WOODLAND WATER STANDARDS
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GENERAL NOTES FOR WATER MAIN INSTALLATION

1. ALL WORKMANSHIP AND MATERIAL SHALL BE IN ACCORDANCE WITH THE WSDOT/APWA STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND MUNICIPAL CONSTRUCTION HEREIN IDENTIFIED AS THE "STANDARD SPECIFICATIONS", AND AWWA SPECIFICATIONS, EXCEPT AS MODIFIED BELOW OR BY CITY OF WOODLAND STANDARD DETAILS.

2. A PRE-CONSTRUCTION MEETING SHALL BE HELD WITH CITY OF WOODLAND AT LEAST 48-HOURS PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE CONSTRUCTION SCHEDULES AND TRAFFIC CONTROL PLANS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. PROPOSED "EQUIVALENTS" MUST BE SUBMITTED TO THE CITY OF WOODLAND FOR APPROVAL.

3. THE CONTRACTOR SHALL NOTIFY THE CITY PUBLIC WORKS DEPARTMENT AT (360) 225-7999, 48-HOURS PRIOR TO LIVE TAPS OR OTHER CONNECTIONS TO EXISTING WATERMAINS. WHERE CONNECTIONS REQUIRE SHUT-DOWN OF SERVICE, CONNECTION POINTS WILL BE EXPOSED FOR "FIELD VERIFICATION" BY CONTRACTOR AND CONNECTION DETAILS SHALL BE VERIFIED 48 HOURS PRIOR TO DISTRIBUTING SHUT-DOWN NOTICES.

4. CALL UNDERGROUND LOCATE AT 811 A MINIMUM OF 48-HOURS PRIOR TO ANY EXCAVATIONS.

5. UNLESS OTHERWISE ESTABLISHED IN WRITING BY THE CITY, ALL WATER MAINS SHALL BE STAKED FOR GRADES AND ALIGNMENT BY AN ENGINEERING OR SURVEYING FIRM CAPABLE OF PERFORMING SUCH WORK.

6. EXISTING VALVES AND ANY VALVES INSTALLED DIRECTLY TO AND CONNECTED TO A PORTION OF ACTIVE WATER SYSTEM ARE TO BE OPERATED BY CITY OF WOODLAND REPRESENTATIVES ONLY.

7. WATER MAINS SHALL BE PVC IN ACCORDANCE WITH AWWA C900, PRESSURE CLASS AS SPECIFIED ON DRAWINGS OR DUCTILE IRON PRESSURE CLASS 50 OR AS NOTED ON DRAWING.

8. ALL LINES SHALL BE CHLORINATED AND TESTED IN CONFORMANCE WITH THE STANDARD SPECIFICATIONS PRIOR TO USE.

9. HARD COPY AND ELECTRONIC "AS- BUILT" DRAWINGS SHALL BE SUBMITTED TO CITY OF WOODLAND UPON COMPLETION OF THE WORK.

10. ALL WATERMAINS, FIRE HYDRANTS, BLOW OFF ASSEMBLIES, VACUUM BREAKERS, AND WATER SERVICES MUST HAVE LOCATE WIRE INSTALLED.
1. Service lines on new watermains shall be pressure tested up to the locking angle ball valve as part of the watermain testing.

2. Meter boxes shall have a 4’ wood stake with blue paint behind the box.

3. All domestic and irrigation meters shall be supplied, owned, and installed by the City of Woodland.
METER BOX RAVEN 1730-18" WITH 1730R LID OR ARMOURCAST BOX (NO CONCRETE)

INSTALL METER BOX 4" BEHIND CURB OR S/W

FINISHED STREET GRADE

CONNECT LOCATE WIRE TO WATERMAIN AND LOWER ANGLE VALVE LOCK EAR AND EXISTING WIRE IF EXISTING

SERVICE SADDLE ROMAC 202S OR APPROVED EQUIVALENT

30' TO 60'

12' PVC NIPPLE

LOCKING BYPASS VALVE

1-1/2" OR 2" CTS HDPE

1-1/2" OR 2" MUELLER CORP. STOP BALL VALVE

WATERMAIN

INSTALL METER YOKE (MUELLER CAT. NO. B2423-15) OR APPROVED EQUIVALENT

METER LAYING LENGTHS:
1-1/2" = 13"
2" = 17"
PLUS 1/2" FOR GASKETS

NOTES:

1. ALL DOMESTIC AND IRRIGATION METERS SHALL BE SUPPLIED, OWNED, AND INSTALLED BY THE CITY OF WOODLAND.

2. PRIOR TO CITY INSTALLATION OF METERS, ALL SERVICE APPLICATIONS MUST BE COMPLETED AND APPROVED. SERVICE FEES PAID IN FULL AND AS-BUILTS SUBMITTED AND APPROVED.

3. CONTRACTOR SHALL CONTACT THE CITY OF WOODLAND PUBLIC WORKS OFFICE (360) 225-7999 48-HOURS PRIOR TO INSTALLING ANY WATER SERVICE CONNECTIONS.

4. METERS WILL NOT BE SET BY THE CITY PRIOR TO DISINFECTION OF THE MAIN AND SERVICE, AND PRIOR TO A SUCCESSFUL BACTERIOLOGICAL TEST.

5. SERVICE LINES ON NEW WATERMAINS SHALL BE PRESSURE TESTED UP TO THE LOCKING ANGLE VALVE AS PART OF THE WATERMAIN TESTING.

6. DURING THE PRESSURE TEST, THE MALL SHALL BE OPEN FOR INSPECTION OF ALL CORPORATION STOPS.

7. USE 1-7/8" BIT FOR ALL 2" SADDLE TAPS AND 1-3/8" BIT FOR 1-1/2" SADDLE TAPS.

8. METER BOXES ARE NOT ALLOWED IN HARD SURFACED AREAS WITHOUT PRIOR WRITTEN APPROVAL. METER BOXES IN HARD SURFACE AREAS SHALL BE SLIGHTLY HIGHER (1/8" MAX) THAN SURROUNDING GRADE AND BOTH THE BOX AND LID MUST BE TRAFFIC RATED.

9. RAVEN OR ARMOURCAST BOX AND EXTENSION MAY BE ALLOWED WITH 1 1/2" METER SETS ONLY.

10. 1 1/2" METER CAN BE INSTALLED IN A 2" SETTING WITH ADAPTORS.
NOTES:

1. ALL NON–SINGLE FAMILY DOMESTIC SERVICES SHALL BE TAPPED SEPARATELY FROM ANY FIRE PROTECTION AND FIRE HYDRANT LEAD PIPING.

2. ALL IRRIGATION METERS SHALL BE PER APPROVED PLAN.

3. IRRIGATION METERS SHALL BE PLACED IN A STANDARD METER BOX WITH READER LID ACCORDING TO METER SIZE (SEE DETAIL W–02 & W–03).

4. EXCEPTIONS TO THESE REQUIREMENTS MAY BE SUBMITTED IN WRITING FOR REVIEW AND APPROVAL.

5. IRRIGATION METERS WILL BE READ DURING REGULAR BILLING CYCLES.
__COMPOUND METER INSTALLATION__

**VAULT**
UTILITY VAULT CO. R.C.P. VAULTS
#575–LA–3660P #76632
#676–WA–3660P W/#57–TL–B LID

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**METER SIZE** | **BY-PASS LINE SIZE** | **BY-PASS MATERIAL**
--- | --- | ---
3" & 4" | 2" MIN | COPPER
6" | 4" | DUCTILE IRON
8" | 6" | DUCTILE IRON

**NOTES:**

1. THE CITY OF WOODLAND WILL SUPPLY, OWN AND MAINTAIN THE METER, METER SPACER, REDUCING TEE, AND STRAINER. CONTACT THE CITY PUBLIC WORKS DEPARTMENT 2 WEEKS PRIOR TO INSTALLATION.

2. ALL METERS SHALL BE INSTALLED BY THE CITY. CONTRACTOR TO INSTALL TEMP. SPACER AS PER NOTE 1.

3. 10 PIPE DIAMETERS OF STRAIGHT PIPE REQUIRED, IN & OUT OF METER (IF USING 6" PIPE, NO BENDS ALLOWED WITHIN 5' OF THE METER IN EITHER DIRECTION [IE: 6" x 10 = 60°]).

4. PIPE AND FIXTURES TO BE SET ON VALVE STANDS INSTALLED ACCORDING TO MANUFACTURERS SPECS.

5. REMOTE READER UNIT SHALL BE LOCATED IN A READILY ACCESSIBLE AREA OUTSIDE THE VAULT, AS APPROVED BY THE CITY.

6. CONTRACTOR SHALL USE APPROPRIATE METHODS TO ENSURE COPPER PIPE, FITTINGS AND JOINTS WILL REMAIN LEAK-TIGHT.

7. METER BOX SHALL NOT BE ALLOWED IN HARD SURFACED AREAS WITHOUT PRIOR WRITTEN APPROVAL. METER BOXES AND LIDS IN HARD SURFACE AREAS SHALL BE SLIGHTLY HIGHER THAN SURROUNDING GRADE AND BOTH MUST BE TRAFFIC RATED.

8. INSTALL OR CONNECT LOCATING WIRE WITH LONG LOOP IN VAULT.

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PUBLIC WORKS DIRECTOR: [Signature]
DATE [Date]

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APPROVED
REVISIONS | DATE | DRAWN | DESIGNED
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NOTES:

1. VALVE STEM EXTENSION TO INCLUDE THE FOLLOWING WELDS TO BE 1/4" FILLET WELD ALL AROUND.
2. VALVE OPERATING NUT OR 1-7/8" X 1-7/8" X 2" HIGH GRADE STEEL.
3. 3/16" THICK X 5-1/5" DIA STEEL GUIDE PLATE SHAFT.
4. 2" X 2" X 3/16" SQUARE STRUCTURAL STEEL TUBING TO FIT OPERATING NUT.
5. FOR NEW VALVES IN EXISTING STREET, RESTORE PAVEMENT PER CITY OF WOODLAND STANDARDS.
GENERAL NOTES FOR BACKFLOW PROTECTION

1. ALL REDUCED PRESSURE AND BACKFLOW DEVICES SHALL BE WASHINGTON STATE APPROVED, PER WAC 246–290.

2. FIRE SPRINKLER AND IRRIGATION SYSTEMS SHALL BE PROTECTED WITH STATE APPROVED BACKFLOW PROTECTION AS PRESCRIBED IN WAC 246–290. IRRIGATION SYSTEMS ARE PROTECTED COMMENSURATE WITH THE DEGREE OF HAZARD AS DEFINED BELOW:
   - HIGH HEATH HAZARD — IS ASSESSED TO ANY IRRIGATION SYSTEM THAT CONTAINS PUMPS OR INFECTORS FOR THE ADDITION OF CHEMICALS. THIS RISK ASSESSMENT IS ALSO BASED ON THE ADDITIONAL HAZARD POSED BY BACTERIAL CONTAMINANTS FOUND ON LAWNs, AND ON THE POSSIBILITY OF CHANGES BEING MADE TO THE IRRIGATION SYSTEM BY THE CUSTOMER. AN APPROVED REDUCED PRESSURE BACKFLOW ASSEMBLY, OR AN APPROVED AIR GAP SEPARATION, SHOULD BE REQUIRED IN ALL CASES WHERE MEANS ARE PROVIDED FOR CHEMICALS OR HERBICIDES TO THE INJECTED INTO THE IRRIGATION SYSTEM, OR WHERE AN AUXILIARY SUPPLY IS ALSO PROVIDED FOR IRRIGATION WATER.
   - LOW HEALTH HAZARD — IS ASSESSED TO ALL IRRIGATION SYSTEMS NOT OTHERWISE ASSESSED AS A HIGH HEALTH HAZARD. THIS RISK ASSESSMENT IS BASED ON THE HAZARD POSED BY BACTERIAL AND CHEMICAL CONTAMINANTS FOUND ON LAWNs, AND ON THE POSSIBILITY OF CHANGES BEING MADE TO THE IRRIGATION SYSTEM BY THE CUSTOMER. AN APPROVED DOUBLE CHECK VALVE ASSEMBLY IS REQUIRED.

3. ALL COMMERCIAL, INDUSTRIAL AND MULTI-FAMILY FACILITIES SHALL BE PROTECTED WITH WASHINGTON STATE APPROVED BACKFLOW PROTECTION.

4. FURTHER BACKFLOW PREVENTION SHALL BE REQUIRED BY THE CITY OF WOODLAND DEPENDENT UPON ACTIVITY (BOILERS, CHILLERS, CHEMICAL ADDITION, BOOSTER PUMPS, WELLS, MEDICAL EQUIP., SODA POP MACHINES, ETC.).

5. ALL HOSEBIBS SHALL BE PROTECTED WITH VACUUM BREAKERS.

6. IF CHEMICALS ARE ADDED TO THE FIRE PROTECTION SYSTEM, A REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTER IS REQUIRED.

7. IF A WELL IS NOW EXISTING ON-SITE OR IS DRILLED IN THE FUTURE, A REDUCED PRESSURE BACKFLOW ASSEMBLY WILL BE REQUIRED AT EACH METER.

8. WHERE A VAULT IS REQUIRED, A GALV. STEEL WALL MOUNTED CHAMBER LADDER W/EXTENSIONS IS REQUIRED AND SHALL BE CENTERED UNDER THE ACCESS DOOR.

9. DOUBLE CHECK ASSEMBLIES SHALL BE INSTALLED IN EITHER AN APPROVED VAULT OR INSIDE THE BUILDING IN A MAINTAINABLE LOCATION.

10. REDUCED PRESSURE ASSEMBLIES SHALL BE INSTALLED EITHER OUTSIDE ABOVE GROUND OR INSIDE THE BUILDING.

11. ALL BACKFLOW DEVICES SHALL BE PROTECTED FROM FREEZING.

12. BACKFLOW PREVENTION ASSEMBLY VAULTS (I.E.: FIRE AND SERVICE PROTECTION) MUST BE INSTALLED AT THE CUSTOMER’S SIDE OF THE EASEMENT OR PROPERTY LINE. ALTERNATE LOCATIONS MUST BE REQUESTED IN WRITING AND APPROVED BY CITY OF WOODLAND PUBLIC WORKS PRIOR TO INSTALLATION.

13. NO PART OF THE BACKFLOW PREVENTION ASSEMBLY SHALL BE SUBMERGED IN WATER OR INSTALLED IN A LOCATION SUBJECT TO FLOODING. IF A BACKFLOW PREVENTION ASSEMBLY IS INSTALLED IN A VAULT OR BASEMENT, ADEQUATE DRAINAGE SHALL BE PROVIDED.

14. ALL FIRE PROTECTION SERVICES SHALL HAVE A IRON BODY GATE VALVE AT THE PUBLIC MAIN AND SHALL BE PRIVATE AFTER THAT VALVE.

15. ALL DOMESTIC SERVICES WITH BACKFLOW PROTECTION SHALL BE PRIVATE AFTER THE DOMESTIC WATER METER.

16. ALL BACKFLOW PREVENTION DEVICES SHALL BE TESTED AFTER INSTALLATION PRIOR TO ACCEPTANCE AND ANNUALLY THEREAFTER BY A CERTIFIED BACKFLOW ASSEMBLY TESTER. A PARTIAL LIST OF WASHINGTON STATE APPROVED TESTERS IS AVAILABLE UPON REQUEST. TEST RESULTS SHALL BE SENT TO THE CITY OF WOODLAND PUBLIC WORKS DEPARTMENT.

MAIL TEST RESULTS TO: CITY OF WOODLAND — PUBLIC WORKS
P.O. BOX 9
WOODLAND, WA 98674

GENERAL NOTES FOR BACKFLOW PROTECTION

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W-07
NOTES:
1. APPROVED DOUBLE CHECK VALVE ASSEMBLY (DCVA) TO LAY HORIZONTAL WITH GROUND. (VERTICAL ALLOWED IF APPROVED BY WASHINGTON STATE DEPARTMENT OF HEALTH)
2. DCVA MAY BE INSTALLED ABOVE OR BELOW GROUND PROVIDED ALL CLEARANCES ARE MET.
3. DESIGN FOR BACK SPHONAGE AND BACK PRESSURE.
4. UNIONIZED ASSEMBLIES REQUIRED.
5. TEST COCKS TO EITHER FACE OUTWARDS OR UPWARDS FROM ASSEMBLY.
6. THOROUGHLY FLUSH LINES PRIOR TO INSTALLATION OF BACKFLOW PREVENTER.
7. DO NOT INSTALL IN AN AREA SUBJECT TO FLOODING.
8. DCVA MUST BE ACCESSIBLE.
9. PROTECT DCVA FROM FREEZING.
10. DCVA SHALL BE APPROVED BY THE STATE OF WASHINGTON
11. PLUMBING PERMIT IS REQUIRED. CONTACT CITY BUILDING DEPARTMENT AT (360) 225-7299.
12. DCVA MUST BE TESTED AFTER INSTALLATION, THEN ANNUALLY BY A WASHINGTON STATE CERTIFIED BACKFLOW TESTER. RESULTS SHALL BE SENT TO THE CITY PUBLIC WORKS DEPARTMENT.
MIN 12" CLEARANCES AROUND BACKFLOW PREVENTER – ALL SIDES, TOP AND BOTTOM

ADEQUATE GRAVITY DRAINAGE SYSTEM REQUIRED W/APPROVED AIR GAP

GROUND/FLOOR

NOTES:

1. APPROVED REDUCED PRESSURE BACKFLOW ASSEMBLY (RPBA) TO LAY HORIZONTAL WITH GROUND (VERTICAL IS ALLOWED IF APPROVED BY WASHINGTON STATE DEPARTMENT OF HEALTH).

2. DESIGN RPBA FOR BACK SIPHONAGE AND BACK PRESSURE.

3. UNIONIZED ASSEMBLIES REQUIRED.

4. THOROUGHLY FLUSH LINES PRIOR TO INSTALLATION OF BACKFLOW PREVENTER.

5. DO NOT INSTALL IN AN AREA SUBJECT TO FLOODING.

6. ABOVE GROUND INSTALLATION ONLY.

7. RPBA MUST BE ACCESSIBLE.

8. PROTECT RPBA FROM FREEZING.


10. RPBA MUST BE TESTED AFTER INSTALLATION, THEN ANNUALLY BY A WASHINGTON STATE CERTIFIED BACKFLOW TESTER. RESULTS SHALL BE SENT TO THE CITY OF WOODLAND PUBLIC WORKS DEPARTMENT.

11. RPBA SHALL BE APPROVED BY THE STATE OF WASHINGTON.
UNDISTURBED EARTH

SEE STANDARD FOR CONCRETE BLOCKING (W-17)

BEARING AREA AGAINST UNDISTURBED SOIL – NO WOOD FORMS

PLAN VIEW

5' X 3' X 4'' CONCRETE PAD

FINISHED GRADE

2'' THREAD COUPLER (3'' – 6'' UNDER LID)

36'' MIN

2'' BRASS PIPE

BEARING AREA AGAINST UNDISTURBED SOIL – NO WOOD FRAMES

SEE STANDARD FOR TRENCH BEDDING (W-13)

SIDE VIEW

SEE STANDARD FOR VALVE BOX (W-06)

EXTENSION PIECE, 6'' PVC (2 REQ’D)

TYTON JOINT PLUG, TAPPED 2''
LOCATE WIRE

2'' x 6'' BRASS NIPPLE
2'' GATE VALVE, IRON BODY, SCREWED ENDS & 2'' OPERATING NUT
2'' BRASS PIPE
2'' BRASS 90' BEND THREADED

NOTE:

1. NO WOOD OR TIE DOWNS ALLOWED.
NOTE:

1. REPLACE ALL SERVICES WHICH MEET ANY OF THE FOLLOWING CONDITIONS:
   A. METER BOX IS RELOCATED
   B. SUBSTANDARD EITHER BY MATERIALS OR LACK OF COVER
   C. THE METER SETTER MUST BE REPLACED

2. ALL SERVICES MUST TERMINATE AT METER SETTER.

3. FOR SERVICE TRANSFERS ONLY, ONE FITTING IS ALLOWED BETWEEN THE CORP STOP AND THE METER STOP.
FOR THIS ZONE OF THE TRENCH SECTION, SEE CITY, COUNTY OR WSDOT RIGHT OF WAY PERMIT OR STANDARD STREET REPAIR DETAIL. FOR NON-PAVED SURFACES, MATCH EXISTING GRAVEL OR SEEDED LAWN, OR REFER TO APPROVED DRAWINGS.

TRENCH BACKFILL MECHANICALLY COMPACTED TO 95% IN LIFTS NOT EXCEEDING 6". BANK RUN GRAVEL SHALL BE IN ACCORDANCE WITH THE MOST CURRENT EDITION OF THE W.S.D.O.T./A.P.W.A. STANDARD SPECIFICATIONS. (SECTION 9-03.19)

PIPE BEDDING IN ACCORDANCE WITH THE MOST CURRENT EDITION OF THE W.S.D.O.T./A.P.W.A. STANDARD SPECIFICATIONS (SECTION 7-9.3(9))

NOTE:

1. CLEAN NATIVE MATERIAL MAY BE USED AS PIPE BEDDING AND TRENCH BACKFILL AS APPROVED BY CITY OF WOODLAND PUBLIC WORKS.
NOTES:

1. HYDRANT TO BE WATEROUS WB67 CLASS 250.

2. HYDRANT TO BE 5-1/4" COMMERCIAL W/ (2) 2-1/2" NST, (1) 4-1/2" NST THREADED PORT(S) WITH (1) 5" TWO LUG QUARTER TURN STORZ OR APPROVED EQUAL PUMPER PORT CONNECTION.

3. STORZ ADAPTORS ARE REQUIRED.

4. FOUR (4) GUARD POSTS TO BE INSTALLED IN UNPROTECTED AREAS (4' RADIUS).

5. FIRE HYDRANT INSTALLATION SHALL BE APPROVED BY THE CITY OF WOODLAND PUBLIC WORKS DEPARTMENT PRIOR TO BACKFILLING.

6. HYDRANTS SHALL NOT BE SET UNTIL LOCATION AND DEPTH ARE APPROVED BY THE CITY OF WOODLAND.

7. FIRE HYDRANTS SHALL BE SHOP PAINTED PRIOR TO INSTALLATION W/ SAFETY YELLOW (RODDA NO. QD81) HIGH GLOSS EQUIPMENT ENAMEL.

8. HYDRANT STANDARD BURY IS 4' UNLESS OTHERWISE NOTED ON THE PLANS, OR WHEN BREAKAWAY JOINT IS STALLED 7" ABOVE FINISHED GRADE.

9. HYDRANT LOCATIONS SHALL BE AS SHOWN ON THE PLANS.

10. JOINT RESTRAINT SYSTEM MAY BE USED FOR INSTALLATIONS OF NOT MORE THAN 18' (ONE PIPE LENGTH).

11. INSTALL LOCATING WIRE AND CONNECT TO EXISTING WIRE IF PRESENT.
NOTES:

1. CONSULT I.B.C. FOR RETAINING WALL CONSTRUCTION REQUIREMENTS.

2. THE AREA WITHIN THE RETAINING WALL BOUNDARIES FROM THE CURB/SIDEWALK TO THE REAR RETAINING WALL SHALL HAVE A MAXIMUM SLOPE OF 1% IN ANY DIRECTION.

3. THE 4'x4' CONCRETE PAD SHALL HAVE A MAXIMUM SLOPE OF 1%.

4. RETAINING WALL SHALL MAINTAIN A MINIMUM RADIUS OF 3.5' AROUND THE HYDRANT.
INSTALL FLEXIBLE END SEAL ON EACH END OF CASING PIPE (PIPELINE SEAL AND INSULATOR INC MODEL "W" OR APPROVED EQUIVALENT)

FILL SPACE BETWEEN CASING PIPE AND CARRIER PIPE WITH SLURRY OR BLOWN IN SAND AS REQUIRED BY INSTALLATION PERMITS

WELDED JOINT

RESTRAINED MECHANICAL JOINT D.I. CARRIER PIPE – SEE PLANS FOR CARRIER PIPE SIZE AND CLASS RATING

STEEL CASING ASTM A 139 GRADE B MIN WALL THICKNESS – SEE PLANS FOR CASING SIZE AND MIN WALL THICKNESS

STAINLESS STEEL CASING SPACER – SEE SCHEDULE FOR SIZE (PIPELINE SEAL & INSULATOR INC MODEL CBG-2 OR APPROVED EQUIVALENT) 3 PER 18’ JOINT OF PIPE, EQUALLY SPACED

CASING SIZING REQUIREMENTS

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<td>24&quot;</td>
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NOTES:
1. CASING TO BE EXTENDED 5’ BEYOND ANY CURBS, WALLS, STRUCTURES, OR FOOTINGS.
2. PUBLIC AND PRIVATE MAINS SHALL BE PLACED IN SEPARATE CASINGS.
3. FOR CASINGS UNDER RAILROAD TRACKS, WRITTEN PERMISSION FOR THE OWNER OF THE RAILROAD TRACKS IS REQUIRED PRIOR TO OBTAINING CITY OF WOODLAND PERMITS TO PROCEED.
4. NO PRIVATE UTILITIES SHALL BE ALLOWED IN CITY OF WOODLAND CASINGS.
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<th>TEE</th>
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<td>27.3</td>
<td>2.73</td>
</tr>
<tr>
<td></td>
<td>45°</td>
<td>33.6</td>
<td>46.0</td>
<td>3.37</td>
</tr>
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<td>18.2</td>
<td>18.3</td>
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<tr>
<td></td>
<td>11-1/4°</td>
<td>9.3</td>
<td>6.7</td>
<td>1.42</td>
</tr>
<tr>
<td>18&quot;</td>
<td>90°</td>
<td>29.9</td>
<td>36.5</td>
<td>3.05</td>
</tr>
<tr>
<td></td>
<td>45°</td>
<td>42.2</td>
<td>64.7</td>
<td>3.79</td>
</tr>
<tr>
<td></td>
<td>22-1/2°</td>
<td>22.9</td>
<td>25.8</td>
<td>2.57</td>
</tr>
<tr>
<td></td>
<td>11-1/4°</td>
<td>11.7</td>
<td>9.4</td>
<td>1.80</td>
</tr>
<tr>
<td>24&quot;</td>
<td>90°</td>
<td>52.3</td>
<td>89.1</td>
<td>4.03</td>
</tr>
<tr>
<td></td>
<td>45°</td>
<td>74.0</td>
<td>149.8</td>
<td>5.00</td>
</tr>
<tr>
<td></td>
<td>22-1/2°</td>
<td>40.0</td>
<td>59.7</td>
<td>3.55</td>
</tr>
<tr>
<td></td>
<td>11-1/4°</td>
<td>20.4</td>
<td>21.7</td>
<td>2.11</td>
</tr>
</tbody>
</table>

NOTES:
1. ALL BLOCKING SHALL BE POURED AGAINST FIRM UNDISTURBED SOIL.
2. ALL CONCRETE BLOCKING SHALL BE POURED IN PLACE WITHOUT DIRECT CONTACT TO PIPE, FITTINGS OR FLANGES. 15 LB. ASPHALT-IMPREGNATED FELT, OR EQUIVALENT AS APPROVED BY THE INSPECTOR, SHALL BE PLACED BETWEEN THE CONCRETE AND PIPE, FITTINGS OR FLANGES.
3. LAYOUT TO BE APPROVED BY THE INSPECTOR PRIOR TO AND AFTER CONCRETE POUR.
4. CONCRETE FOR ALL BLOCKING SHALL HAVE A 28-DAY MINIMUM COMPRESSIVE STRENGTH OF 2,300 P.S.I.
5. THIS CHART IS NOT APPLICABLE TO VERTICAL BENDS. LOCATION SPECIFIC DESIGN IS REQUIRED FOR SUCH INSTALLATIONS.
6. WHERE THE TRENCH SOIL HAS A BEARING PRESSURE LESS THAN 2000 POUNDS PER SQUARE FOOT, LOCATION SPECIFIC DESIGN IS REQUIRED.
NOTES:

1. CONCRETE THRUST BLOCKING TO BE POURED AGAINST UNDISTURBED EARTH.

2. PLASTIC BARRIER SHALL BE PLACED BETWEEN ALL THRUST BLOCKS AND PIPE AND/OR FITTINGS.

3. ANCHOR REBAR SHALL BE 5/8" MINIMUM DIAMETER.

4. CONCRETE DEAD-MAN THRUST BLOCKING MAY BE REQUIRED BY THE CITY, OR ALLOWED AT THE DISCRETION OF THE PUBLIC WORKS DIRECTOR.

5. ALL STANDARD BLOCKING AND THRUST CRITERIA. SEE STANDARD FOR THRUST LOADS (W-19).
THrust loads

THrust at fittings in pounds at 200 pounds per square inch of water pressure

<table>
<thead>
<tr>
<th>PIPE DIAMETER</th>
<th>90' BEND</th>
<th>45' BEND</th>
<th>22-1/2' BEND</th>
<th>11-1/4' BEND</th>
<th>DEAD END OR TEE</th>
</tr>
</thead>
<tbody>
<tr>
<td>4&quot;</td>
<td>3,600</td>
<td>2,000</td>
<td>1,000</td>
<td>500</td>
<td>2,600</td>
</tr>
<tr>
<td>6&quot;</td>
<td>8,000</td>
<td>4,400</td>
<td>2,300</td>
<td>1,200</td>
<td>5,700</td>
</tr>
<tr>
<td>8&quot;</td>
<td>14,300</td>
<td>7,700</td>
<td>4,000</td>
<td>2,000</td>
<td>10,100</td>
</tr>
<tr>
<td>10&quot;</td>
<td>22,300</td>
<td>12,100</td>
<td>6,200</td>
<td>3,100</td>
<td>15,800</td>
</tr>
<tr>
<td>12&quot;</td>
<td>32,000</td>
<td>17,400</td>
<td>8,900</td>
<td>4,500</td>
<td>22,700</td>
</tr>
<tr>
<td>14&quot;</td>
<td>43,600</td>
<td>23,600</td>
<td>12,100</td>
<td>6,100</td>
<td>30,800</td>
</tr>
<tr>
<td>16&quot;</td>
<td>57,000</td>
<td>30,800</td>
<td>15,700</td>
<td>7,900</td>
<td>40,300</td>
</tr>
</tbody>
</table>

NOTES:

1. Blocking shall be commercial concrete poured in place against undisturbed earth. Fitting shall be isolated from concrete thrust block with plastic or similar material.

2. To determine the bearing area of the thrust block in square feet (S.F.): Example: 12" - 90' bend in sand and gravel 32,000 lbs 3000 lb/S.F. = 10.7 S.F. of area

3. Areas must be adjusted for other pipe size, pressures and soil conditions.

4. Blocking shall be adequate to withstand full test pressure as well as to continuously withstand operating pressure under all conditions of service.

Safe soil bearing loads

For horizontal thrusts when the depth of cover over the pipe exceeds 2 feet

<table>
<thead>
<tr>
<th>SOIL</th>
<th>Pounds per square foot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Muck, Peat</td>
<td>0</td>
</tr>
<tr>
<td>Soft Clay</td>
<td>1,000</td>
</tr>
<tr>
<td>Sand</td>
<td>2,000</td>
</tr>
<tr>
<td>Sand &amp; Gravel</td>
<td>3,000</td>
</tr>
<tr>
<td>Sand &amp; Gravel cemented with clay</td>
<td>4,000</td>
</tr>
<tr>
<td>Hard Shale</td>
<td>10,000</td>
</tr>
</tbody>
</table>
NOTES:

1. EXCEPTIONS SHALL BE APPROVED BY THE CITY OF WOODLAND IN WRITING.

2. WHERE MINIMUM CLEARANCES CANNOT BE MET, THE SEWER MAIN SHALL BE PLACED IN SEPARATE TRENCHES AND CONSTRUCTED OF MATERIALS EQUIVALENT TO THE CITY OF WOODLAND WATER MAIN STANDARDS, INCLUDING PRESSURE TESTING. ADEQUATE RESTRAINT SHALL BE PROVIDED TO ALLOW TESTING TO OCCUR.

3. ALL SEWER CROSSINGS OVER OR UNDER WATER MAINS SHALL MAXIMIZE THE JOINT SEPARATION BY USING THE LONGEST STANDARD LENGTH PIPE AVAILABLE FROM THE MANUFACTURER FOR BOTH THE WATER AND SEWER MAINS. BOTH PIPES SHALL BE CENTERED AT THE POINT OF CROSSING.

4. ALL SEWER CROSSING OVER WATER MAINS SHALL BE CONSTRUCTED OF MATERIALS EQUIVALENT TO THE CITY OF WOODLAND WATER MAIN STANDARDS, INCLUDING PRESSURE TESTING.
NOTES:

1. VALVE ASSEMBLY SHALL BE SET AT THE HIGH POINT OF THE LINE.

2. A MINIMUM OF ONE 4" ADJUSTMENT RING MUST BE PROVIDED IN TRAFFIC AREA SETTINGS. SADDLE TAP, PIPING & VALVE TO MATCH COMBINATION AIR VALVE INLET SIZE (SEE PLAN). ADJUSTMENT RINGS AND MANHOLE RING TO BE GROUTED, WATER TIGHT.

3. TERMINATE EXHAUST INSIDE VAULT WITH 90° BEND (DOWN) AND WIRE MESH IF VAULT IS DRAINED TO DAYLIGHT.

4. LOCATE WIRE SHALL INCLUDE A LOOP THAT CAN BE REACHED FROM OPEN COVER.
NOTES:

1. SAMPLING STATIONS SHALL BE 24" BURY, WITH A 3/4" FIP INLET, AND A (3/4" HOSE) NOZZLE.

2. ALL STATIONS SHALL BE ENCLOSED IN A LOCKABLE, NONREMOVEABLE, ALUMINUM–CAST HOUSING.

3. WHEN OPENED, THE STATION SHALL REQUIRE NO KEY FOR OPERATION, AND THE WATER WILL FLOW IN AN ALL BRASS WATERWAY.

4. ALL WORKING PARTS WILL ALSO BE OF BRASS AND BE REMOVABLE FROM ABOVE GROUND WITH NO DIGGING. EXTERIOR PIPING SHALL BE BRASS.

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

6. ECLIPSE NO. 88 BRASS SAMPLING STATION SHALL BE INSTALLED.

7. INSTALL LOCATE WIRE.

8. POUR 3' X 1' X 4" CONCRETE PAD.
Standard Abbreviations

AB  ANCHOR BOLT  H  HIGH, HORIZONTAL
AC  ASPHALTIC CONCRETE, ACoustIC
ADJ  ADJUSTABLE  HDPE  HIGH DENSITY POLYETHYLENE
AL  ALUMINUM  HOA  HAND-OFF-AUTO
ALT  ALTERNATE  HP  HORSEPOWER
AMB  APPROX  HZ  HERTZ (CYCLES PER SECOND)
APPROX  APPROXIMATELY  ID  INSIDE DIAMETER
ASSY  ASSEMBLY  IPS  IRON PIPE SIZE
AUTO  AUTOMATIC  JB  JUNCTION BOX
AUX  AUXILIARY  JT  JOINT
BF  BLIND FLANGE  LB  POUND(S)
BLDG  BUILDING  LVR  LOUVER
BV  BALL VALVE  LW  LOCATE WIRE
CB  CATCH BASIN  MAG  MAGNETIC
CDF  CONTROL DENSITY FILL  MAINT  MAINTENANCE
CEM  CEMENT  MAT'L  MATERIAL
CFM  CUBIC FEET PER MINUTE  MAX  MAXIMUM
CJ  CONSTRUCTION JT  MCC  MOTOR CONTROL CENTER
CLR  CLEAR  MJ  MECHANICAL JOINT
CO  CLEANOUT  MIN  MINIMUM
COMB  COMBINATION  MJ  MECHANICAL JOINT
CONC  CONCRETE, CONCRETING  N  NEUTRAL, NORTH
CPG  COUPLING  NE  NORTH EAST
CSTC  CRUSHED SURFACING  NEG  NEGATIVE
CSC  CRUSHED SURFACING  NO  NOT TO SCALE
CTC  CENTER  NPSH  NET POSITIVE SUCTION HEAD
CTS  COPPER TUBE SIZE  NRS  NONRISING STEM
CSBC  CRUSHED SURFACING  NST  NOT TO SCALE
D  DRAIN, DECANT  OD  OUTSIDE DIAMETER
DIA  DIAMETER  OH  OVERHEAD
DWG(S)  DWG(S)  OPNG  OPENING
E  EAST  PE  PLAIN END, POLYETHYLENE
EA  EXHAUST AIR, EACH  PEN  PENETRATION
ECC  ECCENTRIC  PH  PHASE
ELEV.  ELEVATION (ELEV)  PL  PLATING LINE
ELECTRICAL  E.O.P.  PLCS  PLACES
E.O.P.  EDGE OF PAVEMENT  PLY  PLYWOOD
EQUIP  EQUIPMENT  PP  POWER POLE
EQUIV  EQUIVALENT  PRES  PRESSURE
EX  EXISTING  PRV  PRESSURE REDUCING (RELIEF)
EXIST  EXISTING  PS  PRESSURE SWITCH, PRESSURE
EXH  EXHAUST  PRESSURE SENSOR
EXP  EXPANSION, EXPOSED  PSI  POUNDS PER SQUARE INCH
EXT  EXTERIOR  PVC  POLYVINYL CHLORIDE
FF  FINISH FLOOR  PVMT  PAVEMENT
FIP  FEMALE IRON PIPE  R  RADIUS, RISER
FLEX  FLEXIBLE  R/C  REINFORCED CONCRETE
FLG  FLANGE  RD  ROOF DRAIN, ROAD
FLR  FLOOR  RED  REDUCED(R)
GALV  GALVANIZED  REINF  REINFORCED
GPD  GALLONS PER DAY  REQ'D  REQUIRED
GPM  GALLONS PER MINUTE  RPM  REVOLUTIONS PER MINUTE
GV  GATE VALVE  R/W  RIGHT OF WAY

STANDARD ABBREVIATIONS

APPROVED

REVISIONS DATE DRAWN DESIGNED

W-23

PUBLIC WORKS DIRECTOR DATE