

The critical or 85th percentile speed on the Novato Boulevard at the west city limit is 46 mph, therefore the nearest 5 mph increment is 45 mph, which is the posted speed. However the CVC and MUTCD permit a five mph reduction from the nearest five mph increment if there are factors that would support such a reduction. For example there is no eastbound bicycle lane which forces bicyclists to share the travel lane with eastbound drivers. Segment collision history is another factor that can be considered, which in this segment included a school-age bicyclist fatal collision in 2012. Adjacent speed zones are also factors to be considered: The posted speed in the unincorporated area west of this segment is 45 mph, while the speed zone to the east, between the high school and Novato Creek/Eucalyptus Drive, is 35 mph. If all these factors were taken into account, a 40 mph posted speed limit would be reasonable, and this change in posted speed limit is recommended at this time.

In the long term, when the Novato Boulevard ETS expire or road conditions change, city staff may wish to undertake a review of all the speed zones on Novato Boulevard. One reason is that five of the remaining eight speed zones are posted at speeds higher than the permitted 5 mph reduction speed, as can be seen in Table 1. Additionally, speed zone lengths should be greater than 0.50 miles except in transition areas, according to MUTCD standards. Eight of the nine speed segment lengths on Novato Boulevard are less than 0.40 miles, less than the recommended minimum half-mile, and combining some of them may be beneficial.

Speed Feedback Tools

Police speed enforcement provides feedback to individual drivers though obviously this is labor-intensive and continual police presence is not possible. Automated methods of speed feedback are effective tools for travel speed reduction, whether portable speed feedback signs or pole-mounted signs are used. A portable speed feedback sign is battery-powered and typically deployed upon request. On June 14 a trailer-mounted sign was set up in the shoulder of eastbound Novato Boulevard near San Marin High School, as shown in Plate 1, which we understand was deployed by Novato Police at the request of several residents.



Plate 1: Novato portable speed feedback sign on eastbound Novato

A pole-mounted speed feedback sign is installed on southbound San Marin Drive at the entrance to San Marin High School, which is shown in Plate 2. This sign is set at a height that enables drivers to see it from a greater distance than the trailer-mounted sign. Construction costs vary, though the estimated cost is approximately \$12,000, and if funds were available it is recommended that a speed feedback sign be installed on eastbound Novato Boulevard near San Marin High School, possibly included as part of a future street improvement project along this boulevard.



Plate 2: Fixed-mount speed feedback sign at San Marin High School.



Plate 3: Tunnel of trees as seen from westbound Novato Blvd near the high school.

Tree Limbs and Street Lights

Large trees line both sides of Novato Boulevard and tree limbs overhang the road and in some places converge to create a tunnel effect. There are no street lights on the south side of Novato Boulevard west of San Marin Drive-Sutro Drive, while there is one street light at each intersection on the north side of the street, including one at Sandy Creek Way and Copper Hill Way. Though beautiful, some of the trees create shadows and restrict natural light during the daytime, which is less available during the winter months when school is in session. Shadows can be seen in the photo in Plate 3. Some

of these trees have been pruned where their limbs encroached onto overhead utility lines. Residents also have expressed concern for dropping limbs; this year after a particularly wet winter we understand that a limb dropped on the north side of the street near the high school rear lot entrance. Several tree branches block signs. Pruning

and/or removing tree limbs is recommended, to improve lighting levels and traffic sign visibility, and to eliminate potential limb drops onto the street below.

Installing a street light at the high school rear lot entrance may be necessary to help drivers locate this access point, especially helpful during high school extra activities. It is recommended that a study be initiated to determine if street lighting in this area is needed.

Traffic Signs and Markings

Signs

There are several *warning* signs posted along both sides of Novato Boulevard, including equestrian signs, pedestrian signs, speed reduction signs, and stop ahead signs. *Regulatory* signs are also posted, including 45 mph speed limit signs, 35 mph speed limit signs, 25 mph school speed zone signs, and no parking signs. Depending on potential changes to the posted speed limit, several of the regulatory signs should be removed or relocated to maximize the benefit of these signs, and the locations of several other traffic signs should be reviewed and signs removed if appropriate in order to eliminate sign clutter.

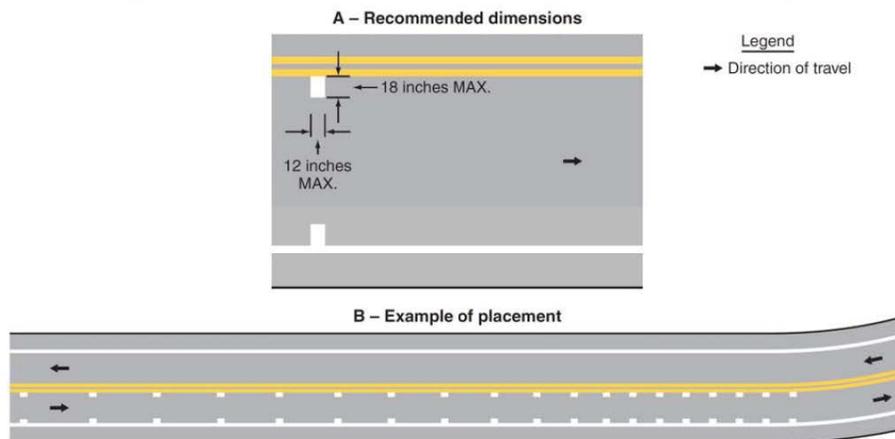
Given the popularity of Dog Bone Meadow and the park's patrons' habit of parking in the Novato Chase neighborhood on the north side of the street, pedestrian crossing signs and possibly enhanced crosswalk facilities should be installed.

Markings

There are various pavement markings and striping, including centerlines, medians, and center turn lanes, and white bike lanes or edge lines. The centerline and median striping details are missing reflective markers, decreasing striping visibility. Refreshing the striping and adding reflective markers is a cost effective improvement that would especially help drivers at night and in foggy conditions.

Other markings can be added or changed in order to affect travel speeds. For example, in the long term, when Novato Boulevard is repaved or reconstructed or otherwise improved, travel lane widths can be reduced and an eastbound bike lane could be added. These changes help reduce travel speeds and increase bicyclists' safety and comfort. Speed reduction markings, as shown in the MUTCD Figure 3B-28 below, could also be installed; they are used to reduce traffic speeds, especially in rural-urban boundaries such as the west city limit on Novato Boulevard. The markings consist of rectangles along each edge of a travel lane with gradually decreasing spacing.

Figure 3B-28. Example of the Application of Speed Reduction Markings



Intersection Controls

The intersection of Novato Boulevard/San Marin Drive-Sutro Drive is an all-way stop controlled intersection. There are nine approach lanes to this large intersection, including four left-turn lanes, four through lanes, and one southbound right-turn lane. During one of the observation periods drivers were seen hesitating to enter the intersection because they were unsure of their right-of-way. When pedestrians entered either of the crosswalks, the hesitation and uncertainty dramatically increased. These behaviors are a concern, and it's likely that inexperienced drivers that are typically found at high schools, would exacerbate this situation. Additionally, the traffic volumes entering the intersection were high when observed, despite the fact that school was out for the summer. It is recommended that a warrant evaluation be initiated to assess the need for a traffic signal or roundabout at his intersection. These controls would be expected to decrease confusion, increase capacity, decrease delay, and/or improve air quality.

Recommendations

- 1) It is recommended that the existing 45 mph posted speed limit be reduced to 40 mph for the segment of Novato Boulevard between the west city limit and the rear lot of San Marin High School. The existing ETS was re-reviewed and it was determined that the current data supported the lower speed, which is justified as described above and summarized on the updated ETS form.
- 2) It is recommended that various tree limbs be removed or pruned along Novato Boulevard within the study segment, to improve lighting levels and traffic sign visibility, and to eliminate potential limb drops onto the street below.
- 3) It is recommended that reflective pavement markers be installed along the existing centerline and median striping on Novato Boulevard west of San Marin Drive-Sutro Drive.
- 4) It is recommended that various traffic signs, including several posted speed limits, no parking signs, and possibly several warning signs, be removed or relocated to maximize sign benefits.
- 5) At such time as this segment of Novato Boulevard is resurfaced, which we understand is scheduled to occur next fiscal year, it is recommended that speed reduction markings be installed at the west city limit to reduce travel speeds of eastbound drivers entering the city from rural areas west of Novato.
- 6) As part of a future improvement project, it is recommended that a pole-mounted speed feedback sign be installed on eastbound Novato Boulevard near the San Marin High School rear lot. This is expected to reduce travel speeds of eastbound drivers.
- 7) It is recommended that a study be initiated to assess whether a street light is needed on Novato Boulevard at the high school rear lot entrance to help drivers locate this access point, especially helpful during high school nighttime activities.
- 8) It is also recommended that a warrant evaluation be conducted to determine if traffic signal or roundabout controls are warranted at the intersection of Novato Boulevard/San Marin Drive-Sutro Drive. These controls would be expected to decrease confusion, increase capacity, decrease delay, and/or improve air quality.

Thank you for the opportunity to provide these services.