHALL BE BROUGHT TO GRADE BEFORE METER IS SET. METERS WILL NOT BE SET IF CURB STOP BOX IS NOT UP TO GRADE, IF WIRE IS MISSING OR IN WRONG AREA, OR IF AN APPROVED BACKFLOW PREVENTION ASSEMBLY IS NOT IN PLACE.

7. "K" COPPER SERVICE LINES SHALL BE CONTINUOUS FROM MAIN TO CURB STOP.

8. COMPRESSION (WITH CRUSH RING) COUPLINGS SHALL BE USED AT THE CORP STOP.

9. COPPER SETTER SHALL BE FORD V82W-44G-33 (3/4" X 3/4"), FORD V84W-44G-44 (1"), OR MUELLER B-2474-SPECIFY SIZE (WITH LOCK WINGS).

10. HDPE METER PIT SUPPORT: USE MIN. 3 1/4" DIA. PVC SCHED. 40 PIPE FOR SUPPORT BAR W/I TWO 3/4" PVC CAPS AND HEAVY DUTY NYLON FASTENERS. SEAL EXTERIOR HOLES AROUND SUPPORT PIPE WITH PERMATEX RTV SILICONE ADHESIVE PRIOR TO INSTALLING PIPE CAPS.
NOTES:

1. FLANGED METER AND WIRE SHALL BE SUPPLIED BY THE TOWN AND INSTALLED BY THE CONTRACTOR.
2. FORD 1½" CUSTOMSETTER 1.5"-VBB76-12B-11-66-NL & C84-66QNL; 2" METER 2"-VBB77-12B-11-77-NL & C84-77QNL WITH BYPASS.
3. METER WILL NOT BE SET IF CURB STOP BOX IS NOT UP TO GRADE, IF WIRE IS MISSING OR IN WRONG AREA, OR IF AN ASSEMBLY IS NOT IN PLACE.
4. THERMAL EXPANSION REQUIRED ON POTABLE SERVICES, NOT REQUIRED ON IRRIGATION SERVICES.
5. WHEN INSTALLING SENSUS OMNI METERS WITH STRAINER, A MINIMUM OF 2½ PIPE DIAMETERS OF STRAIGHT RUN PIPE OR EQUIVALENT FULL OPEN COMPONENTS IS REQUIRED UPSTREAM AND DOWNSSTREAM OF THE METER OR STRAINER FLANGES. FULL OPEN FLOW COMPONENTS MAY CONSIST OF: STRAIGHT PIPE, FULL OPEN GATE VALVES, BYPASS TEES AND CONCENTRIC REDUCERS (1 NOMINAL PIPE SIZE REDUCTION ONLY). FOR ALL OTHER INSTALLATION CONFIGURATIONS, A MINIMUM OF 5 PIPE DIAMETERS OF STRAIGHT RUN IS REQUIRED UPSTREAM.

**METER LAY LENGTH TABLE**

<table>
<thead>
<tr>
<th>METER</th>
<th>LAY LENGTH</th>
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</thead>
<tbody>
<tr>
<td>1½&quot; METER</td>
<td>13 ½&quot;</td>
</tr>
<tr>
<td>2&quot; METER</td>
<td>15 ½&quot;</td>
</tr>
</tbody>
</table>

*LENGTH INCLUDES TWO (2) ½" GASKETS*
5' COVER DISTANCE PER PLAN
EDGE OF R.O.W.

FRAME & RECESSED LID W/ INNER FROST COVER
(COVER TO HAVE OFFSET 1 7/8" TOUCH READ PIT LID)
HOLE MUST BE DRILLED IN LID FOR MXU

GRADE RINGS AS REQUIRED (NOT TO EXCEED 12")

COPPER SETTER W/ PADLOCK WINGS
3/4" & 1" - V82 FORD METER BOX CO.

METER PIT & CURB BOX ARE LOCATED A MINIMUM OF 1' FROM SIDEWALK IN R.O.W.
FOR ATTACHED & DETACHED CONFIGURATIONS

APPROVED BACKFLOW PREVENTION ASSEMBLY

6" THICK ROCK OR APPROVED EQUAL

TYPE K COPPER SERVICE LINE SHALL BE CONTINUOUS FROM MAIN TO BALL VALVE IN METER PIT OR MCDONALD BOX OUTSIDE OF PIT OR CURB STOP AT R.O.W. NO COUPLED FITTINGS ALLOWED

CURB BOX (MCDONALD 5603 ARCH PATTERN W/ 5601-I LID AND 304 STAINLESS STEEL ROD)

DOUBLE STRAP BRONZE SERVICE CLAMP FOR ALL DIP MAINS. BRONZE SADDLE DESIGN FOR PVC CORP STOP (W/ INSULATOR IF DIP MAIN)

WIRE 12"-16"

TYPE K COPPER SERVICE LINE SHALL BE CONTINUOUS FROM MAIN TO BALL VALVE IN METER PIT OR MCDONALD BOX OUTSIDE OF PIT OR CURB STOP AT R.O.W. NO COUPLED FITTINGS ALLOWED

VALVE BOX BY OWNER

REINFORCED PRECAST CONCRETE SECTIONS W/ 2" MIN. WALL THICKNESS OR ALTERNATIVE MID-STATES 2 PIECE 2024x48

STOP AND WASTE VALVE (COMPRESSION TYPE)

FRAME & RECESSED LID W/ INNER FROST COVER
(COVER TO HAVE OFFSET 1 7/8" TOUCH READ PIT LID)
HOLE MUST BE DRILLED IN LID FOR MXU

GRADE RINGS AS REQUIRED (NOT TO EXCEED 12")

3/4" = 7 3/4"
1" = 11 1/4"

"LAY LENGTHS INCLUDE TWO 1/8" GASKETS"

NOTES
1. METER AND WIRE SUPPLIED BY THE TOWN, CONTRACTOR TO INSTALL.
2. METER WILL NOT BE RELEASED TO CONTRACTOR IF CURB STOP BOX IS NOT UP TO FINISHED GRADE, IF WIRE IS MISSING OR IN WRONG AREA, OR IF AN ASSEMBLY IS NOT IN PLACE.
3. PRIOR TO METER RELEASE, IRRIGATION POINT OF CONNECTION MUST BE COMPLETE AS INDICATED ON TOWN DETAIL IR-9.
NOTES:
1. FLANGED METER AND WIRE SUPPLIED BY THE TOWN, CONTRACTOR TO INSTALL.
2. FORD 1.5" METER VBB76-12-11-66-NL & C84-66QNL; 2" METER VBB77-12-11-77-NL & C84-77QNL WITHOUT BYPASS.
3. PRIOR TO METER RELEASE, IRRIGATION POINT OF CONNECTION MUST BE COMPLETE AS INDICATED ON TOWN DETAIL IR-9.
4. WHEN INSTALLING SENSUS OMNI METERS WITH STRAINER, A MINIMUM OF 2 \( \frac{1}{2} \) PIPE DIAMETERS OF STRAIGHT RUN PIPE OR EQUIVALENT FULL OPEN COMPONENTS IS REQUIRED UPSTREAM AND DOWNSTREAM OF THE METER OR STRAINER FLANGES. FULL OPEN FLOW COMPONENTS MAY CONSIST OF: STRAIGHT PIPE, FULL OPEN GATE VALVES, BYPASS TEES AND CONCENTRIC REDUCERS (1 NOMINAL PIPE SIZE REDUCTION ONLY). FOR ALL OTHER INSTALLATION CONFIGURATIONS, A MINIMUM OF 5 PIPE DIAMETERS OF STRAIGHT RUN IS REQUIRED UPSTREAM.

<table>
<thead>
<tr>
<th>Diameter</th>
<th>Length</th>
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</thead>
<tbody>
<tr>
<td>1 1/2&quot; METER</td>
<td>13 1/4&quot;</td>
</tr>
<tr>
<td>2&quot; METER</td>
<td>17 1/4&quot;</td>
</tr>
</tbody>
</table>

* LENGTH INCLUDES TWO (2) 1/8" GASKETS
FORD MONITOR COVER (NONTRAFFIC)  
MC-24MBT W/PVC INNER LID  
1 1/2" HOLE DRILLED IN LID  
NO EXCEPTIONS

CUT-IN TEE & GATE VALVE  
W/ 2" OPERATING NUT  
PRESSURE CLASS 350 D.I.P.  
ON POTABLE INSTALLATIONS & SDR21, CLASS 200 P.S.I.  
PVC ON IRRIGATION INSTALLATIONS (TYP)

METER RISING STEM OS & Y  
GATE VALVE W/ TAMPER SWITCH (TYP)

GRADE RINGS AS REQUIRED  
(NOT TO EXCEED 12")

NOTES:
1. METER SUPPLIED BY THE TOWN & INSTALLED BY THE CONTRACTOR
2. IF PRECAST VAULT IS NOT USED, VAULT SHOP DRAWINGS ARE TO BE SUBMITTED AT TIME OF PROJECT PLAN APPROVAL.
3. BYPASS VALVE CAN RUN ON OUTSIDE OF VAULT WITH A STREET VALVE. VALVE BOX REQUIRED WHEN BYPASS VALVE IS LOCATED OUTSIDE OF VAULT. VALVE BOX SHALL BE INSTALLED IN ACCORDANCE WITH DETAIL W-10. A 2" OPERATING NUT IS REQUIRED WHEN BYPASS VALVE IS LOCATED OUTSIDE OF VAULT.
4. PRV REQUIRED.
5. NO BYPASS ON IRRIGATION INSTALLATIONS.
6. THE PIPE MATERIAL BETWEEN THE EXISTING WATER LINE AND THE CUT-IN TEE SHALL REMAIN CONSISTENT.
7. THE MINIMUM CLEARANCE BETWEEN THE VAULT WALL AND ALL FLANGES, FITTINGS, VALVES, METERS, ETC. SHALL BE 2'.
8. WHEN INSTALLING SENSUS OMNI METERS WITH STRAINER, A MINIMUM OF 2 1/2 PIPE DIAMETERS OF STRAIGHT RUN PIPE OR EQUIVALENT FULL OPEN COMPONENTS IS REQUIRED UPSTREAM AND DOWNSTREAM OF THE METER OR STRAINER FLANGES. FULL OPEN FLOW COMPONENTS MAY CONSIST OF: STRAIGHT PIPE, FULL OPEN GATE VALVES, BYPASS TEES AND CONCENTRIC REDUCERS (1 NOMINAL PIPE SIZE REDUCTION ONLY). FOR ALL OTHER INSTALLATION CONFIGURATIONS, A MINIMUM OF 5 PIPE DIAMETERS OF STRAIGHT RUN IS REQUIRED UPSTREAM.
9. APPROVED BACKFLOW ASSEMBLY REQUIRED DOWNSTREAM OF THE VAULT. BACKFLOW ASSEMBLY TO BE INSTALLED INSIDE BUILDING FOR COMMERCIAL APPLICATIONS AND IN SEPARATE VAULT FOR IRRIGATION APPLICATIONS.

METER LAY LENGTH TABLE

<table>
<thead>
<tr>
<th>Diameter</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>3&quot; Meter</td>
<td>17 1/4&quot;</td>
</tr>
<tr>
<td>4&quot; Meter</td>
<td>23 1/4&quot;</td>
</tr>
</tbody>
</table>

* LENGTH INCLUDES TWO (2) 1/8" GASKETS
1. VAULT WALL & FLOOR THICKNESS 6" MIN.
2. ALL VALVES TO HAVE HANDWHEELS AND BYPASS VALVES LOCKABLE OR CHAINABLE.
3. IF PRECAST VAULT IS NOT USED, VAULT SHOP DRAWINGS ARE TO BE SUBMITTED AT TIME OF PROJECT PLAN APPROVAL.
4. BYPASS VALVE CAN RUN ON OUTSIDE OF VAULT WITH A STREET VALVE AND BOX. VALVE BOX SHALL BE INSTALLED IN ACCORDANCE WITH DETAIL W-10. A 2" OPERATING NUT IS REQUIRED WHEN BYPASS VALVE IS LOCATED OUTSIDE OF VAULT.
5. PRV REQUIRED.
6. THE PIPE MATERIAL BETWEEN THE EXISTING WATER LINE AND THE CUT-IN TEE SHALL REMAIN CONSISTENT.
7. THE MINIMUM CLEARANCE BETWEEN THE VAULT WALL AND ALL FLANGES, FITTINGS, VALVES, METERS, ETC. SHALL BE 2'.
8. WHEN INSTALLING SENSUS OMNI METER WITH STRAINER, A MINIMUM OF 2 1/2 PIPE DIAMETERS OF STRAIGHT RUN PIPE OR EQUIVALENT FULL OPEN COMPONENTS IS REQUIRED UPSTREAM AND DOWNSTREAM OF THE METER OR STRAINER FLANGES. FULL OPEN FLOW COMPONENTS MAY CONSIST OF: STRAIGHT PIPE, FULL OPEN GATE VALVES, BYPASS TEES AND CONCENTRIC REDUCERS (1 NOMINAL PIPE SIZE REDUCTION ONLY). FOR ALL OTHER INSTALLATION CONFIGURATIONS, A MINIMUM OF 5 PIPE DIAMETERS OF STRAIGHT RUN IS REQUIRED UPSTREAM.
9. APPROVED BACKFLOW ASSEMBLY REQUIRED DOWNSTREAM OF VAULT. BACKFLOW ASSEMBLY TO BE INSTALLED INSIDE BUILDING FOR COMMERCIAL APPLICATIONS AND IN SEPARATE VAULT FOR IRRIGATION APPLICATIONS.
10. SHOP DRAWINGS MUST BE PROVIDED TO AND APPROVED BY CASTLE ROCK WATER.
11. ALL PIPES SHALL BE FULLY RESTRAINED.
NOTES:

1. 1/4 TURN BALL VALVES WITH HANDLE BYPASS TO BE LOCKABLE.

2. BACKFLOW PREVENTERS SHALL CONFORM TO THE COLORADO CROSS CONNECTION CONTROL MANUAL AND THE FOUNDATION FOR CROSS CONNECTION CONTROL HYDRAULIC RESEARCH FOR PROPER APPLICATIONS, INSTALLATION AND INSPECTION. MINIMUM CLEARANCE 12", MAXIMUM CLEARANCE 36", MINIMUM SIDE CLEARANCE WHEN SIDE LOCK FACES A WALL 24". WHEN TEST LOCKS ARE FACING AWAY FROM WALL MINIMUM CLEARANCE OF 12". NO ELECTRICAL COMPONENTS IN THE SAME GENERAL AREA AS THE BACKFLOW ASSEMBLY.

3. METER INSTALLED AND CONNECTIONS MADE BY TOWN.

4. WIRE SUPPLIED BY TOWN TO BE 3 CONDUCTOR 18 GAUGE.
NOTES:

1. INSTALL METER IN HORIZONTAL PLANE W/ METER SET UPRIGHT ONLY.

2. NO GATE OR BUTTERFLY VALVES ON 1 1/2" OR 2" SERVICE. USE 1/4 TURN BALL VALVES WITH HANDLE. BYPASS MUST BE LOCKABLE WITH PADLOCK PROVIDED BY CASTLE ROCK WATER.

3. METER AND WIRE PROVIDED BY THE TOWN. CONTRACTOR TO INSTALL METER AND WIRE.

4. BACKFLOW PREVENTION ASSEMBLIES MUST HAVE TEN (10) PIPE DIAMETERS UPSTREAM FROM NEAREST FITTING & THREE (3) PIPE DIAMETERS DOWNSTREAM TO NEXT FITTING.

5. IF WIRE EXITS THROUGH MASONRY, IT MUST BE PLACED INSIDE A CONDUIT.

6. REDUCED PRESSURE BACKFLOW PREVENTORS, AS DETERMINED BY CASTLE ROCK WATER, SHALL CONFORM TO THE COLORADO CROSS CONNECTION CONTROL MANUAL AND THE FOUNDATION FOR CROSS CONNECTION CONTROL HYDRAULIC RESEARCH FOR PROPER APPLICATION, INSTALLATION AND INSPECTION. MIN CLEARANCE 12", MAX CLEARANCE 36" FROM FLOOR. MIN SIDE CLEARANCE WHEN TEST COCK FACES A WALL 24", WHEN TEST COCKS FACE AWAY FROM WALL MIN CLEARANCE 12". NO ELECTRICAL COMPONENTS IN THE SAME GENERAL AREA AS THE BACKFLOW ASSEMBLY. CONTRACTOR TO PROVIDE PASSING TEST RESULTS ON ALL BACKFLOW PREVENTION ASSEMBLIES TO CASTLE ROCK WATER.

7. METER AND BYPASS ASSEMBLY SHALL BE SECURED PROPERLY.

8. IF CURBSTOP IS LOCATED IN CONCRETE, APPROVED VARIANCE MUST BE IN PLACE AND FEES PAID.

9. METERS WILL NOT BE SET IF CURB STOP BOX IS NOT UP TO FINISHED GRADE OR IF AN ASSEMBLY IS NOT IN PLACE.

10. IF CONTINUOUS WATER SERVICE IS REQUIRED DURING BACKFLOW TESTING, A SECONDARY BACKFLOW BYPASS WILL BE REQUIRED.
### GENERAL NOTES:

1. VAULT SHALL BE DESIGNED FOR HS20 LOADING.
2. VAULT PENETRATIONS SHALL BE SEALED WITH LINK-SEAL AND NON-SHRINK GROUT (TYP.).
3. ALL PRV’S TO BE PRESSURE REDUCING/PRESSURE SUSTAINING, CLA-VAL.
4. ALL WORK TO CONFORM TO TOWN OF CASTLE ROCK STANDARD SPECIFICATIONS.
5. RESTRAINED JOINT SECTIONS OF PIPE SHALL BE MEG-A-LUGGED.
6. ALL GATE VALVES LOCATED IN THE VAULT SHALL HAVE RISING STEM WHEEL OPERATORS. GATE VALVES SHALL BE THE SAME SIZE AS THE CONNECTING PIPING.
7. ALL PIPING SHALL BE DUCTILE IRON PRESSURE CLASS 350. ALL JOINTS SHALL BE FLANGED. A RESTRAINED FCA SHALL BE INSTALLED DOWNSTREAM OF EACH PRV.
8. PRESSURE GAUGES SHALL BE 4" DIAL NON-YELLOWING GLYCERIN FILLED, WITH SNUBBER. MUST HAVE BALL VALVE FOR ISOLATION. PRESSURE RANGES FROM 0 - 200 PSI UPSTREAM AND 0 - 200 PSI DOWNSTREAM.

### PRPSV DESIGN PARAMETERS & SETTINGS

<table>
<thead>
<tr>
<th>MAIN DIAMETER (D&quot;)</th>
<th>DESIGN FLOW (@ 10 fps)</th>
<th>PRESSURE REDUCING - PRESSURE SUSTAINING VALVE / CONNECTING PIPE SIZES</th>
<th>VAULT SIZES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>PRV #1/D1</td>
<td>PRV #2/D2</td>
</tr>
<tr>
<td>8</td>
<td>1600</td>
<td>6&quot; / 6&quot;</td>
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<tr>
<td>12</td>
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<td>14000</td>
<td>12&quot; / 12&quot;</td>
<td>12&quot; / 12&quot;</td>
</tr>
</tbody>
</table>

**NOTE:**

PRV #4 WILL ONLY BE INSTALLED WHEN THE DOWNSTREAM SYSTEM IS NOT SUPPLIED BY A RESERVOIR.

IF 12" OR LARGER PRV’S ARE INSTALLED INSIDE VAULT, LIFTING HOIST & ROTATING BOOM SHALL BE INSTALLED.

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**PRRESSURE REDUCING VALVE VAULT**

Issued By: Town of Castle Rock, Development Services March 22, 2019

Sheet 2 of 2
NOTES:

1. AIR RELEASE VALVE SHALL BE PLACED AT THE HIGH POINT OF THE MAIN WATER LINE OR AS DETERMINED THROUGH PLAN REVIEW.

2. ARI D-040 COMBINATION AIR VALVE "BARAK" SHALL BE USED. SIZING TO BE ESTABLISHED FROM THE MANUFACTURERS SIZING TABLES & APPROVED BY THE TOWN.

3. CASTING SPECS: ASTM A-48 WITH A MIN TENSILE STRENGTH OF 30,000 PSI (CLASS 30). (NEENAH TYPE R-1758 RING & COVER OR EQ).

4. DO NOT USE IN APPLICATIONS WHERE MANHOLES ARE WITHIN DRAINAGE WAYS.

5. STANDARD MANUFACTURER'S LETTERING SIZES & PATTERNS (LETTERING SHALL BE CAST AS PART OF COVER).
NOTE: VENT PIPES TO BE LOCATED IN THE FIELD @ THE NEAREST INTERSECTION OF THE STREET PROPERTY LINE & SIDE LOT LINE. PAINT PIPE SAFETY YELLOW & LOCATE MANHOLE W/ DISTANCE & DIRECTIONS SIMILAR TO MARKER POST.

VENT PIPE & BREAK-AWAY COUPLING DETAILS

6" GALVANIZED STEEL PIPE
90° BEND (GALV.)

18" x 18" x 6" CONC SUPPORT PAD (3000 PSI)

GALV. COUPLING

CORE DRILL TO O.D. +1" & GROUT PIPE TO SEAL

Fabricated Vent Screen

2"

6" MIN.

5'-0" MIN.

6'-0" MAX.

6 5/8" O.D. GALV. STEEL PIPE, SCHEDULE 40 W/ THREADED JOINTS

2'-6" x 2'-6" CONCRETE PAD W/ #3 REBAR @ 12" O.C. EACH WAY

6" GALVANIZED STEEL PIPE
NOTES:

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

NOTES:

1. CARE SHALL BE TAKEN WHEN INSTALLING VALVES TO ASSURE PROPER SUPPORT OF THE VALVE. THE ENGINEER MAY REQUIRE 3/4" CRUSHED ROCK TO BE INSTALLED UNDER THE VALVE TO PROVIDE PROPER SUPPORT.

2. VALVES SHALL NOT BE PLACED IN CONCRETE CROSS PANS, GUTTERS, OR OTHER DRAINAGE WAYS.

3. OPERATING NUTS OR EXTENSIONS SHALL NOT BE SET CLOSER THAN THREE (3) FEET FROM FINISHED GRADE. IF OPERATING NUT IS DEEPER THAN FIVE (5) FEET FROM FINAL GRADE, PROVIDE A 1 1/4" EXTENSION SHAFT W/ CENTERING RING. OPERATOR EXTENSIONS SHALL BE CONNECTED TO THE VALVE OPERATOR NUT USING A SET SCREW.

4. GATE VALVE SHALL BE POLYETHYLENE WRAPPED (8 MIL).

5. CONCRETE COLLARS & MARKER POSTS ARE REQUIRED WHEN VALVE IS LOCATED IN AN UNPAVED AREA.

6. VALVE BOXES ARE TO BE BROUGHT UP TO GRADE @ THE TIME OF PAVEMENT PLACEMENT OR OVERLAY. VALVE BOX ADJUSTING RINGS ARE NOT ALLOWED.

7. SEE DETAILS W-13 & W-14 FOR TYPICAL VALVE LOCATIONS.

8. NO TRACER WIRE ALLOWED INSIDE OF VALVE BOX. SHOULD HAVE SEPARATE MONUMENT STYLE VALVE BOX W/ CP TEST STATION FOR TRACER WIRE (SEE DETAIL W-28).
NOTES:
1. ALL HYDRANTS SHALL BE PAINTED "SAFETY YELLOW" FROM THE FACTORY. FIELD RE-PAINTING MAY BE REQUIRED BY THE PUBLIC WORKS INSPECTOR.

2. THE CONNECTIONS SHALL BE 2 - 2½" NOZZLES AND 1 - 5¼" PUMPER NOZZLE, ALL THREADS TO BE NATIONAL STANDARD W/ 1¾" PENTAGONAL CAP NUTS. ALL HYDRANTS SHALL BE AWWA C-502-94 STANDARD OPEN LEFT.

3. NO TAPS SHALL BE ALLOWED BETWEEN THE HYDRANT & THE MAIN.

4. THE ENTIRE FIRE HYDRANT ASSEMBLY SHALL BE WRAPPED W/ 8 MIL POLYETHYLENE, INCLUDING THE RISER PORTION, TO FINISHED GRADE. CUT HOLE IN WRAP AT WEEP HOLE.

5. ALL FIRE HYDRANTS SHALL BE INSTALLED PLUMB & LOCATED ACCORDING TO PROJECT PLANS.

6. SEE FIRE HYDRANT LOCATION DETAILS W-13 & W-14 FOR PROPER LOCATION RELATIVE TO OTHER IMPROVEMENTS & REFER TO APPROVED PLANS.

7. THE MECHANICAL JOINTS OF THE FIRE HYDRANT ASSEMBLY SHALL BE RESTRAINED VIA MEG-A-LUG JOINT CLAMPS.

8. NO MORE THAN ONE HYDRANT EXTENSION, NOT TO EXCEED 24", MAY BE USED. OVERALL HEIGHT MAY NOT EXCEED 8'.

9. TEST STATION IS REQUIRED BEHIND ALL FIRE HYDRANTS; REFER TO DETAIL W-28.

10. FOR BURY DEPTHS GREATER THAN 8', REFER TO DETAIL W-11A.

TYPICAL JOINT RESTRAINT DETAIL FOR MULTIPLE JOINT ASSEMBLIES (NOT TO SCALE)
NOTES:
1. ALL HYDRANTS SHALL BE PAINTED "SAFETY YELLOW" FROM THE FACTORY. FIELD RE-PAINTING MAY BE REQUIRED BY THE PUBLIC WORKS INSPECTOR.

2. THE CONNECTIONS SHALL BE 2 - 2 1/2" NOZZLES AND 1 - 5 1/2" PUMPER NOZZLE. ALL THREADS TO BE NATIONAL STANDARD W/ 1 1/2" PENTAGONAL CAP NUTS. ALL HYDRANTS SHALL BE AWWA C-502-94 STANDARD OPEN LEFT.

3. NO TAPS SHALL BE ALLOWED BETWEEN THE HYDRANT & THE MAIN.

4. THE ENTIRE FIRE HYDRANT ASSEMBLY SHALL BE WRAPPED W/ 8 MIL POLYETHYLENE, INCLUDING THE RISER PORTION, TO FINISHED GRADE. CUT HOLE IN WRAP AT WEEP HOLE.

5. ALL FIRE HYDRANTS SHALL BE INSTALLED PLUMB & LOCATED ACCORDING TO PROJECT PLANS.

6. SEE FIRE HYDRANT LOCATION DETAILS W-13 & W-14 FOR PROPER LOCATION RELATIVE TO OTHER IMPROVEMENTS & REFER TO APPROVED PLANS.

7. THE MECHANICAL JOINTS OF THE FIRE HYDRANT ASSEMBLY SHALL BE RESTRAINED VIA MEG-A-LUG JOINT CLAMPS.

8. NO MORE THAN ONE HYDRANT EXTENSION, NOT TO EXCEED 24", MAY BE USED. OVERALL HEIGHT MAY NOT EXCEED 8'.

9. TEST STATION IS REQUIRED BEHIND ALL FIRE HYDRANTS; REFER TO DETAIL W-28.
4 BOLLARDS, ARRANGED AS SHOWN.

NOTES:
1. TO BE USED IN AREAS WHERE HYDRANTS ARE EXPOSED TO VEHICULAR TRAFFIC.
2. STEAMER CONNECTION ON FIRE HYDRANT SHALL BE DIRECTED AS NOTED ON PLANS.
NOTE:
1. VALVES SHALL NOT BE PLACED IN CONCRETE CROSS PANS OR WITHIN GUTTER PORTIONS.
See fire hydrant assembly detail W-11

Hydrant placed @ the deepest point of cul-de-sac @ lot line extended

Gate valve; no connections beyond this valve

See project plans for location of service lines - see typ service line details

Gate valve

Lot line (typ)

Right of way line

See fire hydrant assembly detail W-11
NOTES:

1. ALL FITTINGS SHALL BE MJ WITH MEG-A-LUG.

2. LOCATION OF STUB OUT SHALL BE PER PLAN.

3. LOCATION OF STUB OUT MUST BE SHOWN WITH CARSONITE MARKER.

4. STUB OUT SHALL BE PRESSURE TESTED & CLEAR WATER TESTED @ TIME OF MAIN LINE TESTING. VALVE SHALL BE CLOSED AFTER TESTS.

5. STUB OUT SHALL BE FULLY RESTRAINED FROM THE TEE.
NOTES:

1. PLUG SHALL BE MECHANICALLY RESTRAINED:
   A. FOR SLEEVE TYPE MACHINED COUPLING PIPE OR PIPE WITHOUT BELL, ROD BACK TO THE NEXT COUPLING UPSTREAM.
   B. FOR BELL & SPIGOT PIPE, TIE TO BELL (SHOWN).

2. BLOW OFF ASSEMBLY SHALL BE INSTALLED AT TEMPORARY DEAD ENDS ONLY.

TEMPORARY BLOW-OFF ASSEMBLY

BOND BREAKER

2" THREADED BRASS PIPE

CONCRETE TO BE 3,000 PSI MIN.

30" X 30" CONCRETE COLLAR FOR INSTALLATIONS OUTSIDE OF PAVED AREAS

2" MINIMUM CONC. TO BE 3000 PSI MIN.

2" THREADED BRASS PIPE

BONDED AREA

UNPAVED

PAVED AREA

UNPAVED

PAVED AREA

2" THREADED BRASS PIPE W/ THREADED PVC CAP IRON PIPE THREAD (IPT)

6" VALVE BOX ASSEMBLY TOP & CENTER SECTIONS W/O BASE

6" VALVE BOX SEE DETAIL W-10

2" GATE VALVE W/ 2" OPERATING NUT (RESILIENT WEDGE TYPE)

FOR PIPE 16" DIA OR LARGER, TAP 2" STREET EL @ TOP OF PIPE

PLUG W/ 2" TAP

1 1/2" WASHED ROCK (1 CUBIC FT)

DRILL 1/8" WEEP HOLE

2" THREADED BRASS PIPE

4" MIN. SQUEEGEE
NOTES:

1. WHERE WATER LINE COVER EXCEEDS 7'-6" AT THE LOW POINT OF THE CONDUIT CROSSING, VERTICAL BENDS ARE REQUIRED. WHEN COVER IS LESS THAN 7'-6", PIPE JOINTS MAY BE DEFLECTED 1/2 THE MANUFACTURER'S RECOMMENDED DEFLECTION IN LIEU OF VERTICAL BENDS. THE LIMITS OF THE DEPRESSED AREA SHALL BE DOCUMENTED ON THE "AS-BUILT" DRAWINGS.

2. IF UTILITY CROSSING IS SANITARY SEWER & IS OVER A RAW OR POTABLE WATER LINE, ALL UTILITY CROSSING JOINTS WITHIN 10' SHALL BE ENCASED 1' BOTH SIDES OF THE JOINT W/ CONCRETE. SEE ENCASEMENT DETAIL W-20.

3. MULTIPLE JOINTS BETWEEN MEG-A-LUG FITTINGS SHALL BE RESTRAINED.

4. SEE PIPE RESTRAINT TABLE (DETAIL W-18) FOR SPECIFICATIONS.

5. NO TEES, SERVICE CONNECTIONS, VALVES, OR FIRE HYDRANT CONNECTIONS ARE ALLOWED IN LOWERING.

6. PIPE MATERIAL IN LOWERED SECTION SHALL MATCH THE MAIN LINE.

VOLUME OF CONCRETE & TIE MATERIAL SHALL BE SPECIFIED ON PLANS

SEE THRUST BLOCK DETAIL W-22 FOR SIZING DETAILS

PIPE RESTRAINT (TYP)

MEG-A-LUG (TYP)

MJ x MJ ELBOW (TYP)

COVER VARIES

5' MIN. TOP OF PIPE

18" MIN.

10' MIN.

45° BEND (TYP)

MEG-A-LUG BACK
A MIN. OF (2) JOINTS

MEG-A-LUG BACK
A MIN. OF (2) JOINTS

UTILITY CROSSING
PIPE RESTRAINT TABLE

LENGTH OF RESTRAINED PIPE

<table>
<thead>
<tr>
<th>PIPE SIZE</th>
<th>4&quot;</th>
<th>6&quot;</th>
<th>8&quot;</th>
<th>12&quot;</th>
<th>16&quot;</th>
<th>20&quot;</th>
<th>24&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>FITTING</td>
<td>L</td>
<td>L</td>
<td>L</td>
<td>L</td>
<td>L</td>
<td>L</td>
<td>L</td>
</tr>
<tr>
<td>90° BEND, TEE, PLUG OR VALVE</td>
<td>30'</td>
<td>45'</td>
<td>60'</td>
<td>86'</td>
<td>108'</td>
<td>132'</td>
<td>155'</td>
</tr>
<tr>
<td>45° BEND</td>
<td>M1</td>
<td>13'</td>
<td>18'</td>
<td>25'</td>
<td>32'</td>
<td>39'</td>
<td>45'</td>
</tr>
<tr>
<td>22 1/2° BEND</td>
<td>M1</td>
<td>M1</td>
<td>M1</td>
<td>M1</td>
<td>M1</td>
<td>M1</td>
<td>M1</td>
</tr>
<tr>
<td>11 1/4° BEND</td>
<td>--</td>
<td>--</td>
<td>M1</td>
<td>M1</td>
<td>M1</td>
<td>M1</td>
<td>M1</td>
</tr>
</tbody>
</table>

LEGEND

L = LENGTH
M1 = MINIMUM OF 1 FULL LENGTH OF PIPE

NOTES:
1. LENGTH OF RESTRAINED PIPE MEASURED EACH WAY FROM VALVES & BENDS.
2. MINIMUM 5' GROUND COVER REQUIRED.
3. ALL FITTINGS SHALL BE FITTED WITH MEG-A-LUGS.
4. PIPE RESTRAINTS SHALL BE AS Follows:
   A. D.I.P. - RESTRAINTS FOR STD. MECHANICAL JOINTS SHALL BE OF HIGH STRENGTH DUCTILE IRON CONFORMING TO ASTM A536, GRADE 65-45-12. MECH. JOINTS SHALL HAVE A WATER WORKING PRESSURE OF 100 P.S.I. MINIMUM AND SHALL BE EBBA IRON INC., MEG-A-LUG SERIES 1100, FORD METER BOX CO., UNI-FLANGE 1400 OR APPROVED EQUAL.
   B. PVC - RERAINT DEVICES SHALL BE MANUFACTURED OF HIGH STRENGTH DUCTILE IRON. ASTM A536, GRADE 65-45-12 IN 2" - 24" SIZES, ASTM A36 IN SIZES 30" - 36". FULL RATED PRESSURE OF THE PVC PIPE AND SHALL BE EBBA IRON INC., MEG-A-LUG SERIES 1100 FORD METER BOX, UNI-FLANGE 1400 OR APPROVED EQUAL.
NOTES:
CONCRETE ENCASEMENT WILL BE REQUIRED ON SEWER LINE WHEN CLEAR VERTICAL DISTANCE FROM WATER LINE IS LESS THAN 1'-6" OR HORIZONTAL DISTANCE IS LESS THAN 10' BETWEEN PARALLEL LINES.
CONCRETE ENCASEMENT REQUIRED IN ALL CASES WHERE SEWER LINE IS ABOVE WATER LINE OR IS UNDER A WATERWAY CROSSING.

<table>
<thead>
<tr>
<th>PIPE I.D.</th>
<th>NO. OF LONGITUDINAL BARS &amp; LOCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>6&quot; TO 8&quot;</td>
<td>4 - #4 BARS 1 EACH CORNER</td>
</tr>
<tr>
<td>10&quot; TO 18&quot;</td>
<td>8 - #4 BARS 3 EACH SIDE</td>
</tr>
<tr>
<td>21&quot; TO 33&quot;</td>
<td>12 - #4 BARS 4 EACH SIDE</td>
</tr>
<tr>
<td>36&quot;</td>
<td>16 - #4 BARS 5 EACH SIDE</td>
</tr>
</tbody>
</table>
NOTES:

1. ALL TRENCHES SHALL BE BACKFILLED IN ACCORDANCE WITH THE ABOVE DETAIL UNLESS OTHERWISE SPECIFIED.

2. PRIOR TO PLACEMENT OF ASPHALT OR CONCRETE, PAVEMENT EDGE SHALL BE SAWN CUT TO A CLEAN, VERTICAL, & STRAIGHT EDGE.

3. 1-SAC SAND/CEMENT SLURRY MAY BE SUBSTITUTED FOR BACKFILL MATERIAL.

4. TRENCH WIDTH SHALL NOT BE MORE THAN 16" NOR LESS THAN 12" WIDER THAN THE DIAMETER OF THE PIPE.

5. USE #4 REBAR AT 2' CENTERS ALONG THE PERIMETER OF CONCRETE REPLACEMENT SECTIONS.

6. 95% OF ASTM D698 STANDARD COMPACTION EFFORT IS REQUIRED ON ALL TRENCHING ZONES, IN BOTH IMPROVED & UNIMPROVED AREAS.

7. IN UNIMPROVED AREAS, ALL DISTURBED AREAS SHALL BE REGRADED, SEED & MULCHED.

8. IN CONCRETE ROADWAYS, A MINIMUM OF 1/2 PANEL WIDTH OR 10' x 5' SECTION WILL BE ALLOWED TO REMAIN, OTHERWISE THE ENTIRE CONCRETE PANEL MUST BE REPLACED.

9. BEDDING MATERIAL DEPTH WHEN INSTALLING STORM SEWER SHALL BE UP TO SPRING LINE, EXCEPT IN AREAS OF UNSUITABLE BACKFILL, THEN BEDDING MATERIAL SHALL BE 12" ABOVE PIPE.

10. ALL TRENCHES IN EXISTING ASPHALT OR CONCRETE PAVED ROADWAYS SHALL BE FLOW FILLED TO THE BOTTOM OF PAVEMENT DEPTH. NO EXCEPTIONS.
NOTES:

1. BEARING AREAS SHOWN ON THE CHART ARE MINIMUM AREAS & ARE DESIGNED USING THE FOLLOWING CRITERIA:
   A. INTERNAL WORKING PRESSURE OF 150 PSI.
   B. TRANSIENT (WATER HAMMER) PRESSURE OF 120 PSI FOR 4", 6" & 8" DIAMETER LINES, 110 PSI FOR 12" LINES, & 70 PSI FOR 20" LINES.
   C. THRUSTBLOCK CONCRETE SHALL HAVE A MINIMUM STRENGTH OF 3000 PSI.

2. ALL SIZES OF BENDS, TEES & DEAD ENDS SHALL HAVE CONCRETE THRUSTBLOCKS.

3. THRUSTBLOCKS ARE NOT A SUBSTITUTE FOR JOINT RESTRAINT.

<table>
<thead>
<tr>
<th>SIZE OF PIPE</th>
<th>11 1/4°</th>
<th>22 1/2°</th>
<th>45°</th>
<th>90°</th>
<th>TEE OR DEAD END</th>
</tr>
</thead>
<tbody>
<tr>
<td>6&quot;</td>
<td>2.00</td>
<td>2.00</td>
<td>2.25</td>
<td>4.25</td>
<td>3.00</td>
</tr>
<tr>
<td>8&quot;</td>
<td>2.00</td>
<td>2.00</td>
<td>4.00</td>
<td>8.00</td>
<td>5.25</td>
</tr>
<tr>
<td>12&quot;</td>
<td>2.00</td>
<td>4.25</td>
<td>8.25</td>
<td>12.00</td>
<td>11.00</td>
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<tr>
<td>16&quot;</td>
<td>3.50</td>
<td>6.50</td>
<td>12.50</td>
<td>23.00</td>
<td>16.50</td>
</tr>
<tr>
<td>20&quot;</td>
<td>5.00</td>
<td>10.00</td>
<td>19.50</td>
<td>35.50</td>
<td>25.00</td>
</tr>
</tbody>
</table>
NOTE:
1. USE MARKER POST IN AREAS WHERE UTILITY CANNOT BE LOCATED FROM OTHER IMPROVEMENTS.
RADIUS TO MATCH VALVE BODY PIPE OR METER

PL 5/8" x 2 1/2" x 6"
BENT AS SHOWN

1 1/4" DIA THREADED ROD

1 1/4" STANDARD HEX NUT

PL 1/2" x 2 1/2" x 2 1/2"
W/ 1 1/2" DIA HOLE

STEEL PIPE 1 1/2" DIA

PL 1/2" x 5" x 5"
NOTES:
1. MINIMUM ID OF CASING PIPE SHALL ACCOMMODATE MAXIMUM OD OF CARRIER PIPE JOINTS AND/OR RESTRAINTS.
2. MINIMUM CASING PIPE DIAMETER AND THICKNESS SHALL BE PER TABLE UNLESS SPECIFIED BY ENGINEER.
3. IF CARRIER PIPE RESTRAINT IS REQUIRED, RESTRAINED CASING SPACERS SHALL BE USED (E.G. FORD).
4. ANODES SHALL BE "ULTRAMAG HIGH POTENTIAL MAGNESIUM", MINIMUM 46 LBS EACH, PACKAGED READY FOR BURIAL; MODEL NO. 1703, OR APPROVED EQUAL.
5. 24" OF SURPLUS WIRE SHALL BE LEFT AT ALL CONNECTIONS
6. TERMINAL BOARD SHALL HAVE x4 TERMINALS.

<table>
<thead>
<tr>
<th>CARRIER PIPE DIA.</th>
<th>CASING PIPE DIA.</th>
<th>CASING PIPE THICKNESS</th>
<th>NO. OF SPACERS PER 20 FT. LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>(IN)</td>
<td>(IN)</td>
<td>(IN)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>12</td>
<td>0.188</td>
<td>3</td>
</tr>
<tr>
<td>6</td>
<td>16</td>
<td>0.250</td>
<td>3</td>
</tr>
<tr>
<td>8</td>
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<td>3</td>
</tr>
<tr>
<td>16</td>
<td>28</td>
<td>0.406</td>
<td>3</td>
</tr>
<tr>
<td>20</td>
<td>32</td>
<td>0.469</td>
<td>3</td>
</tr>
<tr>
<td>24</td>
<td>36</td>
<td>0.562</td>
<td>3</td>
</tr>
</tbody>
</table>

TRENCH SECTION

PROFILE AT END OF TYP CASING

TERMINAL BOARD

SHUNT 0.01 OHM

12 AWG STRANDED WIRE, BLACK

TYP: CONNECT WIRE TO CASING WITH THERMITE WELD

STEEL CASING PIPE

ANNULAR SPACE, FILLED W/ CONCRETE SAND OR APPROVED EQ.

CASING SPACERS

DOUBLE SPACERS AT END OF CASING EACH

END SEAL, TYPE C OR COMMON BRICK AND MORTAR

x2 ANODES AT EQUAL ELEVATION AND BACKFILLED IN NATIVE SOIL

BINGHAM & TAYLOR TEST BOX
P4HHD IN PAVED AREAS
P4HL IN NON-PAVED AREAS
(OR APPROVED EQUAL); LID TO READ "CP TEST"

#4 REBAR, EACH SIDE

3" PVC

18" MIN.

12" MIN.

x4 CASING SPACERS, EQUALLY SPACED

2x2x4" THICK CONCRETE PAD

x2 ANODES, PLACED AS SHOWN

CARRIER PIPE

6" MIN.
NOTES:

1. CASTING SPECIFICATIONS: ASTM A-48 WITH A MINIMUM TENSILE STRENGTH OF 30,000 PSI (CLASS 30). (NEENAH TYPE R-1706 RING AND COVER OR EQUIVALENT).

2. TOTAL MINIMUM WEIGHT APPROXIMATELY 410 LBS.

3. DO NOT USE IN APPLICATIONS WHERE MANHOLES ARE WITHIN DRAINAGE WAYS.

4. STANDARD MANUFACTURER'S LETTERING SIZES & PATTERNS. (LETTERING SHALL BE CAST AS PART OF COVER).

5. MANHOLES PLACED OUTSIDE OF ROW MUST HAVE CARSONITE MARKER.

WATER MANHOLE
24" RING & COVER

Issued By: Town of Castle Rock, Development Services May 2, 2019
NOTES:
1. ABANDONMENT TO INCLUDE REMOVAL OF ALL RELATED FIXTURES INCLUDING, BUT NOT LIMITED TO, ALL SECTIONS OF CONCRETE METER PIT, TOP BONNET INCLUDING LID AND INNER LID, METER YOKE, COPPER LINE FROM MAIN TO INTERIOR OF METER PIT, ALL VALVES, AND VALVE BOXES.

2. METER WILL BE REMOVED BY A REPRESENTATIVE OF CASTLE ROCK WATER.

3. AFTER INITIAL ACCEPTANCE, ALL EQUIPMENT BECAME THE PROPERTY OF THE TOWN OF CASTLE ROCK. ALL REMOVED EQUIPMENT WILL BE RETURNED TO THE TOWN UNLESS DEEMED TO BE NO LONGER USABLE OR IS DESTROYED IN THE PROCESS OF REMOVAL, AS DETERMINED BY TOWN OF CASTLE ROCK REPRESENTATIVE.

4. CORPORATION STOP ON MAIN WILL BE SHUT-OFF AND ABANDONED PIPING REMOVED.

5. A PLUGGING DEVICE WILL BE ADDED TO THE CORPORATION STOP TO PREVENT ANY LEAKING THAT MAY OCCUR IN THE EVENT THAT THE CORPORATION STOP FAILS AFTER IT HAS BEEN ABANDONED.

6. AREA TO BE REPAIRED AND REPLACED TO MATCH THE CONDITIONS OF SURROUNDING AREA.

7. IN SOME INSTANCES, CORPORATION STOPS MAY BE FOUND THAT WERE DIRECTLY TAPPED INTO THE MAIN LINE WITHOUT A SADDLE. IN THESE INSTANCES IT MAY BE REQUIRED TO REMOVE THE CORPORATION STOP AND INSTALL A SADDLE WITH A NEW CORPORATION OVER THE HOLE. DEPENDING ON THE INTEGRITY OF THE EXISTING MAIN, A STAINLESS REPAIR CLAMP MAY BE REQUIRED IN PLACE OF A SADDLE, AT DISCRETION OF THE TOWN REPRESENTATIVE.

8. CROSS CONNECTION CONTROL TECHNICIAN FOR THE TOWN SHALL BE NOTIFIED OF ANY SERIAL NUMBERS OF BACK FLOW PREVENTION DEVICES REMOVED FROM SERVICE.

9. ABANDONMENT REQUEST LETTER MUST BE SUBMITTED TO CASTLE ROCK WATER BILLING TO DISCONTINUE ACCOUNT.
1. SPACE TRACE WIRE BOXES AT 500 FEET MAXIMUM SPACING.

2. TRACER WIRE SHALL BE AEF UL TYPE GOLF COURSE SPRINKLER WIRE 12 GAUGE 600 VOLT, SOLID CORE, INSULATION WALL 0.045, PRODUCT NUMBER 1212, OR APPROVED EQUAL. WIRE COLOR SHALL BE WHITE AND SHALL CONFORM TO UL 493, UL 83 AND UL 1581 PHYSICAL AND ELECTRICAL STANDARDS. SPICING OF THE WIRE IF NEEDED SHALL UTILIZE A DBY DIRECT BURY SPLICE KIT AS MANUFACTURED BY 3M CORPORATION AND Sized ACCORDING TO NUMBER OF 12 GAUGE CONDUCTORS TO BE JOINED.
NOTES:

1) SAMPLING STATIONS SHALL BE AN ECLIPSE NO. 88 SAMPLING STATION OR AN APPROVED EQUAL.

2) ALL STATIONS SHALL BE ENCLOSED IN A LOCKABLE, NON-REMOVABLE, ALUMINUM-CASE HOUSING.

3) A COPPER VENT TUBE WILL ENABLE EACH STATION TO BE PUMPED FREE OF STANDING WATER TO PREVENT FREEZING AND TO MINIMIZE BACTERIA GROWTH.

4) PADLOCK PROVIDED BY CASTLE ROCK WATER.

5) CONCRETE FILLED PAINTED SAFETY YELLOW BOLLARDS TO BE INSTALLED PER INSPECTOR IF STATION IS SUBJECT TO TRAFFIC.
NOTES:

1. CARE SHALL BE TAKEN WHEN INSTALLING VALVES TO ASSURE PROPER SUPPORT OF THE VALVE. THE ENGINEER MAY REQUIRE 3/4" CRUSHED ROCK TO BE INSTALLED UNDER THE VALVE TO PROVIDE PROPER SUPPORT.

2. VALVES SHALL NOT BE PLACED IN CONCRETE CROSS PANS, GUTTERS, OR OTHER DRAINAGE WAYS.

3. OPERATING NUTS OR EXTENSIONS SHALL NOT BE SET CLOSER THAN THREE (3) FEET FROM FINISHED GRADE. IF OPERATING NUT IS DEEPER THAN FIVE (5) FEET FROM FINAL GRADE, PROVIDE A VALVE STEM EXTENSION (SEE DETAIL W-37).

4. GATE VALVE SHALL BE POLYETHYLENE WRAPPED (8 MIL).

5. CONCRETE COLLARS & MARKER POSTS ARE REQUIRED WHEN VALVE IS LOCATED IN AN UNPAVED AREA.

6. VALVE BOXES ARE TO BE BROUGHT UP TO GRADE @ THE TIME OF PAVEMENT PLACEMENT OR OVERLAY. VALVE BOX ADJUSTING RINGS ARE NOT ALLOWED.

7. INSTALL SOLID SLEEVE WITH MEGALUG MECHANICAL JOINT RESTRAINT.

8. NO TRACER WIRE ALLOWED INSIDE OF VALVE BOX. SHOULD HAVE SEPARATE MONUMENT STYLE VALVE BOX W/ CP TEST STATION FOR TRACER WIRE (SEE DETAIL W-28).

SEE DETAIL W-23 FOR MARKER POST

UNPAVED AREAS

PAVED AREAS

5 7/8" MIN DIA. CAP W/ WORD "WATER" ON COVER

1/4" TO 1/2" BELOW FINISHED GRADE

NEW PAVEMENT SECTION

30" SQ. X 6" THICK CONCRETE COLLAR (EXCEPT IN PAVEMENT) W/ #4 REBAR @ 3" FROM OUTSIDE PERIMETER OR USE FIBROUS CONCRETE.

6" VALVE BOX
TYLER 6860 W/ 160 BASE OR APPROVED EQUAL. BASE SHALL NOT REST ON PIPE.

SEE TRENCH DETAIL W-21

RESILIENT WEDGE VALVE PER PLAN

SEE NOTE #1

SEE NOTE #7
TEMPORARY BLOW OFF ASSEMBLY PER DETAIL W-16

APPROVED BACKFLOW ASSEMBLY

2½" THROTTLE VALVE

SMOOTH, UNTHREADED SAMPLING FAUCET

THROTTLE VALVE

DISCHARGE TO GRADE DECHLORINATION IS REQUIRED

SUPPLIED BY THE TOWN
SUPPLIED BY THE CONTRACTOR

18" MIN ABOVE GRADE

TEMPORARY BLOW OFF ASSEMBLY PER DETAIL W-16

MAIN DISINFECTION UP TO 12"

SUPPLIED BY THE TOWN
SUPPLIED BY THE CONTRACTOR

Sheet 1 of 1
SUPPLIED BY THE TOWN
SUPPLIED BY THE CONTRACTOR

DISCHARGE TO GRADE
DECHLORINATION IS REQUIRED

THROTTLE VALVE
SMOOTH, UNTHEADED
SAMPLING FAUCET

CAP BLOW OFFS WITH PVC CAPS WHEN NOT IN USE

EXISTING TEMPORARY BLOW OFF ASSEMBLY

DRY KICK WITH 2x4 OR 4x4

TEMPORARY BLOW OFF ASSEMBLY PER DETAIL W-16

SQUEEGE
NOTES:

1. VALVE EXTENSION SHALL BE STEEL WITH BLACK ENAMEL FINISH OR EQUIVALENT.

2. TOP OF OPERATING NUT TO BE LOCATED 3 TO 5 FEET BELOW FINISHED GRADE.

3. VALVE STEM EXTENSIONS SHALL ONLY BE USED IF THE VALVE'S OPERATION NUT IS GREATER THAN 7' BELOW FINISHED GRADE.
NOTES:

1. PIPES MUST BE WRAPPED WITH POLYETHYLENE TUBING.
2. FLOWFILL SHALL EXTEND TO OR BEYOND PIPE SPRINGLINES.
1. IN PAVEMENT, DEPRESS CURB STOP APPROXIMATELY 1/4" BELOW FINISHED GRADE.

2. A TECHNICAL CRITERIA VARIANCE, FIELD CHANGE ORDER AND/OR ASSOCIATED FEES MAY BE REQUIRED FOR CURB STOPS PLACED IN PAVEMENTS.

3. UNLESS REPAIRS OF TOWN-OWNED INFRASTRUCTURE IS NEEDED, THE PROPERTY OWNER IS RESPONSIBLE FOR PAVEMENT AROUND CURB STOP.

4. CURB STOP SHALL BE McDONALD 5607 w/ 304 STAINLESS STEEL ROD OR APPROVED EQUAL.
CONTRACTOR AND INSPECTOR TO NOTIFY CASTLE ROCK WATER PRIOR TO INSTALLATION OF LOW POINT BLOW OFF.
RESTRAINED DISMANTLING JOINT - VIKING JOHNSON OR EQUAL.

30" OPENING IN PRECAST BUTT SLAB TOP.

THIRD AIR RELEASE VACUUM VALVE: ARI-D-040 COMBINATION

AIR VALVE "BARAK".

SLOPE FLOOR 1/4" PER FT. TO SUMP (TYP.).

PIPE PENETRATIONS SEE DETAIL W-7A.

10'-0" VALVE OPERATOR

WITH EXTENSION AS REQUIRED

STATION POINT

SEE DETAIL W-7A

PIPE SUPPORT

UNPAVED OR OPEN SPACE AREA

2"∅ BRASS PIPE

FLANGED 16" AND LARGER MAIN

NOTE:

1. SHOP DRAWINGS REQUIRED FOR APPROVAL BY CASTLE ROCK WATER.

2. ALL VAULTS: JOINTS SHALL BE SEALED WITH 'RISER WRAP' OR APPROVED EQUAL.

3. AIR GREATER THAN 2" REQUIRES A MANUFACTURED 'TEE'. NO SADDLE TAPS ARE ALLOWED.

4. CASTING SPEC: ASTM A-48 WITH A MIN TENSILE STRENGTH OF 30,000 PSI (CLASS 30). (NEENAH TYPE R-1758 RING & COVER OR EQ).

5. STANDARD MANUFACTURER'S LETTERING SIZES & PATTERNS (LETTERING SHALL BE CAST AS PART OF COVER).

DETAIL PLAN NO. W-42

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