



# ARLINGTON VIRGINIA

## DEPARTMENT OF ENVIRONMENTAL SERVICES

### Corridor Comparison Study: Walter Reed Drive between 5<sup>th</sup> Street South and Columbia Pike

Prepared for:

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## Table of Contents

I.	Introduction .....	1
II.	Background .....	2
III.	Speed Data.....	2
	Before and After Comparison .....	3
	Police Enforcement Data .....	5
IV.	Side Street Volumes .....	5
V.	Collision Data .....	6
VI.	Conclusion.....	7

## Table of Figures

Figure 1 - Study Area on Walter Reed Drive .....	1
Figure 2 - Speed Data Distribution at 5 <sup>th</sup> Street Site Before and After Improvements .....	4
Figure 3 - Speed Data Distribution at 9 <sup>th</sup> Street Site Before and After Improvements .....	4
Figure 4 - Side Street Volume Count Locations.....	5

## List of Tables

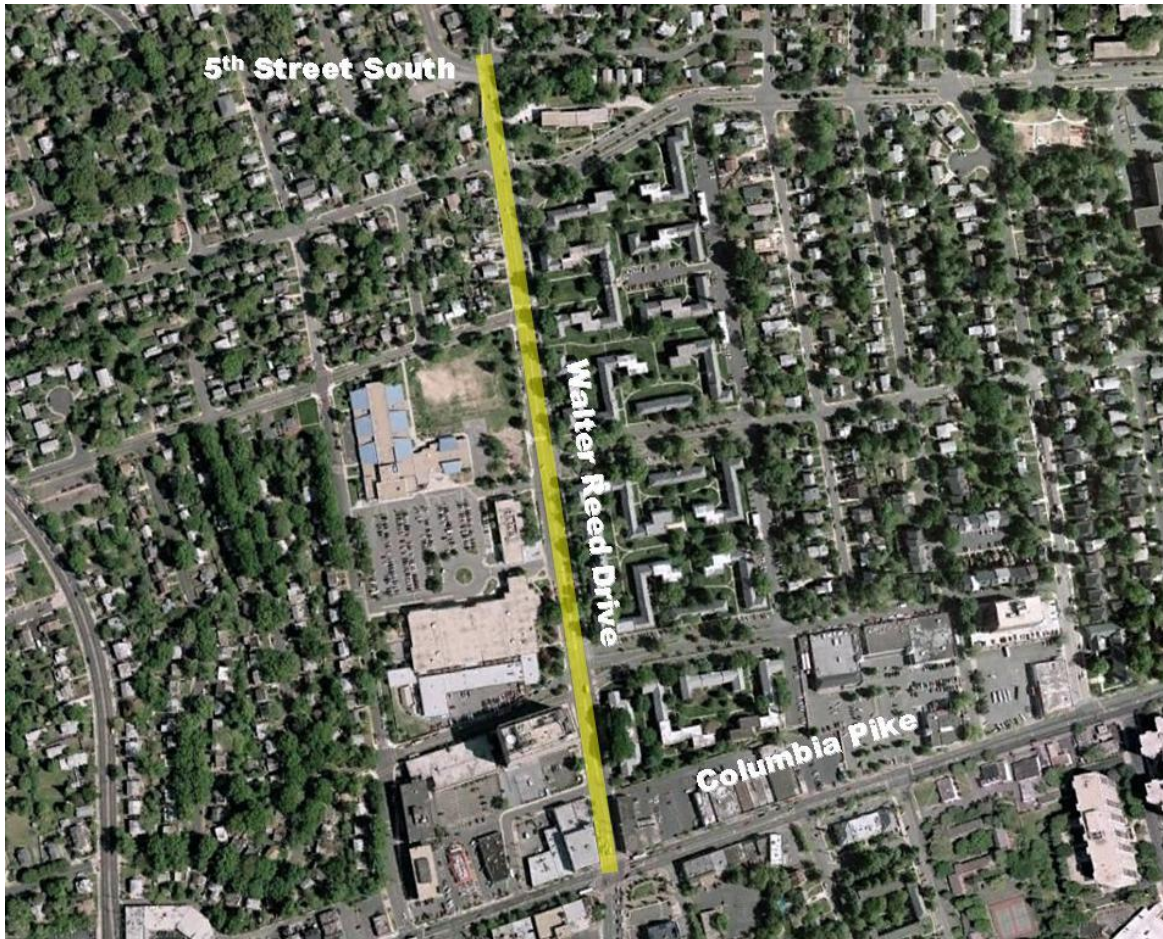
Table 1 - Speed Data Collected Before Improvements.....	2
Table 2 - Speed Data Collected Before and After Improvements .....	3
Table 3 - Speed Data Difference Before and After Improvements .....	3
Table 4 - Police Enforcement Data Before and After Improvements.....	5
Table 5 - Side Street Volumes Before and After Improvements .....	6
Table 6 - Walter Reed Drive Collision Data per Year .....	6

## List of Appendices

APPENDIX 1 – VEHICLE SPEED AND VOLUME DATA ON WALTER REED DRIVE
APPENDIX 2 – SIDE STREET TRAFFIC COUNTS

## I. Introduction

Walter Reed Drive is a two-lane divided arterial street in south Arlington County with a posted speed limit of 25 miles per hour between 5<sup>th</sup> Street South and Columbia Pike. This analysis will compare traffic patterns before and after that segment of Walter Reed Drive was modified from a four-lane roadway to a two-lane divided roadway as part of a “road diet”. Traffic patterns and data will be analyzed to assess the effects of the roadway improvements on vehicle speeds, traffic volumes, and crash frequency and severity. Figure 1 shows the extents of the project area.



**Figure 1 - Project Area on Walter Reed Drive**

The road diet on Walter Reed Drive included restriping the roadway from a four-lane to a two-lane roadway while adding a bicycle lane in both directions, a northbound left-turn bay at 7<sup>th</sup> Street South, restriped crosswalks for increased visibility and adding an edge line for the on-street parking.

## II. Background

Interest in reconfiguring South Walter Reed Drive dates back several years. This section of roadway was one of the eleven examined in the August 2004 Arterial Transportation Management (ATM) Study. As part of the ATM study, a “tool box” was developed detailing ATM measures that could be implemented on Arlington County roadways. In an effort to test these ATM measures and to effect changes in driver behavior, the County has been implementing a variety of low-cost measures on arterial streets as opportunities present themselves. In recent years, the County has restriped a number of arterial roadways in conjunction with scheduled resurfacing projects. These restriping projects generally convert a four-lane cross-section to two travel lanes and two bicycle lanes, with the remaining space striped as a median or as parking lanes. The goal of these measures, collectively called a road diet, is to make the roadway safer for all road users, including cars, transit vehicles, bicycles, and pedestrians.

Walter Reed Drive from 5<sup>th</sup> Street South to Columbia Pike was scheduled to be repaved in 2007, and Arlington County had received several citizen complaints about high traffic speeds throughout this area. Since this section of roadway was one identified in the ATM study for potential improvement, and the improvements were as outlined in the Goals and Policies of the Master Transportation Plan, Arlington County took the opportunity to implement the road diet concept with a minimal outlay of County funding.

In order to assess the impacts of the road diet on traffic operations, Arlington County collected vehicle counts and speed data on Walter Reed Drive at either end of the road diet project. These data were first collected in May 2007, before the school year had ended. A second round of speed and volume data was collected in September 2007, about a year after implementation of the road diet and after school had resumed in the fall.

Additionally, to assess what effect (if any) the road diet would have on neighborhood street traffic, traffic data were collected on several side streets off Walter Reed Drive before and after implementation of the road diet.

## III. Speed Data

Vehicle speed data were collected before the improvements were installed in May of 2007. The data were collected over a single 24-hour period. A summary of these data is provided in Table 1.

**Table 1 - Speed Data Collected Before Improvements**

Data	Walter Reed Drive South of 5 <sup>th</sup> Street South	Walter Reed Drive North of 9 <sup>th</sup> Street South
<b>Number of Vehicles</b>	11,730	10,893
<b>Number of Vehicles Speeding (over 25 mph)</b>	9,729	8,546
<b>Percent of Vehicles Speeding</b>	82.9%	78.5%
<b>Average Speed</b>	30 mph	30 mph
<b>85<sup>th</sup> Percentile Speed</b>	35 mph	36 mph

The data collected support the observations of citizens and County staff – over 75% of vehicles at both data collection locations were exceeding the speed limit. In both locations, the 85<sup>th</sup>-percentile speed of traffic was 35 mph or greater.

### Before and After Comparison

Vehicle speed data were again collected at both locations along Walter Reed Drive over a year after the improvements were installed, allowing for an adjustment period for drivers to become used to the new lane geometry. The speed data collected after the street was modified are shown in Table 1 along with the original speed data collected before the street was modified.

**Table 2 - Speed Data Collected Before and After Improvements**

	W.R. Drive at 5 <sup>th</sup> Street S. – Before Improvement (2007)	W.R. Drive at 5 <sup>th</sup> Street S. – After Improvement (2008)	W.R. Drive at 9 <sup>th</sup> Street S. – Before Improvement (2007)	W.R. Drive at 9 <sup>th</sup> Street S. – After Improvement (2008)
<b>Number of Vehicles</b>	11,730	10,442	10,893	11,602
<b>Number of Vehicles Speeding (over 25 mph)</b>	9,729	7,047	8,546	6,908
<b>Percent of Vehicles Speeding</b>	82.9%	70.5%*	78.5%	61.1%*
<b>Percent of Vehicles Exceeding 30 mph</b>	47.9%	18.1%*	48.3%	16.9%*
<b>Average Speed</b>	30 mph	27 mph	30 mph	26 mph
<b>85<sup>th</sup> Percentile Speed</b>	35 mph	31 mph	36 mph	31 mph

\* - these percentages discount vehicles with a speed of “0” indicating they were parked at the counter

Table 3 shows the overall differences between vehicle speeds before and after the Walter Reed Drive roadway improvements were installed.

**Table 3 - Speed Data Difference Before and After Improvements**

	Walter Reed Drive at 5 <sup>th</sup> Street South	Walter Reed Drive at 9 <sup>th</sup> Street South
<b>Percent of Vehicles Speeding</b>	-12.4%	-9.4%
<b>Percent of Vehicles Exceeding 30 mph</b>	-29.8%	-31.4%
<b>Average Speed</b>	-3 mph	-4 mph
<b>85<sup>th</sup> Percentile Speed</b>	-4 mph	-5 mph

As shown in the above tables, implementing the road diet on Walter Reed Drive has had a significant effect on vehicle speeds. Recorded vehicle speeds are lower at both count sites and the percentage of vehicles speeding is significantly reduced from the percentage before the improvements were installed. The percentage of vehicles exceeding 30 mph is down

approximately 30 percent at both sites. The change in vehicle speeds before and after the improvements to Walter Reed Drive is shown graphically in Figure 2 and Figure 3. Vehicle speed and volume data on Walter Reed Drive are provided in Appendix 1.

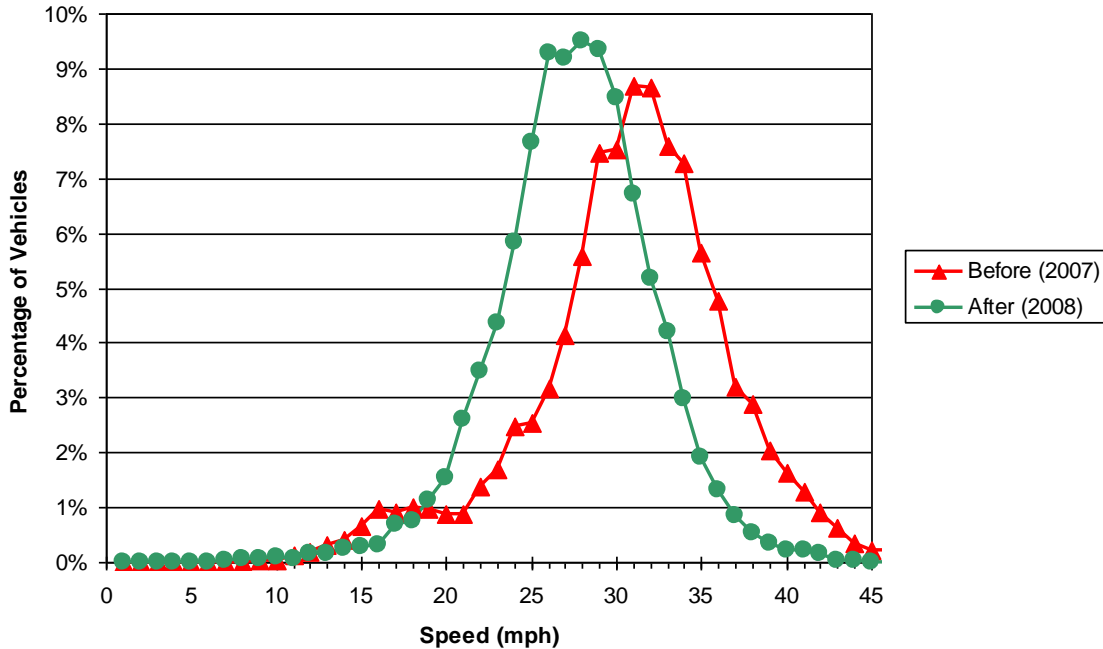


Figure 2 - Speed Distribution on Walter Reed Dr. at 5<sup>th</sup> St. Before and After Improvements

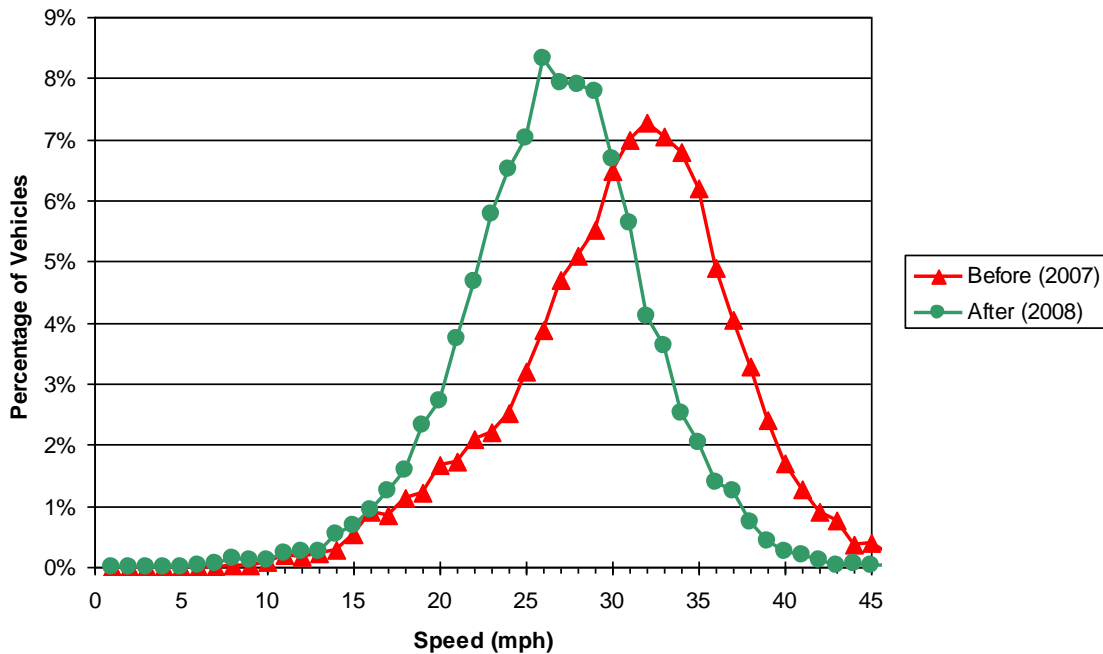


Figure 3 - Speed Distribution on Walter Reed Dr. at 9<sup>th</sup> St. Before and After Improvements

### Police Enforcement Data

In addition to the vehicle speed data collected, the Arlington County Police were consulted in order to determine if they had seen a change in vehicle speeds through enforcement within the study area. The Arlington County Police enforcement data are provided in Table 4.

**Table 4 - Police Enforcement Data Before and After Improvements**

Calendar Year	Number of Tickets Issued*
2007	409
2008	38
2009 (through Sep. 09)	39

\* - source: Arlington County Police

As shown above, the police enforcement data show a very significant reduction in speeding tickets issued before and after the improvements on Walter Reed Drive were installed. It should also be noted that the improvements were installed during calendar year 2007 and the difference in tickets issued may be even more significant when that cutoff is considered.

### IV. Side Street Volumes

When modifying Walter Reed Drive to reduce speeding violations and increase safety, a concern of Arlington County and local residents was that vehicles would cut through the surrounding neighborhood on one of several side streets, increasing the volume on these neighborhood streets. In order to determine what effect, if any, the road diet on Walter Reed Drive had on neighborhood street traffic, volume counts were collected along the side streets throughout the project area before and after the roadway improvements. The side street count locations are shown in Figure 4.



**Figure 4 - Side Street Volume Count Locations**

The count data collected at the locations shown in Figure 4 are summarized in Table 5.

**Table 5 - Side Street Volumes Before and After Improvements**

Location	24-hour Volume Before Improvements	24-hour Volume After Improvements	Change in Traffic Volume per year
6 <sup>th</sup> St. S. West of Walter Reed Dr.	519 veh	475 veh	-8.5%
6 <sup>th</sup> St. S. East of Walter Reed Dr.	1598 veh	1818 veh	2.6%
7 <sup>th</sup> St. S. West of Walter Reed Dr.	2001 veh	1855 veh	-7.3%

\* - Count taken in 2003 – change calculated is per year

Counts were taken at 9<sup>th</sup> Street South, but nearby construction in the fall of 2008 caused a change in traffic volumes and patterns that caused significant inconsistencies between May 2007 and September 2008, making the counts unusable. The side street count data is provided in Appendix 2.

As shown in Table 5, the side street volumes do not show a significant change from the improvements to Walter Reed Drive. Based upon this information it can be concluded that vehicles are not using the neighborhood streets to bypass Walter Reed Drive.

## V. Collision Data

Arlington County examined collision data for the Walter Reed Drive project area going back 5 years. There were 20 collisions on Walter Reed Drive between 5<sup>th</sup> Street South and 9<sup>th</sup> Street South from 2004 to 2008. These were mostly rear-end collisions with some collisions at an angle, and relatively fewer collisions with fixed objects or parked cars. Collision rates per million of vehicles traveled were calculated for the corridor based upon the Institute of Transportation Engineers (ITE) *Manual of Transportation Studies* (1994). Based upon the 2008 average daily traffic (ADT), the corridor's highest collision rate is 0.23 collisions per million vehicles traveled. This falls below the threshold of 1.0 collisions per million vehicles traveled to be considered a high accident location. Overall, collision rates are low and relatively constant throughout the project area. The collision data for Walter Reed Drive is provided in Table 6.

**Table 6 - Walter Reed Drive Collision Data per Year**

S. Walter Reed Drive					
Year	6 <sup>th</sup> St. S.	7 <sup>th</sup> St. S.	8 <sup>th</sup> St. S.	9 <sup>th</sup> St. S.	Total
2004	0	1	0	2	3
2005	0	2	1	5	8
2006	0	0	1	2	3
2007	0	1	0	2	3
2008	0	1	0	2	3



## VI. Conclusion

The road diet improvements on Walter Reed Drive between 5<sup>th</sup> Street South and 9<sup>th</sup> Street South were intended to reduce the speeding problem along that section of road and to increase safety for all road users, including cars, transit vehicles, bicycles, and pedestrians.

This analysis shows that average speeds on Walter Reed Drive are down between 3 and 4 mph since the road diet was implemented, the amount of vehicles exceeding the speed limit is down, and the amount of vehicles exceeding 30 mph is down approximately 30%. Additionally, police enforcement data show a significant decrease in the amount of tickets issued within the project area after the road diet was implemented.

While this analysis shows that the accident rate within the project area seems to be unaffected by the improvements to Walter Reed Drive, it is also relatively constant over the years analyzed and low enough not to merit concern.

Based upon the traffic counts collected for this analysis, the road diet on Walter Reed Drive has not affected side street volumes and has not added any traffic to the neighborhood streets.

Overall, the road diet on S. Walter Reed Drive has achieved its objectives. It has reduced unlawful vehicle speeds, provided increased safety through better road signing and striping, and required only a minimal expense from Arlington County.

## **APPENDIX 1**

## **APPENDIX 2**

## **APPENDIX 3**