CHAPTER 2. ROAD TYPES AND GEOMETRICS

2.1 Road Classifications

City roads are classified functionally as indicated in the City of SeaTac Comprehensive Plan. Function is the controlling element for classification and shall govern right-of-way, road width and road geometric. Other given elements such as access, arterial spacing, and average daily traffic count (ADT) are typical. It is necessary to classify streets for purposes of traffic operations, control, and enforcement. Typically, arterials will have higher speed limits and more stringent traffic control measures at intersections, (e.g., traffic signals or stop signs), than non-arterials. In planning, functional classification establishes the hierarchy of roads and highways necessary for a complete transportation system that serves all types of travel needs. Each road has a specified function that produces a comprehensive network for travel and access throughout an area, when combined with the rest of the system.

Land Development. Land developments shall provide "curb" type road improvements unless otherwise specified in these Standards, figures 2-002 and 2-003. A curb type road typically requires an underground pipe storm drainage system with curb, gutter, and sidewalks. Exceptions to this may be approved by the Engineering Review Manager on residential access streets that are located in long-term, low-density neighborhoods and where a pattern of "shoulder" type roads is firmly established. Exceptions for two-lot urban short plats are as allowed in Section 2.5(A).

2.2 Functional Classifications

A. Freeway (Interstate or Expressway)

Freeways are multi-lane, high speed, high capacity roadways. Freeways have controlled access and are intended to serve longer, regional intra-state or interstate travel. Freeways that serve the City are under the jurisdiction of the Washington State Department of Transportation (WSDOT) or Port of Seattle.

B. Principal Arterial

Principal arterials connect focal points of traffic generation throughout the City and adjacent areas. They are used to provide access to the regional highway system, connect major community centers and connect to adjacent cities. These streets are intended to primarily serve “through” traffic with limited access to abutting land use. Principal arterials typically carry the highest traffic volumes.

C. Minor Arterial

Minor arterials are inter-community roadways that connect community centers with each other or to principal arterials or freeways. Minor arterials serve lesser points of traffic generation, and provide greater land access than principal arterials. Generally, minor arterials have moderate to high traffic volumes and may include some restriction of traffic movements and limitations on spacing of driveways and local streets.

D. Collector Arterial

Collector arterials distribute trips between local streets and arterials and serve as transition roads to or from residential and commercial areas. They provide land access as well as connections between neighborhoods and smaller community centers. Collectors typically have low to moderate traffic volumes and limited regulation of access control. On-street parking is usually limited.

E. Local Streets

Local Streets primarily provide direct property access and generally discourage through traffic. These streets typically have low to moderate traffic volumes and few access controls. On-street parking is generally allowed.

1. Neighborhood Collectors

   Neighborhood collector streets are the highest in the local roadway classification hierarchy. They connect two or more neighborhoods and typically connect to arterials or other neighborhood collectors. Direct driveway connections to neighborhood collectors are restricted.

2. Subcollectors

   Subcollector streets are the second highest in the local roadway classification hierarchy. Subcollectors provide circulation within neighborhoods and typically connect to neighborhood collectors. Although they typically allow direct driveway access there are some project related exceptions.

3. Subaccess

   Subaccess streets are permanent cul-de-sacs or short loop streets that connect to subcollectors. Subaccess streets are not supportive of through traffic. They provide direct driveway connections.

4. Minor Access

   A minor access street is a permanent cul-de-sac or short loop street with low traffic volumes that provides circulation and access to off-street parking within a residential development boundary. Like subaccess streets, a minor access street allows direct driveway connections.

F. Private Streets

1. While public streets, owned and maintained by the City, usually best serve community street requirements, private streets may be appropriate for some local access streets. Usually these are minor access streets, either residential or commercial.

2. Private streets may be approved only when they are:

   a. Permanently established by right-of-way, tract or easement providing legal access to each affected lot, dwelling unit, or business and sufficient to accommodate required improvements, to include

provision for future use by adjacent property owners when applicable; and

b. Built to the Standards, as set forth herein, see figures x to x, and

c. Accessible at all times for emergency and public service vehicle use; and

d. Not obstructing, or part of, the present or future public neighborhood circulation plan developed in processes such as the City of SeaTac Comprehensive Plan, Transportation Master Plan, or Capital Improvement Program; and

e. Not going to result in land locking of present or future parcels; and

f. Not needed as public roads to meet the minimum road spacing requirements of these Standards; and

g. Designed to serve a maximum potential of 16 single-family dwelling units when the entire length of the private road system to the nearest public maintained road is considered. The maximum potential is the number of dwelling units that can possibly be served by the road when physical barriers, zoning or other legal constraints are considered; and

h. Maintained by a capable and legally responsible owner or homeowners' association or other legal entity made up of all benefited property owners; and

i. Clearly described on the face of the plat, short plat, binding site plan, site development permit or other development authorization and clearly signed at street location as a private street, for the maintenance of which the City is not responsible.

j. Provide sidewalks that connect to the public sidewalks at the adjoining public streets. These private sidewalks should provide connections through the project for public access to adjoining areas.

3. The City will not accept private streets for maintenance as public streets until such streets are brought into conformance with current SeaTac Municipal Code and these Standards.

4. Best Management Practices (BMP'S) should be used when maintaining private roadways.

5. The City will not accept private streets within short plats when the roads providing access to the plat are private and already have the potential to serve more than the number of lots specified in Section 2.2(F.2.g). If a short plat has been proposed on a property to which the only access is over private streets that fail to meet the standards specified in this section, the

proposal shall be denied.

TABLE 2.1(A) ARTERIALS (CURB ROADWAY SECTION)

Classification	Principal	Minor	Collector
Access	Controlled with very restricted access to abutting	Partially controlled with infrequent access to abutting properties.	Partially controlled with infrequent access to abutting
Arterial Spacing[1]	Under 1 mile	Under 1 mile	Under 0.5 mile
Design Speed[2]	See AASHTO	See AASHTO	See AASHTO
Horizontal Curvature	See AASHTO	See AASHTO	See AASHTO
Maximum Grade[3]	See AASHTO	See AASHTO	See AASHTO
Typical Traveled Way[4]	44 to 56 feet	44 to 56 feet	26 to 34 feet
Typical Roadway Width[4]	44 to 66 feet	44 to 66 feet	26 to 44 feet
Typical Lane Width	11 feet	11 feet	11 feet
Typical Left Turn Lane Width	12 feet	12 feet	12 feet
Typical Right Turn Lane Width	12 feet	12 feet	12 feet
Typical Widened Curb Lane Width[6]	14 feet	14 feet	14 feet
Typical Bike Lane Width	5 feet	5 feet	5 feet
Maximum Superelevation[5]	6%	6%	6%
Minimum Stopping Sight Distance	See Table 2.1	See Table 2.1	See Table 2.1
Minimum Entering Sight Distance	See Table 2.1	See Table 2.1	See Table 2.1
Minimum Right-of-Way Width[4]	60 feet	60 feet	60 feet
Minimum Sidewalk Width	5 feet	5 feet	5 feet
Curb Type	Vertical	Vertical	Vertical

[1] For arterial spacing, distances are given only as general guidelines, topographic conditions in SeaTac will affect these dimensions.
[2] Design speed is a basis for determining geometric elements and does not imply posted or legally permissible speed.
[3] Maximum grade may be exceeded for short distances.
[4] Criteria for federal and state funding may require greater traveled way, roadway and right-of-way widths. Greater widths also may be required for the construction of bike lanes, equestrian trails, and other non-motorized use.
[5] See Section 2.4 for allowed uses of superelevations greater than 6 percent.
[6] A widened curb lane is provided to accommodate bicycles.

TABLE 2.1(B) LOCAL STREETS

Classification	Neighborhood Collector	Subcollectors	Subaccess	Minor Access
Access	Restricted, Lots front on local access street where feasible.	As needed with some restrictions.[1]	Subaccess streets are not supportive of through traffic. Generally permanent cul-de-sacs or short loop[2] streets that connect to subcollectors.	Permanent cul-de-sacs or short loops with low traffic volumes that provide circulation and access to off-street parking within residential development limits.
Public or Private	Public	Public	Public	Public or Private (See Section 2.06)
Serving Potential Number of Lots or Dwelling Units	Over 100[3]	100 Maximum[4]	50 Maximum	16 Maximum
Design Speed[5]	35 mph	30 mph	Low Speed Curve (See Table 2.4)	Low Speed Curve (See Table 2.4)
Max Superelevation	See Section 2.4B	See Section 2.4B	See Section 2.4B	See Section 2.4B
Horizontal Curvature	See Table 2.2	See Table 2.2	Low Speed Curve (See Section 2.10)	Low Speed Curve (See Section 2.10)
Maximum Grade[6]	11%	12%	12%	12%
Minimum Stopping Sight	See Table 2.2	See Table 2.2	150 feet	150 feet
Typical Traveled Way	22 feet[7]	22 feet	22 feet	22 feet
Typical Roadway Width	32 feet[7]	28 feet	24 feet	22 feet
Minimum Right-of-Way Width	56 feet	48 feet	40 feet[8]	40 feet[8]
Minimum Half Street Width	20 feet	20 feet	20 feet	20 feet
Minimum One Way Paved Width	20 feet	20 feet	20 feet	20 feet
Minimum Sidewalk Width	5 feet	5 feet	5 feet	5 feet
Curb Type	Vertical	Vertical[1]/Rolled	Vertical/Rolled	Vertical/Rolled

[1] See Section 2.20 for urban exceptions. Also, when Section 2.20 applies the curbing shall be vertical.
[2] See Section 2.16 for one-way loops.
[3] See Section 2.19 for residential access connection requirements.
[4] See Section 2.20 for urban exception criteria.
[5] Design speed is a basis for determining geometric elements and does not imply posted or legally permissible speed.
[6] Maximum grade may be exceeded for short distances. See Section 2.11.
[7] Neighborhood collectors intersecting with arterials shall be 36 feet wide for the first 150 feet. See Section 4.05 for tapers.
[8] The right-of-way width may be reduced to minimum roadway width plus storm drainage, sidewalk, and one-foot beyond road improvements including sidewalks, provided that the curbing is vertical, the minimum clear zone requirements are met, and all potential serving utilities are accommodated within the right-of-way.

2.3

2.3 Special Development Areas

The City has adopted three subarea plans, each with standards specific to the subarea. See Figure X for subarea boundaries. Street cross-sections within the subareas vary from typical street cross-sections.

A. City Center
See figures x to x for subarea typical details. Reference SeaTac Municipal Code 15.300

B. South 154th Station Area
See figures x to x for subarea typical details. Reference SeaTac Municipal Code 15.305

C. Angle Lake District Station Area
See figures x to x for subarea typical details. Reference SeaTac Municipal Code 15.310

2.4 Horizontal Curvature and Sight Distance Design Values

A. The values shown in Tables 2.1 and 2.2 are minimum design values. A maximum of 8 percent superelevation may be used, upon approval of the Engineer, for design of improvements to existing arterials, as necessary, to meet terrain and right-of-way conditions. Superelevation run-off lengths on arterials and local streets shall be calculated in accordance with the WSDOT Design Manual.

B. Superelevation is not required in the design of horizontal curves on local streets; however, horizontal curves must be designed based on design speed and selected cross section as indicated in Table 2.2. This table is based on AASHTO "Low Speed Urban Streets" design methodology. Superelevation may be used on local streets as necessary to meet terrain and right-of-way conditions.

Table 2.2

ARTERIAL ROADS AND LOCAL STREETS
DESIGN VALUES

Design Speed (mph)	**20**	**25**	**30**	**35**	**40**	**45**	**50**
Horizontal Curvature, Normal Crown Section, Radius (Ft.)	107	198	333	510	762	1039	N/A
Horizontal Curvature for 6% Superelevation *(maximum allowable on neighborhood collectors and local access streets)* Radius (Ft.)	81	144	231	340	485	643	833
Horizontal Curvature for 8% Superelevation (*maximum allowable on arterials*) Radius (Ft.) (requires approval of the Engineer)	76	134	214	314	444	587	758
Stopping Sight Distance (Ft.)	115	155	200	250	305	360	425
Entering Sight Distance (Ft.)[1,2,3]	225	280	335	390	445	500	555

[1] See Section 2.13. Entering sight distance shown is for a stopped passenger vehicle to turn left onto a two-lane highway with no median and grades 3 percent or less. For other conditions the time gap must be adjusted and required sight distance recalculated. (See AASHTO – Intersection Control section).

[2] For multilane roadways: For left turns onto two-way roadways with more than two lanes, add 0.5 seconds for passenger cars or 0.7 seconds for trucks for each additional lane from the left, in excess of one, to be crossed by the turning vehicle.

[3] For minor and approach grades: If the approach grade is an upgrade that exceeds 3 percent; add 0.2 seconds for each percent grade for left turns.

2.5 Short Plats

This section is limited to residential short subdivisions of four lots or less. The City will not accept streets for maintenance within short plats when the roads providing access to the short plat are private and already have the potential to serve more than the number of lots specified in Section 2.2.F.2.g.

A. Residential Short Plats

1. When an residential short plat adds one additional lot to an existing lot that already has a permitted habitable residential dwelling unit, a paved shoulder and associated drainage improvements, including water quality and flow control facilities, may be constructed along the short plat frontage as an alternative to curb, gutter, and sidewalk improvements, provided:
    a. The surrounding roadways frontage improvements are of similar character; and,
    b. The potential development of the neighborhood is low and consists primarily of in-fill.
2. When the short plat access street extends more than 150 feet measured from the centerline of the nearest street intersection and serves or will serve more than two lots, a turnaround shall be provided. The turnaround may be a cul-de-sac or a hammerhead.
3. The total roadway width shall be 20 feet and the surfacing shall be asphalt.
4. The geometric design criteria shall meet the requirements of a private street.

2.6 Half Streets

A. A half street, figure 2-009, may be permitted as an interim facility when:

1. Such street shall not serve as primary access to more than 35 dwelling units or equivalent ADT; and
2. Such alignment is consistent with or will establish a reasonable circulation pattern; and
3. There is reasonable assurance of obtaining the prescribed additional right-of-way from the adjoining property with topography suitable for completion of a full-section road.

B. A half street shall meet the following requirements:

1. Right-of-way width of the half street shall be a minimum width of thirty (30) feet and sufficient to construct the roadway and related grading; and
2. The half street shall be graded consistent with locating the centerline of the ultimate road section as close as possible to the property line; and
3. Traveled way shall be surfaced the same as the designated road type to a width not less than 20 feet, sidewalk shall be constructed as required for the designated road type; and
4. Property line edge of street shall be finished with temporary curbing, shoulders, ditches, and/or side slopes in order to assure proper drainage, bank stability, and traffic safety; and
5. Half streets shall not intersect other half streets or exceed these requirements unless so approved by the Engineer, and
6. The intersection of a half street shall be improved to full width standards, and
7. Half-streets shall meet the requirements of Section 4.3 of these Standards.

C. When a half street is eventually completed to a whole street, the completing builder shall reconstruct the original half street as necessary to produce a proper full-width crowned street of a designated section.

D. Obtaining any right-of-way or easements to accomplish the above shall be the responsibility of the applicant or developer.

2.7 Cul-de-sacs and Hammerheads

A. Cul-de-sacs: Whenever a dead-end street serves or will serve more than six lots or extends more than 150 feet from centerline of accessing street to farthest extent of surfaced traveled way, a widened "bulb," figure 2-006 shall be constructed as follows:

1. Minimum right-of-way diameter across bulb section: 100 feet in a permanent cul-de-sac; 84 feet in a temporary cul-de-sac, with bulb area lying outside straight-street right-of-way provided as temporary easement pending forward extension of the street. Right-of-way may be

reduced, provided utilities and necessary drainage are accommodated on permanent easements within the development. See Section 2.18.

2. Minimum diameter of surfacing across bulb: 80 feet of paving in curb-type road; 80 feet total in shoulder-type road to include 64 feet of paving and eight-foot shoulders with compacted crushed surfacing material.
3. Where required on cul-de-sacs, sidewalks shall be constructed on both sides.
4. A permanent cul-de-sac shall not be longer than 600 feet measured from centerline of intersecting loop or through street to the center of the bulb section. On the basis of pertinent traffic planning factors such as topography, sensitive areas and existing development, the Engineer or designee will consider waivers to this requirement.
5. The Engineer or Engineering Review Manager may require an emergency vehicle access and/or an off-street walkway to connect a cul-de-sac at its terminus with other streets, parks, schools, bus stops, or other pedestrian traffic generators.
6. If a street temporarily terminates at a property boundary, serves or will serve more than six lots, or is longer than 150 feet, a temporary bulb shall be constructed near the development boundary. The paved bulb shall be 80 feet in diameter with sidewalks terminated at the point where the bulb radius begins. Removal of the temporary constructed cul-de-sac and construction of the extension of the sidewalk shall be the responsibility of the applicant/developer who extends the road. See figure 2-007.
7. The maximum cross slope in a bulb shall not exceed 6 percent in any direction.
8. Partial bulbs or eyebrows shall have a minimum paved radius and an island configuration as shown on figure 2-008. Island shall be offset two feet from edge of roadway.
9. Temporary cul-de-sac easements are extinguished, when applicable, through the right-of-way vacation process in accordance with SeaTac Municipal Code 11.05.090.
10. When a commercial access street change from a public to private designation a public turnaround shall be required, regardless whether another fire access turnaround is provided elsewhere, except as noted in Section 2.08(A).

B. Cul-de-sac Island: A cul-de-sac island is an optional feature for any cul-de-sac when bulb paved diameter is 80 feet or less; mandatory when bulb paved diameter exceeds 80 feet. If provided, island shall have full-depth cement concrete vertical curb and gutter. Minimum island diameter shall be 10 feet and there shall be at least 30-foot wide paved traveled way in a shoulder-type section and a 30-foot wide paved traveled way in a curb-type section around the circumference. An island shall be grassed or landscaped. The adjoining property owners are responsible for the landscaped and or grassed area within the island.

C. Hammerheads: A hammerhead may be used to satisfy the turnaround requirements where a private street serves or will serve 4 or fewer lots. See figure 2-011.

2.8 Alleys and Private Access Tracts

The geometric design criteria for subaccess streets shall be used to design alleys. An alley is considered a private road that provides secondary access.

A. Alleys

1. An alley shall serve a maximum of 30 dwelling units; have a maximum length of 400 feet, no dead ends or cul-de-sacs.
2. The tract width shall be sufficient to construct the alley and related grading. The minimum tract width shall be 20 feet with a pavement surface width of 18 feet (including curb) based on a 5-foot structure setback. For differing structure setback requirements, the alley surfacing width may be reduced if designed to provide for safe turning access to properties.
3. Paved surface shall have a curb on one side and cross slope in one direction to control surface runoff. It shall be a minimum length of 20 feet. See figure 2-010.
4. Public streets to which an alley connects or which provide access to the front boundary of the properties served by the alley shall be 28-foot minimum paved width with vertical curb. Where connecting streets are curb type sections, driveway cuts shall be required.
5. Modifications to existing alleys serving commercial or industrial properties, in accordance with the above, will be determined on a case-by- case basis subject to approval by the Engineering Review Manager.
6. Alleys shall not intersect other alleys.

B. Private Access Tracts

Private access tracts shall meet the geometric design criteria for minor access streets and the following:

1. A private access tract shall serve a maximum of six dwelling units.
2. Minimum tract width of 20 feet with a maximum length of 150 feet, measured from centerline of intersecting street to furthest extent of paved tract. In addition, if the tract width is inadequate to provide for the necessary drainage facilities and utilities serving the development, an easement may be required to provide additional width.
3. Pavement width shall be a minimum of 18 feet including curb (rolled, extruded, or thickened edge) and gutter in urban areas.
4. Pedestrian connections from the public sidewalks within the public right of way will be required within the private access tract.

2.9 Intersections and Low-Speed Curves

A. Intersections

1. Angle of intersection (measured at 10 feet beyond road classification right-of-way)	Minimum 85 degrees Maximum 95 degrees
2. Minimum centerline radius (2-lane) (radii are for minor or subaccess streets)	55 feet
3. Minimum curb radius	
a. Arterials and roads classified neighborhood collector or higher:	35 feet
b. Residential access street intersections where the highest classification involved is subcollector:	25 feet
4. Minimum right-of-way line radius:	25 feet

B. Spacing between adjacent intersecting streets, whether crossing or T-connecting, shall be as follows:

When highest classification involved is:	Minimum centerline offset shall be:
Principal arterial	1,000 feet
Minor arterial	500 feet
Collector arterial	300 feet
Neighborhood collector	150 feet
Any lesser street classification	100 feet

C. On sloping approaches at an intersection, landings shall be provided with grade not to exceed one foot difference in elevation for a distance of 30 feet approaching an arterial or 20 feet approaching a residential or commercial street, measured from future right-of-way line (intersected by an imaginary 2 percent grade extended from crowned road to right-of-way line) of intersecting street as provided in Section 2.4. See figure 2-013.

D. Roundabout intersections taking the place of standard intersections shall be designed in accordance with the WSDOT Design Manual.

E. Entering Sight Distance. See Sections 2.4 and 2.13 for design requirements. See Tables 2.2 for specific entering sight distance values based on required design speed.

F. Low Speed Curves: applicable to subaccess and minor access streets only.

	Up to 75°	**75° & Over**
1. Minimum centerline radius (two-lane):	100 feet	55 feet
2. Minimum curb radius:	80 feet	35 feet[1]
3. Minimum right-of-way line radius:	70 feet	25 feet

2.10 Roundabouts

A. Roundabouts may be considered at intersections within the City. Proposed roundabouts shall be designed in accordance with WSDOT Design Manual, Chapter 3120.

2.11 Maximum Grade and Grade Transitions

A. Maximum roadway grade as shown in Tables 2.1 (A) and 2.1 (B) may be exceeded for short distances of 300 feet or less, upon showing that no practical alternative exists. Grades greater than 15 percent that exceed the 300-foot distance must be approved by the Engineer or designee through the road variance process. Additionally, the maximum grade shall not exceed 15 percent unless verification is obtained from the Fire Marshal that additional fire protection requirements will be met and the applicant's engineer must demonstrate what method will be used to ensure drainage will be controlled. Grades exceeding 12 percent shall be paved with hot mix asphalt (HMA) or portland cement concrete (PCC).

B. Grade transitions shall be constructed as smooth vertical curves, without angle points, except in intersections where the difference in grade is one percent or less and upon approval of the Engineer or Engineering Review Manager.

2.12 Stopping Sight Distance

Stopping Sight Distance shall be calculated in accordance with "A Policy on Geometric Design of Highways and Streets" (AASHTO).

2.13 Entering Sight Distance

Entering Sight Distance shall be calculated in accordance with "A Policy on Geometric Design of Highways and Streets" (AASHTO).

2.14 Roadside Obstacles

WSDOT Clear Zone distances shall be used for evaluation, placement and relocation of roadside features within the City right-of-way.

Intersection/driveway sight triangles will be evaluated based upon "A Policy on Geometric Design of Highways and Streets" (AASHTO). Sight distance requirements for each approach will be those indicated in the appropriate table.

2.15 Medians (Optional Design Feature)

Median width shall be additional to, not part of the specified width of traveled way.

Edges shall be similar to outer road edges: either extruded or formed vertical curb; or shoulder and ditch; except that median shoulders shall be four feet in width minimum. Twenty feet of drivable surface (which includes traveled way and paved shoulders, if any) shall be provided on either side of the median. The median may be grassed, landscaped, or surfaced with aggregate or pavement. Median shall be designed so as not to limit turning radii or sight distance at intersections. No portion of a side street median may extend into the right-of-way for an arterial street. The Engineer or Engineering Review Manager may require revisions to medians as necessary to provide for new access points and to maintain required sight distance. Non-yielding or non-breakaway structures shall not be installed in medians. Street trees may be planted in the median subject to approval by the Engineer or designee.

2.16 One-Way Streets

Local access streets, including loops and bulbs, may be designated one-way upon a finding by the Engineer that topography or other site features make two-way traffic impractical.

2.17 Bus Zones and Turn-Outs

During the design of arterials and neighborhood collectors, the designer shall contact the transit agencies and the local school district to determine bus zone (stop) locations and other bus operation needs. The project shall provide wheelchair accessible landing pads at designated bus zones, and where required shall include turn-outs and shelter pads. Pedestrian and disabled access improvements within the right-of-way to and from the bus loading zone or turn-out from nearby businesses or residences shall also be provided as part of the road improvement. Surfacing for bus zones and turnouts shall at a minimum meet the requirements of Section 4.01 of these Standards. Metro's publication, "Metro Transportation Facility Design Guidelines," or other applicable agencies guidelines may require additional surfacing requirements.

2.18 Slope, Wall, and Drainage Easements and Right-of-Way Reduction

A. Easements: Either the functional classification or particular design features of a road may necessitate slope, sight distance, and wall or drainage easements beyond the right-of-way line. The Engineer or Engineering Review Manager may require such easements in conjunction with dedication or acquisition of right-of-way. The design engineer must document there is sufficient right-of-way to include cuts and fills and necessary clear zone.

B. Right-of-Way Reduction: The right-of-way width may be reduced to minimum roadway width, plus storm drainage, sidewalk, one-foot behind sidewalk, provided that potential serving utilities are accommodated within permanent public easements. The reduced right-of-way, plus easement, at a minimum shall allow for construction and maintenance of the sidewalks, one-foot behind sidewalk, planting strips, drainage facilities, and sign placement. Additionally, they shall allow for sidewalk widening around mailbox locations.

2.19 Access and Circulation Requirements

No residential street shall serve more than 100 lots or dwelling units unless the street is connected in at least two locations with another street that functions at a level consistent with Sections 2.2. Additionally, every effort shall be made to provide a second access through the building permit process.

A. The second access requirement may be satisfied through use of connecting a new street to an existing street in an adjacent neighborhood if:
    1. No other practical alternative exists, or
    2. Existing street was previously stubbed indicating intent for future access, or
    3. An easement has been recorded specifically for said purpose.

B. The second access requirement may cause the construction of an off-site road connecting the development to a suitable serving street.

C. These provisions are not intended to preclude the state statute on land locking.

D. This section does not preclude a non-residential project from gaining access through a residential development. Traffic impacts for such projects will be analyzed during the environmental and permitting process.

2.20 Exception for Maximum Dwelling Units on Urban Subcollectors

Proposed subcollectors serving new urban area developments with an average density of seven to eight dwelling units per acre and that meet the access requirements of Section 2.19 may serve up to 250 dwelling units, if approved by the Engineering Review Manager. In this situation, the curbing shall be vertical. Prior to approval, the applicant must submit a traffic circulation study demonstrating a balanced traffic flow of less than 1500 vehicles per day past any access point. Street trees shall be mandatory along subcollectors serving higher densities of seven to eight dwelling units per acre and shall be in conformance with Section 5.03.