

DRAFT MEMORANDUM

Date: April 24, 2020

Project #: 22521.05

To: Hank Phan, Oakland Department of Transportation

From: Laurence Lewis, AICP and Quinn Wallace

Project: Telegraph Ave. Before/After Evaluation

Subject: Baseline Conditions Analysis Results

INTRODUCTION

Kittelison & Associates, Inc. (Kittelison) is assisting the Oakland Department of Transportation (OakDOT) in evaluating the performance of Telegraph Avenue improvements relative to community and City goals. Following the selection of evaluation metrics with OakDOT staff, the project team collected data for each metric prior to project construction. This memorandum summarizes the results of this baseline evaluation, which aim to capture the “before” conditions of the project.

EVALUATION OVERVIEW

Study Corridor Sections

The study area comprises Telegraph Avenue from 52nd Street to 20th Street. OakDOT is in the process of implementing four projects in three sections (**bolded**) of the study area:

- **Temescal** Repairing Telegraph project from 52nd Street to MacArthur Boulevard
- **Connecting** Telegraph from MacArthur Boulevard to 29th Street
- **KONO** Interim Telegraph project from 29th Street to 20th Street
- **KONO** Permanent Telegraph project from 29th Street to 20th Street

The **Temescal** section encompasses Telegraph Avenue from 52nd Street to MacArthur Boulevard. Land uses adjacent to the corridor are predominantly commercial. This section has a 30 mph speed limit and typically has two vehicle travel lanes in each direction with parking on both sides of the street. The MacArthur BART station is located west of 40th Street in this section of the corridor.

The **Connecting** section encompasses Telegraph Avenue from MacArthur Boulevard to 29th Street and runs primarily through Oakland’s Pill Hill neighborhood. Land uses adjacent to Telegraph Avenue are

predominantly commercial and residential, and there are several medical facilities east of the corridor between 34th Street and 30th Street. This section has a 30 mph speed limit and typically has two vehicle travel lanes in each direction with parking on both sides of the street. Interstate 580 runs over the corridor between 36th Street and 34th Street.

The **KONO** section encompasses Telegraph Avenue from 29th Street to 20th Street. Along this section, an initial improvement project was completed in 2016. Interim improvements are planned for Summer 2020 and permanent improvements are slated for 2021. This section has a 25 mph speed limit and now has one travel lane in each direction with parking and protected bike lanes on both sides of the street. Temporary bus boarding islands are installed at AC Transit bus stops. Land uses adjacent to the corridor are primarily commercial, featuring many businesses serving Oakland's Korean community.

Evaluation Metrics

An overview of all evaluation metrics is provided in Table 1. For the baseline evaluation, data was collected in February 2020. Data for each metric, except for Metric 4 (Bicycle/Pedestrian Conflicts at the Boarding Island), will be collected at the same locations again about three to six months after the projects have been implemented on Telegraph Avenue.

Data collected for Metrics 1 through 6 are the focus of this memo. Data collection for Metrics 7 (Transit Boarding and Alighting) and 8 (Public Opinion) is ongoing and will be summarized by OakDOT at a future date.

Table 1: Evaluation Metrics

Metric		Intended Outcome	Evaluation Tools	Data Collection Time Periods	Movements
1	Multimodal Counts	To understand changes in travel patterns due to the road diet	Video with Manual Reduction	One Weekday: 2-Hour AM and PM Peak Periods	All
2	Vehicle ADT	To understand changes in travel patterns due to the road diet	Pneumatic Tubes with Manual Reduction	24 Hours	N/A
3	Speed	To demonstrate reductions in vehicle speeds due to the project	Pneumatic Tubes with Manual Reduction	24 Hours	Northbound Southbound
4	Bicycle/Pedestrian Conflicts at the Boarding Island*	To demonstrate the effectiveness of project design in minimizing conflict	Video with Manual Reduction	One Weekday: 2-Hour PM Peak Period	Northbound
5	Drivers Yielding to Pedestrians	To demonstrate increased yield rates due to the project	Video with Manual Reduction	One Weekday: 2-Hour AM and PM Peak Periods	Northbound Southbound
6	Vehicle Loading Behavior	To demonstrate greater compliance with curbside vehicle loading	Video with Manual Reduction	One Weekday: 2-Hour AM and PM Peak Periods	Northbound Southbound
7	Transit Boarding and Alighting	To evaluate changes in transit activity	Automated Passenger Count (APC) Data	24 Hours; Continuous	N/A
8	Public Opinion	To evaluate levels of community support of the project	Meetings and focus groups with community members	Continuous	N/A

* Data on this metric can only be collected after the project has been implemented.

BASELINE EVALUATION RESULTS

Data collection results of the metrics provide a baseline of how people travel on Telegraph Avenue prior to implementing the project. Each metric's purpose, relevance to the project, methodology, and primary findings are detailed in this section. Graphics, charts, and tables supplement written findings.

1. Multimodal Counts

Multimodal counts were collected to capture the volumes of vehicles, bicycles, pedestrians, and heavy vehicles on Telegraph Avenue. Counts were collected at five intersections on Telegraph Avenue: Grand Avenue, 27th Street, MacArthur Boulevard, 40th Street, and 51st Street. Peak hour bicycle and pedestrian counts at these locations are shown in Figure 1. Peak hour vehicle and heavy vehicle counts are shown in Figure 2.

Data Collection

- Video data collection
- Manual data reduction to count the number of each mode
- Weekday data collection in the AM and PM peak hours
- Observed number of modes by directions of travel

Findings

- **The number of people biking and walking is highest in KONO.** Notably, peak hour bicycle volumes were between 197 and 340 in the AM and PM peak hours at the Grand Avenue intersection, where the road diet and separated bike lanes have already been installed.
- **The number of vehicles highest at the Grand Avenue and 51st Street intersections.** For each of these locations, over 5,000 vehicles were counted in the AM and PM peak hours.
- **The highest volume of pedestrians is at the 40th Street intersection.** Almost 1,000 pedestrians were counted at this location during the AM and PM peak hours. This finding is significant due to the intersection's proximity to the MacArthur BART station.
- **The highest volumes of bicyclists are at the 40th Street and Grand Avenue intersections.** Across the AM and PM peak hours, a total of 371 and 397 bicyclists were counted at the 40th Street and Grand Avenue intersections, respectively.
- **Heavy vehicle counts¹ are highest at the MacArthur Boulevard intersection.** At this location, 124 and 60 heavy vehicles were counted for the AM and PM peak hours respectively, making up about 2-3% of all motorized vehicles counted at this location.

¹ Heavy vehicles include any vehicle with 3 or more axles, buses, and commercial vehicles with 2 axles and 6 tires (dual rear tires).

2. Vehicle ADT

Vehicle average daily traffic (ADT) was measured to identify patterns of vehicle volumes in the three portions of the study area. Counts were collected in each section of the corridor and are representative of each section's ADT. Figure 3 provides an overview of vehicle volumes and speeds collected on the corridor.

Data Collection

- Pneumatic tubes placed between the intersections of 43rd Street and 44th Street (Temescal), 33rd Street and 34th Street (Connecting), and 23rd Street and 24th Street (KONO)
- Manual data reduction to provide an hourly and directional data set of vehicle volumes and to calculate ADT
- Two 24-hour weekday data collection periods

Findings

- **The highest ADT of 16,809 was counted in the Temescal segment between 51st Street and MacArthur Boulevard.** This ADT was recorded between the intersections of 43rd Street and 44th Street.
- **Daily volumes were generally evenly split between the northbound and southbound directions.** One exception was found in KONO, where of the 11,011 vehicles counted, 45% (4,964) were traveling northbound and 55% (6,055) were traveling southbound.

3. Speed

Vehicle speeds were measured to identify where vehicles were driving at high or unsafe speeds. Speeds were collected in each of the three areas between intersections. Figure 3 provides an overview of vehicle volumes and speeds collected on the corridor. Findings regarding vehicle speeds for each area of the corridor are provided in Table 2, and Figure 4 shows the percentages of vehicles driving either above or below the speed limit. The speed limit is 25 mph in KONO and 30 mph in Temescal and the Connecting area.

Data Collection

- Pneumatic tubes
- Manual data reduction to provide an hourly and directional breakdown of vehicle speeds
- Two 24-hour weekday data collection periods

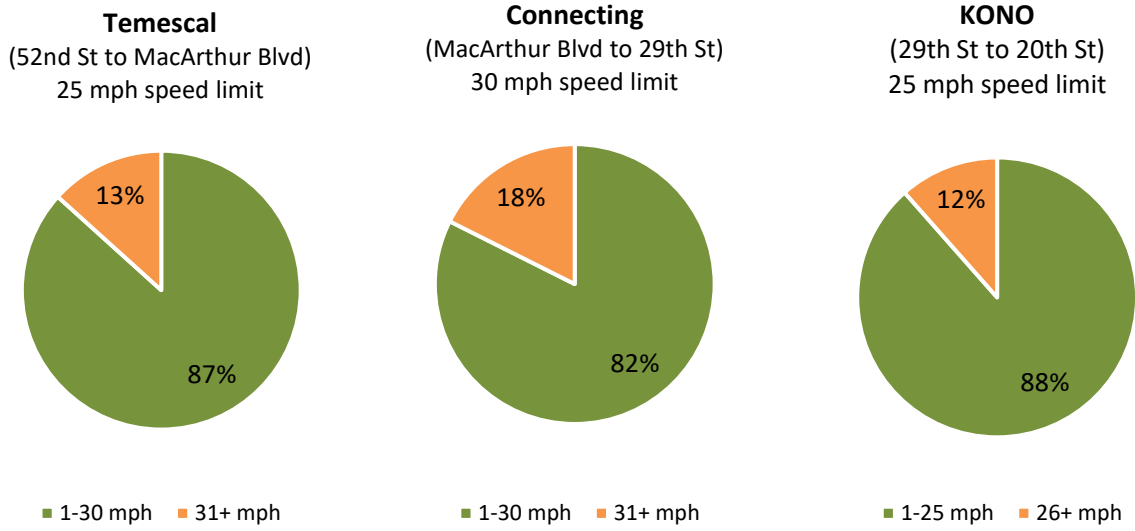
Findings

- **The mean speed and 85th percentile speed were both lowest in KONO.** The mean speed was 17 mph, compared to 24 mph in Temescal and the Connecting area. The 85th percentile speed is 24 mph. This finding is notable because the road diet is already implemented in this area.
- **The number of cars driving at the top speed recorded was highest in the Connecting area.** Seven cars were recorded going the top speed, 55 mph, in this area, compared to two cars going the top speed of either 50 mph or 55 mph in Temescal and KONO.
- **More vehicles drove at or below the speed limit in KONO compared to the other areas of the corridor.** In KONO, about 88% of vehicles drove at or under the speed limit of 25 mph. 87% of vehicles in Temescal and 82% of vehicles in the Connecting area drove at or under these areas' speed limit of 30 mph.

Table 2: Speed Findings Overview, February 2020

Area	85 th Percentile Speed	Average Speed	Top Speed (approx.)	Number of Vehicles Driving at Top Speed
Temescal (52 nd St to MacArthur Blvd)	24 mph	17 mph	50 mph	2
Connecting (MacArthur Blvd to 29 th St)	30 mph	24 mph	55 mph	7
KONO (29 th St to 21 st St)	29 mph	24 mph	55 mph	2

Figure 4: Percentages of Vehicles Driving Above or Below the Speed Limit, February 2020



4. Bicycle/Pedestrian Conflicts at the Boarding Island

Conflicts between bicyclists and pedestrians were evaluated to identify potential points of conflict between them at the boarding island. Bicycle/pedestrian conflict was observed at the boarding island north of 23rd Street, where AC Transit Lines 6 and 800 stop. This metric only applies to this location on the corridor, where the road diet, including temporary bus boarding islands and protected bike lanes, has already been installed.

Data Collection

- Video data collection using six camera angles
- Manual data reduction to count the number of pedestrians and bicyclists and interactions between them
- Two-hour weekday data collection in the PM (5pm-7pm) period in February 2020
- Observed number of pedestrians and bicyclists, number of interactions, and interaction types

Findings

- **Few interactions occurred between bicyclists and pedestrians.** One close call occurred at 5pm, and one pedestrian yielded to a bicyclist at 4pm.
- **A higher number of bicyclists passed through this location than transit riders.** 82 bicyclists passed through this location, compared to 40 pedestrians who crossed between the sidewalk and the boarding island.

5. Drivers Yielding to Pedestrians

The instances and rate of drivers yielding to pedestrians was evaluated to understand risks pedestrians face crossing Telegraph Avenue before the project is built. Drivers yielding to pedestrians was observed in marked crosswalks in each area of the corridor. Yielding was measured whenever a pedestrian was in the crosswalk or at the curb ramp facing the street.

In addition to yielding observations, close calls between vehicles and pedestrians were also measured. A close call is an instance when drivers and/or pedestrians make sudden, reactive moves to avoid a collision with one another. Close calls are reported separate from when drivers yield or do not yield and can indicate the degree of safety that pedestrians experience when crossing the street.²

Table 3 provides the details of driver yields and close calls in both the AM and PM peak hours. Figure 5 shows the rates of how often drivers yield to pedestrians in each area of the corridor.

Data Collection

- Video data collection using six camera angles
- Manual data reduction to count, time, and classify yield rate events
- Two-hour weekday data collection in the AM (7am-9am) and PM (4pm-6pm) peak period
- Observed number, type, and location of drivers yielding, not yielding, and close calls

Findings

- **The lowest yield rates were located in the Connecting area at the 32nd Street crosswalk.** At this location, 43% of drivers yielded to pedestrians in the AM period, while 32% of drivers yielded to pedestrians in the PM period.
- **The highest yield rates were located in KONO at the 24th Street crosswalk, where the greatest number of interactions and close calls also occurred.** 82% of drivers yielded to pedestrians in the AM period, and 74% of drivers yielded to pedestrians in the PM period.
- **More close calls were observed at the 24th Street sidewalk compared to other locations.** Between both time periods, seven close calls occurred, compared to one close call at each of the other locations.
 - During the data collection periods, it was observed that drivers frequently parked illegally in the painted bulbout zone between the travel lane and the bike lane at the 24th Street crosswalk. However, these vehicles were not present during the close calls that were observed. For the one instance where a close call occurred and a vehicle was parked illegally, the parked vehicle did not limit the visibility of the driver or pedestrian involved in the close call.

² Close call definition based on the SFMTA Safe Streets Evaluation Handbook's (2018) definition available online: https://www.sfmta.com/sites/default/files/reports-and-documents/2018/10/safestreetevaluationhandbook_july2018.pdf

- **The highest number of interactions occurred in the PM peak period at all locations.** Across all locations, 227 interactions occurred in the PM peak period, compared to 37 interactions in the AM peak period.

Table 3: Drivers Yielding to Pedestrians by Peak Period, February 2020

Marked Crosswalk Location	AM Peak Period				PM Peak Period			
	Driver Yields	Driver Does Not Yield	Close Calls	Yield Rate	Driver Yields	Driver Does Not Yield	Close Calls	Yield Rate
48 th Street	5	3	0	63%	37	28	1	57%
32 nd Street	3	4	0	43%	7	15	1	32%
24 th Street	18	4	1	82%	103	37	6	74%

6. Vehicle Loading Activity

Vehicle loading activity was evaluated to understand the project’s potential effects on where vehicles are currently loading and unloading on Telegraph Avenue. Vehicle loading activity was observed in the Temescal segment of Telegraph Avenue, between 48th Street and the Temescal Plaza signal. Table 4 details vehicle loading activity findings between 48th Street and Temescal Plaza by the MD and PM peak periods. Figure 6 shows the rates of passenger vehicles and TNCs stopping in the travel lane respective to each side of the street.

Data Collection

- Video data collection using six camera angles
- Manual data reduction to count, time, and classify loading events
- Two-hour weekday data collection in the Midday (10am-12pm) and PM (5pm-7pm) peak periods
- Observed number, vehicle type, and duration of blockage events

Findings

- **More loading events occur during the PM period than during the Midday period.** A total of 44 loading events were observed in the Midday period, compared to 72 events in the PM period.
- **On the east side of the street, approximately 20 percent of vehicles stopped in the travel lane.** Of the 34 loading events that occurred on the east side of the street, only 7 vehicles stopped in the travel lane.
- **On the west side of the street, approximately 40 percent of vehicles stopped in the travel lane.** Of the 78 loading events occurred on the west side of the street, 29 vehicles stopped in the travel lane.
- **More vehicles stop in the travel lane in the PM period than the Midday period.** 40 vehicles stopped in the travel lane the PM period, compared to 16 vehicles in the Midday period.
- **The proportion of passenger vehicles was higher during the PM period.** 52% of vehicles observed loading or unloading in the Midday period were passenger vehicles; this percentage was 81% in the PM period.
- **Passenger vehicles and TNCs are significantly overrepresented in the vehicles that stopped in the travel lane.** 80% of all loading events involved passenger vehicles or TNCs, but 95% of loading events that occurred in the travel lane involved passenger vehicles or TNCs.

Table 4: Vehicle Loading Activity Between 48th Street and Temescal Plaza by Peak Period, February 2020

	MD Peak Period	PM Peak Period
Median Loading Time	2.61 minutes	2.62 minutes
Longest Loading Time	113 minutes	91 minutes
Share of Passenger Vehicles	52%	81%
Total Loading Events	44	72

NEXT STEPS

Following project implementation, data will be collected again at the same locations for all metrics. Projects will be constructed in the timeframes described below:

- **Temescal** Repairing Telegraph project from 52nd Street to MacArthur Boulevard – implementation Spring 2020
- **Connecting** Telegraph from MacArthur Boulevard to 29th Street – implementation slated for late 2020
- **KONO** Interim Telegraph project from 29th Street to 20th Street – implementation Summer 2020
- **KONO** Permanent Telegraph project from 29th Street to 20th Street – implementation 2021

The results for the “after” conditions will be compared to the results presented in this memo to provide a comprehensive evaluation of the project.