NOTES:
1. METER BOX SHALL BE INSTALLED AS SHOWN IN THE LOCATION DETAIL SHOWN BELOW.
2. ALL BENDS IN PLASTIC PIPE SHALL HAVE A MINIMUM RADIUS OF 30 PIPE DIAMETERS.
3. NO COUPLINGS OR UNIONS IN PLASTIC PIPE UNLESS AS SHOWN PER DETAIL.
4. PROVIDE 2' MIN. OF COVER OVER SERVICE LATERAL PIPE IN ALL LOCATIONS.
5. INSTALL 6" PORTLAND CEMENT CONCRETE FOOTING UNDERNEATH TRAFFIC RATED METER BOXES.
6. ALL NON-RESIDENTIAL USES SHALL BE PROTECTED WITH A BACKFLOW PREVENTION DEVICE AS REQUIRED AND APPROVED BY THE CITY'S CROSS-CONNECTION CONTROL TEAM.
7. ALL DRY AND WET TAPS SHALL BE PERFORMED ACCORDING TO THE PIPE MANUFACTURERS RECOMMENDATION.

METER BOX TABLE

<table>
<thead>
<tr>
<th>METER SIZES</th>
<th>ARMORCAST BOX</th>
<th>ARMORCAST LID</th>
<th>TRAFFIC RATED LID</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/8&quot; &amp; 3/4&quot; &amp; 1&quot;</td>
<td>A600 1429</td>
<td>A600 1428-H7</td>
<td>A600 1428T-H7</td>
</tr>
<tr>
<td>1.5&quot; &amp; 2&quot;</td>
<td>A600 1640PCX12</td>
<td>A600 1643-H7</td>
<td>A600 1643T-H7</td>
</tr>
</tbody>
</table>

CITY OF REDWOOD CITY
ENGINEERING AND TRANSPORTATION
WATER SERVICE LINE
CONNECTIONS TO D.I.P. & PVC MAINS
FOR 5/8" TO 2" METERS

STANDARD DETAIL
W - 1
PVC
CITY OF REDWOOD CITY
ENGINEERING AND TRANSPORTATION
4" AND 6" PVC POTABLE WATER SERVICE TO PVC MAIN

DATE: 11/25/19

NOTES:
1. ALL PIPE SIZES SHALL BE 4" OR 6", AS SHOWN ON THE PLANS.
2. FOR SERVICES TO 3" WATER METERS, PROVIDE AND INSTALL REDUCERS BETWEEN VAULT AND GATE VALVES TO REDUCE TO 3" WATER METER. ALL OTHER PIPE AND FITTINGS EXTERIOR TO THE VAULT SHALL BE 4" OR 6".
3. ALL PVC PIPE SHALL BE BLUE PVC AWWA C900 CL305 DR14.
4. PROVIDE METER BOX LID WITH 2-PIECE COVER W/ ONE PIECE TO HAVE A TOUCH READ HOLE (FLEX NET HOLE).
6. ALL JOINTS SHALL BE restrained and wrapped per DETAIL W-23.
7. ALL DUCTILE IRON SPIELO SPOOLS AND FITTINGS SHALL BE CL53 AND FUSION EPOXY LINED AND COATED.
8. GATE VALVES SHALL BE SUPPORTED BY CONCRETE, SEE DETAIL W-10.
9. ALL GATE VALVES SHALL HAVE BOX AND RISERS, SEE DETAIL W-42.
**NOT TO SCALE**

**FIRE HYDRANT IN BAY MUD**

**MARKER PLAN DETAIL:**
BLUE MARKERS SHALL BE PLACED ON THE LEFT HAND SIDE OF ALL TRAVEL LANES ADJACENT TO THE FIRE HYDRANT UP TO THE CENTER OF THE STREET.

**MARKER LOCATION**

**NOTES:**
1. ALL NUTS, BOLTS, AND WASHERS SHALL BE ASTM A-276 TYPE 316 STAINLESS STEEL.
2. IN REDWOOD SHORES, FIRE HYDRANT SHALL BE LOW-SILHOUETTE MODEL #92 WITH TWO 2-1/2" AND ONE 4-1/2" OUTLETS, FUSION EPOXY LINED AND COATED. FOR ALL OTHER AREAS, REFER TO THE TABLE IN DETAIL W-3.
3. PROVIDE BLUE REFLECTIVE MARKER PER MARKER PLAN DETAIL SHOWN LEFT.
4. PROVIDE 5-FOOT MINIMUM CLEARANCE AROUND FIRE HYDRANT, OR AS SHOWN ON PLANS.
5. ALL MECHANICAL JOINTS SHALL BE WRAPPED IN PETROLATUM TAPE WRAP SYSTEM, SEE DETAIL W-23.

**DATE: 11/25/19**
2" BLOW OFF

NOT TO SCALE

CITY OF REDWOOD CITY
ENGINEERING AND TRANSPORTATION

DATE: 11/25/19

STANDARD DETAIL
W - 5
PVC

NOTES:
1. LOCATOR WIRE SHALL BE CAPABLE OF EXTENDING 2' ABOVE VALVE BOXES.
CITY OF REDWOOD CITY
ENGINEERING AND TRANSPORTATION

ABOVE GROUND
COMBINATION AIR/VACUUM
RELEASE VALVE

DATE: 11/25/19
NOTES:
1. ALL THRUST BLOCKS SHALL BEAR AGAINST UNDISTURBED EARTH.
2. ALL JOINTS AT BENDS SHALL BE RESTRAINED AND WRAPPED, SEE DETAIL W-23.
3. CALCULATIONS ARE BASED ON ALLOWABLE SOIL BEARING PRESSURE OF 2000 LBS. PER SQ. FT AND WATER PIPE PRESSURE OF 220 PSI. CALCULATED AS A WORKING OPERATING PRESSURE OF 80 PSI WITH A 1.5 SAFETY FACTOR PLUS A WATER HAMMER PRESSURE OF 100 PSI FROM A 5 FPS FLOW VELOCITY IN PVC.
4. DESIGNER SHALL PROVIDE A REVISED DETAIL W-10 DETAIL WITH REVISED BEARING AREAS, AS NEEDED, IF SITE CONDITIONS AND PIPE PRESSURES DIFFER FROM ASSUMPTIONS STATED IN NOTE #3.
5. FORM CONCRETE AS REQUIRED TO KEEP CONCRETE OFF OF MECHANICAL PIPE OR FLANGE BOLTS.
6. BUTTERFLY VALVES SHALL BE CLEAR OF CONCRETE.

<table>
<thead>
<tr>
<th>TYPE OF FITTING</th>
<th>4&quot;</th>
<th>6&quot;</th>
<th>8&quot;</th>
<th>10&quot;</th>
<th>12&quot;</th>
<th>14&quot;</th>
<th>16&quot;</th>
<th>18&quot;</th>
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</thead>
<tbody>
<tr>
<td>90° ELL</td>
<td>3</td>
<td>6</td>
<td>19</td>
<td>18</td>
<td>24</td>
<td>31</td>
<td>37</td>
<td>33</td>
</tr>
<tr>
<td>45° ELL</td>
<td>2</td>
<td>4</td>
<td>6</td>
<td>9</td>
<td>13</td>
<td>17</td>
<td>22</td>
<td>28</td>
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<td>22 1/2° ELL</td>
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<td>2</td>
<td>3</td>
<td>5</td>
<td>7</td>
<td>9</td>
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</tr>
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<td>3</td>
<td>4</td>
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<td>6</td>
<td>7</td>
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<td>PLUG/TEE</td>
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<td>8</td>
<td>12</td>
<td>16</td>
<td>22</td>
<td>23</td>
<td>34</td>
</tr>
</tbody>
</table>

GATE AND BUTTERFLY VALVE

1/2" Ø A316 STAINLESS STEEL HOOK REBAR EACH SIDE

6" MIN. COVER

6" MINIMUM CONCRETE HEIGHT AND SHALL NOT PASS SPRINGLINE OF VALVE. BUTTERFLY VALVE GEAR BOX SHALL BE CLEAR OF CONCRETE.
NOTES: RESTRAINED LENGTH PIPES SHALL BE USED IN-LIEU OF THRUST BLOCKS IN BAY MUD. THIS DETAIL IS FOR REFERENCE ONLY. IF USED IN RARE CASES, DESIGNER SHALL PROVIDE FULL DESIGN CALCULATIONS AND APPROVED BY THE CITY ENGINEER.

DIMENSION TABLES FOR HORIZONTAL BENDS

<table>
<thead>
<tr>
<th>PIPE DIA.</th>
<th>A</th>
<th>D</th>
<th>H</th>
<th>L</th>
<th>RE-BAR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>S&quot;</td>
<td>SIZE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>90° BEND</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6&quot;</td>
<td>4'</td>
<td>1'</td>
<td>2'</td>
<td>4'</td>
<td>No. 4</td>
</tr>
<tr>
<td>8&quot;</td>
<td>4.5'</td>
<td>2'</td>
<td>2.5'</td>
<td>5'</td>
<td>No. 4</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>PIPE DIA.</th>
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<th>D</th>
<th>H</th>
<th>L</th>
<th>RE-BAR</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>S&quot;</td>
<td>SIZE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>45° BEND</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>6&quot;</td>
<td>3'</td>
<td>1'</td>
<td>1'</td>
<td>3'</td>
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<table>
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<th>H</th>
<th>L</th>
<th>RE-BAR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>S&quot;</td>
<td>SIZE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22 1/2° BEND</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6&quot;</td>
<td>1'</td>
<td>1'</td>
<td>1'</td>
<td>2'</td>
<td>No. 4</td>
</tr>
<tr>
<td>8&quot;</td>
<td>2'</td>
<td>1'</td>
<td>1.5'</td>
<td>3'</td>
<td>No. 4</td>
</tr>
<tr>
<td>10&quot;</td>
<td>2.5'</td>
<td>1'</td>
<td>2'</td>
<td>4'</td>
<td>No. 4</td>
</tr>
<tr>
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<td>1'</td>
<td>2'</td>
<td>4.5'</td>
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<table>
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<tr>
<th>PIPE DIA.</th>
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<th>H</th>
<th>L</th>
<th>RE-BAR</th>
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<tbody>
<tr>
<td></td>
<td>S&quot;</td>
<td>SIZE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11 1/4° BEND</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6&quot;</td>
<td>1'</td>
<td>1'</td>
<td>1'</td>
<td>2'</td>
<td>No. 4</td>
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<tr>
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<td>1'</td>
<td>1'</td>
<td>2'</td>
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<tr>
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<td>1'</td>
<td>1'</td>
<td>1'</td>
<td>3'</td>
<td>No. 6</td>
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<td>1'</td>
<td>2'</td>
<td>4'</td>
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<table>
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<th>H</th>
<th>L</th>
<th>RE-BAR</th>
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<tbody>
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<td></td>
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<td>SIZE</td>
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<td></td>
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</tr>
<tr>
<td>TEES AND DEAD ENDS</td>
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<td>1.5'</td>
<td>1.5'</td>
<td>3'</td>
<td>No. 4</td>
</tr>
<tr>
<td>8&quot;</td>
<td>3.5'</td>
<td>2'</td>
<td>2.5'</td>
<td>3.5'</td>
<td>No. 4</td>
</tr>
</tbody>
</table>
### Minimum Length (L) of Restraint, Each Side of Standard Fitting (in Feet)

#### Horizontal Bends

<table>
<thead>
<tr>
<th>Pipe Size</th>
<th>90°</th>
<th>45°</th>
<th>22.5°</th>
<th>11.25°</th>
<th>90°</th>
<th>45°</th>
<th>22.5°</th>
<th>11.25°</th>
<th>90°</th>
<th>45°</th>
<th>22.5°</th>
<th>11.25°</th>
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<tbody>
<tr>
<td>4&quot;</td>
<td>13</td>
<td>6</td>
<td>3</td>
<td>2</td>
<td>N/A</td>
<td>12</td>
<td>6</td>
<td>4</td>
<td>22</td>
<td>1</td>
<td>42</td>
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</tr>
<tr>
<td>6&quot;</td>
<td>22</td>
<td>8</td>
<td>4</td>
<td>2</td>
<td>N/A</td>
<td>22</td>
<td>8</td>
<td>4</td>
<td>22</td>
<td>1</td>
<td>31</td>
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<td>10</td>
<td>22</td>
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<td>127</td>
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#### Vertical Bends

<table>
<thead>
<tr>
<th>Pipe Size</th>
<th>90°</th>
<th>45°</th>
<th>22.5°</th>
<th>11.25°</th>
<th>90°</th>
<th>45°</th>
<th>22.5°</th>
<th>11.25°</th>
<th>90°</th>
<th>45°</th>
<th>22.5°</th>
<th>11.25°</th>
</tr>
</thead>
<tbody>
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<td>4&quot;</td>
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<td>12</td>
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<td>22</td>
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<td>3</td>
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<td>15</td>
<td>N/A</td>
<td>15</td>
<td>8</td>
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</tbody>
</table>

**NOTES:**

1. Calculations are based on a water pipe pressure of 200 PSI calculated as a working operating pressure of 80 PSI with a 1.5 safety factor plus a water hammer pressure of 80 PSI from a 4 FFS flow velocity in PVC pipe.
2. All new bends, valves and other fittings shall be restrained for the minimum distances shown.
3. This table is based on EBAA restraining devices.
4. All fittings shall be restrained using mechanical restraining devices unless otherwise noted.
5. Wrap restraining devices with Petroleum tape wrap system per Specification Section 02661 and W-23.
6. Use the smallest standard degree bends when possible, unless otherwise shown on the plan.
7. For PVC pipe, bell and spigot joint restraints shall be EBAA series serrated type 1500 or 2800; mechanical joint restraints shall be EBAA series 2000PV; for CPVC, mechanical joint restraints shall be EBAA Megalug series 1100.
8. Restrained bedding shall be per standard detail UT-1 or UT-2.
9. Restrained length shall be used in lieu of thrust blocks in bay mud.

* Single bend restraint length shall be used when X > L1.

---

### Design Criteria:

- **Pipe Pressure:** 200 PSI
- **Bedding:** GP & SF
- **Depth:** 4 FT
- **Vertical Offset:** 6 FT
- **Lower Bed Depth:** 3 FT

---

**City of Redwood City**

**Engineering and Transportation**

**Thrust Restraint Length Table**

**W - 13 PVC**
NOTES:

1. CONTRACTOR SHALL ADHERE TO THE STATE WATER STANDARDS (TITLE 22, CHAPTER 16, SECTION 64572) CRITERIA AND STATE WATER BOARD MEMO NO. 2003-02—ALTERNATE CRITERIA GUIDANCE (UNDER SECTION 64551.100.a) FOR SEPARATION OF WATER MAINS AND NON-PORTABLE PIPELINES.

2. THE ABOVE DETAIL ILLUSTRATES ALTERNATE CONSTRUCTION CASE 2C FROM MEMO 2003-02 WHERE THE NEW WATER MAIN COULD NOT BE INSTALLED ABOVE THE OBSTRUCTED PIPELINE AND HAS TO BE INSTALLED BELOW IT.

3. THE USE OF THIS DETAIL AND OTHER ALTERNATE CONSTRUCTION FOR SAFE SEPARATIONS STATED IN ABOVE MENTIONED STATE MEMO NO. 2003-02 SHALL BE REVIEWED & APPROVED IN A CASE-BY-CASE BASIS BY THE CITY ENGINEER. FIELD MODIFICATIONS TO THIS DETAIL TO IMPROVE PUBLIC SAFETY SHALL BE FURTHER PROVIDED BY THE CITY.

4. USE SMALLEST STANDARD DEGREE FITTINGS AS REQUIRED FOR VERTICAL SEPARATION, UNLESS OTHERWISE SHOWN ON PLAN.

5. FOR PVC PIPE, BELL AND SPIGOT JOINT RERAINTS SHALL BE EBAA SERIES 1500 OR 2800; MECHANICAL JOINT RERAINTS SHALL BE EBAA SERIES 2000PV. FOR DIP, MECHANICAL JOINT RERAINTS SHALL BE EBAA MEGALUG SERIES 1100.

6. SEE THRUST RESTRAINT LENGTH TABLE ON W-13 PVC FOR RESTRAINED JOINT LENGTH, "L".

7. PIPE BEDDING SHALL BE PER STANDARD DETAIL UT-1 OR UT-2.
RESTRAINED CONNECTION DETAIL
FOR NEW PVC PIPE TO EXISTING WATERMAIN

PLAIN END CONNECTION TO EXIST, BELL END PIPE

BELL JOINT RESTRAINT, EBA 1500 SERIES, OR APPROVED EQUAL

PLAIN END CONNECTION TO EXIST, GATE VALVE

MJ RESTRAINTS, AS MANUFACTURED BY EBA 2000PV, AND FOR DIP AND CIP USE EBA 1100 SERIES.

PLAIN END CONNECTION TO EXIST, BUTTERFLY VALVE

MJ RESTRAINTS, AS MANUFACTURED BY EBA 2000PV, AND FOR DIP AND CIP USE EBA 1100 SERIES.

PLAIN END CONNECTION TO EXIST, FLANGE JOINT

MJ RESTRAINTS, AS MANUFACTURED BY EBA 2000PV, AND FOR DIP AND CIP USE EBA 1100 SERIES.

CITY OF REDWOOD CITY
ENGINEERING AND TRANSPORTATION
RESTRAINED CONNECTION DETAIL
FOR NEW PVC PIPE TO EXISTING WATERMAIN

DATE: 11/25/19

STANDARD DETAIL
W - 15
PVC
NOT TO SCALE

CITY OF REDWOOD CITY
ENGINEERING AND TRANSPORTATION

CATHODIC PROTECTION
AT FITTINGS & VALVES

DATE: 11/25/19

STANDARD
DETAIL

W - 20
PVC

1. SS316 STAINLESS STEEL TAPPING SLEEVES DO NOT REQUIRE CATHODIC PROTECTION.
2. ALL MJ JOINTS SHALL BE PROTECTED WITH A PETROLATUM TAPE WRAP SYSTEM.
3. FLANGE BY FLANGE CONNECTIONS WITH SS316 BOLTS DO NOT REQUIRE PETROLATUM TAPE WRAP SYSTEMS.
4. JUMPER BONDS TO STAINLESS STEEL FITTINGS, WHEN REQUIRED, SHALL BE F-33 ERICO CADWELD.

INSTALL JUMPER BONDS WHEN TAPPING TO EXIST METALLIC PIPE
PETROLATUM WRAP TAPE ALL MJ JOINTS
INSTALL TWO AWG #4 HMWPE (BLACK) JUMPER BOND WIRES (TYP.) TO EACH DIP FITTING
AWG #10 (WHITE) TEST LEAD AND DRAIN CABLES
TEST STATION, SEE DETAIL W-16

PLAN

PRE-PACKAGED ANODE, SEE CONSTRUCTION PLANS FOR ANODE TYPE, SIZING, AND QUANTITY
INSTALL ANODE LEAD FROM ALL METALLIC FITTINGS AND PIPES
AWG #10 (BLACK) ANODE LEAD

TEST STATION, SEE DETAIL W-21

VALVE BOX AND RISER, SEE DETAIL W-42

PROFILE

PETROLATUM WAX TAPE SYSTEM ON ALL MECHANICAL JOINTS. SEE CITY DETAIL W-20
JUMPER BOND WIRES ACROSS FLANGE (FOR FIRE HYDRANTS SEE DETAIL W-6)
AWG #10 (BLACK) ANODE LEAD
PREPACKED ANODE, SEE CONSTRUCTION PLANS
EXCAVATE HOLE TO A MIN. OF 3-INCHES LARGER THAN THE ANODE DIAMETER. TOP OF ANODE SHALL BE 1-FOOT BELOW FITTINGS.
TEST BOARD DETAIL

ANODE LEAD, TEST LEAD, AND DRAIN CABLE SHALL BE LONG ENOUGH TO EXTEND 18-INCHES BELOW GROUND SURFACE.

DRAIN CABLE
#8 WHITE

TEST LEAD
#8 WHITE

PROVIDE 18" SLACK ON CABLE (TYP.)
#10 BLACK

.C0 OHM SHUNT

4"x4"x1/4" MICARTA BOARD

ETCHED LAMINATED LABEL (TYP.)

ANODE LEAD

ANODE DRAIN

NATIVE DIRT SHALL BE FLUSH WITH NEW VALVE BOX

SETTING BOX IN NON-PAVED AREA

TEST BOARD, SEE DETAIL BELOW

3" MIN. AC PAVEMENT

EXIST. AC

CONCRETE COLLAR

CALTTRAN CLASS 2AB AGGREGATE

DATE: 11/25/19

CITY OF REDWOOD CITY
ENGINEERING AND TRANSPORTATION

CATHODIC PROTECTION
TEST STATION HOUSING

STANDARD DETAIL
W - 21
PVC

City of Redwood City
California
Founded 1867

NOT TO SCALE
STEPS FOR WELDING JUMPER BONDS AND LEADS:

1. FILE TO BARE METAL & CLEAN OVER SURFACE

2. STRIP INSULATION FROM WIRE AND ATTACH COPPER SLEEVE

3. HOLD MOLD FIRMLY WITH OPENING AWAY FROM OPERATOR, IGNITE WITH FLINT GUN.

4. REMOVE SLAG FROM CONNECTION, COVER CONNECTION WITH COMPATIBLE COATING OVER EXPOSED METAL.

CITY OF REDWOOD CITY
ENGINEERING AND TRANSPORTATION
CATHODIC PROTECTION
EXOTHERMIC WELDING

DATE: 11/25/19
WRAP SYSTEM FOR FITTINGS

WRAP SYSTEM FOR BELL RESTRAINTS

WRAP SYSTEM FOR COUPLINGS

1. WAX-TAPE PRIMER, AS MANUFACTURED BY TRENTON OR APPROVED EQUAL, APPLY DIRECTLY TO ALL METALLIC FITTINGS, TYP.

2. PETROLATUM PROFILING MASTIC, AS MANUFACTURED BY TRENTON OR APPROVED EQUAL, PREPARE A SMOOTH PROFILE FOR ADHESION OF PETROLATUM TAPE.

3. TRENTON WAX-TAPE #1 NON-FIRMING PETROLATUM TAPE WRAP, OR APPROVED EQUAL.

4. PVC OUTERWRAP WITH RUBBER ADHESIVE, AS MANUFACTURED BY TRENTON OR APPROVED EQUAL.

NOTES:

1. THE PETROLATUM TAPE SYSTEM IS BY TRENTON CORPORATION, DENSO PASTE AND DENSYL TAPE MADE BY DENSO NORTH AMERICA, OR APPROVED EQUAL. SEE INSTALLATION STEPS BELOW NOTES.

2. APPLICABLE TO FITTINGS IN HORIZONTAL AND VERTICAL ORIENTATIONS.

3. PROVIDE A SMOOTH PROFILE ON IRREGULAR SHAPED FITTINGS SUCH AS FLANGED JOINTS AND JOINT RESTRAINTS USING MOLDED MASTIC FILLER PACKED INTO IRREGULARITIES TO ELIMINATE BRIDGING AND VOIDS PRIOR TO WRAPPING.

4. INSTALL MJ RESTRANTS FOR ALL MJ FITTINGS EBAA 2000PV SERIES OR APPROVED EQUAL. INSTALL BELL JOINT RESTRANT WHERE SHOWN ON PLANS, EBAA 1500 OR EBAA 2800 SERIES OR APPROVED EQUAL.

5. INSTALLATION STEPS IN ORDER ARE LISTED BELOW.
   A. APPLY PETROLATUM TAPE SYSTEM PRIMER.
   B. APPLY MOLDED PLASTIC FILLER.
   C. INSTALL PETROLATUM TAPE.
   D. INSTALL PROTECTIVE OVER-WRAP.
NOTES:
1. INSTALL THRUST BLOCKS PER CITY STANDARD DETAIL W-10 AND W-11.
2. LANDSCAPE PLANTINGS, WHEN FULLY GROWN, SHALL NOT OBSCURE VALVE OR FIRE DEPARTMENT CONNECTION (THREE FEET MINIMUM CLEARANCE REQUIRED ON ALL SIDES) FOR OPERATION, TESTING, AND MAINTENANCE.
3. ALL UNDERGROUND BOLTS NUTS, AND WASHERS SHALL BE 316 STAINLESS STEEL.
4. BACKFLOW PREVENTER LOCATION SHALL BE AS CLOSE AS POSSIBLE TO THE PROPERTY LINE, NOT EXCEEDING 6 FEET FROM PROPERTY LINE, OR IMMEDIATELY INSIDE THE BUILDING BEING SERVED.
5. BACKFLOW DEVICES INSTALLED INSIDE OF A BUILDING SHALL BE ACCESSIBLE TO CITY STAFF AND REQUIRE A DRAIN. CONTRACTOR SHALL ENSURE CITY METER FLEX-NET MAY BE READ AT ALL TIMES.
6. ALTERNATE BACKFLOW DEVICES, RISERS, AND MATERIALS SHALL BE REVIEWED AND APPROVED BY THE FIRE DEPARTMENT AND THE CITY'S CROSS-CONNECTION PROTECTION TEAM AND BY THE CITY ENGINEER.
7. ARRANGEMENT AND AS EQUAL BACKFLOW DEVICES SHALL BE REVIEWED AND APPROVED BY THE CROSS-CONNECTION PROTECTION TEAM AND BY THE CITY ENGINEER.

CITY OF REDWOOD CITY
ENGINEERING AND TRANSPORTATION
FIRE SERVICE
(REDUCTED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY)

DATE: 11/25/19

STANDARD DETAIL
W - 30
PVC
NOTES:

1. BELOW GRADE DOUBLE CHECK VALVES (DC) SHALL BE INSTALLED ON SMALL WATER SERVICES 2" AND SMALLER SERVING SITES USING GROUNDWATER FOR LANDSCAPE IRRIGATION, APPROVED CREEK WATER FOR LANDSCAPE IRRIGATION, RESIDENTIAL FIRE SPRINKLER SYSTEMS, COMMERCIAL USES, AND INDUSTRIAL USES.

2. A REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTOR (RP) SHALL BE INSTALLED IN-LIEU OF A DC IF THE WATER SERVICE SERVES:
   2.1. A CROSS CONNECTION EXISTS BETWEEN A CREEK WATER OR GROUNDWATER IRRIGATION SYSTEM SYSTEM;
   2.2. A RESTAURANT;
   2.3. A RESIDENTIAL SPRINKLER SYSTEM WITH CHEMICAL ADDITIVES;
   2.4. COMMERCIAL OR INDUSTRIAL SPACE WITH DEVICES THAT POSES A SIGNIFICANT RISK TO THE PUBLIC WATER SYSTEM; OR
   2.5. AS REQUIRED BY THE CROSS-CONNECTION CONTROL TEAM.

3. THE BOX SHALL PROVIDE ENOUGH SPACE AROUND THE DC TO ALLOW FOR TESTING AND MAINTENANCE.

4. THE DC SHALL BE INSTALLED IN THE UPRIGHT POSITION, SUCH THAT THE TEST COCKS ARE FACING UPWARD.

5. THE DC SHALL BE INSTALLED IN THE CENTER OF THE BOX TO PROVIDE EQUAL DISTANCE ON EITHER SIDE OF THE DEVICE.

6. THE DC SHALL BE INSTALLED AS CLOSE TO THE METER AS FEASIBLE. THE LOCATION SHALL BE APPROVED BY THE BUILDING DEPARTMENT AND CROSS CONNECTION CONTROL TEAM. IF LOCATED IN A PUBLIC RIGHT-OF-WAY, THE LOCATION SHALL BE APPROVED BY THE CITY ENGINEER.

7. THE BACKFLOW PREVENTION DEVICE AND BOX WILL BE OWNED AND MAINTAINED BY THE PROPERTY OWNER.
NOTES:

1. WHEN LOCATED IN THE PUBLIC RIGHT OF WAY OR WHEN SUSCEPTIBLE TO BEING DAMAGED AND IF REQUIRED BY THE CROSS-CONNECTION CONTROL TEAM, CITY ENGINEER, OR BUILDING DEPARTMENT, A BACKFLOW ENCLOSURE SHALL BE INSTALLED, PER DETAIL Z-1.

2. THE BACKFLOW DEVICE SHALL BE INSTALLED AS CLOSE TO THE METER AS FEASIBLE. THE LOCATION SHALL BE APPROVED BY THE BUILDING DEPARTMENT AND CROSS-CONNECTION CONTROL TEAM. IF LOCATED IN A PUBLIC RIGHT-OF-WAY, THE LOCATION SHALL BE APPROVED BY THE CITY ENGINEER.

3. REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTER SHALL BE USED ON WATER SERVICE CONNECTIONS TO PARKS AND OPEN SPACES. A PRESSURE VACUUM BREAKER SHALL BE USED FOR CENTER MEDIAN ONLY.

4. THIS DETAIL SHALL BE USED FOR 2" AND SMALLER ONLY. LARGER DEVICES SHALL BE DESIGNED BY THE PROJECT AND SUBMITTED TO THE CITY ENGINEER FOR REVIEW AND APPROVAL.

CITY OF REDWOOD CITY
ENGINEERING AND TRANSPORTATION
REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION DEVICE FOR IRRIGATION AND DOMESTIC SERVICES

DATE: 11/25/19

STANDARD DETAIL
W - 32
PVC
NOTES:
1. TRACING WIRE SHALL BE NO. 8 THHN OR HMWPE SINGLE STRANDED ELECTRICAL WIRE WITH A SOLID BLUE JACKET.
2. TRACING WIRE SHALL BE EXTENDED TO THE TERMINUS OF EVERY LATERAL INCLUDING EXTENSION TO THE END OF
   BOVs, ARVs, WATER METERS, HYDRANTS, ETC.
3. TAPE LOCATOR WIRE TO ALL PIPES AT 3' INTERVALS.
4. 3M DIRECT BURY WIRE SPLICE KIT MAY BE USED IN- LIEU OF BRASS SPLIT WIRE NUT AND COATING.

CITY OF REDWOOD CITY
ENGINEERING AND TRANSPORTATION

LOCATOR WIRE

DATE: 11/25/19
NOTE:

1. Extensions are required for valves extending for more than 9 feet below the surface.
2. The valve stem shall be fusion epoxy coated per standard specifications.
WATER

SINGLE VALVE BOX

14-1/4" 

22"

3" MIN. PAVEMENT

EXIST. AC

6"

3"

DIRT SHALL BE FLUSH WITH NEW VALVE BOX

IN NON-PAVED AREA

RISER SHALL BE ONE PIECE 8" PVC MIN. DR-26 PIPE

WATER

DOUBLE VALVE BOX

11"

22"

8" MIN.

4" MIN.

48.5"

3" MIN. PAVEMENT

EXIST. AC

6"

3"

RISER

DIRT SHALL BE FLUSH WITH NEW VALVE BOX

IN NON-PAVED AREA

RISER SHALL BE ONE PIECE 8" PVC MIN. DR-26 PIPE (TYP.)

WATER

VALVE BOX - CHRISTY TYPE G5 BOX (TYP.) OR APPROVED EQUAL EACH COVER SHALL BE CAST WITH THE LABEL "WATER"

CONCRETE BASE - CLASS A CONCRETE

CITY OF REDWOOD CITY
ENGINEERING AND TRANSPORTATION

VALVE BOX AND RISER

W - 42
PVC

DATE: 11/25/19
NOTES:

1. NO TAP SHALL BE MADE WITHIN 2.5' OF A JOINT OR FITTING OR OTHER TAPS ON C.I.P. OR D.I.P.

2. NO TAP SHALL BE MADE WITHIN 3' OF A JOINT OR FITTING OR OTHER TAPS ON A.C.P. OR PVC.

3. THE CONTRACTOR PROVIDES AND INSTALLS THE TAPPING SLEEVE, AND THE CITY WILL PERFORM THE TAP WITH CITY TAPPING MACHINE.

4. TAPPING SLEEVES SHALL BE ALL TYPE 316 STAINLESS STEEL BY SMITH BLAIR MODEL 663, JCM 6432 OR APPROVED EQUAL AND TAPPING VALVES SHALL BE MUELLER FLANGE X MECHANICAL JOINT OR APPROVED EQUAL.
CAPPING ACTIVE LINE

CONCRETE THRUST BLOCK, SEE CITY STANDARD DETAIL W-10 (PLUGGED RUNS) OR W-11 (BAY MUD) FOR PROPER SIZE

D.I. TAPPED CAP (MJ) OR ROMAC ALPHA COUPLING TAPPED CAP

PROVIDE PETROLATUM TAPE SYSTEM, TYP. SEE W-23 AND SPECIFICATION SECTION 02661

MJ RESTRAINTS, AS MANUFACTURED BY EBAA OR APPROVED EQUAL. FOR PVC USE EBAA 2000PV, AND FOR DIP AND CIP USE EBAA 1100 SERIES.

NOTES:
1. REFER TO DETAIL W-23 AND SPECIFICATION SECTION 02661 FOR PETROLATUM TAPE SYSTEM

PLUGGING ABANDONED LINE

12" MIN.

CONCRETE

ABANDONED LINE
NOTE:

1. INSTALL PRESSURE EQUALIZATION BY-PASS ASSEMBLY AT CLOSED GATE VALVES WHERE PRESSURE DIFFERENCE ON EITHER SIDE OF THE CLOSED GATE VALVE EXCEEDS 20 PSI OR AS DIRECTED BY THE CITY ENGINEER.

- VALVE BOX, SEE DETAIL W-41
- CONCRETE BASE, PER DETAIL W-12
- 1" CURB VALVE (M.I.P.xM.I.P.), MUELLER B-20276N OR APPROVED EQUAL VALVE TO BE NORMALLY KEPT CLOSED.
- 1" PE PIPE CLASS 250 HDPE/PE 4710 ASTM D2737 (TYP.)
- CORPORATION VALVE (CCxMIP) MUELLER B-2996 AND QUARTER BEND (11OCTSxFIP) MUELLER H-15533, OR APPROVED EQUAL.
- SERVICE SADDLE w/ 1" TAPERED CORP STOP THREAD (TYP.)
- PVC MAIN: MUELLER BR25 w/ STAINLESS STEEL DOUBLE STRAPS
- OTHER MAIN: MUELLER BR2B w/ BRONZE DOUBLE STRAPS

CITY OF REDWOOD CITY
ENGINEERING AND TRANSPORTATION

PRESSURE BY-PASS FOR CLOSED GATE VALVES

STANDARD DETAIL
W - 45 PVC

DATE: 11/25/19