

SECTION 3 STREET DESIGN

3.01 GENERAL

For purposes of geometric and structural design, streets shall be classified according to the following table. The City Engineer will determine the class of all proposed streets. Lane configurations, striping details, and related roadway layout information are provided in the City Standard Details. Any deviation from the following standards shall require the approval of the City Engineer. Street standard shown below in **underlined bold italic** print apply to streets located within the North Area, (except as modified within the Washington Specific Plan Area and the Bridge District Specific Plan Area – see Specific Plans for this information), all as shown on Table 3-1. Street Standards shown below in plain print apply to streets located within the Southport Area as shown in Table 3-1.

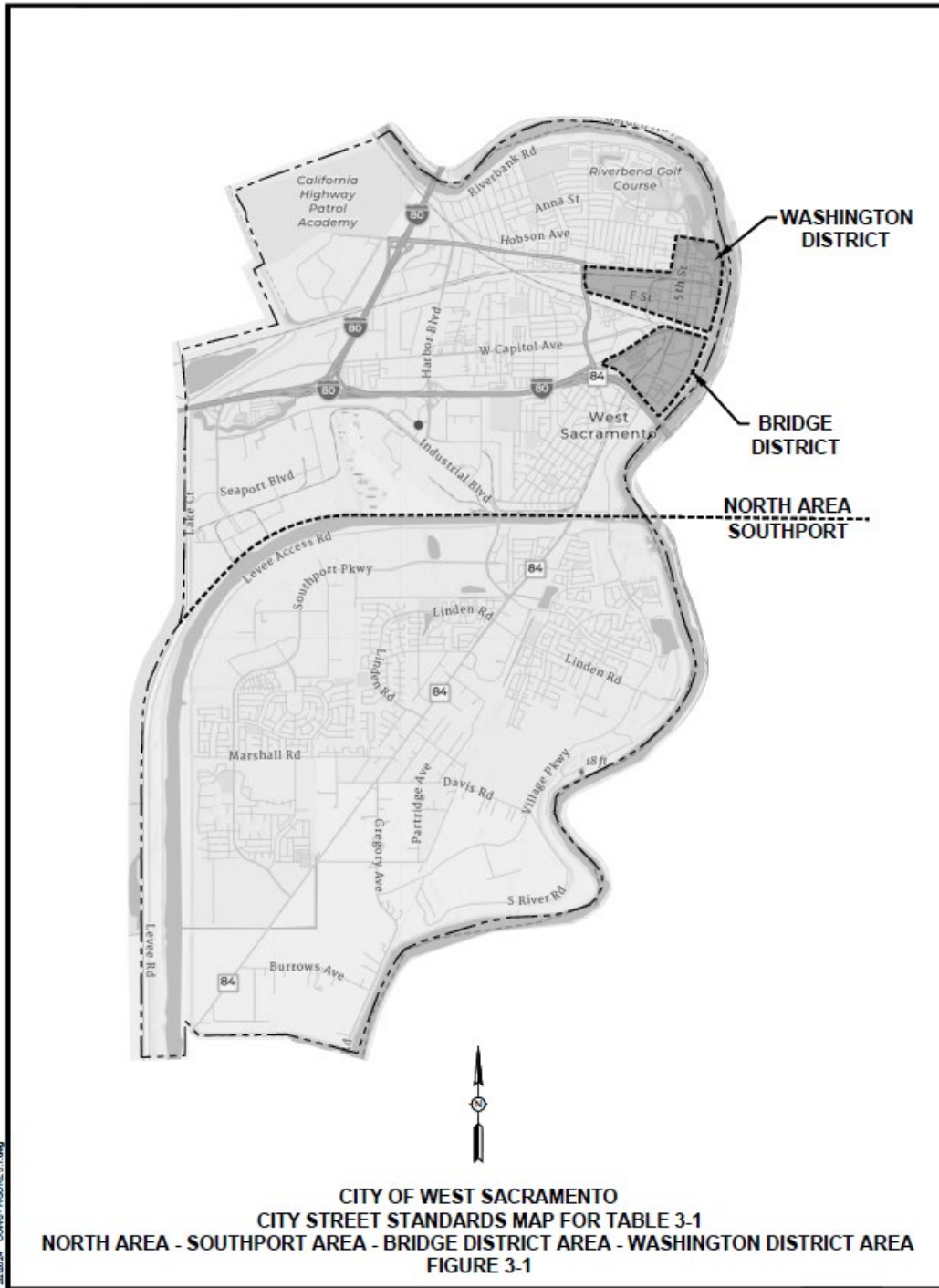
Table 3-1 - City Standard Details

Roadway Class ³	Right of Way (ft)	Curb Face to Curb Face (ft)	Intersection Face of Curb Radius ⁷ (ft)	Traffic Index ¹	Median Width (ft)	Number of Travel Lanes	Bike Lane Width ⁴ (ft)	Minimum Centerline Radius ² (ft)	Sidewalk Width ³ (ft)	Minimum Landscape (ft)
Loop Pkwy- Maximum (Minor/Major) ⁸	136/ 158	76/98	50	10	16 ¹³	4/6	8 ⁴	1150	6	7.5
Loop Pkwy- Minimum (Collector)	108	54	50	7	16 ¹³	2	8 ⁴	800	6	7.5
Major Arterial (4 Lane / 6 Lane)	136/ 158	76/ 98	50	10	16 ¹³	4/6	8 ⁴	1150	6	7.5
<u>Major Arterial</u>	<u>89/ 111</u>	<u>76/ 98 min</u>	<u>50</u>	<u>10</u>	<u>16¹³</u>	<u>4 (min)</u>	<u>8⁴</u>	<u>800</u>	<u>6</u>	<u>N/A</u>
Minor Arterial	112	60	50	9	N/A	4	8 ⁴	800	6	7.5
<u>Minor Arterial</u>	<u>73</u>	<u>60</u>	<u>50</u>	<u>9</u>	<u>N/A</u>	<u>4</u>	<u>8⁴</u>	<u>800</u>	<u>6</u>	<u>N/A</u>
Res. Collector (Back/Back Yard)	74	34	30	7	N/A	2	6	550	5	7.5
Res. Collector (Back/Side Yard)	67	34	30	7	N/A	2	6	550	5	7.5
Res. Collector	45	34	30	7	N/A	2	6	250	5	N/A
Residential Local	60	34	25	7	N/A	2	N/A	250	5	7.5
<u>Residential Local</u>	<u>45</u>	<u>34</u>	<u>25</u>	<u>7</u>	<u>N/A</u>	<u>2</u>	<u>N/A</u>	<u>250</u>	<u>5</u>	<u>N/A</u>
Residential Cul-de-sac	58	32	25	6	N/A	2	N/A	250	5	7.5
<u>Residential Cul-de-sac</u>	<u>43</u>	<u>32</u>	<u>25</u>	<u>6</u>	<u>N/A</u>	<u>2</u>	<u>N/A</u>	<u>250</u>	<u>5</u>	<u>N/A</u>
Rural Roads ⁵	50	24 ¹⁰	25	6	N/A	2	N/A	300	N/A	N/A
Industrial Collector ⁹	68	56	50	10	N/A	3	N/A	800	5.5	N/A
Commercial / Industrial Local ⁹	56	44	50	10	N/A	2	N/A	600	5.5	N/A
<u>Commercial / Industrial Local⁹</u>	<u>56</u>	<u>44</u>	<u>50</u>	<u>10</u>	<u>N/A</u>	<u>2</u>	<u>N/A</u>	<u>600</u>	<u>5.5</u>	<u>N/A</u>
<u>Alley</u>	<u>20</u>	<u>20¹¹</u>	<u>25</u>	<u>6</u>	<u>N/A</u>	<u>2</u>	<u>N/A</u>	<u>250</u>	<u>N/A</u>	<u>N/A</u>

Notes for Table 3-1

1. The Traffic Index may be changed at the discretion of the City Engineer if traffic warrants a different value.
2. Actual design of horizontal curves shall be based on the design speed of the street as determined by the City Engineer. Use of expanded corners shall be limited to projected low volume residential, commercial, and industrial streets. Conditions where conformance to minimum horizontal centerline radius is not practical shall be subject to the approval of the City Engineer.
3. Sidewalk widths, where no landscape strip is adjacent to the curb, shall be measured from the back of curb to the other edge of the sidewalk for either rolled or vertical curbs, and shall not include width of the curb itself.
4. Bike lane width includes a six (6) foot wide striped lane measured from the face of curb. Minor arterial and higher roadway classifications shall be required to add a two-foot-wide striped buffer area next to the outside traffic lane and a green coating delineating the bike lane on the roadway pavement. Bikeway designs shall conform to the current edition of the State Highway Design Manual and the current edition of the City Bicycle, Pedestrian, and Trails Master Plan. Roadway classifications requiring bike lanes shall not allow on-street parking on both sides of the roadway, unless modified by the City Engineer or required within a City Specific Plan Area.
5. Rural roads may only be constructed when providing access to properties zoned Rural Residential, Rural Estates, Agricultural, or Planned Residential with a minimum one (1) acre lot size. Roads exceeding the limits for the Rural Road Standards shall be considered on a case-by-case basis.
6. Sidewalks shall be separated from the curb by a landscape parkway strip, except for streets located within the North Area as shown in Table 3-1 and all cul-de-sac bulbs and expanded corners, where they shall be adjacent to the curb. Sidewalks within industrial areas of Southport shall be adjacent to the curb.
7. An intersection curb return radius may be adjusted, at the discretion of the City Engineer, to accommodate traffic signal control equipment. Property line radius at intersections shall be consistent with streets on the opposite side of the intersection, or as otherwise approved by the City Engineer. Where unlike opposite classes of streets intersect a cross street, the largest curb return radius shall apply.
8. The Loop Parkway width and landscape treatment shall be reduced by five feet on each side of the street within Rural Residential and Rural Estate areas.
9. No on-street parking within 1, twenty (20) feet of a driveway; 2, twenty (20) feet of a vehicle approach side of any unmarked and marked crosswalk; 3, fifteen (15) feet of any crosswalk where a curb extension is present; and 4, fifteen (15) feet on either side of a fire hydrant.
10. Dimension is edge of pavement to opposite edge of pavement.
11. Curb and gutter may be replaced by valley gutter at centerline of the alley. In this case, the width shall be measured from edge of pavement to edge of pavement. The width shall be increased to 26' where required to meet Fire Code requirements.
12. All public roadways shall include a twelve-and-one-half (12.5) foot Public Utility Easement (PUE) dedication on each side of the edge of the right-of-way unless otherwise modified by the City Engineer.
13. Place Pedestrian Safety Landings on median islands on the Loop Road, arterials, and collectors where raised medians exist. Mid-block crossings will be specifically identified and approved by the City Engineer.

Figure 3-1 - City Street Standard Map



3.02 STRUCTURAL SECTION

- A. FLEXIBLE PAVEMENT DESIGN - Street sections shall be calculated based on “R” values reported in the Soils or Geotechnical Report and obtained from material gathered from the level of the proposed subgrade using the State of California Department of Transportation design method and Traffic Indexes listed in Table 3-1. If subgrade has an “R” value of ten (10) or less, geotextile fabric shall be installed on subgrade prior to placement of Aggregate Base (AB), or Aggregate Subbase (ASB), material. In addition, the City Engineer may require the installation of edge drains in soils where the “R” value of the subgrade is ten (10) or less. The Soils (Geotechnical) Engineer may submit for treatment of the subgrade material with lime or cement if suitable soils exist. This may be considered in lieu of geotextile fabric with written approval from the City Engineer. Private roads are to be constructed using public road standards.
- B. RIGID PAVEMENT DESIGN - Rigid pavement shall be Portland cement concrete over cement treated base, aggregate base, or native subgrade as detailed in the project Soils Report. Portland cement concrete roadways shall be designed and constructed with the Portland cement concrete mix described in the City Standard Construction Specifications. Unless otherwise provided in the Soil Report, the minimum pavement thickness shall be determined by the City Engineer. Private roads are to be constructed using public road standards. Rigid pavement surface treatments shall be as indicted in Table 3-2 below:

Table 3-2 - Rigid Pavement Surface Treatment

Roadway Designation	Minimum Traffic Index	PCC Pavement Surface Treatment
Residential Cul-de Sac, Rural Road & Alley	6	Trowel & Broom Finish
Residential Local, Residential Collector & Loop Parkway Collector	7	Trowel & Broom Finish
Commercial / Industrial Local & Collector Minor Arterial and Higher-Level Roadway	9 & 10	Travel Lanes: Diamond Grind Bike Lanes: Trowel & Broom Finish

Note: Pavement grinding shall be in accordance with State Standard Specifications Section 42-3.

3.03 OPEN TRENCHING

- A. PERMIT REQUIRED - All pavement removal, open trenching, and potholing within City rights-of-way or easements shall be subject to a City encroachment permit. A City encroachment permit must be obtained prior to start of any construction activity within the City rights-of-ways or easements.

- B. MORATORIUM - Open trenching shall be prohibited on all newly paved or newly overlaid streets or reconstructed streets for a period of three (3) years unless approved by the City Engineer. Potholing, bore pits and adding service laterals in these prohibited areas shall only be allowed upon prior approval of the City Engineer. If permitted, special pavement restoration requirements shall be imposed on a case by case basis at the discretion of the City Engineer. For a complete list of streets currently under moratorium, please consult the City Capital Projects Department.
- C. TRENCH AND POTHOLE BACKFILL - Open trenches and potholes within City right-of-way shall be backfilled and compacted per Standard Details 110 through 115 of the Standard Details. Slurry backfill of potholes may be permitted with prior approval by the City Engineer.
- D. DRY UTILITY CONSTRUCTION - Dry utilities shall be placed to avoid utility conflicts, with sufficient depth and horizontal separation from other utilities, as approved by the City Engineer. Use of joint trenches are preferred for major dry utility improvements. Cover for dry utilities shall be a minimum of sixty (60) inches unless approved by the City Engineer. Trenchless utility construction will only be allowed upon submittal of a detailed construction plan for utility installation and approval by the City Engineer. Potholing of existing utilities located within the path of the trenchless construction shall be conducted, by permit, and results shown on the construction plan.
- E. EXISTING FACILITIES IMPACTED BY TRENCH WORK - Existing signs, striping, pavement markings, legends, guardrails, markers, trees, shrubs, fences, walks, steps, etc., that are disturbed shall be replaced and restored to their original condition or better, to the satisfaction of the City of West Sacramento. Final replacement or restoration shall occur within ten (10) calendar days of backfill.
- F. PROTECTION OF EXISTING TREES - No open trenching or boring shall occur within the drip line of any existing trees without a City tree permit.

3.04 PARTIAL STREETS

- A. ALLOWANCES - At the discretion of the City Engineer, partial streets may be permitted along the boundary of a subdivision or other private development where the full right-of-way cannot be dedicated. When permitted, the developer shall, as a minimum, dedicate sufficient right-of-way and construct a full half street section for the appropriate class of street indicated above along the frontage of the development and ten (10) foot wide paved roadway with four (4) foot wide gravel shoulder along the opposite side. Construction of partial streets shall be limited to residential streets only.

3.05 PRIVATE ROADS

- A. Private roads shall be designed and constructed in conformance with these Standards

3.06 GEOMETRICS

- A. INTERSECTION SPACING - All streets shall intersect at or as near right angles as is practicable. The centerlines of streets that intersect on opposite sides of another street shall coincide, or the offset distance between the intersecting streets shall equal or exceed five hundred (500) feet for arterials and Loop Parkway roadways. The distance between intersections for all other streets, centerline to centerline, shall be at least two hundred (200) feet with one exception. This exception is when a residential local street intersects a collector street where the intersection has no more than three (3) legs, the first intersection on the residential local street may not be less than one hundred fifty (150) feet, centerline to centerline, from the collector to the next residential local street or residential cul-de-sac.
- B. CURVE DATA REQUIREMENTS - Curve data for street centerline, right-of-way, and face of curb alignment shall be tabulated in a box shown on the improvement plans. Centerline curve data shall include curve length, delta, tangent, curve number, and radius.
- C. GUTTER SLOPE - Gutter flow line grades shall have a minimum slope of thirty-two ten thousandths (0.0032) ft/ft. Maximum grades shall be determined by the City Engineer on a case-by-case basis.
- D. CROSS SLOPE - Cross slope on all streets shall be as shown on the Standard Details. Any deviation from these standard cross slopes shall be subject to the approval of the City Engineer. For new construction, the maximum cross slope shall be two (2) percent. For reconstruction projects, the maximum cross slope may be increased to three (3) percent with special approval by the City Engineer. Minimum cross slope shall not be less than one (1) percent unless otherwise approved by the City Engineer.
- E. LONGITUDINAL SLOPE - The grade of a fire apparatus access road shall be a maximum of 12 percent. The first ten feet of approach and departure for fire apparatus access roads shall have a maximum grade of 8.5 percent.
- F. VERTICAL CURVES - The minimum vertical curve length allowable at the intersection of two grades that exceed two (2) percent shall be fifty (50) feet. Actual design of the vertical curve shall be based on the design speed of the street and stopping sight distance and shall conform to the State Highway Design Manual Section 204.4 unless otherwise specifically approved by the City Engineer. However, vertical curves may be omitted where the algebraic difference in grades does not exceed two (2) percent.
- G. STOPPING SIGHT DISTANCE - The minimum stopping sight distance over any segment of the roadway on any street shall conform to the State Highway Design Manual unless otherwise specifically approved by the City Engineer. No obstructions shall be located closer than twenty-five (25) feet from the intersection of the right-of-way line extensions unless specifically approved by the City Engineer.

- H. DEAD END LENGTH - Except for rural roads, all new residential, commercial, and industrial cul-de-sacs may not exceed six hundred (600) feet in length as measured from the centerline of the intersecting street to the radius point of the cul-de-sac bulb.

For rural roads serving any parcel with a gross area between one (1) and four-point ninety-nine (4.99) acres, dead end lengths may not exceed one thousand three hundred twenty (1,320) feet in length as measured from the centerline of the intersecting street to the radius point of the cul-de-sac bulb.

For rural roads serving any parcel with a gross area equal or greater than five (5) acres, dead end lengths may not exceed two thousand six hundred forty (2,640) feet in length as measured from the centerline of the intersecting street to the radius point of the cul-de-sac bulb.

Turnarounds (cul-de-sac bulbs) shall be provided on any dead-end road in excess of one hundred fifty (150) feet in length as measured from the centerline of the intersecting street. The cul-de-sac radius and bulb transition geometrics shall be as shown on the Standard Details.

- I. ADDITIONAL LANES - At intersections, additional right-of-way or reduction of landscaping within the median or adjacent to the right-of-way boundary may be required to accommodate additional left turn, right turn, or through lanes.

3.07 APPURTENANCES

- A. DRIVEWAYS - For the purposes of the following, driveway widths do not include width of transitions, and the top of driveway transition constitutes the edge of driveway. Driveways shall not exceed 150 feet in length, at which point they shall be considered emergency access roads and meet the requirements of Section 3.06 K of this Section.
 - 1. No driveway, including sidewalk/curb transitions, shall be permitted within five (5) feet of a property line on multi-family and commercial properties. Driveway locations for single family property, including sidewalk/curb transitions, shall not be permitted within two (2) feet of a property line unless a property fronts on a cul-de-sac bulb in which case a driveway may be constructed up to the property line. Special consideration by the City Engineer may be given for unusual circumstances.
 - 2. The minimum width for single family residential and duplex driveways shall be ten (10) feet. The maximum driveway width shall be thirty (30) feet. If the length of the private driveway is greater than one hundred fifty (150) feet, driveway design shall comply with the requirements of the latest edition of the California Fire Code.
 - 3. The minimum width for two-way commercial, industrial, and multi-family residential driveways shall be twenty (20) feet. For non-residential one-way driveways, the minimum width shall be ten (10) feet. The maximum driveway width shall be forty-five (45) feet.

4. The minimum distance between driveways serving the same parcel shall not be less than twenty-one (21) feet as measured along the face of curb from the near edges of the top of driveway transitions.
5. Not more than forty (40) percent of the frontage of any parcel shall be occupied by driveways except on cul-de-sac bulbs and expanded corners.
6. The design of driveways shall conform to the Standard Details.
7. The maximum number of driveways for any parcel shall conform to the following*:

Table 3-3 - Maximum Number of Driveways per Parcel

Street Frontage Length (feet)**	Maximum No. of Driveways
Up to 100	One
101 to 400	Two
Over 400	More than two shall be subject to approval by the City Engineer

Notes for Table 3-3

* With special approval by the City Engineer, the maximum number of driveways may be increased by one to provide a secondary, accessory driveway for ADU access or RV parking per the Zoning Ordinance and if on-site parking is provided behind the building setback line. The design of such driveways shall comply with the Standard Details. Driveways shall be located such that a twenty-one (21) foot minimum on-street parking area is maintained across the property frontage on the street. Measurement shall be from top of driveway transition to top of driveway transition.

** For corner lots, street frontage length shall be measured as the sum of all continuous street frontage.

8. No residential driveway access shall be allowed on any major or minor arterial street or on Southport Area collector streets.
9. On commercial, industrial, and arterial streets located in the North Area as shown on Figure 3-1, driveways shall be located at least seventy-five (75) feet from all intersections, as measured from the projected near face of curb line of the intersecting street. On commercial and industrial streets located in the Southport Area, driveways shall be located at least one hundred fifty (150) feet from all intersections, measured likewise. If physical constraints or other conditions exist which, in the judgment of the City Engineer make it impractical to meet these standards, then driveways may be located closer to the intersection provided that measures are taken to prohibit or reduce left turn movements in and out of the driveway. For all other streets, driveways shall be located as far away from intersections as is practicable and as determined by the City Engineer.
10. Driveways entering rural roads shall be provided with a minimum twelve (12) inch culvert under the driveway where roadside ditches exist (see Division I, Section 4.08). The design of rural driveways, including the profile grade, shall be subject to the approval of the City Engineer.

11. Right Turn Deceleration/Acceleration Lanes for Driveways: If such lanes are required for specific development projects, such requirements shall be provided by the City Engineer on a case-by-case basis.
 12. Left Turn Deceleration/Acceleration Lanes for Driveways: If such lanes are required for specific development projects, such requirements shall be provided by the City Engineer on a case-by-case basis.
- B. BUS TURNOUTS - Bus turnouts shall be provided at the intersection of all arterial streets, and at all other locations directed by the City Engineer. Space for bus turnouts shall be provided outside of the travel lane and shoulder of the roadway. The design of bus turnouts shall comply with the City Standard Specifications, including Standard Detail #261, or as required by the City Engineer or the local or regional transit authority.
- C. PARKING - For all single-family parcels, at least one on-street parking space, twenty-one (21) feet in length measured along the face of curb, shall be provided for each single-family lot along the street frontage of the lot. The parking space shall not encroach within any driveway, including the driveway transitions. This requirement does not apply to cul-de-sac bulbs, where a single-family parcel is not adjacent to the street frontage, expanded corner bulbs, or where the on-street parking space would be within twenty (20) feet of a marked or unmarked crosswalk. Parking spaces shall not be considered in any way for the exclusive use or under the control of the parcel. All curbs within twenty (20) feet of a marked or unmarked crosswalk or within fifteen (15) feet of any crosswalk where a curb extension is present shall be posted as a no parking zone with signs in accordance with CAMUTCD standards.
- D. VALLEY GUTTERS - With the exception of public alleys, valley gutters will not be allowed within the public right-of-way or public easement unless otherwise approved by the City Engineer.
- E. SIDEWALKS, CURBS, AND GUTTERS
1. Sidewalk widths and landscape parkway strips shall comply with Table 3.01. Wider and/or separated sidewalks may be required by the City Engineer in certain situations or required by approved City Specific Plans.
 2. The design of sidewalks, curbs and gutters shall conform to the Standard Details, or as required by the City Engineer. Sidewalks are required on both sides of all streets.
 3. ADA compliant accessible ramps shall be installed at the center of curb returns at all intersections, and at all other locations specified by the City Engineer.
 4. Projections of side yard lot lines shall be clearly marked with a "+" chiseled or sawcut in the concrete at the top edge of the back of sidewalk.
 5. All new streets, including residential streets, shall be constructed with vertical curb and gutter conforming to the Standard Details.

Type "A" curb or Median and Barrier curb shall be used for median islands. Type "B" curbs and AC dikes shall be limited to on-site installation outside of the public ROW unless otherwise approved by the City Engineer.

6. For retrofit sidewalk construction, any existing improvements located in the sidewalk area including, but not necessarily limited to, joint poles, fire hydrants, streetlights, meter boxes, and utility vaults shall be relocated to the back of sidewalk unless otherwise approved by the City Engineer.
- F. SURVEY MONUMENTS
1. Survey monuments shall be installed at the following locations:
 - a. On the public street centerline at intersections, at the beginning and end of all curves, and at the centerline radius of all cul-de-sac bulbs and expanded corners.
 - b. At intersections of the subdivision boundary with public street centerlines.
 - c. At any other locations it is necessary to enable the subdivision boundaries to be retraced or re-established as determined by the City Engineer.
 2. All monuments within the street right-of-way shall conform to the Standard Details and shall clearly show the registration number of the CA Registered Civil Engineer or Land Surveyor under whose responsible direction the monuments are placed. All monuments placed shall be recorded with the County of Yolo as a Record of Survey map or other appropriate legal document and a copy of the recorded document provided to the City Engineer. All existing monuments shall be protected and noted on the plans for protection.
- G. SIGNING, STRIPING, AND BARRICADES
1. Street name signs and all regulatory and warning signs shall be installed by the developer at their expense.
 2. Permanent barricades shall be installed where improvements cover only a portion of the ultimate development or as directed by the City Engineer. The barricade shall be constructed, erected, painted, and signed in accordance with the Standard Details.
 3. All striping and pavement markings shall be thermoplastic unless otherwise specified by the City Engineer.
- H. EASEMENTS - Public utility, sewer, water, drainage, landscaping, fence, sound walls, and all other public easements shall be located as required by the City or utility companies, these Design Standards, and as directed by the City Engineer.
- I. STREETSCAPES - Median sections four (4) feet or less shall be paved or filled with materials subject to approval of the City Engineer. The remainder of the median shall be landscaped with low maintenance drought tolerant landscaping and medium to large canopy shade trees consistent with the City's Landscape Development Guidelines ([Landscape Guidelines](#)). Other Streetscape improvements required by Approved City Specific Plans for projects within their designated areas, shall be included in the Public Improvement Plans and constructed as part of the proposed project and consistent with the City's Landscape Design Guidelines.
- J. BIKE LANES - On-street bike lanes are required on all arterials and collectors located Citywide as outlined in the Standard Details and on streets identified within the most current City Bikeway, Pedestrian, and Trails Master Plan. The minimum width of bike lanes shall be in accordance with Table 3-1. Bike lane width requirements may

increase resulting from design speed as determined by the City Engineer. ([Bikeways and Trail Plan](#))

K. EMERGENCY ACCESS

- B. Except for rural roads, at least two connections with an existing, improved public street, or with a future street extension approved by the City, shall be provided for all proposed roadways, except when the dead-end length of the roadway does not exceed six hundred (600) feet.

For rural roads, at least two (2) connections with an existing, improved public street, or with a future street extension approved by the City, shall be provided for all proposed roadways, except when the dead-end length of the roadway does not exceed the maximum lengths specified in Section 3.06H of these Design Standards, and when no more than thirty (30) residences are to be served by the road. When more than thirty (30) residences are to be served by the road, the maximum dead-end length of the roadway shall not exceed six hundred (600) feet unless otherwise required by the City Fire Department or City Engineer.

2. When the secondary access is to be provided with a future street extension, then a temporary emergency access road or acceptable alternative shall be required as determined by the City Engineer and the City Fire Department.

Temporary emergency access roads shall have a minimum paved width of twenty feet (20) and have a minimum structural section of two (2) inches AC over four (4) inches AB. An access gate and Knox lock or other locking devices may be required on gates per the City Engineer and the City Fire Department. Gates shall be provided at all points of access to public streets as approved by the City Engineer and the City Fire Department. Gate width and configuration will be set by City Fire Department. Said roads shall be contained within an emergency access easement.

Emergency access roads shall have the following minimum paved widths and turnarounds:

<u>Length</u>	<u>Width</u>	<u>Turnaround Required</u>
0' -150'	20'	None Required
151' - 500'	20'	Required
501' or greater	26'	Required