

SECTION 4

STREETS

4-1. DEVELOPER'S PAVEMENT, SIGNAL, AND STREET LIGHT RESPONSIBILITY

- A. Construction of street improvements shall conform to the centerline established by the City.
- B. Where the existing pavement section does not generally meet the current structural section standard and/or the centerline grade and alignment are not satisfactory to the City, the Applicant shall be responsible for the pavement section to the centerline on all streets within, adjacent, and contiguous to the Applicant's project.

The Applicant shall overlay any areas beyond the centerline where the design centerline grade deviates from the existing. The Applicant shall also be responsible for overlaying any low areas where the new pavement meets the existing pavement to maintain a uniform cross slope.

- C. When making a connection to an existing street end, the Applicant shall be responsible for removing and reconstructing the existing roadway to make a satisfactory connection as required by the City.

When making connections to existing pavement, the Applicant shall be responsible for a 1-foot minimum sawcut of the existing pavement along with an additional 1-foot by 1½" deep grinding and paving. Refer to Standard drawing ST-38 for pavement restoration.

- D. The Applicant shall be responsible for all of the structural section and pavement on all streets within, adjacent, and contiguous to the project, including frontage roads, as required by the City. If the street is to be paved under a future City contract, the Director may require a cash deposit for the roadway and related work in lieu of actual construction and the City will include the work in the City contract.
- E. All temporary approaches to existing roadways required as a result of the development shall be at the Developer's expense. The temporary approaches shall be paved with a structural section to be determined individually for each situation.
- F. The Developer shall be responsible for relocating existing traffic signals and street lights, and installing new traffic signals and street lights as necessary for new street and driveway locations. The Developer shall also be responsible for relocating existing traffic signals and street lights as necessary for the installation of new curbs, bus stops and turn-outs, and sidewalks at locations where there are no such facilities existing.
- G. The City may elect to prepare the traffic signal relocation construction plans to be given to the Developer if requested in writing. In lieu of actual plan preparation, the City will provide all pertinent design information to be included by the Developer on their plans within 30 days after being requested in writing and the Developer's

engineer provides an acceptable base plan. The City's design costs shall be reimbursed by the Developer.

- H. For intersections with new traffic signal construction that is located within one half of a mile of an intersection with an existing traffic signal, the work shall include the installation of traffic signal interconnect conduits and conductors to connect the new traffic signal to the nearest existing traffic signal. Should interconnect conduits exist through an intersection where a new signal is to be constructed, the work shall include the connection of the new traffic signal into the existing interconnect system. Such work may include the installation of new interconnect cable from the traffic signal to the nearest existing traffic signal.

The design of the traffic signal interconnect facilities shall be subject to the review and approval by the City of Elk Grove Public Works Department

- I. The Applicant shall be responsible for constructing or modifying curbed median islands where required by these standards, or when required for traffic control as a result of the development, as determined by the Director. If the street is to be paved under a future City contract, the Director may require a cash deposit for the roadway and related work in lieu of actual construction and the City will include the work in the City contract.
- J. The Applicant shall be responsible for bus stops, bus turnouts, and intersection widening as shown on Standard Drawings and in accordance with these Standards.
- K. The Applicant shall be responsible for all drainage facilities (bridges, pipes, culverts, and appurtenances) crossing new streets within, adjacent, and contiguous to the project.
- L. The Applicant shall be responsible for all associated modifications to allow for access for the disabled, including but not limited to: guide-strips, sidewalk ramps, striping, etc.

4-2. CITY COST PARTICIPATION

Costs associated with the design and construction of eligible facilities included in various fee programs, Community Facilities Districts, Assessment Districts, or other funding programs may be reimbursable to the Applicant as set forth in the applicable funding program(s). In order to ensure eligibility for such reimbursements, the Applicant must comply with the current version of the City's Reimbursement Policies and Procedures for Privately Constructed Public Facilities, which is available on the City's website (www.elkgrovecity.org).

Applicants wishing to seek reimbursement from the City shall provide a written request to the City for cost participation if the proposed work is beyond the Applicant's responsibility. This application shall show the items of work, the estimated quantities, reimbursable costs, and justification for the request. Upon review of the Applicant's request, the City will notify the Applicant as to the acceptance and the extent of cost participation. Should an agreement be reached between the Applicant and the City on the methods and level of participation, the parties must enter into, and execute, a formal "cost

sharing/reimbursement” agreement specifying the terms of the agreement prior to starting such work.

Costs associated with design and construction of eligible facilities included in fee programs, Community Facilities Districts, Assessment Districts, or other funding programs may be reimbursable to the Applicant as set forth in the applicable funding program(s). In order to ensure eligibility for such reimbursements, the Applicant must comply with the current version of the City’s Reimbursement Policies and Procedures for Privately Constructed Public Facilities, which is available on the City’s website (www.elkgrovecity.org).

Any portion of work shown on the Consulting Engineer’s plans, for which the City has agreed to cooperate, shall not be segregated by note or legend, but shall be identified as separate items in the Construction Contract between the Applicant and their Contractor. The City will reimburse the Applicant for these reimbursable items after the work has been accepted by the Director and all outstanding fees owed to the City (i.e., plan review and inspection fees) have been paid.

Final quantities will be determined by field measurement, observed jointly by the City Inspector, the Contractor, and the Applicant or his designated agent. Unit prices prepared for fee and bond calculation and authorized in City Code shall be used as a basis for cooperative work. The Director may negotiate unit or lump sum prices for items not usually encountered, or for unusual field conditions.

A. In Lieu Fees

When an in-lieu fee is required, or an allowable option in lieu of constructing improvements, the Consulting Engineer shall provide a written estimate of probable costs for the improvements based on a publicly bid project using prevailing wages assuming the City will construct the improvements. This written estimate shall contain all backup to quantity calculations and utilize current unit prices from publicly bid projects unless otherwise authorized by the City. The written estimate shall be signed and stamped by a licensed civil engineer and submitted to the City for approval. The estimate shall also include escalation using the same escalation method as the Roadway Fee Program.

4-3. STREET DESIGN STANDARDS

Unless required otherwise by the Rural Road Standards or an approved Specific Plan, the minimum street design and geometric standards must conform to Table 1, Street Design Parameters.

TABLE 1
Street Design Parameters

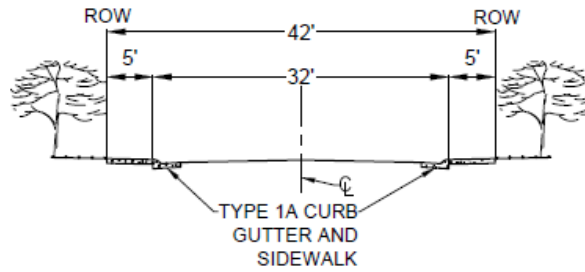
Parameter	Minor Residential ⁽¹⁾	Primary Residential ⁽²⁾	Collector ⁽³⁾	Minor Arterial	Major Arterial
Right-of-Way Width	42 feet	40 feet	50 feet	74 feet +	96 feet +
BOC to BOC Width	32 feet	38 feet	50 feet	74 feet +	96 feet +
Sidewalk Width	5 feet (attached)	5 feet (detached)	5 feet (detached)	8 feet (detached)	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.) ⁽⁴⁾	28 feet	28 feet	33 feet	33 feet	33 feet
Traffic Index (Min.)	6.0 ⁽⁵⁾	6.0 ⁽⁵⁾	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:

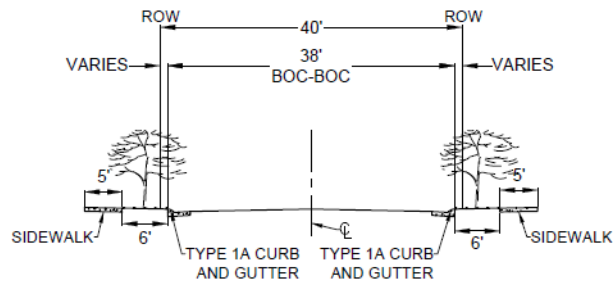
- (1) servicing < 100 residential units
- (2) servicing between 100-400 residential units
- (3) for Residential, Multi-Family, Commercial and Industrial
- (4) when streets intersect with wider streets, the wider street requirements apply

Definitions:

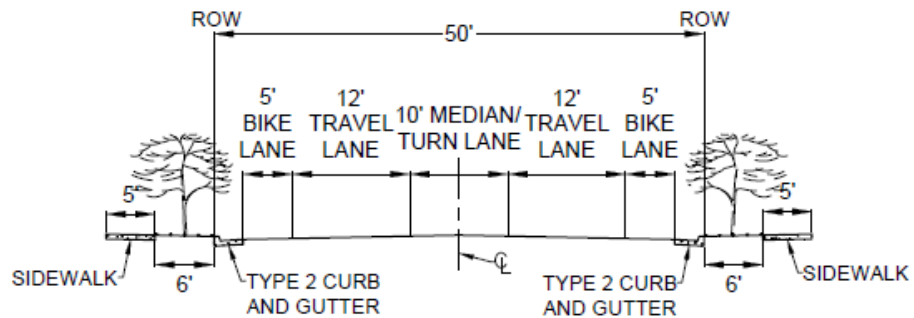
- BOC = Back of Curb
- EP = Edge of Pavement
- LTSB = Lime Treated Subbase



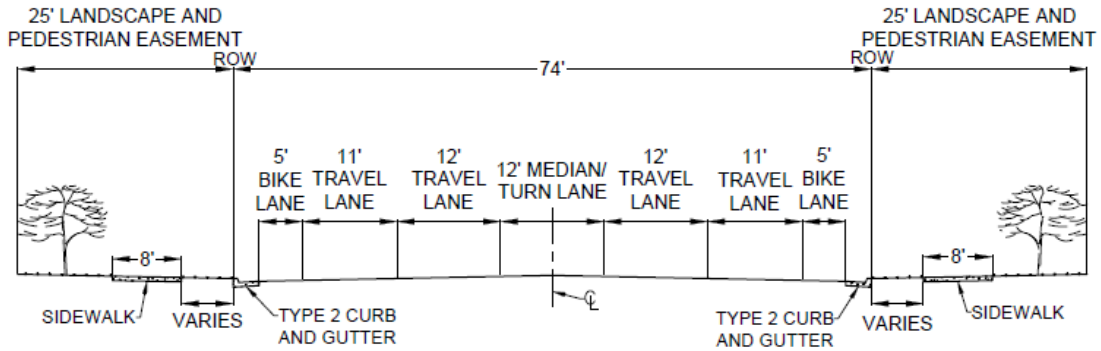
MINOR RESIDENTIAL
42' RIGHT OF WAY (TYPICAL)
NOT TO SCALE



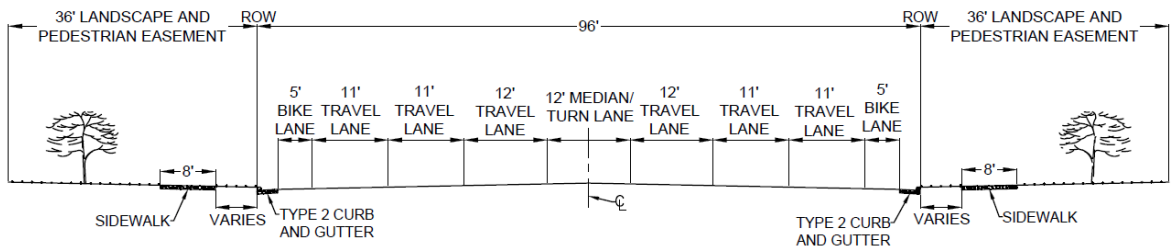
PRIMARY RESIDENTIAL
40' RIGHT OF WAY (TYPICAL)
NOT TO SCALE



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			
Geotextile strength Property Requirements			
Property	ASTM Test Method	Class 1	
		Woven	Nonwoven
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
- H. 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 42-foot, 46-foot or 48-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 48-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 42, 46 and 48-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:

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: 42-foot, 46-foot and 48-foot streets, only along segments where continuous single family residential units are proposed for front-on access, or as required by the Director.
- B. Type 2 Curb and Gutter: All streets not covered under A. above.

4-15. CROSS GUTTER

Cross gutters may be permitted on 42-foot, 46-foot and 48-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.

4-17. SIDEWALKS

Sidewalks shall be in accordance with these Standards and the geometry shown in the Standard Drawings. Sidewalks within landscape corridors adjacent to Collector, Arterial, and Thoroughfare streets shall conform to the Adopted Citywide Design Guidelines and Standard drawing ST-35.

All school and park developments shall have 8-foot attached sidewalks along all frontages.

For standard sidewalks separated from the roadway curbing by a landscaped buffer, no utility pole, guy wire, cabinet, hydrant, sign or other above ground facility shall be located within the sidewalk area, where possible. Where utility poles and other obstructions are situated within the planned sidewalk section, a minimum of 4 feet of clear uninterrupted sidewalk area shall be provided. Where it is necessary to widen the sidewalk beyond its standard width to attain the 4-foot clearance, the widened area shall extend a minimum of 5 feet beyond each side of the obstruction and a 10-foot taper on each side of the widening shall be required. Traffic signal poles may be located with sidewalk areas to allow for pedestrian access to pedestrian push buttons, however four-foot minimum pedestrian clearance around poles must be provided on the sidewalk.

For standard sidewalks that are attached to the roadway curbing (monolithic), all utility poles, guy wires, cabinets, hydrants, signs and other above ground facilities shall be located behind the sidewalk, within the easement for public utilities and public facilities, where possible. If such is not possible, the conflicting facility shall be located such that there is a minimum of four feet clear space for pedestrian use of the sidewalk. Where it is necessary to widen the sidewalk beyond its standard width to attain the 4-foot minimum clearance, the widened area shall extend a minimum of 10 feet beyond each side of the obstruction and a 10-foot taper on each side of the widening shall be provided.

Where sidewalks end within infill areas and a gap in the sidewalk exists, provided that right-of-way is available, temporary sidewalks shall be constructed to fill the gap to the satisfaction of the Director. Otherwise the sidewalk shall be extended beyond the end of the property for a minimum distance of 6 feet or if approved by the Director a cut-off wall may be constructed at the end of the sidewalk and appropriate connection to the existing public street shall be provided for pedestrians traveling beyond the end of the sidewalk.

The meandering sidewalks will be designed to the specifications in Standard drawing ST-35. For Case I, the sidewalk will have at least a 2-foot wide straight path down the center and a 10-foot minimum distance at the back of walk between landscaped areas. A Type 2 curb & gutter shall be required along the entire length of meandering sidewalk. For Case II, the sidewalk will have no abrupt changes in direction and will be constructed using only tangents of any length and inside radii of at least 150 feet. Type 2 curb & gutter shall be required at all locations where the sidewalk is separated from the curb. The Director may approve other configurations of meandering sidewalks to save existing trees or for special design applications.

4-18. PEDESTRIAN LANES AND TRAILS

Pedestrian lanes and trails within a development shall conform to the current version of the City's Bicycle, Pedestrian, and Trails Master Plan and these Standards.

Bollards placed as trail entrance barriers shall conform to Standard drawings L-21 and L-22.

4-19. TRENCHING IN EXISTING PAVED ROADWAYS

Crossings, other than perpendicular crossings of existing roadways, and all trenching in high traffic locations shall provide for select backfill material and increased structural section depth over the standard for that particular roadway. Boring may be required on 72-foot, 96-foot, and 118-foot streets where, in the opinion of the Director, high peak hour traffic volumes or other unusual conditions exist. The Applicant shall be required to coordinate trenching work schedules to avoid cutting new pavement in instances where repaving is planned by the City.

No pavement cuts or trenching will be permitted on any street that has been constructed within the last five years or has been overlaid within the last three years without written special approval of the Director. Special pavement restoration will be required for cuts made in streets that have been constructed or overlaid within a period of five or three years, respectively, prior to the time of work. See Standard drawings ST-1 through ST-10.

4-20. TESTING OF MATERIAL

Testing of materials to be utilized in work performed under the Standard Construction Specifications shall be performed in accordance with the methods of the Laboratory of the State of California, Department of Transportation. Signed copies of the test results, as required, shall be submitted to the Director. Test results shall show clearly the name of the individual and firm performing the tests, as well as the name of the project, the date of sampling, and the date of testing. Tests performed by the City will be charged to the Applicant as part of inspection billing.

The tests indicated in the Standard Construction Specifications will be the minimum required. In large developments, or those developments presenting special problems, a more comprehensive and extensive testing program may be required. Such conditions will be evaluated and an appropriate testing program prescribed on an individual basis. Two copies of any Federal Housing Administration required soils tests shall be submitted with proposed plans.

4-21. STREET NAME

All roads and streets within a development shall be named by the Applicant subject to the approval of the Director. No duplication of names already in use or previously proposed will be permitted. Sound-alike names or names with more than 13 spaces are not acceptable. Street names at intersections shall be continued on both sides of the intersecting streets unless approved by the Director.

Street name signs shall be furnished and erected by the Applicant. Street name signs shall conform to the requirements of the Standard Construction Specifications and these Improvement Standards.

Street names and street name sign locations shall appear on plans submitted for approval. Sign details shall be as shown on the Standard drawings T-3 and T-4.

Block numbering shall be required on all street name signs.

Private roads shall have street name signs installed in accordance with Section 4- 26(B) below. Street name signs for private roads may be the same as for public streets (see Standard drawing T-3) except the words City of Elk Grove must be omitted. Also, a separate additional sign must be placed on the same post saying "Not a City Road" which shall be 9 inches wide, 8 inches high, and have 1-3/4 inch high white letter on a green background.

4-22. STREET SIGN LOCATION

Street sign locations shall conform to the following:

- A. Two street name sign installations (with four sign plates on each post) are required at each intersection where one or both of the intersecting streets has a right-of-way width of 72 feet or greater. At a four-way intersection, the installations shall be located on both far right-hand corners of the intersection relative to the street having the greater right-of-way width or relative to the street with greater traffic volume if right-of-way widths are equal.

At a "T" intersection, the first installation shall be located on the far right-hand corner of the intersection, relative to the through street, and the second installation shall be located adjacent to the through street at a point in line with the centerline of the terminating street. One sign plate shall be omitted from the standard four-plate installation at the "T" intersection sign locations where an approach street does not exist.

- B. One street name sign installation (with four sign plates on each post) is required at each intersection where both intersecting streets have a right-of-way width of less than 72 feet. At a four-way intersection, the installation shall be located on one of the far right-hand corners of the intersection relative to the street having the greater right-of-way width or relative to the street with greater traffic volume if the right-of-way widths are equal. At a "T" intersection, the installation shall be located on the far right-hand corner relative to the through street.
- C. For highways with frontage roads, the street name sign installations shall be located in the divider strip between the frontage road and the main traveled lanes of the highway. All other requirements shall be as outlined above, except that only one sign will be required (in the divider strip in line with the centerline of the minor street) when there is no opening in the divider strip for access to the main highway.
- D. Standard drawings T-5A, T-6A, and T-6B show placement details for street name signs. On streets having a right-of-way width of 72 feet or greater, the street name

sign installations are to be located adjacent to the street with greater traffic volume at the end of the curb return. On streets with right-of-way widths less than 84 feet, the street name sign installations are to be located at the midpoint of the curb return.

- E. Street name signs shall be placed on streetlight poles wherever possible, in accordance with Standard drawings T-5B.
- F. At signalized intersections, street name signs shall be placed on all four corners of four-legged intersections and at three locations on "T" intersections. In addition, internally illuminated street name signs are to be installed on their own clamp-on steel mast arms, 9'-3" in length, 3-5/8' in diameter, mounted at the 27-foot level.

4-23. TRAFFIC SIGNS

All cul-de-sac and dead-end (stub) streets greater than 300 feet in length and all cul-de-sac and dead-end (stub) streets less than 300 feet in length where the curb at the centerline of the end of the street is not visible from the standard driver's eye position at the entering intersection shall be posted with a standard 24" x 24" "Dead End" (W14-1) sign. The bottom of the sign shall be a minimum of 7 feet above the sidewalk. The standard location for the W14-1 sign is on the right hand side at the tangent point of the corner rounding, 6 inches (minimum) from the back of sidewalk. Consideration shall be given to property lines and street light locations when determining the final location of the sign.

All Fire Department approved turn-arounds on street ends shall be posted with a standard 24" x 24" "End" (W31) sign, and a standard 18" x 18" red Type N marker. The red Type N marker shall be mounted below the W31 sign, on the same post. The top of the red Type N marker shall be a minimum of 4 feet above the sidewalk. The standard location for the W31 / red Type N installation is in the head on position, facing traffic, approximately 3 feet to the right of the prolongation of the street centerline, 6 inches (minimum) from the back of sidewalk.

All roads and streets within a development and new street frontage improvements shall include necessary traffic signs and pavement striping and shall be installed by the Applicant. Applicant may request City forces to install traffic signs and striping at Applicant expense. The Applicant shall not proceed to open the roads or traffic lanes until required traffic controls are in place and traffic safety is ensured. Traffic signing and striping shall conform to the City of Elk Grove Standard Specifications. A traffic signing and striping plan, if applicable, shall be included in the plans submitted for approval by the Director.

4-24. PERMANENT BARRICADE

Where improvements are temporarily terminated on a street proposed to be extended in the future, the improvements shall include a permanent type barricade at the end of the street extending completely across the right-of-way to prohibit access and to serve as a warning to the public. The barricade shall be constructed, erected, painted, and signed in accordance with Standard drawing ST-41 through ST-43. When necessary, barricades may be lengthened by making the 2" x 12" plank continuous with splicing at the posts.

Gates may be required where streets stub into public park areas or like areas.

Timber barricades with SW-44 signs and Type "L" markers in accordance with the Standard drawing ST-42 shall be required where partial street widening terminates at the far end of the widening in the direction of traffic. If the ground beyond the pavement constriction is free of fixed objects and relatively flat, the Director may approve the placement of delineators on 6-foot spacing as shown on the Standard Drawing in lieu of a timber barricade and signs.

Sidewalk barricades shall be constructed at the end of sidewalks where pedestrians cannot safely continue beyond the end of the sidewalk. Sidewalk barricades shall conform to Standard drawing ST-43. Where sidewalks improvements are terminated, an A.C. sidewalk conform shall be constructed in accordance with the Standard drawing ST-36. A permanent barricade shall also be constructed at the end of A.C. sidewalk conform if the conform abuts a drainage ditch, a fill slope steeper than 1:20 or other surface that would pose a hazard to pedestrians.

4-25. FENCES

The location for fences or walls along public streets shall conform to the requirements of the City of Elk Grove Zoning Code and these Standards (Refer to Section 6, 'Sound Barrier Design"). Fences or walls shall not encroach upon visibility easements required by Section 4-8 and Standard drawings ST-26.1 and ST-26.2. All fences and walls are subject to the visibility requirements of the City of Elk Grove Municipal Code (Title 12).

Fences and walls may require modification to accommodate street light poles and/or foundations.

When a barrier fence is required by the conditions described in Section 4-20, "Barrier Curb," the barrier fence shall be three feet high, shall be chain link type or another type required by the Director, shall be placed at the back of sidewalk, and shall conform to the visibility requirements described herein.

4-26. PRIVATELY OWNED BRIDGE

A bridge intended for the sole use of the occupants of a multi-family type development or any bridge on a private road shall be designed to withstand the greater of an H-20 load and the loading conditions for fire trucks and garbage trucks. Other design features of the bridge, including but not limited to widths, railings, clearances and materials shall be in conformance with City and State Standards. A soil report prepared by a qualified soil engineer shall be required Along with design calculations signed by the Consulting Engineer including the registration number. Maintenance and operation of privately owned bridges shall be the responsibility of the private property owner.

4-27. VEHICLE ACCESS AT STREET TERMINATIONS

Vehicular access shall not be permitted from the end of a stubbed street. To obtain vehicular access, the street must be extended through the property or properly terminated with a standard cul-de-sac bulb. In cases where no access is provided at the

end of the street, the Director may approve a modified cul-de-sac (See Section 4-11 of these standards).

4-28. TRAFFIC CALMING DEVICES

Traffic Circles and Speed Lumps (*Pending further input and drawings*)

4-29. ROOT BARRIERS

For requirements regarding tree root barriers, see Section 23.54.040(C)(2)(d) of the City of Elk Grove Municipal Code.