

City of Lafayette Staff Report

For: City Council
By: Tony Coe, Engineering Services Manager
Meeting Date: October 9, 2012
Subject: East End Ped/Bike and Streetscape Improvement Project- Continued Discussion of Preliminary Design Concepts

Background

The Lafayette Capital Improvement Program for 2013 includes a project to improve street design and enhance safety and mobility for pedestrians and bicycles on Mt. Diablo Boulevard from First Street to Brown Avenue. In August staff presented preliminary design concepts for review by the City Council, who then directed staff to return with certain options to reconfigure the Golden Gate Way intersection, as well as adjustments to the median layout based on public comments received. This report will present staff's analysis and recommendations on those items and seek approval from the City Council to commence engineering and design work on the project.

Median Layout Adjustments

The Downtown Street Improvements Master Plan envisions a continuous median along Mt. Diablo Boulevard, generally occupying the present two-way left-turn lane. Responding to public review, staff proposes an alternative "intermittent median" layout, which strategically incorporates openings in the medians to allow continued left-turn access to driveways serving most of the businesses along the boulevard. Subsequent to the August City Council meeting, staff has had continued discussions with representatives of the Corporate Terrace complex. While the "intermittent median" plan shown in Figure 1 below would allow left-turn ingress, exit movements are limited to right turns only.

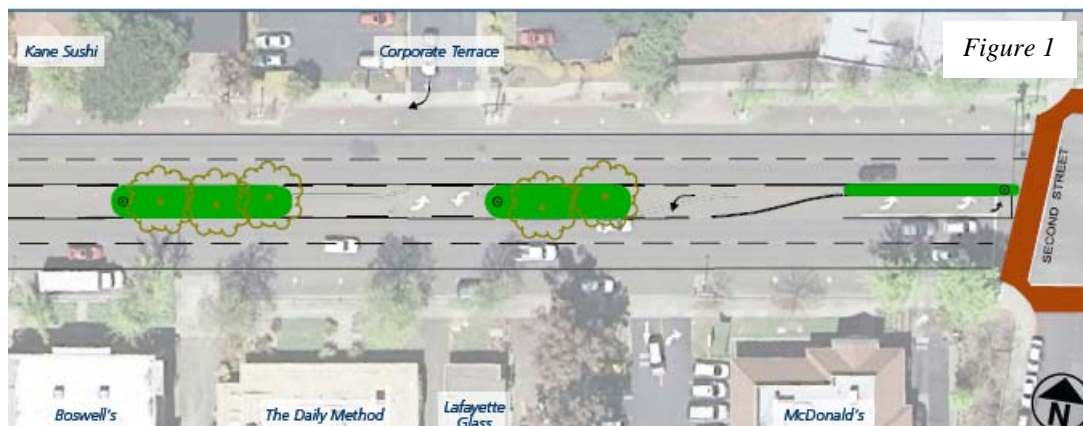
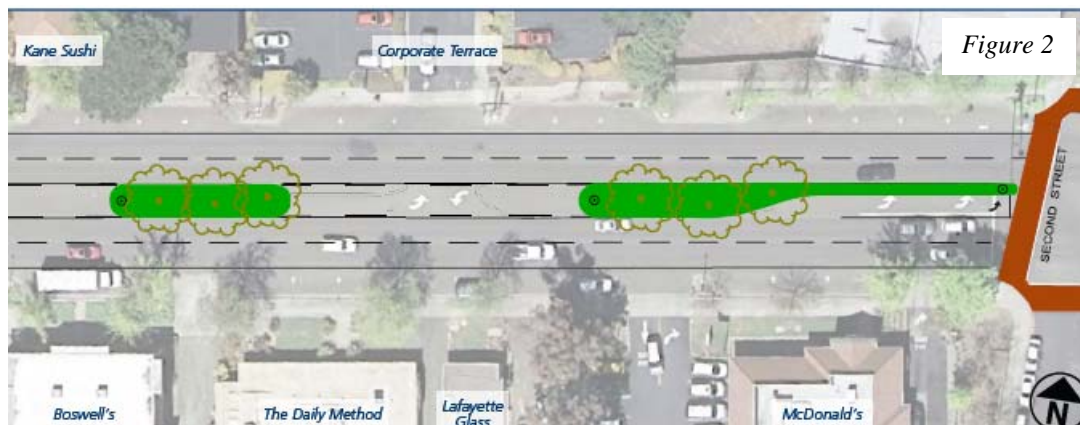


Figure 1

This limitation on the exit movements means that vehicles wishing to go east must either use the secondary exit on First Street or make a U-turn at the intersection of Mt. Diablo Boulevard/First Street. The secondary exit on First Street is about 80 feet south of and connects directly with the eastbound on-ramp to SR24, with the next Lafayette exit being Pleasant Hill Road. Depending on their destinations, this route would inconveniently require some people to travel an extra distance. It is possible to connect to Deer Hill Road and go east from the Corporate Terrace secondary driveway on First Street. Due to the close proximity of the driveway to the on-ramp, drivers may find it difficult to merge out of the on-ramp lane immediately after exiting the driveway.

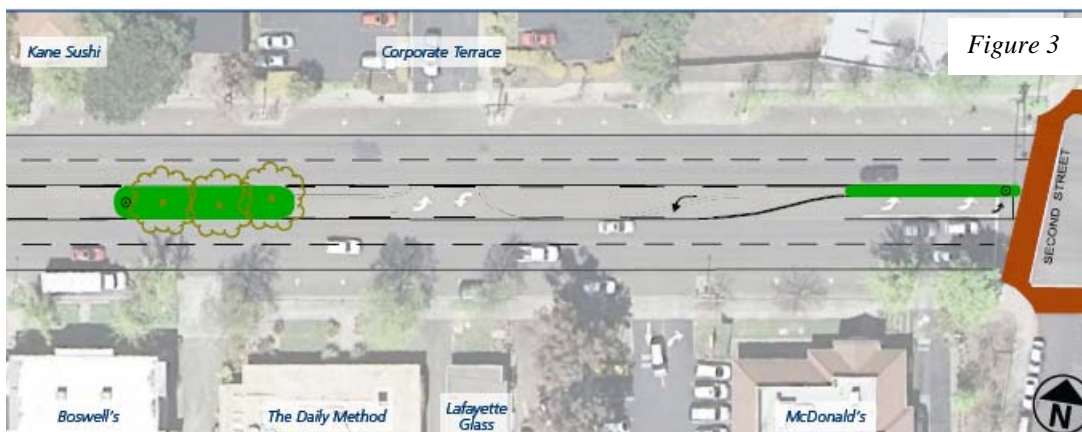
The alternate route involves turning right out of the Corporate Terrace driveway on Mt. Diablo Boulevard, traveling about 450 feet to the intersection at First Street, and making a U-turn at the signalized intersection or turning right to go north to the freeway on-ramp or Deer Hill Road. This option is admittedly also somewhat inconvenient but certainly safe and viable. The distance is sufficient to allow the average driver to merge toward the left-turn lane at the intersection under typical conditions. During peak traffic time, westbound queues on Mt. Diablo Boulevard would occasionally extend from First Street to the Corporate Terrace driveway. This condition requires exiting vehicles to wait longer for an acceptable gap to turn onto the boulevard, and merging left to make a U-turn under this condition may be more difficult than average conditions. In this case, turning right onto First Street and using the freeway ramp or Deer Hill Road may be an easier alternative. At the First Street intersection the added U-turn volumes would have negligible impact on the current signal operation. The critical movements that dictate the cycle length and green time allocation at this signal are the eastbound left turn and the westbound through movements. The additional U-turns would lengthen the green time required for the westbound left turn, which is served concurrently with either the eastbound left or the westbound through movement depending on the time of day. Given that the volumes of those two critical movements far exceed the westbound left turns by a factor of at least 20, the green time for the latter can be extended substantially without any detectable effect on the overall signal operation.

There are two optional modifications to the median layout that would maintain the left turn egress movement from Corporate Terrace. The first scheme shown in Figure 2 below pushes the median fronting the property further to the east, thus creating the space needed to accommodate vehicles turning left out of the driveway.



The drawback to this option is that left turn access to the McDonald's driveway is now obstructed. Representatives of McDonald's are equally vehement in their opposition to any median layout that impact full access to their property. In essence, the above option trades one unhappy customer for another.

To avoid impacts to both subject driveways, the entire median between the two must be eliminated, as shown in Figure 3 below. This area simply reverts back to the existing two-way left-turn operation that exists today. While this scheme fully accommodates the businesses in question, it obviously detracts from the goal of maintaining the spirit the Master Plan in a consistent and coherent way. There will be a section of Mt. Diablo Boulevard about 300 feet long west of Second Street where streetscape improvements will essentially be omitted.



For that reason, staff has reservations about this option and maintains our position that the original “intermittent” layout in Figure 1 strikes the best balance between the competing interests under consideration.

Recap of Roundabout Proposal

In our August report to the City Council staff makes a case for considering a modern roundabout at the intersection of Mt. Diablo Boulevard and Golden Gate Way. Recall that staff's proposal is to address three major goals that we believe to be critically germane to the current and future viability of this intersection as a part of a vibrant Lafayette small-town downtown. They are:

1. Restore pedestrians' ability to cross Mt. Diablo Boulevard safely and without feeling intimidated by vehicles, which currently exhibit a low propensity to respect traffic laws governing pedestrian rights-of-way.
2. Moderating prevailing traffic speeds to a level that is commensurate with a downtown setting that accommodates safe and convenient mobility for users of all modes, including people who cannot and do not want or need to drive.
3. Transform the existing auto-dominant streetscape design to a pedestrian-scale environment that supports on-going and future development and revitalization of the

area. Research shows that pedestrian and bicycle mobility increases economic vitality of downtowns.



Staff's proposal has generated a strong reaction from the community. While some recognize the benefits of achieving the above stated goals, many people oppose the idea of a roundabout. By a wide margin the single most cited reason is the belief that a roundabout would create congestion on Mt. Diablo Boulevard. While the August staff report on the roundabout already presents data indicating traffic capacity to be a non-issue for the foreseeable future, it may be worth repeating some of that analysis here given the pervasive concern about traffic delay.

Two separate efforts have been made to analyze and understand the traffic impacts of installing the roundabout and reducing the number of travel lanes on Mt. Diablo Boulevard approaching the intersection. Available traffic data for the subject and two adjacent intersections to the east and west indicate that the peak traffic in the peak direction on Mt. Diablo Boulevard is in the order of 800 vehicles per hour currently. This peak direction is generally westbound during the morning commute hours, and eastbound in the evening. During the lunch time and after school hours, traffic is more balanced in both directions but generally less than the two commute peaks. At all other times during the day, traffic volumes are significantly lower based on observations of field conditions. Given that urban streets like Mt. Diablo Boulevard typically have a capacity of 1,000 vehicles per hour per lane, there is clearly excess capacity today, by a factor of more than two. To corroborate this conclusion staff created a simulated lane merge in both directions of Mt. Diablo Boulevard approaching Golden Gate Way. Simulations were done on two separate weekdays in late May and early June during the morning commute between 7:45 a.m. and 8:30 a.m. and the mid-day peak between 11:45 a.m. and 12:30 p.m. In both instances staff observed vehicles to move through the merge freely. Staff observed no congestion resulting from the lane merge; in fact, we noted periods of significant breaks in traffic, where large gaps existed between platoons of vehicles as a result of the cycling of traffic signals at the adjacent intersections.

Separately staff enlisted Reid Middleton, a well-recognized authority on roundabout planning and design, to assist in the analysis of the proposed roundabout operation at Golden Gate Way. To ensure a worst-case scenario, existing traffic volumes are scaled up to be consistent with future traffic projections of the “Cumulative Scenario” contained in the recently adopted Downtown Specific Plan. The Plan accounts for all development that can reasonably be expected to occur through 2030 at the maximum density that is typically allowed. This escalation is in the order of 25% above existing traffic levels. Reid Middleton concludes that the roundabout would still be operating at level of service “A” (the highest of six levels of service used to describe traffic flow conditions at intersections), with a vehicle-to-capacity ratio of no more than 72% *in the highest-peak direction*. Other movements at the roundabout would actually be operating at a v/c ratio of less than 50%. The average delay to decelerate when approaching the intersection, yield to traffic already circulating within the roundabout, and finally navigate through is in the order of 7 seconds. Given that Mt. Diablo Boulevard currently operates with an excess capacity with no traffic control- a condition that allows many vehicles to speed freely through the intersection- critics would point out that any delay is a delay. While that is technically correct, it is far from the “horrible congestion” being predicted by people who prefer existing conditions to remain unchanged.

Notwithstanding these speculations, hard data and facts suggest that the roundabout will have minimal impacts to the intersection’s capacity to handle traffic well into the future. In this case, moderating vehicle speeds clearly does not translate to debilitating congestion.

Alternative Intersection Configurations

In discussing the proposed roundabout City Council indicated to staff an interest in exploring another option for reconfiguring the intersection at Mt. Diablo Boulevard/Golden Gate Way and directed staff to return with analysis for consideration. As further background, staff would point out that two and half decades ago, the Master Plan contemplated the following layout for the intersection.



Figure 5

Note that all existing turning movements at the intersection are essentially preserved, with the exception of the eastbound left turn into the private driveway opposite Golden Gate Way. Because of the close proximity of the two intersections at Blackwood Lane and Golden Gate Way, there is insufficient room to install a transition taper into a turn pocket that would meet common standards. Moreover, there are benefits to locating a median island between the two intersections as shown to channel and organize the various movements into and out of Blackwood Lane and Golden Gate.

In evaluating this concept to incorporate into the current project, staff found it to be lacking in responding to the three stated project goals. The addition of medians does soften the streetscape and provide needed visual interest to some degree. Applying a high-visibility treatment to the crosswalk across Mt. Diablo Boulevard, together with the small refuge area afforded by the new median, would provide additional marginal improvements to pedestrian safety. The traffic movements on Mt. Diablo Boulevard, however, remain uncontrolled. The streetscape design does not sufficiently change the character of the intersection to alter the behavior of drivers to bring about the desired balance between vehicle and pedestrian rights-of-way. Pedestrians would likely continue to feel intimidated by vehicles when crossing the boulevard; because when vehicles are able to move at high speeds, they are typically not inclined to yield.

In an earlier report to the Circulation Commission, staff discussed the feasibility of augmenting the crosswalk with some variation of electronic warning signage. While this concept has been somewhat effective at some locations in Lafayette, installations at locations with similar road geometry and traffic conditions at the Lafayette Park Hotel and on Pleasant Hill Road at Condit Road were unsuccessful. The City's experience with in-pavement flashing light systems were not effective for those multilane boulevards with high prevailing speeds; and, in many instances, they gave pedestrians a false sense of safety. Some streets with an east/west orientation are also not ideal candidates for in-pavement flashers because, at dusk, drivers have difficulty seeing the flashing lights against the glare of the sun. Traffic signals were ultimately installed at those locations after warrants for them were met. As noted in the August staff report to the City Council, the subject intersection at Golden Gate Way currently does not meet traffic signal warrants. This analysis initially led staff to consider other options to more fully respond to the project goals.

The City Council's discussion in August centered on a variation of the layout envisioned by the Master Plan. In the scheme shown in Figure 6, below, the center median is continued across the intersection at Golden Gate Way, closing off left turns into and out of that street. There is no need to provide for turn lanes on Mt. Diablo Boulevard, and this provides significantly more space for streetscape enhancements. The substantial center median makes the road width in each direction on the boulevard appear much narrower than existing conditions. This helps to reduce the scale of the street visually and for pedestrians who wish to cross. But through traffic on the boulevard remains uncontrolled, and the wide median would have a measurable but probably small effect in slowing vehicular speeds approaching the crosswalk. As a result, the number of vehicles who would yield at the crosswalk would likely continue to be low.

By closing off Golden Gate Way to all left turns, some traffic would be diverted to the intersection of Mt. Diablo Boulevard and Second Street. The number of left turns out of Golden Gate Way is very low, around 10 vehicles during the peak hour. Westbound left turns into Golden Gate Way are more significant in number, more than 90 during the evening commute peak. Currently Mt. Diablo Boulevard/Second Street operates at a very high level of service (LOS “A”) throughout the day with minimal left turns in the westbound direction. Diverting the left turns from Golden Gate Way to this intersection would result in a couple of seconds in overall delay, but would unlikely cause any discernible traffic operational impacts. Having to detour around the Golden Gate Way intersection may likely raise the same objections that have been lodged against the median proposal elsewhere on Mt. Diablo Boulevard.



Figure 6

While this configuration begins to offer some of the benefits of the roundabout option, it also has trade-offs in terms of compatibility with future land-use planning. The recently-adopted Downtown Specific Plan has created a new district – the Plaza District – located on the south side of Mt. Diablo Boulevard and extending from Moraga Road to the east end of Golden Gate Way (the gazebo). The vision here is to create an intimate, pedestrian-friendly, mixed-use area that honors its historical roots and celebrates the cultural institutions within it. The specific plan envisions that the library will be a hub of community activities seven days a week and into the evenings; therefore, uses that take advantage of and create relationships with these activities will be the focus of this area. Plaza Way, which connects to Golden Gate Way, will be revitalized through private and public investment and become the gathering place for the community. This effort is already underway. Golden Gate Way will be transformed into a “slow street” where retail uses, restaurants, offices, housing and other compatible uses can thrive. Two parks will be built within the district; one at Golden Gate Way and First Street and the other adjacent to the gazebo.

Lafayette has a linear downtown with little opportunity to create viable pedestrian-oriented secondary streets. If the vision for the Plaza District is realized, Golden Gate Way will become that secondary downtown street with active retail and civic activities. Staff is concerned that the proposed blockage of one of the primary entrances to the district could inhibit the planning vision from materializing. The blockage would make properties on the east end of Golden Gate Way less accessible and potentially less desirable. Patrons and residents will not be able to easily enter and leave the area from the district's east end. To maximize the potential for realizing the planning vision for the Plaza District, staff continues to recommend retaining full access into and out of Golden Gate Way at its intersection with Mt. Diablo Boulevard.

The advantages and drawbacks of the roundabout as compared to the two median variations under consideration can be summarized in Table 1 on the following page. Considering all factors in the context of the project goals to 1) improve pedestrian safety, 2) moderate vehicle speeds to be commensurate with a downtown setting, 3) transform the project area to a pedestrian scale, walkable environment; staff continues to recommend the roundabout as the most viable alternative to not only address known existing issues, but to also support the on-going revitalization of the project area.

Recommendation

Staff recommends that the City Council takes the following actions:

1. Confirm preference for the "intermittent median" layout as previously presented for Mt. Diablo Boulevard between First Street and Brown Avenue.
2. Direct staff to proceed with engineering and design of the project, to include a modern roundabout at the intersection of Mt. Diablo Boulevard and Golden Gate Way.

Attachments

1. Proposed Alternate Median Layout ("Intermittent Medians" Concept) and Roundabout Photo-Simulation
2. Compilation of Public Comments Received

Table 1: Comparison of Options for Configuring Golden Gate Way Intersection

Project Goals	Roundabout (Figure 4)	Master Plan Median Layout (Figure 5)	Median across Golden Gate Way (Figure 6)
Pedestrian Safety	<p>Pro: Shorter crossing distance and lower approaching vehicle speed will result in a significantly safer pedestrian crossing.</p> <p>Con: Some people, especially the visually-impaired, prefer explicit cues on when to cross, like at a traffic signal.</p>	<p>Pro: Golden Gate Way is stop-controlled, requiring a mandatory stop.</p> <p>Con: No substantive improvements for peds crossing Mt. Diablo Blvd. compared to existing conditions.</p>	<p>Pro: Golden Gate Way is stop-controlled, requiring a mandatory stop. Wide median breaks up boulevard into shorter crossings.</p> <p>Con: Continued high speed and lack of traffic control mean that rate of vehicles yielding to peds unlikely to improve substantially.</p>
Traffic Calming	<p>Pro: Will slow speeds significantly while still maintain traffic flow.</p> <p>Con: Will slow speeds significantly; drivers accustomed to fast speeds will feel inconvenienced and/or annoyed.</p>	<p>Pro: Will slow speeds but only marginally.</p> <p>Con: Has few if any traffic calming benefits.</p>	<p>Pro: Wide landscaped median may result in some traffic calming effects.</p> <p>Con: Insufficient change to achieve project goal.</p>
Vehicular Traffic Operational Efficiency	<p>Pro: Intersection will operate at LOS “A” under traffic conditions projected through 2030; improved level of service for Golden Gate Way approach.</p> <p>Con: Slower traffic and increase rate of yielding to peds will create nominal delays compared to current uncontrolled, free flow conditions.</p>	<p>Pro: Maintains existing uncontrolled traffic flow.</p> <p>Con: None that is obvious.</p>	<p>Pro: Maintains existing uncontrolled traffic flow on Mt. Diablo Boulevard.</p> <p>Con: Diverts all left turns into/out of GGW to Second Street, but the impacts are expected to be negligible.</p>
Aesthetics	<p>Pro: Delivers most plant/tree shade coverage; creates unique opportunity for signature landscaping piece; highest level of improvements to street design.</p> <p>Con: Highest increase to on-going maintenance budget.</p>	<p>Pro: Some improvements to plant/tree shade coverage and street design.</p> <p>Con: Smallest increase to maintenance.</p>	<p>Pro: Significantly improves existing conditions.</p> <p>Con: Some increase to maintenance.</p>
Downtown Vitality	<p>Pro: Creates an interesting place and a pedestrian-scale, walkable downtown environment that supports downtown vitality and future planning for project area.</p> <p>Con: None that is obvious.</p>	<p>Pro: Improves existing conditions.</p> <p>Con: No obvious, significant contribution to downtown vitality.</p>	<p>Pro: Significantly improves existing conditions.</p> <p>Con: “Closing off” Golden Gate Way could detract from planning vision for downtown Plaza District.</p>

ATTACHMENT 1
“INTERMITTENT MEDIANS” CONCEPT LAYOUT
and ROUNDABOUT PHOTO-SIMULATION

ATTACHMENT 2
WRITTEN PUBLIC COMMENTS RECEIVED
(As of October 2, 2012)