

Summary of 2008 Update to Water Engineering Standards

1998 Water Engineering Standards	2008 Water Engineering Standards	Revision
Table of Contents, Chapter W2	Table of Contents, Chapter W2	Added Section W2-05 As-Built Documentation
Table of Contents, Section W4-30	Table of Contents, Section W4-30	Changed title to Reduced Pressure Detector Assembly
Table of Contents, Section W4-32	Table of Contents, Section W4-32	Changed title to Double Check Detector Assembly
Table of Contents, Section W5	Table of Contents, Section W5-27	Added Trenchless Excavation
Table of Contents, Sections W5-27 to W5-37	Table of Contents, Sections W5-28 to W5-38	Renumbered to accommodate insertion of Trenchless Excavation
Table of Contents	Table of Contents, Chapter W6	Added Chapter W6, Underground Fire System Installation Requirements for Commercial/Multi-Family Projects, Sections W6-01 to W6-05
Chapter W1, Section W1-02, “Standard Specifications”	Chapter W1, Section W1-02, “Standard Specifications”	Changed WSDOT version from 1998 to 2004.
Chapter W2, Section W2-04.3, General Note #1	Chapter W2, Section W2-04.3, General Note #1	Added “the 2008” to COB Utility Engineering Standards
Chapter W2, Section W2-04.3, General Note #4	Chapter W2, Section W2-04.3, General Note #4	Changed reference to Standard Detail from W-8 to W-9
Chapter W2, Section W2-04.3, General Note #13	Chapter W2, Section W2-04.3, General Note #13	Changed 3/4 inch to 1 inch, added “adaptors shall be used for 3/4 inch”
Chapter W2, Section W2-04.3, General Note #15	Chapter W2, Section W2-04.3, General Note #15	Changed 48 hours to 72 hours and added new phone number, “811”.
Chapter W2, Section W2-04.3, General Note #18	Chapter W2, Section W2-04.3, General Note #18	Changed “filter fabric” to “catch basin inserts”, deleted phrase “downhill storm drain inlets and”, changed “filter fabric” to “inserts”, deleted sentences about construction during rainy season.
Chapter W2, Section W2-04.3, General Note #19, #1	Chapter W2, Section W2-04.3, General Note #19, #1	Added, “with brass plug” for Romac Service Saddle used to abandon service tap, deleted phrase, “prior to service demolition”.
Chapter W2, Section W2-04.3, General Note #20	Chapter W2, Section W2-04.3, General Note #20	Changed reference from Standard Detail W-7 to W-8, added spec for wrapping DI pipe and couplings, changed CDF backfill for AC pipe from “spring line” to “the invert”.
Chapter W2, Section W2-04.3	Chapter W2, Section W2-04.3, General Note #24	New Note - Addition of permit requirement for work in COB-owned confined spaces

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Chapter W2, Section W2-04.3	Chapter W2, Section W2-04.3, General Note #25	New Note - Addition of definition of confined spaces
Chapter W2, Section W2-04.3	Chapter W2, Section W2-04.3, General Note #26	New Note - Addition of requirement of Contractor to provide written notice to property owner(s) and Bellevue Utilities 48 hours before entering public utility easement.
Chapter W2, Section W2-04.3	Chapter W2, Section W2-04.3, General Note #27	New Note - Addition of requirement of Contractor to restore easement(s) to a condition equal or better than condition prior to construction and obtain signed release from all affected property owners.
Chapter W2	Chapter W2, Section W2-05	Added Section W2-05 As-Built Documentation
Chapter W3, Section W3-01.2, Item A	Chapter W3, Section W3-01.2, Item A	Changed Single Family Unit Demands from 100 to 90 GPCD. Changed Multi-family Unit Demands from 80 to 79 GPCD
Chapter W3, Section W3-01.2, Item B	Chapter W3, Section W3-01.2, Item B	Changed Single Family Population Densities from 2.8 to 2.85 people per unit. Changed Multi-family Population Densities from 1.8 to 1.85 people per unit.
Chapter W3, Section W3-02, Item N	Chapter W3, Section W3-02, Item N	Added requirement to drain water vaults to storm system if draining to daylight is not feasible, (except RPBA vaults, which require a bore sighted daylight drain).
Chapter W3, Section W3-02	Chapter W3, Section W3-02, Item O	New Item - Added requirement for placement of surface appurtenances and meter vaults (e.g., covers outside tire tracks, vaults outside sidewalk, where possible).
Chapter W3, Section W3-02	Chapter W3, Section W3-02, Item P	New Item - Added requirement that water service connections or distribution piping shall not be used for electrical service grounding.
Chapter W3, Section W3-02	Chapter W3, Section W3-02, Item Q	New Item - Added requirement that manufacturer's certification of testing and accuracy be provided for all commercial meter installations.
Chapter W3, Section W3-04, Item C	Chapter W3, Section W3-04, Item C	Added to "Exceptions"; - On dead-end streets, reduce single-family residential spacing to be 400 feet apart.

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Chapter W3, Section W3-04, Item E	Chapter W3, Section W3-04, Item E	Deleted requirement for not showing piping between fire sprinkler vaults and building on design sheet. Added requirement that fire hydrants be installed on same side of street as water main where feasible.
Chapter W3, Section W3-05, Item B	Chapter W3, Section W3-05, Item B	Changed requirement for ductile iron encasement under rockeries and wall footings that are 5 feet high to 4 feet high. Added spec to support pipe in casing over 10 feet long with casing spacers. Changed trench backfill to be full-depth crushed rock under rockeries/walls.
Chapter W3, Section W3-08	Chapter W3, Section W3-08, Item G	New Item - Added requirement for property owner to notify Utility of any removal or demolition of structure connected to public water system.
Chapter W3, Section W3-08	Chapter W3, Section W3-08, Item H	New Item - Added requirement that water system must not be connected to private sewer pump stations.
Chapter W3, Section W3-10	Chapter W3, Section W3-10, Item H	New Item - Added requirement that 3 inch and larger water service have a valve on every leg of tee connection to main.
Chapter W3, Section W3-10	Chapter W3, Section W3-10, Item I	New Item – Require that new mixed-use buildings have separate meters for multi-family and commercial portion of the building.
Chapter W3, Section W3-11	Chapter W3, Section W3-11	Added clarification that DCDA requirement applies to fire lines that are 3” and larger (both interior and outside assemblies). Added requirement of premise isolation at the water meter for all sites using an auxiliary water system in addition to public water system. Added requirement that backflow prevention assembly be located no more than 50 feet from water main. Added requirement of an RPBA for premise isolation on all mixed use buildings.
Chapter W3, Section W3-13	Chapter W3, Section W3-13	Added exception from irrigation requirements for single-family residences or any project with a landscaped area of less than 500 square feet.

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Chapter W3, Section W3-13.1, Item B	Chapter W3, Section W3-13.1, Item B	Added acceptable credentials for irrigation system designers.
Chapter W3, Section W3-13.1, Item D	Chapter W3, Section W3-13.1, Item D	Added audit must be performed by IACLIA certified irrigation auditor.
Chapter W3, Section W3-13.1	Chapter W3, Section W3-13.1, Item E	New Item - Added restrictions to type and location of irrigation systems installed.
Chapter W3, Section W3-13.2	Chapter W3, Section W3-13.2, Item E	New Item - Added provision for manual watering.
Chapter W4, Table of Contents, Section W4-30	Chapter W4, Table of Contents, Section W4-30	Changed title to Reduced Pressure Detector Assembly
Chapter W4, Table of Contents, Section W4-32	Chapter W4, Table of Contents, Section W4-32	Changed title to Double Check Detector Assembly
Chapter W4, Section W4-05	Chapter W4, Section W4-05	Replaced “vacuum breaker” with “and air valve”.
Chapter W4, Section W4-06	Chapter W4, Section W4-06	Updated spec for gasket material.
Chapter W4, Section W4-10	Chapter W4, Section W4-10	Updated specs for gate valves by size and material (now allow AWWA C-515 ductile iron valves).
Chapter W4, Section W4-15	Chapter W4, Section W4-15	Deleted phrase, “large quantities of”. Added phrase, “and during filling of the pipeline”.
Chapter W4, Section W4-19	Chapter W4, Section W4-19	Added phrase, “foot valve connection, and all joints between”. Replaced “nut is” with “and port cap nuts are”. Added shackle rods are not permitted on hydrants.
Chapter W4, Section W4-20	Chapter W4, Section W4-20	Replaced “pipe” with “posts”. Updated guard post paint specs – replaced “white” with “safety yellow”
Chapter W4, Section W4-22	Chapter W4, Section W4-22	Deleted plug type corporation stops; now allow only ball valves.
Chapter W4, Section W4-23	Chapter W4, Section W4-23	Updated specs for meter boxes - now allow cast iron, steel, and plastic boxes. Concrete boxes not allowed.
Chapter W4, Section W4-27	Chapter W4, Section W4-27	Added that concrete blocks shall be left open for inspection.
Chapter W4, Section W4-30	Chapter W4, Section W4-30	Changed title to Reduced Pressure Detector Assembly.
Chapter W4, Section W4-32	Chapter W4, Section W4-32	Changed title to Double Check Detector Assembly.
Chapter W4, Section W4-35, Item A	Chapter W4, Section W4-35, Item A	Updated spec for bedding material.

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Chapter W4, Section W4-35, Item C	Chapter W4, Section W4-35, Item C	Added “Zone” to title of Section 9-03.12(3)
Chapter W5, Table of Contents	Chapter W5, Table of Contents, Section W5-27	Addition of Trenchless Excavation
Chapter W5, Table of Contents, Sections W-27 to W-37	Chapter W5, Table of Contents, Sections W-28 to W-38	Renumbered to accommodate addition of W-27 Trenchless Excavation
Chapter W5, Section W5-03	Chapter W5, Section W5-03	Added soil nail placement and clearance restrictions.
Chapter W5, Section W5-05	Chapter W5, Section W5-05	Added soil nail placement and clearance restrictions.
Chapter W5, Section W5-06	Chapter W5, Section W5-06	Updated fire hydrant paint specs – replaced “white” with “safety yellow”. Added requirement to install blue raised pavement marker.
Chapter W5, Section W5-18	Chapter W5, Section W5-18	Changed preconstruction photo size from 5”x 7” to 4”x 6”.
Chapter W5, Section W5-23	Chapter W5, Section W5-23	Added additional specs for trench/excavation protection.
Chapter W5, Section W5-24	Chapter W5, Section W5-24	Added additional specs for shoring.
Chapter W5, Section W5-26, Item C	Chapter W5, Section W5-26, Item C	Changed specs for crushed surfacing backfill materials. Changed reference for compaction and moisture control tests for both paved and unimproved areas.
Chapter W5	Chapter W5, Section W5-27	Added Section W5-27 Trenchless Excavation Methods.
Chapter W5, Sections W5-27 to W-37	Chapter W5, Sections W5-28 to W5-38	Renumbered to accommodate addition of Section W5-27 Trenchless Excavation.
Chapter W5, Section W5-28.2	Chapter W5, Section W5-29.2	Updated reference for Abandonment of Structures in Standard Specifications.
Chapter W5	Chapter W5, Section W5-29.3	Added new section W5-29.3 Abandoning Gate Valves In Place.
Chapter W5, Section W5-36	Chapter W5, Section W5-37	Added exterior and interior vault coating specs.
	Chapter W6 – Summary of Underground Fire System Installation Requirements For Commercial/Multi-Family Projects (For Services Greater Than 2 Inches in Diameter)	Added new Chapter W6 – Summary of Underground Fire System Installation Requirements For Commercial/Multi-Family Projects (For Services Greater Than 2 Inches in Diameter)

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Appendix W-1, Table of Contents	Appendix W-1, Table of Contents, W-5	Added Detail W-5, Pipe Clamp and Anchor Rods For Concrete Blocking
Appendix W-1, Table of Contents, W-5	Appendix W-1, Table of Contents, W-6	Renumbered Detail W-5, Typical Trench Detail, to W-6
Appendix W-1, Table of Contents, W-6	Appendix W-1, Table of Contents, W-7	Renumbered Detail W-6, Casing Installation, to W-7
Appendix W-1, Table of Contents, W-7	Appendix W-1, Table of Contents, W-8	Renumbered Detail W-7, Typical A.C. Watermain Crossing Replacement Detail, to W-8
Appendix W-1, Table of Contents, W-8	Appendix W-1, Table of Contents, W-9	Renumbered Detail W-8, Filling New Water Mains, to W-9
Appendix W-1, Table of Contents, W-9	Appendix W-1, Table of Contents, W-10	Renumbered Detail W-9, Tapping Tees, to W-10
Appendix W-1, Table of Contents, W-10	Appendix W-1, Table of Contents, W-11	Renumbered Detail W-10, Valve Box Installation, to W-11
Appendix W-1, Table of Contents, W-11	Appendix W-1, Table of Contents, W-12	Renumbered Detail W-11, Valve Operating Extension, to W-12
Appendix W-1, Table of Contents, W-12	Appendix W-1, Table of Contents, W-13	Renumbered Detail W-12, Fire Hydrant Assembly, to W-13
Appendix W-1, Table of Contents, W-13	Appendix W-1, Table of Contents, W-14	Renumbered Detail W-13, Fire Hydrant Guard Post & Valve Marker Post, to W-14
Appendix W-1, Table of Contents, W-14	Appendix W-1, Table of Contents, W-15	Renumbered Detail W-14, 2” Blowoff Assembly, to W-15
Appendix W-1, Table of Contents, W-15	Appendix W-1, Table of Contents, W-16	Renumbered Detail W-15, 1” Air & Vacuum Release Valve Assembly, to W-16
Appendix W-1, Table of Contents, W-16	Appendix W-1, Table of Contents, W-17	Renumbered Detail W-16, Standard Pressure Reducing Station, to W-17
Appendix W-1, Table of Contents	Appendix W-1, Table of Contents	Added Detail W-18, Typical P.R.V. Schematic
Appendix W-1, Table of Contents, W-17	Appendix W-1, Table of Contents, W-19	Renumbered Detail W-17, Pressure Reducing Station Access Ladder and Pressure Relief Drain, to W-19
Appendix W-1, Table of Contents, W-18	Appendix W-1, Table of Contents, W-20	Renumbered Detail W-18, Individual Pressure Reducing Valve Assembly (Residential), to W-20
Appendix W-1, Table of Contents, W-19	Appendix W-1, Table of Contents, W-21	Renumbered Detail W-19, Individual Pressure Reducing Valve Assembly (Multi-Family or Commercial), to W-21
Appendix W-1, Table of Contents, W-20	Appendix W-1, Table of Contents, W-22	Renumbered Detail W-20, Individual Pressure Reducing Valve Assembly With Pressure Relief (Multi-Family or Commercial), to W-22

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Appendix W-1, Table of Contents	Appendix W-1, Table of Contents	Deleted Detail W-21, 1 inch x ¾ inch Single Water Service or Domestic Irrigation Service (Horizontal Meter Setter)
Appendix W-1, Table of Contents	Appendix W-1, Table of Contents	Deleted Detail W-22, 1 inch x ¾ inch Single Water Service or Domestic Irrigation Service (Vertical Meter Setter)
Appendix W-1, Table of Contents	Appendix W-1, Table of Contents	Changed Detail W-25 title to 1 ½ inch Domestic Water and/or Fire Service
Appendix W-1, Table of Contents	Appendix W-1, Table of Contents	Changed Detail W-26 title to 1 ½ inch Domestic Water Service (Commercial and Multi-Family)
Appendix W-1, Table of Contents	Appendix W-1, Table of Contents	Changed Detail W-27 title to 2-inch Irrigation Water Service
Appendix W-1, Table of Contents	Appendix W-1, Table of Contents	Changed Detail W-28 title to 2-inch Irrigation Water Service (Commercial and Multi-Family)
Appendix W-1, Table of Contents	Appendix W-1, Table of Contents	Changed Detail W-29 title to 2-inch Domestic Water and/or Fire Service
Appendix W-1, Table of Contents	Appendix W-1, Table of Contents	Changed Detail W-30 title to 2-inch Domestic Water Service (Commercial and Multi-Family)
Appendix W-1, Table of Contents, W-31	Appendix W-1, Table of Contents, W-31	Changed Detail W-31 title to 2-inch Irrigation Service
Appendix W-1, Table of Contents, W-32	Appendix W-1, Table of Contents, W-32	Changed Detail W-32 title to 2-inch Irrigation or Fire Sprinkler Water Service (Commercial and Multi-Family)
Appendix W-1, Table of Contents, W-36	Appendix W-1, Table of Contents	Deleted Detail W-36, Outside DCVA Installation For Residential Fire Sprinkler Systems
Appendix W-1, Table of Contents, W-37	Appendix W-1, Table of Contents, W-36	Renumbered Detail W-37, 1” to 2” Double Check Valve Assembly For Irrigation Systems (Outside Installation) to be W-36. Changed “¾-inch to 1-inch” to be, “1-inch to 2-inch”
Appendix W-1, Table of Contents, W-38	Appendix W-1, Table of Contents, W-37	Renumbered Detail W-38, Inside DCVA Installation for Residential Fire Sprinkler Systems, to W-37
Appendix W-1, Table of Contents, W-39	Appendix W-1, Table of Contents, W-38	Renumbered Detail W-39, Double Check Valve Assembly (Inside Installation), to W-38
Appendix W-1, Table of Contents, W-40	Appendix W-1, Table of Contents, W-39	Renumbered Detail W-40, Outside DCVA Installation For 1 ½-inch and 2-inch Commercial Fire Sprinkler Systems, to W-39

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Appendix W-1, Table of Contents	Appendix W-1, Table of Contents, W-40	Addition of Detail W-40, Outside DCVA Installation For 3” and Larger Commercial Fire Sprinkler Systems
Appendix W-1, Table of Contents, W-41	Appendix W-1, Table of Contents, W-41	Changed Detail W-41 title to “1 ½-inch and 2-inch Domestic Double Check Valve Assembly For Continuous Supply (Outside Installation)”
Appendix W-1, Table of Contents, W-45	Appendix W-1, Table of Contents, W-45	Changed Detail W-45 title to “3-inch to 10-inch Double Check Detector Assembly For Fire Sprinkler Systems (Outside Installation)”
Appendix W-1, Table of Contents, W-47	Appendix W-1, Table of Contents, W-47	Changed Detail W-47 title to “3-inch to 10-inch Reduced Pressure Detector Assembly For Fire Sprinkler System (Outside Installation)”
Appendix W-1, Table of Contents, W-48	Appendix W-1, Table of Contents, W-48	Deleted Detail W-48, Timber Baffle/Hill Holder; Replaced with Detail W-48, Reduced Pressure Principle Backflow Assembly For Domestic and Irrigation Service (Inside Installation)
Appendix W-1, Table of Contents	Appendix W-1, Table of Contents, W-49	Added Detail W-49, Requirements For FDC and Check Valve Routed Through Backflow Assembly Vault – 1
Appendix W-1, Table of Contents	Appendix W-1, Table of Contents, W-50	Added Detail W-50, Requirements For FDC and Check Valve Routed Through Backflow Assembly Vault – 2
Appendix W-1, Table of Contents	Appendix W-1, Table of Contents, W-51	Added Detail W-51, FDC Assembly
Appendix W-1, Table of Contents	Appendix W-1, Table of Contents, W-52	Added Detail W-52, FDC Bollards
Appendix W-1, Table of Contents	Appendix W-1, Table of Contents, W-53	Added Detail W-53, Project Sign Detail
Appendix W-1, Table of Contents	Appendix W-1, Table of Contents, W-54	Added Detail W-54, Roadway Clearances For Above Ground Appurtenances
Appendix W-1, Table of Contents	Appendix W-1, Table of Contents, W-55	Added Detail W-55, Fireline Valve Marker
Standard Detail W-1, Concrete Blocking	Standard Detail W-1, Concrete Blocking	Minor typographical changes
Standard Detail W-2, Vertical Blocking With Restrained Joints For New Lines	Standard Detail W-2, Vertical Blocking With Restrained Joints For New Lines	<ul style="list-style-type: none"> • Added Note 8 – Leave block open or sheeted a minimum of 24 hours. • Added reference to new Detail W-5. • Note 4 – changed “deformed reinforcement bars” to “galvanized rods”. • Added 316 SST as approved restraint rod substitution

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Standard Detail W-3, Vertical Blocking For Connecting to Existing Main	Standard Detail W-3, Vertical Blocking For Connecting to Existing Main	<ul style="list-style-type: none"> • Added reference to new Detail W-5. • Added 316 SST as approved restraint rod substitution. • Added Note 2 - Leave block open or sheeted 24 hours minimum.
Standard Detail W-4, Concrete Slope Anchor Detail	Standard Detail W-4, Concrete Slope Anchor Detail	<ul style="list-style-type: none"> • Added reference to new Detail W-5
Standard Detail	Standard Detail W-5, Pipe Clamp and Anchor Rods For Concrete Blocking	New Water Detail – please refer to 2008 Standard Detail W-5
Standard Detail W-5, Typical Trench Detail	Standard Detail W-6, Typical Trench Detail	<ul style="list-style-type: none"> • Renumbered W-6 • Revised crushed rock and gravel borrow spec. • Bedding gravel to extend 4 inches below water pipe. • Require hand compaction of backfill from springline up to 12 inches above crown of pipe • Revised maximum width at top of pipe
Standard Detail W-6, Casing Installation	Standard Detail W-7, Casing Installation	<ul style="list-style-type: none"> • Renumbered W-7 • Deleted Class B asphalt (cold mix) as option for casing end seal.
Standard Detail W-7, Typical A.C. Watermain Crossing Replacement Detail	Standard Detail W-8, Typical A.C. Watermain Crossing Replacement Detail	<ul style="list-style-type: none"> • Renumbered W-8 • Added 1” minimum clearance between D.I. pipe crossing and new utility pipe going under watermain.
Standard Detail W-8, Filling New Water Mains	Standard Detail W-9, Filling New Water Mains	<ul style="list-style-type: none"> • Renumbered W-9
Standard Detail W-9, Tapping Tees	Standard Detail W-10, Tapping Tees	<ul style="list-style-type: none"> • Renumbered W-10 • Show trench wall and add thrust block reference to Detail W-1 • Call out concrete support blocks • Added minimum distance from pipe bell • Call for compacted gravel under tee and thrust block • Note 4 – clarify that tap is minimum 2” smaller diameter than existing main

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Standard Detail W-10, Valve Box Installation	Standard Detail W-11, Valve Box Installation	<ul style="list-style-type: none"> • Renumbered W-11 • Call for 8” deep ACP collar around valve box in paved areas and 8” deep concrete collar in unpaved areas • Call for 2” thick ethafoam pad between valve box base section and top of valve body • Clarified that valve operating extension piece may be required to bring operating nut to within 2’ to 3’ of ground surface • Removed Inland Foundry model
Standard Detail W-11, Valve Operating Extension	Standard Detail W-12, Valve Operating Extension	<ul style="list-style-type: none"> • Renumbered W-12 • Added Note 2 regarding installation alignment • Changed extension coating to “hot dipped galvanized”
Standard Detail W-12, Fire Hydrant Assembly	Standard Detail W-13, Fire Hydrant Assembly	<ul style="list-style-type: none"> • Renumbered W-13 • Clarified that pumper port is “City of” Seattle Standard Thread • Added requirement for concrete pad around base of hydrant (may be waived in certain cases – see detail) • Increased base flange clearance from ground from 4” to 6” • Changed paint color from “white” to “safety yellow” • Added requirement for blue raised pavement marker • Added 3’ minimum radius of level ground around hydrant
Standard Detail W-13, Fire Hydrant Guard Post & Valve Marker Post	Standard Detail W-14, Fire Hydrant Guard Post & Valve Marker Post	<ul style="list-style-type: none"> • Renumbered W-14 • Changed paint color to “Safety Yellow”, manufactured by Rustoleum, Krylon, Sherwin Williams, or equal.
Standard Detail W-14, 2” Blow-Off Assembly	Standard Detail W-15, 2” Blow-Off Assembly	<ul style="list-style-type: none"> • Renumbered W-15 • Removed Fogtite concrete meter box spec. • Added Olympic Foundry metal and MidStates Plastics meter box spec. • Added clarification that all 2” blow off piping is brass
Standard Detail W-15, 1” Air & Vacuum Release Valve Assembly	Standard Detail W-16, 1” Air & Vacuum Release Valve Assembly	<ul style="list-style-type: none"> • Renumbered W-16 • Removed Fogtite concrete meter box • Added MidStates Plastics meter box • Added “swing joint” construction to base of riser pipe.

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Standard Detail W-16, Standard Pressure Reducing Station	Standard Detail W-17, Standard Pressure Reducing Station	<ul style="list-style-type: none"> • Renumbered W-17 • Removed “Typical PRV schematic” detail from this drawing and added reference to new Detail W-18 (Typical PRV Schematic) • Increased pressure relief drain pipe size to storm system from 6” to 8”. • Added note to grade surrounding ground away from PRV vault surface • Removed 30” manhole access and replaced with aluminum LW hatch per Detail W-19 • Revised vault depth to be 6’-6” minimum and 8’-0” maximum • Added additional pipe stanchion (under 6” strainer) • Increased daylight drain pipe size from vault from 4” to 6” • Added “swing joint” construction to base of 2” pressure relief riser and referenced Detail W-16 • Changed 2” corporation stop on pressure relief piping to be 2” bronze ball valve • Added Note 8 – reference to hatch and ladder per Detail W-19 • Added Note 9 – provide ladder-up at top of ladder • Added Note 10 – provide 2’ of level, unobstructed area around hatches
Standard Detail	Standard Detail W-18, Typical P.R.V. Schematic	New Water Detail – shows schematic removed from former Detail W-16

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Standard Detail W-17, Pressure Reducing Station Access Ladder and Pressure Relief Drain	Standard Detail W-19, Pressure Reducing Station Access Ladder and Pressure Relief Drain	<ul style="list-style-type: none"> • Renumbered W-19 • Changed 30” manhole access to lockable aluminum hatch to read “WATER” with light blast skid resistance treatment • Added ladder width (16”) • Increased pressure relief drain size from 6” to 8” • Changed distance of first ladder step below cover to 8” minimum and 12” maximum • Added 6” vault drain to daylight with mesh rodent screen • Note 1 – added clarification on where to support ladder (top, middle, bottom) • Added Note 4 – access hatch to be aluminum LW hatch rated for HS-25 load • Added Note 5 – Added ladder-up at top of ladder • Added Note 6 – noted that manhole lid is optional if station cover is located in traffic
Standard Detail W-18, Individual Pressure Reducing Valve Assembly (Residential)	Standard Detail W-20, Individual Pressure Reducing Valve Assembly (Residential)	<ul style="list-style-type: none"> • Renumbered W-20 • Called out 12” minimum depth to top of pipe inside the box • Called out 3” minimum clearance from bottom of PRV to washed gravel • Removed Fogtite concrete meter boxes • Added MidStates Plastics meter boxes
Standard Detail W-19, Individual Pressure Reducing Valve Assembly (Multi-Family or Commercial)	Standard Detail W-21, Individual Pressure Reducing Valve Assembly (Multi-Family or Commercial)	<ul style="list-style-type: none"> • Renumbered W-21 • Called out 3” minimum clearance from bottom of PRV to washed rock • Item A – Revised Wilkins PRV model spec. Was “600 Series”; is now “600 Series HLR” • Item B – Changed bronze gate valve to be bronze ball valve • Item F – Replaced Fogtite concrete meter box with MidStates Plastics meter box

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Standard Detail W-20, Individual Pressure Reducing Valve Assembly With Pressure Relief (Multi-Family or Commercial)	Standard Detail W-22, Individual Pressure Reducing Valve Assembly With Pressure Relief (Multi-Family or Commercial)	<ul style="list-style-type: none"> • Renumbered W-22 • Added “swing joint” construction to base of pressure relief riser and referenced W-16 • Item B – changed bronze gate valve to be bronze ball valve • Under materials list, add Item M, ¾”x 2” bushing immediately upstream of 90 degree elbow leading to pressure relief valve • Revise letters of items in material list (after Item L) • Item R – Replaced Fogtite concrete meter box spec with MidStates Plastics box
Standard Detail W-21, 1”x ¾” Single Water Service or Domestic Irrigation Service (Horizontal Meter Setter)	N/A	Deleted ¾” service detail; upgraded to 1” service with adapters in 1-inch setter to accommodate ¾-inch meters – please refer to 2008 Standard Detail W-23
Standard Detail W-22, 1”x ¾” Single Water Service or Domestic Irrigation Service (Vertical Meter Setter)	N/A	Deleted ¾” service detail; upgraded to 1” service with adapters in 1-inch setter to accommodate ¾-inch meters – please refer to 2008 Standard Detail W-24
Standard Detail W-23, 1”x 1” Single Water Service or Domestic Irrigation Service (Horizontal Meter Setter)	Standard Detail W-23, 1”x 1” Single Water Service or Domestic Irrigation Service (Horizontal Meter Setter)	<ul style="list-style-type: none"> • Item A – Revised service saddle to have epoxy coated boss • Item B – Revised corporation stop to be ball valve type. Removed Ford F1000. Changed Mueller H-15008 to be B-25008 • Item F – Replaced Fogtite concrete meter box with MidStates Plastics meter box
Standard Detail W-24, 1”x 1” Single Water Service or Domestic Irrigation Service (Vertical Meter Setter)	Standard Detail W-24, 1”x 1” Single Water Service or Domestic Irrigation Service (Vertical Meter Setter)	<ul style="list-style-type: none"> • Item A – Revised service saddle to have epoxy coated boss • Item B – Revised corporation stop to be ball valve type. Removed Ford F1000. Changed Mueller H-15008 to be B-25008 • Item F – Replaced Fogtite concrete meter box with MidStates Plastics meter box

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Standard Detail W-25, 1 ½” Domestic Water Service	Standard Detail W-25, 1 ½” Domestic Water and/or Fire Service	<ul style="list-style-type: none"> • Renamed to 1 ½” Domestic <u>and/or</u> Fire Service • Item A – Revised service saddle to have epoxy coated boss • Item B – Added clarification that corporation stop is ball valve type • Item I – Replaced Fogtite concrete meter box with MidStates Plastics meter box • Removed Note 4 regarding substitute fittings for Items C and E
Standard Detail W-26, 1 ½” Domestic Water Service (C.B.D. & Other Sensitive Areas)	Standard Detail W-26, 1 ½” Domestic Water Service (Commercial and Multi-Family)	<ul style="list-style-type: none"> • Renamed 1 ½” Domestic Water Service (<u>Commercial and Multi-Family</u>) • Item A – changed cast iron tee to ductile iron. Require tee with three gate valves on new mains and tapping tee with 1 valve on existing mains • Item D – Removed brass nipple. Replaced with Item E revised to be male iron pipe thread by pack joint for copper • Items E through L revised to be D through K • Item J – Replaced Fogtite concrete meter box with MidStates Plastics meter box • Item K – Added reference to Detail W-11, valve box • Removed Note 4 regarding substitution fittings for Items D and F
Standard Detail W-27, 1 ½” Irrigation or Fire Sprinkler Water Service	Standard Detail W-27, 1 ½” Irrigation Water Service	<ul style="list-style-type: none"> • Renamed to 1 ½” Irrigation Service (dropped “or Fire Sprinkler”) • Item A – Revised service saddle to have epoxy coated boss • Item B – Added clarification that corporation stop is ball valve type • Item I – Replaced Fogtite concrete meter box with MidStates Plastics meter box

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Standard Detail W-28, 1 ½” Irrigation or Fire Sprinkler Water Service (C.B.D. & Other Sensitive Areas)	Standard Detail W-28, 1 ½” Irrigation Water Service (Commercial and Multi-Family)	<ul style="list-style-type: none"> • Renamed to 1 ½” Irrigation Water Service (Commercial or Multi-Family); (dropped “or Fire Sprinkler) • Item A – changed cast iron tee to ductile iron. Require tee with three gate valves on new mains and tapping tee with 1 valve on existing mains • Item D – Removed brass nipple. Replaced with Item E revised to be male iron pipe thread by pack joint for copper • Items E through L revised to be D through K • Item J – Replaced Fogtite concrete meter box with MidStates Plastics meter box • Item K – Added reference to Detail W-11, valve box • Removed Note 4 regarding substitution fittings for Items D and F
Standard Detail W-29, 2” Domestic Water Service	Standard Detail W-29, 2” Domestic Water and/or Fire Service	<ul style="list-style-type: none"> • Renamed to 2” Domestic <u>and/or</u> Fire Service • Item A – Revised service saddle to have epoxy coated boss • Item B – Added clarification that corporation stop is ball valve type • Item I – Replaced Fogtite concrete meter box with MidStates Plastics meter box • Removed Note 4 regarding substitute fittings for Items C and E
Standard Detail W-30, 2” Domestic Water Service (C.B.D. & Other Sensitive Areas)	Standard Detail W-30, 2” Domestic Water Service (Commercial and Multi-Family)	<ul style="list-style-type: none"> • Renamed 2” Domestic Water Service (<u>Commercial and Multi-Family</u>) • Item A – changed cast iron tee to ductile iron. Require tee with three gate valves on new mains and tapping tee with 1 valve on existing mains • Item D – Removed brass nipple. Replaced with Item E revised to be male iron pipe thread by pack joint for copper • Items E through L revised to be D through K • Item J – Replaced Fogtite concrete meter box with MidStates Plastics meter box • Item K – Added reference to Detail W-11, valve box • Removed Note 4 regarding substitution fittings for Items D and F

1998 Water Engineering Standards	2008 Water Engineering Standards	Revision
Standard Detail W-31, 2" Irrigation or Fire Sprinkler Water Service	Standard Detail W-31, 2" Irrigation Water Service	<ul style="list-style-type: none"> • Renamed to 2" Irrigation Service (dropped "or Fire Sprinkler") • Item A – Revised service saddle to have epoxy coated boss • Item B – Added clarification that corporation stop is ball valve type • Item I – Replaced Fogtite concrete meter box with MidStates Plastics meter box
Standard Detail W-32, 2" Irrigation or Fire Sprinkler Water Service (C.B.D. & Other Sensitive Areas)	Standard Detail W-32, 2" Irrigation or Fire Sprinkler Water Service (Commercial and Multi-Family)	<ul style="list-style-type: none"> • Renamed to 2" Irrigation or Fire sprinkler Service (<u>Commercial and Multi-Family</u>) • Item A – changed cast iron tee to ductile iron. Require tee with three gate valves on new mains and tapping tee with 1 valve on existing mains • Item D – Removed brass nipple. Replaced with Item E revised to be male iron pipe thread by pack joint for copper • Items E through L revised to be D through K • Item J – Replaced Fogtite concrete meter box with MidStates Plastics meter box • Item K – Added reference to Detail W-11, valve box • Added Note 5, referring to Detail W-55 for valve marker to be located in valve box connection to main. For Fire Service only.
Standard Detail W-33, 3" to 6" Domestic Meter Installation	Standard Detail W-33, 3" to 6" Domestic Meter Installation	<p>TABLE REVISIONS</p> <ul style="list-style-type: none"> • Clarified that mainline and bypass pipe size for 3" meter are 4" diameter in first line of table. • Changed flush port size on 3" meter from 1" to 2". • Removed "* Pipe, fittings, valves outside vault shall be 4" for 3" service installation" from bottom of table and added this text as new Note 11. • Added reference to Note 6, regarding modifications to vault hatch and cover.

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Standard Detail W-33, 3" to 6" Domestic Meter Installation - Continued	Standard Detail W-33, 3" to 6" Domestic Meter Installation - Continued	<p>DRAWING REVISIONS</p> <ul style="list-style-type: none"> • Deleted schematic drawing of hatch and ladder and added hatch/ladder information to plan and section views. • Section View – Showed adjacent ground level and clarified that vault top shall be 3" above grade in planted or unpaved areas. • Section View – Added requirement for gas tight LW hatch and refer to Note 6. • Section View – Showed paved areas slope away from vault. • Section View – Added wire mesh rodent screen to vault drain. Changed drain size from 4" to 6". • Plan View – Added ladder in new location below hatch doors and added reference to Item 21. • Plan View – Added "Private Plumbing" callout on customer side of vault. <p>MATERIAL LIST REVISIONS</p> <ul style="list-style-type: none"> • Item 1 – Changed Flex coupling to mechanical coupling (Romac 501) • Item 8 – Removed 1" flush port option for 3" meter. Added "tap pointed up at 12-o'clock". Changed "Ford FB-400" to be "Ford FB400-7". Added 2"x 2 1/2" adapter and cap for hose connection. • Item 11 – Revised meter register to read 500 cubic feet resolution for 4" and 6" meters. • Item 15 – Increased traffic load rating from H-20 to HS-25. • Item 20 – Added distance for first ladder step below cover. • Item 21 – Added requirement for Ladder-up at top of ladder. Added reference to Detail W-19.

1998 Water Engineering Standards	2008 Water Engineering Standards	Revision
Standard Detail W-33, 3" to 6" Domestic Meter Installation - Continued	Standard Detail W-33, 3" to 6" Domestic Meter Installation - Continued	<p>NOTES REVISIONS</p> <ul style="list-style-type: none"> • Note 3 – Added requirement for 3 gate valves at distribution main. • Note 6 – Revised steel hatch doors to be aluminum LW hatch doors with light blast skid resistance treatment. • Note 8 – Changed “steel” door to “aluminum” door. • Note 9 – Revised number of places ladder is bolted to vault from 2 to 3. • Note 11 – Moved Note here from Table • Note 12 – Added requirement for minimum of 2’ of level, unobstructed area around hatches.
Standard Detail W-34, 8" Domestic Meter Installation	Standard Detail W-34, 8" Domestic Meter Installation	<p>TABLE REVISIONS</p> <ul style="list-style-type: none"> • Added reference to Note 5 regarding modifications to vault hatch and cover <p>DRAWING REVISIONS</p> <ul style="list-style-type: none"> • Schematic drawing of hatch and cover, moved hatch and ladder location. Changed steel doors to aluminum doors. • Section View – Showed adjacent ground level and clarified that vault top shall be 3” above grade in planted and unpaved areas. • Section View – Showed paved areas slope away from vault • Section View – Added fourth pipe stanchion under strainer. • Section View – Added wire mesh rodent screen to vault drain. Changed drain size from 4” to 6”. • Section and Plan View – Removed test port downstream of meter. • Plan View – Showed ladder in new location. • Plan View – Added “Private Plumbing” callout on customer side of vault. <p>MATERIAL LIST REVISIONS</p> <ul style="list-style-type: none"> • Item 1 – Changed Flex coupling to mechanical coupling (Romac 501)

1998 Water Engineering Standards	2008 Water Engineering Standards	Revision
Standard Detail W-34, 8" Domestic Meter Installation - Continued	Standard Detail W-34, 8" Domestic Meter Installation - Continued	<p>MATERIAL LIST REVISIONS - Continued</p> <ul style="list-style-type: none"> • Item 7 – Added “tap pointed up at 12 o’clock”. Changed “Ford FB400” to “Ford FB400-7”. Added 2”x 2 ½” adapter and cap for hose connection. • Item 9 – Replaced Sensus meter with Neptune Protectus III Fire Service meter with “E-Coder” solid state encoder registers. • Item 13 – Increased traffic load rating from H-20 to HS-25. • Item 15 – Replaced Sensus TR/PL sensor with sensor for Neptune meter. • Item 16 – Changed 3 stanchions to be 4 stanchions. • Item 17 – Revised number of places ladder is bolted to vault from 2 to 3. Added Ladder-up to top of ladder. Added reference to Detail 19. <p>NOTES REVISIONS</p> <ul style="list-style-type: none"> • Note 3 – Added requirement for 3 gate valves at distribution main. • Note 5 – Revised steel hatch doors to be aluminum LW hatch doors with light blast skid resistance treatment. • Note 6 – Replaced Sensus TR/PL sensor with sensor for Neptune. • Note 8 – Added requirement for minimum of 2’ of level, unobstructed area around hatches.
Standard Detail W-35, 3” to 6” Irrigation Meter Installation	Standard Detail W-35, 3” to 6” Irrigation Meter Installation	<p>TABLE REVISIONS</p> <ul style="list-style-type: none"> • Changed 3” meter main line size from 3” to 4”. • Changed 3” test port size from 2” to 1 ½”. • Added reference to Note 7 regarding modifications to vault hatch and cover. <p>DRAWING REVISIONS</p> <ul style="list-style-type: none"> • Schematic drawing of hatch and cover, moved hatch and ladder location. Changed steel doors to aluminum doors. • Section View – Showed adjacent ground level and clarified that vault top shall be 3” above grade in planted and unpaved areas.

1998 Water Engineering Standards	2008 Water Engineering Standards	Revision
Standard Detail W-35, 3" to 6" Irrigation Meter Installation - Continued	Standard Detail W-35, 3" to 6" Irrigation Meter Installation - Continued	<p>DRAWING REVISIONS – Continued</p> <ul style="list-style-type: none"> • Section View – Showed paved areas slope away from vault. • Section View – Added wire mesh rodent screen to vault drain. Changed drain size from 4" to 6". • Plan View – Showed ladder in new location. <p>MATERIAL LIST REVISIONS</p> <ul style="list-style-type: none"> • Item 1 – Changed Flex coupling to mechanical coupling (Romac 501) • Item 3 – Revised meter register to read 500 cubic feet resolution for 4" and 6" meters. • Item 6 – Increased traffic load rating from H-20 to HS-25. • Item 8 – Added 2"x 2 1/2" adapter and cap for hose connection to test port. <p>NOTES REVISIONS</p> <ul style="list-style-type: none"> • Note 7 – Revised steel hatch doors to be aluminum LW hatch doors with light blast skid resistance treatment. • Inserted new Note 8 – Added requirement for minimum of 2' for level, unobstructed area around hatches. • Renumbered Notes 8 to 11 to be 9 to 12. • Note 11 – Revised number of places ladder is bolted to vault from 2 to 3. Added Ladder-up to top of ladder. Added reference to Detail 19.
Standard Detail W-36, Outside DCVA Installation For Residential Fire Sprinkler Systems	N/A	Deleted Detail W-36, Outside DCVA Installation For Residential Fire Sprinklers
Standard Detail W-37, 3/4" to 2" Double Check Valve Assembly For Irrigation or Fire Sprinkler Systems (Outside Installation)	Standard Detail W-36, 1" to 2" Double Check Valve Assembly For Irrigation Systems (Outside Installation)	<ul style="list-style-type: none"> • Renumbered W-36 • Renamed; changed 3/4" to 1" and deleted "or Fire Sprinkler" from title • Revised 3" maximum clearance above DCVA to be 4" minimum and 6" maximum. • Item 2 – Replaced concrete meter box spec with metal box in sidewalk and plastic meter box in non-traffic areas.

1998 Water Engineering Standards	2008 Water Engineering Standards	Revision
Standard Detail W-37, ¾” to 2” Double Check Valve Assembly For Irrigation or Fire Sprinkler Systems (Outside Installation) - Continued	Standard Detail W-36, 1” to 2” Double Check Valve Assembly For Irrigation Systems (Outside Installation) - Continued	<ul style="list-style-type: none"> • Item 3 – Revised 3” maximum clearance from lid to 6”. • Item 4 – Deleted “Y-pattern DCVA should be installed on side.” Replaced with “(2) Unions” and added unions to section and plan views. • Item 6 – Removed “Provide support for 2-inch device” and removed supports from Section View. • Item 7 – Renumbered to 6. • Note 2 – Changed Uniform Plumbing Code to International Plumbing Code. Added requirement for installation to meet WSDOH approved installations list. • Note 3 – Revised phone number.
Standard Detail W-38, Inside DCVA Installation For Residential Fire Sprinkler Systems	Standard Detail W-37, Inside DCVA Installation For Residential Fire Sprinkler Systems	<ul style="list-style-type: none"> • Renumbered W-37 • Changed Standard Detail reference from W-39 to W-38
Standard Detail W-39, Double Check Valve Assembly (Inside Installation)	Standard Detail W-38, Double Check Valve Assembly (Inside Installation)	<ul style="list-style-type: none"> • Renumbered W-38 • Item 2 – Replaced text, “horizontally not vertically” with “per WSDOH approved installations list”. • Item 3 – Clarified that supports are required for 2 ½” and larger line sizes. • Item 9 – Changed “Uniform Plumbing Code” to “International Plumbing Code”. • Item 10 – Added new clarification that FDC to be located downstream of DCVA (Commercial only).
Standard Detail W-40, Outside DCVA Installation For 1 ½” & 2” Commercial Fire Sprinkler Systems	Standard Detail W-39, Outside DCVA Installation For 1 ½” & 2” Commercial Fire Sprinkler Systems	<ul style="list-style-type: none"> • Renumbered W-39 • Changed Standard Detail reference from W-37 to W-36 • Removed PIV symbol • Revised drawing to illustrate that FDC to be located not more than 50’ from mainline fire hydrant.
Standard Detail	Standard Detail W-40, Outside DCVA Installation For 3” and Larger Commercial Sprinkler Systems	New Water Detail – please refer to 2008 Standard Detail W-40

1998 Water Engineering Standards	2008 Water Engineering Standards	Revision
Standard Detail W-41, 1 ½” and 2” Double Check Valve Assembly For Continuous Supply (Outside Installation)	Standard Detail W-41, 1 ½” and 2” Domestic Double Check Valve Assembly For Continuous Supply (Outside Installation)	<ul style="list-style-type: none"> • Added “Domestic” to title • Added table with pipe material, vault, and cover specs. • Item 8 – Removed redundant spec for shut off valves and test cocks (these are included in the assembly) • Item 9 – Revised single vault door to be 2 locking LW type aluminum doors with light blast skid resistance treatment. Increased traffic load rating from H-20 to HS-25. • Item 10 – Removed pipe stanchion requirement. • Item 11 – Renumbered to 10, and drain revised to slope to daylight or storm drainage system. Added wire mesh rodent screen to drain. • Note 5 – Deleted note, “DCVA’s shall be centered in vault” and replaced with “brass fittings”.
Standard Detail W-42, 3” to 6” Domestic Double Check Valve Assembly For Continuous Supply (Outside Installation)	Standard Detail W-42, 3” to 6” Domestic Double Check Valve Assembly For Continuous Supply (Outside Installation)	<ul style="list-style-type: none"> • Relocated bypass tees to be outside of vault. • Added table with vault and cover specs. • Item 3 – Changed shut off valves from resilient seated to ball style. • Item 9 - Revised single vault door to be 2 locking LW type aluminum doors with light blast skid resistance treatment. Increased traffic load rating from H-20 to HS-25. • Item 11 – Drain revised to slope to daylight or storm drainage system. Added wire mesh rodent screen to drain. • Note 2 – Increased clearance between DCVA’s from 12” to 36” minimum • Note 5 – Deleted note, “DCVA’s shall be centered in vault”, replaced with , “Provide ladder and Ladder-up per Detail W-19” • Note 7 – Added new note requiring minimum of 2’ of level, unobstructed area around hatches. • Note 8 - Added new note requiring hatch to be located per Detail W-17.

1998 Water Engineering Standards	2008 Water Engineering Standards	Revision
Standard Detail W-43, 8” and 10” Domestic Double Check Valve Assembly For Continuous Supply (Outside Installation)	Standard Detail W-43, 8” and 10” Domestic Double Check Valve Assembly For Continuous Supply (Outside Installation)	<ul style="list-style-type: none"> • Added table with pipe material, vault, and cover specs. • Items 1, 4, 5, 6 and Note 1 – Clarified that bypass line is 4” <u>minimum</u>. • Item 3 – Changed shut off valves from resilient seated to ball style. • Item 7 - Revised single vault door to be 2 locking LW type aluminum doors with light blast skid resistance treatment. Increased traffic load rating from H-20 to HS-25. • Item 9 - Drain revised to slope to daylight or storm drainage system. Added wire mesh rodent screen to drain. • Item 10 – Added two gate valves at bypass tees upstream and downstream of vault. • Note 2 - Increased clearance between DCVA’s from 12” to 36” minimum • Note 5 - Deleted note, “DCVA’s shall be centered in vault”, replaced with , “Provide ladder and Ladder-up per Detail W-19” • Note 6 – Changed minimum 18” clearance to be 24” clearance. • Note 7 – Required both thrust blocking <u>and</u> joint restraint devices. • Note 8 - Added new note requiring minimum of 2’ of level, unobstructed area around hatches. • Note 9 - Added new note requiring hatch to be located per Detail W-17.
Standard Detail W-44, 3” and 10” Double Check Valve Assembly For Domestic and Irrigation Services (Outside Installation)	Standard Detail W-44, 3” and 10” Double Check Valve Assembly For Domestic and Irrigation Services (Outside Installation)	<ul style="list-style-type: none"> • Added callout for floor to slope to drain, and changed drain location. • Item 3 – Replaced Uniflange with Megaflange. • Item 4 – Added Ladder-up to ladder and referenced Detail W-19. • Item 5 – Revised vault doors to be lockable LW type aluminum doors with light blast skid resistance treatment. Increased traffic load rating from H-20 to HS-25. • Item 6 – Revised to add Megalug as acceptable restraint for inlet/outlet pipe.

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Standard Detail W-44, 3” and 10” Double Check Valve Assembly For Domestic and Irrigation Services (Outside Installation) - Continued	Standard Detail W-44, 3” and 10” Double Check Valve Assembly For Domestic and Irrigation Services (Outside Installation) - Continued	<ul style="list-style-type: none"> • Item 7 – Revised drain to slope to daylight or storm drainage system and be minimum 6” diameter. • Item 11 – Added wire mesh rodent screen over drain outlet. • Note 3 – Deleted “valve assembly to be centered in vault”. • Renumbered Notes 4 through 7 to be 3 through 6. • Note 7 – Added new note requiring minimum of 2’ of level, unobstructed area around hatches. • Table – Added reference to Item 5 regarding modifications to vault hatch and cover.
Standard Detail W-45, 3” to 10” Double Check Valve Assembly With Detector For Fire Sprinkler Systems (Outside Installation)	Standard Detail W-45, 3” to 10” Double Check Detector Assembly For Fire Sprinkler Systems (Outside Installation)	<ul style="list-style-type: none"> • Renamed; changed “valve” to “detector” and deleted “With Detector”. • Item 5 – Replaced Uni-Flange with Megaflange • Item 6 – Added Ladder-up to ladder and referenced Detail W-19. • Item 7 - Revised vault doors to be lockable LW type aluminum doors with light blast skid resistance treatment. Increased traffic load rating from H-20 to HS-25. • Item 8 - Revised to add Megalug as acceptable restraint for inlet/outlet pipe. • Item 9 - Revised drain to slope to daylight or storm drainage system and be minimum 6” diameter. • Item 15 – Added Valve Supervisory Switch ZPDT, per Fire Department Requirements. • Note 3 – Delete, “valve assembly to be centered in vault”. • Renumbered Notes 4 through 9 to be 3 through 8. • Note 8 – Removed “and PIV” from first sentence. Added second sentence, “FDC line and check valve may be routed inside the DCVA vault provided all provisions in Standard Detail W-48 are met.” • Note 9 – Added new note requiring a minimum of 2’ of level, unobstructed area around hatches. • Note 10 – Added new note, “Secure a valve marker, per Detail W-55, to each gate valve handle”. • Table – Added reference to Item 7 regarding modifications to vault hatch and cover.

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Standard Detail W-46, 3” to 10” Reduced Pressure Principle Backflow Assembly For Domestic and Irrigation Service (Outside Installation)	Standard Detail W-46, 3” to 10” Reduced Pressure Principle Backflow Assembly For Domestic and Irrigation Service (Outside Installation)	<ul style="list-style-type: none"> • Added “Install wire mesh rodent screen over drain outlet” to drawing. • Item 2 - Replaced Uni-Flange with Megaflange • Item 3 - Added Ladder-up to ladder and referenced Detail W-19. • Item 4 - Revised vault doors to be lockable LW type aluminum doors with light blast skid resistance treatment. Increased traffic load rating from H-20 to HS-25. • Item 5 - Revised to add Megalug as acceptable restraint for inlet/outlet pipe. • Item 6 – Revised to read, “Drain, slope to daylight with bore sighted daylight drain clearly visible end to end with straight pipe, sized to meet flow requirements of RPBA relief vent.” • Note 3 – Added sentence, “Also provide 12” minimum air gap clearance from top of drain pipe”. • Note 11 - Added new note requiring a minimum of 2’ of level, unobstructed area around hatches. • Table – Added reference to Item 4 regarding modifications to vault hatch and cover.
Standard Detail W-47, 3” to 10” Reduced Pressure Principle Backflow Assembly With Detector For Fire Sprinkler Systems (Outside Installation)	Standard Detail W-47, 3” to 10” Reduced Pressure Detector Assembly For Fire Sprinkler Systems (Outside Installation)	<ul style="list-style-type: none"> • Renamed; changed “Principle Backflow” to “Detector” and deleted “With Detector” • Item 5 - Replaced Uni-Flange with Megaflange • Item 6 – Added Ladder-up to ladder and referenced Detail W-19. • Item 7 – Revised vault doors to be lockable LW type aluminum doors with light blast skid resistance treatment. Increased traffic load rating from H-20 to HS-25. • Item 8 – Revised to add Megalug as acceptable restraint for inlet/outlet pipe. • Item 9 – Revised to read, “Drain, slope to daylight with bore sighted daylight drain clearly visible end to end with straight pipe, sized to meet flow requirements of RPBA relief vent.” • Item 13 – Added Valve Supervisory Switch, SPDT, per Fire Department Requirements. • Note 3 - Added sentence, “Also provide 12” minimum air gap clearance from top of drain pipe”.

1998 Water Engineering Standards	2008 Water Engineering Standards	Revision
Standard Detail W-47, 3” to 10” Reduced Pressure Principle Backflow Assembly With Detector For Fire Sprinkler Systems (Outside Installation) - Continued	Standard Detail W-47, 3” to 10” Reduced Pressure Detector Assembly For Fire Sprinkler Systems (Outside Installation) - Continued	<ul style="list-style-type: none"> • Removed “and PIV” from first sentence. Added second sentence, “FDC line and check valve may be routed inside the RPBA vault provided all provisions in Standard Detail W-48 are met.” • Note 12 - Added new note requiring a minimum of 2’ of level, unobstructed area around hatches. • Note 13 - Added new note, “Secure a valve marker, per Detail W-55, to each gate valve handle”. • Table – Added reference to Item 7 regarding modifications to vault hatch and cover.
Standard Detail W-48, Timber Baffle/Hill Holder	N/A	Deleted Detail W-48, Timber Baffle/Hill Holder
Standard Detail	Standard Detail W-48, Reduced Pressure Principle Backflow Assembly For Domestic and Irrigation Service (Inside Installation)	New Water Detail – please refer to 2008 Standard Detail W-48
Standard Detail	Standard Detail W-49, Requirements For FDC and Check Valve Routed Through Backflow Assembly Vault – 1	New Water Detail – please refer to 2008 Standard Detail W-49
Standard Detail	Standard Detail W-50, Requirements For FDC and Check Valve Routed Through Backflow Assembly Vault – 2	New Water Detail – please refer to 2008 Standard Detail W-50
Standard Detail	Standard Detail W-51, FDC Assembly	New Water Detail – please refer to 2008 Standard Detail W-51
Standard Detail	Standard Detail W-52, FDC Bollards	New Water Detail – please refer to 2008 Standard Detail W-52
Standard Detail	Standard Detail W-53, Project Sign Detail	New Water Detail – please refer to 2008 Standard Detail W-53
Standard Detail	Standard Detail W-54, Roadway Clearances For Above Ground Appurtenances	New Water Detail – please refer to 2008 Standard Detail W-54
Standard Detail	Standard Detail W-55, Fireline Valve Marker	New Water Detail – please refer to 2008 Standard Detail W-55
Appendix W-4, Joint Restraint Systems	Appendix W-4, Joint Restraint Systems	Revised UniFlange Corporation from “Series 1300 and 1390” to Series 1400 and 1450”. Added 600 Series, RomaGrip to Romac (Grip Ring)

1998 Water Engineering Standards	2008 Water Engineering Standards	Revision
Appendix W-4, Couplings	Appendix W-4, Couplings	Added (400 and 501 Series) to Romac
Appendix W-4, PRV Station, Strainers	Appendix W-4, PRV Station, Strainers	Deleted brass as a strainer screen material
Appendix W-4, Individual Pressure Reducing Valves (Commercial), Pressure Reducing Valves	Appendix W-4, Individual Pressure Reducing Valves (Commercial), Pressure Reducing Valves	Added HLR Series to Wilkins 600
Appendix W-4, Corporation Stops	Appendix W-4, Corporation Stops	Changed Mueller 1" No. H-15028 to P-15028 Added A.Y. McDonald makes and models – please refer to 2008 Appendix A-4
Appendix W-4, Angle Meter Valves	Appendix W-4, Angle Meter Valves	Added A.Y. McDonald 4604B as approved material
Appendix A-4, Valve Boxes	Appendix A-4, Valve Boxes	Deleted Inland Foundry Co products from approved material list
Appendix A-4, Fire Hydrants	Appendix A-4, Fire Hydrants	Deleted several models – (Clow 2500, Mueller Centurion, M&H 129T, American Darling B-62-B, and Clow Medallion)
Appendix A-4, Brass Water Service Fittings and Valves	Appendix A-4, Brass Water Service Fittings and Valves	Added A.Y. McDonald Manufacturing Co as an approved manufacturer
Appendix A-4, Meter Setters	Appendix A-4, Meter Setters	Deleted all ¾" setters from approved materials list, Added A.Y. McDonald makes and models – please refer to 2008 Appendix A-4
Appendix A-4, Meter Boxes	Appendix A-4, Meter Boxes	Changed approved manufacturers and models – (deleted Fogtite and added MidStates Plastics)
Appendix A-4, Controlled Density (Flowable) Fill	Appendix A-4	Deleted category
Appendix A-4, Recycled Concrete (For Use as Crushed Surfacing Base Course Material)	Appendix A-4	Deleted category
Appendix A-4	Appendix A-4, Ladder-Up	Added new category , manufacturer and model – please refer to 2008 Appendix A-4
Appendix A-4	Appendix A-4, Vault/Hatch Door	Added new category, manufacturer and models – please refer to 2008 Appendix A-4