Oro Valley Water Utility Standards

Distribution Details

2021
PREFACE

The Oro Valley Water Utility Standard Design Details can be found online at: https://www.orovalleyaz.gov/Government/Departments/Water-Utility/Potable-Water-Standard-Specification

Tucson Water Standards Specifications and Details can be found online at: www.tucsonaz.gov/water/spec-book

Pima County Association of Governments (PAG) Standard Specifications and Details for Public Improvements can be found online at: http://apps.pagnet.org/standards specifications/

All or any part of the book may be downloaded in Adobe file format. Oro Valley maintains a current Engineering Directives link at the webpage with updates, changes, and additions to the current specifications.

Users of these documents are requested to send any noted errors or omissions, as well as comments and suggestions, for clarification or amendment of the Standard Specifications and Details to the following address:

WaterStandards@OroValleyaz.gov

Oro Valley Water Utility
Engineering Division
11000 N. La Canada Drive
Oro Valley, Arizona 85737
520-229-5023

RECOMMEND

Elizardo “Lee” Jacobs, P.E.
Engineering Manager

CONCUR

Peter A. Abraham, P.E.
Director of Oro Valley Water
DISTRIBUTION STANDARD DETAILS

OVWU 103  DRAINAGE STRUCTURE CROSSING DETAIL
OVWU 108  PIPE SADDLE SUPPORT DETAIL
OVWU 109  TURNING RADII FOR WATER EASEMENTS
OVWU 110  RIGHT ANGLE TURN AROUND FOR WATER EASEMENTS
OVWU 111  LANDSCAPE GUIDELINES AND PLANTING LIMITS
OVWU 112  PLANTING LIMITS ALONG WATER LINE ALIGNMENT
OVWU 115  PIPE BEDDING AND TRENCH BACKFILL
OVWU 116  TRACER WIRE DETAILS
OVWU 119  CORROSION AND CONTINUITY TEST DETAIL
OVWU 126  WATER QUALITY SAMPLING STATION
OVWU 300  VAVLE BOX INSTALLATION
OVWU 309  WATER SERVICE CONNECTION AND NOTES
OVWU 310  AMI PLACEMENT STANDARD STEEL METER BOX COVERS
OVWU 311  STANDARD CONCRETE METER BOX
OVWU 312  METER BOX IN CONCRETE
OVWU 314  STANDARD CAST IRON METER BOX
OVWU 315  ABOVE GROUND METERING STATION WITH BACKFLOW
OVWU 316  ABOVE GROUND STACKED PRV INSTALLATION AND CAGE
OVWU 330  BELOW GROUND AIR RELEASE VAULT DETAIL 2 INCH & SMALLER
OVWU 331  ABOVE GROUND AIR RELEASE VALVE 2 INCH & SMALLER
OVWU 332  STANDARD ARV ENCLOSURE FOR 1 INCH & LARGER INSTALL
OVWU 400  DRAIN VALVE ASSEMBLY
OVWU 600  RETRAINED JOINTS & NOTES
OVWU 610  CONCRETE THRUST BLOCKING
OVWU 1800  BACKFLOW PREVENTION AIR GAP SEPARATION INSTALL
OVWU 1801  BACKFLOW PREVENTION POTABLE WATER FIRE HYDRANT
OVWU 1802  BACKFLOW PREVENTION REDUCED PRESSURE ASSEMBLY (RPA)
OVWU 1803  PRESSURE VACUUM BREAKER ASSEMBLY (PVB)
OVWU 1805  DOUBLE CHECK VALVE ASSEMBLY (DCVA)
OVWU 1807  BACKFLOW SPILL RESISTENT PRESSURE VACUUM ASSEMBLY (SVB)
OVWU 1809  BACKFLOW WATER MAIN TEMPORARY CONNECTION TESTING
AIR RELEASE VALVE
(PER STANDARD DETAIL OVWU 330 & 331)

STA. 00+00
SOLID SLEEVE
(PRIOR APPROVAL BY
OVWU FOR ALTERNATIVE)
(P.V.C. TO D.I.P.)

CONCRETE LINED
DRAINAGEWAY
FINISH GRADE

STORM DRAIN,
BOX CULVERT OR
OPEN CHANNEL

18.50'
(MIN.)

5'-0''
(MIN.)

3'-0''
(MIN.)

18.50'
(MIN.)

BEND
(TYP.)

D.I.P. (CLASSIFY)

WITH RESTRAINED JOINTS PER
(TUCSON WATER STANDARD DETAIL 600).

NOTES:
1. DRAINAGE WAYS WITHOUT CONCRETE LINING WILL BE EVALUATED INDIVIDUALLY
   BY DESIGN ENGINEER.

2. UPPER BEND RESTRAINTS PER (TUCSON WATER STANDARD DETAIL 600).
ADJUSTABLE PIPE SADDLE SUPPORT SCHEDULE
(Dimensions in inches)

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KEYNOTES:

1. STANDARD STEEL PIPE
2. CAST IRON SADDLE
3. STAKED LOCKNUT NIPPLE
4. SPECIAL REDUCER
5. 4" DIA. RISER PIPE (THREAD NPT)
6. PIPE SUPPORT SPECIFICATIONS
   FOR STEEL PER (TUCSON WATER
   SECTION 0901)
7. 2500 PSI CONCRETE
8. 2" LAYER OF GRAVEL (EXIST./NEW)
9. UNDISTURBED SOIL OR 95% MINIMUM COMPACTION
10. 4 x 4-W2.9/W2.9 WWF OR
    5-3/4" RE-BARS @ 4" O.C.,
    BOTH WAYS
11. IMBED 4" DIA. RISER PIPE WITH 1" x 1"
    WIDE STEEL PLATE WELDED TO PIPE
12. STEEL YOKE WITH STEEL NUTS

NOTES:

1. "ANVIL" ADJUSTABLE PIPE STANCHION SADDLE, FIG. 259 OR EQUAL, W/ LOCKNUT
   NIPPLE FOR VERTICAL ADJUSTMENT
2. HORIZONTAL CONCRETE SURFACES SHALL BE FORMED WITH 3/4" CHAMFER
**KEYNOTES:**

1. STANDARD STEEL PIPE
2. CAST IRON SADDLE
3. STAKED LOCKNUT NIPPLE
4. SPECIAL REDUCER
5. 4” DIA. RISER PIPE (THREAD NPT).
6. 1/2” STEEL PLATE (LENGTH AND WIDTH AS SHOWN IN PIPE SUPPORT SCHEDULE)
7. CHEMICAL ANCHORS WITH NUTS AND WASHERS SIZE SHALL BE 1/2”Ø x 4-1/2”L WITH 3” EMBED FOR PIPE SIZES 4”-16” AND 5/8”Ø x 6”L WITH EMBED FOR PIPE SIZES 18”-36”.
8. STEEL YOKE WITH STEEL NUTS

**NOTES:**

1. "ANVIL" ADJUSTABLE PIPE STANCHION SADDLE, FIG. 259 OR EQUAL, W/ LOCKNUT NIPPLE FOR VERTICAL ADJUSTMENT.
2. HORIZONTAL CONCRETE SURFACES SHALL BE FORMED WITH 3/4” CHAMFER.
**NOTES:**

1. SEE STANDARD DETAIL OVVU 111

2. SEE THE DESIGN STANDARDS, SUBSECTION 0.0 (FOR MORE INFORMATION).
NOTES:
1. SEE STANDARD DETAIL OVWU 111

2. RIGHT ANGLE TURN-AROUNDS REQUIRED FOR DEAD-END WATER EASEMENTS WITH LENGTHS EXCEEDING 150' FOR LENGTHS OF 150' OR LESS, A SHORT ACCESS EASEMENT MAY BE PERMITTED. SEE THE DESIGN STANDARDS, SUBSECTION 0.0.0 FOR MORE INFORMATION.
OVERHANGING
SITE OBJECTS

WATER EASEMENT WIDTH PER PLAN
(SEE NOTE 1)

CLEAR SPACE
(TYP.)

16'-0"
(MIN.)

(SEE NOTE 2)

2% CROSS
SLOPE, (TYP.)

(SEE NOTES 3 & 4)

FOR MIX DESIGN REQUIREMENTS

COMPACT SOIL STABILIZATION MIX
TO (MIN.) 95% OF (MAX.)

PROCTOR DENSITY AS DETERMINED
IN ACCORDANCE WITH THE
APPLICABLE TEST METHODS OF
ADOT MATERIALS TESTING MANUAL

STABILIZED SURFACE TREATMENT
NOT TO SCALE

SCREEN
WALL

CENTER
EASEMENT AT
EACH WATER VALVE
SECTION A - A
(SEE STANDARD DETAIL
OVWU 109 & 110)

BUILDING
UTILITY LINE

TREE OR SHRUB

20'-0"
(MIN.)

20'-0"
VERTICAL
CLEARANCE ZONE

6'-0"
(MIN.)

NOTES:
1. FOR MINIMUM WATER EASEMENT WIDTHS AND OTHER REQUIREMENTS
   (SEE THE DESIGN STANDARDS, SUBSECTION 1.1.1)
2. THE EDGE OF THE STABILIZED SURFACE SHALL BE 6' (MIN.) FROM THE CENTER OF EACH WATER VALVE BOX.
3. MIX DESIGN FOR STABILIZED SURFACE TREATMENTS SHALL BE SUBMITTED BY THE CONTRACTOR FOR
   APPROVAL BY THE FIELD ENGINEER UNLESS PROVIDED ON THE PLANS.
4. MIX DESIGN SHALL BE CERTIFIED BY AN ARIZONA REGISTERED GEOTECHNICAL ENGINEER AND SHALL MEET
   THE FOLLOWING MINIMUM REQUIREMENTS:
   - BASED ON SITE-SPECIFIC SOILS, USE ONE OF THE FOLLOWING APPROVED STABILIZING AGENTS:
     - HYDRATED LIME SLURRY (HLS), HLS AND FLY ASH, OR PORTLAND CEMENT;
     - PASS 100% THROUGH THE 3 INCH SIEVE;
     - SHALL NOT CONTAIN DETERIOROUS MATERIALS; AND
     - MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI
   - SUBMIT ALL TESTING TO THE FIELD ENGINEER. (COMPACTION AND STRESS TEST).

ISSUED: 09/20
REVISED: 09/20

STANDARD DETAIL
WATER EASEMENT
TYPICAL SECTION

DETAIL NO. OVWU-111

SHEET 7 OF 1
KEYNOTES:

1. MAGNETIC LOCATOR TAPE ALL SIZE SERVICES
   (SEE TUCSON WATER STANDARD SPECIFICATION 0210)

2. WELLS AND PLANTING PITS FOR SHALLOW ROOTED PLANTS ONLY

3. IF LESS THAN 7.5 FEET PLACE GEOTEXTILE MEMBRANE AT SIDE OF PLANTING PIT
   NEAREST WATER LINE AND ALONG BOTTOM OF PLANTING PIT. MAX REQUIRED
   DEPTH IS 48". PLACE ANY HERBICIDE POCKETS TOWARD ROOTS. INSPECTORS
   CAN EVALUATE ON CASE-BY-CASE BASIS AND APPROVE BASED ON PUBLIC WORKS
   AND LANDSCAPE DETAIL.

4. ROOT BALL

5. IRRIGATION PLACEMENT OPPOSITE SIDE OF WATER MAIN.

6. INSTALL GEOTEXTILE ROOT BARRIER AT BOTTOM OF ENTIRE PLANTING PIT
   CONNECTING TO LINEAR ROOT BARRIER. TO COMPENSATE AND MINIMIZE INTRUSION
   FROM DEEP ROOTED PLANTS.

NOTES:

1. THIS DETAIL MAY BE USED BY THE CONTRACTOR IF APPROVED IN THE PLANS OR IN
   WRITING BY THE ENGINEER REVIEWER.

2. ALL IRRIGATION INFRASTRUCTURE AND WIRE MUST BE A MINIMUM OF 5'-0" AWAY
   HORIZONTALLY FROM PUBLIC WATER MAINS.
KEYNOTES:
1. METALLIC DETECTABLE TAPE (SEE TUCSON WATER STANDARD SPECIFICATIONS 0210)
2. BEDDING AND SHADING MATERIAL SHALL COMPLY WITH TUCSON WATER STANDARD
   SPECIFICATION 0209. EXPECT WHERE NOTED IN OVVU GENERAL SYSTEM NOTES
   (MATERIALS STANDARD NOTE 14)
3. TRACER WIRE
4. 4" (MIN.) FOR PIPES 12" OR SMALLER AND 6" (MIN.) FOR PIPES LARGER THAN 12"
5. PLATE TAMP SAND BEDDING 1'-0" ABOVE PIPE

NOTES:
1. TRENCH WIDTH MEASURED AT THE TOP OF THE PIPE SHALL BE 18" FOR 4" AND 6"
   MAINS AND 24" FOR 8" MAINS. TRENCH WIDTH FOR 12" AND LARGER SHALL BE
   O.D. + 18" MIN., O.D. + 24" MAX.
2. BEDDING MATERIAL SHALL BE ACTUAL TRENCH WIDTH (BANK TO BANK)
3. PAVEMENT PATCHING SHALL CONFORM WITH THE REQUIREMENTS OF THE PIMA
   ASSOCIATION OF GOVERNMENTS AND TOWN OF ORO VALLEY PW REQUIREMENTS.
4. BACKFILL MATERIAL AND COMPACTION MUST MEET WITH THE REQUIREMENTS OF THE
   AUTHORITY THAT HAS JURISDICTION OVER THE RIGHT-OF-WAY. ALL BACKFILL
   MATERIAL SHALL BE SCREED TO 6" MINUS. ON PROJECTS WHERE TWO OR MORE
   AUTHORITIES ARE INVOLVED, THE MORE RESTRICTIVE SPECIFICATION SHALL APPLY AND
   SHALL COMPLY WITH TUCSON WATER STANDARD SPECIFICATION 0209.

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<td>PIPE BEDDING AND TRENCH BACKFILL</td>
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1. All new waterlines require magnetic locator tape, marker tape and a tracer wire. The tape is to be installed per SD-115. The tracer wire shall be 12 AWG solid copper with HDPE installation and run along the top of the pipe, in a continuous length between valves, air release valves, drain valves, modified drain valves, stub outs, and service lines. The tracer wire shall be secured to the pipe in intervals of 10’ (maximum) with tape per SD 0210.

2. For DIP waterlines, tracer wire shall be attached to the outside of the polyethylene encasement.

3. The tracer wire is to be certified by a licensed private utility locator. Locator should be able to demonstrate ability to locate entire length of installed facility at a low frequency (8.19 kHz) or below. Final acceptance will not be granted until certification is received by Tucson Water.

4. Tracer wire on potable water lines shall be colored blue. Tracer wire on reclaimed water lines shall be colored purple.
DRILL 1/2” HOLE
12” TO 16” BELOW
RIM OF RISER

CONNECTION TO IN-LINE VALVES

KEYNOTES:
1 MAIN
2 3 WAY CONNECTOR
3 TRACER WIRE IN ACCORDANCE WITH NOTES
4 SECURE WIRE TO RISER AT INTERVALS OF 1’ WITH WIRE OR TAPE
5 3’ COIL WITH TWIST ON WIRE NUT
6 VALVE BOX COVER (SEE OVWU STANDARD DETAIL 300)
7 RISER (SEE OVWU STANDARD DETAIL 300)

NOTES:
1. TRACER WIRE SHALL BE SECURED TO THE RISER AT MAXIMUM INTERVALS OF 1’.
2. THREAD TRACER WIRE THROUGH 1#4” HOLE DRILLED IN THE RISER PIPE 2” TO 4”
   BELOW THE VALVE BOX. A KNOT SHALL BE TIED IN THE TRACER WIRE INSIDE THE
   RISER PIPE AND A 3’ COIL OF WIRE LEFT NEATLY INSIDE THE RISER. (PART #SCB-01).
3. A TWIST ON WIRE NUT SHALL BE INSTALLED ON END OF TRACER WIRE INSIDE OF
   RISER.
KEYNOTES:

1. MAIN
2. 3 WAY CONNECTOR
3. TRACER WIRE
4. 3' COIL W/TWIST ON WIRE.

NOTES:

1. THE TRACER WIRE SHALL BE ATTACHED TO THE AIR RELEASE LINE WITH TAPE AT 1' INTERVALS. A 3' COIL OF WIRE SHALL BE LEFT IN THE METER BOX.

2. THIS DETAIL APPLIES TO AIR RELEASE VALVES IN OVWU-330 AND OVWU-331.
KEYNOTES:

1 MAIN
2 MJ x 2” FIP CAP
   WITH RESTRAINER
3 2”Ø x 6” BRASS
   NIPPLE IPT
4 2” TYPE ”K”
   COPPER TUBE (RIGID)
5 CONCRETE
   (SEE STANDARD DETAIL OVWU-300)
6 3’ WIRE COIL
   (WITH TWIST ON WIRE NUT)
7 3 WAY CONNECTOR
8 MAGNESIUM ANODE
9 TRACER WIRE IN
   ACCORDANCE WITH NOTES

NOTES:
1 TYPICAL TRACER WIRE INSTALLATION FOR DRAIN VALVE ASSEMBLY
   (SEE STANDARD DETAIL OVWU-400)
2 THE TRACER WIRE SHALL BE ATTACHED TO THE COPPER PIPE WITH
   TAPE AT 1’ INTERVALS.
**EXAMPLE OF 4-WAY CROSS USING 3-WAY CONNECTORS**

**KEYNOTES:**

1. MAIN
2. 3 WAY CONNECTORS
3. TRACER WIRE
4. TRACER TO COME UP THROUGH VALVE RISER

(SEE STANDARD DETAIL OVWU-116 2 OF 7)

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PLAN VIEW
NOT TO SCALE

KEYNOTES:
1) DRIVE-IN MAGNESIUM GROUND ANODE ROD
2) ABOVE-GROUND TRACE WIRE
ACCESS BOX PERMANENTLY MOUNT TO GRADE FLANGE BOLT (SEE FRONT VIEW)
3) #12 AWG COPPER-BLUE (TYP.)
4) 3-WAY CONNECTOR
5) TAPE OR PLASTIC TIE (TYP.)
6) WATER MAIN
7) ABOVE-GROUND TRACE WIRE
ACCESS BOX (SEE NOTE 1)
8) BRACKET TO PERMANENTLY SECURE ACCESS BOX TO GRADE FLANGE WITH 3/4" CONDUIT
9) #14 AWG COPPER CLAD STEEL-RED, FACTORY CONNECTED TO GROUND ROD
10) WIRE CONTINUES UNDER HYDRANT LEAD AND CONNECTS TO MAIN LINE WIRE (SEE PLAN VIEW)

NOTES:
1. TRACER WIRE BOX SHALL NOT BE INSTALLED BELOW PUMPER NOZZLE OF HOSE NOZZLE, BOX SHALL BE INSTALLED AT THE BACKSIDE OF THE FIRE HYDRANT. ALL OUTLETS MUST HAVE SUFFICIENT CLEARANCE TO OPEN WITHOUT AFFECTING THE TRACER WIRE BOX. MINIMUM 2' OF 3/4" CONDUIT SHALL BE INSTALLED TO ACCESS BOX.

STANDARD DETAIL
TRACER WIRE

DETAIL NO.
OVWU-116

ISSUED:
02/21

REVISED:
02/21

SHEET 6 OF 7
NOTES:
1. WATER SERVICE ANODES ARE NOT REQUIRED WHERE METERS ARE LOCATED WITHIN 150'-0" FROM EACH OTHER IN SUBDIVISIONS WITH MULTIPLE RESIDENTIAL LOTS.
11. TRACER WIRE SHALL BE ATTACHED TO COPPER PIPE WITH TAPE AT 1'-0" INTERVALS.
KEYNOTES:

1. FILL HOUSING WITH PEA GRAVEL
2. 1/2" x 3/8" (AP) S.S. BALL VALVE
3. USE ONLY KORALEEN WATER QUALITY SAMPLING STATION (STATION GUARD XLT) AS ONLY APPROVED STATION
4. 4' THICK CONCRETE SPLASH PAD WITH WELDED WIRE REINFORCED
5. 3/4" TYPE K USA COPPER PER TUCSON WATER STANDARD 1416.0201 (B) BETWEEN ANGLE METER STOP, 1" x 3/4" MIP x COMPRESSION AND STAINLESS STEEL OUTLET (WATER SUPPLY LINE TO SAMPLING STATION)
6. 2" x 4" x 12" SOLID CONCRETE BLOCKS OR (ROMAN BRICK ENTIRE LENGTH AND WIDTH OF BOX)
7. METER BOX #2 (OVWU SEE STANDARD DETAIL 310)
8. 1" ANGLE METER STOP AS SHOWN, FOR CLARITY (INSTALL PER OVWU AND TUCSON WATER STANDARDS)
9. 1" WATER SERVICE FROM MAIN LINE
10. TRACER WIRE, IN ACCORDANCE WITH (TUCSON WATER STANDARD DETAIL 116)
11. MAGNETIC LOCATOR TAPE ALL SIZE SERVICES (SEE TUCSON WATER STANDARD SPECIFICATION 0210)

ISSUED: 01/18
REvised: 09/20
STANDARD DETAIL: WATER QUALITY SAMPLING STATION
DETAIL NO: OVWU-126
KEYNOTES:
1. CONTINUOUS LENGTH OF RISER PIPE. RISER PIPE SHALL BE PVC MEETING THE REQUIREMENTS OF AWWA C900 FOR D74 CL 305 JOINTS IN RISER PIPE IF REQUIRED, SHALL BE SECURED BY USING A FERRNO FLEXIBLE COUPLING FOR SEWER PIPE OF APPROVED EQUAL RISER PIPE FOR RECLAIMED WATER VALVES.
2. PVC PIPE MUST FIT LOOSE INSIDE VALVE BOX.
3. CONCRETE COLLAR (2FT. SQ.) (PAVED AREAS) 2,500 PS.
4. VALVE BOX & COVER (PER OVMU STANDARD DETAIL 300)
5. A.B.C. 100% COMPACTION
6. FINISHED GRADE (PAVED)
7. WATER MAIN PIPE
8. PIPE DETAIL PER PLANS = 44" MIN. (60" MIN. IN ANY RIGHT-OF-WAY INCLUDING TOLTEC COUNTY, ORO VALLEY, MARANA AND AGOT NOT AT FINISH GRADE)
9. REFER TO (TUCSON WATER STANDARD DETAIL 305)
10. CLASS 2 FINISH (HARD-TROWEL LIGHT BROOM)
11. TRACER PIPE WITH 3-WAY CONNECTOR, IN ACCORDANCE WITH (PER OVMU STANDARD DETAIL 115)
12. DEBRIS CAP (SW SERVICES MODEL: DC350)

NOTES:
1. CONCRETE COLLAR TO EXTEND TO FINISHED GRADE WHEN INSTALLED IN CONCRETE PAVEMENT.

ISSUED: 01/18
REvised: 10/20
STANDARD DETAIL: VALVE BOX INSTALLATION IN PAVEMENT
DETAIL NO.: OVMU-300
SHEET 1 OF 5
VALVE BOX & COVER
30"Ø
SCORE JOINTS (TYP.)
15" (TYP.)
15" (TYP.)

POTABLE OR RECLAIM CONCRETE COLLAR
PLAN VIEW

KEYNOTES:
1. CONTINUOUS LENGTH OF RISER PIPE. RISER PIPE SHALL BE PVC MEETING THE REQUIREMENTS OF AWWA C900 FOR U14 CL 305 JOINTS IN RISER PIPE IF REQUIRED, SHALL BE SECURED BY USING A FERNCO FLEXIBLE COUPLING FOR SEWER PIPE OF APPROVED EQUAL RISER PIPE FOR RECLAIMED WATER VALVES SHALL BE PURPLE (SEYMOUR SAFETY PURPLE) IN COLOR. PAINTING INSIDE OF RISER PIPE IS ACCEPTABLE.
2. RISER PIPE MUST FIT LOOSE INSIDE VALVE BOX.
3. VALVE BOX & COVER (PER OVWU STANDARD DETAIL 300)
4. TOP OF CONCRETE COLLAR (16 INCH RADIUS) UNPAVED 3000 PSI
5. A.D.T. 100% COMPACTION
6. FINISHED GRADE (PAVED)
7. WATER MAIN PIPE
8. CONCRETE COLLAR TO BE REVELED WHEN VALVE BOX IS LOCATED WITHIN UNPAVED AREA
9. FINISHED GRADE (UNPAVED)
10. PIPE DEPTH PER PLANS = 14" MIN. (60" MIN. IN ANY RIGHT-OF-WAY INCLUDING PIMA COUNTY, ORO VALLEY, MARANA AND ADOT NOT AT FINISH GRADE)
11. REFER TO SHEET OVWU 300-1 OF 4 FOR ADDITIONAL INFORMATION
12. REFER TO TUCSON WATER STANDARD DETAIL 302
13. TRACER WIRE WITH 3 WAY CONNECTOR IN ACCORDANCE WITH (PER OVWU STANDARD DETAIL 115)
14. DEBRIS CAP (SW SERVICES MODEL: DC430)

NOTES:
1. OUTSIDE OF PAVEMENT, BOXES ARE ADJUSTED TO 6 INCH ABOVE GRADE.

ISSUED: 01/18
REVISED: 10/20

STANDARD DETAIL
VALVE BOX INSTALLATION
OUTSIDE PAVEMENT

DETAIL NO. OVWU-300
SHEET 2 OF 5
NOTES:

1. ALL MATERIAL SHALL BE CAST IRON PER ASTM. A-48, CLASS 30 B.

2. THE SURFACES OF THE COVER AND BOX WHICH COME IN CONTACT WITH EACH OTHER MUST BE SMOOTH AND FREE OF ALL CASTING RIDGES AND BURRS TO PROVIDE A SNUG FIT.

3. THE COVER AND BOX SHALL WEIGH 50 POUNDS ± 5 POUNDS.

4. THE VALVE BOX COVER SHALL ROTATE 360° IN THE BOX CASTING WITHOUT BINDING.

5. LETTERING SHALL BE RESTRICTED TO THAT SHOWN ON THE VALVE BOX COVER.

6. CASTING TO BE GLOSS BLACK ASPHALTIC COATED.

DETAIL "A"

SECTION VIEW

DETAIL "B"

STANDARD DETAIL

WATER VALVE BOX AND COVER

DETAIL NO.

OVWU-300

ISSUED:

01/18

REVISED:

09/18

SHEET 3 OF 5
NOTES:

1. ALL MATERIAL SHALL BE CAST IRON PER ASTM A-48, CLASS 30 B.

2. THE SURFACES OF THE COVER AND BOX WHICH COME IN CONTACT WITH EACH OTHER MUST BE SMOOTH AND FREE OF ALL CASTING RIDGES AND BURRS TO PROVIDE A SNUG FIT.

3. THE VALVE BOX SHALL HAVE A ROUND BOTTOM TO ACCOMMODATE RISER PIPE. THE TOP OF THE VALVE BOX SHALL BE SQUARE.

4. THE LID AND INSIDE AND OUTSIDE OF THE RISER PIPE SHALL BE COLORED PURPLE. COLOR MAY BE INCORPORATED INTO PIPE DURING MANUFACTURE OR PAINTED ONTO PIPE SURFACE. WHEN PAINTED THE PAINT SHALL BE SEYMOUR SAFETY PURPLE.

5. LETTERING SHALL BE RESTRICTED TO THAT SHOWN ON THE VALVE BOX COVER.

6. 3/4" LETTERS RAISED 1/8" (TYP.)

RECLAIMED WATER VALVE BOX AND COVER

STANDARD DETAIL

RECLAIMED WATER VALVE BOX AND COVER

DETAIL NO.

OVWU-300

ISSUED: 01/18

REVISED: 09/18

SHEET 4 OF 5
NOTES:

1. A 2” FLAT BRASS SURVEY MONUMENT SHALL BE INSTALLED ON 12” VALVES AND LARGER. BRASS MONUMENT SHALL HAVE SERRATED OR A STEM DESIGNED FOR CONCRETE APPLICATIONS.

2. BRASS MONUMENT SHALL BE PRE-STAMPED BY 5/16” PUNCHED LETTERING INDICATING SIZE, TURN COUNT, AND VALVE TYPE.

3. INSTALLATION OF BRASS MONUMENT SHALL BE CENTERED BETWEEN THE EDGE OF THE CONCRETE. BRASS MONUMENT SHALL BE CLEAN AND LEGIBLE AFTER CONCRETE INSTALLATION.
KEYNOTES:
1. SERVICE SADDLE
2. CORPORATION STOP
3. MAGNETIC LOCATOR TAPE ALL SIZE SERVICES
   (SEE TUCSON WATER STANDARD SPECIFICATION 0210)
4. TRACER WIRE, IN ACCORDANCE WITH (OVWU STANDARD DETAIL 116)
5. COPPER PIPE (TYPE "K") (TUCSON WATER STANDARD SPECIFICATION 1416)
6. "SERVICE REQUIRE THE 1" TO 3/4" WATERWORKS ADAPTOR
7. ANGLE METER STOP TO BE PLACED 1" FROM INSIDE EDGE OF METER BOX
   (FORD AMS MODEL: BA443-444W-G-NL OR APPROVED EQUAL)
8. METER COUPLING (FORD B13-342-H1-34-NL, B13-352-H1-34-NL)
   OR APPROVED EQUAL
9. BALL VALVE WITH HANDLE (FORD HBS/B13-322W-NL) OR APPROVED EQUAL
10. BEGIN PRIVATE PLUMBING (SEE STANDARD SPECIFICATION 1445)
11. 2" x 4" x 12" SOLID CONCRETE BLOCKS
    (ROMAN BRICK ENTIRE LENGTH AND WIDTH OF BOX)
12. METER BOX (SEE OVWU STANDARD DETAILS 311 AND 314)

NOTES:
1. PRIVATE PLUMBING MUST BE ADJUSTED TO MATCH NEW METER ELEVATION.
2. CUSTOMER SIDE SHALL INSTALL MUELLER METER COUPLING W/THREADED CONNECTION
   OR APPROVED EQUAL BEFORE PRIVATE PLUMBING
3. WHEN SINGLE SERVICES ARE INSTALLED AT A COMMON LOT LINE THE TAPS MUST BE
   30 INCHES APART A SINGLE TRENCH MAY BE USED WITH 24" OF SEPARATION
   BETWEEN SERVICE LINES. TAPS NOT ON SAME PLANE.
KEYNOTES:

1. Erosion Protection per Town of Oro Valley Grading Ordinance
2. Concrete Collar
3. Cast Iron Meter Box
   (2 Stacked & Welded if Applicable per OVWU Standard Details 311 and 314)
4. Ball Valve with Handle (Ford HBS/B13-332W-NL) or Approved Equal
6. 2" x 4" x 12" (Roman Brick Entire Length or Width of Box)
7. Angle Meter Stop to Be Placed Within Meter Box
   (See Note OVWU Standard Detail 309)
8. Magnetic Locator Tape All Size Services (See Standard Specification 0210)
9. Tracer Wire, in Accordance With
   (See OVWU Standard) Detail 116
10. Copper Pipe (Type "K") (Tucson Water Standard Specification 1416)
11. Corporation Stop
12. Service Saddle
13. Mueller H-10896 Swivel Nut Between Meter and Brass Ball Valve
    (Customer Side)
14. Filter Fabric Geotextile
15. All Service Lines 1", 1-1/2" & 2" (See OVWU Detail 309 Sheets 1 & 2 of 4).

NOTES:

1. Meter Box Shall Be Supported by 2" x 4" x 12" Solid Concrete Blocks or
   Roman Brick Entire Length and Width of Box
2. Main May Be Down Slope with Home Up Slope as an Alternate to What Is
   Shown.
3. Positive Drainage to Be Away from Meter Box.
KEYNOTES:

1. SERVICE SADDLE
2. CORPORATION STOP
3. MAGNETIC LOCATOR TAPE ALL SIZE SERVICES
   (SEE TUCSON WATER STANDARD SPECIFICATION 0210)
4. TRACER WIRE, IN ACCORDANCE WITH (SEE OVWWU STANDARD DETAIL 116)
5. 2" COPPER PIPE (TYPE "K") (SEE TUCSON WATER STANDARD SPECIFICATION 1416)
6. 2" X 2" BALL VALVE CTS X IP
7. 2" 90° DEGREE ELBOW BRASS FIP X FIP
8. ANGEL METER STOP CTS COMPRESSION X METER FLANGE TO BE PLACED WITHIN
   1' FROM INSIDE EDGE OF METER BOX
9. OMNI C2 METER 1-1/2" THRU 6" ARE FLANGE X FLANGE
10. METER COUPLING (MUELLER H=10896) OR APPROVED EQUAL
11. BALL VALVE WITH HANDLE (FORD HBS/313-332W-NL) OR APPROVED EQUAL
12. 2" X 4" X 12" SOLID CONCRETE BLOCKS
    (ROMAN BRICK ENTIRE LENGTH OR WIDTH OF BOX)
13. BEGIN PRIVATE PLUMBING (SEE STANDARD SPECIFICATION 1445)
14. METER BOX (SEE METER BOX PER OVWWU STANDARD DETAILS 311 AND 314)

NOTES:

1. PRIVATE PLUMBING MUST BE ADJUSTED TO MATCH NEW METER ELEVATION.
**KEYNOTES:**

1. SERVICE SADDLE
2. CORPORATION STOP
3. MAGNETIC LOCATOR TAPE ALL SIZE SERVICES (SEE TUCSON WATER STANDARD SPECIFICATION 0210)
4. TRACER WIRE, IN ACCORDANCE WITH (SEE OVWW STANDARD DETAIL 116)
5. 1" COPPER PIPE (TYPE "K") (SEE TUCSON WATER STANDARD SPECIFICATION 1416)
6. ANGLE METER STOP (ITS COMPRESSION X METER FLANGE TO BE PLACED WITHIN 1' FROM INSIDE EDGE OF METER BOX)
7. OMNI C2 METER 1-1/2" THRU 6" ARE FLANGE X FLANGE
8. METER COUPLING (MUELLER H=10896) OR APPROVED EQUAL
9. BALL VALVE WITH HANDLE (FORD HBS/B13-332W-NL) OR APPROVED EQUAL
10. 2" x 4" x 12" SOLID CONCRETE BLOCKS (ROMAN BRICK ENTIRE LENGTH OR WIDTH OF BOX)
11. BEGIN PRIVATE PLUMBING (SEE STANDARD SPECIFICATION 1445)
12. METER BOX (SEE METER BOX PER OVWW STANDARD DETAILS 311 AND 314)

**NOTES:**

1. PRIVATE PLUMBING MUST BE ADJUSTED TO MATCH NEW METER ELEVATION.
KEYNOTES:
1. METAL HEAVY DUTY FENCE T-POST, U-POST, #4 REBAR OR APPROVED EQUAL
2. BRIGHT YELLOW W/BOLD BLACK TEXT 3" WIDE CAUTION TAPE OR APPROVED EQUAL
3. OSHA REBAR SAFETY CAP
4. METER BOX (SEE METER BOX PER OVWU STANDARD DETAILS 311 AND 314)

STANDARD DETAIL
METER BOX PROTECTION

ISSUED: 01/18
REVISED: 12/20
DETAIL NO. OVWU-309
SHEET 6 OF 6
NOTE:
1. STEEL COVER MATERIAL TO BE PER ASTM A786.
2. POTABLE WATER COVER PAINTED BLACK AND RECLAIMED WATER COVER PAINTED 1029 ENDURATONE –COLOR PURPLE RAIN 14SF.
3. DIMENSIONS SHOWN SHALL NOT VARY MORE THAN A 1/16 OF AN INCH.
4. ALL COVERS MADE OUT OF DIAMOND CHECKER PLATE
5. STANDARD ADVANCED METERING INFRASTRUCTURE (AMI) HOLE 2” PER AGENCY OR STANDARD SPECIFICATION:
6. REFER TO OVWU STANDARD DETAILS 311 AND 314 FOR VERTICAL LOAD RATING.
NOTE:

1. STEEL COVER MATERIAL TO BE PER ASTM A786.

2. POTABLE WATER COVER PAINTED BLACK AND RECLAIMED WATER COVER PAINTED 1029 ENDURATONE - COLOR PURPLE RAIN 14SF.

3. DIMENSIONS SHOWN SHALL NOT VARY MORE THAN A 1/16 OF AN INCH.

4. ALL COVERS MADE OUT OF DIAMOND CHECKER PLATE

5. STANDARD ADVANCED METERING INFRASTRUCTURE (AMI) HOLE 2" PER AGENCY OR STANDARD SPECIFICATION.

6. REFER TO OVVU STANDARD DETAILS 311 AND 314 FOR VERTICAL LOAD RATING.
KEYNOTES:
1. Concrete expansion board shall match depth of concrete thickness.

NOTES:
1. Reviewed by inspector before being approved.
2. All meter boxes shall be upsized one size if placed in concrete or driveways and shall be cast iron street rated.
1. Meter boxes install behind sidewalk shall have and be set with reveal or stick-up of 2" above sidewalk to accommodate decorative rock or landscaping materials (per OVWU Standard Detail 309 4 of 4). The exception is in concrete sidewalks, driveways, and paved areas where the meter box shall be set flush with surrounding surface.
NOTE:

1. METER BOX INSTALLATION IN AREAS SUBJECT TO VEHICULAR TRAFFIC SHALL BE AVOIDED. IF METER BOX INSTALLATION IN AN AREA SUBJECT TO VEHICULAR TRAFFIC OR IN CONCRETE IS UNAVOIDABLE CAST IRON BOXES OF THE APPROPRIATE SIZE SHALL BE USED. REFER TO DETAIL ABOUT UP SIZING CAST IRON METER BOXES REQUIRE (2) 2” X 4” X 12” SOLID CONCRETE BLOCKS. (ROMAN BRICK ENTIRE LENGTH AND WIDTH OF BOX)
NOTE:
1. SEE NOTE #6, OVWU STANDARD DETAILS 311 AND 314
NOTE:

1. METER BOX INSTALLATION IN AREAS SUBJECT TO VEHICULAR TRAFFIC SHALL BE AVOIDED. IF METER BOX INSTALLATION IN AN AREA SUBJECT TO VEHICULAR TRAFFIC OR IN CONCRETE IS UNAVOIDABLE CAST IRON BOXES OF THE APPROPRIATE SIZE SHALL BE USED. REFER TO DETAIL ABOUT UP SIZING CAST IRON METER BOXES REQUIRE (2) 2" X 4" X 12" SOLID CONCRETE BLOCKS. (ROMAN BRICK OR ENTIRE LENGTH AND WIDTH OF BOX)
KEYNOTES:
1. 8" x 8" x 16" SPLIT FACE MASONRY WALL
2. 4" x 8" x 16" SOLID CAP BLOCK
3. 95% COMPACTED SUBGRADE
4. MASONRY WALL WEEP HOLES
   (SHALL BE SPACED 4 FEET APART)
5. TEE AND NIBBLE FOR FLUSHING
   (OVWU STANDARD DETAIL 315 SHEET 1 OF 2)

NOTES:
1. CONTRACTOR SHALL SUBMIT SAMPLES OF BLOCK TO ENGINEER
   FOR APPROVAL BEFORE CONSTRUCTION BEGINS.
2. DEVELOPER CAN SUBMIT ALTERNATIVE SECURITY MATERIALS TO
   OVWU SUCH AS, WROUGHT IRON, SLUMP BLOCK THAT IS CONSISTENT
   WITH CHARACTER OF DEVELOPMENT.
3. MINIMUM 3 FEET FROM WALL/FENCE OBSTRUCTION TO METERING
   STATION.
4. BYPASS SHALL BE SIZED BY DESIGN ENGINEER. ALLOWABLE SIZES
   2, 4, AND 6 INCH.
PIPING AND EQUIPMENT

1. 4—CHEMICAL ANCHORS WITH NUTS AND WASHERS SIZE SHALL BE 1/2"Ø x 6"L WITH 3" EMBED

2. GATE LOCK HASP WITH PADLOCK (SEE SPECIFICATION)

3. 2" x 2" x 1/4" STEEL TUBING WITH 2" END CAPS

4. 1-1/2" x 1-1/2" x 1/4" STEEL TUBING WELD 18 GA. WITH STAGGERED CENTER @ 40% MCMICHOLS CO. OPEN PERFORATED METAL SHEET (ITEM NO. 1618311841) STEEL MESH OR ENGINEER APPROVED EQUAL

5. 4" x 4" BOX HINGE TO BE WELD ONTO STEEL TUBING

6. 4" x 8" x 16" SOLID CAP BLOCK

NOTES:

1. PERFORATED SHEET METAL SHALL BE PLACED ON INSIDE FACING PANEL OF DOOR TOWARD FACILITY
NOTES:
1. ALL 2" PIPING SHALL BE THREADS STAINLESS STEEL FREEZING PROTECTION TYPE TO BE DETERMINED BY OWWU.
2. ALL ABOVE GROUND PIPING SHALL BE PAINTED AND COATED WITH TNEPEC PAINT PER AWWA STANDARDS.
3. CONTRACTOR TO SIZE ENCLOSURE/CAGE BASED ON PRV SIZE. THIS WILL VARY WITH PRV DIMENSIONS.
4. DEVELOPER CAN SUBMIT ALTERNATIVE SECURITY MATERIALS TO OWWU SUCH AS, WROUGHT IRON, SLUMP BLOCK THAT IS CONSISTENT WITH CHARACTER OF DEVELOPMENT.

ISSUED:
01/18

REVISED:
02/21

STANDARD DETAIL
ABOVE GROUND STACKED PRV INSTALLATIONS AND CAGE

DETAIL NO.
OWWU-316

SHEET 1 OF 2
KEYNOTES

1. D.I.P. (DUCTILE IRON PIPE)

2. STANDARD STEEL PIPE SLEEVE (SEE NOTE 3 STANDARD DETAIL OVWU 315 SHEET 1 OF 2)

3. TEE FL X FL D.I. (DUCTILE IRON) (VERT.)

4. GATE VALVE (VERT.)

5. TEE FL X FL D.I. (DUCTILE IRON) (VERT.) ROTATE AS REQ'D FLANGED CAP THRSD-O-LET W/ 2 INCH FIP PORT TO RECEIVE COMBINATION AIR RELEASE VALVE A.R.I. (MODEL: D-040 ARV) AND INSECT BUG SCREEN.

6. NEW DUCTILE IRON SPOOL PIECE

7. 2" PRESSURE REDUCING VALVE WILL BE REDUCED PORTED WITH PRESSURE GAUGES. VALVE SHALL BE A CLA-VAL (MODEL 682-01) WITH STAINLESS STEEL TUBING AND FITTINGS IN PILOT SYSTEM. VALVE SCHL SS PRESSURE CLASS 150, WITH FLANGE ENDS, EPOXY LINING/COATING (NSF-61 APPROVED).

8. SOLID SLEEVE WITH MEGALUG

9. (304 STAINLESS STEEL) NIPPLE

10. LOCKING CORP. STOP

11. (304 STAINLESS STEEL) 90' ELBOW

12. (304 STAINLESS STEEL) TAPPED PIPE

13. WATER METER OMNI (MODEL: C2 COMPOUND)

14. 1" THRSD-O-LET WITH 304 STAINLESS STEEL PLUG TO RECEIVE FUTURE WATER METER WITH ALARMS FOR PRESSURE AND CHLORINE RESIDUAL.

15. 2" FULLY PORTED PRESSURE REDUCING VALVE WITH PRESSURE GAUGES, VALVE SHALL BE A CLA-VAL (MODEL 40-01) WITH STAINLESS STEEL TUBING AND FITTINGS IN PILOT SYSTEM. VALVE SHL SS PRESSURE CLASS 150, WITH FLANGE ENDS, EPOXY LINING/COATING (NSF-61 APPROVED).

16. PIPE SUPPORTS

17. CONCRETE PAD FOR CAGE (SEE NOTE 3 STANDARD DETAIL OVWU 316 SHEET 1 OF 2)

18. CONCRETE PAD IS FOR CAGES ONLY SIZE DEPENDS ON CAGE SIZE ALL EDGES 3/4" CHAMFER WITH 2,500 PSI CONCRETE.

19. HEAVY STEEL TUBING ROLLED INTO AN 180' ARG, ALL TUBING SHALL BE 1-1/4" SCH 40 ASTM A53 GRADE A ELECTRIC WELD PIPE, INTERMEDIATE SECTIONS AND END PANELS MADE OF HEAVY EXPANDED METAL. EXPANDED METAL SHALL BE 1/2" STEEL FLATTED DIAMOND PATTERN STEEL. CAGE SHALL BE LOCKABLE AND IN TWO SECTIONS. CONTRACTOR TO SUBMIT SHOP DRAWINGS FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.

20. HINGED

21. CONCRETE PAD WITH WELDED WIRE MESH

22. #4 CLOSED TIES REBAR

23. #4 REBAR EACH SIDE

24. HEAVY STEEL GRAB HANDLE

25. LOCKING MECHANISM

26. BRASS MONUMENT CAP WITH STAMPED ELEVATION

ISSUED: 01/18
REVISED: 10/20

STANDARD DETAIL
ABOVE GROUND PRV INSTALLATION AND CAGE

DETAIL NO. OVWU-316

SHEET 2 OF 2
KEYNOTES:
1. TRAFFIC RATED BOX WITH CONCRETE COLLAR (PER OVVU STANDARD DETAIL 311 AND 330)
2. 1" OR 2" BRASS CORP. STOP
3. COPPER PIPE
4. TRACER WIRE, IN ACCORDANCE WITH (PER OVVU STANDARD DETAIL 110)
5. 3/4" ROCK SUMP FULL LENGTH AND WIDTH OF BOX
6. 1" OR 2" AIR RELEASE VALVE W/INSECT SCREEN (304 S.S. MESH)
7. 2" x 4" x 12" SOLID CONCRETE BLOCKS (ROMAN BRICK ENTIRE LENGTH OF BOX AND WIDTH)
8. ARY D-940 COMBO 90° BENDS
9. NEEDED ON 2 AND 1-1/2" COPPER
10. SADDLE WITH CORPORATION STOP TO ACCOMMODATE PIPE SIZE
11. CONCRETE COLLAR (2500 PSI)
12. 35% COMPACTED SURFACE
13. OVVU 330 (SEE NOTE 3).

NOTES:
1. 3/4" ROCK SUMP BOX
   1 DEEP (3/4" - 1"") COMBINATION AIR RELEASE VALVE
   2 DEEP (2") COMBINATION AIR RELEASE VALVE

2. COMBINATION AIR RELEASE VALVE TO BE LOCATED OUTSIDE OF PAVED AREAS

3. OVVU STANDARD DETAIL 311 METER BOX SHALL BE INSTALLED FOR 2" AIR RELEASE VALVE

ISSUED: 01/18
REvised: 09/20

STANDARD DETAIL
BELOW GROUND
AIR RELEASE VAULT DETAIL
2 INCH AND SMALLER

DETAIL NO.
OVWU-330

SHEET 1 OF 1
2" ARV DETAIL

COPPER

KEYNOTES:
1. 1" OR 2" AIR RELEASE VALVE W/INSECT SCREEN (304 S.S. MESH)
2. PER TW STANDARD DETAIL 353 FOR CAGE INSTALLATION
3. 1 1/4" BALL VALVE
4. 1" OR 2" BRASS TEE WITH BALL VALVE
5. 1 OR 2 BRASS CORP STOP
6. 1" SLEEVE (PVC)
7. TRACER WIRE IN ACCORDANCE WITH TW STANDARD DETAIL 116
8. RUN COPPER PIPE AT A POSITIVE SLOPE FROM OUTLET TO ARV
9. CORPORATION STOP WITH 90° COMPRESSION FITTING TO MAINTAIN POSITIVE SLOPE
10. DUCTILE IRON PIPE SADDLE CLAMP
11. C.C.P., P.C.C.P. OR O.I. PIPE

NOTES:
1. 2" ARV MUST BE INSTALLED PER PLAN LOCATION OR RELOCATED BY INSPECTOR.
2. ARMACELL AP/ARMAFLEX BLACK LAP SEAL TUBE INSULATION SHALL MEET ASTM C447. INSULATION SHALL BE NONCOMBUSTIBLE
   1. 1" THICK INSULATION w/ K- VALUE NOT GREATER THAN 0.27 @ 75°F
   2. MAXIMUM SERVICE TEMPERATURE: 850°F (454°C)
3. FIELD APPLIED JACKETS (FOR ARMACELL AP/ARMAFLEX BLACK LAP SEAL TUBE):
   4. ARMATURE ALUMINUM JACKET, 0.016 INCH (0.040 MM) THICK SHEET, EMBOSSED FINISH, WITH LONGITUDINAL SLIP JOINTS AND 2 INCH (50MM) LAPS, DIE SHAPED FITTING COVERS WITH FACTORY ATTACHED PROTECTIVE LINER
4. NOT BETWEEN CURB AND SIDEWALK (3'-0" MIN. BEHIND SIDEWALK.)
GUARD SHACK #1
QUALITY ENCLOSURE #1
OR APPROVED EQUAL BY OVVU

KEYNOTES:
1. EYE BOLT WITH LOCK (SEE OVVU STANDARD DETAIL 332 SHEET 2)
2. CONCRETE PERIMETER EDGE SHALL HAVE A 1/2" RADIUS CORNERS

NOTES:
1. PROTECTION POST MAY BE REQUIRED TO ACCOMMODATE SITE CONDITIONS
   (PER TW STANDARD DETAIL 500 SHEET 3 OF 8)
CONCRETE CLASS "C"
2500 PSI WITH 6x6 12GA.
WELDED WIRE MESH
(PER TW SECTION 301)

95% COMPACTION

HARDWARE:
1. (2) 3/8"-16 x 2-1/2" FORGED EYEBOLT
2. (4) 3/8"-16 HEX NUT
3. (2) 3/8" x 1-1/2" FENDER WASHER
4. PER TUCSON WATER SECTION 501 (METALS)
1. The lengths of restrained or continuous pipe called out in the following tables are for installation of mechanically restrained fittings and are calculated based on the following parameters:

A. All ductile iron (DI) is polyethylene encased.

B. The soil type is "GP" as defined by the Unified Soil Classifications, ASTM Standard D2487.

C. The test pressure of the water system is two hundred pounds per square inch (200 psi).

D. The trench is type 5, as per ANSI/AWWA C150/A21.5, trench conditions.

E. The depth of cover is two feet (2').

F. The safety factor shall be 1.5.

2. If field conditions varying significantly from these parameters are encountered, the contractor shall immediately advise the Tucson Water Field Inspector. The Tucson Water Field Inspector will advise the contractor of the required length of restrained pipe necessary to meet the existing conditions.

3. The consultant or design firm shall specify soil type, test pressure, trench type, and depth of cover in the water distribution plans. If the department judges that the required restrained length exceeds that specified in the tables, or if the pipe diameter exceeds 12”, a professional civil engineer registered in Arizona shall prepare and submit for approval appropriate restrained length calculations.
ALL THRUST RESTRAINTS SHALL BE IN COMPLIANCE WITH SECTION 1406.

SEE STANDARD SPECIFICATION 1406 AND 1430

THE MINIMUM ATTACHED LENGTH OF PIPE (LR) TO EXTEND IN EACH DIRECTION ALONG THE RUN OF THE TEE SHALL BE A SOLID PIPE WITHOUT JOINTS, FITTINGS, ETC. THE LENGTH OF THE RESTRAINED BRANCH SHALL BE DERIVED FROM THE FOLLOWING TABLE.

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<th>4'</th>
<th>6'</th>
<th>8'</th>
<th>10'</th>
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<th>14'</th>
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</tr>
<tr>
<td>12x8</td>
<td>204</td>
<td>187</td>
<td>171</td>
<td>154</td>
<td>138</td>
<td>121</td>
<td>105</td>
<td>88</td>
<td>72</td>
<td>55</td>
<td>39</td>
</tr>
<tr>
<td>12x12</td>
<td>204</td>
<td>178</td>
<td>162</td>
<td>146</td>
<td>130</td>
<td>113</td>
<td>100</td>
<td>74</td>
<td>58</td>
<td>42</td>
<td>26</td>
</tr>
</tbody>
</table>

ISSUED: 01/18
REvised: 01/21

STANDARD DETAIL
RESTRAINED JOINTS

DETAIL NO. OWWJ-600

SHEET 2 OF 4
**HORIZONTAL BENDS**

The minimum restrained length of pipe (Lr) to extend in both directions from the horizontal bend shall be derived from the following table.

**VERTICAL BENDS**

The minimum restrained length of pipe (Lr) to be restrained on both sides of the vertical offset shall be derived from the following table.

<table>
<thead>
<tr>
<th>Pipe Size and Material</th>
<th>11 1/4&quot;</th>
<th>22 1/2&quot;</th>
<th>45°</th>
<th>90°</th>
<th>11 1/4&quot;</th>
<th>22 1/2&quot;</th>
<th>45°</th>
<th>90°</th>
</tr>
</thead>
<tbody>
<tr>
<td>PVC PIPE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4&quot;</td>
<td>3&quot;</td>
<td>5&quot;</td>
<td>11&quot;</td>
<td>27&quot;</td>
<td>7&quot;</td>
<td>15&quot;</td>
<td>31&quot;</td>
<td></td>
</tr>
<tr>
<td>6&quot;</td>
<td>4&quot;</td>
<td>7&quot;</td>
<td>15&quot;</td>
<td>37&quot;</td>
<td>10&quot;</td>
<td>21&quot;</td>
<td>43&quot;</td>
<td></td>
</tr>
<tr>
<td>8&quot;</td>
<td>5&quot;</td>
<td>10&quot;</td>
<td>20&quot;</td>
<td>48&quot;</td>
<td>13&quot;</td>
<td>27&quot;</td>
<td>56&quot;</td>
<td></td>
</tr>
<tr>
<td>12&quot;</td>
<td>6&quot;</td>
<td>13&quot;</td>
<td>27&quot;</td>
<td>65&quot;</td>
<td>19&quot;</td>
<td>38&quot;</td>
<td>78&quot;</td>
<td></td>
</tr>
<tr>
<td>BY POLYWRAP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4&quot;</td>
<td>3&quot;</td>
<td>6&quot;</td>
<td>13&quot;</td>
<td>31&quot;</td>
<td>11&quot;</td>
<td>22&quot;</td>
<td>46&quot;</td>
<td></td>
</tr>
<tr>
<td>6&quot;</td>
<td>4&quot;</td>
<td>8&quot;</td>
<td>18&quot;</td>
<td>42&quot;</td>
<td>15&quot;</td>
<td>31&quot;</td>
<td>65&quot;</td>
<td></td>
</tr>
<tr>
<td>8&quot;</td>
<td>5&quot;</td>
<td>11&quot;</td>
<td>23&quot;</td>
<td>54&quot;</td>
<td>20&quot;</td>
<td>41&quot;</td>
<td>84&quot;</td>
<td></td>
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<tr>
<td>12&quot;</td>
<td>7&quot;</td>
<td>15&quot;</td>
<td>31&quot;</td>
<td>74&quot;</td>
<td>28&quot;</td>
<td>57&quot;</td>
<td>118&quot;</td>
<td></td>
</tr>
</tbody>
</table>

*NOT RECOMMENDED*

**ISSUED:** 01/18  
**STANDARD DETAIL:** REstrained Joints  
**DETAIL NO.:** OVWU-600  
**REvised:** 01/21  
**Sheet:** 3 of 4
REDUCERS
THE MINIMUM LENGTH OF PIPE (LR) TO BE RESTRAINED ON THE LARGE SIDE OF THE REDUCER SHALL BE DERIVED FROM THE ABOVE TABLE.

<table>
<thead>
<tr>
<th>REDUCER SIZE AND PIPE MATERIAL</th>
<th>MINIMUM RESTRANED LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>6x4</td>
<td>53'</td>
</tr>
<tr>
<td>8x4</td>
<td>97'</td>
</tr>
<tr>
<td>8x6</td>
<td>56'</td>
</tr>
<tr>
<td>12x4</td>
<td>164'</td>
</tr>
<tr>
<td>12x6</td>
<td>137'</td>
</tr>
<tr>
<td>12x8</td>
<td>100'</td>
</tr>
<tr>
<td>6x4</td>
<td>81'</td>
</tr>
<tr>
<td>8x4</td>
<td>147'</td>
</tr>
<tr>
<td>8x6</td>
<td>85'</td>
</tr>
<tr>
<td>12x4</td>
<td>247'</td>
</tr>
<tr>
<td>12x6</td>
<td>207'</td>
</tr>
<tr>
<td>12x8</td>
<td>151'</td>
</tr>
</tbody>
</table>

DEAD ENDS AND VALVES
THE MINIMUM LENGTH OF PIPE (LR) TO BE RESTRAINED ON A DEAD END SHALL BE DERIVED FROM THE ABOVE TABLE. OR CONCRETE BLOCKS MAY BE USED WITH PERMISSION OF THE ENGINEER. ALL VALVES SHALL BE CONSIDERED DEAD ENDS IN BOTH DIRECTIONS.

<table>
<thead>
<tr>
<th>DEAD END SIZE AND PIPE MATERIAL</th>
<th>MINIMUM RESTRANED LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>74'</td>
</tr>
<tr>
<td>6</td>
<td>104'</td>
</tr>
<tr>
<td>8</td>
<td>135'</td>
</tr>
<tr>
<td>12</td>
<td>189'</td>
</tr>
<tr>
<td>4</td>
<td>112'</td>
</tr>
<tr>
<td>6</td>
<td>157'</td>
</tr>
<tr>
<td>8</td>
<td>204'</td>
</tr>
<tr>
<td>12</td>
<td>284'</td>
</tr>
</tbody>
</table>
CONCRETE THRUST BLOCKING

NOTES:

1. THE USE OF PORTLAND CEMENT CONCRETE THRUST BLOCKS IS NOT PERMISSIBLE EXCEPT AS SHOWN ON THE PLANS OR WITH THE APPROVAL OF THE ENGINEER.

PORTLAND CEMENT CONCRETE THRUST BLOCKS SHALL BE PLACED AGAINST UNDISTURBED EARTH. WHERE IT IS NOT PRACTICAL TO PLACE THE CONCRETE THRUST BLOCK AGAINST UNDISTURBED EARTH, THE FILL MATERIAL PLACED BETWEEN THE PIPE’S BEARING SURFACE AND THE UNDISTURBED SOIL SHALL BE COMPACTED TO A MINIMUM OF 95% OF THE MAXIMUM DENSITY AS DETERMINED IN ACCORDANCE WITH THE REQUIREMENTS OF ARIZONA TEST METHODS 225, 226, 230 OR 231 AND 232.

2. THE TABLES FOUND ON SHEETS 2, 3, AND 4 OF 4 ARE BASED ON THE FOLLOWING:

   A) 200 PSI INTERNAL PRESSURE.
   B) 1500 PSF SOIL BEARING PRESSURE.
   C) CLASS B, 2500 PORTLAND CEMENT CONCRETE PER SECTION 100B, STANDARD SPECIFICATIONS FOR PUBLIC IMPROVEMENTS.
   D) THE CORRESPONDING WEIGHT OF THE CONCRETE (CLASS B) IS EQUAL TO OR GREATER THAN THE VERTICAL COMPONENT OF THRUST ON THE VERTICAL BEND.

3. DIMENSIONS MAY BE VARIED AS REQUIRED BY FIELD CONDITIONS WHERE AND AS DIRECTED BY THE ENGINEER. THE VOLUMES OF CONCRETE THRUST BLOCKING SHALL NOT BE LESS THAN SHOWN.

4. EARTH TRENCH CONDITIONS: THE "C" DIMENSION SHALL BE AS SHOWN. THE CONCRETE BLOCKING MUST BE POURED AGAINST FIRM SOIL.

5. UNSTABLE SOIL: THE ENGINEER SHALL DETERMINE IF ADDITIONAL THRUST BLOCKING IS REQUIRED. THE "C" DIMENSION SHALL BE INCREASED AS DIRECTED BY THE ENGINEER, BASED ON GEOTECHNICAL EVALUATIONS OF THE SITE SOILS.

6. IF WEDGING IS REQUIRED TO SECURE SYSTEM IN-PLACE, THEN ONLY NYLON / PLASTIC WEDGES SHALL BE PERMITTED.
### PLAN VIEW

**PLACE AGAINST UNDISTURBED EARTH**

**CONCRETE THRUST BLOCK**

### DETAIL "A"

<table>
<thead>
<tr>
<th>NOMINAL PIPE SIZE</th>
<th>11 1/4&quot; A B C D E</th>
<th>22 1/2&quot; A B C D E</th>
<th>45° A B C D E</th>
<th>90° A B C D E</th>
</tr>
</thead>
<tbody>
<tr>
<td>4&quot;</td>
<td>1.0' 1.0' 1.5' 0.4' 0.4'</td>
<td>1.0' 1.5' 1.5' 0.4' 0.8'</td>
<td>2.0' 1.5' 1.5' 0.4' 0.4'</td>
<td>3.5' 1.5' 1.5' 0.4' 0.4'</td>
</tr>
<tr>
<td>6&quot;</td>
<td>1.0' 1.5' 1.5' 0.6' 0.4'</td>
<td>1.5' 1.5' 1.5' 0.6' 0.8'</td>
<td>2.5' 1.5' 1.5' 0.6' 0.4'</td>
<td>5.0' 1.5' 1.5' 0.6' 0.4'</td>
</tr>
<tr>
<td>8&quot;</td>
<td>1.0' 2.5' 1.5' 0.7' 0.4'</td>
<td>1.5' 2.5' 1.5' 0.7' 0.8'</td>
<td>3.0' 2.5' 1.5' 0.7' 0.4'</td>
<td>7.5' 1.5' 2.5' 0.7' 0.4'</td>
</tr>
<tr>
<td>12&quot;</td>
<td>1.5' 2.5' 1.5' 1.0' 0.6'</td>
<td>3.0' 2.5' 1.5' 1.0' 1.1'</td>
<td>6.0' 2.5' 1.5' 1.0' 0.5'</td>
<td>10.5' 2.5' 2.5' 1.0' 0.5'</td>
</tr>
</tbody>
</table>

**STANDARD DETAIL**

**CONCRETE THRUST BLOCKING**

**DETAIL NO.**

**OVWU-610**

**ISSUED:**

**01/18**

**REVISED:**

**01/21**

**SHEET 2 OF 5**
PLACE AGAINST UNDISTURBED EARTH

RUN PIPE

O.D. OF BRANCH PIPE

BRANCH PIPE

USE POLYETHYLENE WRAP TO FORM A BOND BREAKER BETWEEN THE CONCRETE AND THE FITTING.

PLAN VIEW

CONCRETE THRUST BLOCK

DETAIL "A"

NOTE:
1. FOR DEAD END FITTINGS USE THRUST BLOCK DIMENSIONS FOR SAME SIZE BRANCH PIPE

<table>
<thead>
<tr>
<th>BRANCH PIPE</th>
<th>SIZE</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4&quot;</td>
<td>2.5'</td>
<td>1.5'</td>
<td>1.5'</td>
<td>0.4'</td>
</tr>
<tr>
<td></td>
<td>6&quot;</td>
<td>3.5'</td>
<td>1.5'</td>
<td>1.5'</td>
<td>0.6'</td>
</tr>
<tr>
<td></td>
<td>8&quot;</td>
<td>3.5'</td>
<td>2.5'</td>
<td>1.5'</td>
<td>0.7'</td>
</tr>
<tr>
<td></td>
<td>12&quot;</td>
<td>7.5'</td>
<td>2.5'</td>
<td>1.5'</td>
<td>1.0'</td>
</tr>
</tbody>
</table>

ISSUED: 01/18
REVISED: 01/21
STANDARD DETAIL CONCRETE THRUST BLOCKING
DETAIL NO. OVWU-610
SHEET 3 OF 5
NOTES:
1. 90° BENDS ARE NOT RECOMMENDED
2. 3" MINIMUM COVER OVER ALL BARS

<table>
<thead>
<tr>
<th>NOMINAL SIZE</th>
<th>11 1/4</th>
<th>22 1/2</th>
<th>45°</th>
</tr>
</thead>
<tbody>
<tr>
<td>4&quot;</td>
<td>1.5</td>
<td>1.5</td>
<td>2.0</td>
</tr>
<tr>
<td>6&quot;</td>
<td>2.0</td>
<td>2.0</td>
<td>3.0</td>
</tr>
<tr>
<td>8&quot;</td>
<td>2.5</td>
<td>2.5</td>
<td>4.0</td>
</tr>
<tr>
<td>12&quot;</td>
<td>3.0</td>
<td>3.0</td>
<td>4.0</td>
</tr>
</tbody>
</table>

ISSUED: 01/18
REVISED: 01/21

STANDARD DETAIL
CONCRETE THRUST BLOCKING

DETAIL NO.
OVWU-610

SHEET 4 OF 5
NOTES:
1) DIMENSION "B" IS MEASURE FROM BOTTOM OF TRENCH.
2) PLACE CONCRETE UP TO SPRING LINE OF PIPE.
3) PLACE CONCRETE IN ALL DIMENSIONS AGAINST UNDISTURBED SOIL.
4) USE HIGH EARLY STRENGTH CONCRETE RATED AT 2500 PSI IN 24 HR (MIN.)

Dimensions:

<table>
<thead>
<tr>
<th>PIPE SIZE</th>
<th>BAR SIZE</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>4&quot;</td>
<td>#4</td>
<td>2.5</td>
<td>1.5</td>
<td>1.5</td>
<td>0.5</td>
<td>1.0</td>
</tr>
<tr>
<td>6&quot;</td>
<td>#5</td>
<td>3.5</td>
<td>2.0</td>
<td>2.0</td>
<td>0.7</td>
<td>1.5</td>
</tr>
<tr>
<td>8&quot;</td>
<td>#6</td>
<td>3.5</td>
<td>2.5</td>
<td>2.5</td>
<td>0.8</td>
<td>2.0</td>
</tr>
<tr>
<td>12&quot;</td>
<td>#7</td>
<td>5.5</td>
<td>3.5</td>
<td>3.5</td>
<td>1.0</td>
<td>3.0</td>
</tr>
</tbody>
</table>

---

PLAN VIEW
NOT TO SCALE

ALTERNATE STRAP MAY BE USED IF SUBMITTED AND APPROVED BY TUCSON WATER

REBAR, SIZE PER CHART BELOW, FORM TO FIT SNUGLY AROUND BODY

CONCRETE (SEE NOTE 4)

ELEVATION VIEW
NOT TO SCALE

POLYWRAP VALVE PRIOR TO PLACEMENT OF REBAR, ENSURE REBAR FITS SNUGLY AROUND VALVE BODY PRIOR TO PLACING CONCRETE.

#4 REBAR 12" O.C.

BOTH WAYS TOP AND BOTTOM

C
A

NEW DI PIPE
EXISTING PIPE
AC/DI PIPE TRANSITION COUPLING BOTH SIDES

3"
(MIN.)
(TYP.)

2'
(MIN.)

D

01/18
01/21

01/18
01/21

CONCRETE THRUST BLOCKING

ISSUED:
REVISED:

STANDARD DETAIL

DETAIL NO.

OVWU-610

SHEET 5 OF 5
NOTES:

1. THE PREVENTION OF BACKFLOW IN A POTABLE WATER SUPPLY SYSTEM IS NECESSARY TO PREVENT CONTAMINATION OR POLLUTING OF THE WATER SUPPLY. PREVENTION IS ACCOMPLISHED BY THE USE OF AIR-GAP SEPARATIONS OR BY MECHANICAL BACKFLOW PREVENTION ASSEMBLIES. AIR-GAP SEPARATIONS AND BACKFLOW PREVENTION ASSEMBLIES SHALL BE INSTALLED ACCORDING TO CURRENT OVWU STANDARD DETAILS TO ASSURE PROTECTION OF THE PUBLIC WATER SUPPLY SYSTEM.

2. AN AIR GAP IS NOT GENERALLY UTILIZED FOR WATER SERVICE LINE PROTECTION SINCE ALL SUPPLY PRESSURE IS LOST. A WATER SERVICE LINE TO A LAKE, TANK OR OTHER VESSEL IS GENERALLY WHERE AN AIR GAP IS USED. HOWEVER, FOR SERVICE PROTECTION, ANOTHER DETERRENT IS THAT ALL PIPING TO THE AIR GAP MUST REMAIN EXPOSED.


4. THERE SHALL NOT BE ANY PROVISIONS FOR EXTENDING THE FIXTURE BELOW THE FLOOD LEVEL RIM. IF THE END OF THE POTABLE WATER PIPE OR FIXTURE OUTLET IS THREADED OR ALLOWS FOR ANY TYPE OF EXTENSION BY ANY MEANS, A PROPERLY INSTALLED AND APPROVED BACKFLOW PREVENTED SHALL BE INSTALLED.

5. FOR ADDITIONAL INFORMATION CONSULT OVWU BACKFLOW PREVENTION ORDINANCE OR CONTACT (520) 229-5042
KEYNOTES:
1. POTABLE WATER SYSTEM FIRE HYDRANT
2. 2" REDUCED PRESSURE BACKFLOW ASSEMBLY
3. RELIEF VALVE Pointing Downward
4. WATER METER
5. OPTIONAL SUPPORT
6. PIPE SUPPORT
7. KLEIN TANK, WATER TRUCK, VESSEL OR OTHER USE
8. CHAIN AND PADLOCK (PROVIDED BY OWWJ)

NOTES:
1. ALL BACKFLOW ASSEMBLIES SHALL BE INSTALLED, MAINTAINED AND TESTED (BY OWWJ).
2. ONLY ONE CONNECTION PER HYDRANT IS ALLOWED.
3. FOR FURTHER INFORMATION CONTACT THE BACKFLOW PREVENTION SECTION AT (520) 229-5042.
1. A PERMIT IS REQUIRED BEFORE INSTALLING OR REPLACING A BACKFLOW ASSEMBLY. PERMITS SHALL BE OBTAINED BY CONTACTING WATER QUALITY-BACKFLOW DIVISION AT 520-229-5042.
2. A LIST OF APPROVED BACKFLOW ASSEMBLIES IS MAINTAINED AND AVAILABLE FROM OVWU.
3. THE PVB SHALL BE INSTALLED OUTSIDE, ABOVE GROUND, 12”-18” FROM THE WATER METER AND ON PRIVATE PROPERTY UNLESS OTHERWISE AUTHORIZED. (RIGHT-OF-WAYs ARE NOT PRIVATE PROPERTY).
4. THERE SHALL BE NO OTHER PIPING CONNECTED TO THE PIPING BETWEEN THE WATER METER AND THE BACKFLOW ASSEMBLY EXCEPT FOR PARALLEL INSTALLATIONS.
5. INSTALLATIONS SHALL MEET CURRENT LOCAL PLUMBING CODES AND FIRE CODES AS APPLICABLE IN ADDITION TO OVWU’S STANDARD DETAILS. (SEE #12 APPROVED PIPING MATERIALS)
6. ALL CONNECTIONS SHALL BE LEFT EXPOSED UNTIL INSPECTED AND APPROVED BY OVWU.
7. PROTECTIVE CASES ARE OPTIONAL, AND SHALL MEET CLEARANCE, ACCESS AND DRAINAGE REQUIREMENTS.
8. IT IS RECOMMENDED THAT BACKFLOW ASSEMBLIES BE PROTECTED FROM THE ELEMENTS. CARE SHALL BE TAKEN TO ENSURE THAT THE PROTECTION DOES NOT HINDER OPERATION OF THE ASSEMBLY.
9. ALLOW FOR PROPER DRAINAGE.
10. BEFORE INSTALLING A BACKFLOW ASSEMBLY ON ANY FIRE SYSTEM, CONSULT THE FIRE AUTHORITY FOR ADDITIONAL REQUIREMENTS. (IE. OS AND Y SHUTOFFS, ALARMS ETC.)
11. THE INSTALLATION OF A BACKFLOW ASSEMBLY WILL CREATE A CLOSED SYSTEM. CONSULT LOCAL PLUMBING CODES FOR PRESSURE RELIEF VALVE AND THERMAL EXPANSION REQUIREMENTS.
12. DEVELOPER OR BUILDER IS REQUIRED TO INSTALL A CUSTOMER’S 1” SHUTOFF BALL VALVE W/SWIVEL NUT AND HANDLE.
13. FIRE ADJUSTMENT INFORMATION CONSUMED (OYWU) BACKFLOW PREVENTION ORDINANCE OR CONTACT (520) 292-5042.
14. METER COUPLING 1” OR SMALLER SHALL BE EQUIPPED WITH (MUELLER H-10896) W/SWIVEL NUT AND HANDLE.

ISSUED: 01/18
REVISED: 11/20

STANDARD DETAIL
BACKFLOW PREVENTION REDUCED PRESSURE ASSEMBLY (RPA) INSTALLATION

DETAIL NO. OVWU-1802

SHEET 1 OF 1
1. A PERMIT IS REQUIRED BEFORE INSTALLING OR REPLACING A BACKFLOW ASSEMBLY. PERMITS SHALL BE OBTAINED BY CONTACTING WATER QUALITY-BACKFLOW DIVISION AT 520-229-5042.

2. A LIST OF APPROVED BACKFLOW ASSEMBLIES IS MAINTAINED AND AVAILABLE FROM OVWW.

3. THE PVB SHALL BE INSTALLED OUTSIDE, ABOVE GROUND, 12'-18" FROM THE WATER METER AND ON PRIVATE PROPERTY UNLESS OTHERWISE AUTHORIZED. (RIGHT-OF-WAY IS NOT PRIVATE PROPERTY).

4. THERE SHALL BE NO OTHER PIPING CONNECTED TO THE PIPING BETWEEN THE WATER METER AND THE BACKFLOW ASSEMBLY.

5. INSTALLATIONS SHALL MEET CURRENT LOCAL PLUMBING CODES AND FIRE CODES AS APPLICABLE IN ADDITION TO OVWW'S STANDARD DETAILS. (SEE #2 APPROVED PIPE MATERIALS)

6. ALL CONNECTIONS SHALL BE LEFT EXPOSED UNTIL INSPECTED AND APPROVED BY OVWW.

7. PROTECTIVE CASES ARE OPTIONAL AND SHALL MEET CLEARANCE, ACCESS, AND DRAINAGE REQUIREMENTS.

8. IT IS RECOMMENDED THAT BACKFLOW ASSEMBLIES BE PROTECTED FROM THE ELEMENTS. CARE SHALL BE TAKEN TO ENSURE THAT THE PROTECTION DOES NOT HINDER OPERATION OF THE ASSEMBLY (ALLOW FOR PROPER DRAINAGE).

9. PVB'S MAY BE MAINTAINED UNDER CONTINUOUS PRESSURE AND HAVE SHUT OFF VALVES DOWNSTREAM, BUT THERE SHALL BE NO MEANS OF IMPOSING BACK PRESSURE ON THE PVB FROM ANY OTHER SOURCE.

10. PVB'S SHALL ONLY BE APPROVED FOR IRRIGATION METER SERVICE PROTECTION WHERE THERE IS NO OTHER SOURCE OF WATER SUPPLY TO THE PREMISES, I.E. MEDIAN ISLANDS NO BACK PRESSURE.

11. DEVELOPER OR BUILDER IS REQUIRED TO INSTALL A CUSTOMER'S 1" SHUTOFF BALL VALVE W/ SWIVEL NUT AND HANDLE 1 AM'S COMPRESSION (MUELLER H-106861). PRIVATE SIDE 1" BALL VALVE SWIVEL NUT X FIP (B-2435IN) OR APPROVED EQUAL.

12. APPROVED PIPE MATERIALS SHALL BE: COPPER TYPE L OR K, OR DUCTILE IRON.

13. PVB TO BE INSTALLED IN AN OPEN AREA WITH NO OBSTRUCTION ORubre OR SIDE.

14. PRESSURE VACUUM BREAKER ASSEMBLY (PVB) INSTALLATION. THESE SPECIFICATIONS ARE TO BE FOLLOWED FOR ALL WATER SERVICE PROTECTION INSTALLATIONS UTILIZING PVB.

15. FOR ADDITIONAL INFORMATION CONSULT OVWW BACKFLOW PREVENTION ORDINANCE OR CONTACT (520) 292-5042.

STANDARD DETAIL
PRESSURE VACUUM BREAKER ASSEMBLY (PVB) INSTALLATION

ISSUED: 01/18
REVISED: 10/20

DETAIL NO. OVWW-1803

SHEET 1 OF 1
1. A PERMIT IS REQUIRED BEFORE INSTALLING OR REPLACING A BACKFLOW ASSEMBLY. PERMITS SHALL BE OBTAINED BY CONTACTING WATER QUALITY-BACKFLOW DIVISION AT 520-222-5042.

2. A LIST OF APPROVED BACKFLOW ASSEMBLIES IS MAINTAINED AND AVAILABLE FROM OVWW.

3. THE DCVA SHALL BE INSTALLED OUTSIDE ABOVE GROUND, 12” - 18” FROM THE WATER METER AND ON PRIVATE PROPERTY UNLESS OTHERWISE AUTHORIZED. (RIGHT-OF-WAYS ARE NOT PRIVATE PROPERTY).

4. THERE SHALL BE NO OTHER PIPING CONNECTED TO THE PIPING BETWEEN THE WATER METER AND THE BACKFLOW ASSEMBLY EXCEPT FOR PARALLEL INSTALLATIONS.

5. INSTALLATIONS SHALL MEET CURRENT LOCAL PLUMBING CODES AND FIRE CODES AS APPLICABLE IN ADDITION TO OVWW’S STANDARD DETAILS. (SEE #12 APPROVED PIPING MATERIALS)

6. ALL CONNECTIONS SHALL BE LEFT EXPOSED UNTIL INSPECTED AND APPROVED BY OVWW.

7. PROTECTIVE CAGES ARE OPTIONAL, AND SHALL MEET CLEARANCE, ACCESS AND DRAINAGE REQUIREMENTS.

8. IT IS RECOMMENDED THAT BACKFLOW ASSEMBLIES BE PROTECTED FROM THE ELEMENTS. CARE SHALL BE TAKEN TO ENSURE THAT THE PROTECTION DOES NOT HINDER OPERATION OF THE ASSEMBLY.

9. BEFORE INSTALLING A BACKFLOW ASSEMBLY INTO THE PVC SYSTEM, CONSULT WITH THE FIRE AUTHORITY FOR ADDITIONAL REQUIREMENTS (E.G., OS AND Y SHUTOFFS, ALARMS ETC.)

10. THE INSTALLATION OF A BACKFLOW ASSEMBLY WILL CREATE A CLOSED SYSTEM, CONSULT LOCAL PLUMBING CODES FOR PRESSURE RELIEF VALVE AND THERMAL EXPANSION REQUIREMENTS.

11. DEVELOPER OR BUILDER IS REQUIRED TO INSTALL A CUSTOMER’S 1” SHUTOFF BALL VALVE W/SWIVEL NUT AND HANDLE.

12. APPROVED PIPING MATERIALS SHALL BE: COPPER TYPE L OR K, OR DUCTILE IRON.

13. FOR ADDITIONAL INFORMATION CONSULT OVWW BACKFLOW PREVENTION ORDINANCE OR CONTACT (520) 292-5042.

14. DOUBLE CHECK VALVE ASSEMBLY (DCVA) INSTALLATION THESE SPECIFICATION ARE TO BE FOLLOWED FOR ALL WATER SERVICES PROTECTION INSTALLATION UTILIZING A DCVA.

ISSUED: 01/18

REVISED: 10/20

STANDARD DETAIL

DOUBLE CHECK VALVE ASSEMBLY (DCVA) INSTALLATION

DETAIL NO. OVWW-1805

SHEET 1 OF 1
NOTES:

1. A PERMIT IS REQUIRED BEFORE INSTALLING OR REPLACING A BACKFLOW ASSEMBLY. PERMITS SHALL BE
   OBTAINED BY CONTACTING OVWU WATER QUALITY-BACKFLOW DIVISION AT 520-229-5042.
2. A LIST OF APPROVED BACKFLOW ASSEMBLIES IS MAINTAINED BY OVWU.
3. THE BACKFLOW ASSEMBLY LISTED IN THIS DETAIL OR SVB SHALL BE INSTALLED OUTSIDE, 12”-18” FROM THE WATER
   METER AND ON PRIVATE PROPERTY UNLESS OTHERWISE AUTHORIZED.
   (RIGHT-OF-WAYS ARE NOT PRIVATE PROPERTY)
4. THERE SHALL BE NO OTHER PIPING CONNECTED TO THE PIPING BETWEEN THE WATER METER AND THE
   BACKFLOW ASSEMBLY.
5. ALL CONNECTIONS SHALL MEET CURRENT LOCAL PLUMBING CODES AND FIRE CODES AS APPLICABLE IN
   ADDITION TO OVWU’S STANDARD DETAILS.
   (SEE #12 OR #10 APPROVED PIPING MATERIALS)
6. ALL CONNECTIONS SHALL BE LEFT EXPOSED UNTIL INSPECTED AND APPROVED BY OVWU.
7. PROTECTIVE CAGES ARE OPTIONAL, AND SHALL MEET CLEARANCE, ACCESS AND DRAINAGE REQUIREMENTS.
8. IT IS RECOMMENDED THAT BACKFLOW ASSEMBLIES BE PROTECTED FROM THE ELEMENTS. CARE SHALL BE
   TAKEN TO ENSURE THAT THE PROTECTION DOES NOT HINDER OPERATION OF THE ASSEMBLY.
9. DEVELOPER OR BUILDER IS REQUIRED TO INSTALL A CUSTOMER’S 1” SHUTOFF BALL VALVE W/ SWIVEL NUT AND HANDLE
   1” AMS COMPRESSION (MUELLER H-108661). PRIVATE SIDE 1” BALL VALVE SWIVEL NUT X FIP (B-2435MN)
   OR APPROVED EQUAL
10. APPROVED PIPING MATERIALS SHALL BE: COPPER TYPE L OR K, OR DUCTILE IRON.
11. TO BE INSTALLED IN AN OPEN AREA WITH NO OBSTRUCTION ON ONE SIDE.
12. SPILL RESISTANT PRESSURE VACUUM BREAKER ASSEMBLY (SVB) INSTALLATION. THESE SPECIFICATION ARE
    TO BE FOLLOWED FOR ALL WATER SERVICES PROTECTION INSTALLATION UTILIZING A SVB. ADD NOTE #11
    FROM (RP 4002) TO (SVB 1802).
13. METER SERVICE INSTALLATION FOR COUPLING ASSEMBLY. (PER OVWU STANDARD DETAIL 309)
14. FOR ADDITIONAL INFORMATION CONSULT OVWU BACKFLOW PREVENTION ORDINANCE OR CONTACT
    (520) 292-5042.

ISSUED: 01/18
REVISI: 10/20

STANDARD DETAIL: BACKFLOW PREVENTION
SPILL RESISTANT PRESSURE
VACUUM BREAKER ASSEMBLY (SVB)
INSTALLATION

DETAIL NO. OVWU-1807

SHEET 1 OF 1
**KEYNOTES:**

1. **EXISTING POTABLE WATER MAIN**
2. **2” CONVF STOP PLUG WHEN FINISHED**
3. **TEMPORARY CONNECTION FOR CONSTRUCTION WATER USE**
4. **RIGID POTABLE WATER PIPE**
5. **REDUCED PRESSURE (R.P.) BACKFLOW ASSEMBLY**
6. **FIRE HYDRANT METER**
7. **CUSTOMER SUPPLIED 2” GATE OR BALL VALVE**
8. **2'-0” BRASS MALE HYDRANT NIPPLE**
9. **PIPE SUPPORT**
10. **QUICK DISCONNECT (CAMLOCK)**
11. **2” GATE OR BALL VALVE**

**NOTES:**

1. **BACKFLOW ASSEMBLY SHALL BE INSTALLED, MAINTAINED AND TESTED IN ACCORDANCE WITH STATE AND LOCAL CODES AND REGULATIONS.**
2. **TEMPORARY CONNECTION TO EXISTING POTABLE MAIN MUST BE APPROVED BY A ORO VALLEY WATER QUALITY/BACKFLOW SECTION, CONTACT ADAM 520-229-5042.**
3. **WATER TO BE USED FOR FILLING AND FLUSHING OF NEW WATER MAINS ONLY.**
4. **BACKFLOW ASSEMBLY AND METER SHALL BE TESTED BY ORO VALLEY WATER QUALITY/BACKFLOW SECTION.**
5. **WHEN INSTALLED, MOVED, OR REMOVED.**
6. **BACKFLOW ASSEMBLY IS REQUIRED TO BE TURNED OFF AT BOTH SHUT OFF VALVES AND REMAIN OFF WHEN CHLORINATING NEW MAIN.**
7. **DO NOT LEAVE BACKFLOW ASSEMBLY CONNECTED WITHOUT WATER METER. INSTALLATION MUST COMPLY WITH STANDARD DETAIL AT ALL TIMES.**

**ISSUED:**

01/18

**REVISIONS:**

11/20

**STANDARD DETAIL**

**DETAIL NO:**

**Sheet 1 of 1**