



## MEMORANDUM

Date: January 17, 2017  
To: Peter Chun, City of Oakland  
From: Ryan McClain and Teresa Peterson  
Subject: Telegraph Avenue Complete Streets Phase 1 – After Implementation Performance Summary

*OK15-0049.09*

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This memorandum summarizes data collected before and after implementation of the first phase of the Telegraph Avenue Complete Streets project. Phase 1 of the project included reduction of vehicle through lanes from two to one in each direction and installation of parking protected bicycle lanes on Telegraph Avenue between 29th Street and 20<sup>th</sup> Street/Thomas L Berkeley Way in the Koreatown Northgate neighborhood of Oakland. The improvements were implemented as part of roadway resurfacing project and therefore consisted primarily of striping and signing elements. This included green pavement for bicycle lanes and conflict zones, epoxy treatment to define median islands, and vertical delineators at key locations to discourage vehicles from turning into the protected bicycle lanes. Data collected includes pedestrian, bicycle, and vehicle counts, vehicle speeds, and driver yielding rates at crosswalks. Previously, data was collected in the Fall of 2013 for the Telegraph Avenue Complete Streets study and presented in the Existing Conditions Report (CD+A, December 17, 2013)<sup>1</sup>. Data was collected again in the Fall of 2016 after implementation of the project.

### **Average Daily Volume Results**

Hourly traffic data was collected for five 24-hour periods at two locations on Telegraph Avenue. The days of data collection for each location are listed below.

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<sup>1</sup> The Existing Conditions Report of the Telegraph Avenue Complete Streets Study can be found at <http://www2.oaklandnet.com/oakca1/groups/pwa/documents/report/oak044666.pdf>



- 27th Street and Sycamore Street
  - Wednesday, September 28th 2016
  - Thursday, September 29th 2016
  - Friday, September 30th 2016
  - Saturday, October 22nd 2016
  - Sunday, October 9th 2016
- 40th Street and 41st Street
  - Wednesday, September 28th 2016
  - Thursday, October 21th 2016
  - Friday, October 21st 2016
  - Saturday, October 22nd 2016
  - Sunday, October 2nd 2016

**Table 1** summarizes the data collected for all modes along Telegraph Avenue after implementation of the project.

TABLE 1: 2016 TELEGRAPH VOLUME DATA								
Location	Mode	Daily Volume					Average Volume	
		Wednesday	Thursday	Friday	Saturday	Sunday	Weekday	Weekend
Between 27th Street and Sycamore Street	Bike	1,371	1,279	1,255	1,024	823	1,302	924
	Pedestrians	1,560	1,578	2,041	1,813	1,324	1,726	1,569
	Vehicles	13,268	13,550	14,902	13,247	10,835	13,907	12,041
Between 40th Street and 41st Street	Bike	1,379	1,263	1,235	924	823	1,292	874
	Pedestrians	3,428	3,349	3,497	2,765	2,401	3,425	2,583
	Vehicles	18,033	18,762	19,308	15,971	14,459	18,701	15,215

Source: Fehr & Peers, 2016

Bicycle volumes collected on Telegraph Avenue at 40th Street (outside of the project area) in April 2013 showed an average of 1,203 bicycles on weekdays and 679 bicycles on weekends<sup>2</sup>. When comparing the April 2013 volumes to those shown in **Table 1**, from after implementation of the project, the average daily weekday volumes increased by 7% and the average daily weekend volumes increased by 28% at 40<sup>th</sup> Street. Daily bicycle volumes were not collected in 2013 within the Phase 1 project area.

<sup>2</sup> Data from before installation of the project can be found in the Existing Conditions Report of the Telegraph Avenue Complete Streets Study:

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### Intersection Turning Movement Counts

Intersection peak period turning movement counts for vehicles, bicycles, and pedestrians were collected at each of the signalized intersections along the corridor before and after the Phase 1 project was implemented. Data was collected before the project was implemented<sup>3</sup> on Thursday, October 17, 2013 from 7:00 to 9:00 AM and 4:00 to 6:00 PM and again after implementation on Thursday, September 29, 2016 from 7:30 to 9:30 AM and 4:00 to 6:00 PM. Turning movement vehicle counts for the AM and PM peak hours (8:00 to 9:00 AM and 5:00 to 6:00 PM, respectively) are shown on **Figure 1**. Bicycle and pedestrian volumes for the same AM and PM peak hours are shown on **Figure 2**. Vehicle volumes for the major movements on Telegraph Avenue decreased by between 0 and 40 percent in the AM and between 6 and 44 percent in the PM. Bicycle volumes traveling through on Telegraph Avenue increased by between 81 and 186 percent in the southbound direction for the AM peak hour and by between 48 and 190 percent for the northbound direction in the PM peak hour. Pedestrian volumes also increased throughout the corridor, with the highest increase experienced at the south end of the project at 20th street. The total number of pedestrians crossing at the Telegraph Avenue/20<sup>th</sup> Street intersection increased from 139 to 497 in the AM peak hour and from 150 to 531 in the PM peak hour. The difference in peak hour vehicle, bicycle, and pedestrian intersection volumes for four signalized intersections along the corridor is shown in **Table 2**.

Intersection	Peak Hour	Vehicles			Bicycles			Pedestrians		
		2013	2016	% Change	2013	2016	% Change	2013	2016	% Change
Telegraph & 29th	AM	1241	1157	-7%	61	120	97%	28	69	146%
	PM	1648	1419	-14%	100	139	39%	119	106	-11%
Telegraph & 27th	AM	1887	1847	-2%	116	158	36%	68	88	29%
	PM	2495	2423	-3%	128	192	50%	115	149	30%
Telegraph & Grand	AM	2128	2316	9%	59	174	195%	131	143	9%
	PM	2676	2845	6%	101	191	89%	185	314	70%
Telegraph & 20th	AM	1165	1070	-8%	55	158	187%	139	497	258%
	PM	1537	1326	-14%	67	151	125%	150	531	254%

Source: Fehr & Peers, 2016

<sup>3</sup> Data from before installation of the project can be found in the Existing Conditions Report of the Telegraph Avenue Complete Streets Study:

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### Speed Survey Results

Speed data was collected on Telegraph Avenue on July 29, 2014 from 10:00 AM to 11:00 AM and on Thursday, September 29, 2016 from 10:00 AM to 2:00 PM using a calibrated radar speed gun in both the northbound and southbound directions. Speed surveys were conducted at two locations; in the project area between Sycamore Street and 27th Street and north of the project area between 34th Street and 36th Street. The surveys were conducted on a typical weekday to capture average vehicle speeds during off-peak hours while the roadway is in free flow conditions. **Table 3** presents the 85<sup>th</sup> percentile speed and median speed at the two survey locations. The 85<sup>th</sup> percentile speed is the speed at which 85 percent of vehicles are traveling less than or equal to.

Location	Direction	2014			2016		
		Median Speed	85th Percentile	% Traveling Over Speed Limit	Median Speed	85th Percentile	% Traveling Over Speed Limit
Between Sycamore St and 27th St	Northbound	27	30	64%	25	27	35%
	Southbound	25	29	44%	24	27	32%
Between 34th St and 36th St	Northbound	30	34	83%	29	34	84%
	Southbound	31	35	92%	32	37	87%

Source: Fehr & Peers, 2016

The posted speed limit on Telegraph Avenue in the project area is 25 mph. In the project area (between Sycamore Street and 27th Street), from 2014 to 2016, the percent of vehicles traveling over the 25 mph posted speed limit decreased by 29 percent in the northbound direction and 12 percent in the southbound direction. The 85<sup>th</sup> percentile speed decreased in the northbound and southbound directions by 3 and 2 mph, respectively. Outside of the project implementation area (between 34th and 36th Street), the percent of vehicles traveling over the speed limit stayed relatively constant.

### Pedestrian Yield Rate

Data was collected on the yielding behavior of drivers approaching unsignalized crosswalks when a pedestrian indicated intent to cross the street. For the purposes of this study a pedestrian intending to cross the street was defined as standing at the edge of the curb visibly looking for a gap in cross traffic, stepping off the curb into the parking, travel or bicycle lane, or otherwise entering the marked crosswalk. Pedestrian activity and driver behavior was observed at



uncontrolled crosswalks in the project area before and after the project was implemented. Uncontrolled crosswalks located at 24th Street and 21st Street were observed on Thursday, September 29th, 2016 during the AM and PM peak hours (7:45 AM to 8:45 AM and 5:00 PM to 6:00 PM). On Wednesday, November 6, 2013, the same data was collected at the 24th Street uncontrolled crosswalk only<sup>4</sup>. At each crosswalk observed, the number of cars failing to yield the right-of-way to pedestrians was recorded for each pedestrian crossing event. **Table 4** presents the number of pedestrians observed crossing at each location during the AM and PM peak hours.

<b>TABLE 4: PEDESTRIANS USING THE CROSSWALK DURING THE PEAK HOUR</b>			
<b>Location</b>	<b>Year</b>	<b>Peak Hour Pedestrian Volume</b>	
		<b>AM</b>	<b>PM</b>
24th St	2013	20	30
	2016	35	62
21st St	2016	54	67

Source: Fehr & Peers, 2016

The percentage of vehicles that will yield to a pedestrian is an important metric for understanding driver behavior and pedestrian comfort. This percentage indicates the percentage of drivers that will yield to a pedestrian waiting at the curb to cross a crosswalk or that has entered a crosswalk and started to cross. For example, "20 percent of drivers yielded to pedestrians in the crosswalk." The calculation consists of:

$$\frac{\text{total number of cars that yielded to pedestrians}}{\text{total number of cars that yielded to pedestrians} + \text{total number of cars that did not yield to pedestrians}}$$

The pedestrian yield rates for the two locations on Telegraph Avenue are shown in **Table 5**.

<sup>4</sup> Data from before installation of the project can be found in the Existing Conditions Report of the Telegraph Avenue Complete Streets Study:

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<b>TABLE 5: PEDESTRIAN YIELD RATES</b>			
<b>Location</b>	<b>Year</b>	<b>Pedestrian Yield Rates (Veh Yield/Veh* (Yield+Not Yield))</b>	
		<b>AM</b>	<b>PM</b>
24th St	2013	20%	22%
	2016	40%	67%
21st St	2016	33%	50%

Source: Fehr & Peers, 2016

The results show that the crosswalk at 24th Street experienced more pedestrian crossings and a higher rate of vehicles yielding after the project was implemented. Another key metric for understanding driver behavior at uncontrolled crosswalks is the average number of cars failing to yield per pedestrian. This metric indicates the average number of cars that will fail to yield to a pedestrian that is waiting at the curb or has entered the crosswalk. For example, in 2013 at 24<sup>th</sup> Street, on average during the study period, a pedestrian would wait for more than four cars to pass before a car would stop to let them cross.

**Table 6** shows the average number of cars that fail to yield per pedestrian crossing event.

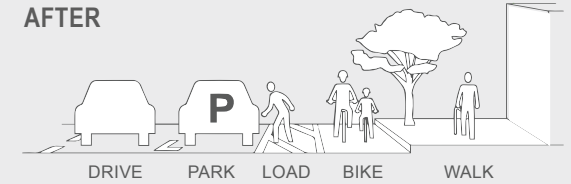
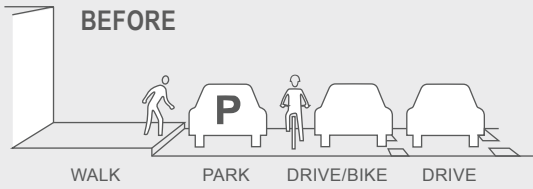
<b>TABLE 6: AVERAGE NUMBER OF CARS FAILING TO YIELD PER PEDESTRIAN</b>			
<b>Location</b>	<b>Year</b>	<b>Average Cars Failing to Yield per Pedestrian</b>	
		<b>AM</b>	<b>PM</b>
24th St	2013	4.05	4.8
	2016	1.10	0.95
21st St	2016	1.76	1.26

This table shows that after the project was implemented, pedestrians waiting to cross will experience less drivers that pass them, failing to yield, and a shorter wait time before a car stops and allows them to cross.

Please contact Ryan McClain or Teresa Peterson with any questions.

# TELEGRAPH AVE COMPLETE STREETS PROJECT

BEFORE & AFTER EVALUATION, 20TH TO 29TH STREET



The City of Oakland is working to improve transportation safety and comfort on Telegraph Avenue between 20th Street and 57th Street for all modes of travel. The first phase of this project, from 20th Street to 29th Street, was installed in May 2016.



Telegraph Avenue redesign is guided by the following goals: improve safety and accessibility of all modes; make the street more comfortable and enjoyable for walking and bicycling; and balance the needs and convenience of all users, including transit and motor vehicles. This fact sheet summarizes conditions before and after the installation.

## Peak Hour Traffic AT TELEGRAPH & NORTH OF GRAND AVENUE

	2013	2016	
Drivers	816	758	↓
Total Intersection Pedestrian	1,101	961	↓
Total Intersection Pedestrian	131	143	↑
Total Intersection Pedestrian	185	292	↑
Bicyclists	44	111	↑
Bicyclists	74	129	↑

## Pedestrian Crossings AT TELEGRAPH & 24TH STREET

	2013	2016	
Peak Hour Pedestrian Crossing Volume	20	35	↑
Peak Hour Pedestrian Crossing Volume	30	62	↑
Drivers Yielding to Pedestrians	1/5	2/5	↑
Drivers Yielding to Pedestrians	2/9	2/3	↑

## Safety & Speeds BETWEEN SYCAMORE & 27th ST

	2014	2016	
SPEED LIMIT	25	25	
% Speeding Drivers	64%	35%	↓
% Speeding Drivers	44%	32%	↓
85th Percentile Speed	30 mph	27 mph	↓
85th Percentile Speed	29 mph	27 mph	↓

## Peak Hour Traffic AT TELEGRAPH & SOUTH OF 27th STREET

	2013	2016	
Drivers	845	690	↓
Drivers	1,175	990	↓
Total Intersection Pedestrian	68	88	↑
Total Intersection Pedestrian	115	121	↑
Bicyclists	68	128	↑
Bicyclists	86	110	↑

Telegraph Ave

20th St

Grand Ave

24th St

27th St

29th St