

To: Menlo Park City Council
From: Gary Lauder
Re: Changing 101/Willow Rd. interchange from cloverleaf to partial cloverleaf
Date: Tuesday, February 22, 2016

Dear City Council,

After learning about this plan a year ago,¹ I was horrified that the same mistake was going to be made as occurred about 15 years ago when Marsh Rd. was converted from cloverleaf to partial cloverleaf (parclo), which made the intersection dramatically worse. Marsh is the primary 101 intersection that I use, so this won't affect me as much as the residents who depend on Willow, but in the past 6 years I have been trying to do my part in improving regional transportation congestion, so I investigated to learn what I could since I could not stand idly by knowing what I knew/know. I have had extensive correspondence with Caltrans along with a high-level meeting, and the important concerns and questions remain unaddressed. I have been hoping that Caltrans would defer this project on their own accord, but that has yet to occur.

Summary: Most of the premises upon which this plan are based are flawed, baffling, questionable, and/or achievable through other means at much lower cost. Furthermore, circumstances have changed for this such that — even if it is determined that it's worth doing — the point in time at which it should occur is much further in the future AFTER the upstream bottlenecks have been solved.

Most compelling point (if this is all that you read, it should be enough to convince you that it should not be done anytime soon): The environmental impact statement <http://www.dot.ca.gov/dist4/envdocs.htm#sanmateo> looked at the impact on many things: potential Indian burial sites, dinosaur bones, and many animal species...but not human residents of Menlo Park. The main problem (among others) is that drivers, who presently exit 101 north to go west on Willow are able to bypass the one (1) mile queue of cars waiting to exit to Willow Rd. east during the PM rush hours. After the change to a parclo, they would have to queue up to take the same exit. At present throughput, **that would add about 15 minutes to the PM commute for those heading to Willow Rd. west (esp. Menlo Park residents)!**

The queue at 101N & Marsh Road is MUCH shorter, but analogous: I wait in the queue until I can get into the left turn lane.

The "Route 101/Willow Road Interchange Improvements Traffic Operations Analysis Report" (TOAR)² was published in 2012, and it was based on traffic analyses from 2009, during the recession. That document conclusion says:

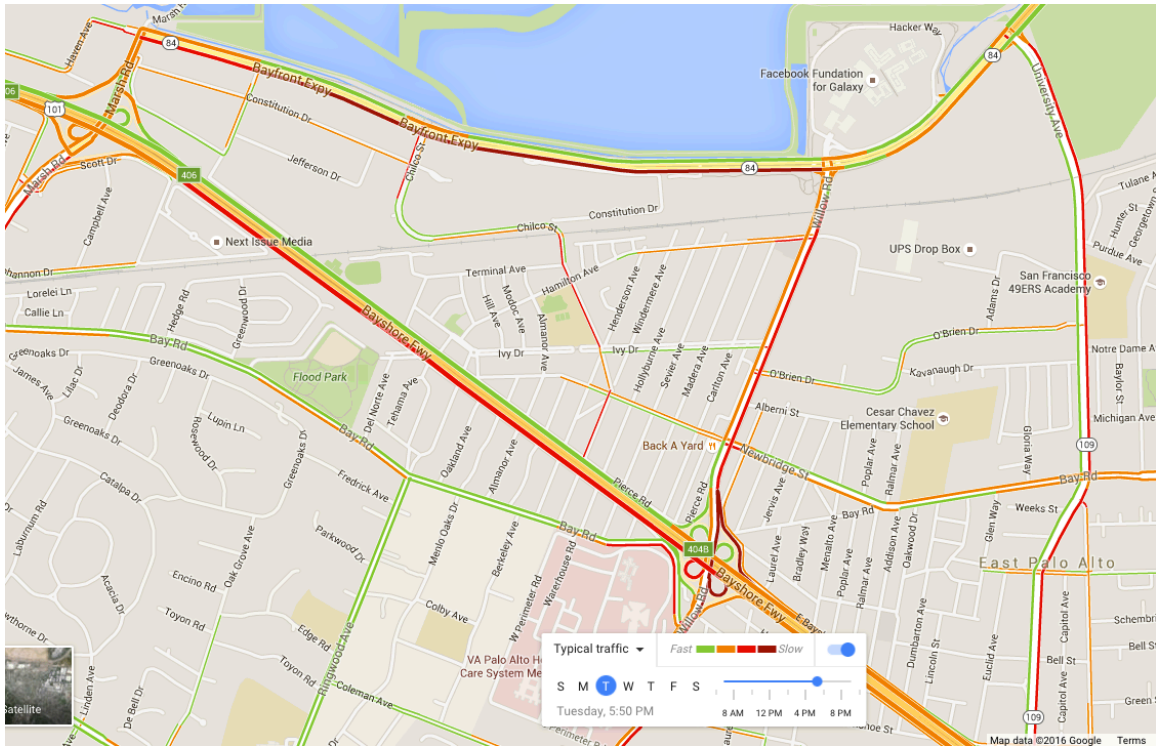
¹ By reading this: http://www.mercurynews.com/mr-roadshow/ci_25173011/roadshow-fixes-mess-at-willow-road-and-101

² This was sent to me by Caltrans and I can't find a link to it. I presume that MP staff can provide it. Otherwise, I can.

Page 14: "Northbound Route 101 off-ramp to eastbound Willow Road: Queues were observed to extend from the Newbridge intersection onto the off-ramp. The queue, however, was not observed to spill back to the freeway mainline."

At present, it spills back a full mile. The present traffic queue already exceeds the projections made for 2020. If the exiting traffic destined for westbound Willow were to be added to the existing queue, it would extend the queue beyond the University entrance ramp (and perhaps also exit ramp). This would create a new hazard of crossover traffic which has not been publicly evaluated.

The congestion on eastbound Willow is due to congestion emanating from the intersection of the Bayfront Expressway (84) and Willow (in front of Facebook's entrance), and — to a lesser extent — the University Ave./84 intersection. Until/unless that upstream bottleneck is eliminated, eastbound throughput will not be improved by the parcel, so reconfiguring this intersection will create new delays (for MP residents) and hazards (for all) that should be unacceptable to you.

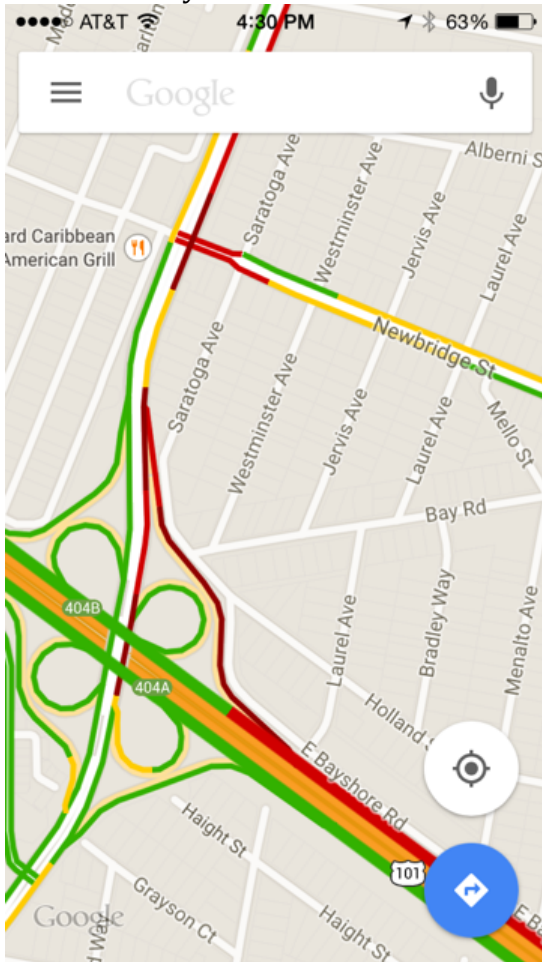


Flawed premises:

“The purpose of the project is to address the operational deficiencies of this interchange for all modes of travel and to reduce backups and upstream queuing on US 101. The need for this project is to reduce existing and expected traffic congestion in the vicinity of US 101 and Willow Road. **This congestion is being caused because of short weaving segments between loop ramps along US 101/Willow Road Interchange. These short**

weaving segments create weaving conflicts resulting in reduced traffic speed and increased upstream queuing and backups.”

Anyone who drives this intersection knows that that is not the cause of congestion in this vicinity.



Safer?

There is a claim that it would be safer. This too flies in the face of some well-known traffic facts, so I have asked Caltrans to provide evidence based on other cloverleaf intersections converted to parclo's. The reason for my doubt is that the primary accident types for cloverleaves are side-swipes or low-speed rear-ends, which have low injury and fatality rates. Traffic lights have more T-bone and head-on collisions, so one would expect the injury and fatality rates to be higher for parclo's.³ Based on the limited data in the TOAR, I wrote the following to Caltrans:

³ “A smaller percentage of angle accidents [T-bones] occur at full cloverleaves (2%) than at partial cloverleaves (24%) and SPUIs (34%), probably due to the absence of turning movements at the full cloverleaves.” Page iv in Guidelines For Preliminary Selection Of The Optimum Interchange Type For A Specific Location (1/99) by the Virginia Transportation Research Council, <http://ntl.bts.gov/lib/9000/9800/9871/99-r15.pdf>

“Regarding safety: the prior questions remain. Also, in the existing accident rates on P. 131 of the PDF, I note that in the only parclo in the study area, NB off to Marsh Rd, the injury accident rate is 0.81 (vs. 0.42 statewide), and the total rate is 2.23 (vs. 1.2 statewide).” This implies that Marsh Rd. has double the accident rate of other intersections in the state.

Detour conflict:

Were the project to commence as planned, the traffic would be detoured to the adjacent intersections. Those are University Ave. and Marsh Rd. Atherton is planning to close Marsh Rd. in order to cover over the drainage ditch along it. Were that to coincide with the Willow Rd. closure, it would be way worse. This is another factor that Caltrans was probably not aware of when they scheduled this.

Throughput reduction:

It is well-known in traffic-engineering that parclo’s have lower throughput than cloverleaves.⁴ Another factor that Caltrans has probably not taken into account is the advent of self-driving cars. Last week I confirmed with a knowledgeable (but anonymous) source that self-driving cars would have dramatically greater throughput through cloverleaves than parclo’s. I have asked Google for their official answer to this question, but have not yet gotten it. I suggest that MP and Caltrans do so too.

Bicycle safety:

As one who rode my bike to work for the 4 years I worked in NYC, I agree that we need to make safe accommodation for bikers. The interchange replacement is expected to cost about \$70M (not counting the costs imposed on the driving public due to additional delays during construction). If it were the case that the other reasons to change this intersection do not stand up to scrutiny, then there are cheaper ways to accomplish the bike safety objective. For example, building another bike bridge over 101 (in addition to the one about 3000’ up 101). Widening the narrower sidewalk on the bridge could be done without materially adding to the bridge’s weight by using light materials (e.g. wood and aluminum) and removing concrete.

The public hearing process did not raise these concerns. There are many potential arguments and counter-arguments. This memo is not comprehensive. Its purpose is to persuade you that this deserves more scrutiny prior to committing to a course of action.

As part of my investigation into how an advanced civilization such as California’s can have the worst traffic in the nation, worsening rapidly with no end in sight, I was informed by Caltrans that their primary consideration is safety, and congestion

⁴ IBID, “Directional interchanges were seen as having the highest capacity, followed by the trumpet, SPUI, **full cloverleaf**, **partial cloverleaf**, and diamond.” (i.e. parclo's are slower)

is primarily the responsibility of C/CAG. When one looks at C/CAG's agenda, it appears to only be able to affect things on the margin (e.g. metering lights, HOV lanes, etc.). So it appears that there is nobody in charge of identifying the bottlenecks and widening them. While funds are not easy to shift around, there are better ways to spend \$70M than on reconfiguring this interchange at this time. Specifically, I recommend fixing the flows to and through 84.

The failure to address the *avoidable* congestion that is wasting the lives of so many is a moral and ethical issue. As the cost of housing on the peninsula skyrockets, we should ameliorate the commute for teachers and others whom we depend on. At a minimum, the Hippocratic Oath should apply: "First do no harm."

If any of you have any questions about this, I would be happy to answer them.

-Gary