



Phone: 916.683.7111  
Fax: 916.691.3168

Web: [www.elkgrovecity.org](http://www.elkgrovecity.org)

8401 Laguna Palms Way  
Elk Grove, California 95758

## Standards Update Transmittal

Reference Number: 2021-TBD  
Standards: Improvement Standards Manual, Section 4-3, 4-7C, 4-9, 4-11, 4-14, 4-15  
Standard Drawing, ST-23, ST-24, ST-25

### Update:

1. Modification to Improvement Standards:
  - a. Section 4-3, Street Design Standards: Modify Table 1, Street Design Parameters to have a right-of-way width of 44' with a back-of-curb-to-back-of-curb width of 34'.
  - b. Section 4-3, Street Design Standards: Modify Minor Residential graphic to have a right-of-way width of 44' with a back-of-curb-to-back-of-curb width of 34'
  - c. Section 4-7 C., Intersections and Driveways: Street width references updated in accordance with updated Table 1 in Section 4-3.
  - d. Section 4-9, Intersection Corner Radii and Bulb-Outs: Street width references updated in accordance with updated Table 1 in Section 4-3.
  - e. Section 4-11, Partial Street: Street width references updated in accordance with updated Table 1 in Section 4-3.
  - f. Section 4-14, Curb and Gutter: Street width references updated in accordance with updated Table 1 in Section 4-3.
  - g. Section 4-15, Cross Gutter: Street width references updated in accordance with updated Table 1 in Section 4-3.
2. Modification to Standard Drawings:
  - a. ST-23, CUL-DE-SAC: update the right-of-way widths and change the back-of-curb radius at the bulb from 36' to 41'. Street sections called out in St-23 will also be updated.
  - b. ST-24, BULB-OUT DETAIL: Street width references updated in accordance with updated Table 1 in Section 4-3 of City Standards.
  - c. ST-25, 90 DEGREE INTERSECTION ELBOW: Street width references updated in accordance with updated Table 1 in Section 4-3 of City Standards.

### Effect of Update:

1. To provide CSD Fire with at least a 32' wide path of travel from flow line to flow line on a Minor Residential Street section and a 40' radius to the flow line at the bulb of a Cul-de-sac.

Request for Update Initiated By:

Development Services

Update Reviewed for Conformity and  
Consistency to Standards:

*Shoab Ahrary*

3/2/2022 | 1:18 PM PST

Shoab Ahrary, PE, ESD Manager

Date

Update to Standards Approved:

*Jeffrey R. Werner*

3/2/2022 | 7:15 PM PST

Jeffrey R. Werner, PE, City Engineer

Date

**TABLE 1**  
**Street Design Parameters**

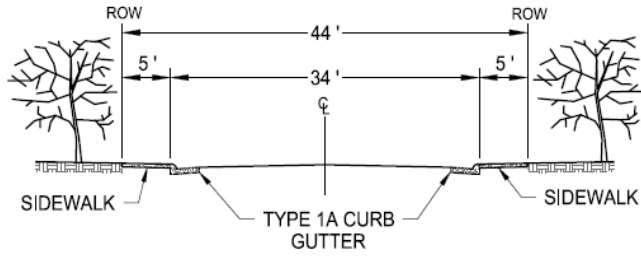
Parameter	Minor Residential <sup>(1)</sup>	Primary Residential <sup>(2)</sup>	Collector <sup>(3)</sup>	Minor Arterial	Major Arterial
Right-of-Way Width	44 feet	40 feet	50 feet	74 feet +	96 feet +
BOC to BOC Width	34 feet	38 feet	50 feet	74 feet +	96 feet +
Sidewalk Width	5 feet (attached)	5 feet (detached)	5 feet (detached)	8 feet (detached)	8 feet (detached)
Landscape Strip/Corridor Width	None	6 feet	6 feet	25 feet	36 feet
Number of Travel Lanes	2	2	2	4	6+
Travel Lane Width	No Center Stripe	No Center Stripe	12 feet	11 feet (12' inside)	11 feet (12' inside)
Median/Turn Pocket Width	None	None	10 feet	12 feet	12 feet
Bike Lane Width	None	None	5 feet	5 feet	5 feet
On-Street Parking Allowed	Yes	Yes	No	No	No
Design Speed	25 mph	25 mph	35 mph	45 mph	50 mph
Stopping Sight Distance	150 feet	150 feet	250 feet	360 feet	430 feet
Centerline Radius (Min.)	200 feet	350 feet	500 feet	1,500 feet	2,000 feet
EP Radius at Intersections (Min.) <sup>(4)</sup>	28 feet	28 feet	33 feet	33 feet	33 feet
Traffic Index (Min.)	6.0 <sup>(5)</sup>	6.0 <sup>(5)</sup>	7.0	9.0	10.0
Structural Section	4" AC 13" AB	4" AC 13" AB	4" AC 16" AB	5.5" AC 21" AB	6.5" AC 23" AB
Structural Section w/LTSB	4" AC 6" AB 9" LTSB	4" AC 6" AB 9" LTSB	4" AC 6" AB 11" LTSB	5.5" AC 7" AB 13" LTSB	6.5" AC 8" AB 16" LTSB

**Notes:**

- (1) servicing < 100 residential units  
(2) servicing between 100-400 residential units  
(3) for Residential, Multi-Family, Commercial and Industrial  
(4) when streets intersect with wider streets, the wider street requirements apply

**Definitions:**

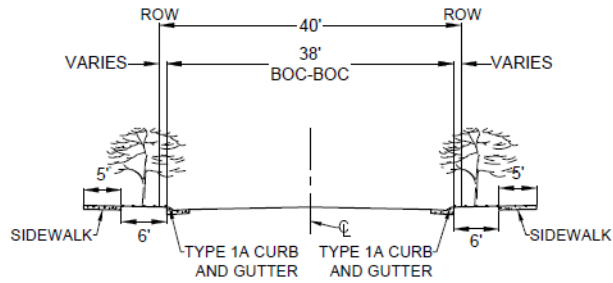
BOC = Back of Curb  
EP = Edge of Pavement  
LTSB = Lime Treated Subbase



**MINOR RESIDENTIAL**

44' RIGHT OF WAY (TYPICAL)

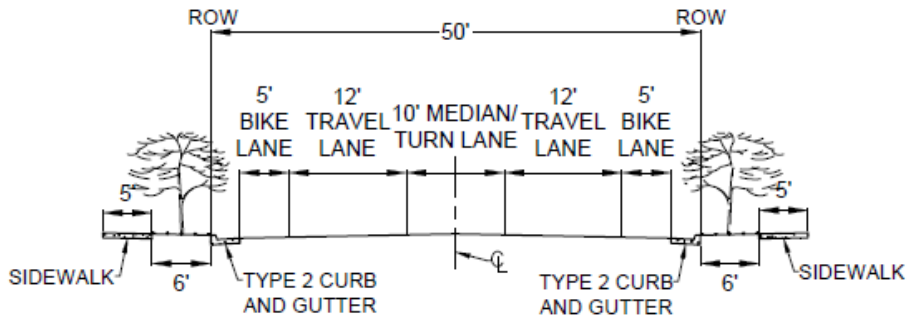
NOT TO SCALE



**PRIMARY RESIDENTIAL**

40' RIGHT OF WAY (TYPICAL)

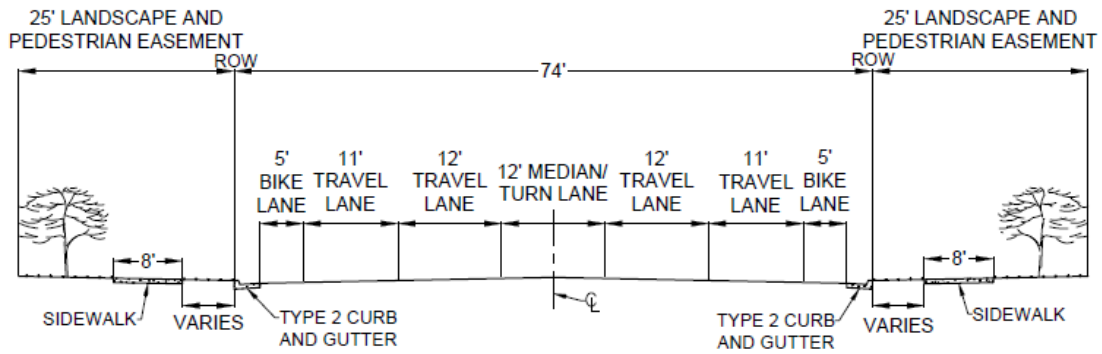
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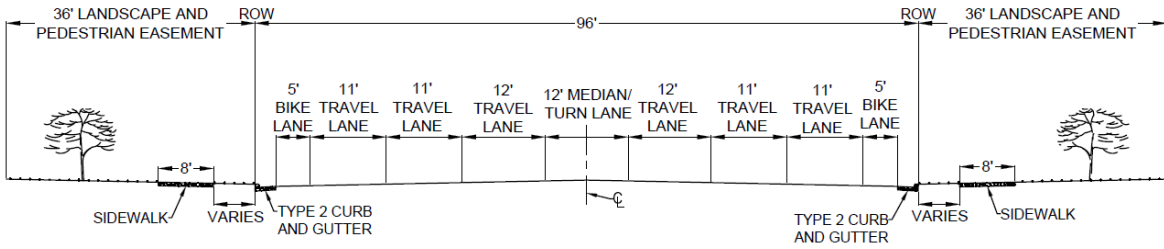
**COLLECTOR**

50' RIGHT OF WAY (TYPICAL)

NOT TO SCALE



**MINOR ARTERIAL**  
74' RIGHT OF WAY (TYPICAL)  
NOT TO SCALE



**MAJOR ARTERIAL**  
96' RIGHT OF WAY (TYPICAL)  
NOT TO SCALE

#### 4-4. STANDARD PLANS

The City maintains a large library of Standard Drawings. All details must be in accordance with these Standard Drawings unless written deviation is requested from the applicant and approved by the City.

#### 4-5. STRUCTURAL SECTION

The following standards for the design of structural sections shall govern the preparation of plans for proposed improvements.

- A. Structural sections for all asphalt roadways shall conform to Table 1 or shall be designed to conform to the California Department of Transportation Highway Design Manual (Latest Edition), "Topic 608 - Asphalt Concrete Pavement Structural Section Design", as modified from time to time, or other method as approved by the Public Works Director. The gravel equivalent safety factor of 0.2 feet of asphalt concrete shall be used for design. Calculated asphalt thicknesses shall be rounded up to the nearest ½ -inch increment and calculated aggregate base thicknesses shall be rounded up to the nearest 1-inch increment.
- B. Geotextile fabric, meeting the AASHTO M228-96 Geotextile Specification for Class 1 geotextiles, see Table 4.1, shall be placed between the basement soil and the aggregate base material in all streets.

Table 4.1 AASHTO M228-96 Geotextile Specification for Class 1 Geotextile			
<b>Geotextile strength Property Requirements</b>			
<b>Property</b>	<b>ASTM Test Method</b>	<b>Class 1</b>	
		<b>Woven</b>	<b>Nonwoven</b>
Grab Tensile Strength	D 4632	1400 N (315 lbs)	900 N (202 lbs)
Seam Strength	D 4632	1260 N (283 lbs)	810 N (182 lbs)
Trapezoidal Tear Strength	D 4533	500 N (112 lbs)	350 N (78 lbs)
Index Puncture Strength	D 4833	500 N (112 lbs)	350 N (78 lbs)
Mullen Burst Strength	D 3786	3500 N (508 lbs)	1700 N (247 lbs)

- C. If the subgrade has an R-value of 30 or less, the installation of pavement edge drains at least 12" deep shall be required on both sides of the street, located at the back of curb, for all streets unless allowed by Section D below. Drain design to be submitted by Consulting Engineer, for City approval by the Director.
- D. With approval by the Director, the subgrade soil beneath the curb & gutter and pavement section may be lime treated per geotechnical recommendations in lieu of the geotextile fabric and edge drain requirements noted above. When lime treatment is used, the street structural section shall be determined based on a three layer section using a gravel equivalent factor no greater than 1.1 and an R-value no greater than 50 for the lime treated sub-base layer. However, the thickness of the aggregate base layer shall be no less than six inches under any circumstance.

- E. A soils report indicating the "R" value of the basement (i.e., subgrade) soil, along with calculations for structural pavement sections shall be submitted with any plan indicating construction of roadway.
- F. Portland cement concrete streets may be constructed with the approval of the Director.
- G. The use of alternate road building materials will be allowed if supported by a sound pavement design study prepared by a registered civil (or geotechnical) engineer and approved by the Director. These alternate road building materials may include but not be limited to the following:
  - Pavement stress absorbing interlayers
  - In-situ soil and subgrade stabilizing admixtures
  - Reclaimed Asphalt Pavement (RAP)
  - Rubberized asphalt concrete
  - Roller compacted concrete

In transition areas from one street width to another street width standard, the heavier structural section shall be used in the transition area.

#### **4-6. HORIZONTAL AND VERTICAL STANDARDS**

The following standards for the design of profiles shall govern the preparation of plans for proposed improvements.

- A. All minimum vertical sight distances shall be based on Chapter 200 of the Caltrans Highway Design Manual.
- B. The minimum grade on new streets shall be 0.35% except that the minimum curb and gutter grade around intersection corners shall be 0.50%.
- C. The minimum grade of gutter sections constructed on existing streets shall be 0.25%.
- D. Standard cross slope on new streets shall be 2.0%.
- E. The minimum cross slope on street widening shall be 1.5% and the maximum cross slope shall be 3.0%. The cross slope of the widening shall conform to the cross slope of the existing pavement whenever possible.
- F. When two streets intersect, neither street shall have a longitudinal grade greater than 3.0% for a minimum distance of 40 feet measured from the back of curb line of the intersecting street, except in unusually rough terrain, as determined by the Director. At all street intersections, the centerline crown of the lesser roadway width shall meet the surface pavement elevation of the intersecting roadway at a point along the projected lip of gutter of the larger roadway. If both roadways have the same street width, the larger roadway shall be the street with the higher projected traffic volume with full land development. Crown slope may be reduced to 1.0% within the intersection, if necessary.
- G. The minimum vertical curve length allowable at the intersection of two grades shall be 50 feet. Vertical curves on residential and collector streets may be omitted where the

algebraic difference in grades does not exceed 2.0%. Vertical curves on all other streets may be omitted where the algebraic difference in grades does not exceed 1.5%. The minimum vertical curve data to be computed and shown on the plans shall consist of the point of intersection elevation, the tangent gradients, the middle ordinate and the length of curve.

- H. **HORIZONTAL CURVES:** Minimum horizontal curves shall be as shown in Table 1, Street Design Parameters. A minimum tangent length of 200 feet is required between reversing curves on 50-foot back of curb to back of curb and larger streets.

#### 4-7. INTERSECTIONS AND DRIVEWAYS

- A. All streets shall intersect at  $90^{\circ} \pm 5^{\circ}$  angle to each other. This angle shall be maintained for a minimum distance equivalent to the right-of-way width measured from the curb return.
- B. Streets shall not be designed to intersect on the inside of a horizontal curve nor on the opposite side of a crest vertical curve if the sight distance will be inadequate for drivers to enter the traffic flow or cross the street safely.
- C. Streets intersecting any 40-foot or 44-foot residential street from opposite sides shall have their centerlines meet, or the offset between intersections shall be a minimum of 150 feet.
- D. Streets intersecting any 50-foot back of curb to back of curb, or 66-foot street from opposite sides shall have their centerlines meet, or the offset between intersections shall be a minimum of 200 feet
- E. Streets intersecting any 72-foot street from opposite sides shall have their centerlines meet, or the offset between intersections shall be a minimum of 300 feet. Pursuant to this section major access driveways shall be considered as streets with respect to offsets.
- F. **ELBOW INTERSECTION:** Elbows shall be required at right angle intersections in accordance with the Standard drawing ST-25.
- G. **DRIVEWAYS:** Driveway installation shall be in accordance with the Standard Drawings as applicable, and the following:
- Driveways entering Class "B" or Class "C" streets shall meet the property line at such a grade and elevation as to permit conversion to a Class "A" street without re-grading the driveway beyond the property line. The maximum driveway slope shall be 10%, except for single family and duplex driveways, and in unusual terrain conditions, when specifically approved by the Director. The maximum algebraic difference in grade at any grade change within the public right-of-way and a driveway or between a driveway and public roadway shall be 10%.
  - Concrete driveways will not be permitted within the right-of-way lines when entering Class "C" streets. (See Standard drawing ST-19.)
  - No driveway (including transition tapers) will be allowed within 5 feet of a side property line (See Standard drawing ST-22.) Joint driveways may be required by

the Director and a reciprocal access agreement will be required prior to approval of improvement plans.

- Driveways and intersections on arterials and thoroughfares shall be evaluated for right turn pockets. Driveways and intersections which have at least 25 right-turning trips in the peak hour shall have a right turn pocket into the development. Projects with less than 25 right-turning trips in the peak hour at the driveway or intersection shall be evaluated on a case by case basis. Right turn pockets shall have 90' bay taper. Pocket lengths shall be evaluated on a case by case basis based upon traffic volumes and other relevant considerations.
- For all 72-foot streets and wider, driveway throat depths shall be a minimum of 50' from the back of the sidewalk, clear of drive aisle or parking spaces. Longer throat depths may be required based upon traffic volumes generated and the traffic volume on the street the project is accessing. All driveways, except those providing access to single family residential uses, on two lane streets shall have a minimum throat depth of 25 feet.
- The minimum width for a single family residential or duplex driveway shall be 10 feet. The maximum single family residential or duplex driveway width shall be 24 feet. For dwellings that provide three car garages, (side by side garages only) wider driveways may be evaluated and approved on a case by case basis
- All commercial and multiple family developments shall install driveways consistent with the standard drawings. (See Standard drawings ST-20.) Commercial, office and multi-family driveways on collector streets shall have a minimum opening of 24-feet and may be increased, as determined by the Director to 35-feet wide based upon the driveway vehicular volume, street geometrics, street vehicular volumes or other characteristics of the area. Driveways serving significant truck traffic may be increased to a 45-foot wide driveway opening, at the discretion of the Director.
- The standard multiple family and commercial driveway opening width shall be 35 feet on 72-foot, 96-foot, and 118-foot streets and may be increased to 45 feet at the discretion of the Director. Driveways on 72-foot, 96-foot, and 118-foot streets shall have a minimum clear spacing of 200 feet between driveways (See Standard drawing ST-22.).
- A center median up to 10 feet wide may be approved by the Director for certain driveways. The normal driveway width will be increased by the median width.
- Driveways near major intersections shall be located outside of the widened area at expanded intersections and shall be located as shown on Standard drawing ST-22.
- The standard driveway for industrial developments shall be Type A-6 or Type A-7, 45 feet wide, as shown on the Standard drawings ST-20 and ST-21A.
- When driveways are abandoned or relocated, the driveway sections must be removed and replaced with standard curb and gutter, sidewalk, and if applicable, planters.



- When street frontage improvements exist with, Type 1A, or Type 2 curb and gutter, Type A-6 or A-7 driveways shall be installed for all accesses serving more than four single dwelling units.
- Driveways entering levee roads and driveways entering commercial property on all roads shall have a slope not exceeding 5% for a minimum distance of 20 feet, measured from the edge of existing pavement. Driveways normally used by vehicles towing house or boat trailers shall have special requirements to be determined on an individual basis by the Director.
- The nearest edge of driveways shall not be closer than 50 feet to the end of existing or future traffic medians. Medians shall be reconstructed and/or lengthened to conform to this section if necessary, as determined by the Director.
- Visibility requirements for driveways shall be in accordance with the Section 4-8 and Standard drawings ST-26.1 and ST-26.2. Increased visibility requirements may be required for driveways serving a significant amount of truck traffic.
- Major commercial driveways which will serve significant traffic volume, as determined by the Director, shall be considered as intersecting streets and shall conform to the same offset requirements.
- Driveways accessing public streets with no curbs and gutters and sidewalks shall be paved with dust free surfacing (either asphalt concrete or a double chip seal). Driveways accessing public roads with sidewalks and/or curbs and gutters shall be paved with concrete or asphalt concrete. (See Standard drawing ST-19.)
- Private streets must be designed and constructed to public street standards, per the City of Elk Grove General Plan.
- Residential driveways on minor street or collector streets at their intersection with a 50-foot back of curb to back of curb or narrower street shall be located a minimum of 15 feet clear from the corner return. Residential driveways on minor street or collector streets at their intersection with a street wider than 50-foot back of curb to back of curb shall be located a minimum of 50 feet clear from the corner return. Non-residential driveways on a collector street intersecting with a 72-foot street or wider shall be located a minimum of 150 feet clear of the corner return. (See Standard drawing ST-22.)

#### **4-8. SIGHT DISTANCE AND VISIBILITY EASEMENTS AT INTERSECTIONS**

For streets having, or intersecting with a street having, an ultimate width of 48 feet or greater (measured from back of curb to back of curb), The minimum stopping sight distance at intersections and non-residential driveways for establishing visibility control areas shall be as shown in Table 1, Street Design Parameters (also see Standard drawing ST-26.1)

For other cases, the following visibility control standards shall apply:

- Streets with an ultimate width of less than 48 feet (measured from back of curb to back of curb) shall be consistent with Standard drawing ST-26.2.
- 90-degree intersection elbows shall be consistent with Standard drawing ST-25.

- Residential driveways shall be consistent with Standard drawing ST-26.2. Residential driveways off of collectors, arterials or thoroughfares may be subject to the minimum sight distance requirements set forth above, as determined by the Director.

Regardless of the street width, driveways serving significant traffic volumes, as determined by the Director, shall be subject to the minimum sight distance requirements for major street intersections.

All existing streets that do not intersect at a  $90^{\circ} \pm 5^{\circ}$  angle to one another shall be subject to the minimum sight distance requirements for major street intersections when enforcing the visibility control area.

No signs, plantings, structures, natural growth, fences, walls or any other type of obstruction to a clear view, higher than 3 feet above the nearest pavement surface (or traveled area where no pavement exists) shall be installed or maintained or shall be permitted to be installed or maintained within the visibility control area. Exceptions include tree canopies, signs that provide a minimum clearance of 7 feet measured from the existing grade, or permanent structures existing as of the effective date of these provisions.

Dedication of visibility easements may be required over the visibility control areas to ensure that the required sight distances can be enforced and maintained. Visibility easements for residential driveways are not required unless the Director determines that the dedication is necessary to satisfy special safety considerations. Visibility easements shall be recorded on final maps or by separate instrument if a map is not required.

#### **4-9. INTERSECTION CORNER RADII AND BULB-OUTS**

Minimum right-of-way and edge of pavement radii for intersection corner roundings shall be in accordance with the Standard Drawings and Table 1, Street Design Parameters

When two streets of different widths intersect, the radius for the narrower street shall apply, except that when a 40-foot street intersects a wider street, the radius for the wider street shall apply.

All intersection pavement edges on Class "C" streets shall have a minimum radius of 35 feet where widening is not required by Section 4-3(J) (See also Standard drawing ST-18).

All intersection pavement edges on partial streets shall have a minimum radius of 25 feet or greater, as determined by turning requirements at the subject location, on the uncompleted side.

Bulb-outs shall conform to the geometry shown on Standard drawings ST-24 and shall be installed as required by conditions of approval or as deemed necessary by the Director.

#### **4-10. CUL-DE-SAC**

Cul-de-sac streets shall be terminated with a bulb, which shall have right-of-way and back of curb radius dimensions conforming to the Standard drawing ST-23 and the following:

No cul-de-sac shall exceed 600 feet in length, measured as the distance from the centerline of the intersecting street to the center of the cul-de-sac bulb.

The minimum T.I. for a cul-de-sac shall be 6.5. Special T.I.'s will be provided to the consultant engineer for industrial cul-de-sacs or where other special conditions exist.

Where there is no vehicular access from the end of a public street, the street must be terminated with a bulb. A Fire Department approved turn-around will be considered as an alternative to a cul-de-sac for private streets where no vehicular access is taken from the end.

Where possible a pedestrian connection should be provided from the bulb end of a cul-de-sac to the nearest neighboring roadway.

#### **4-11. PARTIAL STREET**

Partial streets may be permitted by the Director along the boundary of a subdivision or property of the Applicant where the full right-of-way cannot be dedicated or where the complete street cannot be constructed, but will ultimately be constructed with adjacent development.

The minimum right-of-way width shall be 40 feet or one-half of the proposed right-of-way, whichever is greater. Lesser right-of-way widths may be allowed when approved by the City Council in accordance with the State of California Streets and Highways Code.

Partial streets shall be constructed to a complete geometric and structural section and have a minimum paved width specified by the following:

- On 40 and 44-foot streets, the minimum pavement width shall be 26 feet.
- On 50-foot b/c to b/c streets, the pavement shall extend five feet past centerline for a total of 27 feet.
- On 66-foot streets, the pavement shall extend five feet past centerline for a total of 30 feet.

The intersection pavement edges shall have a minimum radius of 25 feet for any corner return that lacks curb & gutter at an intersection of residential and/or collector streets. The minimum radius of a corner return of an intersection that includes either an Arterial or a Thoroughfare roadway is 35 feet.

When paving partial construction of an ultimate street development, the edges of the current pavement on the uncompleted side are to be protected by use of 2"x6" approved headers, construction grade, or by placing a minimum of 1-foot additional width of aggregate base material beyond the edge of pavement to the grade and depth of the adjacent structural section.

Partial streets shall be terminated with the end of the pavement perpendicular to the street unless otherwise specified below. A 2"x6" redwood header board shall be required at the pavement ending.

Partial streets that terminate adjacent to an intersection or driveway shall be tapered 45 degrees to the street if right-of-way is available.

The end of a partial street that terminates a traveled lane in the direction of travel shall have the travel lane tapered in accordance with the following equations:

$$\text{Less than 45 mph, } L = WS^2/60$$

Greater than or equal to 45 mph,  $L = WS$

Where  $L$  = Length,  $W$  = Width (feet) and  $S$  = Design Speed (mph)

The design speed used in determining the taper shall be that given in the table in Section 4-7(F).

The Director may specify alternate pavement tapers for the termination of partial streets.

#### **4-12. BUS STOP**

Bus stop turnouts with paved shelter pad areas shall be required at approximately ¼ mile intervals along Arterial and Thoroughfare streets where specified by the Director. Bus stop turnouts may also be required on Collector streets as determined by the Director.

At all intersections of 72-foot, 96-foot, and 118-foot streets with other 72-foot, 96-foot and 118-foot streets, bus stops shall be provided with turnouts that are integrated with standard intersection widening in accordance with the Standard drawings ST-11 through ST-15B.

General principles related to bus stop turnouts include:

- Bus stop turnouts shall be located on the far right hand side of intersections, unless otherwise required by the Director, in accordance with the Standard drawings ST-11 through ST-15B and ST-27.
- Where intersections are too widely spaced to provide satisfactory bus stop intervals, as determined by the Director, mid-block bus stops and turnouts may be required. Sidewalks shall be 6 feet wide at bus stops with a 7-foot by 28-foot P.C.C. pad to accommodate bus shelters as shown on the Standard drawings ST-27 through ST-28.
- Reinforced Type 2 curbs shall be required at all bus stops and turnouts in accordance with the Standard drawing ST-28.

#### **4-13. SIDEWALK RAMP AND ACCESSIBILITY IMPROVEMENTS**

Sidewalk ramps shall be constructed at all street intersections and at other locations where required by the Director, in accordance with the Standard Drawings, as applicable.

All intersection corners shall have dual sidewalk ramps, unless dual ramps are determined by the Director to be undesirable or impractical (e.g., where dual ramps would result in large crosswalk skews, where visibility concerns exist at stop-controlled intersections, or intersections where the major street has a raised median extending through the intersection).

At "T" intersections, ramps are not to be placed to facilitate crossing of the through street unless the Director determines that special conditions exist (e.g., where the intersection is adjacent to land uses having special pedestrian generating characteristics such as parks and schools).

In accordance with the requirements of the Americans with Disabilities Act (ADA), any modification of any portion of an intersection may require access improvements to all corners of that intersection as determined by the Director based on the nature of work being proposed at the intersection. For the purpose of this requirement, modifications include but are not limited to:

- Roadway widening through the intersection
- Widening of a portion of the intersection
- Construction of corner improvements (curbs, gutter, and/or sidewalks) in any portion of the intersection
- Construction of a new traffic signal
- Modification of an existing traffic signal

Resurfacing the pavement with an asphalt concrete overlay in any portion of the intersection

Access improvements to the intersection include, but are not limited to, the construction of sidewalk ramps. Should there be existing sidewalk ramps prior to the modification of the intersection, it shall be the responsibility of the Applicant to survey the existing sidewalk ramps to ensure that they comply with the current requirements of the ADA for existing ramps. Should any existing ramp fail to meet those requirements, that ramp shall be removed and replaced with a sidewalk ramp that conforms to City ADA standards. Refer to Standard drawings AR-2.0 through AR-4.8.

If an intersection is modified, as defined above, and if that intersection has an existing traffic signal, access improvements shall include the installation of ADA compliant pedestrian push buttons, should they not exist. Those push buttons shall conform to the ADA and City requirements including height, orientation, location relative to sidewalk areas, locations relative to sidewalk ramps and location relative to crosswalks (Refer to Standard drawing T-19). Access improvements for such intersections shall also include the installation of audible pedestrian traffic signals.

Improvements associated with trail and pedestrian crossings at mid-block locations shall be designed in accordance with these Improvement Standards, the *City of Elk Grove Bicycle, Pedestrian, and Trails Master Plan*, and the National Cooperative Highway Research Program (NCHRP).

#### **4-14. CURB AND GUTTER**

Curb and gutter shall be installed or replaced adjacent to all developments, excepting Class "C" Streets, in accordance with the Standard drawing ST-31 and the following:

- A. Type 1A Curb and Gutter: 40-foot and 44-foot streets, only along segments where continuous single family residential units are proposed for front-on access, or as required by the Director.

Type 2 Curb and Gutter: All streets not covered under A. above.

#### **4-15. CROSS GUTTER**

Cross gutters may be permitted on 40-foot and 44-foot streets with the specific approval of the Director when the intersection cannot reasonably be drained to an underground system. (See Standard drawing ST-32.) No cross gutter will be allowed on 50-foot or greater streets. Cross gutters will also not be allowed on any approach to a signalized intersection.

#### **4-16. BARRIER CURB**

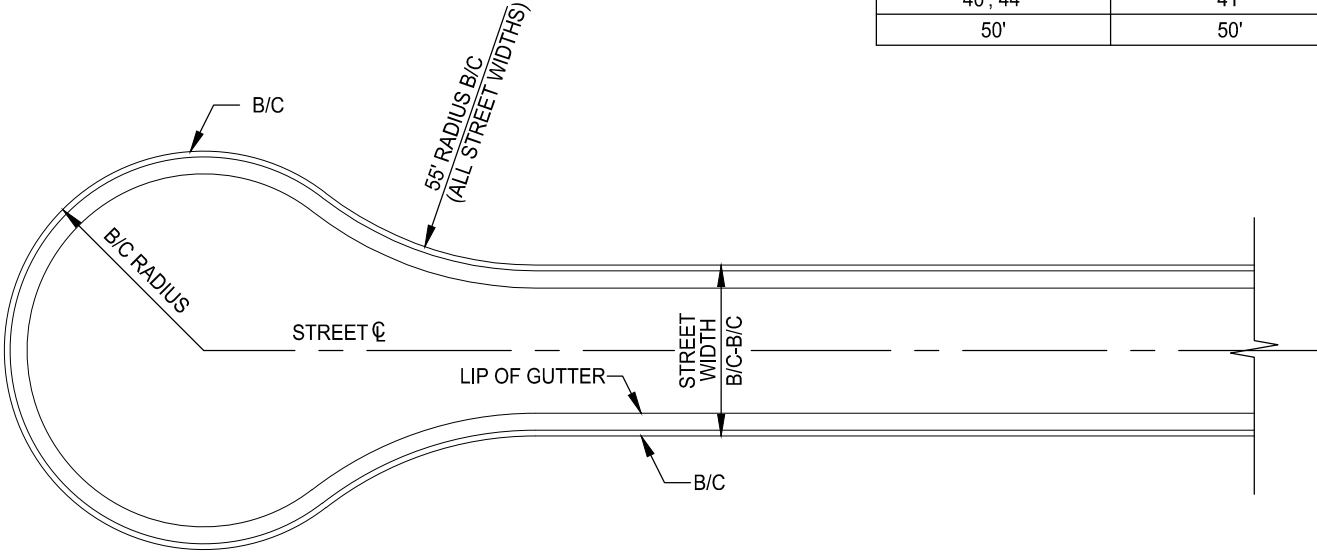
Barrier curbs shall be in accordance with Standard drawings ST-31 and ST-33 (Type 3, 4, or 5). Barrier curbs shall be required at all locations where parking will be allowed adjacent to the sidewalk. See Standard drawing ST-33 for planter and barrier curb details (lawn may extend to the back of sidewalk in lieu of planters).

A barrier curb shall be required at the back of sidewalk at all commercial, industrial, and multi-family residential properties and landscape corridors where landscape planters containing soil and/or mulch are adjacent to the sidewalk. A barrier curb is not required at the back of sidewalk adjacent to lawn.

A barrier curb shall be required at bus stops behind a sidewalk where the slope is toward the sidewalk (to prevent sheet flow across the sidewalk). Under sidewalk drains shall be used to remove drainage collected at the back of the barrier curb, as necessary to prevent any flow across the sidewalk. (See Standard drawings ST-34.)

A barrier curb shall be required behind a sidewalk where the slope behind the sidewalk is greater than 6:1 and the slope is away from the sidewalk (for pedestrian safety). Where a retaining wall is allowed, creating a drop-off adjacent to the sidewalk, a minimum 36-inch high barrier fence is required in lieu of the barrier curb at the back of the sidewalk. Lot grading shall be done so as to not require fencing immediately adjacent to intersections and driveways in violation of the sight distance and visibility requirements of Standard drawing ST-26.2 and Section 4-14.

BULB RADIUS REQUIREMENTS	
STREET R/W WIDTH	B/C RADIUS @ BULB
40', 44'	41'
50'	50'



NOTES:

1. A STANDARD W14-1 ("DEAD END") SIGN MAY BE REQUIRED AT THE ENTRANCE TO THE CUL-DE-SAC (SEE SECTION 4-27).
2. NO CUL-DE-SAC SHALL EXCEED 600 FEET IN LENGTH, MEASURED AS THE DISTANCE FROM THE CENTERLINE OF THE INTERSECTING STREET TO THE CENTER OF THE CUL-DE-SAC BULB.

DATE: 03-02-2022		NOT TO SCALE	
REVISION	BY	APPROVED	DATE
1	STN	SA	03-02-2022

CITY OF ELK GROVE - PUBLIC WORKS


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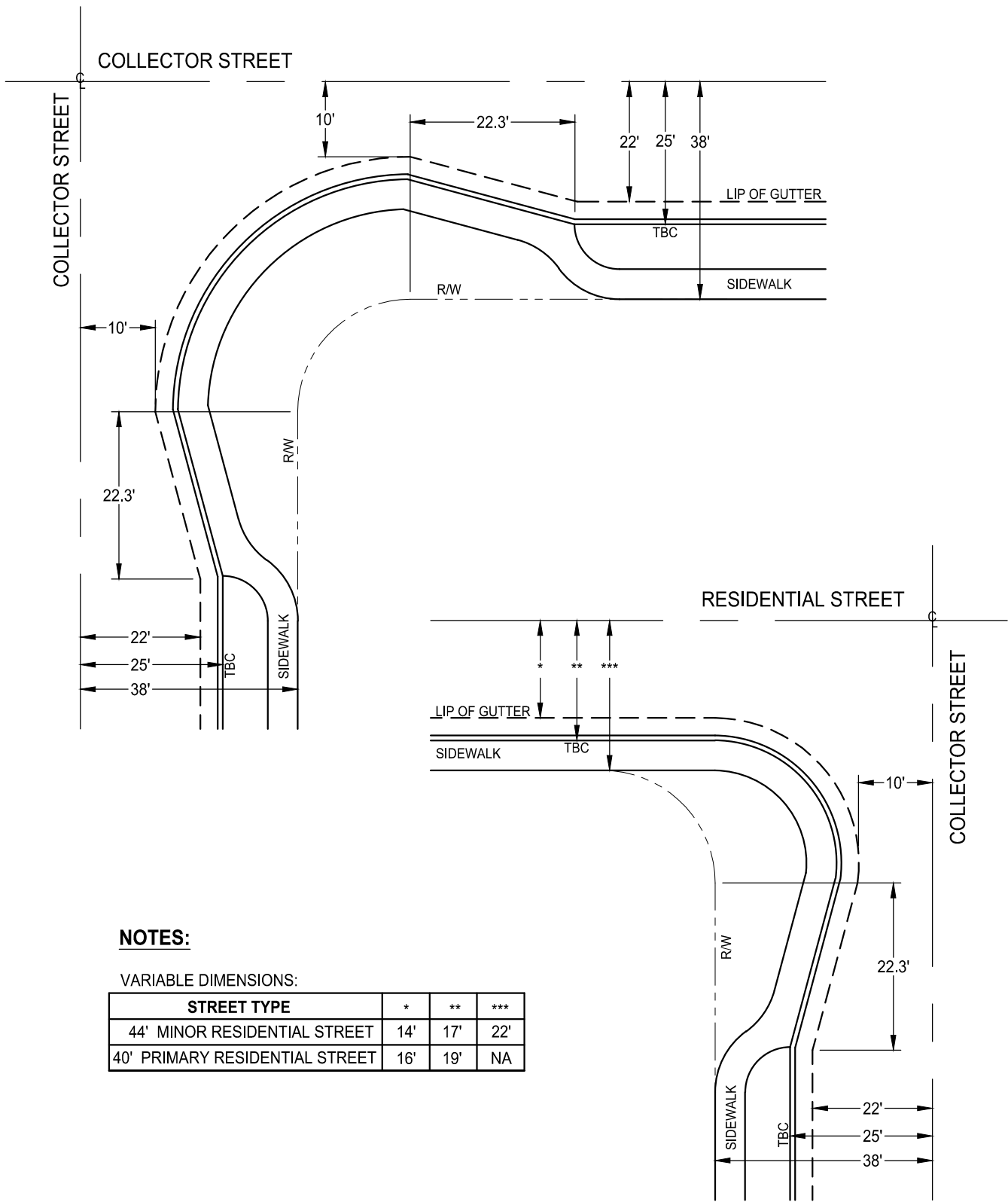
**CUL-DE-SAC**

APPROVED BY: *Jeffrey B. Wan* 03-02-2022  
 CITY ENGINEER DATE

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DRAWING NUMBER  
**ST - 23**





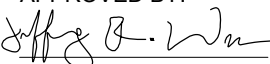
**NOTES:**

VARIABLE DIMENSIONS:

STREET TYPE	*	**	***
44' MINOR RESIDENTIAL STREET	14'	17'	22'
40' PRIMARY RESIDENTIAL STREET	16'	19'	NA

DATE 03-02-2022		NOT TO SCALE	
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01	STN	SA	03-02-2022

CITY OF ELK GROVE - PUBLIC WORKS

APPROVED BY:  
  
 03-02-2022  
 CITY ENGINEER DATE

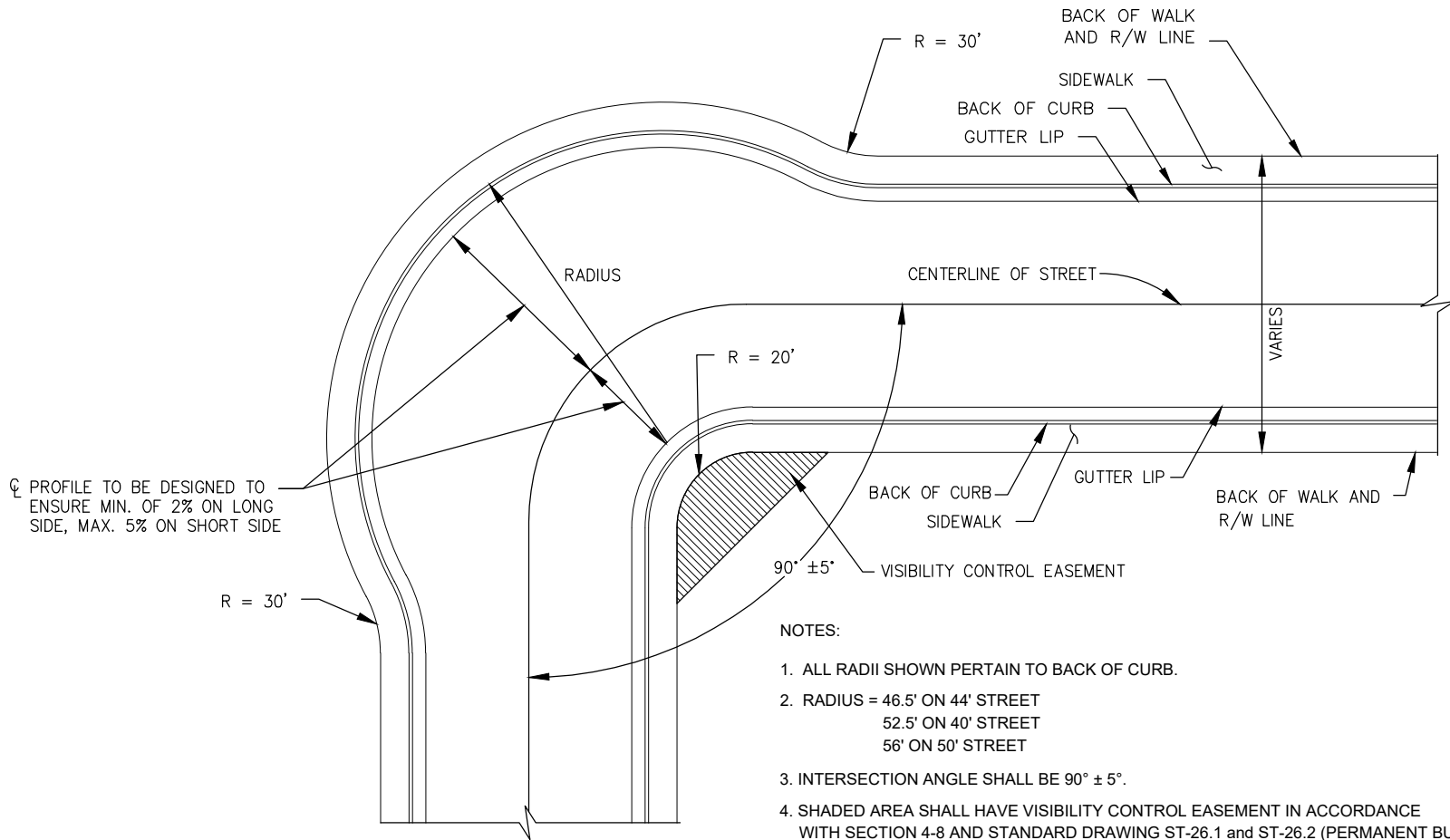
**BULB-OUT DETAIL**



DRAWING NUMBER

**ST - 24**





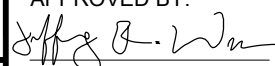
NOTES:

1. ALL RADII SHOWN PERTAIN TO BACK OF CURB.
2. RADIUS = 46.5' ON 44' STREET  
52.5' ON 40' STREET  
56' ON 50' STREET
3. INTERSECTION ANGLE SHALL BE  $90^\circ \pm 5^\circ$ .
4. SHADED AREA SHALL HAVE VISIBILITY CONTROL EASEMENT IN ACCORDANCE WITH SECTION 4-8 AND STANDARD DRAWING ST-26.1 and ST-26.2 (PERMANENT BUILDINGS EXCEPTED WITHIN SETBACK LINE).

DATE: 03-02-2022		NOT TO SCALE	
REVISION	BY	APPROVED	DATE
1	STN	SA	03-02-2022

CITY OF ELK GROVE - PUBLIC WORKS

**90 DEGREE INTERSECTION  
ELBOW**

APPROVED BY:  
  
 CITY ENGINEER      DATE: 03-02-2022

DRAWING NUMBER  
**ST - 25**

