



# mesa·az Transportation Advisory Board Report

**Date:** January 16, 2018  
**To:** Transportation Advisory Board  
**From:** Ryan Hudson, Senior Transportation Engineer  
**Subject:** Efficacy of Various Traffic Calming Measures in Mesa

## Purpose

The purpose of this report is to present findings of several before and after studies of vehicle speeds on streets in Mesa that had speed mitigation features installed. The studies were performed on a variety of different street types (arterial, residential, etc.) and evaluate the efficacy of school zone flashers, driver speed feedback signs (DSFS), speed cushions, and speed humps.

## Background

The need for speed mitigation was investigated based on citizens' concerns and substantiated by speed data collection. Before/after speed studies were conducted at locations where speed mitigation devices were installed in order to determine their respective effect on traffic speeds.

## Discussion

See **Figure 1** for a description of all study locations as well as the respective speed mitigation feature implemented at each location.

The study results for each location are detailed below:

1. **Broadway Road and Alma School Road Adjacent to Guerrero Elementary School** – Establishment of 35 mph school zone and installation of two school zone flashers, one for eastbound Broadway Road and one for northbound Alma School Road (40 mph posted speed limit for both Broadway and Alma School Roads).

Speed counts were collected at one location for each direction of travel (eastbound Broadway Road and northbound Alma School Road) for the before and after counts. The speed data shows some significant decrease in vehicle speeds even when the flashers are not active. Northbound traffic showed a greater decrease in vehicle speeds and a correlated better compliance to the posted speed limit which may be due to the clearer sign and flasher visibility. See **Figure 2** for a location map and the recorded speed data.

2. **May from University Drive to Rio Salado Parkway** – Installation of one DSFS per each direction of travel.

Speed counts were collected at two different locations on May, both north of Camino Street and at the ultimate location of the DSFS's as shown on **Figure 3**. Overall, both locations showed a negligible change in vehicle speeds and southbound speeds showed a noticeable increase downstream of the respective DSFS.

3. **McLellan Road from Harris Drive to Gilbert Road** (Candlelight Estates Neighborhood) – Installation of three sets of speed cushions.

Speed counts were collected at two locations along McLellan Road, one just east of Kachina and one west of Forest. The before and after counts were collected at nearly the same locations, minimally moved to ensure the after locations were set near the midpoint between features. See **Figure 4** for the count locations and the respective speed data. **Table 1** below shows the average speeds (weighted) taken from two locations before and after the installation of speed cushions on this segment of McLellan Road. The results show a decrease of 3.9 mph in observed 85<sup>th</sup> percentile speeds and a drop of over 30% for the percentage of vehicles travelling over 25 mph. Additionally, there was an average decrease of 147 vehicles per day when comparing the before and after traffic volumes.

**Table 1** – Speed Counts on McLellan Road Before & After Speed Cushions

Weighted Average from 2 Locations on McLellan Road			
McLellan Road Between Harris Drive & Gilbert Road			
May-17	Nov-16	Oct-17	Average
Installed	Before	After	Change
Avg. Speed (mph)	29.7	25.9	-3.8
85 <sup>th</sup> -tile Speed (mph)	34.8	30.9	-3.9
% Veh > 25 mph	83.5%	52.7%	-30.7%
% Veh > 35 mph	13.2%	3.7%	-9.5%
% Veh > 45 mph	0.3%	0.2%	-0.1%
% Veh > 55 mph	0.0%	0.0%	0.0%
Daily Volume (vpd)*	1193	1046	-147
<i>Before Data: 5-day weighted average November 17-18 &amp; 21-23, 2016, at two locations</i>			
<i>After Data: 5-day weighted average October 18-20 &amp; 23-24, 2017, at two locations</i>			

4. **8<sup>th</sup> Street from Mesa Drive to Horne** – Installation of three sets of speed cushions.

Speed counts were collected at one location on 8<sup>th</sup> Street between Mesa Drive and Horne. See **Figure 5** for the count location and the respective speed data. **Table 2** below shows the average speeds before and after the installation of speed cushions on this segment of 8<sup>th</sup> Street. The results show a decrease of 4.4 mph in observed 85<sup>th</sup> percentile speeds and a drop of over 20% for the percentage of vehicles travelling over 25 mph. Additionally, there was an average decrease of 109 vehicles per day when comparing the before and after traffic

volumes.

**Table 2** – Speed Counts on 8<sup>th</sup> Street Before & After Speed Cushions

Average from 1 Location on 8th Street			
8th Street Between Mesa Drive & Horne			
Aug-15	Mar-15	May-17	Average
Installed	Before	After	Change
Avg. Speed (mph)	27.3	24.2	-3.1
85th%-tile Speed (mph)	33.9	29.5	-4.4
% Veh > 25 mph	63.2%	42.6%	-20.7%
% Veh > 35 mph	10.1%	1.9%	-8.2%
% Veh > 45 mph	0.8%	0.1%	-0.7%
% Veh > 55 mph	0.2%	0.0%	-0.2%
Daily Volume (vpd)	1053	944	-109
<i>Before Data: 1-day count March 4, 2015, at one location</i>			
<i>After Data: 2-day average May 3-4, 2017, at one location</i>			

5. **Sunnyvale from Broadway Road to Delta Avenue** (Lemon Tree Terrace Neighborhood) – Installation of three sets of speed cushions.

Prior to speed cushions being installed, speed counts were collected at one location on Sunnyvale, north of Carol Avenue. After counts were collected at two locations, one north and one south of Carol Avenue, both set near the midpoint between two sets of the speed cushions. See **Figure 6** for the count locations and the respective speed data. **Table 3** below shows the average speeds (weighted) before and after the installation of speed cushions on this segment of Sunnyvale. The results show a weighted average decrease of 3.0 mph in observed 85<sup>th</sup> percentile speeds and a drop of over 30% for the percentage of vehicles travelling over 25 mph. Additionally, there was an average increase of 274 vehicles per day when comparing the before and after traffic volumes.

**Table 3** – Speed Counts on Sunnyvale Before & After Speed Cushions

Weighted Average from 2 Locations on Sunnyvale			
Sunnyvale Between Broadway Road & Delta Avenue			
Dec-16	Oct-15	Jan-17	Average
Installed	Before	After	Change
Avg. Speed (mph)	27.0	24.4	-2.6
85th%-tile Speed (mph)	32.6	29.6	-3.0
% Veh > 25 mph	70.4%	39.8%	-30.6%
% Veh > 35 mph	4.1%	2.2%	-1.9%
% Veh > 45 mph	0.2%	0.2%	0.0%
% Veh > 55 mph	0.1%	0.1%	0.0%
Daily Volume (vpd)	1165	1439	274
<i>Before Data: 1-day count October 13, 2015, at one location</i>			
<i>After Data: 2-day weighted average January 11-12, 2017, at two locations</i>			

6. **54<sup>th</sup> Street from Southern Avenue to Sunnyvale** – Installation of three sets of speed cushions.

Speed counts were collected at one location on 54<sup>th</sup> Street between Southern Avenue and Sunnyvale. See **Figure 7** for the count location and the respective speed data. **Table 4** below shows the average speeds before and after the installation of speed cushions on this segment of 54<sup>th</sup> Street. The results show a decrease of 4.4 mph in observed 85<sup>th</sup> percentile speeds and a drop of 34% for the percentage of vehicles travelling over 25 mph. Additionally, there was an average decrease of 74 vehicles per day when comparing the before and after traffic volumes.

**Table 4** – Speed Counts on 54<sup>th</sup> Street Before & After Speed Cushions

Average from 1 Location on 54th Street			
54th Street Between Southern Ave & Sunnyvale			
Jul-13 Installed	Feb-13 Before	Oct-17 After	Average Change
Avg. Speed (mph)	27.5	24.0	-3.5
85th%-tile Speed (mph)	33.1	28.7	-4.4
% Veh > 25 mph	71.0%	37.5%	-33.5%
% Veh > 35 mph	6.2%	0.5%	-5.7%
% Veh > 45 mph	0.3%	0.1%	-0.3%
% Veh > 55 mph	0.2%	0.0%	-0.2%
Daily Volume (vpd)	1792	1718	-74
<i>Before Data: 2-day average February 5-6, 2013, at one location</i>			
<i>After Data: 2-day average October 18-19, 2017, at one location</i>			

7. **96<sup>th</sup> Street from Baseline Road to Idaho Avenue** – Installation of three sets of speed cushions.

Prior to speed cushions being installed, speed counts were collected at one location on 96<sup>th</sup> Street, between Jerome and Jan Avenues. After counts were collected at three locations set between Baseline Road and Jerome Avenue, Jerome and Jan Avenues, and Impala and Idaho Avenues, respectively. See **Figure 8** for the count locations and the respective speed data. **Table 5** below shows the average speeds (weighted) before and after the installation of speed cushions on this segment of 96<sup>th</sup> Street. The results show a weighted average decrease of 4.6 mph in observed 85<sup>th</sup> percentile speeds and a drop of 28% for the percentage of vehicles travelling over 25 mph. Additionally, there was an average decrease of 396 vehicles per day when comparing the before and after traffic volumes.

**Table 5** – Speed Counts on 96<sup>th</sup> Street Before & After Speed Cushions

Weighted Average from 3 Locations on 96th Street			
96th Street Between Baseline Rd & Idaho Ave			
Feb-15	May-14	Oct-17	Average
Installed	Before	After	Change
Avg. Speed (mph)	29.2	25.1	-4.1
85th%-tile Speed (mph)	34.8	30.2	-4.6
% Veh > 25 mph	76.9%	49.4%	-27.6%
% Veh > 35 mph	13.7%	2.5%	-11.3%
% Veh > 45 mph	0.7%	0.1%	-0.6%
% Veh > 55 mph	0.1%	0.0%	-0.1%
Daily Volume (vpd)	2466	2070	-396
<i>Before Data: 1-day count May 20, 2014, at one location</i>			
<i>After Data: 2-day weighted average October 18-19, 2017, at three locations</i>			

8. **2<sup>nd</sup> Street from Alma School Road to Westwood** – Installation of two speed humps.

Speed counts were collected at two locations along 2<sup>nd</sup> Street, one east and one west of Beverly. The before and after counts were collected at nearly the same locations, minimally moved to ensure the after locations were set at the midpoint between the speed humps. See **Figure 9** for the count locations and the respective speed data. **Table 6** below shows the average speeds taken from two locations (weighted) before and after the installation of speed humps on this segment of 2<sup>nd</sup> Street. The results show a drastic decrease of 18 mph in observed 85<sup>th</sup> percentile speeds and a drop of 71% for the percentage of vehicles travelling over 25 mph. Additionally, there was an average increase of 20 vehicles per day when comparing the before and after traffic volumes.

**Table 6** – Speed Counts on 2<sup>nd</sup> Street Before & After Speed Humps

Weighted Average from 2 Locations on 2nd Street			
2nd Street Between Alma School Rd & Westwood			
Apr-16	Oct-14	Oct-17	Average
Installed	Before	After	Change
Avg. Speed (mph)	31.9	18.5	-13.4
85th%-tile Speed (mph)	42.3	24.3	-18.0
% Veh > 25 mph	76.8%	5.4%	-71.3%
% Veh > 35 mph	39.7%	0.3%	-39.5%
% Veh > 45 mph	6.3%	0.1%	-6.2%
% Veh > 55 mph	1.0%	0.0%	-1.0%
Daily Volume (vpd)*	349	369	20
<i>Before Data: 2-day weighted average October 1-2, 2014, at two locations</i>			
<i>After Data: 2-day weighted average October 25-26, 2017, at two locations</i>			

9. **1<sup>st</sup> Place from 1<sup>st</sup> Street to Lazona Drive** – Installation of one speed hump.

Speed counts were collected at one location on 1<sup>st</sup> Place between 1<sup>st</sup> Street and Lazona Drive. See **Figure 10** for the count location and the respective speed

data. **Table 7** below shows the average speeds before and after the speed hump installation on this segment of 1<sup>st</sup> Place. The results show a decrease of 12.9 mph in observed 85<sup>th</sup> percentile speeds and a drop of 36% for the percentage of vehicles travelling over 25 mph. There was a negligible decrease of 17 vehicles per day when comparing before and after traffic volumes.

**Table 7** – Speed Counts on 1<sup>st</sup> Place Before & After Speed Hump

Average from 1 Location on 1 <sup>st</sup> Place			
1st Place between 1st Street & Lazona Drive			
May-16 Installed	May-15 Before	Mar-17 After	Average Change
Avg. Speed (mph)	25.0	16.6	-8.4
85th%-tile Speed (mph)	35.7	22.8	-12.9
% Veh > 25 mph	40.7%	5.0%	-35.7%
% Veh > 35 mph	16.1%	0.0%	-16.1%
% Veh > 45 mph	1.7%	0.0%	-1.7%
% Veh > 55 mph	0.8%	0.0%	-0.8%
Daily Volume (vpd)	118	101	-17
<i>Before Data: 1-day count May 13, 2015, at one location</i>			
<i>After Data: 2-day average March 28-29, 2017, at one location</i>			

10. **Hoover Avenue from Pima to Pasadena** – Installation of one speed hump.

Speed counts were collected at one location on Hoover Avenue between Pima and Pasadena. See **Figure 11** for the count location and the respective speed data. **Table 8** below shows the average speeds before and after the speed hump installation on this segment of Hoover Avenue. The results show a decrease of 7.7 mph in observed 85<sup>th</sup> percentile speeds and a drop of 17% for the percentage of vehicles travelling over 25 mph. There was a negligible increase of 9 vehicles per day when comparing before and after traffic volumes.

**Table 8** – Speed Counts on Hoover Avenue Before & After Speed Hump

Average from 1 Location on Hoover Avenue			
Hoover Avenue Between Pima & Pasadena			
Oct-17 Installed	Aug-16 Before	Dec-17 After	Average Change
Avg. Speed (mph)	23.7	19.9	-3.8
85th%-tile Speed (mph)	33.0	25.3	-7.7
% Veh > 25 mph	31.4%	14.8%	-16.7%
% Veh > 35 mph	11.3%	0.5%	-10.8%
% Veh > 45 mph	3.6%	0.0%	-3.6%
% Veh > 55 mph	0.5%	0.0%	-0.5%
Daily Volume (vpd)	194	203	9
<i>Before Data: 2-day average August 17-18, 2016, at one location</i>			
<i>After Data: 2-day average December 6-7, 2017, at one location</i>			

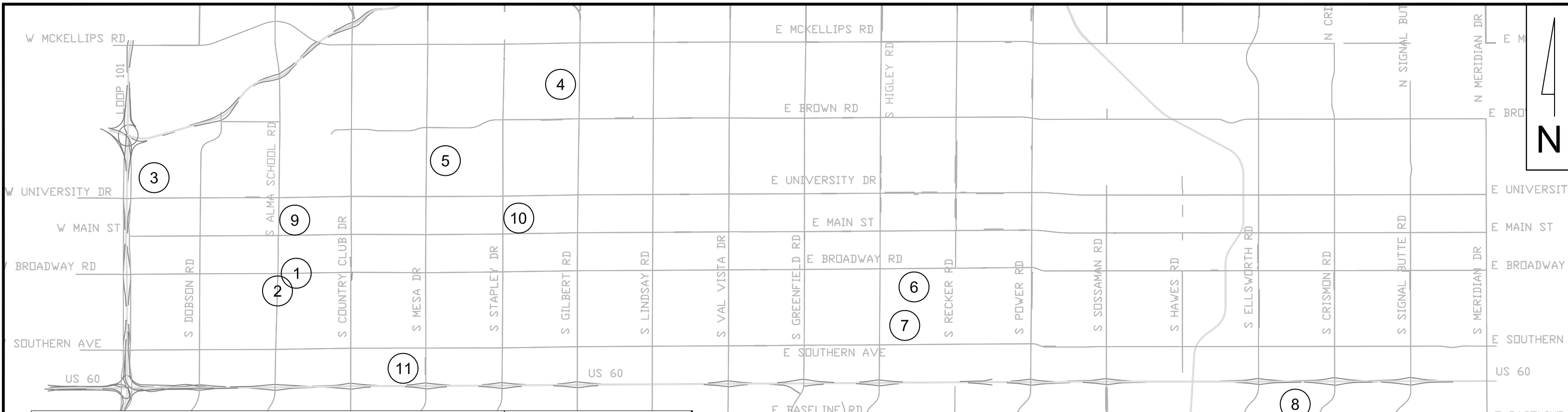
**Table 9** below summarizes the before and after speed count data for all the above referenced street segments that received speed cushions and humps. The

data shows an overall average decrease of 4.1 mph and 12.9 mph in observed 85<sup>th</sup> percentile speeds for the streets where speed cushions and speed humps were installed, respectively.

**Table 9** – Speed Count Summary Before & After Speed Cushions & Humps

DEVICE/ FEATURE	STREET	AVERAGE SPEED (MPH)			85TH%-TILE SPEED (MPH)		
		BEFORE	AFTER	DELTA	BEFORE	AFTER	DELTA
SPEED CUSHIONS	MCLELLAN RD	29.7	25.9	-3.8	34.8	30.9	-3.9
	8TH ST	27.3	24.2	-3.1	33.9	29.5	-4.4
	SUNNYVALE	27.0	24.4	-2.6	32.6	29.6	-3.0
	54TH ST	27.5	24.0	-3.5	33.1	28.7	-4.4
	96TH ST	29.2	25.1	-4.1	34.8	30.2	-4.6
<b>AVERAGE</b>		<b>28.1</b>	<b>24.7</b>	<b>-3.4</b>	<b>33.8</b>	<b>29.8</b>	<b>-4.1</b>
SPEED HUMPS	2ND ST	31.9	18.5	-13.4	42.3	24.3	-18.0
	1ST PL	25.0	16.6	-8.4	35.7	22.8	-12.9
	HOOVER AVE	23.7	19.9	-3.8	33.0	25.3	-7.7
<b>AVERAGE</b>		<b>26.9</b>	<b>18.3</b>	<b>-8.5</b>	<b>37.0</b>	<b>24.1</b>	<b>-12.9</b>

Similar Mesa studies have been done in the past to examine the effectiveness of speed cushions (2011) and speed humps (2001). The studies showed varied results for the different street segments where the speed cushions and humps were installed, but all commonly showed a decrease in the observed 85<sup>th</sup> percentile speeds. The decrease in 85<sup>th</sup> percentile speeds varied from a 1.7 mph reduction to a 7.5 mph reduction and an average 6.7 mph reduction in 85<sup>th</sup> percentile speeds for the eight street segments included in the speed cushions study. Results of the speed hump study showed that on average, the 85<sup>th</sup> percentile speeds decreased by 6.0 mph following the installation of speed humps.



STUDY LOCATIONS		FEATURE/CHANGE
1	BROADWAY RD - ALMA SCHOOL RD TO WESTWOOD	SCHOOL ZONE FLASHER
2	ALMA SCHOOL RD - BROADWAY RD TO ALMA MEADOWS	SCHOOL ZONE FLASHER
3	MAY - UNIVERSITY DR TO RIO SALADO PKWY	DSFS
4	MCLELLAN RD - HARRIS DR TO GILBERT RD	SPEED CUSHIONS
5	8TH ST - MESA DR TO HORNE	SPEED CUSHIONS
6	SUNNYVALE - BROADWAY RD TO DELTA AVE	SPEED CUSHIONS
7	54TH ST - SOUTHERN AVE TO SUNNYVALE	SPEED CUSHIONS
8	96TH ST - BASELINE RD TO IDAHO AVE	SPEED CUSHIONS
9	2ND ST - ALMA SCHOOL RD TO WESTWOOD	SPEED HUMP
10	1ST PL - 1ST ST TO LAZONA AVE	SPEED HUMP
11	HOOVER AVE - PIMA TO PASADENA	SPEED HUMP

ITEM NO. 5

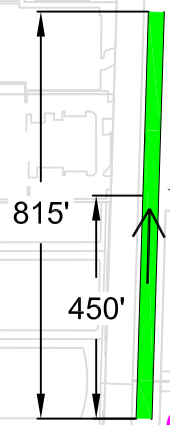
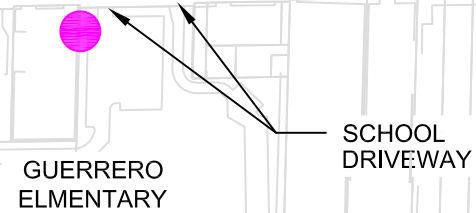
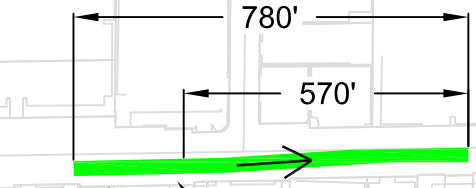


Eastbound Broadway Road Adjacent to Guerrero Elementary School			
Weighted Averages - Only Times Surrounding School Start & Release			
Mar-17	May-16 & Feb-17	Apr-17	
Installed	EB Before	EB After	Change
Avg. Speed (mph)	41.0	37.1	-3.9
85th%-tile Speed (mph)	47.2	42.9	-4.3
% Veh > 35 mph	74.3%	56.3%	-18.0%
% Veh > 45 mph	21.9%	5.5%	-16.4%
% Veh > 55 mph	2.7%	0.2%	-2.6%
Volume (veh)	863	894	31
Posted Speed Limit	40 mph	35 mph	

ALMA SCHOOL RD




DAVIS

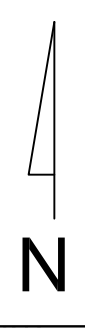
BROADWAY RD



Northbound Alma School Road Adjacent to Guerrero Elementary School			
Weighted Averages - Only Times Surrounding School Start & Release			
Mar-17	May-16 & Feb-17	Apr-17	
Installed	NB Before	NB After	Change
Avg. Speed (mph)	41.6	34.1	-7.5
85th%-tile Speed (mph)	47.5	39.3	-8.1
% Veh > 35 mph	80.1%	30.0%	-50.1%
% Veh > 45 mph	22.1%	1.3%	-20.8%
% Veh > 55 mph	1.3%	0.0%	-1.3%
Volume (veh)	1157	1090	-67
Posted Speed Limit	40 mph	35 mph	

**LEGEND:**

-  FLASHER LOCATION
-  DESIGNATED SCHOOL ZONE
-  SPEED COUNT LOCATION



ITEM NO. 5

**FIGURE 2: GUERRERO LOCATION MAP**

RIVERVIEW PARK



RIO SALADO PKWY

MAY

DIXON ST

DEVONSHIRE ST

**LEGEND:**

-  DSFS LOCATION
-  SPEED COUNT LOCATION



May 650' North of Camino Street - SOUTHBOUND				AT DSFS
Aug-17 Installed	Jun-17 Before	Sep-17 After	Average Change	
Avg. Speed (mph)	29.1	29.7	0.6	Posted Speed Limit: 25 mph
85th%-tile Speed (mph)	35.5	36.5	1.0	
% Veh > 25 mph	73.5%	77.6%	4.1%	
% Veh > 35 mph	16.3%	19.7%	3.4%	
% Veh > 45 mph	0.6%	1.1%	0.5%	
% Veh > 55 mph	0.0%	0.1%	0.1%	
Daily Volume (vpd)	894	857	-37	

May 650' North of Camino Street - NORTHBOUND				LEAVING DSFS
Aug-17 Installed	Jun-17 Before	Sep-17 After	Average Change	
Avg. Speed (mph)	28.3	28.3	0.0	Posted Speed Limit: 25 mph
85th%-tile Speed (mph)	34.1	34.4	0.3	
% Veh > 25 mph	70.3%	70.6%	0.3%	
% Veh > 35 mph	9.5%	11.7%	2.2%	
% Veh > 45 mph	0.1%	0.3%	0.2%	
% Veh > 55 mph	0.0%	0.0%	0.0%	
Daily Volume (vpd)	872	872	0	

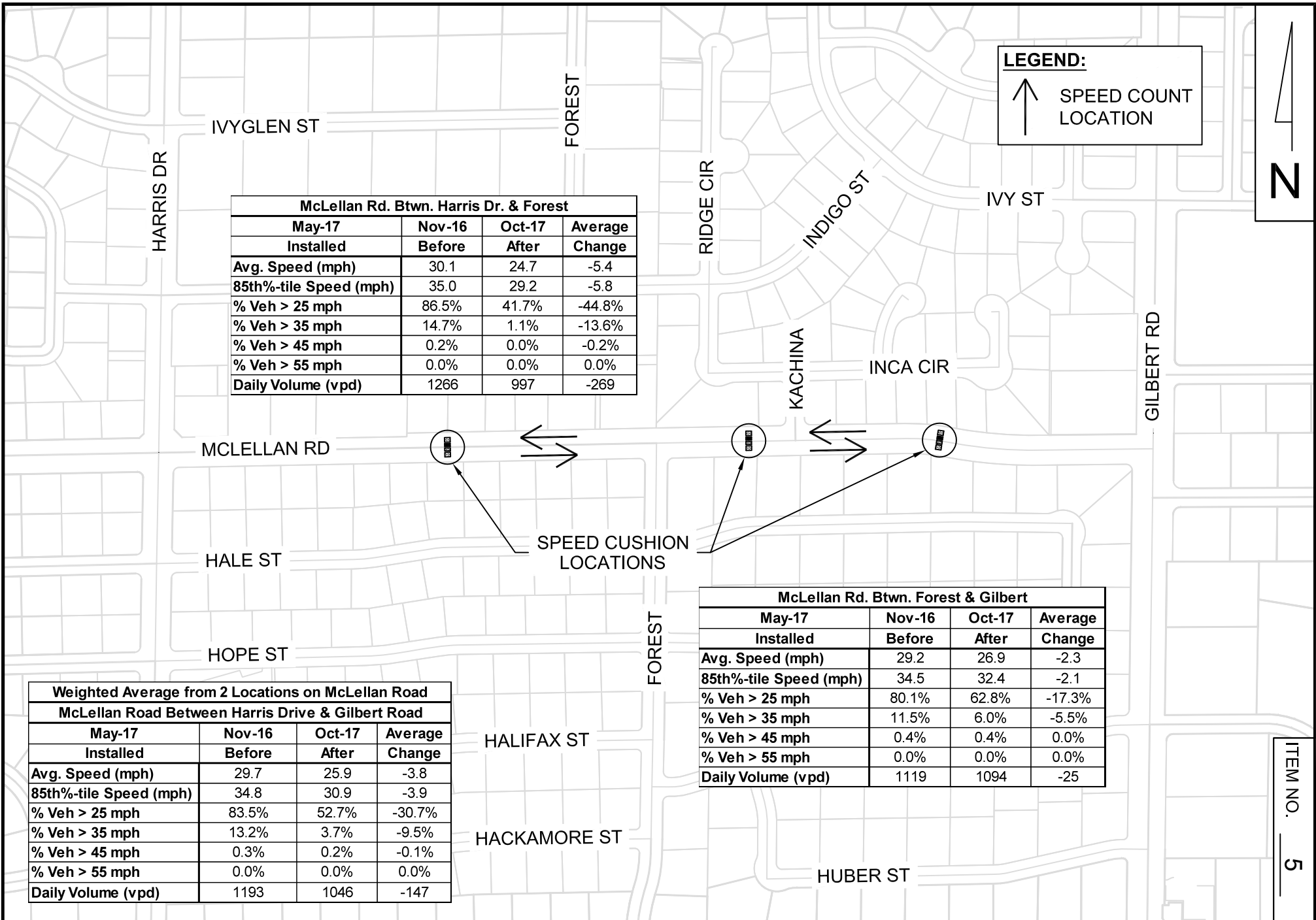
May 275' North of Camino Street - SOUTHBOUND				LEAVING DSFS
Aug-17 Installed	Jun-17 Before	Sep-17 After	Average Change	
Avg. Speed (mph)	29.3	31.3	2.0	Posted Speed Limit: 25 mph
85th%-tile Speed (mph)	35.8	37.6	1.8	
% Veh > 25 mph	73.8%	87.6%	13.8%	
% Veh > 35 mph	17.7%	24.8%	7.1%	
% Veh > 45 mph	0.3%	1.5%	1.2%	
% Veh > 55 mph	0.0%	0.1%	0.1%	
Daily Volume (vpd)	880	924	44	

May 275' North of Camino Street - NORTHBOUND				AT DSFS
Aug-17 Installed	Jun-17 Before	Sep-17 After	Average Change	
Avg. Speed (mph)	30.0	28.7	-1.3	Posted Speed Limit: 25 mph
85th%-tile Speed (mph)	35.6	34.5	-1.1	
% Veh > 25 mph	83.3%	47.6%	-35.8%	
% Veh > 35 mph	16.8%	11.9%	-4.9%	
% Veh > 45 mph	0.5%	0.6%	0.1%	
% Veh > 55 mph	0.0%	0.1%	0.1%	
Daily Volume (vpd)	864	900	36	

UNIVERSITY DR

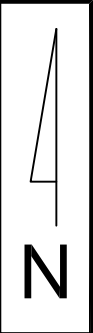
CAMINO ST

TEMPE CANAL



**LEGEND:**

↑ SPEED COUNT LOCATION



McLellan Rd. Btwn. Harris Dr. & Forest			
May-17 Installed	Nov-16 Before	Oct-17 After	Average Change
Avg. Speed (mph)	30.1	24.7	-5.4
85th%-tile Speed (mph)	35.0	29.2	-5.8
% Veh > 25 mph	86.5%	41.7%	-44.8%
% Veh > 35 mph	14.7%	1.1%	-13.6%
% Veh > 45 mph	0.2%	0.0%	-0.2%
% Veh > 55 mph	0.0%	0.0%	0.0%
Daily Volume (vpd)	1266	997	-269

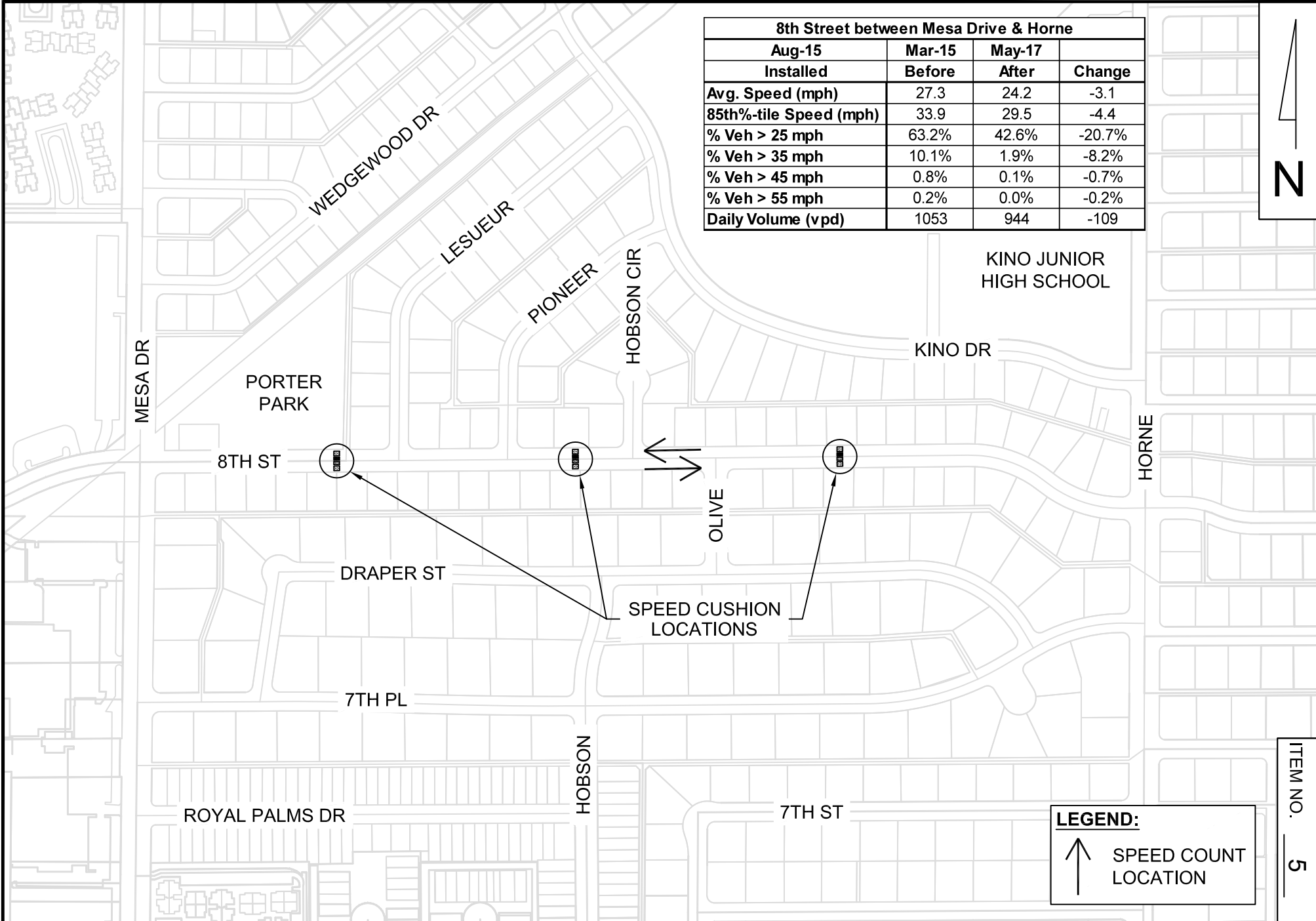
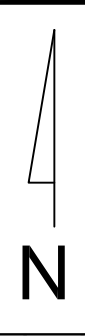
McLellan Rd. Btwn. Forest & Gilbert			
May-17 Installed	Nov-16 Before	Oct-17 After	Average Change
Avg. Speed (mph)	29.2	26.9	-2.3
85th%-tile Speed (mph)	34.5	32.4	-2.1
% Veh > 25 mph	80.1%	62.8%	-17.3%
% Veh > 35 mph	11.5%	6.0%	-5.5%
% Veh > 45 mph	0.4%	0.4%	0.0%
% Veh > 55 mph	0.0%	0.0%	0.0%
Daily Volume (vpd)	1119	1094	-25

Weighted Average from 2 Locations on McLellan Road McLellan Road Between Harris Drive & Gilbert Road			
May-17 Installed	Nov-16 Before	Oct-17 After	Average Change
Avg. Speed (mph)	29.7	25.9	-3.8
85th%-tile Speed (mph)	34.8	30.9	-3.9
% Veh > 25 mph	83.5%	52.7%	-30.7%
% Veh > 35 mph	13.2%	3.7%	-9.5%
% Veh > 45 mph	0.3%	0.2%	-0.1%
% Veh > 55 mph	0.0%	0.0%	0.0%
Daily Volume (vpd)	1193	1046	-147

ITEM NO. 5

**FIGURE 4: MCLELLAN RD LOCATION MAP**

8th Street between Mesa Drive & Horne			
Aug-15	Mar-15	May-17	
Installed	Before	After	Change
Avg. Speed (mph)	27.3	24.2	-3.1
85th%-tile Speed (mph)	33.9	29.5	-4.4
% Veh > 25 mph	63.2%	42.6%	-20.7%
% Veh > 35 mph	10.1%	1.9%	-8.2%
% Veh > 45 mph	0.8%	0.1%	-0.7%
% Veh > 55 mph	0.2%	0.0%	-0.2%
Daily Volume (vpd)	1053	944	-109

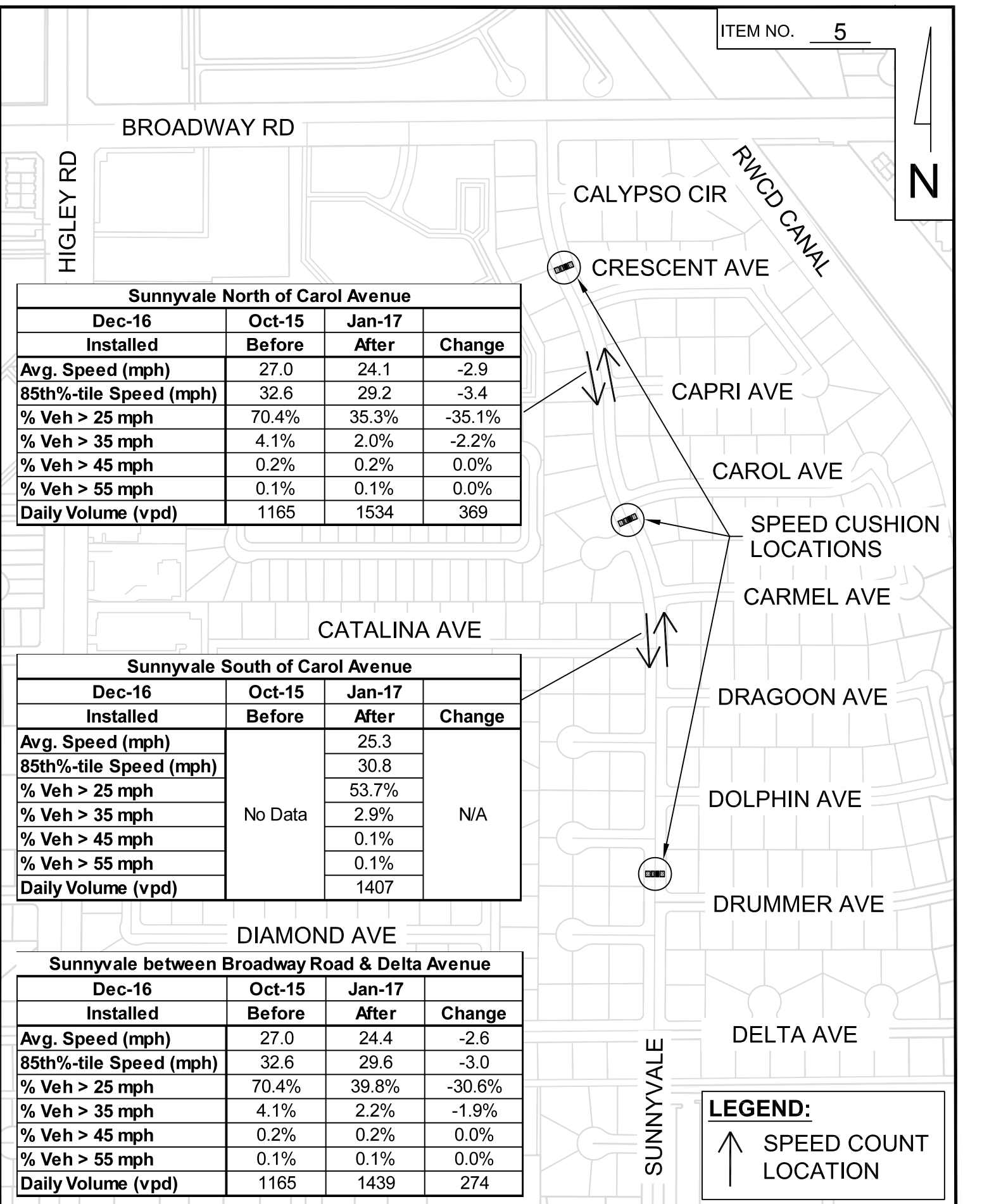


**LEGEND:**

↑ SPEED COUNT LOCATION

ITEM NO. 5

**FIGURE 5: 8TH ST LOCATION MAP**




Sunnyvale North of Carol Avenue			
Dec-16	Oct-15	Jan-17	
Installed	Before	After	Change
Avg. Speed (mph)	27.0	24.1	-2.9
85th%-tile Speed (mph)	32.6	29.2	-3.4
% Veh > 25 mph	70.4%	35.3%	-35.1%
% Veh > 35 mph	4.1%	2.0%	-2.2%
% Veh > 45 mph	0.2%	0.2%	0.0%
% Veh > 55 mph	0.1%	0.1%	0.0%
Daily Volume (vpd)	1165	1534	369

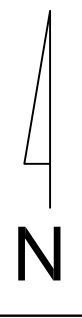
Sunnyvale South of Carol Avenue			
Dec-16	Oct-15	Jan-17	
Installed	Before	After	Change
Avg. Speed (mph)	No Data	25.3	N/A
85th%-tile Speed (mph)		30.8	
% Veh > 25 mph		53.7%	
% Veh > 35 mph		2.9%	
% Veh > 45 mph		0.1%	
% Veh > 55 mph		0.1%	
Daily Volume (vpd)		1407	

Sunnyvale between Broadway Road & Delta Avenue			
Dec-16	Oct-15	Jan-17	
Installed	Before	After	Change
Avg. Speed (mph)	27.0	24.4	-2.6
85th%-tile Speed (mph)	32.6	29.6	-3.0
% Veh > 25 mph	70.4%	39.8%	-30.6%
% Veh > 35 mph	4.1%	2.2%	-1.9%
% Veh > 45 mph	0.2%	0.2%	0.0%
% Veh > 55 mph	0.1%	0.1%	0.0%
Daily Volume (vpd)	1165	1439	274

**LEGEND:**

↑ SPEED COUNT LOCATION

**LEGEND:**  
 SPEED COUNT LOCATION



HIGLEY RD

ELENA CIR

EMELITA AVE

SUNNYVALE

EMERALD AVE

ENID AVE

FARMDALE AVE

FORGE AVE

54TH ST

FORGE AVE

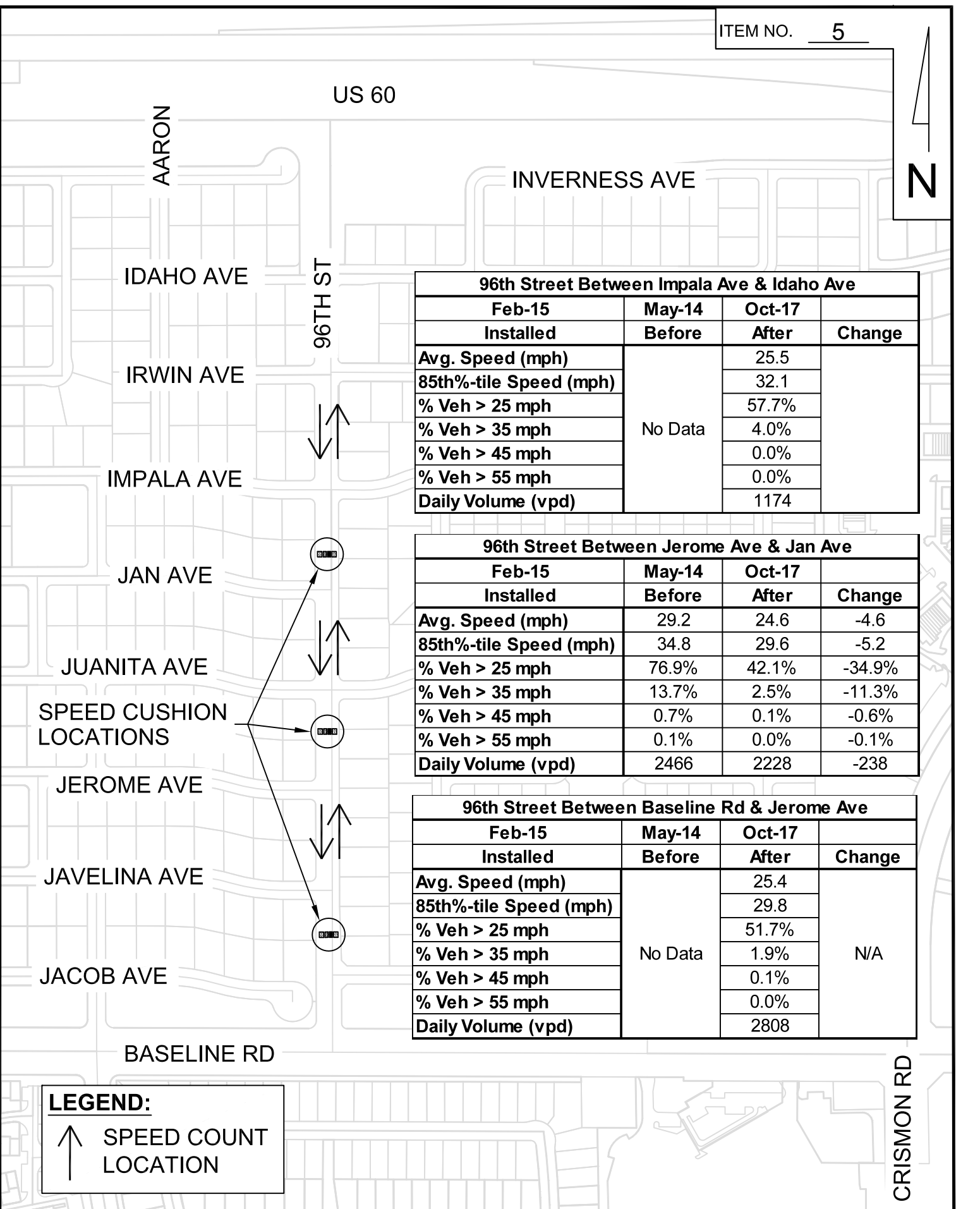
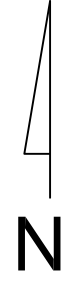
SPEED CUSHION LOCATIONS

FLORIAN AVE

FLOWER AVE

SOUTHERN AVE

54th Street between Southern Ave & Sunnyvale			
Jul-13 Installed	Feb-13 Before	Mar-17 After	Change
Avg. Speed (mph)	27.5	24.0	-3.5
85th%-tile Speed (mph)	33.1	28.7	-4.4
% Veh > 25 mph	71.0%	37.5%	-33.5%
% Veh > 35 mph	6.2%	0.5%	-5.7%
% Veh > 45 mph	0.3%	0.1%	-0.3%
% Veh > 55 mph	0.2%	0.0%	-0.2%
Daily Volume (vpd)	1792	1718	-74

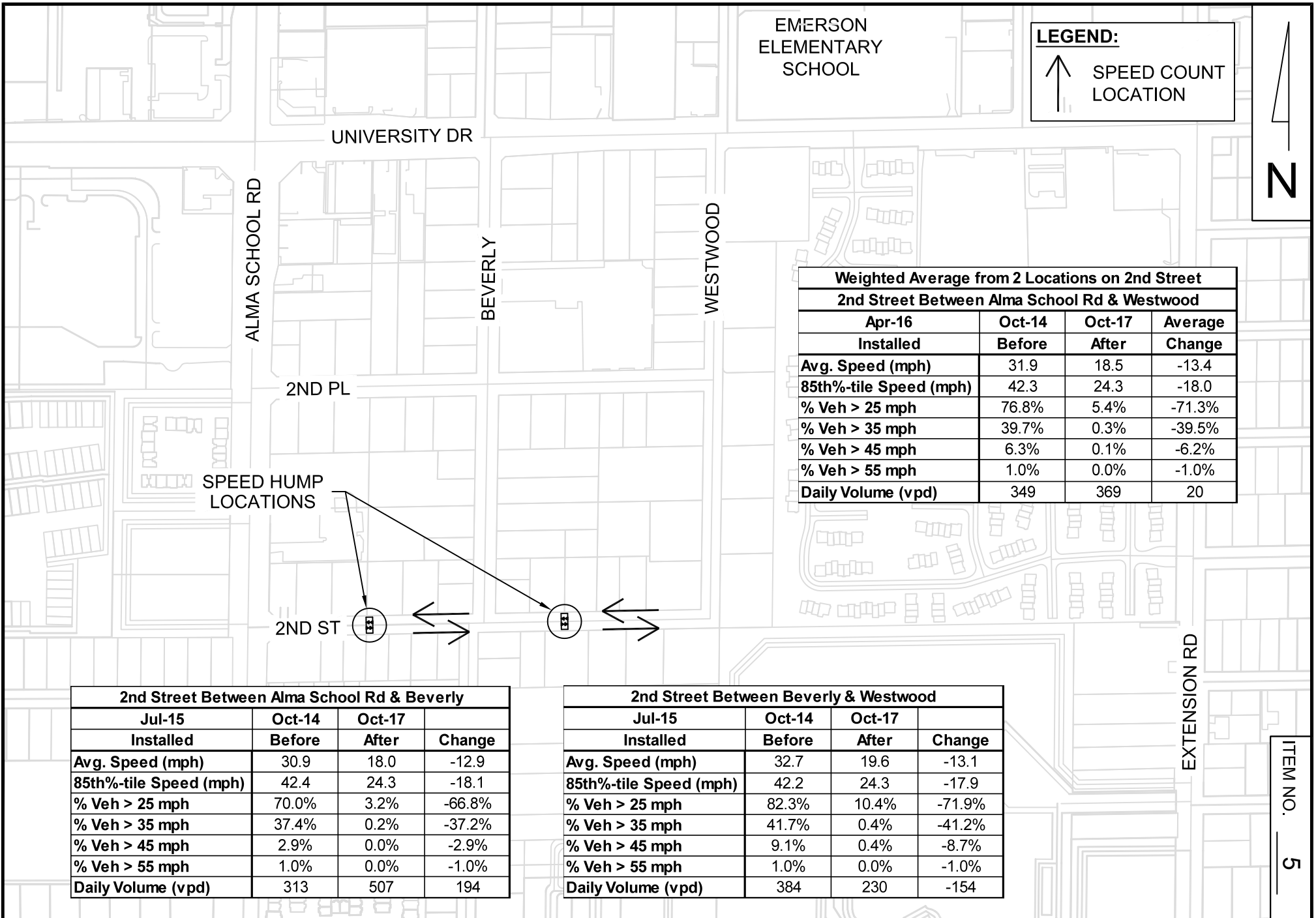


96th Street Between Impala Ave & Idaho Ave			
Feb-15 Installed	May-14 Before	Oct-17 After	Change
Avg. Speed (mph)	No Data	25.5	
85th%-tile Speed (mph)		32.1	
% Veh > 25 mph		57.7%	
% Veh > 35 mph		4.0%	
% Veh > 45 mph		0.0%	
% Veh > 55 mph		0.0%	
Daily Volume (vpd)		1174	

96th Street Between Jerome Ave & Jan Ave			
Feb-15 Installed	May-14 Before	Oct-17 After	Change
Avg. Speed (mph)	29.2	24.6	-4.6
85th%-tile Speed (mph)	34.8	29.6	-5.2
% Veh > 25 mph	76.9%	42.1%	-34.9%
% Veh > 35 mph	13.7%	2.5%	-11.3%
% Veh > 45 mph	0.7%	0.1%	-0.6%
% Veh > 55 mph	0.1%	0.0%	-0.1%
Daily Volume (vpd)	2466	2228	-238

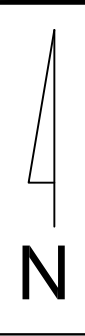
96th Street Between Baseline Rd & Jerome Ave			
Feb-15 Installed	May-14 Before	Oct-17 After	Change
Avg. Speed (mph)	No Data	25.4	N/A
85th%-tile Speed (mph)		29.8	
% Veh > 25 mph		51.7%	
% Veh > 35 mph		1.9%	
% Veh > 45 mph		0.1%	
% Veh > 55 mph		0.0%	
Daily Volume (vpd)		2808	

**LEGEND:**  
 SPEED COUNT LOCATION



**LEGEND:**

↑ SPEED COUNT LOCATION



Weighted Average from 2 Locations on 2nd Street			
2nd Street Between Alma School Rd & Westwood			
Apr-16	Oct-14	Oct-17	Average
Installed	Before	After	Change
Avg. Speed (mph)	31.9	18.5	-13.4
85th%-tile Speed (mph)	42.3	24.3	-18.0
% Veh > 25 mph	76.8%	5.4%	-71.3%
% Veh > 35 mph	39.7%	0.3%	-39.5%
% Veh > 45 mph	6.3%	0.1%	-6.2%
% Veh > 55 mph	1.0%	0.0%	-1.0%
Daily Volume (vpd)	349	369	20

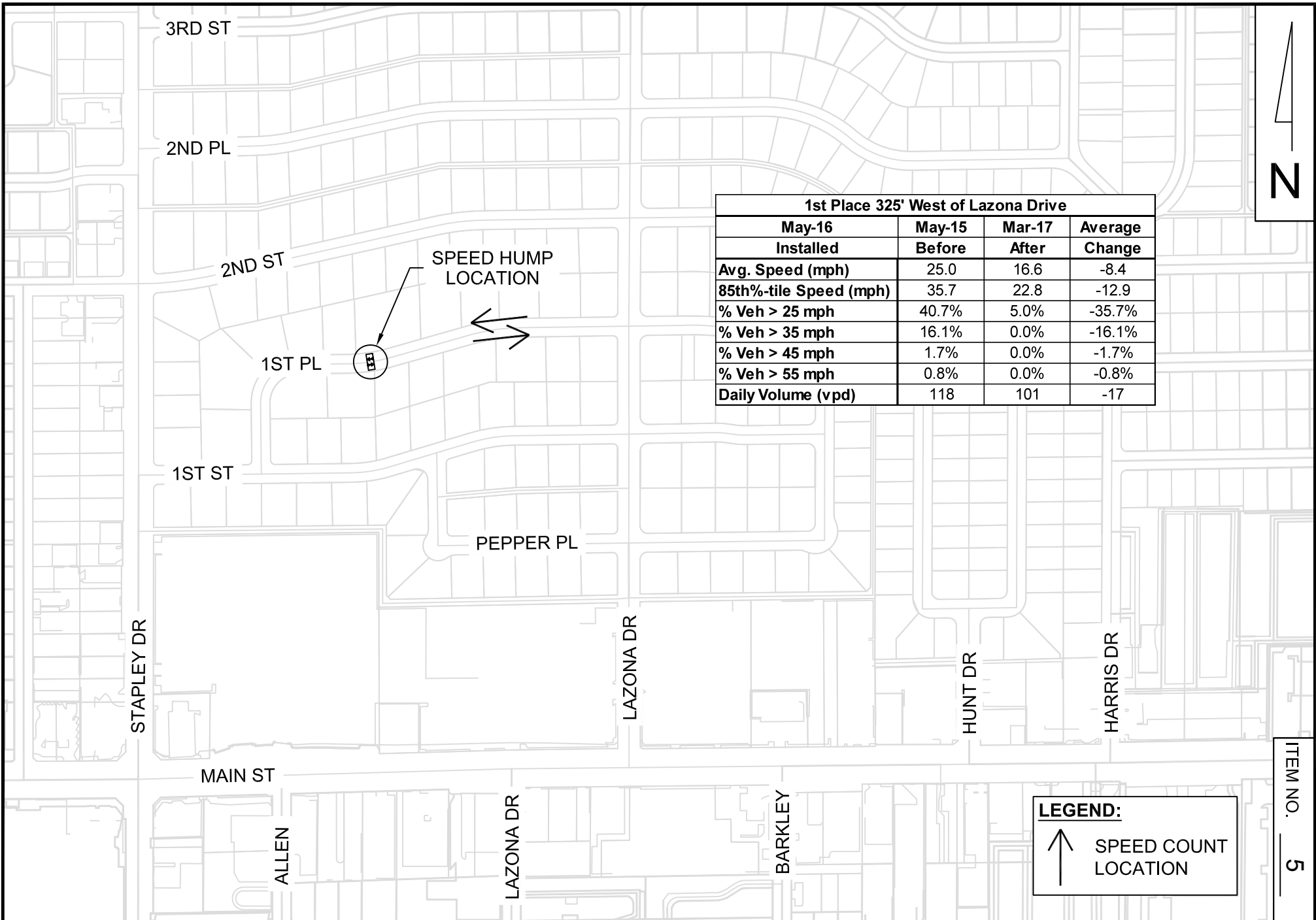
2nd Street Between Alma School Rd & Beverly			
Jul-15	Oct-14	Oct-17	
Installed	Before	After	Change
Avg. Speed (mph)	30.9	18.0	-12.9
85th%-tile Speed (mph)	42.4	24.3	-18.1
% Veh > 25 mph	70.0%	3.2%	-66.8%
% Veh > 35 mph	37.4%	0.2%	-37.2%
% Veh > 45 mph	2.9%	0.0%	-2.9%
% Veh > 55 mph	1.0%	0.0%	-1.0%
Daily Volume (vpd)	313	507	194

2nd Street Between Beverly & Westwood			
Jul-15	Oct-14	Oct-17	
Installed	Before	After	Change
Avg. Speed (mph)	32.7	19.6	-13.1
85th%-tile Speed (mph)	42.2	24.3	-17.9
% Veh > 25 mph	82.3%	10.4%	-71.9%
% Veh > 35 mph	41.7%	0.4%	-41.2%
% Veh > 45 mph	9.1%	0.4%	-8.7%
% Veh > 55 mph	1.0%	0.0%	-1.0%
Daily Volume (vpd)	384	230	-154

ITEM NO. 5

**FIGURE 9: 2ND ST LOCATION MAP**



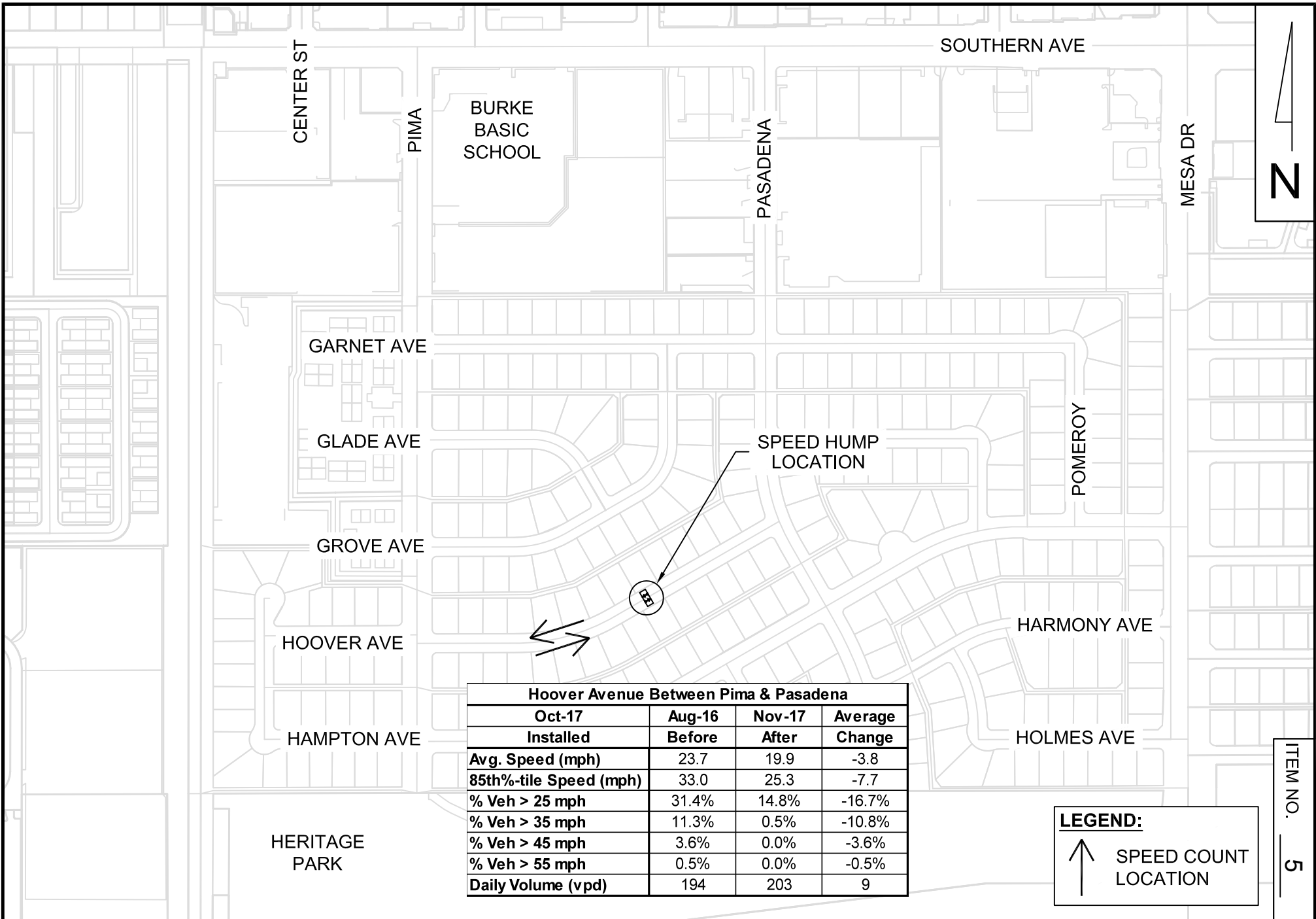


**LEGEND:**

↑ SPEED COUNT LOCATION

ITEM NO. 5

**FIGURE 10: 1ST PL LOCATION MAP**



ITEM NO. 5

FIGURE 11: HOOVER AVE LOCATION MAP