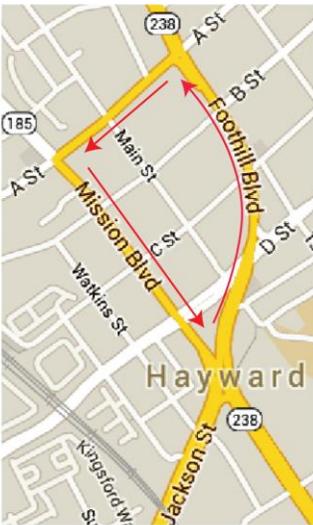


How have travel speeds changed on the Loop?

Sherman Lewis, February 15, 2016

The Loop map below shows the one way traffic pattern in downtown Hayward: north from Jackson/Mission on Foothill, west on A St., and south on Mission back to Jackson/Mission. This analysis starts by looking at pm peak (4 pm to 6 pm weekdays) speeds as measured by the Alameda County Transportation Commission (ACTC) in its Level of Service (LOS) reports made every two years.¹ The speeds are measured by driving several times along a link, timing the trip, and knowing how long the link is. A link is the road between two points in the designated network. One link, for example, is westbound on A St. from Foothill to Western Ave. Based on the time and distance the link speed is estimated to the nearest tenth of a mile per hour.

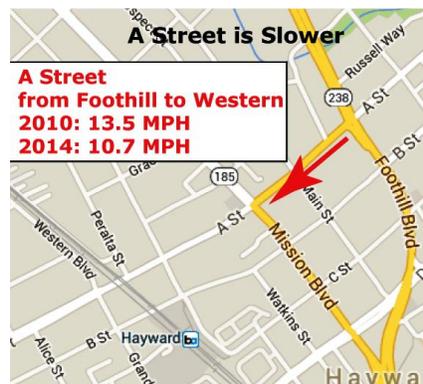
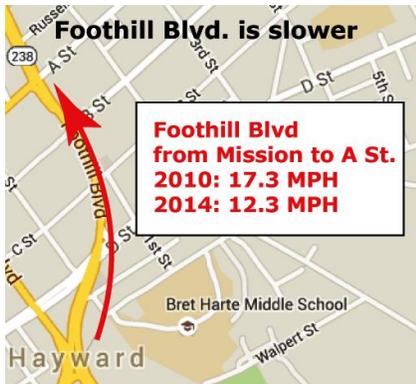
The Loop



I looked at the LOS reports for 2010, 2012, and 2014, the links within the Loop, and the links leading to and from it. All the data is in a big table at the end of this report.

Slowdowns in the Loop direction

The Loop was under construction in 2012, so many link speeds were slower that year. Comparing 2014 to 2010 made more sense. Travel speeds **southbound on Mission** from Sunset to Jackson/Mission did **not change** from 2010 to 2014; they stayed at about 11.5 miles per hour. Travel speeds **westbound on A St.** from Foothill to Western Blvd. got **slower**, from 13.5 mph to 10.7 mph. Travel speeds **northbound on Foothill** from Jackson/Mission to City Center Dr. got **slower**, from 17.3 mph to 12.3 mph. These results do not make sense intuitively, because all three links are in the Loop direction and served with much wider roads.



Circularity causes slowness in the opposing directions

Circularity means traveling longer distances because of a one way system. Circularity increases travel distance, especially for eastbound on A St., which has to come two blocks south, two blocks east, and two blocks north to get back on its route.

¹ http://www.alamedactc.org/app_pages/view/8091

Circularity going East on A Street



Missing links. ACTC chose to measure link speeds on the Loop by removing the reverse direction links from the network. The link eastbound on A St. from Western to **Foothill** became Western to **Mission**. The link southbound on Foothill from City Center Dr. to **Jackson** became City Center Dr. to **A St.** The northbound link on Mission from **Jackson** to Sunset became from **A St.** to Sunset. In my view, the performance of the network was affected by creating gaps in the historical network, which was defined in 1991. The travel time between points should have consistency and measure how the network really works.

ACTC hid the reality of slower trips. People used to get from A to B at some speed and we need to know how that speed has changed. The distance remains the same but the route between the points has changed. Consider, for example, what ACTA would have done if a zigzag route had been replaced by a straight road. ACTC probably would not have had a problem reporting the new and faster speed. In the case of the Loop, straight roads were replaced by longer routes, and were not reported. ACTC took the easy way out by arbitrarily changing the established links and making a meaningless measurement that no one noticed until we looked. The slowdown to level of service F was never reported.

On February 8, Nancy Schluntz, driver, and I, the stopwatch, drove each missing link twice. The times on A St. from Western to Foothill were 4:37 and 6:47 minutes. The times on Foothill from City Center Dr. to Jackson/Mission were 3:47 and 4:17 minutes. The times on Mission from Jackson to Mission at A St. were 4:24 and 4:11 minutes. More runs would produce better results because a lot depends on how you catch the lights. From 2010 to 2016 on A St. the speed dropped from 7.6 mph to 5.6 mph. On Foothill speed dropped from 16.2 mph to 9.2 mph. On Mission speeds dropped from 17.0 mph to 5.3 mph. In all three cases, the level of service dropped to F which, if ACTC had reported it, would have required discussion in the LOS report.

Another aspect of circularity, which we did not analyze, is the longer distances traveled to reach a place you used to be able to drive straight to. For example, if you are driving up Mission to downtown and want to go someplace on Mission, you have to go up Foothill first, then left on B St. or A St. and left on Mission to get there. If you are downtown at Lucky and you want to go to CVS, it requires detour back to C St. and around. If you go to CVS first, it is easy to get to Lucky.

Outside the Loop

The next way of evaluating the Loop is more complicated. Since the Loop itself is confusing with overlapping directions of travel, we can look at how speeds worked **outside the Loop**, treating the Loop like a **black box** which traffic comes into and then goes out of. This analysis is also valuable because the Loop did not increase any road capacity beyond itself. The Loop simply took inbound traffic from the same existing network and put it outbound into the same network.

From 2010 to 2014, starting with **A St. westbound**, into the Loop, the datum from Redwood Rd. to Foothill for 2010 is missing. (ACTC told me they were not collecting this data until 2012.) Coming out traffic from Western to I-880 slowed a bit going out, from 21.8 mph to 20.6 mph.

Going the other way, A St. **eastbound** traffic entered from I-880 to Western Ave. at 23.3 mph in 2010 and slowed to 20.8 in 2014. Coming out the Loop, we again have the problem of a missing datum.

Looking at **Mission Blvd. southbound**, traffic coming in from Lewelling to Sunset slowed from 27.3 mph to 16.4 mph, and leaving the Loop from Jackson to Sorenson it slowed from 23.3 mph to 16.9 mph.

Mission **northbound** traffic came in from Sorenson to Jackson at 15.8 mph in 2010 and to 20.7 mph in 2014. It left from Sunset to Lewelling at 26.3 mph in 2010 and slowed to 20.7 mph in 2014.

Finally, **Foothill Blvd. southbound** from Castro Valley Blvd. to City Center Dr. came in at 27.2 mph in 2010 and at 24.5 mph in 2014. It left on Jackson from Mission to I-880 at 23.4 mph in 2010 and at 18.4 mph in 2014.

Northbound traffic entered the Loop from I-880 to Jackson at 15.4 mph in 2010 and slowed to 14.5 mph in 2014. It left the Loop at 20.7 mph in 2010 and slowed to 13.5 mph in 2014.

We have, then, ten comparisons of speeds from 2010 to 2014 and in all ten cases, traffic in 2014 is slower, sometimes a little, sometimes a lot. Outside the Loop itself, traffic generally slowed down. Even if traffic inside the Loop sped up, it did little good outside its limits. The Loop did not have the goal of speeding up outside traffic, but the question remains: would speeding up traffic inside the Loop do any good if outside the Loop speeds remained the same?

As seems to have happened, speeds showed down in the Loop directions, opposite the Loop directions, and in the network around the Loop.

Surprises

We've discussed the Loop in terms of speed in the Loop direction, speed in the opposite direction, and speed outside the Loop. I was not surprised by the terrible performance in the opposite direction; if anything, the slowdowns northbound on Mission and southbound on Foothill were more than I expected.

I was surprised by the slowdown outside the Loop because its capacity did not change. I thought speeds would remain about the same. There is no explanation I know of.

I was really surprised by slower traffic in the Loop directions. There may be some explanation, like more traffic in 2014 than 2010, but that does not seem plausible as a cause of so much slowdown.

Another cause could be circularity, that is, for trips against the Loop direction people have to drive the long way around, and increase traffic in the Loop direction in order to do so. For example, if you really want to go north on Mission you have to go up Foothill, left on A St., change lanes across five lanes of traffic, and turn right on Mission to get there. If you want to go someplace on Mission

between A St. and Jackson, you go up Foothill, left on A, and left on Mission. Traffic is increased on Foothill because of circularity, possibly slowing it down, in spite of its being much wider.

Slower traffic could also result from numerous operational problems, such as so much lane changing in crowded traffic, unbalance stacking in one lane in order to make a turn leaving other lanes empty, having only one lane to go left on A St., and “pulse traffic” from traffic lights due to overly wide streets.

Oddly enough, traffic on the Loop **seems fast** despite the low measured speeds, possibly because people “jack rabbiting” --driving fast between lights and then waiting at a light. Also, pedestrians perceive threats from many cars coming at them on a very wide street. More Loop issues are discussed in another report, Ideas for Downtown Hayward.

Traffic Modeling

Oddly enough the City does not argue that the Loop speeds up traffic. Instead, the City claims that without the Loop traffic would be even slower. In order to make the claim, the City used a traffic consultant who used a computer model. The estimates of the model depend on assumptions and algorithms, i.e., formulas, used by the model to predict the future. The model used was a type known as a four step model. I explained in some detail to the City when the decision was pending why these model were worthless.

The ACTC web site not only has speed data, it also has modeling data showing traffic volumes for actual 2010 and projected 2020 on all the links in Alameda County. There are thousands of data points, so I picked one which is typical. In 2010 on B St. from Foothill to Main there were 434 trips in the pm peak period, 4 pm to 6 pm. In 2020 the model predicts 1,929 trips, a 344 percent increase. A major reason for the big increase was the low base, so I checked eight more links by the Loop, and found increases ranging from 2 percent to 58 percent. This is the future our elected officials and traffic engineers are planning for us.

The models do not consider the effects of induced demand, induced restraint, and land use changes resulting from the project. They do not consider policies, e.g., pricing policies, transportation demand management, traffic calming, complete streets, and parking policies that would affect performance. Better planned cities around the world are increasing mobility by decreasing car traffic. We get the traffic we plan for.

The Crux of the Matter

I have a more important concern than traffic speeds and bad modeling. People in Hayward who hate the Loop should realize that changing back to a two way system with more parking and pedestrian support is unlikely to speed up traffic and may even slow it down. Traffic is not magic; it requires a balancing of trade-offs. Downtown can have an expressway with fast traffic or have slower traffic and more access to business. We don't need to figure it all out in great detail. As far as faster traffic is concerned, it really fails in all three frames of reference.

The 2016 LOS Report could show improvements, but the crux of the matter is that traffic speeds are less important than planning the city we want to have. The best analyses, based on research on the relationship of travel time to the purpose of travel, show that travel time tends to be stable regardless of how many roads there are or the mode of travel. In lay terms, it does not matter within limits what we do to the network; people work out how to use it over time.

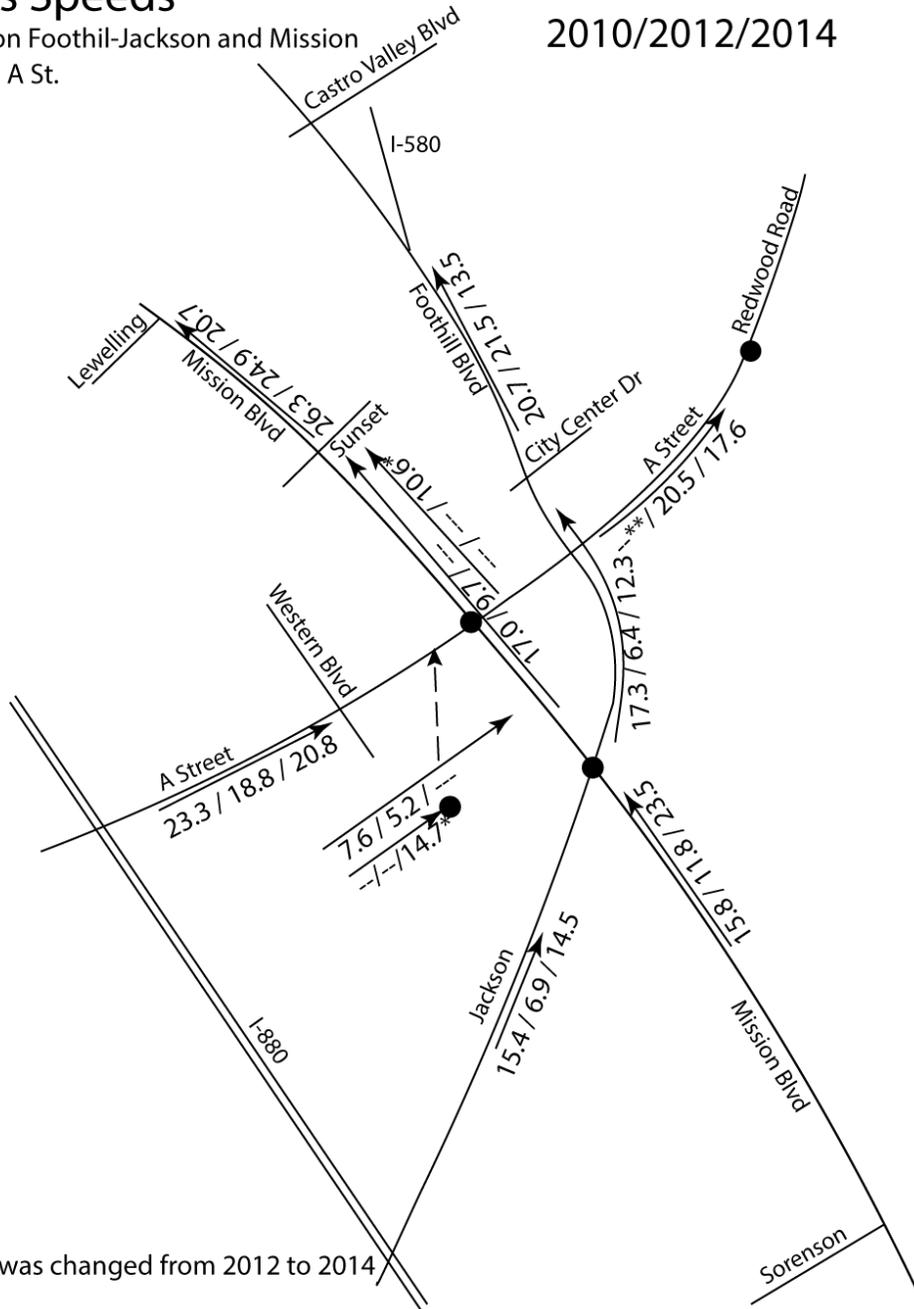
I think we who live in Hayward should debate what kind of future we want, and find a way to make it happen. We should not invest millions of dollars based on what a computer model tells us will happen given certain assumptions. We know enough about traffic from a hundred years of experience from all over the world. I am alarmed by those who say we can't get people out of their cars when they are in fact doing so. We have a car culture which can control us or we can choose to control it.

In many places people are managing cars better—not getting rid of them, but managing them much better. Even in Hayward, we can have more affordability, more sustainability, more mobility, more safety and health, better design, and community spirit if we do it right.

Links Speeds

North on Foothil-Jackson and Mission
East on A St.

2010/2012/2014

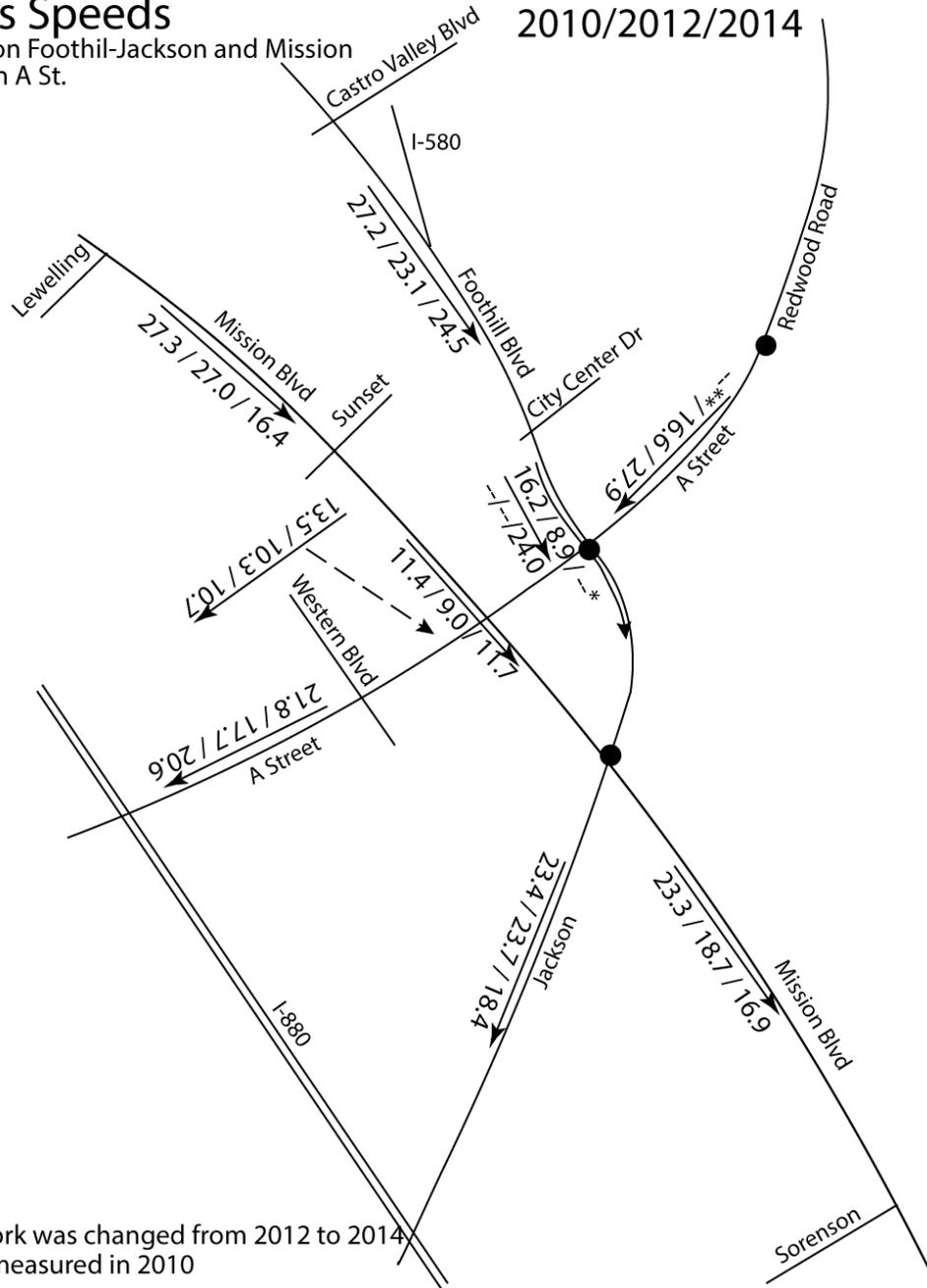


*Network was changed from 2012 to 2014

Links Speeds

South on Foothil-Jackson and Mission
West on A St.

2010/2012/2014



*Network was changed from 2012 to 2014
**Not measured in 2010

Link Speeds on Hayward Loop, 2010, 2012, 2014

Links in the Loop Itself					Miles per hour				
Not Ms'd	from	to	2010	2012	2014	2016 est.	Class	LOS	
= Not Measured	A St. Eastbound								
	Western B	Foothill	7.6	5.2	Not Ms'd				
	Western B	Mission	Not Ms'd	Not Ms'd	14.7	5.3	III	F	
	A St. Westbound								
	Foothill	Western B	13.5	10.3	10.7		III	D	
	Mission Northbound								
	238/92/185	Sunset/A St.	17.0	10.6	Not Ms'd				
	A St.	Sunset	Not Ms'd	Not Ms'd	9.7	5.6	III	F	
	Mission Southbound								
	Sunset	238/92/185	11.4	9.0	11.7		III	D	
	Jackson Foothill Northbound								
	238/92/185	City Ctr Dr.	17.3	6.4	12.3		III	D	
	Foothill Jackson Southbound								
	City Ctr Dr.	238/92/185	16.2	8.9	Not Ms'd		III		
	City Ctr Dr.	A St.	Not Ms'd	Not Ms'd	24.0	9.2	III	F	

Links Leading into and out of the Loop

A St. Eastbound		2010	2012	2014	The Loop			2010	2012	2014
I-880	Western B	23.3	18.8	20.8		Foothill	Redwood	Not Ms'd	20.5	17.6
A St. Westbound										
Rewood Rd.	Foothill	Not Ms'd	16.6	27.9		Western B	I-880	21.8	17.7	20.6
Mission Northbound										
Sorenson	238/92/185	15.8	11.8	23.5		Sunset	Lewelling	26.3	24.9	20.7
Mission Southbound										
Lewelling	Sunset	27.3	27.0	16.4		238/92/185	Sorenson	23.3	18.7	16.9
Jackson Foothill Northbound										
I-880	238/92/185	15.4	6.9	14.5		City Ctr Dr.	I-580 ramp	20.7	21.5	13.5
Foothill Jackson Southbound										
Castro Vly Blvd.	City Ctr Dr.	27.2	23.1	24.5	238/92/185	I-880	23.4	23.7	18.4	

Timing for 2016 was based on a knowledgeable driver who knows what lanes to get in ahead of time for turns.

Timing was based on two runs and affected by traffic lights, so more runs would be more accurate.