

TRAFFIC CALMING

Speed is an issue on some Tierrasanta streets. One of our dilemmas is whether we want lower speed limits that are unenforceable by radar, or limits that are higher than we would like that are enforceable. Even if the limits are enforceable, enforcement may be sporadic because police officers must spend the time to enforce them. Further, some of us may be on the receiving end of citations.

One approach to a dilemma is to look for another alternative. Engineering, Education and Enforcement are the three E's of traffic safety. The City of San Diego has a project entitled [Vision Zero](#) that has material addressing these issues. My suggested pilot project represents the first: Engineering.

A basic problem is that many of our streets are designed for and encourage speeds higher than appropriate.

A long term approach that changes the nature of the streets to reduce speeds is known as TRAFFIC CALMING.

The City of San Diego has published a street design manual that discusses traffic calming techniques starting at page 77. It is well worth reading to inform our thinking about speed issues. It can be found by searching for San Diego Street Design Manual. ¹

According to the manual, traffic calming strategies generally fall into these categories:

- Horizontal deflections (chicanes, mini traffic circles, median slow points or chokers)
- Vertical deflections (road humps, speed tables, and raised crosswalks)
- Intersection pop-outs
- Traffic diverters (semi-diverters)
- Channelization

Drawbacks of these strategies are that they can be expensive, and if they don't work it can be expensive to return to status quo or try a different strategy.

¹<https://www.sandiego.gov/sites/default/files/legacy/publicworks/pdf/edocref/streetdesignmanual02.pdf>

However, I have identified a way to try one of these horizontal deflection strategies, traffic circles, inexpensively on a pilot project basis that can be easily reversed or modified. It can also be applied to many of the other strategies.

Draft Traffic Circle Proposal:

In the January TCC meeting there was discussion about installing a 3-way stop sign on Villarrica way to address high traffic speeds. I noted that traffic circles were suggested for a similar problem on Rueda Dr. and might be helpful on Villarrica Way. The traffic engineer who addressed the Council in November said that traffic circles cost \$150,000 and up. At that price they make little sense simply for traffic calming.

The Engineering Department at Stanford University is famous for innovative solutions to engineering problems. One such innovative solution is this inexpensive and elegant approach to making a traffic circle. Stanford University campus uses a type of traffic circle that can be installed for approximately 1/75 of that cost, or approximately \$2,000 each.



Traffic Circle at corner of Serra Mall and Lasuen Mall at Stanford University. Note: This only shows in the Google Maps App or Google Earth, not in maps.google.com.



Aerial view of traffic circle at corner on Lasuen Mall and Serra Mall at Stanford University.

The construction of this type of traffic circle is very simple. It is composed of speed bumps in a circular pattern to direct traffic. The bumps are made from recycled tires or plastic and can be attached to the asphalt with either 12 inch spikes or with screw in attachments. It appears the Stanford installation was done with the spike system. The only other part of construction is asphalt paint with the proper patterns to alert and direct traffic around the circle.

Cost: The 6 foot speed bumps cost approximately \$150 each, delivered. The cost goes down with larger orders. (Traffic Safety Store sells for \$110 each plus tax and delivery for orders of 50+) The traffic circle at Stanford is approximately 12 feet in diameter and required 7 speed bumps with one cut in half. Speed bump suppliers estimate that the materials for one circle would cost less than \$1,000, delivered. After a crew became proficient at installation it would only take an hour or two for attaching with spikes and an hour or two for paint. If screw-in attachments were used it might take somewhat longer. Alternatively, there are small speed

bumps about 18 inches long that could serve the same purpose. They come in white or yellow and cost about \$36 each.

Thus, estimated cost is \$2,000 per circle--\$1,000 for materials and \$1,000 for installation and painting.



Detail of installation of speed bumps and paint to form traffic circle.

Benefits:

- Traffic circles have been shown to be effective traffic calming devices. I've driven in towns with a lot of traffic circles and they change the whole character of traffic flow making it much more sedate. They work really well.
- Traffic circles are energy efficient because they eliminate the extra fuel needed for stopping and starting at intersections. City plans to address energy efficiency call for more use of traffic circles.

- Traffic circles are safer than cross-style intersections. They reduce the number of conflict points and the risk of head-on or T-type collisions because cars traversing the circle are traveling closer to parallel paths.
- Traffic circles reduce the noise from vehicles starting and stopping.
- Traffic circles do not stress vehicle suspensions the way speed bumps do.
- This type of traffic circle would not require any change to the in-street utilities and would be inexpensive to remove and replace if water, sewer, or electrical lines had to be accessed by opening the street.
- This type of traffic circle would not impair access to the manhole covers that are located in the intersections on Rueda Dr.
- This type of traffic circle would not significantly impede access by emergency vehicles or other large vehicles. If necessary, such vehicles could simply drive over the traffic circles.

Potential problems:

- Vehicles need to deviate around traffic circles. That is the source of their traffic calming effect.
 - Some parking spaces would be lost along the curb within a reasonable distance of each traffic circle to allow vehicles to deviate around them.
- People living on Rueda Dr. may not like losing some parking spaces. However, the reduced speed of vehicles on Rueda Dr. might persuade them to accept the reduction in parking spaces, particularly where few cars seek to park. This would less of an issue on Villarrica.
- If the speed bumps need to be removed for resurfacing of the streets it would likely require cutting/removing the attachments and reinstallation. However, since the circles would get little or no traffic, interim slurry sealing could be applied around them and the only cost would be repainting the traffic directing patterns.

Proposal:

I propose a pilot project to install traffic circles like this in the intersections on Villarrica Way and Rueda Drive where traffic speeds are an issue and at the corner of El Comal and Amaro Dr.

Villarrica Way would require two circles.

Rueda Dr. would require 17 to put a circle at each intersection between Clairemont Mesa Blvd. and Tierrasanta Blvd. Alternatively, 8 circles could be installed on the downhill part--the major speed issue.

El Comal and Amaro Dr. would require one.

Thus, total cost for the full pilot project might be in the range of \$40,000. It is my understanding one speed calming sign costs \$8,000, so four traffic circles could be installed

for the cost of one speed calming sign. If an alternative with fewer circles on Rueda Drive is chosen, the cost might be in the \$20,000 to \$22,000 range.

