

**Community Focus Statement B:** Ensure safe and effective mobility options that accommodate the community’s needs throughout the year.

**Action Statement B.3: Advocate for and seek funding to construct traffic calming improvements that increase safety for pedestrians and visitors along Oak Glen Road with priority given to the busiest sections.**

**B**

**Benchmark:** Conduct a traffic calming study that includes a set of recommended traffic calming improvements for the corridor. Achieve community support for all improvements prior to implementation. Fund, design, and construct a set of improvements.

**Champion:** Volunteer group or person or can be identified by the community

**Estimated Cost:** \$20,000–\$5,000,000



*Experimental speed markings with red background have been shown as effective in reducing vehicle speeds. Photo source: [Federal Highway Administration \(FHWA\) Research and Technology](#)*

Safety for pedestrians and cyclists along major roadways is a challenge, particularly along constrained roadways that do not incorporate dedicated bicycle and pedestrian facilities. Oak Glen Road, as it travels through Oak Glen, is currently two lanes and does not include pedestrian or cyclist amenities. Further, the roadway accommodates high-speed traffic, which impacts the safety of pedestrians and cyclists attempting to cross or travel along the corridor. Latent demand exists as these high operating speeds reduce use of the roadway by pedestrians and cyclists.

In order to address these issues, traffic calming measures could be implemented along the roadway to reduce vehicle speeds and create a more bicycle- and

pedestrian-friendly environment. Traffic calming can also improve roadway safety. The safety/mobility plan completed in Action Statement B.2 should be used as the starting point for Action Statement B.3. Prior to the development of new traffic calming infrastructure along the roadway, a corridor study should be completed to evaluate the condition of the roadway and develop potential solutions to challenges experienced along the roadway if not included in the safety/mobility plan. Once this study is complete, new infrastructure could be planned and prioritized along Oak Glen Road.

For Oak Glen Road, traffic calming measures could consist of physical design changes as well as other measures. These could include narrowed roads and speed humps, put in place on roads with the intention of slowing down or reducing motor vehicle traffic as well as to improve safety for pedestrians and cyclists. Table 1 includes samples of potential options and possible typical costs per item or measure to be considered in the potential future study, planning, and any design and implementation along Oak Glen Road. These can be mixed and matched and used liberally as needed to enhance public safety.

Since Oak Glen Road is a County-maintained facility, obtaining the support of the San Bernardino County Board of Supervisors for the general implementation of traffic calming measures and the County Public Works Department during planning and funding efforts.

**Traffic Calming Measures and Estimated Typical Costs**

Potential Traffic Calming Measure	Description	Cost (typical per measure or item)
Traffic Calming Study	<ul style="list-style-type: none"> <li>Study to indicate proper locations for traffic calming measures</li> </ul>	\$20,000–\$50,000
Speed Table	<ul style="list-style-type: none"> <li>Long raised speed humps with a flat section in the middle and ramps on the ends; sometimes constructed with brick or other textured materials on the flat section</li> <li>Sometimes called flat top speed humps, trapezoidal humps, speed platforms, raised crosswalks, or raised crossings</li> </ul>	<p>An overall reduction of motor vehicle speeds. More specifically, 85th percentile speeds reduced by 4 to 23 mph.</p> <p>Costs: Both speed humps and speed tables cost on average approximately \$2,500 each, with low estimates of about \$1,000 and high estimates of \$6,900 (Costs for Pedestrian and Bicyclist Infrastructure Improvements – FHWA 2013).</p>
Raised Intersection	<ul style="list-style-type: none"> <li>Flat raised areas covering entire intersections, with ramps on all approaches and often with brick or other textured materials on the flat section and ramps</li> <li>Sometimes called raised junctions, intersection humps, or plateaus</li> </ul>	<p>Raised crosswalks are approximately \$5,000–\$7,000, depending on drainage conditions and materials used. The cost of a raised intersection is highly dependent on the size of the roads. They can cost from \$25,000 to \$70,000. (FHWA 2016).</p>
Neighborhood Traffic Circle	<ul style="list-style-type: none"> <li>Raised islands, placed in intersections, around which traffic circulates</li> <li>Higher speeds allowed (&gt;25mph)</li> <li>Stop, signal, or give priority to entering vehicle</li> <li>Require drivers to slow to a speed that allows them to comfortably maneuver around them</li> <li>Sometimes called intersection islands</li> <li>Different from roundabouts</li> </ul>	<p>The cost is approximately \$5,000–\$15,000. The cost varies depending on whether the traffic circle is landscaped and/or on an asphalt or concrete street. Traffic circles typically have a service life of 25 years (FHWA 2016).</p>

Potential Traffic Calming Measure	Description	Cost (typical per measure or item)
Roundabout	<ul style="list-style-type: none"> <li>• Circular intersection, without stop signs or traffic lights</li> <li>• Maintain relatively low speeds (&lt;25mph)</li> <li>• Yield at entry</li> <li>• Roundabouts are not traffic circles</li> <li>• Today's roundabouts are not like traditional traffic circles, which are often large, high-speed intersections that require the vehicles traveling in the circle to stop or yield to those entering. This often results in congestion, as well as crashes. Roundabouts are typically smaller, have slower speeds, and make entering vehicles yield to those already in the roundabout.</li> </ul>	<p>The average construction cost of roundabouts is estimated at approximately \$250,000. Roundabouts discussed in this report ranged in cost from \$194,000 to just under \$500,000, depending on their size (or "footprint" and right-of-way acquisitions that were needed) (FHWA 2000).</p>
Chicane	<ul style="list-style-type: none"> <li>• A series of narrowings or curb extensions that alternate from one side of the street to the other forming S-shaped curves</li> <li>• Also called deviations, serpentines, reversing curves, twists, and staggerings</li> </ul>	<p>The cost per unit is approximately as follows:            Median: \$8,050            Average: \$9,960            Minimum: \$2,140            Maximum: \$25,730            (Costs for Pedestrian and Bicyclist Infrastructure Improvements – FHWA 2013)</p>

Potential Traffic Calming Measure	Description	Cost (typical per measure or item)
Curb Extension/ Bulbout/Choker	<ul style="list-style-type: none"> <li>• Curb extensions at midblock or intersection corners that narrow a street by extending the sidewalk or widening the planting strip</li> <li>• Can leave the cross section with two narrow lanes or with a single lane</li> <li>• At midblock, sometimes called parallel chokers, angled chokers, twisted chokers, angle points, pinch points, or midblock narrowings</li> <li>• At intersections, sometimes called neckdowns, bulbouts, knuckles, or corner bulges</li> <li>• If marked as a crosswalk, they are also called safe crosses</li> </ul>	<p>Costs can vary depending on drainage, the addition of street furnishings, landscaping, and special paving, and whether utilities must be relocated. The cost to retrofit a four-leg intersection with curb extensions would be approximately \$100,000 (8 X \$12,620).</p> <p>Per unit, however, costs are as follows:            Median: \$10,150            Average: \$13,000            Minimum: \$1,070            Maximum: \$41,170            (Costs for Pedestrian and Bicyclist Infrastructure Improvements – FHWA 2013)</p>
Center Island Narrowing	<ul style="list-style-type: none"> <li>• Raised islands located along the centerline of a street that narrow the travel lanes at that location</li> <li>• Sometimes called midblock medians, median slow points, or median chokers</li> </ul>	<p><u>Cost per square foot:</u>            Median: \$9.80            Average: \$10.00            Minimum: \$2.28            Maximum: \$26</p> <p><u>Cost per island:</u>            Median: \$10,460            Average: \$13,520            Minimum: \$2,140            Maximum: \$41,170            (Costs for Pedestrian and Bicyclist Infrastructure Improvements – FHWA 2013)</p>



Action	Action Leader	Timeline	Resources
1. Review safety/mobility plan from Action Statement B.2. Define the project study area and the desired project traffic calming goals.	Public Safety Committee	Months 1 – 2	Effective Application of Traffic Calming Techniques, Preliminary Investigation, Caltrans Division of Research and Innovation
2. Coordinate with County Department of Public Works.	Public Safety Committee	Month 3	<a href="http://www.dot.ca.gov">http://www.dot.ca.gov</a>
3. Request the formation of a special district for streets if not completed or part of Action Statement B.2.	Public Safety Committee and County Special Districts Department	Month 4	Institute of Transportation Engineers (ITE) Traffic Calming Measures <a href="http://www.ite.org">www.ite.org</a>
4. Gain support from the San Bernardino County Board of Supervisors.	Public Safety Committee	Month 5	US Department of Transportation, Surface Transportation Improvement Grants
5. Building on the safety/mobility Plan ,conduct a traffic calming study that includes a needs assessment, recommended improvements, conceptual design, a cost estimate, and an implementation plan.	Public Safety Committee	Months 6 – 18	<a href="https://www.transportation.gov/livability/grants-programs">https://www.transportation.gov/livability/grants-programs</a>  Federal Highway Administration, Bicycle and Pedestrian Program and State Highway Safety Office grants
6. Attempt to secure grant funding for design and construction.	Public Safety Committee	Months 19 – 40	<a href="http://www.fhwa.dot.gov/environment/bicycle_pedestrian/?redirect">http://www.fhwa.dot.gov/environment/bicycle_pedestrian/?redirect</a>
7. If grant funding is not available, coordinate with the County Special Districts Department to establish a Community Services District for Oak Glen safety and traffic calming improvements. (Combined effort with Action Statement B.2.)	Public Safety Committee	Months 41 – 104	US Department of Agriculture, Rural Development Grants <a href="http://www.rd.usda.gov/programs-services">http://www.rd.usda.gov/programs-services</a>
8. Conduct outreach with community representatives and emergency services providers to obtain community consensus on proposed improvements. Obtain community and stakeholder input on proposed improvements.	Public Safety Committee	Months 105 – 112	US Department of Housing and Urban Development, Reinvestment and Recovery Grants <a href="http://portal.hud.gov/hudportal/HUD?src=/recovery">http://portal.hud.gov/hudportal/HUD?src=/recovery</a>
9. Procure final design plans for proposed improvements and submit to County Public Works for plan review.	Public Safety Committee	Months 113 – 130	



Action	Action Leader	Timeline	Resources
10. Construct/implement corridor improvements with coordination with County Public Works.	Public Safety Committee and County Public Works	Month 131 – 146	Special Districts <a href="http://www.specialdistricts.org">http://www.specialdistricts.org</a>
11. Conduct community outreach/education program to inform users of the operational changes to the corridor with assistance of County Public Works.	Public Safety Committee and County Public Works	Months 147 – 150	<p>Institute of Transportation Engineers (ITE): <a href="http://www.ite.org/traffic/tcdvices.asp">http://www.ite.org/traffic/tcdvices.asp</a></p> <p>Bushell et al. Costs for Pedestrian and Bicyclists Infrastructure Improvements. Federal Highway Administration. October 2013. <a href="http://www.pedbikeinfo.org/cms/downloads/Countermeasure%20Costs_Report_Nov2013.pdf">http://www.pedbikeinfo.org/cms/downloads/Countermeasure%20Costs_Report_Nov2013.pdf</a>, accessed July 11, 2016.</p> <p>Federal Highway Administration, 2016. <a href="http://www.fhwa.dot.gov/publications/research/safety/00067/000672.pdf">http://www.fhwa.dot.gov/publications/research/safety/00067/000672.pdf</a>, accessed July 11, 2016.</p> <p>An Information Guide, FHWA-RD-00-67, Federal Highway Administration, Exhibit 5.2, pp 106, Washington, DC, June 2000. <a href="http://www.tfrc.gov/safety/00068.htm">www.tfrc.gov/safety/00068.htm</a>.</p>