



CITY OF REDMOND
Engineering Department

243 E. Antler Ave
 Redmond, OR 97756-0100

(541) 504-2002
 Fax: (541) 548-0253
 info@ci.redmond.or.us
 www.ci.redmond.or.us

2010 PUBLIC WORKS STANDARDS & SPECIFICATIONS
SPECIAL PROVISIONS

DATE: 5-8-13 – Check City website for most current version

Note changes in **bold print**

DESIGN STANDARDS

Section II.A.1 General: Change the third sentence to read as follows: “Street **width**, alignment and placement shall meet the requirements of the City of Redmond Development Code. **Street widths are shown in Table 1, Section 8.2710 of the Development Code (reproduced below) and in Standard Drawing 2-1.**”

Table 1 - City of Redmond Right of Way and Roadway Design and Cross-Section Standards

Functional Class	Width (ft)		Right of Way [±]	Travel Lanes	Sidewalks	Bike Lanes**	Parking**
	Pavement standard	Pavement (minimum) [±]					
Residential Alley	16 ft		20 ft	n/a	none	shared	none
Commercial Alley	20 ft		20 ft	n/a	none	shared	none
Local Residential	36 ft		60 ft	2***	5 ft.	shared	both sides (unstriped)
	28 ft*		60 ft	2***	5 ft.	shared	one side (unstriped)
	24 ft*		60 ft	2***	5 ft.	shared	none
Local Industrial	40 ft	38 ft	60 ft	2***	5 ft.	shared	optional (unstriped)
Industrial Collector	40 ft	38 ft	80 ft	2	5 ft.	6 ft.	none
Minor Collector	40 ft	36 ft****	60 ft	2	5 ft.	shared	both sides (8 ft)
Major Collector	36-50 ft	36 ft****	80 ft	2	5 ft.	6 ft.	none
Minor Arterial (3-lane)	50 ft	48 ft	100 ft	3	7 ft.	6 ft.	none
Minor Arterial (5-lane)	74 ft	72 ft	100 ft	5	7 ft.	6 ft.	none

Notes:

*May be constructed only in conjunction with the creation of covenants, conditions and restrictions (CCR's) and the establishment of a homeowners association (HOA) for the development. The CCR's shall provide that the primary responsibility for parking enforcement shall be the HOA, with the City of Redmond also being acknowledged in the CCR's as a beneficiary for such parking enforcement as a violation of the land use decision and/or city code .

** In certain cases, bike lanes may be reduced to 5 ft, parking may be reduced to 7 ft, and travel lanes to 11 ft at the discretion of the City Engineer

*** Unstriped travel lanes

**** 36 ft in existing built-out areas

***** All streets less than 28 feet wide shall be no longer than 300 feet in length, unless such streets include at least one (1) parking bay per lot, located along each lot frontage for the entire length of such street, up to the maximum block length. Streets 300 feet or less in length shall not have any direct driveway access. In no case shall any street less than 28 feet wide intersect with any other street less than 28 feet wide.

SECTION II.B.4: Delete and replace with the following:

4. Storm Facility Testing

Stormwater facility testing requirements shall be shown on the plans. Testing requirements vary depending on the type of facility and whether infiltration is accounted for in the design.

a. Information to show on plans: For each drainage facility, provide runoff area in square feet, runoff coefficient used for calculations, peak runoff rate to the facility in cubic feet per second and gallons per minute and total runoff volume to the facility in cubic feet and gallons. For facilities with designs that account for infiltration, also provide the maximum required storage volume and design storage volume in cubic feet and gallons.

b. Testing Procedures: There are three parts to the testing procedure; confirmation of storage volume, infiltration rate and ability to drain within 72 hours. Test methods vary by the type of facility and basis for design as follows:

1) Drywells:

- i. **Storage Volume:** Confirm the storage volume by tracking the quantity of drain rock used with load tickets and measuring the diameter and depth of the drywell. Calculate interior volume of the drywell from the base to the bottom of the lowest pipe. Calculate the storage volume in the drain rock using a void ratio of 35 percent unless a different void ratio is provided by a materials testing lab.
- ii. **Infiltration Rate:** For drywells with a convenient hydrant, fill the drywell with water from a metered source and adjust the flow rate to maintain the level of water at the top of the barrel section or the base of the inlet pipes (whichever is lower). Measure and record the flow rate at 10 minute intervals. Maintain the flow rate necessary to keep the drywell at the top of the barrel section or pipe invert for one hour. After the one hour period, turn off the water supply and record the depth to the water surface every 10 minutes for one hour. If the drywell cannot be filled, measure the depth to the water surface and record depth and flow rate at 10 minute intervals. Stop filling after 60 minutes and measure and record the depth to the water surface every 10 minutes for one hour. If a hydrant is not readily available, a water truck is required. Place four water truck loads (3,500 to 4,000 gallons) in the drywell within a 2-hour period. After the water has been placed, let the drywell drain and record the depth to the water surface every 10 minutes for one hour.
- iii. **72-hour Drainage:** Check 72 hours after stopping the flow to see if the drywell has emptied.

2) Ponds, swales and infiltration galleries:

- i. **Storage Volume:** For ponds, swales and other surface facilities, confirm the storage volume with as-built measurements and calculations provided by the project surveyor. For infiltration galleries, track the quantity of drain rock used with load tickets. Calculate the storage volume in the drain rock using a void ratio of 35 percent unless a different void ratio is provided by a materials testing lab.
- ii. **Infiltration Rate:** For infiltration swales and ponds in general and for infiltration galleries constructed with filter soil placed above the drain rock, measure the infiltration rate at the surface after the filter soil is placed. If the infiltration gallery is designed so that runoff enters directly into the drain rock with filter soil below, measure the infiltration rate of the soil prior to placing the drain rock. Use the single-ring infiltrometer test (Appendix D of the Central Oregon Stormwater Manual) or other test recommended by a Geotechnical Engineer.
- iii. **72-hour Drainage:** Use the Swale Flood Test described in Appendix 4E of the Central Oregon Stormwater Manual. For sloped swales and swales with check dams, introduce flow at the high end and allow it to overtop each check dam until it pools to a depth of 6 inches in the low end. Check 72 hours after stopping the flow to see if the facility has emptied. Use standpipe to monitor water level in infiltration

galleries.

Section II.C.7 and 8: Delete and replace with the following:

7. Sampling Manholes

A sanitary sewer sampling manhole located at a point accessible at all hours to City personnel is required for each commercial, industrial, or institutional user's service lateral. The sampling manhole shall be constructed upgradient from any discharge into the public sewer system and within an access easement granted to the City. The manhole have a minimum depth of 48", be constructed and maintained at no cost to the City, and when possible be located adjacent to the public right-of-way. If manholes cannot be located in the pavement, then a six inch thick concrete pad 5 foot square centered on the manhole cover must be provided.

8. Grease Interceptor

A grease interceptor compliant with the Oregon Plumbing Specialty Code is required for all facilities where commercial or institutional food preparation or food service is performed. Interceptors must treat discharged sewer to a quality in compliance with provisions the Sections 4.326 and 4.332 of the Redmond Municipal Code. All plumbing fixture drains in the kitchen area shall be routed to the interceptor, including kitchen sinks, bar sinks, hand sinks, garbage disposals, mop sinks, and floor drains. Restroom connections to the interceptor are prohibited.

STANDARD SPECIFICATIONS

DIVISION I

Section 101.2.02B Class B Backfill (1); Change to read as follows: "Shall have more than **90** percent by weight passing a ¾-inch screen."

DIVISION II

Add the following section: **203.3.02 EROSION AND SEDIMENT CONTROL**
Erosion and sediment control measures shall be installed in accordance with Appendix 9B of the Central Oregon Stormwater Manual to insure that sediment laden runoff does not leave areas disturbed by construction.

Section 204.3.03 EMBANKMENT CONSTRUCTION: Change number to 204.3.04.

Section 207.2.02 DURABILITY: Change table as follows:

Test	Test Method	Requirements
Degradation (Coarse Aggregate):		
Passing No. 20 sieve	ODOT TM 208	30 percent maximum
Sediment Height	ODOT TM 208	3 inch maximum
Abrasion:	AASHTO T 96	35 percent maximum

Section 215.2.04A Portland Cement Concrete: Change to read as follows: "...meeting the requirements of 101.2.02B".

DIVISION III

Section 303.2.04A Poly Vinyl Chloride Pipe: Add the following to 1. GRAVITY SERVICE FITTINGS: "**c. Lateral connections to the main shall be made with Tee-Wyes.**"

Section 303.307C Testing Equipment and Procedures: **Delete section.**

Section 307.2.02: Add the following: "**Ductile iron grates matching the dimensions in Standard Drawing 3-12 may be substituted for steel grates.**"

Section 308.3.05: Delete and replace with the following:

308.3.05 DRYWELL TESTING AND ACCEPTANCE CRITERIA

Prior to acceptance and certification, all drywells shall pass a performance test conducted by a City Representative if they are in the right of way and observed by a City Representative if they are on private property. Drywell testing consists of three components; confirmation of storage volume, verification of infiltration rate and ability to drain within 72 hours.

1. The testing process starts during construction. Track the quantity of drain rock placed using load tickets. Record on the testing form and calculate the volume of drain rock storage.
2. Measure the diameter and depth of the drywell. Calculate interior volume of the drywell from the base to the bottom of the lowest pipe and record on the testing form. Verify that total volume exceeds design volume shown on the construction plans.
3. Inspect the drywell for compliance with construction drawings and City Standard Drawings and Specifications.
4. Field check the accuracy of the flow meter to be used for the test.
5. Introduce clean water into the drywell. Monitor flow using an in-line flowmeter.
6. If possible, raise the water level in the structure until it reaches the top of the active barrel section. In the case of structures interconnected by pipes, raise the water level to the invert elevation of the connecting pipe, or use an expandable plug to seal the connecting pipe.
7. Monitor and record the flow rate required to maintain the constant head level in the drywell at 10 minute intervals.
8. If a hydrant is available, it shall be used for the test. Fill the drywell with water from a metered source and adjust the flow rate to maintain the level of water at the top of the barrel section or the base of the inlet pipes (whichever is lower). Measure and record the flow rate at 10 minute intervals.
 - a. For drywells in the right of way, maintain the flow rate necessary to keep the water level at the top of the barrel section or pipe invert for one hour. After the one hour period, turn off the water supply and record the depth to the water surface every 10 minutes for one hour. If the drywell cannot be filled, measure the depth to the water surface and record depth and flow rate at 10 minute intervals. Stop filling after 60 minutes and measure and record the depth to the water surface every 10 minutes for one hour.
 - b. For drywells on private property, maintain the flow rate necessary to keep the water level at the top of the barrel section or pipe invert for one hour or until the design volume has been reached. At this time, turn off the water supply and record the depth to the water surface every 10 minutes for one hour. If the drywell cannot be filled, measure the depth to the water surface and record depth and flow rate at 10 minute

intervals. Stop filling after 60 minutes or when the design volume is reached and measure and record the depth to the water surface every 10 minutes for one hour.

9. If a hydrant is not readily available, a water truck may be used. Place four water truck loads (3,500 to 4,000 gallons) in the drywell within a 2-hour period. After the water has been placed, let the drywell drain and record the depth to the water surface every 10 minutes for one hour.
10. Fill out all of the information on the drywell testing form including a sketch of the installation. Take photos of the installation during construction and after completion. Note any other pertinent data in the comments section

Section 308.3.06: Delete and replace with the following:

308.3.06 SWALE, POND AND INFILTRATION GALLERY TESTING AND ACCEPTANCE CRITERIA

Prior to acceptance and certification, the storage volume, infiltration rate and ability to drain within 72 hours shall be confirmed.

308.3.06A Storage Volume: For ponds, swales and other surface facilities, confirm the storage volume with as-built measurements and calculations provided by the project surveyor. For infiltration galleries, track the quantity of drain rock used with load tickets. Calculate the storage volume in the drain rock using a void ratio of 35 percent unless a different void ratio is provided by a materials testing lab.

308.3.06B Infiltration Rate: For infiltration swales and ponds in general and for infiltration galleries constructed with filter soil placed above the drain rock, measure the infiltration rate at the surface after the filter soil is placed. If the infiltration gallery is designed so that runoff enters directly into the drain rock with filter soil below, measure the infiltration rate of the soil prior to placing the drain rock. Use the single-ring infiltrometer test (Appendix D of the Central Oregon Stormwater Manual) or other test recommended by a Geotechnical Engineer.

308.3.06C 72-hour Drainage: Use the Swale Flood Test described in Appendix 4E of the Central Oregon Stormwater Manual. For sloped swales and swales with check dams, introduce flow at the high end and allow it to overtop each check dam until it pools to a depth of 6 inches in the low end. Check 72 hours after stopping the flow to see if the facility has emptied. Use standpipe for infiltration galleries.

DIVISION IV

Section 402.2.02: Delete and replace with the following:

402.2.02 DUCTILE IRON PIPE FITTINGS

Ductile iron pipe fittings shall meet the requirements of AWWA C110 or C153 and shall have a minimum working pressure rating of 250 psi. Joints shall meet the requirements of AWWA C111. Fittings shall be cement mortar lined and seal coated, meeting the requirements of AWWA C104. Gaskets for flat faced or raised face flanges shall be 1/8 inch thick neoprene having a Durometer reading of 60, +/- 5. The type, material and identification marks for bolts and nuts shall be provided.

Section 402.3.02E: Add the following: **“When installing ductile iron pipe, detection tape is required, detection wire is not.”**

Section 403.2.01: Revise to read as follows: **“Buried epoxy coated, iron body gate valves shall meet AWWA standards (C509 or C515)...**

Section 404.2.01: Revise the first sentence to read: **“Traffic model fire hydrants will meet AWWA Specifications C502 with dry top.”** Eliminated **-64** after C502.

Section 404.2.02: Revise to read as follows: **Provide the appropriate hydrant height for the installation based on the construction drawings to avoid the need for hydrant extensions. If unavoidable, hydrant extensions shall be of same manufacture as hydrant and only one extension is permitted per hydrant.**

STANDARD DRAWINGS

Standard drawings have been revised as noted below and posted to the City website.

Standard Drawing 1-1 Utility Trench: Aggregate callout for utility trench in all-weather road moved so it is readable.

Standard Drawing 2-1 Typical Minimum Street Cross Section Dimensions: Changed local residential paving widths, added residential alley, modified Note O.

Standard Drawing 2-2 Reduced Width Street Typical: Modified right of way width for Reduced Local 1 and 2,

Standard Drawing 2-6 Concrete Curbs: Add Note **“10. Curb heights shall be as follows: 12” Local Streets, 14” Collector and Industrial Streets, 16” Arterial Streets.”** Also revise curb exposure for 16” curb to be 7”.

Standard Drawing 2-24 Typical Stop and Street Sign Combination: Add Note **“4. Attach street name signs to post with drive rivets with nylon washer. Attach stop sign to post with 3/8” bolts, nuts and flat washers.”**

Standard Drawing 2-25 Typical Street Sign Anchor: **Replace straight anchor bolt with corner bolt.**

Standard Drawing 3-2: Typical Sewer Service and Cleanout: Change Tee to **Tee-Wye**. Show cleanout riser as 4” diameter.

Standard Drawing 3-3 Standard Sewer Manhole: Add Note **“All manholes outside of paved areas shall have a 6” thick concrete pad, 5’ square centered on the manhole lid.”**

Standard Drawing 3-6 Sampling Manhole: Add Note **“All manholes outside of paved areas shall have a 6” thick concrete pad, 5’ square centered on the manhole lid.”**

Standard Drawing 3-8 Standard Pre-Cast Drywell: Change Note 9 to read: **“When drywell is located outside of paved areas, provide a 6” thick concrete pad, 5’ square centered on the manhole lid.”**

Standard Drawings 3-7 Standard Sewer Manhole Ring & Cover, 3-8 Standard Pre-cast Drywell and 3-9 Stormwater Access Lid: Add Note **“An adjustment system such as East Jordan Iron Works Infra-Riser, or approved equal, shall be used to adjust manhole frame and cover to finish grade”.**

Standard Drawing 3-10 Standard Catch Basin: Revised to match ODOT G-2 catch basin. Changed dimensions, frame and grate details. Modified Note 1 to specify wall thickness limits and require inside and outside forms for cast in places basins. Added Note 7 to limit the distance pipes can protrude into basin.

Standard Drawing 3-11 Curb Inlet Catch Basin: Modified Note 1 to specify wall thickness limits and require inside and outside forms for cast in places basins.

Standard Drawing 3-12 Standard Catch Basin Grate: Modified to match ODOT G-2 catch basin grate. Note that ductile iron frame and grate is acceptable alternate to steel.

Standard Drawing 3-13 Storm Sewer Manhole: Change Note: A 3-point mechanical adjustment system...to read **“Note: An adjustment system such as East Jordan Iron Works Infra-Riser, or approved equal, shall be used to adjust manhole frame and cover to finish grade”**. Add **“Note: The invert fill shall be true to the sewer pipe invert elevations, with smooth channels of uniform cross section and slope, either straight or with a continuous curve between inlet and outlet of pipes.”** Add Note **“All manholes outside of paved areas shall have a 6” thick concrete pad, 5’ square centered on the manhole lid.”**

Standard Drawing 3-15 Sedimentation Manhole: Add Note **“All manholes outside of paved areas shall have a 6” thick concrete pad, 5’ square centered on the manhole lid.”**

Standard Drawing 3-16 Typical Storm Water Detention Pond Section: Added requirement for grates on pipes larger than 12” in diameter.

Standard Drawing 4-6 Typical 1½” and 2” Water Service: Added **Note 3 Double check valve assembly required on customer side of meter for all commercial and industrial water services. See Standard Drawing 4-18 for more information.**

Standard Drawing 4-16 Air & Vacuum Release Valve Assembly: Added angle stop and bushing, bug screen on air valve. Deleted meter notes.

Standard Drawing 4-18 Typical Backflow Device ¾” to 2” DCVA Installations: Location of property line changed on Installation Configuration view. DCVA is shown installed in public right of way or easement.

Standard Drawing 4-22 Fire Service Vault DCVA with FDC & PIV: Fire Department connection changed to single downward angled Storz connection.

PREVIOUS SPECIAL PROVISIONS DATED 10-14-11

Development Provisions Section 23.3.00: Add the following after the first paragraph; **“Where less than 5,000 sq.ft. (but more than 500 sq.ft.) of new impervious surface areas are proposed, a site plan shall be required that demonstrates on-site drainage will be maintained on site, any proposed retention area or storm drainage facility has design capacity for the required 50 year/24 hour storm event runoff volume (2 inch rainfall) and any necessary erosion control measures will be taken.”**

Section 211.2.04: Revise last sentence of first paragraph to read: **“Use PG 64-28 or PG 70-28 asphalt unless otherwise specified in the contract documents. Refer to Design Standards Section 18 for asphalt binder use on various road classifications.”**

Section 304.2.05: Revise 3rd sentence to read **“On sewer pipe with a diameter of 12” or larger, Inserta Tee® service connections will be acceptable.”**

Section 305.2.01: Revise first sentence to read: **“Unless otherwise specified, all storm pipe with less than 24 inches of cover to finish grade shall be AWWA C900, 8” through 12”, or AWWA C905, 14” through 24”, DR 25,…”**

Standard Drawing 1-1 Utility Trench: Note in upper right corner of Utility Trench in AC Paved Street should read **“ $\frac{3}{4}$ ”-0” Agg. Base See Note #3” (5-24-11)**

Standard Drawing 3-3: Add Note: **“Flat top manhole lids shall be set at an elevation that will allow placement of 4” to 6” of aggregate base between top of lid and bottom of pavement.”**

Standard Drawing 2-6 Concrete Curbs: Add Note 10: **“Where curb and gutter is called out on the plans, but no detail is provided, use ODOT Standard Drawing RD-700 with 18” gutter pan sloped at 4% and 6” curb exposure. For replacement, match existing curb and gutter dimension and slope.”**