REPORT TO MAYOR AND COUNCIL NO: _____

Draft for Planning Commission review on November 14, 2011 and Bicycle and Pedestrian Advisory Commission review on November 18, 2011

Council Meeting: December 6, 2011

SUBJECT: Update/Review Corner Vision Triangle Municipal Code Ordinance – STUDY ISSUE

REPORT IN BRIEF

The City Council approved a 2011 study issue to review the vision triangle regulations (Attachment A). This issue was raised by the Bicycle and Pedestrian Advisory Commission (BPAC). The study intends to review the relevance and adequacy of the existing vision triangle provisions of the Sunnyvale Municipal Code (SMC). It also will examine the possibility of introducing mechanisms to increase the flexibility of vision triangle requirements in response to specific special circumstances.

Staff has completed an investigation that researched various standards and applications of vision triangle requirements. Staff believes that improvements can be made to the current vision triangle requirements that will address issues raised by the BPAC and improve vehicle sight distance at major intersections. Staff recommends adopting more stringent recommendations for land uses that generate a greater number of trips. The study also includes recommendations for allowable exceptions to vision triangle standards. Staff also recommends adding clarifying language for driveway sight triangles to address locations without sidewalk.

BACKGROUND

The SMC contains provisions for defining corner and driveway vision triangles as well as establishing roadway design standards. Per the current SMC, at an intersection, the corner vision triangle is formed by measuring 40 feet from the property line of each of the intersecting streets (Attachment B). The driveway vision triangle is created by measuring 10 feet along the outer edge of a driveway and 10 feet along the back edge of a public sidewalk (Attachment C). For both corners and driveways, obstructions such as fences, hedges or other objects were prohibited to exceed 3 feet in height until recent code revisions inadvertently removed related language.

EXISTING POLICY

Land Use and Transportation Element LT-5.4g, Conduct periodic analyses of roadway facilities and collision data in order to assure traffic safety.

DISCUSSION

Sunnyvale's current code has the following provisions related to vision triangles and private property obstructions to streets:

1) 19.12.17

Corner vision triangle" means the triangular area created by a line connecting points along the two front lot lines which points are established forty feet in distance from the intersection of the extension of such front lot lines within the street right-of-way.

2) 19.12.050 "D" (13)

"Driveway vision triangle" means the triangle area created by a line connecting points along the back edge of a public sidewalk and the outer edge of a driveway, which points are established ten feet distant from the intersection of the back edge of the sidewalk and the outer edge of the driveway. Where a driveway has been widened without a corresponding widening of the curb approach, the driveway vision triangle shall be based on the original driveway edge.

3) 19.34.060

The minimum front yards of each corner lot in every zoning district shall include the triangular area created by a line connecting points along the front lot lines which are established forty feet in distance from the intersection of such front lot lines within the street right-of-way. Provided, however, that a canopy may project into the triangular area for a distance of five feet if the height of the canopy is at least ten feet above the established curb grade, and none of the supporting members of the canopy are affixed in the ground within the triangular area. (Ord. 2623-99 § 1 (part): prior zoning code § 19.44.040). See diagram, Attachment B.

4) 13.16.100. Public nuisance.
The following are hereby declared public nuisances:

(e) The existence of any branches or foliage on private property which interferes with the visibility on, or free use of, or access to, any portion of any street improved for vehicular, bicycle or pedestrian travel;

(g) Any shrubs or plants more than twenty-four inches in height in the tree easement, or portion thereof, measured above top of curb grade;

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(h) Any tree, shrub or other plant on private property which dangerously obstructs the view in the triangular area described in Chapter 19.44, commonly known as the "visibility triangle."

5) 19.44.020 (17)

Corner Vision Triangle or Driveway Vision Triangle Sign. Any sign displayed within the corner vision triangle as defined in Section 19.12.040 or the driveway vision triangle as defined within Section 19.12.050. A sign within a vision triangle is prohibited if the sign is:

(a) Greater than three feet in height; or

(b) A temporary commercial sign.

6) 19.46.160

Side yard, rear yard and forty-foot corner triangle regulations are not applicable within the boundaries of any off-street public parking district…formed pursuant to the Sunnyvale Municipal Code…).

The BPAC requested to review the adequacy of the corner vision triangle in the SMC. The BPAC believes that visibility at street intersections and driveways is extremely important for the safety of pedestrians and bicyclists, and that the current SMC may not sufficiently ensure that adequate visibility is provided. For example, the current vision triangle ordinance does not take into consideration street curvature, intersection angle and type of control, or consistency with the Highway Design Manual. This issue was initiated because of a vision problem at a driveway that was constructed on Mathilda Avenue for the Cherry Orchard retail center.

Sunnyvale's regulations also do not presently allow for a sliding scale, reduction or other exceptions for certain objects in the required vision triangles. Some cities, but not Sunnyvale, allow sight triangle encroachments for fences based on the fence design. An open decorative type fence design would allow for the greatest visibility, and two prime examples of this style are wrought iron and post and rail wood fences. In 2008, City Council decided to broaden the BPAC-initiated study issue to examine the benefits of modifying the SMC by taking into account the openness or transparency of the fence in conjunction with the height of the fence.

Staff reviewed a one year detailed history of collisions Citywide involving auto right-of-way violations, including bicycle and pedestrian involved collisions, to gauge whether corner or driveway sight distance was a significant cause of collisions. Of 111 collisions reviewed, only one involved obscured vision. This

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was an auto versus auto collision that was due to a large parked vehicle obstructing sight distance and insufficient caution when entering a roadway.

The City's current regulations provide a good foundation for improving sight lines for drivers and cyclists, but that some improvement can be made to address the expressed concerns of the BPAC and Council. Staff considered those situations that might warrant a more stringent application or other revision of vision triangle standards and concluded that five areas could be addressed to improve the current regulations.

Improved Standard for Higher Trip Generation and Traffic Volume Locations

Land uses that generate a significant number of trips and intersections with higher levels of traffic and potential conflicts, and land uses that are proposed to have curb return–style driveways (typically higher volume, higher speed roads and higher trip generation land uses) could be the focus for improved sight triangle standards. High trip generation locations have a higher potential for conflict between exiting vehicles and street traffic. Staff believes application of a rule related to the number of parking spaces on a site can be relatively easily applied to determine if increased vision triangle requirements should be necessary. Staff proposes that sites that have 100 or more parking spaces would be subject to the 40 foot vision triangle at driveways.

Application of Caltrans Parking Restrictions at Signalized Intersections

Signalized intersections represent locations with a higher amount of conflicting traffic. The California Manual of Uniform Traffic Control Devices (MUTCD), which is a Caltrans traffic control standard, provides guidance for improving signalized intersection sight distance by providing no parking zones 20 feet from the curb return of an intersection. Staff recommends utilizing this standard and confirming that it is in place at all signalized intersections.

Restoration of SMC Definition of Vision Triangle Obstruction

In recent code revisions initiated by the Planning Division meant to streamline the process of application and proposals in the City, the code language relating to the height of fences, hedges or other objects in the vision triangle was inadvertently removed. The prior code required that fences, hedges or any other obstructions more than 3 feet in height are prohibited in the vision triangles, and staff still follows this as standard practice. It is intended that a specific standard be placed back into the Code. Staff believes that the SMC should be revised to restate the height limitations for fences, shrubs and other objects in the vision triangle. The previous requirement included standards for multi-trunk trees.

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Codify Exceptions to Vision Triangle Code Requirements

In the past, any part of a fence greater than three feet tall has been prohibited in the vision triangle. This includes post and rail-type and wrought iron fences where the fence is see-through, and the posts of three foot tall fences that may extend above the fence and includes a cap on the post. Several requests have been made to allow picket fences or taller posts in the vision triangles, but the code does not allow it.

Also, in certain areas (such as along El Camino Real), property owners are encouraged to locate new buildings closer to the street to encourage a more pleasing pedestrian feel for the street. Deviations may be appropriate in cases where a building is at a signalized intersection, where traffic is better controlled, to encourage good design to allow the building closer to the corner. The Downtown Parking District already is not subject to vision triangle requirements (SMC 19.46.160, Side yard, rear yard and forty-foot corner triangle regulations are not applicable within the boundaries of any off-street public parking district…formed pursuant to the Sunnyvale Municipal Code…).

Currently, outside of the downtown, deviations to the code are not allowed and any request to vary from the code requires a Variance. In most cases, it is extremely difficult to grant a variance for these requests because of the difficulty in meeting the required findings.

One option to address this issue could include codifying items that would not be subject to the requirements, such as open fencing or posts with a size or frequency of a certain amount. Deviations could be allowed for specific type of objects typically found in vision triangles that may not impede visibility. These could include open fencing with specific guidelines, types of trees, and buildings in specific locations. Staff proposes to provide the following exceptions to vision triangle requirements:

- Wrought iron open fencing
- Fence posts spaced eight (8) feet apart and not higher than 4.5 feet
- One tree with a typical trunk circumference of less than thirty-eight inches and a tree canopy higher than ten feet above the curb grade at maturity.
- Buildings at all way stop controlled or signalized intersections located in the Precise Plan for El Camino Real area.

Staff considered defining specific open fencing dimension criteria to allow for other types of fencing such as picket fences. However, it was determined that practical application of a standard for amount of opening or width of pickets would be difficult to administer. Staff believes that wrought iron fencing typically features a high degree of open space that would allow for drivers to

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see through. Therefore the open fencing provisions are limited to wrought iron fencing.

Staff also believes that the previous three (3) foot limitation can be revised to 3.5 feet, which is consistent with highway design guidance on vision triangles. This will reduce the amount of step-down required for front yard fences in vision triangles. Currently front yard fences up to 4 feet tall are allowed outside of the corner vision triangle, but must comply with vision triangle requirements (3 foot maximum height) within the vision triangle. This de facto requires any portion of fences in the vision triangle to be "stepped down" to three (3) feet. Raising the allowable height to 3.5 feet will provide greater consistency with State standards and national guidance, as well as create a less dramatic step down of front yard fences.

Clarify Driveway Triangle Standard

The current driveway vision triangle as defined by the SMC is measured from the edge of driveway to the back edge of the sidewalk. Sidewalks are not present in many locations. Staff proposes adding language to state that the driveway vision triangle shall be measured from the back of sidewalk or from the property line where no sidewalk exists.

Account for Street Curvature, Intersection Angle, Type of Control, and Compliance with the Highway Design Manual

Staff reviewed various design standards and guidance on vision triangles, including guidance from the Caltrans Highway Design Manual (HDM), the American Association of State Highway Transportation Officials (AASHTO), the Institute of Transportation Engineers, and other local and statewide jurisdictions. Engineering guidance is available to account for sight distance for skewed intersections, grades, and intersection traffic controls. Application of guidance or recommended standards would mean that applicants for improvements in corner or vision triangles would need to provide detailed, scaled sight information, and a traffic or civil engineer would need to review each application. Currently, corner and vision triangle standards for private development including signs and fences is performed by Planning staff. Many vision triangle-related permits are issued over the counter. Engineering staff does not conduct vision triangle reviews.

In the case of engineering guidance for sight distance at signal or stop controlled intersections, application of standards could result in a reduction of vision triangle requirements from the current SMC standards.

Staff evaluated Caltrans HDM guidance as requested by the BPAC and because the SMC directs the City Traffic Engineer to utilize Caltrans standards for

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traffic controls. The HDM standards are primarily speed related and make uniform assumptions about vehicle gap times. They do not consider physical conditions of a site, and are intended for application on major roadways. As a Caltrans-prepared document, it appears to be more germane to State highways versus urban/suburban settings. As a design guidance document, it applies more to new "greenfield" design and construction rather than for determining obstructions at existing locations. The HDM does recognize that obtaining recommended corner sight distance in some instances may not be possible due to physical conditions and unacceptable costs for achieving ideal sight distance. It does not address private driveways.

Examples of application of the HDM standards on certain Sunnyvale streets is diagrammed in Attachment D. In the examples provided, for an intersection on Evelyn Avenue having a 35 MPH posted speed, approximately 15 parking spaces would need to be removed, and theoretically all objects with a height greater than 3.5 to 4 feet that obstruct a clear line of sight for drivers would need to be removed, including street trees, utility poles, utility boxes, or other objects. The example cited on Grape Avenue at Bennington would essentially result in removal of an entire block of parking, plus street trees.

Proposed Regulatory Modifications

Corner and driveway vision triangles are currently regulated in the SMC to ensure those areas do not reduce the visibility for pedestrians and bicycles from vehicles. Staff proposes to modify the existing code in the following manner to enhance regulation of corner and driveway sight triangles:

a. New land developments with 100 or more parking spaces shall be required to adhere to the 40 foot vision triangle standard at primary entries and exits.
b. Signalized intersections shall provide no parking zones of 20 feet from curb returns, consistent with the parking restriction standards of the California MUTCD.
c. Fences, hedges or any other obstructions more than 3.5 feet in height shall be prohibited in vision triangles.
d. Provide exceptions to vision triangle requirements for wrought iron open fencing, fence posts spaced 8 feet apart and not higher than 4.5 feet, one tree with a typical trunk circumference of no more than thirty eight inches at maturity, and buildings at all way stop controlled or signalized intersections located in the El Camino Precise Plan area.
e. The driveway vision triangle shall be measured from the back of sidewalk or from the property line where no sidewalk exists.

Should the Council support revision of the corner sight distance provisions of the SMC, staff will return to Council with a proposed ordinance.

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FISCAL IMPACT

There may be an operating impact to the City if more stringent sight distance standards are applied and there is a corresponding increase in modifications to roadway features, such as increased parking restrictions. There will also be an increased level of effort in studying and making sight distance recommendations. Staff believes these procedural changes can be accommodated within existing operating budgets.

PUBLIC CONTACT

Public contact was made by posting the Council agenda on the City's official-notice bulletin board outside City Hall, at the Sunnyvale Senior Center, Community Center and Department of Public Safety; and by making the agenda and report available at the Sunnyvale Public Library, the Office of the City Clerk and on the City's Web site.

ALTERNATIVES

1. Direct staff to prepare a revision to the SMC to include the following provisions related to intersection and driveway sight triangles:
   a. New land developments with 100 or more parking spaces shall be required to adhere to a 40 foot driveway vision triangle standard.
   b. Signalized intersections shall provide no parking zones of 20 feet from curb returns, consistent with the parking restriction standards of the California MUTCD.
   c. Fences, hedges or any other obstructions more than 3.5 feet in height shall be prohibited in vision triangles.
   d. Exceptions to vision triangle requirements shall be allowed for wrought iron open fencing, fence posts spaced 8 feet apart and not higher than 4.5 feet, one tree with a typical trunk circumference of thirty eight inches at maturity, and buildings at all way stop controlled or signalized intersections located in the El Camino Precise Plan area.
   e. The driveway vision triangle shall be measured from the back of sidewalk or from the property line where no sidewalk exists.

2. Direct staff to make other modifications to the Code regarding corner vision triangles.

3. Do not direct staff to make any changes to the SMC regarding corner vision triangles at this time.

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RECOMMENDATION

Staff recommends Alternative No. 1: Direct staff to prepare a revision to the Sunnyvale Municipal Code to include provisions related to intersection and driveway sight triangles identified in Alternative 1, items a-e.

These recommendations improve application of vision triangle requirements at higher volume locations and restore and clarify prohibited and allowable features in vision triangles.

Staff does not recommend adopting any new standards to address skewed intersections, grades, and/or traffic controls. Information required from permit applicants would be significantly greater than what is currently required, and would likely result in increased permit review times and added costs to applicants. Also, there are not sufficient staff resources to conduct engineering reviews of all vision-triangle permits.

Staff is not recommending use of HDM guidance. Staff believes it would be extraordinarily impractical to implement the HDM standard in Sunnyvale. The HDM guidance cannot practically be implemented in many Sunnyvale settings without extremely high costs, environmental disruption, significant loss of on-street parking, and potentially infeasible removal of many existing obstructions.

Reviewed by:

Kent Steffens, Director, Public Works
Prepared by: Jack Witthaus, Transportation and Traffic Manager

Approved by:

Gary M. Luebbers
City Manager

ATTACHMENTS:

A. Study Issue paper DPW 09-02 Update/Review Corner Vision Triangle Municipal Code Ordinance
B. 40 Foot Intersection Vision Triangle Diagram
C. 10 Foot Driveway Vision Triangle Diagram
D. Visual Study of Application of Highway Design Manual Sight Distance Standards

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ATTACHMENT A

2011 Council Study Issue

DPW 09-02 Update/Review Corner Vision Triangle Municipal Code Ordinance

Lead Department Public Works

History **1 year ago** Below the line **2 years ago** Deferred

1. **What are the key elements of the issue? What precipitated it?**

   At an intersection, the corner vision triangle is formed by measuring 40 feet from the property line of each of the intersecting streets, according to current City policy. The driveway vision triangle is created by measuring 10 feet along the outer edge of a driveway and 10 feet along the back edge of a public sidewalk. Fences, hedges or any other obstructions more than 3 feet in height are prohibited in the vision triangles.

   The Bicycle and Pedestrian Advisory Commission would like to review the relevance and adequacy of the corner vision triangle in the Sunnyvale Municipal Code (SMC). The Commisson believes that visibility at street intersections and driveways is extremely important for the safety of pedestrians and bicyclists, and that the current ordinance may not adequately ensure that adequate visibility is provided. For example, the current vision triangle ordinance does not take into consideration street curvature, intersection angle and type of control, and consistency with the Highway Design Manual. This issue was initiated because of a vision problem at the driveway that was constructed on Mathilda Avenue for the Cherry Orchard retail center.

   Sunnyvale's policy does not presently allow for a sliding scale or reduction in the required vision triangles. Some cities, but not Sunnyvale, allow sight triangle encroachments based on the fence design. An open decorative type fence design would allow for the greatest visibility, and two prime examples of this style are wrought iron and open-type wood fences. In 2008, City Council decided to broaden the BPAC initiated study issue to examine the benefits of modifying the SMC by taking into account the openness or transparency of the fence in conjunction with the height of the fence.

2. **How does this relate to the General Plan or existing City Policy?**

   C3 – Attain a transportation system that is effective, safe, pleasant, and convenient.

3. **Origin of issue**

   Board or Commission Bicycle and Pedestrian Advisory Committee

4. **Staff effort required to conduct study** Major

5. **Multiple Year Project?** No **Planned Completion Year** 2011

6. **Expected participation involved in the study issue process?**

   Does Council need to approve a work plan? No
   Does this issue require review by a Board/Commission? Yes
   If so, which? Bicycle and Pedestrian Advisory Committee, Planning Commission
   Is a Council Study Session anticipated? No

7. **Briefly explain cost of study, including consultant hours, impacted budget program, required budget modifications, etc. and amounts if known.**

ATTACHMENT A

The study would be conducted by Public Works and Community Development staff. Costs would be minor and would be absorbed by operating budgets.

8. Briefly explain potential fiscal impact of implementing study results (consider capital and operating costs, as well as potential revenue).

There would be no fiscal impact related to the recommendations of the Study.

9. Staff Recommendation

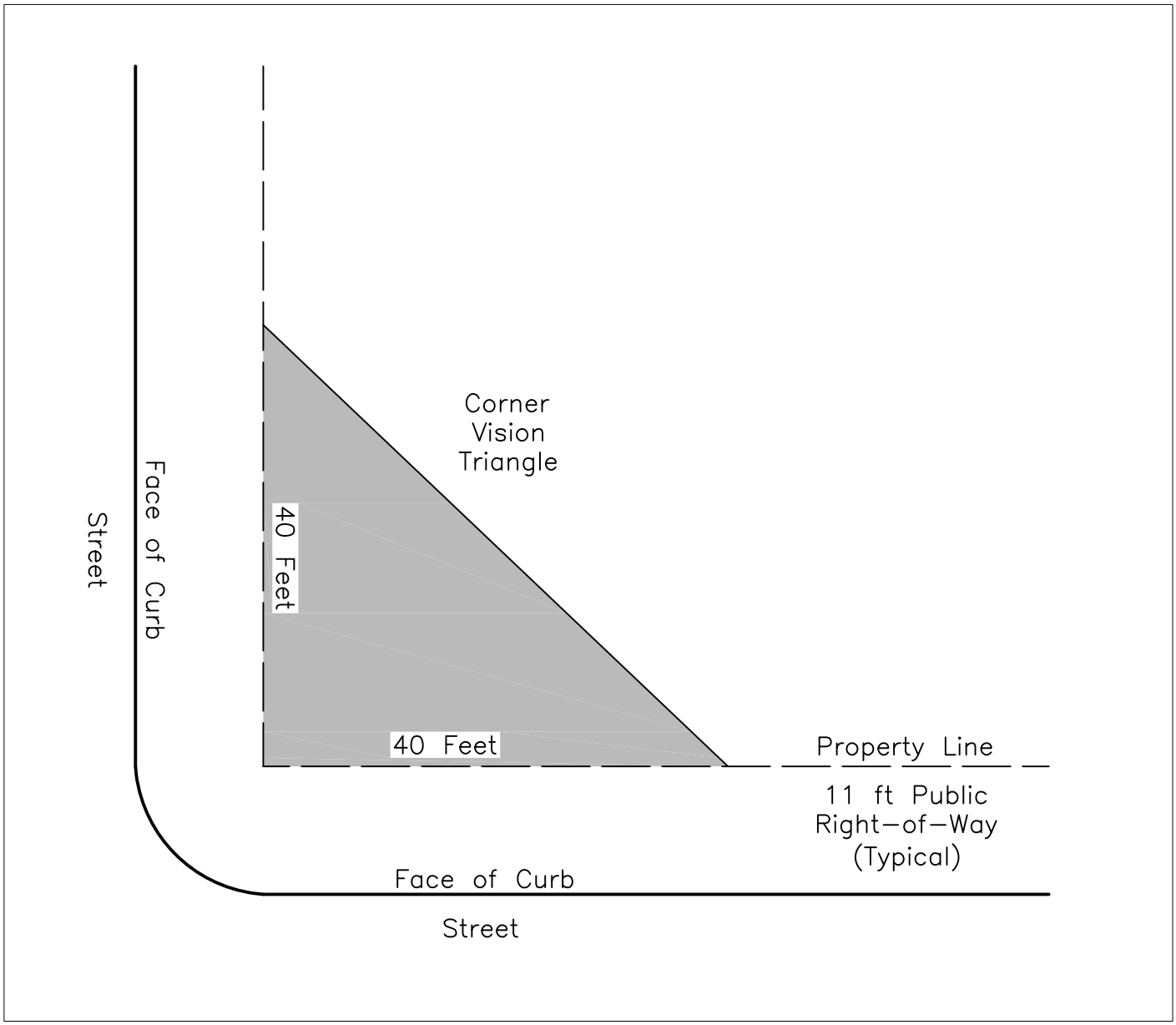
Staff Recommendation Against Study

If 'For Study' or 'Against Study', explain
Staff believes the current policy is adequate. The current process allows for property owners to request a variance from vision triangle requirements, which provides some flexibility. Also, staff can condition projects during the design review process to provide differing sight distance, based upon unique site characteristics.

Reviewed by		Approved by	
Marvin A Rose	11/1/2010		11-2-10
Department Director	**Date**	**City Manager**	**Date**

Attachment "B"

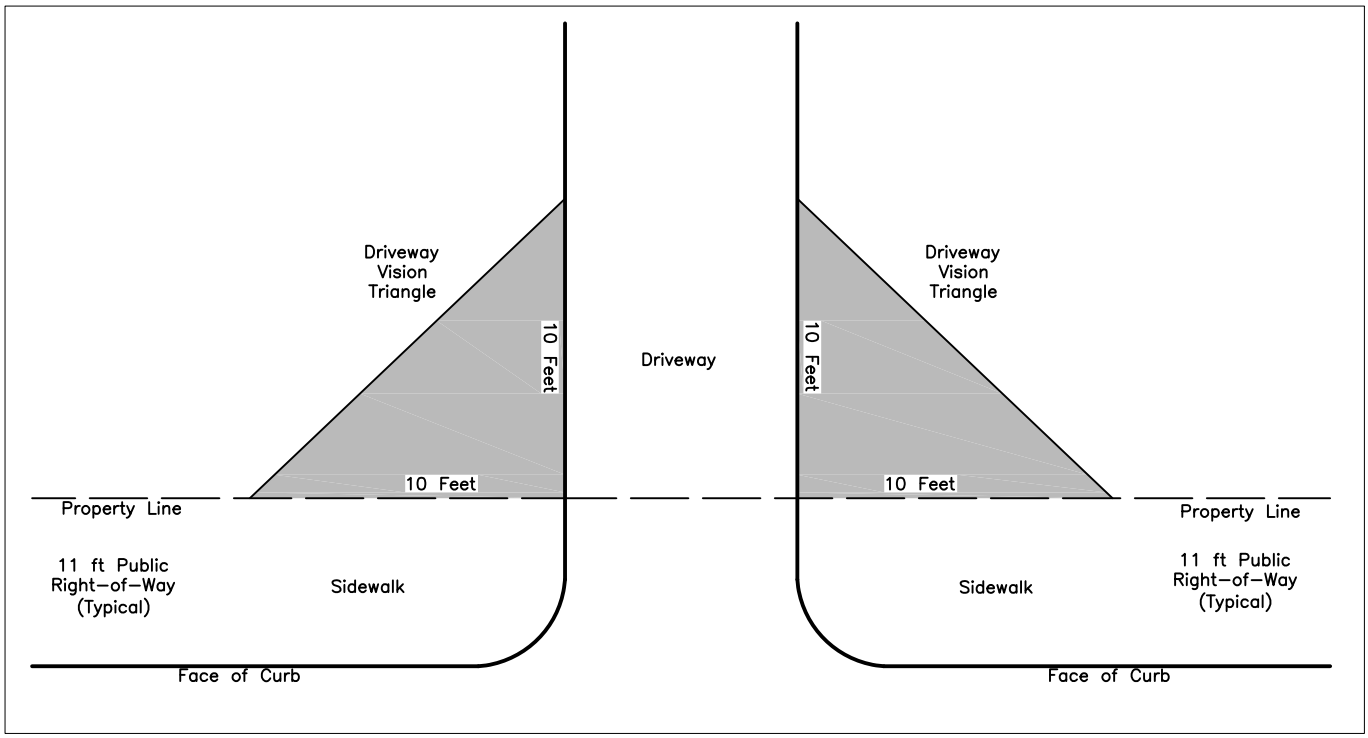
40 ft Corner Vision Triangle



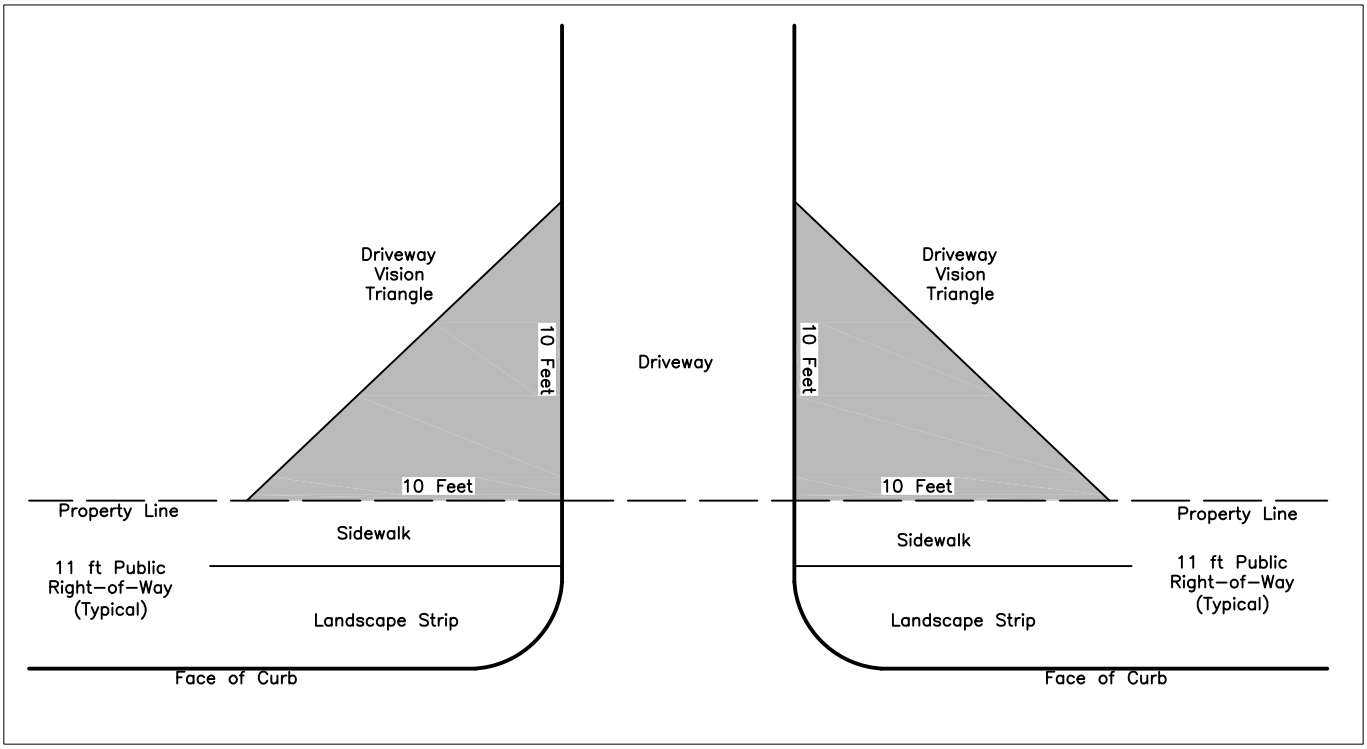
Attachment "C"

10 ft Driveway Vision Triangle

Landscape Strip Adjacent to Property Line



Landscape Strip Adjacent to Curb



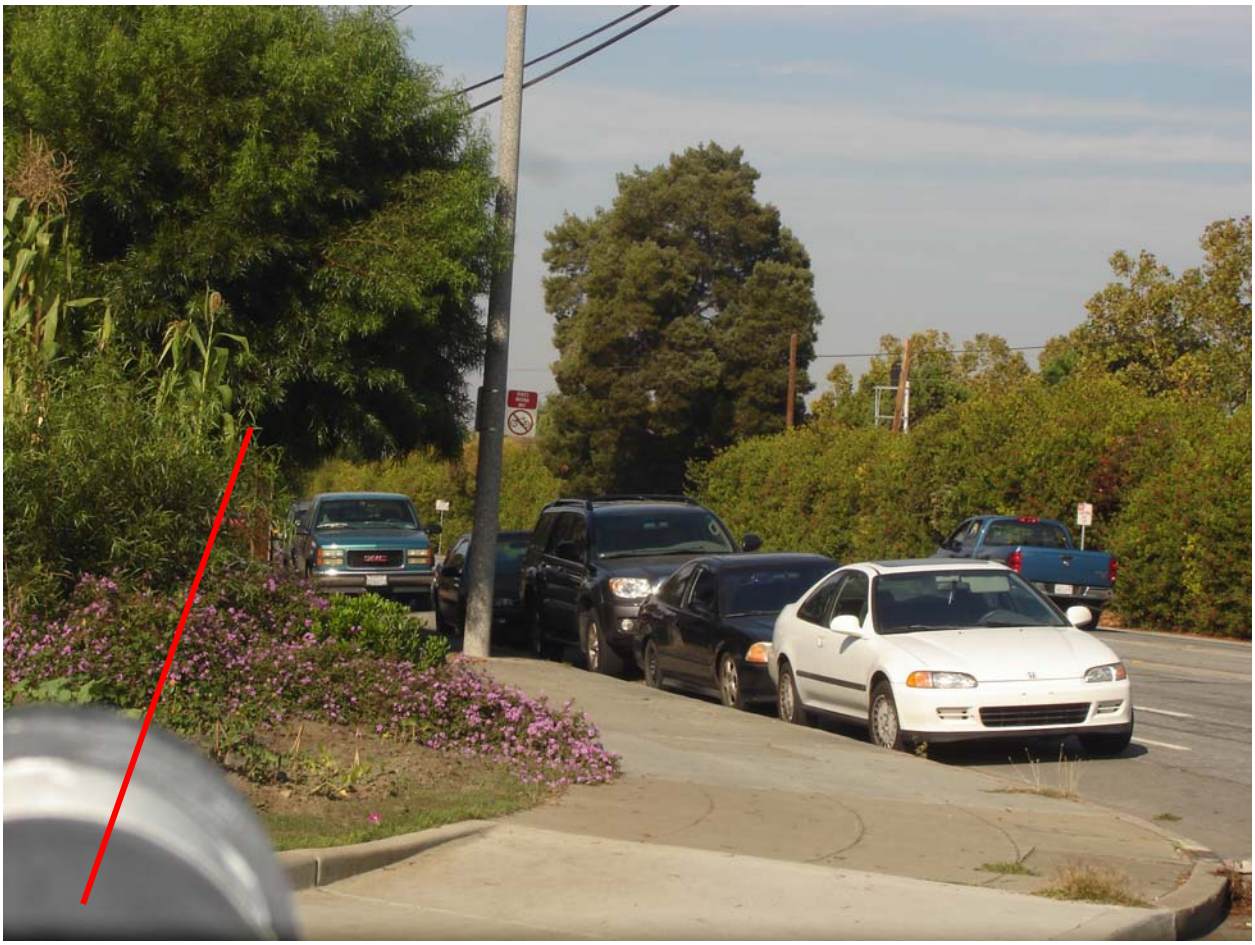
ATTACHMENT D
DEPARTMENT OF PUBLIC WORKS

DIVISION OF TRANSPORTATION AND TRAFFIC

Corner Sight Distance Field Demonstration

Location: Evelyn Avenue at Sunset Avenue
Assumptions:

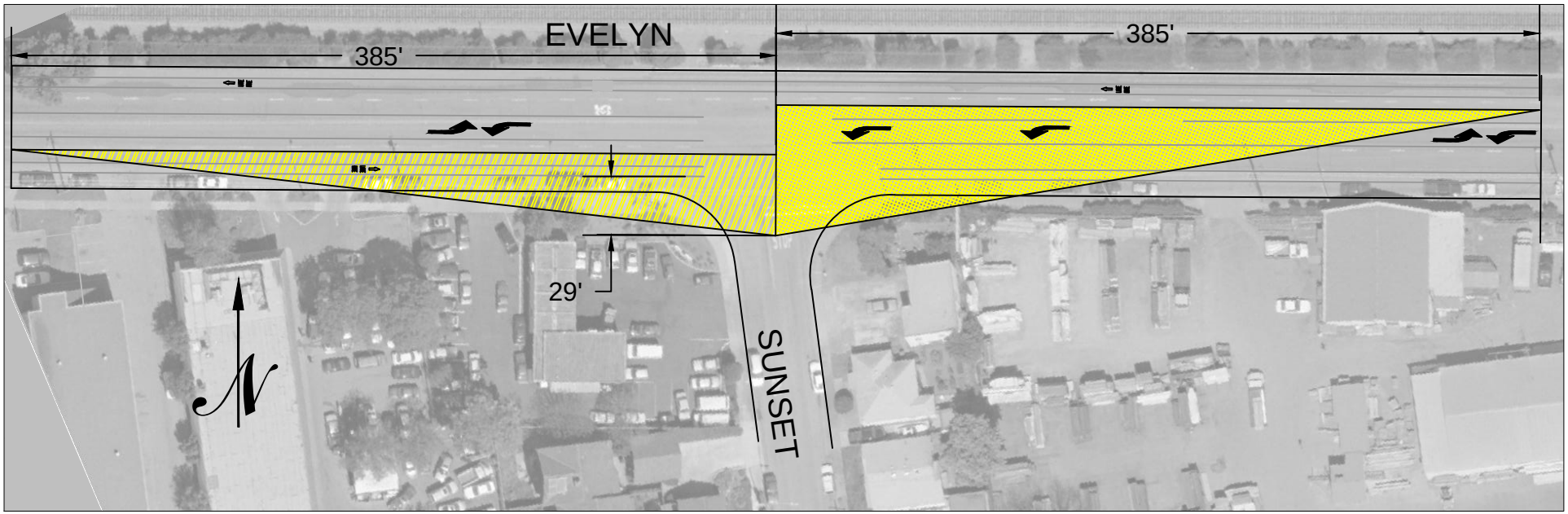
1. Evelyn Avenue speed limit 35 mph
2. Sunset Avenue speed limit 25 mph
3. Highway Design Manual Corner Sight Distance for Evelyn is 385 ft
4. Offset measured in field is 29 ft (parking along Evelyn on south side of street)



Location from where driver on northbound Sunset would be to see vehicle approaching from eastbound Evelyn.
Red line represents line of sight
Northbound Sunset looking to the left

CITY OF SUNNYVALE
DIVISION OF TRANSPORTATION AND TRAFFIC

AERIAL VIEW
EVELYN AND SUNSET



N.T.S

Corner Vision Triangle points on northbound Sunset and on eastbound Evelyn for vehicles approaching from the left

Location: Grape Avenue at Bennington Drive
Assumptions:

5. Grape Avenue speed limit 25 mph
6. Bennington Drive speed limit 25 mph
7. Highway Design Manual Corner Sight Distance for Grape is 275 ft
8. Offset measured in field is 26 ft (parking on both sides of Grape)

Location from where driver on eastbound Bennington would be to see vehicle approaching from southbound Grape
Red line represents line of sight
Eastbound Bennington looking to the left

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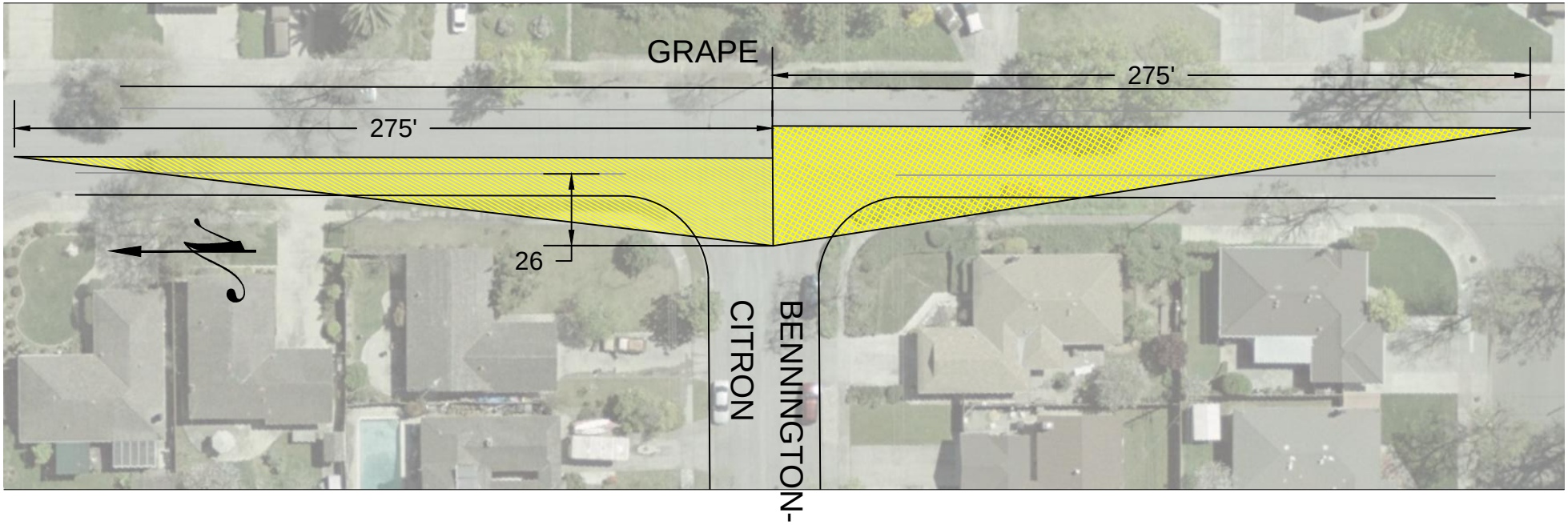
DIVISION OF TRANSPORTATION AND TRAFFIC

AERIAL VIEW
GRAPE AND BENNINGTON-CITRON



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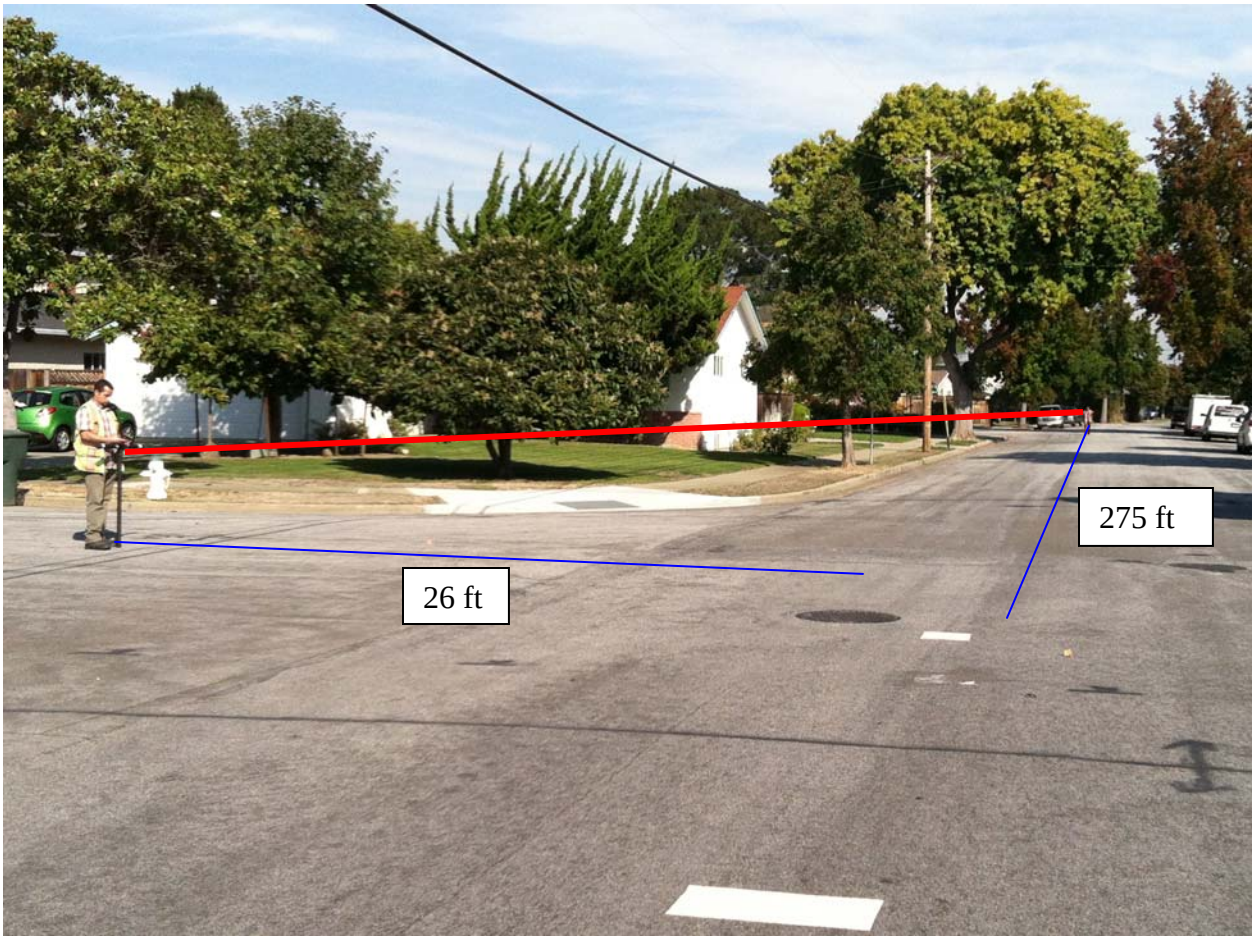

Corner Vision Triangle points on eastbound Bennington and on southbound Grape for vehicles approaching from the left