

TECHNICAL MEMORANDUM

Piedmont On-Call Services

Scenic Avenue Engineering and Traffic Survey

Date: January 7, 2020
To: John Wanger P.E., Coastland
From: Aaron Elias P.E.
cc:

Project #: 21900

This technical memorandum documents the findings of a third Engineering and Traffic Survey (E&TS) for Scenic Avenue, north of Blair Avenue in Piedmont, CA conducted in December 2019. The first survey was conducted in the same location in June 2019 and a second survey were conducted in September 2019. This E&TS was completed using data collected while school is in session closer to the December Holidays, as discussed in later sections.

Scenic Avenue serves a residential area and is used for two-way traffic. However, the road is generally narrow with on-street parking requiring one car to pull over in order to pass another car traveling in the opposite direction. The current speed limit is 15 miles per hour (mph) which is indicated with both signage and pavement markings. The following topics will be covered by this technical memorandum and compared against the June and December 2019 findings:

- Data Collection
- Traffic Volumes
- Vehicle Speeds
- Collision Data
- Comparison with June and December 2019 Studies
- Recommendations

DATA COLLECTION

Traffic volume and speed data were collected using pneumatic tube counters near 168 Scenic Avenue for a seven-day period between December 14, 2019 and December 20, 2019. During this period, a sample of approximately 2,058 speed measurements were captured in both directions. To ensure only free-flow speeds were used in our analysis per the California Manual for Setting Speed Limits, Kittelson removed vehicles from the speed survey that were traveling less than 10 seconds behind the vehicle in front of them. At 15 mph, this would represent a distance of 220 feet between vehicles. Removing the

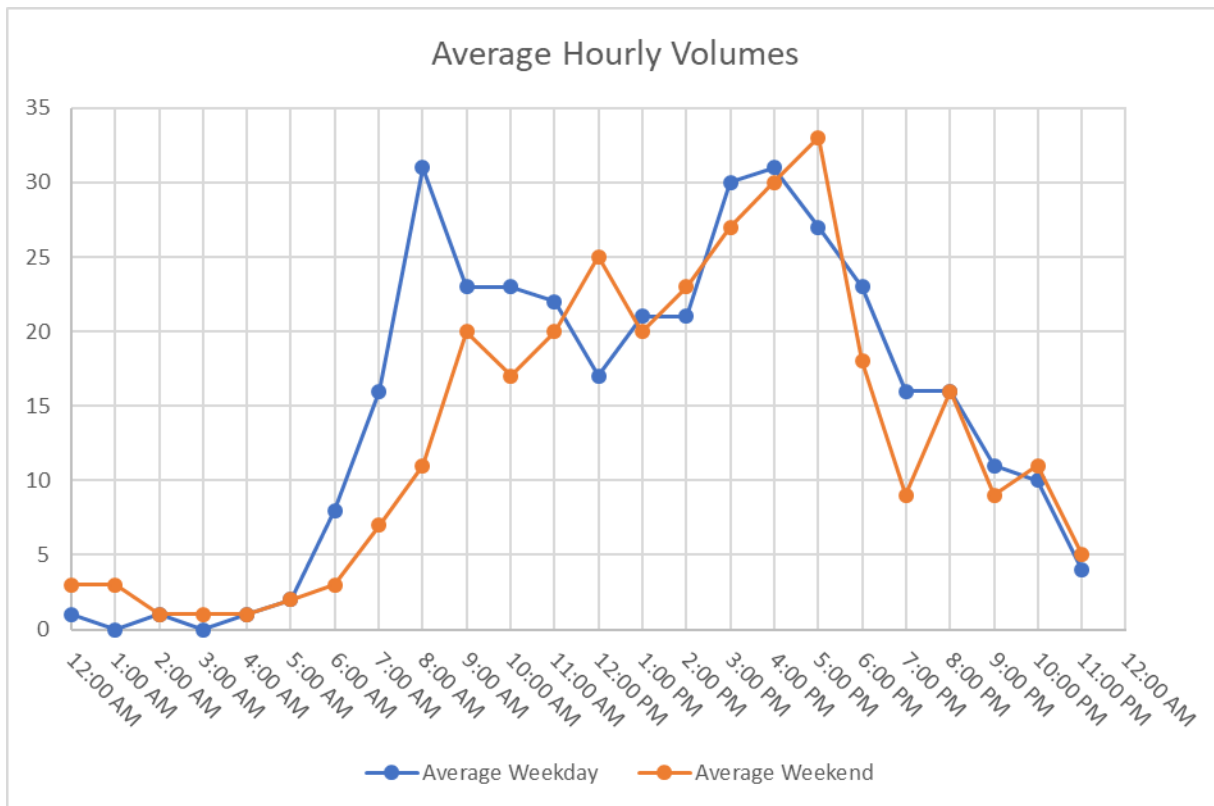
closely spaced vehicles from the sample reduces the overall sample size to approximately 1,984 speed measurements over the seven-day period.

In addition to the traffic volume and speed information, Kittelson pulled collision data for Scenic Avenue from the Statewide Integrated Traffic Records System (SWITRS), a database containing all reported collisions in California based on police reports. The data reported for collisions in this memorandum is based on SWITRS data for Scenic Avenue north of Blair Avenue over a three-year period between January 1, 2016 and December 31, 2018.

TRAFFIC VOLUMES

During the seven-day period in which traffic data were collected, Kittelson found that traffic volumes average about 355 vehicles per day on weekdays and 309 vehicles per day on the weekend. Traffic volumes were generally evenly split between northbound and southbound vehicles. The average hourly distribution of traffic is shown in Exhibit 1. The highest weekday peak hour was 4:00 PM to 5:00 PM when an average of 31 vehicles were counted, while the highest weekend peak hour was 5:00 PM to 6:00 PM when approximately 33 vehicles were counted. Detailed traffic volume data are included in Appendix A.

Exhibit 1: Average Hourly Volumes on Scenic Avenue



VEHICLE SPEEDS

Free-flow speeds on Scenic Avenue are shown in 5 mph speed bins in Exhibit 2 and graphically by number of samples at each speed in Exhibit 3. As shown in these exhibits, most vehicles traveling on Scenic Avenue travel at a speed of between 10 mph and 20 mph. A statistical summary of the speed data is shown in Exhibit 4. The maximum speed recorded over the seven-day period was 24 mph, while the average of all the speed measurements was approximately 14 mph.

The key statistical metric for a speed survey is the 85th percentile speed. The 85th percentile speed is the speed at or below which 85% of the traffic is moving and statistically represents one standard deviation above the average speed. Federal studies FHWA-RD-92-084 and FHWA-RD-98-154 demonstrate that the 85th percentile speed is the most effective attribute when setting the posted speed limit as it represents the upper limit of operating speeds that are considered reasonable and prudent. The empirical data in these studies demonstrated that setting the speed limit too high or too low can increase collisions. Speed limits that are set near the 85th percentile speed of free-flowing traffic are safer and produce less variance in vehicle speeds. Because of this, the 85th percentile is used to establish the upper limit of operating speeds that are considered reasonable and prudent. The 85th percentile speed on Scenic Avenue was 17 mph. Regardless of the posted speed limit, the majority of drivers will continue to drive at speeds at which they feel comfortable. Therefore, posting a speed limit primarily:

1. Provides feedback to the driver, letting them know if they are in the majority of drivers who consider their speed safe and reasonable
2. Allows for fair enforcement for those drivers who are going exceedingly faster or slower than the speed the majority of drivers consider safe and reasonable.

The collected speed data can be found in Appendix B.

Exhibit 2: Collected Speed Data

Range	Number	Percentage
1 - 5 mph	33	1.7%
5 - 10 mph	231	11.6%
10 - 15 mph	848	42.7%
15 - 20 mph	782	39.4%
20 - 25 mph	90	4.5%
25 - 30 mph	0	0.0%
30 - 35 mph	0	0.0%
35 - 40 mph	0	0.0%

Exhibit 3: Number of Samples at Each Speed

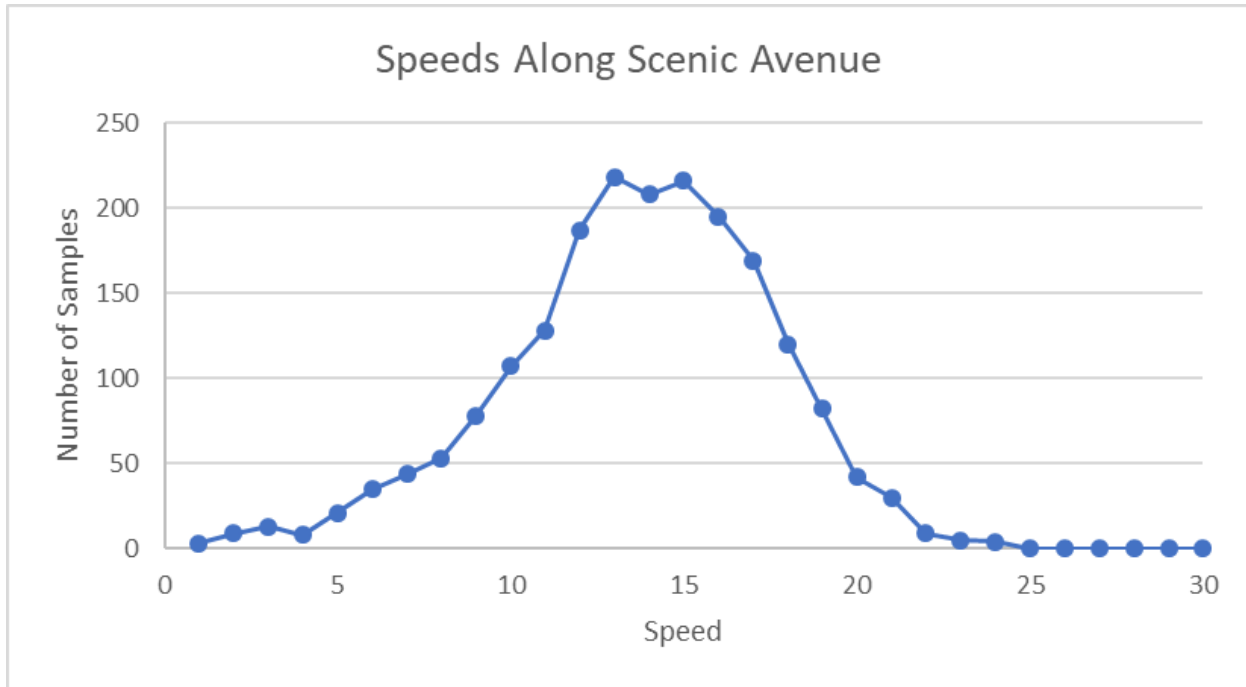


Exhibit 4: Statistical Summary of Speed Data

Metric	Finding
85th Percentile	17
Mean	14
Median	14
Mode	13
Max	24
Sample Size	1,984

COLLISION DATA

The final data source collected for this study were collision data for a three-year period on Scenic Avenue. During the three-year period (January 2016 to December 2018), there were two collisions recorded on Scenic Avenue, north of Blair Avenue. These two recorded collisions are described below.

- On September 23, 2016, a vehicle hit a fixed object on the side of the road near 136 Scenic Avenue. There were no injuries, and no other vehicles, pedestrians or bicyclists were involved in the collision.
- On January 9, 2018, a vehicle was involved in a head-on collision with a parked vehicle near Scenic Avenue and Alta Avenue. The collision was a misdemeanor hit and run involving property damage only with no pedestrians or bicyclists involved.

Neither of these collisions had police reports that cited unsafe speed as the violation contributing to the collisions.

COMPARISON WITH JUNE 2019 STUDY

The study completed in June 2019 is attached as Appendix C to this memorandum while the September 2019 study is Appendix D. A summary of the major comparison points includes:

- The total number of speed samples collected:
 - 06/2019: 1,250
 - 09/2019: 1,675
 - 12/2019: 1,984
- Weekday average daily volume:
 - 06/2019: 287 vehicles
 - 09/2019: 284 vehicles
 - 12/2019: 355 vehicles
- Weekend average daily volume:
 - 06/2019: 190 vehicles
 - 09/2019: 224 vehicles
 - 12/2019: 309 vehicles
- The 85th percentile speed, used to set speed limits:
 - 06/2019: 18 mph
 - 09/2019: 17 mph
 - 12/2019: 17 mph
- Maximum observed speed:
 - 06/2019: 27 mph
 - 09/2019: 28 mph
 - 12/2019: 24 mph
- Average speed:
 - 06/2019: 14 mph
 - 09/2019: 14 mph
 - 12/2019: 14 mph

NEIGHBORHOOD FACTORS

In addition to speed, volume, and collision data, other factors related to the roadway's environmental context should be considered. Based on feedback from the community, the following factors were identified

- Most of Scenic Avenue is narrow with no sidewalks, requiring pedestrians to walk in the street.
- Personal trainers have been known to use the public walkways in the area for training clients.
- There are blind curves on Scenic Avenue as a result of the topography of the neighborhood.

The factors mentioned are environmental in nature and may affect driver behavior through slower speeds. However, the effects of these factors are captured through the recorded speed data versus through a recommendation for additional speed adjustments. In other words, the recorded driver speeds reflect driver behavior after accounting for these and any other environmental factors. As noted earlier, collision data were reviewed to determine whether any collisions are attributable to speeding. No police reports for collisions along Scenic Avenue cited unsafe speeds as a contributing factor.

RECOMMENDATIONS

Based on our analysis of the qualitative and quantitative data on Scenic Avenue, Kittelson recommends the speed limit on Scenic Avenue remain at 15 mph as currently posted for the following reasons:

- 95% of all traffic on Scenic Avenue is traveling at less than 20 mph which would result in a low risk of severe injury for pedestrians¹.
- The 85th percentile speed, in which is the accepted metric for setting speed limits in California, is 17 mph. Since 85th percentile speeds are rounded to the nearest 5 mph increment for setting a speed limit, 15 mph is appropriate for the street.
- Over a three-year period, there were no collisions on Scenic Avenue that were noted as being caused by excess speed.
- The average hourly traffic volume over the 7-day data collection period was about 33 vehicles per hour or less which equates to approximately one vehicle every 2 minutes. This low vehicle volume reduces the risk of pedestrian/vehicle collisions.

¹ Tefft, B.C. (2011). Impact Speed and a Pedestrian's Risk of Severe Injury or Death. AAA Foundation for Traffic Safety.

Appendix A: Collected Vehicle Volumes

Type of report: Tube Count - Volume Data

LOCATION: 168 Scenic Ave SPECIFIC LOCATION: CITY/STATE: Alameda, CA						QC JOB #: 15146401 DIRECTION: EB, WB DATE: Dec 14 2019 - Dec 20 2019				
Start Time	Mon	Tue	Wed	Thu	Fri	Average Weekday Hourly Traffic	Sat 14 Dec 19	Sun 15 Dec 19	Average Week Hourly Traffic	Average Week Profile
12:00 AM							1	4	3	
01:00 AM							2	3	3	
02:00 AM							0	1	1	
03:00 AM							2	0	1	
04:00 AM							2	0	1	
05:00 AM							3	0	2	
06:00 AM							5	1	3	
07:00 AM							7	6	7	
08:00 AM							16	5	11	
09:00 AM							26	14	20	
10:00 AM							16	18	17	
11:00 AM							15	25	20	
12:00 PM							30	20	25	
01:00 PM							25	14	20	
02:00 PM							23	23	23	
03:00 PM							23	31	27	
04:00 PM							30	30	30	
05:00 PM							28	37	33	
06:00 PM							17	18	18	
07:00 PM							4	14	9	
08:00 PM							14	17	16	
09:00 PM							7	10	9	
10:00 PM							15	6	11	
11:00 PM							8	1	5	
Day Total							319	298	315	
% Weekday Average										
% Week Average						0%	101.3%	94.6%		
AM Peak Volume							9:00 AM 26	11:00 AM 25	9:00 AM 20	
PM Peak Volume							12:00 PM 30	5:00 PM 37	5:00 PM 33	

Comments:

LOCATION: 168 Scenic Ave						QC JOB #: 15146401				
SPECIFIC LOCATION:						DIRECTION: EB, WB				
CITY/STATE: Alameda, CA						DATE: Dec 14 2019 - Dec 20 2019				
Start Time	Mon 16 Dec 19	Tue 17 Dec 19	Wed 18 Dec 19	Thu 19 Dec 19	Fri 20 Dec 19	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 AM	0	1	2	1	3	1			1	
01:00 AM	1	0	0	0	0	0			0	
02:00 AM	2	0	0	1	0	1			1	
03:00 AM	0	0	0	0	0	0			0	
04:00 AM	1	1	1	2	1	1			1	
05:00 AM	1	3	3	3	2	2			2	
06:00 AM	6	14	4	4	10	8			8	
07:00 AM	16	17	16	16	13	16			16	
08:00 AM	35	25	30	37	30	31			31	
09:00 AM	20	26	20	22	25	23			23	
10:00 AM	26	19	16	26	29	23			23	
11:00 AM	19	18	17	31	24	22			22	
12:00 PM	22	16	11	17	20	17			17	
01:00 PM	19	18	22	27	19	21			21	
02:00 PM	19	14	28	20	25	21			21	
03:00 PM	28	24	28	29	43	30			30	
04:00 PM	22	26	38	28	42	31			31	
05:00 PM	18	34	18	33	30	27			27	
06:00 PM	22	20	28	22	22	23			23	
07:00 PM	19	16	19	16	11	16			16	
08:00 PM	5	31	13	15	15	16			16	
09:00 PM	10	8	4	16	15	11			11	
10:00 PM	7	7	13	11	13	10			10	
11:00 PM	3	4	2	5	5	4			4	
Day Total	321	342	333	382	397	355			355	
% Weekday Average	90.4%	96.3%	93.8%	107.6%	111.8%					
% Week Average	90.4%	96.3%	93.8%	107.6%	111.8%	100%				
AM Peak Volume	8:00 AM 35	9:00 AM 26	8:00 AM 30	8:00 AM 37	8:00 AM 30	8:00 AM 31			8:00 AM 31	
PM Peak Volume	3:00 PM 28	5:00 PM 34	4:00 PM 38	5:00 PM 33	3:00 PM 43	4:00 PM 31			4:00 PM 31	

Comments:

Appendix B: Collected Vehicle Speeds

Type of report: Tube Count - Speed Data

LOCATION: 168 Scenic Ave															QC JOB #: 15146401		
SPECIFIC LOCATION:															DIRECTION: EB, WB		
CITY/STATE: Alameda, CA															DATE: Dec 14 2019		
Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
12:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
01:00 AM	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1-10	1
02:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
03:00 AM	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2	11-20	1
04:00 AM	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2	11-20	1
05:00 AM	2	0	1	0	0	0	0	0	0	0	0	0	0	0	3	1-10	1
06:00 AM	3	2	0	0	0	0	0	0	0	0	0	0	0	0	5	11-20	3
07:00 AM	6	1	0	0	0	0	0	0	0	0	0	0	0	0	7	1-10	4
08:00 AM	12	3	1	0	0	0	0	0	0	0	0	0	0	0	16	1-10	8
09:00 AM	23	3	0	0	0	0	0	0	0	0	0	0	0	0	26	1-10	15
10:00 AM	15	0	1	0	0	0	0	0	0	0	0	0	0	0	16	1-10	10
11:00 AM	8	6	1	0	0	0	0	0	0	0	0	0	0	0	15	11-20	9
12:00 PM	16	14	0	0	0	0	0	0	0	0	0	0	0	0	30	11-20	19
01:00 PM	21	4	0	0	0	0	0	0	0	0	0	0	0	0	25	1-10	14
02:00 PM	20	3	0	0	0	0	0	0	0	0	0	0	0	0	23	1-10	13
03:00 PM	17	6	0	0	0	0	0	0	0	0	0	0	0	0	23	11-20	12
04:00 PM	22	6	2	0	0	0	0	0	0	0	0	0	0	0	30	1-10	15
05:00 PM	26	2	0	0	0	0	0	0	0	0	0	0	0	0	28	1-10	17
06:00 PM	11	6	0	0	0	0	0	0	0	0	0	0	0	0	17	11-20	10
07:00 PM	2	1	1	0	0	0	0	0	0	0	0	0	0	0	4	16-25	2
08:00 PM	12	2	0	0	0	0	0	0	0	0	0	0	0	0	14	1-10	8
09:00 PM	6	1	0	0	0	0	0	0	0	0	0	0	0	0	7	1-10	4
10:00 PM	13	2	0	0	0	0	0	0	0	0	0	0	0	0	15	1-10	9
11:00 PM	4	3	1	0	0	0	0	0	0	0	0	0	0	0	8	11-20	4
Day Total	244	67	8	0	0	0	0	0	0	0	0	0	0	0	319	1-10	163
Percent	76.5%	21%	2.5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
AM Peak Volume	9:00 AM 23	11:00 AM 6	5:00 AM 1	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	9:00 AM 26		
PM Peak Volume	5:00 PM 26	12:00 PM 14	4:00 PM 2	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 30		
<i>Comments:</i>																	

Report generated on 1/7/2020 8:42 AM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>)

Type of report: Tube Count - Speed Data

LOCATION: 168 Scenic Ave															QC JOB #: 15146401		
SPECIFIC LOCATION:															DIRECTION: EB, WB		
CITY/STATE: Alameda, CA															DATE: Dec 15 2019		
Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
12:00 AM	2	1	1	0	0	0	0	0	0	0	0	0	0	0	4	16-25	2
01:00 AM	2	1	0	0	0	0	0	0	0	0	0	0	0	0	3	11-20	2
02:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
03:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
04:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
05:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
06:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
07:00 AM	2	4	0	0	0	0	0	0	0	0	0	0	0	0	6	11-20	5
08:00 AM	5	0	0	0	0	0	0	0	0	0	0	0	0	0	5	1-10	3
09:00 AM	10	4	0	0	0	0	0	0	0	0	0	0	0	0	14	11-20	7
10:00 AM	13	5	0	0	0	0	0	0	0	0	0	0	0	0	18	11-20	9
11:00 AM	17	7	1	0	0	0	0	0	0	0	0	0	0	0	25	11-20	13
12:00 PM	15	5	0	0	0	0	0	0	0	0	0	0	0	0	20	1-10	10
01:00 PM	12	2	0	0	0	0	0	0	0	0	0	0	0	0	14	1-10	8
02:00 PM	18	3	2	0	0	0	0	0	0	0	0	0	0	0	23	1-10	12
03:00 PM	26	5	0	0	0	0	0	0	0	0	0	0	0	0	31	1-10	17
04:00 PM	24	6	0	0	0	0	0	0	0	0	0	0	0	0	30	1-10	16
05:00 PM	30	7	0	0	0	0	0	0	0	0	0	0	0	0	37	1-10	20
06:00 PM	12	6	0	0	0	0	0	0	0	0	0	0	0	0	18	11-20	10
07:00 PM	11	1	2	0	0	0	0	0	0	0	0	0	0	0	14	1-10	7
08:00 PM	13	4	0	0	0	0	0	0	0	0	0	0	0	0	17	1-10	9
09:00 PM	6	4	0	0	0	0	0	0	0	0	0	0	0	0	10	11-20	6
10:00 PM	3	2	1	0	0	0	0	0	0	0	0	0	0	0	6	16-25	3
11:00 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
Day Total	224	67	7	0	0	0	0	0	0	0	0	0	0	0	298	1-10	149
Percent	75.2%	22.5%	2.3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
AM Peak Volume	11:00 AM 17	11:00 AM 7	12:00 AM 1	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	11:00 AM 25		
PM Peak Volume	5:00 PM 30	5:00 PM 7	2:00 PM 2	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	5:00 PM 37		
<i>Comments:</i>																	

Report generated on 1/7/2020 8:42 AM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>)

Type of report: Tube Count - Speed Data

LOCATION: 168 Scenic Ave															QC JOB #: 15146401		
SPECIFIC LOCATION:															DIRECTION: EB, WB		
CITY/STATE: Alameda, CA															DATE: Dec 16 2019		
Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
01:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	11-20	1
02:00 AM	2	0	0	0	0	0	0	0	0	0	0	0	0	2	1-10	1	
03:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
04:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1	
05:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1	
06:00 AM	2	4	0	0	0	0	0	0	0	0	0	0	0	6	11-20	5	
07:00 AM	11	5	0	0	0	0	0	0	0	0	0	0	0	16	11-20	9	
08:00 AM	24	11	0	0	0	0	0	0	0	0	0	0	0	35	11-20	19	
09:00 AM	11	8	1	0	0	0	0	0	0	0	0	0	0	20	11-20	12	
10:00 AM	20	6	0	0	0	0	0	0	0	0	0	0	0	26	1-10	13	
11:00 AM	9	10	0	0	0	0	0	0	0	0	0	0	0	19	11-20	13	
12:00 PM	17	5	0	0	0	0	0	0	0	0	0	0	0	22	1-10	11	
01:00 PM	15	3	1	0	0	0	0	0	0	0	0	0	0	19	1-10	10	
02:00 PM	12	7	0	0	0	0	0	0	0	0	0	0	0	19	11-20	11	
03:00 PM	26	2	0	0	0	0	0	0	0	0	0	0	0	28	1-10	17	
04:00 PM	15	7	0	0	0	0	0	0	0	0	0	0	0	22	11-20	12	
05:00 PM	14	4	0	0	0	0	0	0	0	0	0	0	0	18	1-10	9	
06:00 PM	16	6	0	0	0	0	0	0	0	0	0	0	0	22	11-20	11	
07:00 PM	15	4	0	0	0	0	0	0	0	0	0	0	0	19	1-10	10	
08:00 PM	5	0	0	0	0	0	0	0	0	0	0	0	0	5	1-10	3	
09:00 PM	7	3	0	0	0	0	0	0	0	0	0	0	0	10	11-20	5	
10:00 PM	5	2	0	0	0	0	0	0	0	0	0	0	0	7	11-20	4	
11:00 PM	1	2	0	0	0	0	0	0	0	0	0	0	0	3	11-20	2	
Day Total	229	90	2	0	0	0	0	0	0	0	0	0	0	321	11-20	166	
Percent	71.3%	28%	0.6%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%				
AM Peak Volume	8:00 AM 24	8:00 AM 11	9:00 AM 1	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	8:00 AM 35		
PM Peak Volume	3:00 PM 26	2:00 PM 7	1:00 PM 1	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	3:00 PM 28		
<i>Comments:</i>																	

Report generated on 1/7/2020 8:42 AM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>)

Type of report: Tube Count - Speed Data

LOCATION: 168 Scenic Ave
SPECIFIC LOCATION:
CITY/STATE: Alameda, CA

QC JOB #: 15146401
DIRECTION: EB, WB
DATE: Dec 17 2019

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
12:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
01:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
02:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
03:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
04:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
05:00 AM	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1-10	2
06:00 AM	13	1	0	0	0	0	0	0	0	0	0	0	0	0	14	1-10	9
07:00 AM	12	5	0	0	0	0	0	0	0	0	0	0	0	0	17	11-20	9
08:00 AM	21	4	0	0	0	0	0	0	0	0	0	0	0	0	25	1-10	14
09:00 AM	14	12	0	0	0	0	0	0	0	0	0	0	0	0	26	11-20	17
10:00 AM	11	8	0	0	0	0	0	0	0	0	0	0	0	0	19	11-20	12
11:00 AM	15	3	0	0	0	0	0	0	0	0	0	0	0	0	18	1-10	10
12:00 PM	9	7	0	0	0	0	0	0	0	0	0	0	0	0	16	11-20	10
01:00 PM	10	5	3	0	0	0	0	0	0	0	0	0	0	0	18	11-20	8
02:00 PM	11	2	1	0	0	0	0	0	0	0	0	0	0	0	14	1-10	7
03:00 PM	18	5	1	0	0	0	0	0	0	0	0	0	0	0	24	1-10	12
04:00 PM	19	6	1	0	0	0	0	0	0	0	0	0	0	0	26	1-10	13
05:00 PM	24	10	0	0	0	0	0	0	0	0	0	0	0	0	34	11-20	18
06:00 PM	13	5	2	0	0	0	0	0	0	0	0	0	0	0	20	11-20	9
07:00 PM	14	2	0	0	0	0	0	0	0	0	0	0	0	0	16	1-10	9
08:00 PM	27	3	1	0	0	0	0	0	0	0	0	0	0	0	31	1-10	18
09:00 PM	4	4	0	0	0	0	0	0	0	0	0	0	0	0	8	11-20	5
10:00 PM	6	1	0	0	0	0	0	0	0	0	0	0	0	0	7	1-10	4
11:00 PM	1	3	0	0	0	0	0	0	0	0	0	0	0	0	4	11-20	3
Day Total	247	86	9	0	0	0	0	0	0	0	0	0	0	0	342	11-20	168
Percent	72.2%	25.1%	2.6%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
AM Peak Volume	8:00 AM	9:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	9:00 AM		
	21	12	0	0	0	0	0	0	0	0	0	0	0	0	26		
PM Peak Volume	8:00 PM	5:00 PM	1:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	5:00 PM		
	27	10	3	0	0	0	0	0	0	0	0	0	0	0	34		

Comments:

Type of report: Tube Count - Speed Data

LOCATION: 168 Scenic Ave
SPECIFIC LOCATION:
CITY/STATE: Alameda, CA

QC JOB #: 15146401
DIRECTION: EB, WB
DATE: Dec 18 2019

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
12:00 AM	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1-10	1
01:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
02:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
03:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
04:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
05:00 AM	1	2	0	0	0	0	0	0	0	0	0	0	0	0	3	11-20	2
06:00 AM	1	3	0	0	0	0	0	0	0	0	0	0	0	0	4	11-20	3
07:00 AM	10	6	0	0	0	0	0	0	0	0	0	0	0	0	16	11-20	9
08:00 AM	21	8	1	0	0	0	0	0	0	0	0	0	0	0	30	11-20	15
09:00 AM	10	10	0	0	0	0	0	0	0	0	0	0	0	0	20	11-20	13
10:00 AM	14	2	0	0	0	0	0	0	0	0	0	0	0	0	16	1-10	9
11:00 AM	9	8	0	0	0	0	0	0	0	0	0	0	0	0	17	11-20	11
12:00 PM	5	6	0	0	0	0	0	0	0	0	0	0	0	0	11	11-20	8
01:00 PM	12	10	0	0	0	0	0	0	0	0	0	0	0	0	22	11-20	14
02:00 PM	18	9	1	0	0	0	0	0	0	0	0	0	0	0	28	11-20	15
03:00 PM	21	6	1	0	0	0	0	0	0	0	0	0	0	0	28	1-10	14
04:00 PM	24	13	1	0	0	0	0	0	0	0	0	0	0	0	38	11-20	21
05:00 PM	12	5	1	0	0	0	0	0	0	0	0	0	0	0	18	11-20	9
06:00 PM	22	6	0	0	0	0	0	0	0	0	0	0	0	0	28	1-10	15
07:00 PM	16	3	0	0	0	0	0	0	0	0	0	0	0	0	19	1-10	11
08:00 PM	8	5	0	0	0	0	0	0	0	0	0	0	0	0	13	11-20	8
09:00 PM	1	3	0	0	0	0	0	0	0	0	0	0	0	0	4	11-20	3
10:00 PM	10	3	0	0	0	0	0	0	0	0	0	0	0	0	13	1-10	7
11:00 PM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	11-20	2
Day Total	218	110	5	0	0	0	0	0	0	0	0	0	0	0	333	11-20	183
Percent	65.5%	33%	1.5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
AM Peak Volume	8:00 AM 21	9:00 AM 10	8:00 AM 1	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	8:00 AM 30		
PM Peak Volume	4:00 PM 24	4:00 PM 13	2:00 PM 1	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	4:00 PM 38		

Comments:

Type of report: Tube Count - Speed Data

LOCATION: 168 Scenic Ave															QC JOB #: 15146401		
SPECIFIC LOCATION:															DIRECTION: EB, WB		
CITY/STATE: Alameda, CA															DATE: Dec 19 2019		
Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
12:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
01:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
02:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
03:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
04:00 AM	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1-10	1
05:00 AM	2	1	0	0	0	0	0	0	0	0	0	0	0	0	3	11-20	2
06:00 AM	3	1	0	0	0	0	0	0	0	0	0	0	0	0	4	1-10	2
07:00 AM	11	5	0	0	0	0	0	0	0	0	0	0	0	0	16	11-20	9
08:00 AM	28	9	0	0	0	0	0	0	0	0	0	0	0	0	37	1-10	19
09:00 AM	20	1	1	0	0	0	0	0	0	0	0	0	0	0	22	1-10	13
10:00 AM	21	5	0	0	0	0	0	0	0	0	0	0	0	0	26	1-10	14
11:00 AM	26	5	0	0	0	0	0	0	0	0	0	0	0	0	31	1-10	17
12:00 PM	17	0	0	0	0	0	0	0	0	0	0	0	0	0	17	1-10	11
01:00 PM	19	8	0	0	0	0	0	0	0	0	0	0	0	0	27	11-20	14
02:00 PM	10	9	1	0	0	0	0	0	0	0	0	0	0	0	20	11-20	12
03:00 PM	24	4	1	0	0	0	0	0	0	0	0	0	0	0	29	1-10	16
04:00 PM	17	11	0	0	0	0	0	0	0	0	0	0	0	0	28	11-20	17
05:00 PM	20	13	0	0	0	0	0	0	0	0	0	0	0	0	33	11-20	20
06:00 PM	19	3	0	0	0	0	0	0	0	0	0	0	0	0	22	1-10	13
07:00 PM	11	4	1	0	0	0	0	0	0	0	0	0	0	0	16	11-20	8
08:00 PM	11	4	0	0	0	0	0	0	0	0	0	0	0	0	15	11-20	8
09:00 PM	13	3	0	0	0	0	0	0	0	0	0	0	0	0	16	1-10	9
10:00 PM	3	4	4	0	0	0	0	0	0	0	0	0	0	0	11	16-25	8
11:00 PM	1	3	1	0	0	0	0	0	0	0	0	0	0	0	5	16-25	4
Day Total	280	93	9	0	0	0	0	0	0	0	0	0	0	0	382	1-10	187
Percent	73.3%	24.3%	2.4%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
AM Peak Volume	8:00 AM 28	8:00 AM 9	9:00 AM 1	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	8:00 AM 37		
PM Peak Volume	3:00 PM 24	5:00 PM 13	10:00 PM 4	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	5:00 PM 33		
<i>Comments:</i>																	

Report generated on 1/7/2020 8:42 AM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>)

Type of report: Tube Count - Speed Data

LOCATION: 168 Scenic Ave															QC JOB #: 15146401		
SPECIFIC LOCATION:															DIRECTION: EB, WB		
CITY/STATE: Alameda, CA															DATE: Dec 20 2019		
Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
12:00 AM	1	2	0	0	0	0	0	0	0	0	0	0	0	0	3	11-20	2
01:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
02:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
03:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
04:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
05:00 AM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	11-20	2
06:00 AM	7	3	0	0	0	0	0	0	0	0	0	0	0	0	10	11-20	5
07:00 AM	8	5	0	0	0	0	0	0	0	0	0	0	0	0	13	11-20	8
08:00 AM	21	7	2	0	0	0	0	0	0	0	0	0	0	0	30	1-10	14
09:00 AM	14	11	0	0	0	0	0	0	0	0	0	0	0	0	25	11-20	16
10:00 AM	20	9	0	0	0	0	0	0	0	0	0	0	0	0	29	11-20	16
11:00 AM	13	9	2	0	0	0	0	0	0	0	0	0	0	0	24	11-20	13
12:00 PM	13	7	0	0	0	0	0	0	0	0	0	0	0	0	20	11-20	11
01:00 PM	14	4	1	0	0	0	0	0	0	0	0	0	0	0	19	1-10	9
02:00 PM	18	7	0	0	0	0	0	0	0	0	0	0	0	0	25	11-20	13
03:00 PM	33	9	1	0	0	0	0	0	0	0	0	0	0	0	43	1-10	22
04:00 PM	32	10	0	0	0	0	0	0	0	0	0	0	0	0	42	1-10	21
05:00 PM	25	5	0	0	0	0	0	0	0	0	0	0	0	0	30	1-10	17
06:00 PM	17	4	1	0	0	0	0	0	0	0	0	0	0	0	22	1-10	11
07:00 PM	8	3	0	0	0	0	0	0	0	0	0	0	0	0	11	11-20	6
08:00 PM	10	5	0	0	0	0	0	0	0	0	0	0	0	0	15	11-20	8
09:00 PM	13	1	1	0	0	0	0	0	0	0	0	0	0	0	15	1-10	9
10:00 PM	8	4	1	0	0	0	0	0	0	0	0	0	0	0	13	11-20	7
11:00 PM	3	2	0	0	0	0	0	0	0	0	0	0	0	0	5	11-20	3
Day Total	279	109	9	0	0	0	0	0	0	0	0	0	0	0	397	11-20	202
Percent	70.3%	27.5%	2.3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
AM Peak Volume	8:00 AM	9:00 AM	8:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	8:00 AM		
	21	11	2	0	0	0	0	0	0	0	0	0	0	0	30		
PM Peak Volume	3:00 PM	4:00 PM	1:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	3:00 PM		
	33	10	1	0	0	0	0	0	0	0	0	0	0	0	43		
<i>Comments:</i>																	

Report generated on 1/7/2020 8:42 AM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>)

LOCATION: 168 Scenic Ave														QC JOB #: 15146401			
SPECIFIC LOCATION:														DIRECTION: EB, WB			
CITY/STATE: Alameda, CA														DATE: Dec 14 2019 - Dec 20 2019			
Speed Range	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
Grand Total	1721	622	49	0	0	0	0	0	0	0	0	0	0	0	2392	11-20	1196
Percent	71.9%	26%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
Cumulative Percent	71.9%	98%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%			
ADT 341															85th Percentile: 17 MPH Mean Speed(Average): 10 MPH Median: 10 MPH Mode: 8 MPH		
<i>Comments:</i>																	



Appendix C: June 2019 E&TS

TECHNICAL MEMORANDUM

Piedmont On-Call Services

Scenic Avenue Engineering and Traffic Survey

Date: July 23, 2019
To: John Wanger P.E., Coastland
From: Aaron Elias P.E.
cc:

Project #: 21900

This technical memorandum documents the findings of an Engineering and Traffic Survey (E&TS) for Scenic Avenue, north of Blair Avenue in Piedmont, CA. Scenic Avenue serves a residential area and is used for two-way traffic. However, the road is generally narrow with on-street parking requiring one car to pull over in order to pass another car traveling in the opposite direction. The current speed limit is 15 miles per hour (mph) which is indicated with both signage and pavement markings. The following topics will be covered by this technical memorandum:

- Data Collection
- Traffic Volumes
- Vehicle Speeds
- Collision Data
- Recommendations

DATA COLLECTION

Traffic volume and speed data were collected using pneumatic tube counters near 200 Scenic Avenue for a seven-day period between June 19, 2019 and June 25, 2019. During this period, a sample of approximately 1,300 speed measurements were captured in both directions. To ensure only free-flow speeds were used in our analysis per the California Manual for Setting Speed Limits, Kittelson removed vehicles from the speed survey that were traveling less than 10 seconds behind the vehicle in front of them. At 15 mph, this would represent a distance of 220 feet between vehicles. Removing the closely spaced vehicles from the sample reduces the overall sample size to approximately 1,250 speed measurements over the seven-day period.

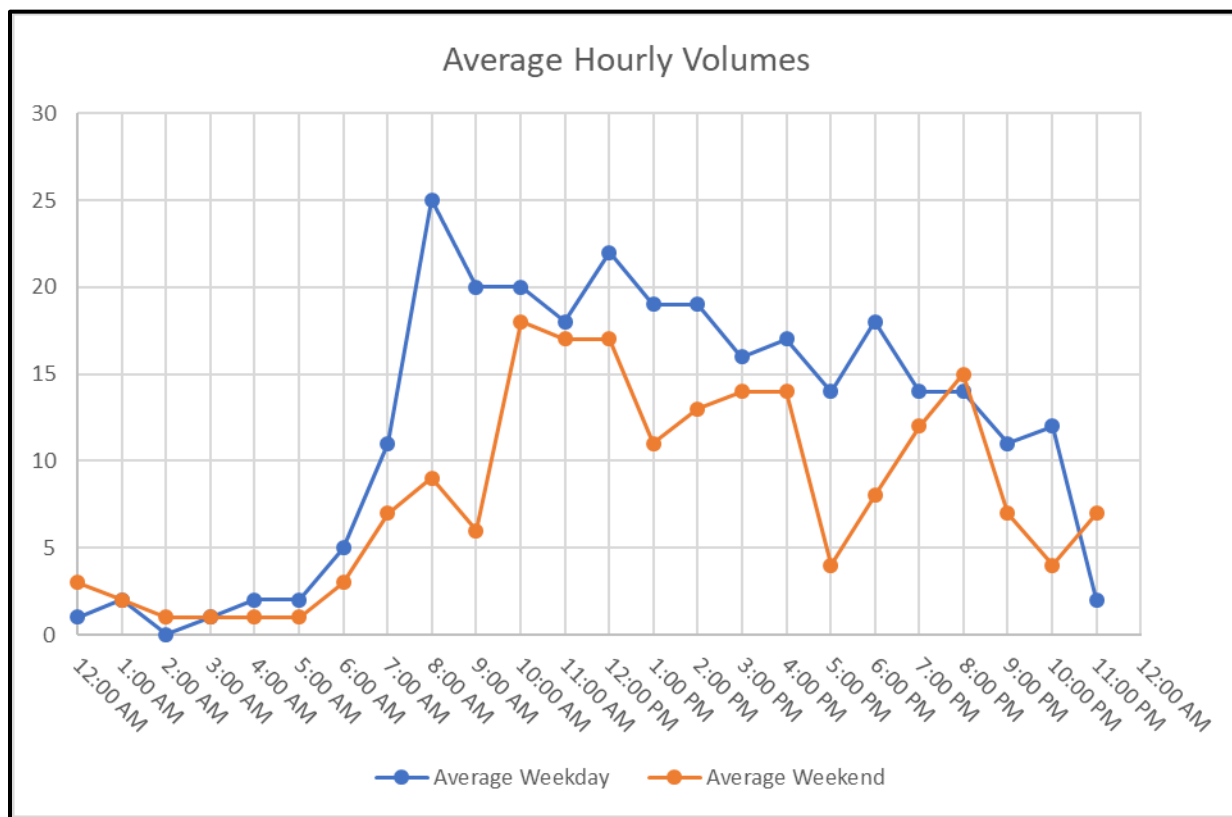
In addition to the traffic volume and speed information, Kittelson pulled collision data for Scenic Avenue from the Statewide Integrated Traffic Records System (SWITRS), a database containing all reported collisions in California based on police reports. The data reported for collisions in this

memorandum is based on SWITRS data for Scenic Avenue north of Blair Avenue over a three-year period between January 1, 2016 and December 31, 2018.

TRAFFIC VOLUMES

During the seven-day period in which traffic data were collected, Kittelson found that traffic volumes average about 287 vehicles per day on weekdays and 190 vehicles per day on the weekend. Traffic volumes were generally evenly split between northbound and southbound vehicles. The average hourly distribution of traffic is shown in Exhibit 1. The highest weekday peak hour was 8:00 AM to 9:00 AM when an average of 25 vehicles were counted, while the highest weekend peak hour was 10:00 AM to 11:00 AM when approximately 18 vehicles were counted. Detailed traffic volume data are included in Appendix A.

Exhibit 1: Average Hourly Volumes on Scenic Avenue



VEHICLE SPEEDS

Free-flow speeds on Scenic Avenue are shown in 5 mph speed bins in Exhibit 2 and graphically by number of samples at each speed in Exhibit 3. As shown in these exhibits, most vehicles traveling on Scenic Avenue travel at a speed of between 10 mph and 20 mph. A statistical summary of the speed data is shown in Exhibit 4. The maximum speed recorded over the seven-day period was 27 mph, while the average of all the speed measurements was approximately 14 mph.

The key statistical metric for a speed survey is the 85th percentile speed. The 85th percentile speed is the speed at or below which 85% of the traffic is moving and statistically represents one standard deviation above the average speed. Federal studies FHWA-RD-92-084 and FHWA-RD-98-154 demonstrate that the 85th percentile speed is the most effective attribute when setting the posted speed limit as it represents the upper limit of operating speeds that are considered reasonable and prudent. Therefore, the 85th percentile speed is used for setting speed limits in California. The 85th percentile speed on Scenic Avenue was 18 mph.

The collected speed data can be found in Appendix B.

Exhibit 2: Collected Speed Data

Range	Number	Percentage
0 - 5 mph	4	0.3%
5 - 10 mph	114	9.1%
10 - 15 mph	521	41.6%
15 - 20 mph	526	42.0%
20 - 25 mph	84	6.7%
25 - 30 mph	3	0.2%
30 - 35 mph	0	0.0%
35 - 40 mph	0	0.0%

Exhibit 3: Number of Samples at Each Speed

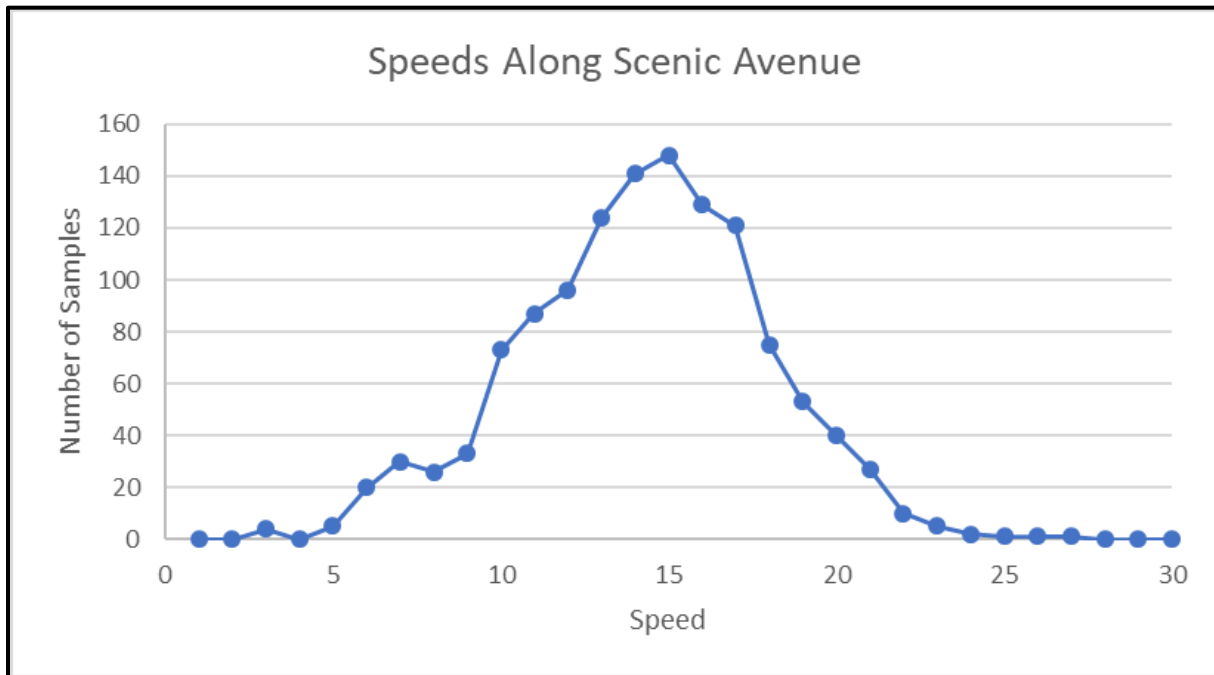


Exhibit 4: Statistical Summary of Speed Data

Metric	Finding
85th Percentile	18
Mean	14
Median	14
Mode	15
Max	27
Sample Size	1,254

COLLISION DATA

The final data source collected for this study were collision data for a three-year period on Scenic Avenue. During the three-year period (January 2016 to December 2018), there were two collisions recorded on Scenic Avenue, north of Blair Avenue. These two collisions are described below.

- On September 23, 2016, a vehicle hit a fixed object on the side of the road near 136 Scenic Avenue. There were no injuries, and no other vehicles, pedestrians or bicyclists were involved in the collision.
- On January 9, 2018, a vehicle was involved in a head-on collision with a parked vehicle near Scenic Avenue and Alta Avenue. The collision was a misdemeanor hit and run involving property damage only with no pedestrians or bicyclists involved.

Neither of these collisions had police reports that cited unsafe speed as the violation contributing to these collisions.

RECOMMENDATIONS

Based on standard practice, the 18 mph 85th percentile speed would normally round up to a posted speed limit of 20 mph. However, California Vehicle Code 21400 allows for setting the speed limit at the 5 mph increment below the 85th percentile, even if mathematical rounding would require the speed to be posted above the 85th percentile speed. Given that Scenic Drive is located in a residential area, the narrowness of the street, and that it is currently posted at 15 mph, Kittelson recommends the speed limit be maintained at 15 mph.

Appendix A: Collected Vehicle Volumes

Type of report: Tube Count - Volume Data

LOCATION: 168 Scenic Avenue QC JOB #: 15012001 SPECIFIC LOCATION: DIRECTION: NB, SB CITY/STATE: Piedmont, CA DATE: Jun 19 2019 - Jun 25 2019										
Start Time	Mon	Tue	Wed	Thu	Fri	Average Weekday	Sat	Sun	Average Week	Average Week Profile
			19 Jun 19	20 Jun 19	21 Jun 19	Hourly Traffic	22 Jun 19	23 Jun 19	Hourly Traffic	
12:00 AM			0	2	1	1	2	4	2	
01:00 AM			1	1	3	2	2	1	2	
02:00 AM			0	0	2	1	1	1	1	
03:00 AM			3	1	1	2	1	1	1	
04:00 AM			0	1	4	2	1	0	1	
05:00 AM			0	2	2	1	1	0	1	
06:00 AM			3	4	1	3	3	2	3	
07:00 AM			11	9	11	10	8	5	9	
08:00 AM			28	23	32	28	9	9	20	
09:00 AM			27	13	18	19	5	7	14	
10:00 AM			18	24	25	22	15	21	21	
11:00 AM			26	16	16	19	13	21	18	
12:00 PM			20	17	20	19	22	12	18	
01:00 PM			16	16	23	18	10	11	15	
02:00 PM			23	17	20	20	15	10	17	
03:00 PM			17	18	16	17	8	19	16	
04:00 PM			23	12	19	18	13	15	16	
05:00 PM			16	13	16	15	3	5	11	
06:00 PM			25	15	15	18	9	7	14	
07:00 PM			6	9	20	12	10	13	12	
08:00 PM			9	16	9	11	21	9	13	
09:00 PM			9	20	12	14	10	3	11	
10:00 PM			15	14	10	13	5	3	9	
11:00 PM			0	8	1	3	9	5	5	
Day Total			296	271	297	288	196	184	250	
% Weekday Average			102.8%	94.1%	103.1%					
% Week Average			118.4%	108.4%	118.8%	115.2%	78.4%	73.6%		
AM Peak Volume			8:00 AM 28	10:00 AM 24	8:00 AM 32	8:00 AM 28	10:00 AM 15	10:00 AM 21	10:00 AM 21	
PM Peak Volume			6:00 PM 25	9:00 PM 20	1:00 PM 23	2:00 PM 20	12:00 PM 22	3:00 PM 19	12:00 PM 18	

Comments:

LOCATION: 168 Scenic Avenue							QC JOB #: 15012001			
SPECIFIC LOCATION:							DIRECTION: NB, SB			
CITY/STATE: Piedmont, CA							DATE: Jun 19 2019 - Jun 25 2019			
Start Time	Mon 24 Jun 19	Tue 25 Jun 19	Wed	Thu	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 AM	3	0				2			2	
01:00 AM	2	2				2			2	
02:00 AM	0	0				0			0	
03:00 AM	1	1				1			1	
04:00 AM	0	3				2			2	
05:00 AM	3	3				3			3	
06:00 AM	4	13				9			9	
07:00 AM	10	15				13			13	
08:00 AM	22	19				21			21	
09:00 AM	24	17				21			21	
10:00 AM	18	14				16			16	
11:00 AM	22	11				17			17	
12:00 PM	21	30				26			26	
01:00 PM	24	17				21			21	
02:00 PM	18	18				18			18	
03:00 PM	15	15				15			15	
04:00 PM	9	22				16			16	
05:00 PM	13	14				14			14	
06:00 PM	21	15				18			18	
07:00 PM	25	10				18			18	
08:00 PM	15	19				17			17	
09:00 PM	9	7				8			8	
10:00 PM	12	10				11			11	
11:00 PM	2	1				2			2	
Day Total	293	276				291			291	
% Weekday Average	100.7%	94.8%								
% Week Average	100.7%	94.8%				100%				
AM Peak Volume	9:00 AM 24	8:00 AM 19				8:00 AM 21			8:00 AM 21	
PM Peak Volume	7:00 PM 25	12:00 PM 30				12:00 PM 26			12:00 PM 26	

Comments:

Appendix B: Collected Vehicle Speeds

Type of report: Tube Count - Speed Data

LOCATION: 168 Scenic Avenue															QC JOB #: 15012001		
SPECIFIC LOCATION:															DIRECTION: NB, SB		
CITY/STATE: Piedmont, CA															DATE: Jun 19 2019		
Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
01:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
02:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
03:00 AM	2	1	0	0	0	0	0	0	0	0	0	0	0	0	3	11-20	2
04:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
05:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
06:00 AM	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1-10	2
07:00 AM	6	5	0	0	0	0	0	0	0	0	0	0	0	0	11	11-20	7
08:00 AM	13	5	0	0	0	0	0	0	0	0	0	0	0	0	18	11-20	9
09:00 AM	15	5	0	0	0	0	0	0	0	0	0	0	0	0	20	1-10	10
10:00 AM	14	3	1	0	0	0	0	0	0	0	0	0	0	0	18	1-10	9
11:00 AM	12	11	0	0	0	0	0	0	0	0	0	0	0	0	23	11-20	15
12:00 PM	10	9	1	0	0	0	0	0	0	0	0	0	0	0	20	11-20	12
01:00 PM	7	7	0	0	0	0	0	0	0	0	0	0	0	0	14	11-20	9
02:00 PM	11	5	2	0	0	0	0	0	0	0	0	0	0	0	18	11-20	9
03:00 PM	8	4	1	0	0	0	0	0	0	0	0	0	0	0	13	11-20	7
04:00 PM	9	3	0	0	0	0	0	0	0	0	0	0	0	0	12	1-10	6
05:00 PM	12	1	0	0	0	0	0	0	0	0	0	0	0	0	13	1-10	8
06:00 PM	16	6	1	1	0	0	0	0	0	0	0	0	0	0	24	11-20	11
07:00 PM	4	2	0	0	0	0	0	0	0	0	0	0	0	0	6	11-20	3
08:00 PM	7	2	0	0	0	0	0	0	0	0	0	0	0	0	9	1-10	5
09:00 PM	4	5	0	0	0	0	0	0	0	0	0	0	0	0	9	11-20	6
10:00 PM	6	3	2	0	0	0	0	0	0	0	0	0	0	0	11	13-22	5
11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
Day Total	160	77	8	1	0	0	0	0	0	0	0	0	0	0	246	11-20	130
Percent	65%	31.3%	3.3%	0.4%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
AM Peak Volume	9:00 AM 15	11:00 AM 11	10:00 AM 1	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	11:00 AM 23		
PM Peak Volume	6:00 PM 16	12:00 PM 9	2:00 PM 2	6:00 PM 1	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	6:00 PM 24		
<i>Comments:</i>																	

Report generated on 6/28/2019 11:32 AM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>)

Type of report: Tube Count - Speed Data

LOCATION: 168 Scenic Avenue															QC JOB #: 15012001		
SPECIFIC LOCATION:															DIRECTION: NB, SB		
CITY/STATE: Piedmont, CA															DATE: Jun 20 2019		
Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
12:00 AM	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2	11-20	1
01:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
02:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
03:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
04:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
05:00 AM	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1-10	1
06:00 AM	2	1	1	0	0	0	0	0	0	0	0	0	0	0	4	16-25	2
07:00 AM	4	4	1	0	0	0	0	0	0	0	0	0	0	0	9	11-20	5
08:00 AM	14	4	1	0	0	0	0	0	0	0	0	0	0	0	19	1-10	9
09:00 AM	9	2	1	0	0	0	0	0	0	0	0	0	0	0	12	1-10	6
10:00 AM	8	15	1	0	0	0	0	0	0	0	0	0	0	0	24	11-20	18
11:00 AM	8	8	0	0	0	0	0	0	0	0	0	0	0	0	16	11-20	11
12:00 PM	11	5	0	0	0	0	0	0	0	0	0	0	0	0	16	11-20	9
01:00 PM	7	3	1	0	0	0	0	0	0	0	0	0	0	0	11	11-20	5
02:00 PM	7	2	0	0	0	0	0	0	0	0	0	0	0	0	9	1-10	5
03:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	11-20	1
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
05:00 PM	0	1	1	1	0	0	0	0	0	0	0	0	0	0	3	16-25	2
06:00 PM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	11-20	2
07:00 PM	3	1	0	0	0	0	0	0	0	0	0	0	0	0	4	1-10	2
08:00 PM	10	4	1	0	0	0	0	0	0	0	0	0	0	0	15	11-20	7
09:00 PM	11	2	1	0	0	0	0	0	0	0	0	0	0	0	14	1-10	7
10:00 PM	5	5	1	0	0	0	0	0	0	0	0	0	0	0	11	11-20	7
11:00 PM	7	0	1	0	0	0	0	0	0	0	0	0	0	0	8	1-10	5
Day Total	112	61	11	1	0	0	0	0	0	0	0	0	0	0	185	11-20	98
Percent	60.5%	33%	5.9%	0.5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
AM Peak Volume	8:00 AM 14	10:00 AM 15	6:00 AM 1	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	10:00 AM 24		
PM Peak Volume	12:00 PM 11	12:00 PM 5	1:00 PM 1	5:00 PM 1	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 16		
<i>Comments:</i>																	

Report generated on 6/28/2019 11:32 AM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>)

Type of report: Tube Count - Speed Data

LOCATION: 168 Scenic Avenue															QC JOB #: 15012001		
SPECIFIC LOCATION:															DIRECTION: NB, SB		
CITY/STATE: Piedmont, CA															DATE: Jun 21 2019		
Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
12:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	11-20	1
01:00 AM	2	1	0	0	0	0	0	0	0	0	0	0	0	0	3	11-20	2
02:00 AM	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2	11-20	1
03:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
04:00 AM	3	1	0	0	0	0	0	0	0	0	0	0	0	0	4	1-10	2
05:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
06:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	11-20	1
07:00 AM	6	5	0	0	0	0	0	0	0	0	0	0	0	0	11	11-20	7
08:00 AM	18	11	0	0	0	0	0	0	0	0	0	0	0	0	29	11-20	17
09:00 AM	11	6	1	0	0	0	0	0	0	0	0	0	0	0	18	11-20	10
10:00 AM	17	4	2	0	0	0	0	0	0	0	0	0	0	0	23	1-10	11
11:00 AM	11	5	0	0	0	0	0	0	0	0	0	0	0	0	16	11-20	9
12:00 PM	8	12	0	0	0	0	0	0	0	0	0	0	0	0	20	11-20	15
01:00 PM	13	7	0	0	0	0	0	0	0	0	0	0	0	0	20	11-20	11
02:00 PM	8	4	0	0	0	0	0	0	0	0	0	0	0	0	12	11-20	7
03:00 PM	0	6	0	0	0	0	0	0	0	0	0	0	0	0	6	11-20	6
04:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	11-20	1
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
06:00 PM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2	16-25	2
07:00 PM	12	3	0	0	0	0	0	0	0	0	0	0	0	0	15	1-10	8
08:00 PM	7	1	1	0	0	0	0	0	0	0	0	0	0	0	9	1-10	5
09:00 PM	4	6	0	0	0	0	0	0	0	0	0	0	0	0	10	11-20	7
10:00 PM	4	3	1	0	0	0	0	0	0	0	0	0	0	0	8	11-20	4
11:00 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
Day Total	127	79	7	0	0	0	0	0	0	0	0	0	0	0	213	11-20	121
Percent	59.6%	37.1%	3.3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
AM Peak Volume	8:00 AM 18	8:00 AM 11	10:00 AM 2	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	8:00 AM 29		
PM Peak Volume	1:00 PM 13	12:00 PM 12	6:00 PM 2	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 20		
<i>Comments:</i>																	

Type of report: Tube Count - Speed Data

LOCATION: 168 Scenic Avenue															QC JOB #: 15012001		
SPECIFIC LOCATION:															DIRECTION: NB, SB		
CITY/STATE: Piedmont, CA															DATE: Jun 22 2019		
Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
12:00 AM	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2	11-20	1
01:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
02:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
03:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
04:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	11-20	1
05:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
06:00 AM	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1-10	2
07:00 AM	6	2	0	0	0	0	0	0	0	0	0	0	0	0	8	1-10	4
08:00 AM	3	2	1	0	0	0	0	0	0	0	0	0	0	0	6	16-25	3
09:00 AM	3	2	0	0	0	0	0	0	0	0	0	0	0	0	5	11-20	3
10:00 AM	6	7	0	0	0	0	0	0	0	0	0	0	0	0	13	11-20	9
11:00 AM	6	4	1	0	0	0	0	0	0	0	0	0	0	0	11	11-20	6
12:00 PM	9	5	1	0	0	0	0	0	0	0	0	0	0	0	15	11-20	8
01:00 PM	8	1	1	0	0	0	0	0	0	0	0	0	0	0	10	1-10	5
02:00 PM	2	2	0	0	0	0	0	0	0	0	0	0	0	0	4	11-20	3
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
06:00 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	16-25	1
07:00 PM	3	3	0	0	0	0	0	0	0	0	0	0	0	0	6	11-20	4
08:00 PM	16	5	0	0	0	0	0	0	0	0	0	0	0	0	21	1-10	11
09:00 PM	6	3	1	0	0	0	0	0	0	0	0	0	0	0	10	11-20	5
10:00 PM	3	2	0	0	0	0	0	0	0	0	0	0	0	0	5	11-20	3
11:00 PM	6	2	0	0	0	0	0	0	0	0	0	0	0	0	8	1-10	4
Day Total	84	42	6	0	0	0	0	0	0	0	0	0	0	0	132	11-20	70
Percent	63.6%	31.8%	4.5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
AM Peak Volume	7:00 AM	10:00 AM	8:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	10:00 AM		
	6	7	1	0	0	0	0	0	0	0	0	0	0	0	13		
PM Peak Volume	8:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	8:00 PM		
	16	5	1	0	0	0	0	0	0	0	0	0	0	0	21		
<i>Comments:</i>																	

Report generated on 6/28/2019 11:32 AM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>)

Type of report: Tube Count - Speed Data

LOCATION: 168 Scenic Avenue															QC JOB #: 15012001		
SPECIFIC LOCATION:															DIRECTION: NB, SB		
CITY/STATE: Piedmont, CA															DATE: Jun 23 2019		
Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
12:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	11-20	1
01:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
02:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
03:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
04:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
05:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
06:00 AM	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2	11-20	1
07:00 AM	3	2	0	0	0	0	0	0	0	0	0	0	0	0	5	11-20	3
08:00 AM	5	2	0	0	0	0	0	0	0	0	0	0	0	0	7	11-20	4
09:00 AM	3	4	0	0	0	0	0	0	0	0	0	0	0	0	7	11-20	5
10:00 AM	16	3	0	0	0	0	0	0	0	0	0	0	0	0	19	1-10	11
11:00 AM	8	3	0	0	0	0	0	0	0	0	0	0	0	0	11	11-20	6
12:00 PM	8	4	0	0	0	0	0	0	0	0	0	0	0	0	12	11-20	7
01:00 PM	6	5	0	0	0	0	0	0	0	0	0	0	0	0	11	11-20	7
02:00 PM	4	3	0	0	0	0	0	0	0	0	0	0	0	0	7	11-20	4
03:00 PM	1	2	0	0	0	0	0	0	0	0	0	0	0	0	3	11-20	2
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
06:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
07:00 PM	7	4	0	0	0	0	0	0	0	0	0	0	0	0	11	11-20	6
08:00 PM	6	1	0	0	0	0	0	0	0	0	0	0	0	0	7	1-10	4
09:00 PM	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1-10	2
10:00 PM	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1-10	1
11:00 PM	4	1	0	0	0	0	0	0	0	0	0	0	0	0	5	1-10	3
Day Total	80	36	0	0	0	0	0	0	0	0	0	0	0	0	116	11-20	63
Percent	69%	31%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
AM Peak Volume	10:00 AM	9:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	10:00 AM		
	16	4	0	0	0	0	0	0	0	0	0	0	0	0	19		
PM Peak Volume	12:00 PM	1:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM		
	8	5	0	0	0	0	0	0	0	0	0	0	0	0	12		
<i>Comments:</i>																	

Report generated on 6/28/2019 11:32 AM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>)

Type of report: Tube Count - Speed Data

LOCATION: 168 Scenic Avenue
SPECIFIC LOCATION:
CITY/STATE: Piedmont, CA

QC JOB #: 15012001
DIRECTION: NB, SB
DATE: Jun 24 2019

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
12:00 AM	2	1	0	0	0	0	0	0	0	0	0	0	0	0	3	11-20	2
01:00 AM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	11-20	2
02:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
03:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
04:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
05:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
06:00 AM	2	2	0	0	0	0	0	0	0	0	0	0	0	0	4	11-20	3
07:00 AM	6	3	1	0	0	0	0	0	0	0	0	0	0	0	10	11-20	5
08:00 AM	11	5	1	0	0	0	0	0	0	0	0	0	0	0	17	11-20	9
09:00 AM	18	2	0	0	0	0	0	0	0	0	0	0	0	0	20	1-10	12
10:00 AM	12	6	0	0	0	0	0	0	0	0	0	0	0	0	18	11-20	10
11:00 AM	13	5	1	0	0	0	0	0	0	0	0	0	0	0	19	11-20	9
12:00 PM	16	5	0	0	0	0	0	0	0	0	0	0	0	0	21	1-10	11
01:00 PM	16	6	1	0	0	0	0	0	0	0	0	0	0	0	23	11-20	11
02:00 PM	9	4	0	0	0	0	0	0	0	0	0	0	0	0	13	11-20	7
03:00 PM	3	2	0	0	0	0	0	0	0	0	0	0	0	0	5	11-20	3
04:00 PM	2	3	0	0	0	0	0	0	0	0	0	0	0	0	5	11-20	4
05:00 PM	4	5	0	0	0	0	0	0	0	0	0	0	0	0	9	11-20	6
06:00 PM	0	4	1	0	0	0	0	0	0	0	0	0	0	0	5	16-25	5
07:00 PM	12	4	0	0	0	0	0	0	0	0	0	0	0	0	16	1-10	8
08:00 PM	9	6	0	0	0	0	0	0	0	0	0	0	0	0	15	11-20	9
09:00 PM	2	6	0	0	0	0	0	0	0	0	0	0	0	0	8	11-20	7
10:00 PM	9	3	0	0	0	0	0	0	0	0	0	0	0	0	12	1-10	6
11:00 PM	1	0	1	0	0	0	0	0	0	0	0	0	0	0	2	16-25	1
Day Total	149	74	6	0	0	0	0	0	0	0	0	0	0	0	229	11-20	124
Percent	65.1%	32.3%	2.6%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
AM Peak Volume	9:00 AM	10:00 AM	7:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	9:00 AM		
	18	6	1	0	0	0	0	0	0	0	0	0	0	0	20		
PM Peak Volume	12:00 PM	1:00 PM	1:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	1:00 PM		
	16	6	1	0	0	0	0	0	0	0	0	0	0	0	23		

Comments:

Type of report: Tube Count - Speed Data

LOCATION: 168 Scenic Avenue															QC JOB #: 15012001		
SPECIFIC LOCATION:															DIRECTION: NB, SB		
CITY/STATE: Piedmont, CA															DATE: Jun 25 2019		
Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
01:00 AM	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1-10	1
02:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
03:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
04:00 AM	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1-10	1
05:00 AM	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1-10	2
06:00 AM	7	4	1	0	0	0	0	0	0	0	0	0	0	0	12	11-20	6
07:00 AM	7	7	1	0	0	0	0	0	0	0	0	0	0	0	15	11-20	9
08:00 AM	9	7	1	0	0	0	0	0	0	0	0	0	0	0	17	11-20	10
09:00 AM	7	10	0	0	0	0	0	0	0	0	0	0	0	0	17	11-20	12
10:00 AM	7	4	1	0	0	0	0	0	0	0	0	0	0	0	12	11-20	6
11:00 AM	5	5	0	0	0	0	0	0	0	0	0	0	0	0	10	11-20	7
12:00 PM	18	10	0	0	0	0	0	0	0	0	0	0	0	0	28	11-20	16
01:00 PM	10	3	1	0	0	0	0	0	0	0	0	0	0	0	14	1-10	7
02:00 PM	5	5	0	0	0	0	0	0	0	0	0	0	0	0	10	11-20	7
03:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	11-20	1
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
06:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
07:00 PM	6	0	2	0	0	0	0	0	0	0	0	0	0	0	8	1-10	4
08:00 PM	11	2	1	0	0	0	0	0	0	0	0	0	0	0	14	1-10	7
09:00 PM	4	2	0	0	0	0	0	0	0	0	0	0	0	0	6	11-20	3
10:00 PM	7	3	0	0	0	0	0	0	0	0	0	0	0	0	10	11-20	5
11:00 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
Day Total	112	63	8	0	0	0	0	0	0	0	0	0	0	0	183	11-20	100
Percent	61.2%	34.4%	4.4%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
AM Peak Volume	8:00 AM	9:00 AM	6:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	8:00 AM		
	9	10	1	0	0	0	0	0	0	0	0	0	0	0	17		
PM Peak Volume	12:00 PM	12:00 PM	7:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM		
	18	10	2	0	0	0	0	0	0	0	0	0	0	0	28		
<i>Comments:</i>																	

Report generated on 6/28/2019 11:32 AM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>)

Appendix D: September 2019 E&TS

TECHNICAL MEMORANDUM

Piedmont On-Call Services

Scenic Avenue Engineering and Traffic Survey

Date: September 17, 2019 Project #: 21900
To: John Wanger P.E., Coastland
From: Aaron Elias P.E.
cc:

This technical memorandum documents the findings of a second Engineering and Traffic Survey (E&TS) for Scenic Avenue, north of Blair Avenue in Piedmont, CA conducted in September 2019. The first survey was conducted in the same location in June 2019; however, there were community concerns regarding the use of data collected in June while school was not in session. Therefore, this E&TS was completed using data collected while school is in session, as discussed in later sections.

Scenic Avenue serves a residential area and is used for two-way traffic. However, the road is generally narrow with on-street parking requiring one car to pull over in order to pass another car traveling in the opposite direction. The current speed limit is 15 miles per hour (mph) which is indicated with both signage and pavement markings. The following topics will be covered by this technical memorandum and compared against the June 2019 findings:

- Data Collection
- Traffic Volumes
- Vehicle Speeds
- Collision Data
- Comparison with June 2019 Study
- Recommendations

DATA COLLECTION

Traffic volume and speed data were collected using pneumatic tube counters near 168 Scenic Avenue for a seven-day period between August 28, 2019 and September 3, 2019. During this period, a sample of approximately 1,875 speed measurements were captured in both directions. To ensure only free-flow speeds were used in our analysis per the California Manual for Setting Speed Limits, Kittelson removed vehicles from the speed survey that were traveling less than 10 seconds behind the vehicle in front of them. At 15 mph, this would represent a distance of 220 feet between vehicles. Removing the

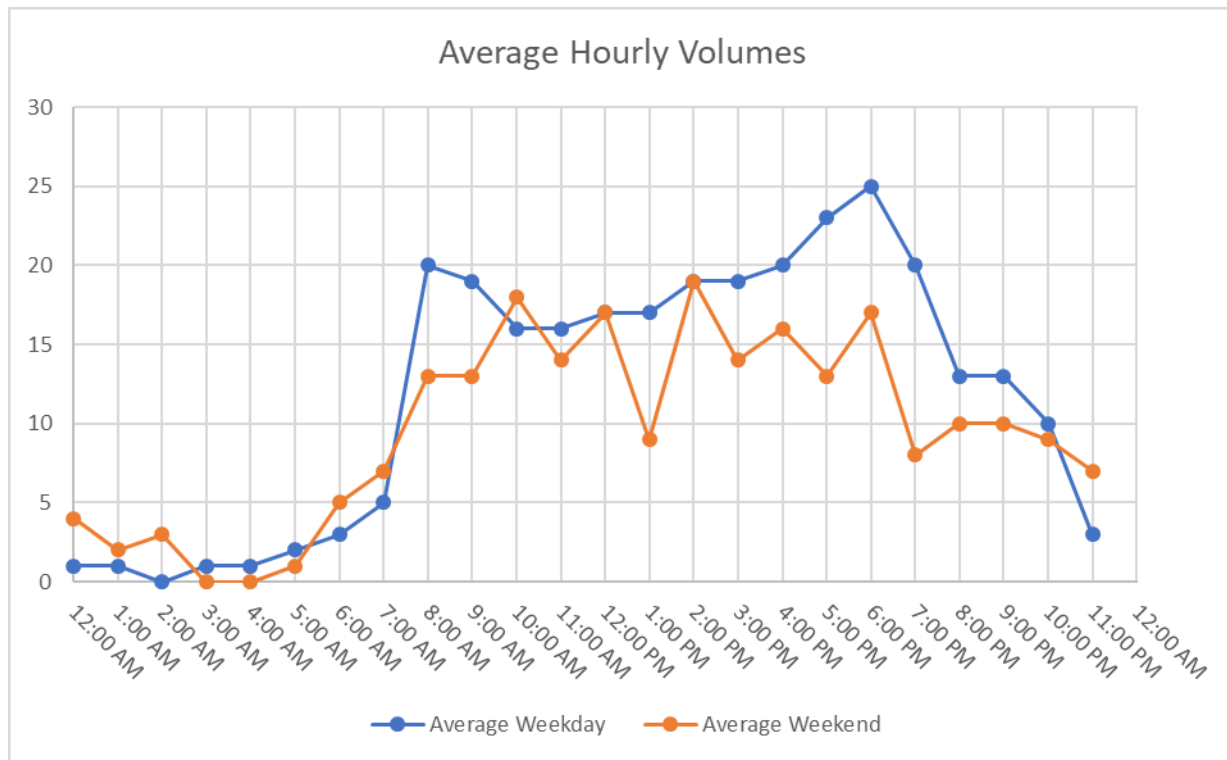
closely spaced vehicles from the sample reduces the overall sample size to approximately 1,675 speed measurements over the seven-day period.

In addition to the traffic volume and speed information, Kittelson pulled collision data for Scenic Avenue from the Statewide Integrated Traffic Records System (SWITRS), a database containing all reported collisions in California based on police reports. The data reported for collisions in this memorandum is based on SWITRS data for Scenic Avenue north of Blair Avenue over a three-year period between January 1, 2016 and December 31, 2018.

TRAFFIC VOLUMES

During the seven-day period in which traffic data were collected, Kittelson found that traffic volumes average about 284 vehicles per day on weekdays and 224 vehicles per day on the weekend. Traffic volumes were generally evenly split between northbound and southbound vehicles. The average hourly distribution of traffic is shown in Exhibit 1. The highest weekday peak hour was 6:00 PM to 7:00 PM when an average of 25 vehicles were counted, while the highest weekend peak hour was 2:00 PM to 3:00 PM when approximately 19 vehicles were counted. Detailed traffic volume data are included in Appendix A.

Exhibit 1: Average Hourly Volumes on Scenic Avenue



VEHICLE SPEEDS

Free-flow speeds on Scenic Avenue are shown in 5 mph speed bins in Exhibit 2 and graphically by number of samples at each speed in Exhibit 3. As shown in these exhibits, most vehicles traveling on Scenic Avenue travel at a speed of between 10 mph and 20 mph. A statistical summary of the speed data is shown in Exhibit 4. The maximum speed recorded over the seven-day period was 28 mph, while the average of all the speed measurements was approximately 14 mph.

The key statistical metric for a speed survey is the 85th percentile speed. The 85th percentile speed is the speed at or below which 85% of the traffic is moving and statistically represents one standard deviation above the average speed. Federal studies FHWA-RD-92-084 and FHWA-RD-98-154 demonstrate that the 85th percentile speed is the most effective attribute when setting the posted speed limit as it represents the upper limit of operating speeds that are considered reasonable and prudent. The empirical data in these studies demonstrated that setting the speed limit too high or too low can increase collisions. Speed limits that are set near the 8th percentile speed of free-flowing traffic are safer and produce less variance in vehicle speeds. Because of this, the 85th percentile is used to establish the upper limit of operating speeds that are considered reasonable and prudent. The 85th percentile speed on Scenic Avenue was 17 mph. Regardless of the posted speed limit, the majority of drivers will continue to drive at speeds at which they feel comfortable. Therefore, posting a speed limit primarily:

1. Provides feedback to the driver, letting them know if they are in the majority of drivers who consider their speed safe and reasonable
2. Allows for fair enforcement for those drivers who are going exceedingly faster or slower than the speed the majority of drivers consider safe and reasonable.

The collected speed data can be found in Appendix B.

Exhibit 2: Collected Speed Data

Range	Number	Percentage
0 - 5 mph	8	0.5%
5 - 10 mph	191	11.4%
10 - 15 mph	748	44.7%
15 - 20 mph	646	38.6%
20 - 25 mph	75	4.5%
25 - 30 mph	4	0.2%
30 - 35 mph	0	0.0%
35 - 40 mph	0	0.0%

Exhibit 3: Number of Samples at Each Speed

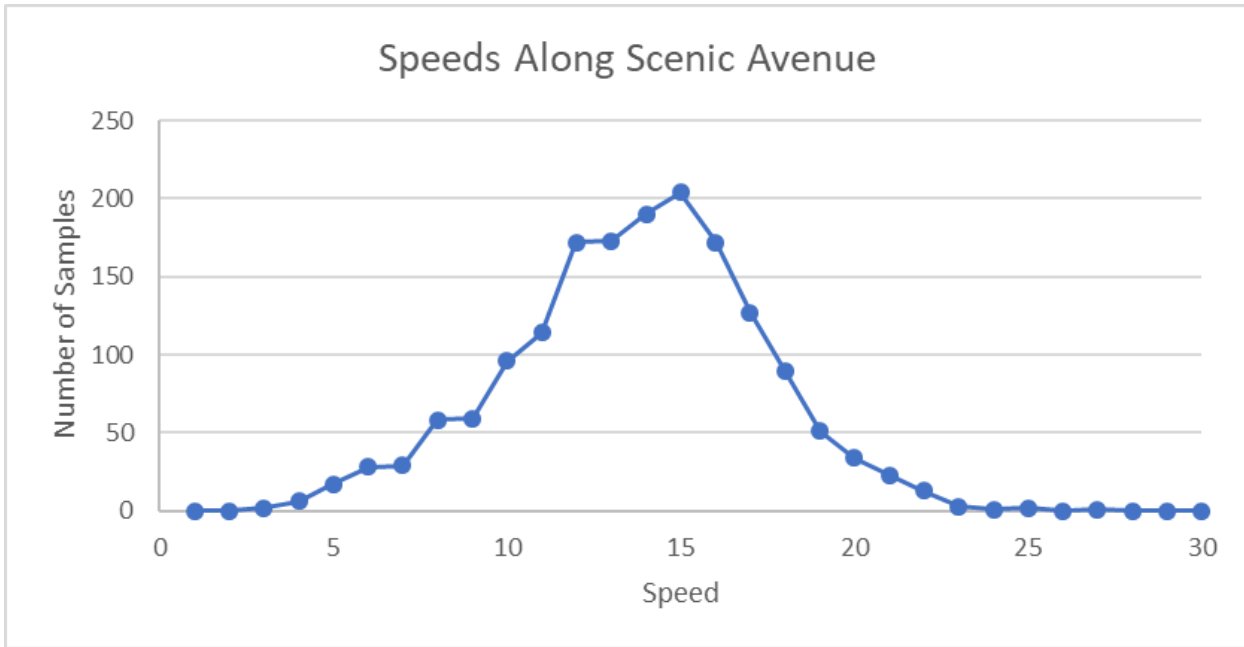


Exhibit 4: Statistical Summary of Speed Data

Metric	Finding
85th Percentile	17
Mean	14
Median	14
Mode	15
Max	28
Sample Size	1,672

COLLISION DATA

The final data source collected for this study were collision data for a three-year period on Scenic Avenue. During the three-year period (January 2016 to December 2018), there were two collisions recorded on Scenic Avenue, north of Blair Avenue. These two recorded collisions are described below.

- On September 23, 2016, a vehicle hit a fixed object on the side of the road near 136 Scenic Avenue. There were no injuries, and no other vehicles, pedestrians or bicyclists were involved in the collision.
- On January 9, 2018, a vehicle was involved in a head-on collision with a parked vehicle near Scenic Avenue and Alta Avenue. The collision was a misdemeanor hit and run involving property damage only with no pedestrians or bicyclists involved.

Neither of these collisions had police reports that cited unsafe speed as the violation contributing to the collisions.

COMPARISON WITH JUNE 2019 STUDY

The study completed in June 2019 is attached as Appendix C to this memorandum. A summary of the major comparison points includes:

- The total number of speed samples collected over the 7-day period increased from about 1,250 in June to 1,675 in September.
- Weekday average daily volume was about the same for June and September at around 285 vehicles per day. The weekend average increase by about 35 vehicles per day from 190 in June to 224 in September.
- The 85th percentile speed, used to set speed limits, decreased from 18 mph in June to 17 mph in September. However, the mean, median, and mode remained about the same indicating very little change between June and September for speeds. The maximum speed recorded over the 7-day period was also similar at 27 mph in June and 28 mph in September.

NEIGHBORHOOD FACTORS

In addition to speed, volume, and collision data, other factors related to the roadway's environmental context should be considered. Based on feedback from the community, the following factors were identified

- Most of Scenic Avenue is narrow with no sidewalks, requiring pedestrians to walk in the street.
- Personal trainers have been known to use the public walkways in the area for training clients.
- There are blind curves on Scenic Avenue as a result of the topography of the neighborhood.

The factors mentioned are environmental in nature and may affect driver behavior through slower speeds. However, the effects of these factors are captured through the recorded speed data versus through a recommendation for additional speed adjustments. In other words, the recorded driver speeds reflect driver behavior after accounting for these and any other environmental factors. As noted earlier, collision data were reviewed to determine whether any collisions are attributable to speeding. No police reports for collisions along Scenic Avenue cited unsafe speeds as a contributing factor.

RECOMMENDATIONS

Based on our analysis of the qualitative and quantitative data on Scenic Avenue, Kittelson recommends the speed limit on Scenic Avenue remain at 15 mph as current posted for the following reasons:

- 95% of all traffic on Scenic Avenue is traveling at less than 20 mph which would result in a low risk of severe injury for pedestrians¹.
- The 85th percentile speed, in which is the accepted metric for setting speed limits in California, is 17 mph. Since 85th percentile speeds are rounded to the nearest 5 mph increment for setting a speed limit, 15 mph is appropriate for the street.
- Over a three-year period, there were no collisions on Scenic Avenue that were noted as being caused by excess speed.
- The average hourly traffic volume over the 7-day data collection period was 25 vehicles per hour or less which equates to approximately one vehicle every 2.5 minutes. This low vehicle volume reduces the risk of pedestrian/vehicle collisions.

¹ Tefft, B.C. (2011). Impact Speed and a Pedestrian's Risk of Severe Injury or Death. AAA Foundation for Traffic Safety.

Appendix A: Collected Vehicle Volumes

Type of report: Tube Count - Volume Data

LOCATION: 168 Scenic Ave QC JOB #: 15061401 SPECIFIC LOCATION: DIRECTION: NB, SB CITY/STATE: Alameda, CA DATE: Aug 28 2019 - Sep 3 2019										
Start Time	Mon	Tue	Wed 28 Aug 19	Thu 29 Aug 19	Fri 30 Aug 19	Average Weekday Hourly Traffic	Sat 31 Aug 19	Sun 1 Sep 19	Average Week Hourly Traffic	Average Week Profile
12:00 AM			0	0	3	1	1	7	2	
01:00 AM			0	1	2	1	0	3	1	
02:00 AM			0	1	0	0	3	2	1	
03:00 AM			1	0	0	0	0	0	0	
04:00 AM			1	0	2	1	0	0	1	
05:00 AM			3	3	0	2	1	1	2	
06:00 AM			8	2	5	5	7	3	5	
07:00 AM			9	19	6	11	8	5	9	
08:00 AM			32	30	31	31	15	11	24	
09:00 AM			18	26	27	24	14	11	19	
10:00 AM			19	14	12	15	18	17	16	
11:00 AM			15	11	18	15	20	7	14	
12:00 PM			9	12	16	12	22	12	14	
01:00 PM			25	11	14	17	10	7	13	
02:00 PM			18	18	21	19	24	13	19	
03:00 PM			20	22	17	20	13	15	17	
04:00 PM			20	19	25	21	16	16	19	
05:00 PM			21	24	23	23	16	9	19	
06:00 PM			22	23	24	23	22	11	20	
07:00 PM			22	27	24	24	9	7	18	
08:00 PM			11	13	9	11	8	12	11	
09:00 PM			20	10	14	15	11	8	13	
10:00 PM			4	16	10	10	11	7	10	
11:00 PM			1	4	0	2	8	6	4	
Day Total			299	306	303	303	257	190	271	
% Weekday Average			98.7%	101%	100%					
% Week Average			110.3%	112.9%	111.8%	111.8%	94.8%	70.1%		
AM Peak Volume			8:00 AM 32	8:00 AM 30	8:00 AM 31	8:00 AM 31	11:00 AM 20	10:00 AM 17	8:00 AM 24	
PM Peak Volume			1:00 PM 25	7:00 PM 27	4:00 PM 25	7:00 PM 24	2:00 PM 24	4:00 PM 16	6:00 PM 20	

Comments:

LOCATION: 168 Scenic Ave SPECIFIC LOCATION: CITY/STATE: Alameda, CA							QC JOB #: 15061401 DIRECTION: NB, SB DATE: Aug 28 2019 - Sep 3 2019			
Start Time	Mon 2 Sep 19	Tue 3 Sep 19	Wed	Thu	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 AM	1	1				1			1	
01:00 AM	0	0				0			0	
02:00 AM	0	0				0			0	
03:00 AM	0	0				0			0	
04:00 AM	0	1				1			1	
05:00 AM	2	3				3			3	
06:00 AM	4	6				5			5	
07:00 AM	5	9				7			7	
08:00 AM	11	31				21			21	
09:00 AM	11	20				16			16	
10:00 AM	14	18				16			16	
11:00 AM	19	18				19			19	
12:00 PM	23	14				19			19	
01:00 PM	9	21				15			15	
02:00 PM	11	23				17			17	
03:00 PM	12	22				17			17	
04:00 PM	10	18				14			14	
05:00 PM	19	28				24			24	
06:00 PM	9	33				21			21	
07:00 PM	16	23				20			20	
08:00 PM	21	6				14			14	
09:00 PM	7	12				10			10	
10:00 PM	1	6				4			4	
11:00 PM	1	4				3			3	
Day Total	206	317				267			267	
% Weekday Average	77.2%	118.7%								
% Week Average	77.2%	118.7%				100%				
AM Peak Volume	11:00 AM 19	8:00 AM 31				8:00 AM 21			8:00 AM 21	
PM Peak Volume	12:00 PM 23	6:00 PM 33				5:00 PM 24			5:00 PM 24	

Comments:

Appendix B: Collected Vehicle Speeds

Type of report: Tube Count - Speed Data

LOCATION: 168 Scenic Ave															QC JOB #: 15061401		
SPECIFIC LOCATION:															DIRECTION: NB, SB		
CITY/STATE: Alameda, CA															DATE: Aug 28 2019		
Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
01:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
02:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
03:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
04:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
05:00 AM	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3	11-20	3
06:00 AM	6	2	0	0	0	0	0	0	0	0	0	0	0	0	8	1-10	4
07:00 AM	5	4	0	0	0	0	0	0	0	0	0	0	0	0	9	11-20	6
08:00 AM	21	10	1	0	0	0	0	0	0	0	0	0	0	0	32	11-20	17
09:00 AM	16	2	0	0	0	0	0	0	0	0	0	0	0	0	18	1-10	11
10:00 AM	14	5	0	0	0	0	0	0	0	0	0	0	0	0	19	11-20	10
11:00 AM	14	1	0	0	0	0	0	0	0	0	0	0	0	0	15	1-10	9
12:00 PM	5	3	1	0	0	0	0	0	0	0	0	0	0	0	9	11-20	5
01:00 PM	18	7	0	0	0	0	0	0	0	0	0	0	0	0	25	11-20	13
02:00 PM	11	5	2	0	0	0	0	0	0	0	0	0	0	0	18	11-20	9
03:00 PM	16	3	1	0	0	0	0	0	0	0	0	0	0	0	20	1-10	11
04:00 PM	15	3	2	0	0	0	0	0	0	0	0	0	0	0	20	1-10	10
05:00 PM	18	3	0	0	0	0	0	0	0	0	0	0	0	0	21	1-10	12
06:00 PM	17	4	1	0	0	0	0	0	0	0	0	0	0	0	22	1-10	11
07:00 PM	19	3	0	0	0	0	0	0	0	0	0	0	0	0	22	1-10	13
08:00 PM	8	2	1	0	0	0	0	0	0	0	0	0	0	0	11	1-10	5
09:00 PM	17	2	0	1	0	0	0	0	0	0	0	0	0	0	20	1-10	11
10:00 PM	3	1	0	0	0	0	0	0	0	0	0	0	0	0	4	1-10	2
11:00 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
Day Total	226	63	9	1	0	0	0	0	0	0	0	0	0	0	299	1-10	151
Percent	75.6%	21.1%	3%	0.3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
AM Peak Volume	8:00 AM 21	8:00 AM 10	8:00 AM 1	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	8:00 AM 32		
PM Peak Volume	7:00 PM 19	1:00 PM 7	2:00 PM 2	9:00 PM 1	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	1:00 PM 25		
<i>Comments:</i>																	

Report generated on 9/16/2019 12:49 PM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>)

Type of report: Tube Count - Speed Data

LOCATION: 168 Scenic Ave															QC JOB #: 15061401		
SPECIFIC LOCATION:															DIRECTION: NB, SB		
CITY/STATE: Alameda, CA															DATE: Aug 29 2019		
Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
01:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
02:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
03:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
04:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
05:00 AM	2	1	0	0	0	0	0	0	0	0	0	0	0	0	3	11-20	2
06:00 AM	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1-10	1
07:00 AM	15	2	2	0	0	0	0	0	0	0	0	0	0	0	19	1-10	10
08:00 AM	24	5	1	0	0	0	0	0	0	0	0	0	0	0	30	1-10	16
09:00 AM	19	7	0	0	0	0	0	0	0	0	0	0	0	0	26	11-20	13
10:00 AM	9	5	0	0	0	0	0	0	0	0	0	0	0	0	14	11-20	8
11:00 AM	8	3	0	0	0	0	0	0	0	0	0	0	0	0	11	11-20	6
12:00 PM	5	4	3	0	0	0	0	0	0	0	0	0	0	0	12	16-25	7
01:00 PM	3	6	2	0	0	0	0	0	0	0	0	0	0	0	11	16-25	8
02:00 PM	11	7	0	0	0	0	0	0	0	0	0	0	0	0	18	11-20	11
03:00 PM	18	4	0	0	0	0	0	0	0	0	0	0	0	0	22	1-10	12
04:00 PM	12	7	0	0	0	0	0	0	0	0	0	0	0	0	19	11-20	11
05:00 PM	16	8	0	0	0	0	0	0	0	0	0	0	0	0	24	11-20	13
06:00 PM	17	5	1	0	0	0	0	0	0	0	0	0	0	0	23	1-10	11
07:00 PM	19	8	0	0	0	0	0	0	0	0	0	0	0	0	27	11-20	14
08:00 PM	10	3	0	0	0	0	0	0	0	0	0	0	0	0	13	1-10	7
09:00 PM	5	5	0	0	0	0	0	0	0	0	0	0	0	0	10	11-20	7
10:00 PM	12	3	1	0	0	0	0	0	0	0	0	0	0	0	16	1-10	8
11:00 PM	1	3	0	0	0	0	0	0	0	0	0	0	0	0	4	11-20	3
Day Total	210	86	10	0	0	0	0	0	0	0	0	0	0	0	306	11-20	156
Percent	68.6%	28.1%	3.3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
AM Peak Volume	8:00 AM 24	9:00 AM 7	7:00 AM 2	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	8:00 AM 30		
PM Peak Volume	7:00 PM 19	5:00 PM 8	12:00 PM 3	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	7:00 PM 27		
<i>Comments:</i>																	

Report generated on 9/16/2019 12:49 PM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>)

Type of report: Tube Count - Speed Data

LOCATION: 168 Scenic Ave															QC JOB #: 15061401		
SPECIFIC LOCATION:															DIRECTION: NB, SB		
CITY/STATE: Alameda, CA															DATE: Aug 30 2019		
Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
12:00 AM	2	1	0	0	0	0	0	0	0	0	0	0	0	0	3	11-20	2
01:00 AM	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2	11-20	1
02:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
03:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
04:00 AM	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1-10	1
05:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
06:00 AM	4	1	0	0	0	0	0	0	0	0	0	0	0	0	5	1-10	3
07:00 AM	3	3	0	0	0	0	0	0	0	0	0	0	0	0	6	11-20	4
08:00 AM	23	7	0	1	0	0	0	0	0	0	0	0	0	0	31	1-10	15
09:00 AM	24	3	0	0	0	0	0	0	0	0	0	0	0	0	27	1-10	16
10:00 AM	11	1	0	0	0	0	0	0	0	0	0	0	0	0	12	1-10	7
11:00 AM	15	3	0	0	0	0	0	0	0	0	0	0	0	0	18	1-10	10
12:00 PM	11	2	3	0	0	0	0	0	0	0	0	0	0	0	16	1-10	7
01:00 PM	9	4	1	0	0	0	0	0	0	0	0	0	0	0	14	11-20	7
02:00 PM	9	12	0	0	0	0	0	0	0	0	0	0	0	0	21	11-20	15
03:00 PM	8	9	0	0	0	0	0	0	0	0	0	0	0	0	17	11-20	12
04:00 PM	18	7	0	0	0	0	0	0	0	0	0	0	0	0	25	11-20	13
05:00 PM	12	10	1	0	0	0	0	0	0	0	0	0	0	0	23	11-20	14
06:00 PM	15	8	1	0	0	0	0	0	0	0	0	0	0	0	24	11-20	13
07:00 PM	18	6	0	0	0	0	0	0	0	0	0	0	0	0	24	1-10	12
08:00 PM	6	2	1	0	0	0	0	0	0	0	0	0	0	0	9	1-10	4
09:00 PM	11	3	0	0	0	0	0	0	0	0	0	0	0	0	14	1-10	7
10:00 PM	8	2	0	0	0	0	0	0	0	0	0	0	0	0	10	1-10	5
11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
Day Total	210	85	7	1	0	0	0	0	0	0	0	0	0	0	303	11-20	155
Percent	69.3%	28.1%	2.3%	0.3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
AM Peak Volume	9:00 AM 24	8:00 AM 7	12:00 AM 0	8:00 AM 1	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	8:00 AM 31		
PM Peak Volume	4:00 PM 18	2:00 PM 12	12:00 PM 3	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	4:00 PM 25		
<i>Comments:</i>																	

Type of report: Tube Count - Speed Data

LOCATION: 168 Scenic Ave															QC JOB #: 15061401		
SPECIFIC LOCATION:															DIRECTION: NB, SB		
CITY/STATE: Alameda, CA															DATE: Aug 31 2019		
Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
12:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
01:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
02:00 AM	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1-10	2
03:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
04:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
05:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
06:00 AM	5	2	0	0	0	0	0	0	0	0	0	0	0	0	7	11-20	4
07:00 AM	3	5	0	0	0	0	0	0	0	0	0	0	0	0	8	11-20	6
08:00 AM	13	2	0	0	0	0	0	0	0	0	0	0	0	0	15	1-10	9
09:00 AM	11	3	0	0	0	0	0	0	0	0	0	0	0	0	14	1-10	7
10:00 AM	13	5	0	0	0	0	0	0	0	0	0	0	0	0	18	11-20	9
11:00 AM	17	3	0	0	0	0	0	0	0	0	0	0	0	0	20	1-10	11
12:00 PM	14	7	1	0	0	0	0	0	0	0	0	0	0	0	22	11-20	12
01:00 PM	7	3	0	0	0	0	0	0	0	0	0	0	0	0	10	11-20	5
02:00 PM	13	9	2	0	0	0	0	0	0	0	0	0	0	0	24	11-20	13
03:00 PM	11	2	0	0	0	0	0	0	0	0	0	0	0	0	13	1-10	7
04:00 PM	11	5	0	0	0	0	0	0	0	0	0	0	0	0	16	11-20	9
05:00 PM	12	4	0	0	0	0	0	0	0	0	0	0	0	0	16	1-10	8
06:00 PM	20	2	0	0	0	0	0	0	0	0	0	0	0	0	22	1-10	13
07:00 PM	7	2	0	0	0	0	0	0	0	0	0	0	0	0	9	1-10	5
08:00 PM	6	2	0	0	0	0	0	0	0	0	0	0	0	0	8	1-10	4
09:00 PM	11	0	0	0	0	0	0	0	0	0	0	0	0	0	11	1-10	7
10:00 PM	8	3	0	0	0	0	0	0	0	0	0	0	0	0	11	11-20	6
11:00 PM	3	3	2	0	0	0	0	0	0	0	0	0	0	0	8	16-25	5
Day Total	190	62	5	0	0	0	0	0	0	0	0	0	0	0	257	1-10	127
Percent	73.9%	24.1%	1.9%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
AM Peak Volume	11:00 AM	7:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	11:00 AM		
	17	5	0	0	0	0	0	0	0	0	0	0	0	0	20		
PM Peak Volume	6:00 PM	2:00 PM	2:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	2:00 PM		
	20	9	2	0	0	0	0	0	0	0	0	0	0	0	24		
<i>Comments:</i>																	

Type of report: Tube Count - Speed Data

LOCATION: 168 Scenic Ave															QC JOB #: 15061401		
SPECIFIC LOCATION:															DIRECTION: NB, SB		
CITY/STATE: Alameda, CA															DATE: Sep 1 2019		
Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
12:00 AM	5	2	0	0	0	0	0	0	0	0	0	0	0	0	7	11-20	4
01:00 AM	2	1	0	0	0	0	0	0	0	0	0	0	0	0	3	11-20	2
02:00 AM	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2	11-20	1
03:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
04:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
05:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
06:00 AM	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1-10	2
07:00 AM	4	1	0	0	0	0	0	0	0	0	0	0	0	0	5	1-10	3
08:00 AM	9	2	0	0	0	0	0	0	0	0	0	0	0	0	11	1-10	6
09:00 AM	8	3	0	0	0	0	0	0	0	0	0	0	0	0	11	11-20	6
10:00 AM	11	6	0	0	0	0	0	0	0	0	0	0	0	0	17	11-20	10
11:00 AM	5	2	0	0	0	0	0	0	0	0	0	0	0	0	7	11-20	4
12:00 PM	6	5	1	0	0	0	0	0	0	0	0	0	0	0	12	11-20	7
01:00 PM	6	1	0	0	0	0	0	0	0	0	0	0	0	0	7	1-10	4
02:00 PM	7	5	1	0	0	0	0	0	0	0	0	0	0	0	13	11-20	7
03:00 PM	11	4	0	0	0	0	0	0	0	0	0	0	0	0	15	11-20	8
04:00 PM	8	7	1	0	0	0	0	0	0	0	0	0	0	0	16	11-20	10
05:00 PM	8	1	0	0	0	0	0	0	0	0	0	0	0	0	9	1-10	5
06:00 PM	6	5	0	0	0	0	0	0	0	0	0	0	0	0	11	11-20	7
07:00 PM	6	1	0	0	0	0	0	0	0	0	0	0	0	0	7	1-10	4
08:00 PM	9	3	0	0	0	0	0	0	0	0	0	0	0	0	12	1-10	6
09:00 PM	5	3	0	0	0	0	0	0	0	0	0	0	0	0	8	11-20	5
10:00 PM	5	1	1	0	0	0	0	0	0	0	0	0	0	0	7	1-10	3
11:00 PM	2	4	0	0	0	0	0	0	0	0	0	0	0	0	6	11-20	5
Day Total	128	58	4	0	0	0	0	0	0	0	0	0	0	0	190	11-20	101
Percent	67.4%	30.5%	2.1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
AM Peak Volume	10:00 AM 11	10:00 AM 6	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	10:00 AM 17		
PM Peak Volume	3:00 PM 11	4:00 PM 7	12:00 PM 1	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	4:00 PM 16		
<i>Comments:</i>																	

Type of report: Tube Count - Speed Data

LOCATION: 168 Scenic Ave															QC JOB #: 15061401		
SPECIFIC LOCATION:															DIRECTION: NB, SB		
CITY/STATE: Alameda, CA															DATE: Sep 2 2019		
Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
12:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
01:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
02:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
03:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
04:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
05:00 AM	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1-10	1
06:00 AM	1	3	0	0	0	0	0	0	0	0	0	0	0	0	4	11-20	3
07:00 AM	4	1	0	0	0	0	0	0	0	0	0	0	0	0	5	1-10	3
08:00 AM	8	3	0	0	0	0	0	0	0	0	0	0	0	0	11	11-20	6
09:00 AM	10	1	0	0	0	0	0	0	0	0	0	0	0	0	11	1-10	7
10:00 AM	11	3	0	0	0	0	0	0	0	0	0	0	0	0	14	1-10	7
11:00 AM	15	4	0	0	0	0	0	0	0	0	0	0	0	0	19	1-10	10
12:00 PM	18	5	0	0	0	0	0	0	0	0	0	0	0	0	23	1-10	12
01:00 PM	3	5	1	0	0	0	0	0	0	0	0	0	0	0	9	14-23	6
02:00 PM	9	2	0	0	0	0	0	0	0	0	0	0	0	0	11	1-10	6
03:00 PM	8	4	0	0	0	0	0	0	0	0	0	0	0	0	12	11-20	7
04:00 PM	5	5	0	0	0	0	0	0	0	0	0	0	0	0	10	11-20	7
05:00 PM	12	7	0	0	0	0	0	0	0	0	0	0	0	0	19	11-20	11
06:00 PM	8	1	0	0	0	0	0	0	0	0	0	0	0	0	9	1-10	5
07:00 PM	12	3	1	0	0	0	0	0	0	0	0	0	0	0	16	1-10	8
08:00 PM	13	8	0	0	0	0	0	0	0	0	0	0	0	0	21	11-20	12
09:00 PM	4	2	1	0	0	0	0	0	0	0	0	0	0	0	7	11-20	3
10:00 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
11:00 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
Day Total	146	57	3	0	0	0	0	0	0	0	0	0	0	0	206	11-20	106
Percent	70.9%	27.7%	1.5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
AM Peak Volume	11:00 AM 15	11:00 AM 4	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	11:00 AM 19		
PM Peak Volume	12:00 PM 18	8:00 PM 8	1:00 PM 1	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 23		
<i>Comments:</i>																	

Type of report: Tube Count - Speed Data

LOCATION: 168 Scenic Ave															QC JOB #: 15061401		
SPECIFIC LOCATION:															DIRECTION: NB, SB		
CITY/STATE: Alameda, CA															DATE: Sep 3 2019		
Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
12:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
01:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
02:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
03:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
04:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
05:00 AM	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1-10	2
06:00 AM	3	3	0	0	0	0	0	0	0	0	0	0	0	0	6	11-20	4
07:00 AM	5	4	0	0	0	0	0	0	0	0	0	0	0	0	9	11-20	6
08:00 AM	28	3	0	0	0	0	0	0	0	0	0	0	0	0	31	1-10	19
09:00 AM	16	4	0	0	0	0	0	0	0	0	0	0	0	0	20	1-10	11
10:00 AM	15	2	1	0	0	0	0	0	0	0	0	0	0	0	18	1-10	10
11:00 AM	11	7	0	0	0	0	0	0	0	0	0	0	0	0	18	11-20	11
12:00 PM	12	2	0	0	0	0	0	0	0	0	0	0	0	0	14	1-10	8
01:00 PM	13	8	0	0	0	0	0	0	0	0	0	0	0	0	21	11-20	12
02:00 PM	16	7	0	0	0	0	0	0	0	0	0	0	0	0	23	11-20	12
03:00 PM	15	7	0	0	0	0	0	0	0	0	0	0	0	0	22	11-20	12
04:00 PM	13	5	0	0	0	0	0	0	0	0	0	0	0	0	18	11-20	9
05:00 PM	21	6	1	0	0	0	0	0	0	0	0	0	0	0	28	1-10	14
06:00 PM	22	9	2	0	0	0	0	0	0	0	0	0	0	0	33	11-20	16
07:00 PM	22	1	0	0	0	0	0	0	0	0	0	0	0	0	23	1-10	15
08:00 PM	3	3	0	0	0	0	0	0	0	0	0	0	0	0	6	11-20	4
09:00 PM	9	3	0	0	0	0	0	0	0	0	0	0	0	0	12	1-10	6
10:00 PM	5	1	0	0	0	0	0	0	0	0	0	0	0	0	6	1-10	3
11:00 PM	2	2	0	0	0	0	0	0	0	0	0	0	0	0	4	11-20	3
Day Total	236	77	4	0	0	0	0	0	0	0	0	0	0	0	317	1-10	157
Percent	74.4%	24.3%	1.3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
AM Peak Volume	8:00 AM	11:00 AM	10:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	8:00 AM		
	28	7	1	0	0	0	0	0	0	0	0	0	0	0	31		
PM Peak Volume	6:00 PM	6:00 PM	6:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	6:00 PM		
	22	9	2	0	0	0	0	0	0	0	0	0	0	0	33		
<i>Comments:</i>																	

Report generated on 9/16/2019 12:49 PM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>)

LOCATION: 168 Scenic Ave														QC JOB #: 15061401			
SPECIFIC LOCATION:														DIRECTION: NB, SB			
CITY/STATE: Alameda, CA														DATE: Aug 28 2019 - Sep 3 2019			
Speed Range	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
Grand Total	1346	488	42	2	0	0	0	0	0	0	0	0	0	0	1878	11-20	937
Percent	71.7%	26%	2.2%	0.1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
Cumulative Percent	71.7%	97.7%	99.9%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%			
ADT 268															85th Percentile: 17 MPH Mean Speed(Average): 10 MPH Median: 10 MPH Mode: 8 MPH		
<i>Comments:</i>																	



Appendix C: June 2019 E&TS

TECHNICAL MEMORANDUM

Piedmont On-Call Services

Scenic Avenue Engineering and Traffic Survey

Date: July 23, 2019 Project #: 21900
To: John Wanger P.E., Coastland
From: Aaron Elias P.E.
cc:

This technical memorandum documents the findings of an Engineering and Traffic Survey (E&TS) for Scenic Avenue, north of Blair Avenue in Piedmont, CA. Scenic Avenue serves a residential area and is used for two-way traffic. However, the road is generally narrow with on-street parking requiring one car to pull over in order to pass another car traveling in the opposite direction. The current speed limit is 15 miles per hour (mph) which is indicated with both signage and pavement markings. The following topics will be covered by this technical memorandum:

- Data Collection
- Traffic Volumes
- Vehicle Speeds
- Collision Data
- Recommendations

DATA COLLECTION

Traffic volume and speed data were collected using pneumatic tube counters near 200 Scenic Avenue for a seven-day period between June 19, 2019 and June 25, 2019. During this period, a sample of approximately 1,300 speed measurements were captured in both directions. To ensure only free-flow speeds were used in our analysis per the California Manual for Setting Speed Limits, Kittelson removed vehicles from the speed survey that were traveling less than 10 seconds behind the vehicle in front of them. At 15 mph, this would represent a distance of 220 feet between vehicles. Removing the closely spaced vehicles from the sample reduces the overall sample size to approximately 1,250 speed measurements over the seven-day period.

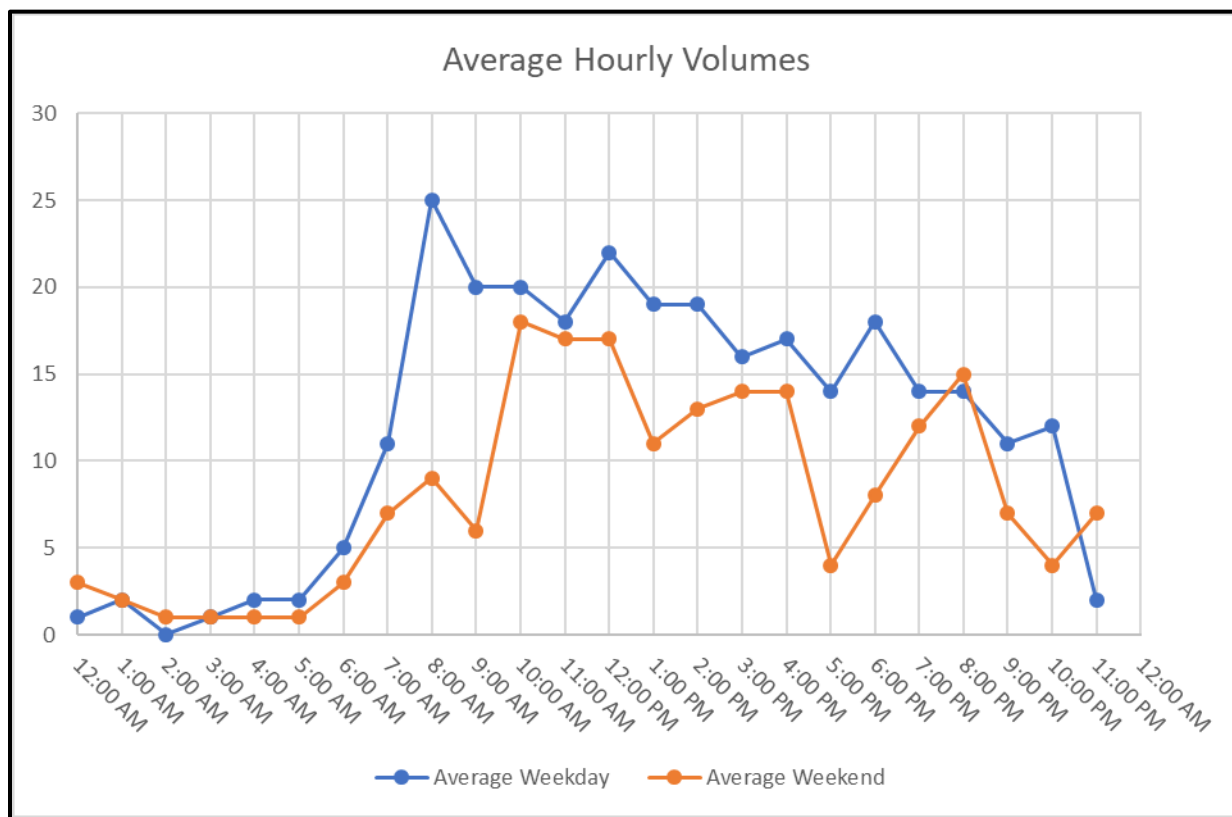
In addition to the traffic volume and speed information, Kittelson pulled collision data for Scenic Avenue from the Statewide Integrated Traffic Records System (SWITRS), a database containing all reported collisions in California based on police reports. The data reported for collisions in this

memorandum is based on SWITRS data for Scenic Avenue north of Blair Avenue over a three-year period between January 1, 2016 and December 31, 2018.

TRAFFIC VOLUMES

During the seven-day period in which traffic data were collected, Kittelson found that traffic volumes average about 287 vehicles per day on weekdays and 190 vehicles per day on the weekend. Traffic volumes were generally evenly split between northbound and southbound vehicles. The average hourly distribution of traffic is shown in Exhibit 1. The highest weekday peak hour was 8:00 AM to 9:00 AM when an average of 25 vehicles were counted, while the highest weekend peak hour was 10:00 AM to 11:00 AM when approximately 18 vehicles were counted. Detailed traffic volume data are included in Appendix A.

Exhibit 1: Average Hourly Volumes on Scenic Avenue



VEHICLE SPEEDS

Free-flow speeds on Scenic Avenue are shown in 5 mph speed bins in Exhibit 2 and graphically by number of samples at each speed in Exhibit 3. As shown in these exhibits, most vehicles traveling on Scenic Avenue travel at a speed of between 10 mph and 20 mph. A statistical summary of the speed data is shown in Exhibit 4. The maximum speed recorded over the seven-day period was 27 mph, while the average of all the speed measurements was approximately 14 mph.

The key statistical metric for a speed survey is the 85th percentile speed. The 85th percentile speed is the speed at or below which 85% of the traffic is moving and statistically represents one standard deviation above the average speed. Federal studies FHWA-RD-92-084 and FHWA-RD-98-154 demonstrate that the 85th percentile speed is the most effective attribute when setting the posted speed limit as it represents the upper limit of operating speeds that are considered reasonable and prudent. Therefore, the 85th percentile speed is used for setting speed limits in California. The 85th percentile speed on Scenic Avenue was 18 mph.

The collected speed data can be found in Appendix B.

Exhibit 2: Collected Speed Data

Range	Number	Percentage
0 - 5 mph	4	0.3%
5 - 10 mph	114	9.1%
10 - 15 mph	521	41.6%
15 - 20 mph	526	42.0%
20 - 25 mph	84	6.7%
25 - 30 mph	3	0.2%
30 - 35 mph	0	0.0%
35 - 40 mph	0	0.0%

Exhibit 3: Number of Samples at Each Speed

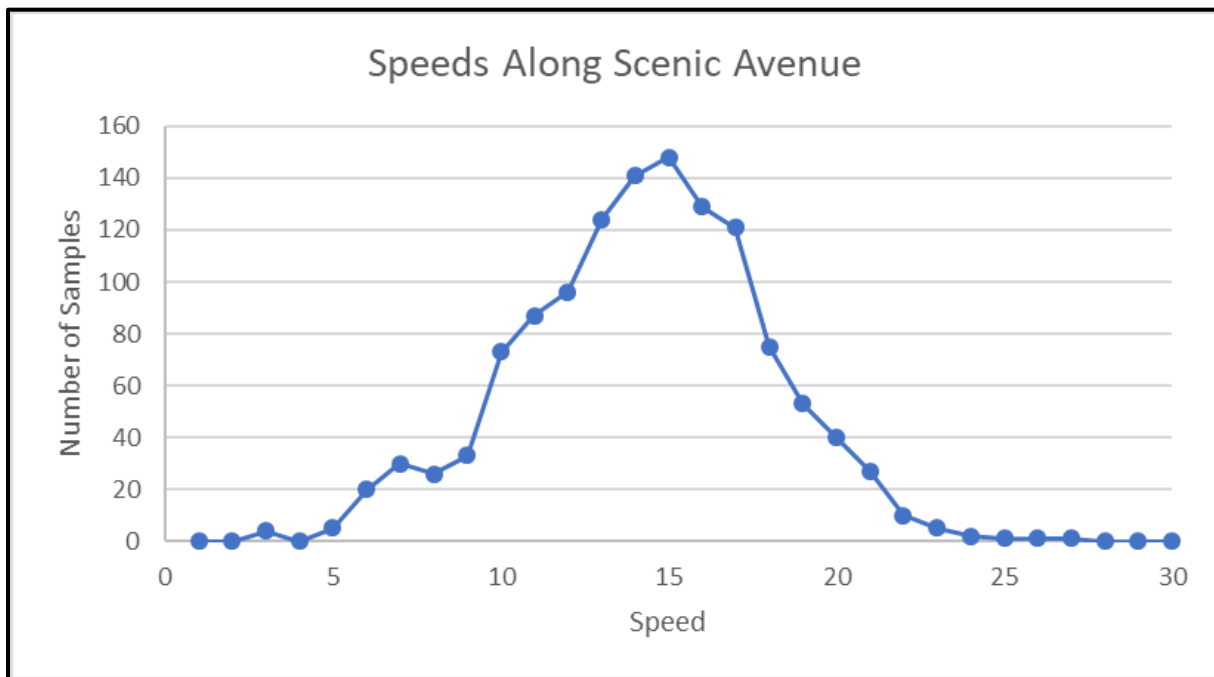


Exhibit 4: Statistical Summary of Speed Data

Metric	Finding
85th Percentile	18
Mean	14
Median	14
Mode	15
Max	27
Sample Size	1,254

COLLISION DATA

The final data source collected for this study were collision data for a three-year period on Scenic Avenue. During the three-year period (January 2016 to December 2018), there were two collisions recorded on Scenic Avenue, north of Blair Avenue. These two collisions are described below.

- On September 23, 2016, a vehicle hit a fixed object on the side of the road near 136 Scenic Avenue. There were no injuries, and no other vehicles, pedestrians or bicyclists were involved in the collision.
- On January 9, 2018, a vehicle was involved in a head-on collision with a parked vehicle near Scenic Avenue and Alta Avenue. The collision was a misdemeanor hit and run involving property damage only with no pedestrians or bicyclists involved.

Neither of these collisions had police reports that cited unsafe speed as the violation contributing to these collisions.

RECOMMENDATIONS

Based on standard practice, the 18 mph 85th percentile speed would normally round up to a posted speed limit of 20 mph. However, California Vehicle Code 21400 allows for setting the speed limit at the 5 mph increment below the 85th percentile, even if mathematical rounding would require the speed to be posted above the 85th percentile speed. Given that Scenic Drive is located in a residential area, the narrowness of the street, and that it is currently posted at 15 mph, Kittelson recommends the speed limit be maintained at 15 mph.

Appendix A: Collected Vehicle Volumes

Type of report: Tube Count - Volume Data

LOCATION: 168 Scenic Avenue QC JOB #: 15012001 SPECIFIC LOCATION: DIRECTION: NB, SB CITY/STATE: Piedmont, CA DATE: Jun 19 2019 - Jun 25 2019										
Start Time	Mon	Tue	Wed	Thu	Fri	Average Weekday	Sat	Sun	Average Week	Average Week Profile
			19 Jun 19	20 Jun 19	21 Jun 19	Hourly Traffic	22 Jun 19	23 Jun 19	Hourly Traffic	
12:00 AM			0	2	1	1	2	4	2	
01:00 AM			1	1	3	2	2	1	2	
02:00 AM			0	0	2	1	1	1	1	
03:00 AM			3	1	1	2	1	1	1	
04:00 AM			0	1	4	2	1	0	1	
05:00 AM			0	2	2	1	1	0	1	
06:00 AM			3	4	1	3	3	2	3	
07:00 AM			11	9	11	10	8	5	9	
08:00 AM			28	23	32	28	9	9	20	
09:00 AM			27	13	18	19	5	7	14	
10:00 AM			18	24	25	22	15	21	21	
11:00 AM			26	16	16	19	13	21	18	
12:00 PM			20	17	20	19	22	12	18	
01:00 PM			16	16	23	18	10	11	15	
02:00 PM			23	17	20	20	15	10	17	
03:00 PM			17	18	16	17	8	19	16	
04:00 PM			23	12	19	18	13	15	16	
05:00 PM			16	13	16	15	3	5	11	
06:00 PM			25	15	15	18	9	7	14	
07:00 PM			6	9	20	12	10	13	12	
08:00 PM			9	16	9	11	21	9	13	
09:00 PM			9	20	12	14	10	3	11	
10:00 PM			15	14	10	13	5	3	9	
11:00 PM			0	8	1	3	9	5	5	
Day Total			296	271	297	288	196	184	250	
% Weekday Average			102.8%	94.1%	103.1%					
% Week Average			118.4%	108.4%	118.8%	115.2%	78.4%	73.6%		
AM Peak Volume			8:00 AM 28	10:00 AM 24	8:00 AM 32	8:00 AM 28	10:00 AM 15	10:00 AM 21	10:00 AM 21	
PM Peak Volume			6:00 PM 25	9:00 PM 20	1:00 PM 23	2:00 PM 20	12:00 PM 22	3:00 PM 19	12:00 PM 18	

Comments:

Report generated on 6/28/2019 11:32 AM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>)

LOCATION: 168 Scenic Avenue SPECIFIC LOCATION: CITY/STATE: Piedmont, CA							QC JOB #: 15012001 DIRECTION: NB, SB DATE: Jun 19 2019 - Jun 25 2019			
Start Time	Mon 24 Jun 19	Tue 25 Jun 19	Wed	Thu	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 AM	3	0				2			2	
01:00 AM	2	2				2			2	
02:00 AM	0	0				0			0	
03:00 AM	1	1				1			1	
04:00 AM	0	3				2			2	
05:00 AM	3	3				3			3	
06:00 AM	4	13				9			9	
07:00 AM	10	15				13			13	
08:00 AM	22	19				21			21	
09:00 AM	24	17				21			21	
10:00 AM	18	14				16			16	
11:00 AM	22	11				17			17	
12:00 PM	21	30				26			26	
01:00 PM	24	17				21			21	
02:00 PM	18	18				18			18	
03:00 PM	15	15				15			15	
04:00 PM	9	22				16			16	
05:00 PM	13	14				14			14	
06:00 PM	21	15				18			18	
07:00 PM	25	10				18			18	
08:00 PM	15	19				17			17	
09:00 PM	9	7				8			8	
10:00 PM	12	10				11			11	
11:00 PM	2	1				2			2	
Day Total	293	276				291			291	
% Weekday Average	100.7%	94.8%								
% Week Average	100.7%	94.8%				100%				
AM Peak Volume	9:00 AM 24	8:00 AM 19				8:00 AM 21			8:00 AM 21	
PM Peak Volume	7:00 PM 25	12:00 PM 30				12:00 PM 26			12:00 PM 26	

Comments:

Appendix B: Collected Vehicle Speeds

Type of report: Tube Count - Speed Data

LOCATION: 168 Scenic Avenue															QC JOB #: 15012001		
SPECIFIC LOCATION:															DIRECTION: NB, SB		
CITY/STATE: Piedmont, CA															DATE: Jun 19 2019		
Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
01:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
02:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
03:00 AM	2	1	0	0	0	0	0	0	0	0	0	0	0	0	3	11-20	2
04:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
05:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
06:00 AM	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1-10	2
07:00 AM	6	5	0	0	0	0	0	0	0	0	0	0	0	0	11	11-20	7
08:00 AM	13	5	0	0	0	0	0	0	0	0	0	0	0	0	18	11-20	9
09:00 AM	15	5	0	0	0	0	0	0	0	0	0	0	0	0	20	1-10	10
10:00 AM	14	3	1	0	0	0	0	0	0	0	0	0	0	0	18	1-10	9
11:00 AM	12	11	0	0	0	0	0	0	0	0	0	0	0	0	23	11-20	15
12:00 PM	10	9	1	0	0	0	0	0	0	0	0	0	0	0	20	11-20	12
01:00 PM	7	7	0	0	0	0	0	0	0	0	0	0	0	0	14	11-20	9
02:00 PM	11	5	2	0	0	0	0	0	0	0	0	0	0	0	18	11-20	9
03:00 PM	8	4	1	0	0	0	0	0	0	0	0	0	0	0	13	11-20	7
04:00 PM	9	3	0	0	0	0	0	0	0	0	0	0	0	0	12	1-10	6
05:00 PM	12	1	0	0	0	0	0	0	0	0	0	0	0	0	13	1-10	8
06:00 PM	16	6	1	1	0	0	0	0	0	0	0	0	0	0	24	11-20	11
07:00 PM	4	2	0	0	0	0	0	0	0	0	0	0	0	0	6	11-20	3
08:00 PM	7	2	0	0	0	0	0	0	0	0	0	0	0	0	9	1-10	5
09:00 PM	4	5	0	0	0	0	0	0	0	0	0	0	0	0	9	11-20	6
10:00 PM	6	3	2	0	0	0	0	0	0	0	0	0	0	0	11	13-22	5
11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
Day Total	160	77	8	1	0	0	0	0	0	0	0	0	0	0	246	11-20	130
Percent	65%	31.3%	3.3%	0.4%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
AM Peak Volume	9:00 AM 15	11:00 AM 11	10:00 AM 1	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	11:00 AM 23		
PM Peak Volume	6:00 PM 16	12:00 PM 9	2:00 PM 2	6:00 PM 1	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	6:00 PM 24		
<i>Comments:</i>																	

Type of report: Tube Count - Speed Data

LOCATION: 168 Scenic Avenue															QC JOB #: 15012001		
SPECIFIC LOCATION:															DIRECTION: NB, SB		
CITY/STATE: Piedmont, CA															DATE: Jun 20 2019		
Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
12:00 AM	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2	11-20	1
01:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
02:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
03:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
04:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
05:00 AM	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1-10	1
06:00 AM	2	1	1	0	0	0	0	0	0	0	0	0	0	0	4	16-25	2
07:00 AM	4	4	1	0	0	0	0	0	0	0	0	0	0	0	9	11-20	5
08:00 AM	14	4	1	0	0	0	0	0	0	0	0	0	0	0	19	1-10	9
09:00 AM	9	2	1	0	0	0	0	0	0	0	0	0	0	0	12	1-10	6
10:00 AM	8	15	1	0	0	0	0	0	0	0	0	0	0	0	24	11-20	18
11:00 AM	8	8	0	0	0	0	0	0	0	0	0	0	0	0	16	11-20	11
12:00 PM	11	5	0	0	0	0	0	0	0	0	0	0	0	0	16	11-20	9
01:00 PM	7	3	1	0	0	0	0	0	0	0	0	0	0	0	11	11-20	5
02:00 PM	7	2	0	0	0	0	0	0	0	0	0	0	0	0	9	1-10	5
03:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	11-20	1
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
05:00 PM	0	1	1	1	0	0	0	0	0	0	0	0	0	0	3	16-25	2
06:00 PM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	11-20	2
07:00 PM	3	1	0	0	0	0	0	0	0	0	0	0	0	0	4	1-10	2
08:00 PM	10	4	1	0	0	0	0	0	0	0	0	0	0	0	15	11-20	7
09:00 PM	11	2	1	0	0	0	0	0	0	0	0	0	0	0	14	1-10	7
10:00 PM	5	5	1	0	0	0	0	0	0	0	0	0	0	0	11	11-20	7
11:00 PM	7	0	1	0	0	0	0	0	0	0	0	0	0	0	8	1-10	5
Day Total	112	61	11	1	0	0	0	0	0	0	0	0	0	0	185	11-20	98
Percent	60.5%	33%	5.9%	0.5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
AM Peak Volume	8:00 AM 14	10:00 AM 15	6:00 AM 1	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	10:00 AM 24		
PM Peak Volume	12:00 PM 11	12:00 PM 5	1:00 PM 1	5:00 PM 1	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 16		
<i>Comments:</i>																	

Report generated on 6/28/2019 11:32 AM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>)

Type of report: Tube Count - Speed Data

LOCATION: 168 Scenic Avenue															QC JOB #: 15012001		
SPECIFIC LOCATION:															DIRECTION: NB, SB		
CITY/STATE: Piedmont, CA															DATE: Jun 21 2019		
Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
12:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	11-20	1
01:00 AM	2	1	0	0	0	0	0	0	0	0	0	0	0	0	3	11-20	2
02:00 AM	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2	11-20	1
03:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
04:00 AM	3	1	0	0	0	0	0	0	0	0	0	0	0	0	4	1-10	2
05:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
06:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	11-20	1
07:00 AM	6	5	0	0	0	0	0	0	0	0	0	0	0	0	11	11-20	7
08:00 AM	18	11	0	0	0	0	0	0	0	0	0	0	0	0	29	11-20	17
09:00 AM	11	6	1	0	0	0	0	0	0	0	0	0	0	0	18	11-20	10
10:00 AM	17	4	2	0	0	0	0	0	0	0	0	0	0	0	23	1-10	11
11:00 AM	11	5	0	0	0	0	0	0	0	0	0	0	0	0	16	11-20	9
12:00 PM	8	12	0	0	0	0	0	0	0	0	0	0	0	0	20	11-20	15
01:00 PM	13	7	0	0	0	0	0	0	0	0	0	0	0	0	20	11-20	11
02:00 PM	8	4	0	0	0	0	0	0	0	0	0	0	0	0	12	11-20	7
03:00 PM	0	6	0	0	0	0	0	0	0	0	0	0	0	0	6	11-20	6
04:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	11-20	1
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
06:00 PM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2	16-25	2
07:00 PM	12	3	0	0	0	0	0	0	0	0	0	0	0	0	15	1-10	8
08:00 PM	7	1	1	0	0	0	0	0	0	0	0	0	0	0	9	1-10	5
09:00 PM	4	6	0	0	0	0	0	0	0	0	0	0	0	0	10	11-20	7
10:00 PM	4	3	1	0	0	0	0	0	0	0	0	0	0	0	8	11-20	4
11:00 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
Day Total	127	79	7	0	0	0	0	0	0	0	0	0	0	0	213	11-20	121
Percent	59.6%	37.1%	3.3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
AM Peak Volume	8:00 AM 18	8:00 AM 11	10:00 AM 2	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	8:00 AM 29		
PM Peak Volume	1:00 PM 13	12:00 PM 12	6:00 PM 2	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 20		
<i>Comments:</i>																	

Type of report: Tube Count - Speed Data

LOCATION: 168 Scenic Avenue															QC JOB #: 15012001		
SPECIFIC LOCATION:															DIRECTION: NB, SB		
CITY/STATE: Piedmont, CA															DATE: Jun 22 2019		
Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
12:00 AM	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2	11-20	1
01:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
02:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
03:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
04:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	11-20	1
05:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
06:00 AM	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1-10	2
07:00 AM	6	2	0	0	0	0	0	0	0	0	0	0	0	0	8	1-10	4
08:00 AM	3	2	1	0	0	0	0	0	0	0	0	0	0	0	6	16-25	3
09:00 AM	3	2	0	0	0	0	0	0	0	0	0	0	0	0	5	11-20	3
10:00 AM	6	7	0	0	0	0	0	0	0	0	0	0	0	0	13	11-20	9
11:00 AM	6	4	1	0	0	0	0	0	0	0	0	0	0	0	11	11-20	6
12:00 PM	9	5	1	0	0	0	0	0	0	0	0	0	0	0	15	11-20	8
01:00 PM	8	1	1	0	0	0	0	0	0	0	0	0	0	0	10	1-10	5
02:00 PM	2	2	0	0	0	0	0	0	0	0	0	0	0	0	4	11-20	3
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
06:00 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	16-25	1
07:00 PM	3	3	0	0	0	0	0	0	0	0	0	0	0	0	6	11-20	4
08:00 PM	16	5	0	0	0	0	0	0	0	0	0	0	0	0	21	1-10	11
09:00 PM	6	3	1	0	0	0	0	0	0	0	0	0	0	0	10	11-20	5
10:00 PM	3	2	0	0	0	0	0	0	0	0	0	0	0	0	5	11-20	3
11:00 PM	6	2	0	0	0	0	0	0	0	0	0	0	0	0	8	1-10	4
Day Total	84	42	6	0	0	0	0	0	0	0	0	0	0	0	132	11-20	70
Percent	63.6%	31.8%	4.5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
AM Peak Volume	7:00 AM 6	10:00 AM 7	8:00 AM 1	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	10:00 AM 13		
PM Peak Volume	8:00 PM 16	12:00 PM 5	12:00 PM 1	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	8:00 PM 21		
<i>Comments:</i>																	

Report generated on 6/28/2019 11:32 AM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>)

Type of report: Tube Count - Speed Data

LOCATION: 168 Scenic Avenue															QC JOB #: 15012001		
SPECIFIC LOCATION:															DIRECTION: NB, SB		
CITY/STATE: Piedmont, CA															DATE: Jun 23 2019		
Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
12:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	11-20	1
01:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
02:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
03:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
04:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
05:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
06:00 AM	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2	11-20	1
07:00 AM	3	2	0	0	0	0	0	0	0	0	0	0	0	0	5	11-20	3
08:00 AM	5	2	0	0	0	0	0	0	0	0	0	0	0	0	7	11-20	4
09:00 AM	3	4	0	0	0	0	0	0	0	0	0	0	0	0	7	11-20	5
10:00 AM	16	3	0	0	0	0	0	0	0	0	0	0	0	0	19	1-10	11
11:00 AM	8	3	0	0	0	0	0	0	0	0	0	0	0	0	11	11-20	6
12:00 PM	8	4	0	0	0	0	0	0	0	0	0	0	0	0	12	11-20	7
01:00 PM	6	5	0	0	0	0	0	0	0	0	0	0	0	0	11	11-20	7
02:00 PM	4	3	0	0	0	0	0	0	0	0	0	0	0	0	7	11-20	4
03:00 PM	1	2	0	0	0	0	0	0	0	0	0	0	0	0	3	11-20	2
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
06:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
07:00 PM	7	4	0	0	0	0	0	0	0	0	0	0	0	0	11	11-20	6
08:00 PM	6	1	0	0	0	0	0	0	0	0	0	0	0	0	7	1-10	4
09:00 PM	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1-10	2
10:00 PM	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1-10	1
11:00 PM	4	1	0	0	0	0	0	0	0	0	0	0	0	0	5	1-10	3
Day Total	80	36	0	0	0	0	0	0	0	0	0	0	0	0	116	11-20	63
Percent	69%	31%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
AM Peak Volume	10:00 AM	9:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	10:00 AM		
	16	4	0	0	0	0	0	0	0	0	0	0	0	0	19		
PM Peak Volume	12:00 PM	1:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM		
	8	5	0	0	0	0	0	0	0	0	0	0	0	0	12		
<i>Comments:</i>																	

Report generated on 6/28/2019 11:32 AM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>)

Type of report: Tube Count - Speed Data

LOCATION: 168 Scenic Avenue
SPECIFIC LOCATION:
CITY/STATE: Piedmont, CA

QC JOB #: 15012001
DIRECTION: NB, SB
DATE: Jun 24 2019

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
12:00 AM	2	1	0	0	0	0	0	0	0	0	0	0	0	0	3	11-20	2
01:00 AM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	11-20	2
02:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
03:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
04:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
05:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
06:00 AM	2	2	0	0	0	0	0	0	0	0	0	0	0	0	4	11-20	3
07:00 AM	6	3	1	0	0	0	0	0	0	0	0	0	0	0	10	11-20	5
08:00 AM	11	5	1	0	0	0	0	0	0	0	0	0	0	0	17	11-20	9
09:00 AM	18	2	0	0	0	0	0	0	0	0	0	0	0	0	20	1-10	12
10:00 AM	12	6	0	0	0	0	0	0	0	0	0	0	0	0	18	11-20	10
11:00 AM	13	5	1	0	0	0	0	0	0	0	0	0	0	0	19	11-20	9
12:00 PM	16	5	0	0	0	0	0	0	0	0	0	0	0	0	21	1-10	11
01:00 PM	16	6	1	0	0	0	0	0	0	0	0	0	0	0	23	11-20	11
02:00 PM	9	4	0	0	0	0	0	0	0	0	0	0	0	0	13	11-20	7
03:00 PM	3	2	0	0	0	0	0	0	0	0	0	0	0	0	5	11-20	3
04:00 PM	2	3	0	0	0	0	0	0	0	0	0	0	0	0	5	11-20	4
05:00 PM	4	5	0	0	0	0	0	0	0	0	0	0	0	0	9	11-20	6
06:00 PM	0	4	1	0	0	0	0	0	0	0	0	0	0	0	5	16-25	5
07:00 PM	12	4	0	0	0	0	0	0	0	0	0	0	0	0	16	1-10	8
08:00 PM	9	6	0	0	0	0	0	0	0	0	0	0	0	0	15	11-20	9
09:00 PM	2	6	0	0	0	0	0	0	0	0	0	0	0	0	8	11-20	7
10:00 PM	9	3	0	0	0	0	0	0	0	0	0	0	0	0	12	1-10	6
11:00 PM	1	0	1	0	0	0	0	0	0	0	0	0	0	0	2	16-25	1
Day Total	149	74	6	0	0	0	0	0	0	0	0	0	0	0	229	11-20	124
Percent	65.1%	32.3%	2.6%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
AM Peak Volume	9:00 AM 18	10:00 AM 6	7:00 AM 1	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	9:00 AM 20		
PM Peak Volume	12:00 PM 16	1:00 PM 6	1:00 PM 1	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	1:00 PM 23		

Comments:

Type of report: Tube Count - Speed Data

LOCATION: 168 Scenic Avenue															QC JOB #: 15012001		
SPECIFIC LOCATION:															DIRECTION: NB, SB		
CITY/STATE: Piedmont, CA															DATE: Jun 25 2019		
Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
01:00 AM	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1-10	1
02:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
03:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
04:00 AM	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1-10	1
05:00 AM	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1-10	2
06:00 AM	7	4	1	0	0	0	0	0	0	0	0	0	0	0	12	11-20	6
07:00 AM	7	7	1	0	0	0	0	0	0	0	0	0	0	0	15	11-20	9
08:00 AM	9	7	1	0	0	0	0	0	0	0	0	0	0	0	17	11-20	10
09:00 AM	7	10	0	0	0	0	0	0	0	0	0	0	0	0	17	11-20	12
10:00 AM	7	4	1	0	0	0	0	0	0	0	0	0	0	0	12	11-20	6
11:00 AM	5	5	0	0	0	0	0	0	0	0	0	0	0	0	10	11-20	7
12:00 PM	18	10	0	0	0	0	0	0	0	0	0	0	0	0	28	11-20	16
01:00 PM	10	3	1	0	0	0	0	0	0	0	0	0	0	0	14	1-10	7
02:00 PM	5	5	0	0	0	0	0	0	0	0	0	0	0	0	10	11-20	7
03:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	11-20	1
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
06:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1-10	0
07:00 PM	6	0	2	0	0	0	0	0	0	0	0	0	0	0	8	1-10	4
08:00 PM	11	2	1	0	0	0	0	0	0	0	0	0	0	0	14	1-10	7
09:00 PM	4	2	0	0	0	0	0	0	0	0	0	0	0	0	6	11-20	3
10:00 PM	7	3	0	0	0	0	0	0	0	0	0	0	0	0	10	11-20	5
11:00 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1-10	1
Day Total	112	63	8	0	0	0	0	0	0	0	0	0	0	0	183	11-20	100
Percent	61.2%	34.4%	4.4%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
AM Peak Volume	8:00 AM	9:00 AM	6:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	8:00 AM		
	9	10	1	0	0	0	0	0	0	0	0	0	0	0	17		
PM Peak Volume	12:00 PM	12:00 PM	7:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM		
	18	10	2	0	0	0	0	0	0	0	0	0	0	0	28		
<i>Comments:</i>																	

Report generated on 6/28/2019 11:32 AM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>)