



APPENDICES

APPENDIX 2. CONSTRUCTION SPECIFICATION AND DESIGN STANDARDS FOR STREETS AND ACCESS

- A. Streets
- B. Access Requirements for Up to Four Dwelling Units or Four Lots
- C. Emergency Vehicle Turnarounds
- D. Driveways

These specifications and design standards implement the City's Transportation Master Plan (TMP) by providing details for the construction of improvements described in the TMP. The TMP should be consulted along with these specifications and standards in order to determine the complete nature and extent of the improvements required. This appendix has been approved by the Director of Public Works, who may approve design deviations in specific situations where conditions warrant and are properly documented. Such site-specific design deviations shall not constitute general changes to these standards.

A. Streets.

1. Purpose. The purpose of this section is to establish street standards for both public and private streets serving five or more dwelling units. This section is a supplement to [RZC 21.52, Transportation Standards](#).
2. Street Types and Widths.
 - a. City of Redmond streets are defined in [RZC 21.52.030.C, Street Classification](#), and as shown on Tables 1, 2 and 3 and Standard Details in the City of Redmond's construction "Standard Specification and Details." Shared Street guidelines are provided in [RZC 21.10.150, Appendix 7](#) and [Appendix 8A](#).
 - b. Private Streets.
 - i. Criteria for Authorization. Private residential streets and roadways are allowed under the following conditions:
 - A. Where due to topographic or other constraints the Public Works Department determines that it would be creating an inequitable hardship on the City or because of practical difficulties the City could not assure maintenance.
 - B. In residential developments, private streets, including the apron or driveway approach entering the City right-of-way shall be maintained and repaired when needed by the homeowners within the development.
 - C. Provision is made for the streets to be open at all times for emergency and public service vehicles.
 - D. The private streets will not obstruct public street circulation.



- ii. Construction Requirements. Private streets shall conform to public works construction standards, except where specifically exempted in this section. Concrete crosswalks, per the City of Redmond Standard Details, are required across all private streets intersecting minor or principal arterials.
- iii. Acceptance as Public Streets. The acceptance of private streets as public streets shall be per adopted procedures. The public street standards contained herein shall apply in consideration of such acceptance.

Table 1. Arterials.			
Arterial Street (1)			
Classification	Principal	Minor	Collector
Corridor Width (Right-of-Way)	100 feet	84 feet	60 feet
Easement (2)	10 feet/Adjacent to ROW	10 feet/Adjacent to ROW	10 feet/Adjacent to ROW
Pavement Width (Curb to Curb)	48 feet – 60 feet 4 through lanes with 12 feet center turn lane where required	44 feet – 56 feet 4 through lanes with 12 feet center turn lane where required	36 feet – 40 feet 2 through lanes with center turn lane and parking where required
Maximum number of general purpose travel lanes in each direction	2	2	1
Mid-block lane width	11-12 feet	10.5-11 feet	10.5-11 feet
Maximum Grade (percent) (3,4)			
Flat	4	6	7
Rolling	6	7	10
Mountainous	8	9	12
Type of Concrete Curb	Vertical Type A-1	Vertical Type A-1	Vertical Type A-1
Sidewalk, Concrete (5)			
Urban Centers	8-foot minimum both sides with widths as great as 12-16 feet in retail areas. See RZC 21.10.150, 21.12.150, and 21.12.200.	8-foot minimum, both sides with widths as great as 12-16 feet in retail areas. See RZC 21.10.150, 21.12.150, and 21.12.200.	8-foot minimum, both sides with widths as great as 12-16 feet in retail areas. See RZC 21.10.150, 21.12.150, and 21.12.200.
Pedestrian Priority Zones Outside Urban Centers (6)	8-foot minimum both sides	8-foot minimum both sides	8-foot minimum both sides
Rest of City	6-foot minimum both sides of street	6-foot minimum both sides of street	6-foot minimum both sides of street
Maximum Pedestrian Crossing Length	75 feet		
On-Street Parking (7)	Allowed in urban centers. Not allowed elsewhere.	Allowed in urban centers. Not allowed elsewhere.	Allowed
Bicycle Facilities	See Redmond Transportation Master Plan for bike lane plan.		
Furnishing Zone/Landscape Strip			
Urban Centers	Varies. See RZC 21.10.150, 21.12.150, and 21.12.200	Varies. See RZC 21.10.150, 21.12.150, and 21.12.200	Varies. See RZC 21.10.150, 21.12.150, and 21.12.200
Pedestrian Priority Zones outside Urban Centers (5)	5-foot minimum both sides	5-foot minimum both sides	5-foot minimum both sides
Rest of City	5-foot minimum both sides	5-foot minimum both sides	5-foot minimum both sides
Notes:			



Table 1. Arterials.

Arterial Street (1)			
Classification	Principal	Minor	Collector
1. Variations may be required to accommodate unusual and/or topographic conditions. Specific corridor designs may supersede these standards. 2. Easements accommodate the sidewalk and can be used to accommodate utilities. 3. Flat – Typical cross slopes from zero percent to eight percent. Rolling – Typical cross slopes from nine percent to 15 percent. Mountainous – Typical cross slopes over 15 percent. 4. Maximum grade may be exceeded for short distances provided no practical alternative exists and subject to approval by the Director of Public Works. 5. RZC 21.10.151, <i>Pedestrian System</i> shall govern in the downtown. 6. See Transportation Master Plan Chapter 4-3 <i>Pedestrian System Plan</i> . 7. Where allowed, on-street parking may be required at the City's discretion.			

Table 2. Local Streets.

Classification	Connector Streets	Local Access Streets					
		Single-Family Residential			Multifamily Residential		Nonresidential
		Private	Public		Private	Public	Public
Dwelling Units/Lots		5 – 9	5 – 9	10 or more			
Corridor Width	60 feet right-of-way	35 feet ingress/egress tract	44 feet right-of-way	50 feet right-of-way	35 feet ingress/egress tract	50 feet (1) right-of-way	60 feet right-of-way
Easement (7)	10 feet/adjacent to ROW	None	10 feet – Adjacent to ROW	10 feet – Adjacent to ROW	None	10 feet – Adjacent to ROW	10 feet – Adjacent to ROW
Pavement Width	36-40 feet 2 through lanes with center turn lane and parking where required	28 feet (9)	28 feet	28 feet	28 feet (9)	28 feet	44 feet thru route 36–40 feet side streets
Maximum number of general purpose travel lanes in each direction	1	1					
Mid-block lane width	10-10.5 feet	10 feet					
Maximum Grade (percent) (4,5)							
Flat	7	8	8	8	8	8	8
Rolling	10	10	12 (6)	12 (6)	10	12 (6)	12 (6)
Mountainous	12	10	15 (3,6)	15 (3,6)	10	15 (3,6)	15 (3,6)
Type of Curb (8)	Vertical Type A-1	Asphalt Thickened Edge or Concrete Shiner or Vertical Type A-1	Vertical Type A-1	Vertical Type A-1	Asphalt Thickened Edge or Concrete Shiner or Vertical Type A-1	Vertical Type A-1	Vertical Type A-1
Sidewalk, Concrete	In Urban Centers, 8-foot minimum both sides with widths as great as 12-16 feet in	One Side (10), 5-foot minimum for detached	One Side (10), 5-foot minimum for detached	Both Sides, 5-foot minimum for detached	One Side (10), 5-foot minimum for detached	Both Sides, 5-foot minimum for detached	Both Sides, 5-foot minimum for detached sidewalks, 6-foot



Table 2. Local Streets.

Classification	Connector Streets	Local Access Streets					
		Single-Family Residential			Multifamily Residential		Nonresidential
		Private	Public		Private	Public	Public
	retail areas. See RZC 21.10.150, 21.12.150, and 21.12.200. In Pedestrian Priority Zones (11) outside of Urban Centers, 8-foot minimum both sides Rest of City, 6-foot minimum or 5-foot minimum with furnishing zone; both sides of street	sidewalks, 6-foot minimum back of curb	sidewalks, 6-foot minimum back of curb	sidewalks, 6-foot minimum back of curb	sidewalks, 6-foot minimum back of curb	sidewalks, 6-foot minimum back of curb	minimum back of curb
Parking Permitted	Allowed, may be required at City's discretion	One Side	One Side	One Side	One Side Only (2)	One Side	None
Bicycle Facilities		See Redmond Transportation Master Plan, <i>Bicycle System Plan</i>					
Landscape Strip/Furnishing Zone	In Urban Centers, Varies. See RZC 21.10.150, 21.12.150, and 21.12.200 In Pedestrian Priority Zones (11) outside of Urban Centers, 5-foot minimum both sides Rest of City, Option 1: 5-foot minimum with 5-foot sidewalk or Option 2: no furnishing zone with 6-foot or wider sidewalk	None	5-foot minimum landscape strip both sides, located between roadway and sidewalk	5-foot minimum landscape strip both sides, located between roadway and sidewalk	None	5-foot minimum landscape strip both sides, located between roadway and sidewalk	None
<p>Notes:</p> <ol style="list-style-type: none"> For less than 10 dwelling units, one may follow the single-family residential public guidelines with 44 feet of right-of-way. RZC 21.40.010.E, <i>Design Requirements for Parking Facilities</i>, would be used in conjunction with this guideline. Maximum grade may be exceeded subject to approval by the Director of Public Works. Such approval shall be conditional upon the following: <ol style="list-style-type: none"> No practical alternative exists. Any grade over 15 percent up to a maximum of 20 percent shall extend no further than 600 feet without being interrupted by an intersection or landing with eight feet difference in elevation over a distance of 100 feet. On private streets the grade shall not exceed 10 percent unless authorized by the Redmond Fire Department. See Table 1 for definitions of terrain. Where grade exceeds 10 percent on an emergency vehicle access road, mitigation shall be required per RMC 15.06.013(17). Easements accommodate the sidewalk and can be used to accommodate utilities. Rolled curb alternative may be approved in some existing areas or in use with vertical curb transition. Minimum 20-foot unobstructed driving surface is acceptable as long as the number of on-street parking stalls can be provided in alternate locations on site based on the standard 8-foot parking lane on one side. These parking stalls should be in addition to the minimum parking requirements per the project. Please note that additional pavement width may be subject to require due to the utilities spacing requirements. Sidewalks shall be installed on the same side of the development with the first half-street improvements. See Transportation Master Plan Chapter 4-3 <i>Pedestrian System Plan</i>. 							



Table 3. Rustic Street Standards for NE Rose Hill Neighborhood Subarea

These rustic streets shall be characterized by: narrow street widths designed to serve local access needs and to reduce the amount of impervious surface; pedestrian walkways; and street edges that incorporate landscaped drainage swales. The landscaped drainage swales shall be designed at a minimum to convey stormwater, improve stormwater quality and provide a natural-looking and informal landscaped edge that separates walkways from vehicle lanes. The following standards for new and improved streets in the NE Rose Hill Subarea implement Redmond's Comprehensive Plan policies N-WR-H-11 and H-12, found in the Willows/Rose Hill Neighborhood Plan.

Local Access Street Improvements: Residential Single-Family

Street Classification	Private	Public	Public
Dwelling units/lots served by street	5 – 9	5 – 9	10 or more lots
Corridor Width	41-46 foot ingress/egress tract	46-foot right-of-way	53-foot right-of-way (28 feet pavement width) 55-foot right-of-way (30 feet pavement width) for NE 100th Street, NE 104th Street, and 138th Avenue NE south of NE 100th Street
Pavement Width (Edge to Edge) (4)	26 feet without parking 31 feet with parking	26 feet without parking 31 feet with parking	28 feet or, 30 feet for NE 100th Street, NE 104th Street and 138th Avenue NE south of NE 100th Street
Easement Width (5)	None	10 feet adjacent to right-of-way	10 feet adjacent to right-of-way
Maximum Grade Percentage	10	10	10
Type of Pavement Edge (included as part of total pavement width)	3 feet wide, thickened edge or flat on each side printed asphalt, scored concrete, or concrete shiner	3 feet wide, thickened edge or flat on each side, scored concrete or concrete shiner	3 feet wide, thickened edge or flat on each side, scored concrete or concrete shiner
Sidewalk, concrete 5-foot-wide minimum	One side; separated from vehicle lanes by street edge treatment	One side; separated from vehicle lanes by street edge treatment	Both sides; separated from vehicle lanes by street edge treatment
Parking, 8-foot-wide (1,4)	One side; interspersed with landscaping, opposite side from sidewalk	One side; interspersed with landscaping, opposite from sidewalk	Either side
Bicycle Lanes	None	None	None
Street edge treatment required (3,4)	Landscape strip minimum width 5 feet both sides	Landscape strip minimum width 5 feet both sides	Minimum landscaped drainage swale width 10 feet required one side. Other side may be landscape strip minimum width 5 feet

Notes:

1. Parking will be located intermittently between the landscaped areas. Parking may be parallel, angled or 90 degree depending on site conditions. The Fire Marshal may allow variation in signage type and allow fewer signs (spacing requirements) that restrict parking in fire lanes.
2. Reserved.
3. Minimum bottom width of swale shall be two feet. Minimum swale depth shall be one foot. Slopes steeper than 2H:1V ratio may only be allowed per approval by the Public Works Director. See RZC 21.08.180 for additional requirements for swales in the Willows/ Rose Hill neighborhood.
4. See Standard Details DG-13 through DG-16.
5. Easements are intended to accommodate utilities and maintenance.
6. The Rustic Street specifications are minimums, alternatives that expand the design or include intermittent curbing may be approved by the Director of Public Works.

3. Street Layout. Street layout shall provide for the following:

- a. Local access streets shall be designed to discourage through traffic and high speeds.



- b. Provide access to adjoining undeveloped property, where necessary.
 - c. Right-of-way placement shall be planned to minimize grading and destruction of natural features.
 - d. Rights-of-way shall not be located in areas where geologic or soil conditions may cause a threat to public safety or pose a continuing excessive liability to the City.
 - e. Walkways and trails shall be provided to maximize the potential for pedestrian circulation within a development and to adjacent areas.
 - f. Where it is applicable, temporary turnaround shall be provided on half streets and future street extensions.
 - g. All power and telecommunication facilities utilities shall be placed underground in accordance with RZC 21.17.020, *Electrical Equipment and Wiring*.
 - h. Required Access to Developments. Where more than 100 units are designed in a residential development, either single-family, multifamily, retirement or similar, there shall be a minimum of two access points to the street system. Such access points shall be located so as to provide for circulation, alternate emergency vehicle access routes, through access, and general area transportation design considerations.
 - i. Divided Streets or Streets with Median Strips. Where due to topographic, engineering, or design considerations a divided local access street is used, the following criteria shall apply:
 - A. The length of the divided local access street shall not exceed 150 feet.
 - B. Each side of the divided street shall not be narrower than 14 feet. If one or both sides of the divided access are within 50 feet of an adjacent building or otherwise deemed necessary for firefighting purposes, then the minimum unobstructed width per applicable side is 20 feet.
 - C. Where a lane is within 100 feet of any structure and where the Fire Chief determines there is a possibility of fire lane obstruction, fire lanes shall be marked per Redmond Fire Department standards.
 - D. Such divided local access streets shall not compromise turning radii of emergency vehicles especially at intersections.
4. Pedestrian Crossings.
- The distance between marked crossings or stop-controlled intersections on new or reconstructed streets (as defined by the Washington State Department of Transportation Local Agencies Guidelines Manual) shall not exceed 1/10 mile (528 feet) in the urban centers, or 1/4 mile (1,320 feet) outside the urban centers and pedestrian priority zones as defined in the Transportation Master Plan unless safety, traffic conditions, or site constraints preclude a crossing as determined by the Traffic Operations Safety and Engineering Division.
5. Street Grades.
- a. Arterials shall generally not exceed 12 percent in grade.
 - b. All streets, alleys and service drives shall generally not exceed 15 percent in average grade. Refer to Table 2 where grades greater than 15 percent are permitted. Portland



- cement concrete may be required in lieu of asphalt pavement for grades over 15 percent.
 - c. All local access streets both public or private which are designated by the Redmond Fire Department as emergency vehicle access roads shall not exceed 10 percent in grade unless approved mitigation measures are implemented and such grades are approved by the Redmond Fire Department. Refer to RMC 15.06.013.
 - d. All changes in grade shall be connected by vertical curves meeting standards established by the City.
6. Minimum Horizontal and Vertical Curve Standards.
- a. Minimum Horizontal Curve Radii.
 - A. Arterials and Connector Streets. The minimum radius shall be as defined in the table below with superelevation of -2.0 percent. The design speed shall be set at five miles per hour over the posted speed (source: AASHTO 2011 6th Edition, Table 3-13b. Minimum Radii and Superelevation for Low-Speed Urban Streets).

Table 4	
Design Speed (miles per hour)	Horizontal Curve Radius (feet)
25	200
30	335
35	510
40	760
Over 40	1040

- B. Local Access Streets. The minimum radius shall be as defined in the table below based on the typical cross slope that the street will traverse. A 100-foot radius may be permitted at the permanent end of a street.

Table 5	
Typical Cross Slope (percent)	Horizontal Curve Radius (feet)
< 8	335
8 – 15	200
> 15	115

- b. Minimum tangent distances between horizontal curves shall be:
 - A. Two hundred feet for streets with a posted speed limit above 25 mph.
 - B. One hundred feet for streets with a posted speed limit of 25 mph.
- c. Distance. Stopping sight distance and decision sight distance shall be determined using a driver height of eye of 3.5 feet and an object height of 0.5 feet. An object height of two feet shall only be considered on a case-by-case basis for existing streets and must be accompanied by a design deviation request.
- d. Stopping Sight Distance (SSD). The minimum stopping sight distance, as measured along the centerline of a level street, shall be determined as follows (source: AASHTO 2011 6th Edition, Table 3-1. Stop Sight Distance on Level Roadways):



Table 6

Design Speed (mph)	Stopping Sight Distance (feet)*
25	155
30	200
35	250
40	305
45	360
50	425
55	495

* Must be adjusted when street downgrade is 3 percent or greater.

- A. Arterial and Connector Streets. The minimum SSD shall be determined using a design speed of 10 mph above the posted speed limit. When restricted by topographic or other constraints, the Public Works Director may allow use of a design speed of five mph above the 85th percentile speed when properly documented in an engineering study.
- B. Local Public Streets. The minimum SSD shall be determined using a design speed of five miles per hour above the posted speed limit. When re-restricted by topographic or other constraints, the Public Works Director may allow use of a design speed equivalent to the 85th percentile speed when properly documented in an engineering study. Where the 85th percentile speed cannot be measured, guidelines established in AASHTO – Guidelines for Geometric Design of Very Low-Volume Local Roads (ADT≤400) may be used.
- C. Private Streets. The minimum SSD shall be 155 feet. When restricted by topographic or other constraints, the Public Works Director may allow use of the guidelines established in AASHTO – Guidelines for Geometric Design of Very Low-Volume Local Roads (ADT≤400) as part of a design deviation request.
- D. Sag Vertical Curves. The application of street lighting may be used for mitigation when the SSD on sag vertical curves is less than stated above. However, in no case shall the sag curve SSD be less than provided in Table 7 for the posted speed (source: AASHTO – Guidelines for Geometric Design of Very Low-Volume Local Roads (ADT≤400)).

Table 7

Posted Speed (miles per hour)	Sag Curve SSD (feet)
25	125
30	165
35	205
40	250
45	300

- e. Adequate decision sight distance shall be provided on all arterial and connector streets as set in the following table. The design speed shall be set at the posted speed. Decision sight distance is measured with a driver eye-height of 3.5 feet and an object-height of two feet.



Table 8

Design Speed (miles per hour)	Decision Sight Distance (feet)*
25	445
30	575
35	665
40	760
45	855

* Must be adjusted when street downgrade is 3 percent or greater.

7. Intersection Design.

- a. Sight Clearance. The requirements of RZC 21.52.040, *Sight Clearance at Intersections*, and City of Redmond Standard Details shall apply.
- b. Horizontal Alignment. Street rights-of-way shall intersect at 80 degrees to 90 degrees, where possible. For residential streets, three-way (“T”) intersections are preferred over four-way intersections.
 - i. Offsets of adjacent streets should be at least 150 feet measured from the near-side face of curb of any existing street or driveway.
 - ii. On sloping approaches, landings are not to exceed two feet difference in elevation for a distance of 30 feet approaching an arterial or 20 feet approaching a connector or local access street, measured from the back of sidewalk or the back of curb if no sidewalk exists.
 - iii. At street intersections, property line corners shall be rounded by an arc, the minimum radius of which shall be 25 feet. In business districts a curb may be substituted for such an arc. The curb radius shall be 25 feet for local access streets and 30 feet for arterial and neighborhood collector streets.
 - iv. At private streets, driveways, etc., the minimum curb radius shall be 20 feet. Where driveway widths are less than 28 feet, a 25-foot radius may be required. Refer to the Standard Details.
- c. Adequate intersection (entering) sight distance shall be provided at street intersections and driveways as defined in the table below. Unless otherwise approved, the design speed shall be set at 10 miles per hour over the posted speed. Entering sight distance is measured with a driver eye-height of 3.5 feet and an object-height of two feet (source: AASHTO 2011 6th Edition Figure 9-17 and Table 9-6).

Table 9

Design Speed (miles per hour)	Entering Sight Distance (feet)*
25	280
30	335
35	390
40	445
45	500
50	555
55	610

* Must be adjusted when street downgrade is 3 percent or greater.



- d. Curb Cut or Curb Return.
 - i. Standard driveway Curb Cut or Curb Return is based on site conditions, traffic characteristics, and fire requirements, considering the presence of turning bus traffic, vehicular volumes, the percentage of heavy vehicles (i.e. potential design vehicle), pedestrian safety, land use, and convenience (relative to the heavy vehicle driver).
 - A. Standard driveway Curb Cut is required when one or more of the following criterion are met:
 - 1. Private driveways and access drives intersecting with public streets.
 - 2. High pedestrian volumes are present or reasonably anticipated in Downtown area; refer to Map 10.3, Downtown Pedestrian System.
 - 3. Low turning volumes and majority of turning vehicles are passenger cars.
 - 4. Low speed (35 mph or lower) on the arterials.
 - 5. Low traffic volumes (less than 5,000 AADT) on the arterials.
 - 6. Four or more lanes on arterial so the turning vehicles do not encroach into opposing lanes.
 - B. Curb Return is required when one or more of the following criterion are met:
 - 1. High speed (40 mph or higher) and two-lane roadway arterials.
 - 2. A school bus, moving van, fire truck, or oversized delivery truck will have to encroach into the opposing lane while making turns.
 - 3. High traffic volumes (5,000 AADT or greater) on arterials.
 - 4. Intersecting with signalized or major stop-controlled intersections.
 - 5. Required by fire and emergency vehicle access.
- e. Curb Bulb.
 - i. minimum 15-foot return curb radius for inside and outside for street maintenance.
- f. Temporary Pedestrian Access During Construction.
 - i. A temporary pedestrian access plan is required as part of the civil construction plan set. This plan needs to show how pedestrian traffic passing by the proposed development will be accommodated during the entire length of the construction phase. The plan is required to work in conjunction with pedestrian and vehicle detours already in place for other public and private projects, and may need to be adjusted to respond to changing conditions as the development is constructed.
 - ii. For construction of new structures adjacent to existing sidewalks with pedestrian traffic, a covered walkway will be required to protect pedestrians from falling debris. Covered walkways should be designed to provide sturdiness, adequate light for nighttime use and safety, and proper sight distance at intersections and crosswalks.
 - iii. Short term closures of sidewalks or pathways for utility construction work may be allowed upon review and approval of the pedestrian access plan by the Public Works Department as per RZC 21.52.030.F.3. The pedestrian access plan should show the duration of the short term closure and provide temporary routes with



barricades and cones that parallel existing facilities. These routes must be accessible for persons with disabilities, including the provision of ramps, minimum widths, and smooth surfaces for wheelchair access. When a parallel route is not available, pedestrians must be detoured with advance signing in accordance with the Manual on Uniform Traffic Control Devices. See MUTCD 2009 (or latest revision) sections 6D.01, 6D.02, 6D.05 for guidance.

g. Slip turn lanes are not permitted.

8. Paving Requirements. All pavement shall be designed by a registered engineer in accordance with City of Redmond Standard Detail 301 for Typical Roadway Sections and Washington State Department of Transportation Design Manual Chapter 620, if design is needed beyond the standard detail then use the following criteria:

- a. Trip generation based on ITE "Trip Generation" Manual, Current Edition.
- b. Maximum anticipated traffic loadings with the following minimums:

Zoning	Minimum Truck Traffic
Residential (Single- or Multifamily)	5 percent
All Other	15 percent

c. Design Life.

Public Streets/Parking Lots	20 years
Private Streets/Parking Lots	10 years

d. Minimum Pavement Designs.

Public Street(Arterial)	4-inch HMA Class ½-inch PG 64-22 5-inch HMA Class 1-inch PG 64-22 *Compaction
Public Street (Connector and Local)	7-inch HMA Class ½-inch PG 64-22 *Compaction
Private Street and Parking Lot	3-inch HMA Class ½-inch PG 64-22 4-inch Crushed Surfacing Base Course *Compaction
* Compaction: Subgrade shall be compacted to 95 percent maximum density as determined by Modified Proctor (ASTM D 1557) HMA – Hot Mix Asphalt PG – Performance Grade Asphalt Binder	

e. Street Overlay. Asphalt streets impacted by construction activity must be planed, overlaid, and/or patched, as determined by the Public Works Department and in accordance with City of Redmond Standard Specifications and Details. At a minimum, all new developments (except for single-family home construction) are required to grind and overlay the entire half street along their project frontage if the Pavement Condition Index (PCI) of the existing pavement is below 70 (as determined by the City's bi-annual pavement survey).

f. Half street improvements along the project frontage (except for single-family home construction) shall include full-depth asphalt reconstruction from the right-of-way centerline to the new curb line in accordance with City standards for the street classification if the development will generate 20 or more PM peak hour vehicle trips.

g. In lieu of using the above criteria for paving requirements of private streets and/or parking lots, the geotechnical engineer employed by the developer shall verify and subsequently advise the City that the installation of the paving section(s) conforms to his/her design. The project will not be accepted until the geotechnical engineer provides the City with written documentation of this information.

9. Transit Provisions



- a. Transit stops shall be installed as part of new or reconstructed frontage where needed to ensure that the distance between transit stops on High and Medium Demand Transit Corridors does not exceed 1,000 feet (see Transportation Master Plan, Chapter 4.2 *Transit System Plan*) except where their installation would be unsafe, impractical due to site constraints, or unnecessary due to low demand or route planning, as determined by the City of Redmond.
 - b. Bus bulbs shall be installed as part of new or reconstructed frontage where necessary to ensure that buses may stop in the travel lane when loading and unloading passengers at transit stops on High Demand Corridors (see Transportation Master Plan Chapter 4.2, *Transit System Plan*).
10. Traffic Control.
- a. Signing. All traffic control devices shall conform to the most recent edition of the “Manual on Uniform Traffic Control Devices” (MUTCD). In new developments, the developer shall install all traffic control signs which shall include but not be limited to street name, stop, dead end, and pedestrian signing. The developer shall be responsible for paying the cost of the signs, including the installation. See Standard Detail, *Street Name Sign*.
 - b. Pavement Marking. In new developments, pavement markings, including buttons, striping, and delineators, may be required to provide roadway safety. Such markings shall be provided by the de-veloper. All materials shall conform to the City of Redmond “Standard Specifications and Details,” latest edition. All work shall be approved by the City Traffic Operations Safety and Engineering Division prior to installation.
 - c. Fire Lane Marking. In new plats or commercial/industrial developments, areas designated by the Fire Department as fire lanes and where in the opinion of the Fire Chief marking is needed to prevent obstruction, fire lane marking shall be in accordance with Redmond Fire Department standards. Such markings shall be provided by the developer.
 - d. Construction Requirements.
 - i. All construction activities within the public right-of-way shall have a detailed traffic control plan submitted at least 48 hours in advance of the work if required by the City. The plan shall conform to the current edition of the *Manual on Uniform Traffic Control Devices* and shall be approved by the City Engineer or his designated representative.
 - ii. Both public contracts and private developments shall have a traffic control plan attached to the approved drawings if required by the City. The plan shall show specific placement of cones, barricades, signs, and other devices. All changes including field revisions must be approved by the City Engineer or his designated representative.
11. Street Illumination. Refer also to the City of Redmond Illumination Design Manual.
- a. Requirements for Public Streets, Sidewalks, Trails, and Multiuse Paths.
 - i. Illumination Required. Street light illumination shall be provided in new developments. Sidewalk, trail, and multiuse path illumination shall be provided in new developments in Pedestrian Priority Zones (for Pedestrian Priority Zone maps see Transportation Master Plan Chapter 4.3, *Pedestrian System Plan*).



- ii. Location of Poles. The City shall approve the location of street light poles on plans prepared by Puget Sound Energy or an independent lighting consultant.
 - iii. Maintenance. The street illumination system is maintained by the utility company or the City.
 - iv. Undergrounding. All street light wiring, con-duit, and service connections shall be located underground.
 - v. Luminaire type, height, and lighting levels shall be consistent with the Redmond *Illumination Design Manual*.
 - vi. Electricity Costs -- For single-family home developments, the owner shall be responsible to pay the monthly electricity costs for the street light illumination until the City Inspector has accepted the development for maintenance warranty period. For all other types of development, the owner shall be responsible to pay the monthly electricity costs for the street light illumination until the City has granted certificate of occupancy.
 - vii. Private Easement Removal or Subordination -- Prior to acceptance of the right-of-way and/or easement by the City, the fee owner will be required to remove or subordinate any existing private easements or rights that encumber the property to be dedicated, and shall be required to remove any encroachments on such easements or rights-of-way. See requirements for Right-of-Way and/or Easement Dedication in RZC 21.52.030.G.
- b. Existing Residential Areas. The City will initiate the installation of a street light in existing residential areas provided the following conditions are met:
- i. A letter is received, signed by all occupants within 100 feet of the location of the street light, approving of the light on a public street.
 - ii. If the street light will not be located on an existing power pole, the cost of installation of a luminaire pole and associated underground wiring, etc., shall be borne by the petitioners.
- c. Requirements for Private Streets.
- i. Street light illumination is not required for private streets serving less than 5 lots.
 - ii. Responsibility for Installation. Should street lights be desired, the installation, maintenance, and power costs shall be the responsibility of the developer or homeowners' association, etc., not the City of Redmond.
12. Cul-de-sac and Dead End Streets.
- a. Streets with a cul-de-sac or permanent dead-end should not be longer than 600 feet. In the event that a longer cul-de-sac or permanent dead-end street is unavoidable due to topography or as otherwise specified in this section, turnarounds are required every 600 feet.
 - b. Refer to Appendix 2.C *Emergency Vehicle Turnarounds* to determine if it applies to the street. If Appendix 2.C does not apply, safety provisions must be made to accommodate the turnaround for a single unit (SU-30) truck, and, for public local access streets, a cul-de-sac is required unless the proposed design can demonstrate compliance with safety requirements defined in RZC 21.40.010.E and RMC 10.52.



- c. Temporary dead end streets planned for future continuation shall include the necessary dedication or easements for utilities and vehicle turnarounds. If the dead end is over 300 feet for residential and 150 feet for commercial, then the turnaround must meet the requirements of Appendix 2.C, *Emergency Vehicle Turnarounds*. A barricade designed to City of Redmond standards shall be installed at the end of the dead end street, along with a sign stating "This Street To Be Extended In The Future."
 - d. Refer to the City of Redmond Standard Specification and Details for cul-de-sac and barricade details.
 13. Mailbox Stand(s) in Residential Areas.
 - a. Mailboxes shall be clustered together in stands when practical and when reasonably convenient to the houses served.
 - b. Where appropriate, mailbox stand(s) shall be installed in the sidewalk in accordance with the City of Redmond Standard Details.
 - c. The location of the mailbox stand(s) is determined jointly by the City of Redmond together with the United States Postal Service.
 - d. Mailbox stand locations should not be placed so vehicles using it would obstruct the required width of an emergency vehicle access road. (e) Replacement and/or repair of mailbox stands is the responsibility of property owners served by the mailbox stand.
 14. Franchise Utilities. Non-City-owned franchise utilities are required by City code to relocate existing facilities at their own expense when a conflict results between their facilities and public street improvements. The improvement work must be required by the City as part of an adopted plan or study in order for the relocation work to be the financial responsibility of the utility; otherwise all costs shall be the responsibility of the developer.
 15. Retaining Walls and Rockeries.
 - a. All retaining walls and rockeries constructed to support land used for new development shall be placed outside of the public right-of-way and public easements.
 - b. Retaining wall reinforcements such as tiebacks, soil nails, and geogrid mesh shall not extend into the public right-of-way and public easements.
 - c. Retaining walls that will be visible to the general public and above 4 feet in height shall be constructed of concrete (cast in place, shotcrete, or modular blocks) with an aesthetic pattern on the wall face. Wall type and aesthetic pattern shall be approved by the Public Works Director or their designee.
 - d. Install rockeries per Standard Detail 909 "Rock Wall under 4 feet."
 - e. All retaining walls and rockeries must also meet the design standards in Section 8.6.7 "Rockeries/Retaining Walls" in the Stormwater Technical Notebook 2017 -- Issue 7A.
 16. Safety Railings.
 - a. Installation. Where a sidewalk or other nonmotorized transportation facility is to be constructed above a slope steeper than 3H:1V or adjacent to a rock wall or retaining wall where the lowest finished elevation of the slope, rock wall, or retaining wall is to be 30 inches or more below the finished elevation of the sidewalk or other facility, a safety



- railing shall be required. Railings shall be erected and adjusted, if necessary, after initially set to assure a continuous line and grade.
- b. Design. Safety railings shall be constructed per Standard Detail “Typical Pedestrian Railing.”
17. Guard Rails. For purposes of warrants, design, and location, all guard rails along roadways shall conform to the criteria of Chapter 1610 “Traffic Barriers” of the Washington State Department of Transportation Design Manual.
 18. Survey Control. Street designs shall reference the City of Redmond’s current Vertical and Horizontal Control Systems.
 19. New Monumentation. New survey monuments shall be installed at new street intersections, street tangent points, and center of cul-de-sacs in accordance with the City of Redmond Standard Details.
 20. Street Naming and Numbering. Per RMC 15.06.013(27), the Fire Chief shall name and number City streets based on the King County Street Grid System. The Fire Chief may modify the King County System to fit special circumstances, or as requested by the Technical Committee.
 21. Other Minimum Design Standards.
 - a. Ramps for the Handicapped. Ramps shall be included in all construction per RCW 35.68.075 and the most recent adopted PROWAG (Proposed Guidelines for Accessible Rights-of-Way) standards from the U.S. Access Board. The RCW requires that when curb ramps are constructed at one end of a crosswalk it must be matched by another ramp, i.e. a companion ramp, at the other end of the crosswalk. If an existing companion ramp is not wide enough to accommodate a wheelchair (36-inch minimum) or if the ramp has characteristics that may be deemed unsafe or impassable for a wheelchair user or other mobility assistive device, the curb ramp shall be removed and replaced to comply with current ADA standards.

It shall be the City's policy that an existing ramp will be considered unsafe or impassable under the following conditions: If these conditions exist, the existing ramp must be fully or partially replaced to correct these deficiencies.

 - There is no 4-foot-by-4-foot landing for turning space in or above the existing curb ramp.
 - The existing curb ramp slope is greater than 10 percent.
 - The existing curb wing slope is greater than 12 percent.
 - b. Vertical clearance above the paved roadway surface shall be a minimum of 16.5 feet. Vertical clearance of structures above the walkway surface shall be a minimum of 8.0 feet.
 - c. Clear Zone and Lateral Clearance.
 - i. If the street has curbs (rolled or vertical) and speed limit is 35 mph or less, no clear zone analysis is required. However, the lateral clearance between curb face and the closest part of any fixed object (excluding traffic control signs and break away supports) shall be at least two feet.
 - ii. If the street has no curbs (rolled or vertical) and speed limit is 35 mph or less, the City requires a clear zone of 10 feet from the edge of traveled way to the face of



- any fixed object. Fire hydrants and other fixed objects with break away capabilities are allowed.
- iii. If the street has a speed limit greater than 35 mph, the City requires a clear zone to any fixed object as outlined in Exhibit 1600-2 of the WSDOT Design Manual.
 - d. Roadway Geometrics. Design(s) shall be based upon accepted engineering practices and the requirements listed herein. Horizontal lane transition taper lengths shall be computed by the formula $L = WS$, where L equals the taper length, W equals the horizontal offset, and S equals the posted speed.
22. Interim Pedestrian Walkway / Safe Walk Route.
- a. For an interim walkway immediately adjacent to the street edge of travel way, it shall be constructed with vertical concrete curb, gutter and a 5-foot concrete sidewalk. The curb face shall be located at least 12-feet from the street center line.
 - b. Otherwise, an interim walkway shall be 4 feet wide, constructed of asphalt or concrete, and located a minimum of 10 feet from the street edge of travel way where no curb and gutter exists.
 - c. A safety railing or fencing will be required when: (1) the interim walkway is located at the top of a slope or wall that is steeper than 2:1 and (2) the walkway elevation is 30-inches or higher than the toe of the slope or wall.
 - d. Must be compliant with ADA.
23. Overhead Power and Utilities Undergrounding and/or Relocation.
- a. When undergrounding is required per RZC 21.17.020, existing power poles along the project frontage shall be removed or relocated to the furthest property corner or adjacent property, within the right-of-way or utility easement.
 - b. If any overhead utility lines from across the street are connecting to the power pole that is required to be removed, those overhead lines will be subject to be undergrounded across the street or reconnected from the other side of the street as part of the undergrounding requirements per RZC 21.17.020.
24. Standard Specifications. Except where the City of Redmond Standard Specifications and Details provide otherwise, design detail, workmanship, and materials shall be in accordance with the current edition of the Washington State Department of Transportation (WSDOT)/American Public Works Association (APWA) Standard Specifications for Road, Bridge and Municipal Construction.
- B. Access Requirements for Up to Four Dwelling Units or Four Lots.** The application of these standards shall apply to an access serving up to four individual single-family lots or four dwelling units. Access requirements for the purposes of this section shall refer to access corridors and access from a driveway to the dwelling unit(s) on individual lots.
1. Construction Specifications and Guidelines.
 - a. Construction shall be in accordance with APWA Standard Specifications, Washington State Chapter.
 - b. The access surface and cross section shall be constructed per Standard Details.
 - c. Turnarounds may be required to be installed in accordance with Appendix 2.C, Emergency Vehicle Turnarounds.



2. Minimum Standards.
 - a. Extent. In order to provide adequate emergency vehicle access, the driving surface on an individual lot must terminate within 50 feet of all dwelling unit(s).
 - b. Width.
 - i. One to Two Dwelling Units or Lots. The minimum unobstructed driving surface providing required emergency vehicle access shall be 14 feet in width. An unobstructed Emergency Vehicle Operations Area (EVOA) shall be provided as a continuation of the driving surface with an overall dimension of 20 feet in width and 50 feet in length, in the direction of travel and within 150 feet of all portions of the exterior wall of the dwelling as measured along an approved path. The transition between the 14 feet access road and the EVOA shall be tapered and all inside turning radii shall be a minimum of 55 feet. Final design shall be approved by the Fire Marshal and Engineering Division.
 - ii. Three to Four Dwelling Units or Lots. The minimum unobstructed driving surface shall be 20 feet.
 - c. A 10-foot utility corridor may be required alongside the access corridor unless other utility access is available.
 - d. A profile for the access shall be provided.
- C. **Emergency Vehicle Turnarounds.** Turnarounds for the purpose of this section are to be defined as the minimum dimensions and standards for emergency vehicle return on non-through access.
 1. Design. Design shall be in accordance with Standard Details in the City of Redmond's construction "Standard Specification and Details."
 2. Construction Specifications and Guidelines.
 - a. Construction shall be in accordance with APWA Standard Specifications, Washington State Chapter.
 - b. Access shall be constructed per Standard Details.
 3. When Required.
 - a. Residential. When dwelling units are served by an access longer than 300 feet measured from the closest intersection.
 - b. Commercial. Any emergency access roadway longer than 150 feet measured from the closest intersection.
 - c. The selection of design drawing is subject to approval of the Technical Committee.
 - d. A minimum unobstructed driving surface of 20 feet shall be required.
 - e. Signage, striping, or appropriate means approved by the Redmond Fire Department may be required.
 - f. Where requirements cannot be met, alternate fire protection as designated by the Fire Chief will be required per RMC 15.06.017, Restricted access buildings.
- D. **Driveways.** Driveways, as used in this appendix, shall refer to: (a) vehicle entrances to individual lots and/or (b) the intersection of access corridors with public or private streets.
 1. Construction Specifications.



- a. Construction shall be in accordance with APWA Standard Specifications, Washington State Chapter.
 - b. Driveways shall be constructed per Redmond Standard Details or as determined by the City Engineer.
2. Selection Guidelines.
- a. Driveway details within the Standard Details are most appropriate for residential zones, business park zones, and commercial areas.
 - b. The driveway details within the Standard Details shall also apply to private street entrances serving five or more dwelling units.
 - c. Where curbing exists or is required and a flat approach would be appropriate, a curb return driveway may be used if approved by Public Works. The decision to install a curb return driveway shall be based upon a review of, but not limited to, the following factors:
 - i. Functional classification of street.
 - ii. Projected driveway usage.
 - iii. Turn lane facilities on the public street.
 - iv. Vehicle storage area between the street and any turning or parking maneuvers within the development.
 - v. Distance from intersections.
 - vi. Distance from other driveways.
 - vii. Traffic signalization.
 - viii. Pedestrian circulation.
 - ix. Emergency vehicle access needs.
3. Width and Height of Driveway Entrance.
- a. The minimum and maximum width shall be measured from the outside of the travel lane excluding curb or thickened edge.
 - b. Each traffic lane of both residential, business park, industrial, and commercial driveways shall be at least 10 feet wide.
 - c. The minimum unobstructed business park, industrial, and commercial driveway width shall be 20 feet and the maximum 30 feet. A wider driveway width may be approved by the Technical Committee where a substantial percentage of oversized vehicle traffic will exist. In this case the driveway should be sized to accommodate the largest vehicles.
 - d. The minimum vertical clearance for service vehicles with SU-30 size at the garage entry and within the garage structure area that require sufficient turning movements shall be at least 11 feet based on AASHTO 2011 6th Edition. Some common service vehicles are but not limited to emergency aid-car, delivery truck, and moving vehicle.
 - e. Residential driveway dimensions shall adhere to the following chart.



Table 11

No. of Dwelling Units	Minimum Unobstructed Width in Feet	Maximum Width in Feet*
1	10**	20
2	10**	20
3 – 4	20	24
5 or more	20	28 for multifamily

*In the case where medians are used in driveway entrances, greater width may be required.
**If access corridor is over 50 feet, see subsection B.2.b.i of this appendix.

4. Location and Number of Driveways.

- a. Driveways shall be limited to one per parcel per street frontage, except that the following is permitted subject to the approval of the Technical Committee: one driveway for each 150 feet of local street frontage, or three driveways for two lots having common parking, as provided in RZC 21.40.010.F.1.
- b. The City shall not permit any driveway within 150 feet of the nearside face of the curb of the intersecting street or from any other such driveway. In the event it is either impossible or undesirable to separate by 150 feet, then driveways shall be located as far away from the nearside of curb of the intersecting street or any other such driveway. Separations less than 150 feet shall obtain approval from the Technical Committee. This separation requirement shall not typically be applied to the distance between single-family driveways on local streets.
- c. Whenever practical, abutting property owners shall make joint use of driveways.
- d. Distances between driveways and/or intersections shall be measured from the nearest edge between the driveways and/or intersections.
- e. Driveways directly giving access onto arterials are not permitted if alternate access is available.
- f. Driveways shall not be permitted where, in the judgment of the Technical Committee, dangerous or confusing traffic patterns would result.
- g. Driveways shall be aligned wherever possible with existing driveways on the opposite side of the street. This requirement shall typically not be applied between single-family driveways.
- h. Offset driveways where left turns may conflict shall be separated by at least 150 feet unless approved otherwise by the Technical Committee.

5. Conditions of Approval.

- a. All abandoned driveway areas on the street frontage to be improved shall be removed, and the curbing and sidewalk shall be restored to City standards.
- b. Maintenance and repairs of driveways, including the apron or driveway approach entering the City right-of-way, shall be the responsibility of the owner whose property they serve.
- c. Left turns to and from a driveway may be restricted if such maneuvers are found to be hazardous.
- d. Driveways shall have space adequate to substantially eliminate traffic backup on public streets.



- e. Driveway or drive aisle outside or within the garage structure shall be designed to allow service vehicles with minimum SU-30 size maneuvering around on-site without backing and encroaching into the street. Refer to the standard SU-30 turning movement template by AASHTO 2011 6th Edition. See reference codes in RZC 21.40.010.E.6 and E.8 for Parking Standards.
- f. Concrete crosswalks, per the City of Redmond Standard Details, are required across all driveways intersecting minor or principal arterials.

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