

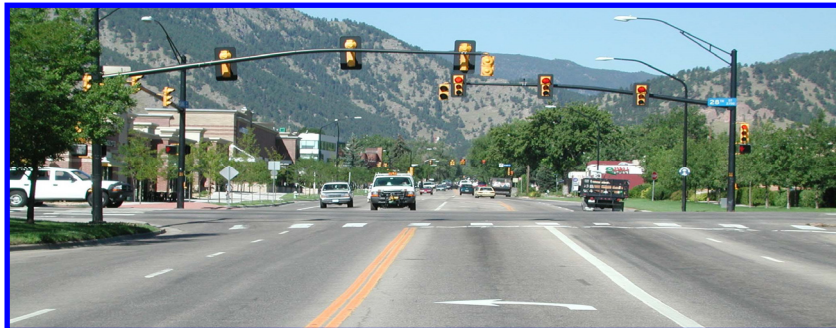
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City of Boulder

# **DRIVE TIME 2010**

Arapahoe Avenue • Valmont Road • Pearl Street

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Prepared by:

Fox Higgins Transportation Group, LLC  
and  
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March 2010

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## **1.0 Background**

A drive time study measuring the time it takes to get across town in Boulder during peak traffic hours (7:30am, 12:00 noon and 5:00 pm) has been performed each year since 1986. The purpose of these annual studies is to determine how congestion on the major arteries in Boulder is changing over time. Historically, in even-numbered years, the north/south routes (Broadway, 28<sup>th</sup> Street, and recently Foothills Parkway) have been studied and in odd-numbered years, the east/west routes (Valmont and Arapahoe) have been studied (see Methodology section for exact routes). The frequency of travel time and delay studies in the City has been reduced in the past few years due to budgetary constraints. Thus, the previous east-west travel time evaluations were performed in 2007. Prior to 2004, these studies were performed by staff of the City of Boulder Audit and Evaluation Division. Since 2004, data has been collected by a consultant team consisting of Fox Higgins Transportation Group, LLC and Short Elliott Hendrickson, Inc. The Pearl Street corridor was added to the data collection in 2007 as a third east-west corridor.

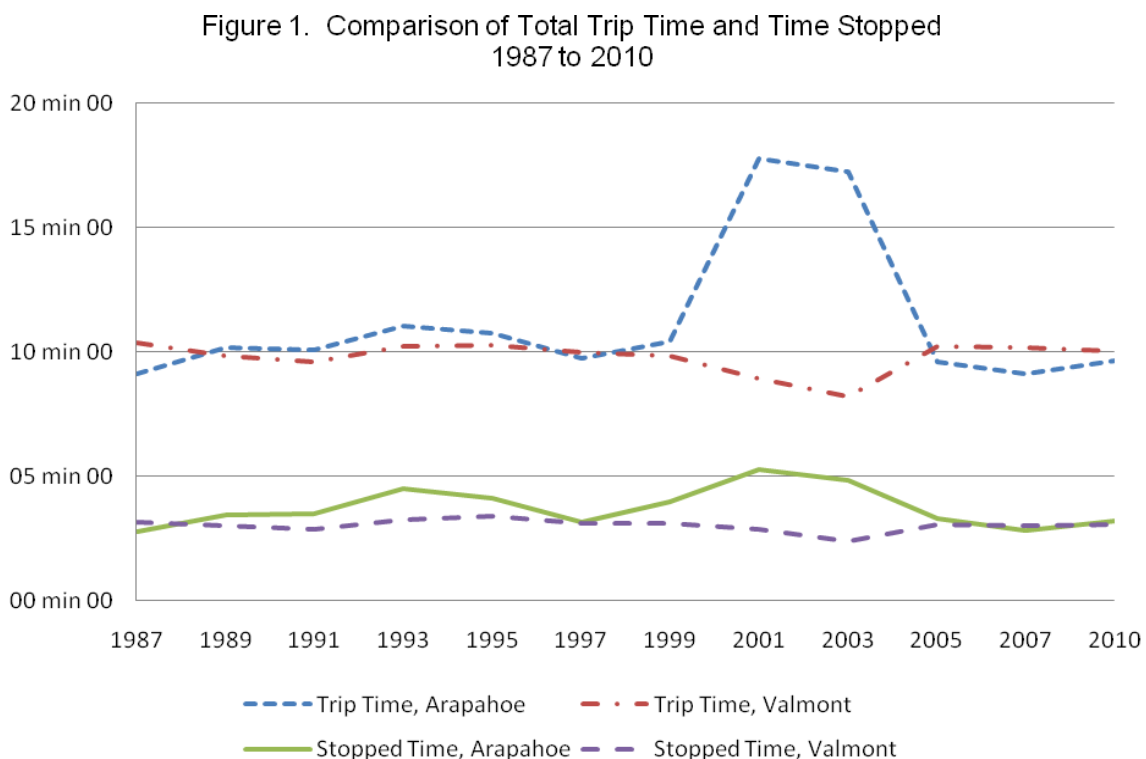
This report focuses on the results from 2010 when the east/west routes of Arapahoe Avenue, Valmont Road, and Pearl Street were studied. Appendix I contains comparison summaries of drive time information by street and direction for all years. Appendix II contains the results in detail for data collected in 2010. Refer to older reports for detailed results of past study years.

In 2004, a significant change in study methodology was made: travel time runs were aborted any time there were conditions along the corridor that were considered atypical. This may have been due to construction, lane closures, traffic accidents, or severe weather. Since these runs, which are typically much longer and experience greater delays, were removed from the data set, the average trip times since 2004 are generally shorter than previous years and direct comparisons between new data and previous study years may not be relevant. This change was made to provide a more direct evaluation of the performance of the corridor signal system by only collecting data in typical conditions.

## 2.0 Comparison of Drive Time by Street

The average trip times and the average time spent stopped on Arapahoe and Valmont from 1987 to 2010 are displayed in **Figure 1**. The Pearl corridor is not shown since there are only two years of data (2007 and 2010). On Arapahoe, total travel times remained fairly constant between 1987 and 1999 and then experienced a dramatic spike in travel time in 2001. After a slight decrease in travel time in 2003, travel times on Arapahoe dropped significantly in 2005. This decrease may be partially attributable to the change in data collection methods discussed in this report. Since 2005, travel times and stopped times have not significantly changed.

On Valmont, total trip times have remained relatively constant, with the 2010 mean total trip time within 19 seconds of the 1987 value. Stopped times have also remained relatively constant from 1987 to 2010 along Valmont (7 second differential).



The 2001 report did not provide potential reasoning for the spike that occurred in that year along Arapahoe Avenue, though the Broadway construction project may have contributed to these results. The Broadway project heavily affected the Arapahoe / Broadway intersection and would have been expected to result in increased delays there. The Broadway project did not extend to the Valmont Road corridor. Considering that the Valmont corridor did not experience the same increases as the Arapahoe corridor in 2001, the theory that the Broadway project contributed to the increased travel times on Arapahoe is plausible.

**Table One** (below) shows the mean trip times, mean time spent stopped, and the mean percent of time spent stopped by year. Differences between each study year and the first year the corridor was studied (1987 for Arapahoe and Valmont, 2007 for Pearl) are presented as well.

**Table One**  
**Comparison of Arapahoe, Valmont and Pearl**  
**Mean Total Trip Time, Mean Total Time Stopped, and Mean Percent of Time Stopped**

Street	Year	Mean Total Trip Time		Mean Total Time Stopped		Mean % of Time Stopped	
		Trip Time	Difference from First Year of Data	Time Stopped	Difference from First Year of Data	Percent of Time Stopped	Difference from First Year of Data
Arapahoe	1987	09 min 07 sec	n/a	02 min 46 sec	n/a	30%	n/a
	1989	10 min 11 sec	+ 01 min 04 sec	03 min 27 sec	+ 00 min 41 sec	33%	+ 3%
	1991	10 min 04 sec	+ 00 min 57 sec	03 min 30 sec	+ 00 min 44 sec	34%	+ 4%
	1993	11 min 03 sec	+ 01 min 56 sec	04 min 31 sec	+ 01 min 45 sec	38%	+ 8%
	1995	10 min 45 sec	+ 01 min 38 sec	04 min 08 sec	+ 01 min 22 sec	37%	+ 7%
	1997	09 min 43 sec	+ 00 min 36 sec	03 min 10 sec	+ 00 min 24 sec	33%	+ 3%
	1999	10 min 23 sec	+ 01 min 16 sec	03 min 59 sec	+ 01 min 13 sec	36%	+ 6%
	2001	17 min 47 sec	+ 08 min 40 sec	05 min 18 sec	+ 02 min 32 sec	30%	- no change
	2003	17 min 14 sec	+ 08 min 07 sec	04 min 53 sec	+ 02 min 07 sec	29%	- 1%
	2005	09 min 35 sec	+ 00 min 28 sec	03 min 18 sec	+ 00 min 32 sec	33%	+ 3%
	2007	09 min 06 sec	- 00 min 01 sec	02 min 50 sec	+ 00 min 04 sec	30%	- 0%
	2010	09 min 38 sec	+ 00 min 31 sec	03 min 13 sec	+ 00 min 27 sec	32%	+ 2%
Valmont	1987	10 min 23 sec	n/a	03 min 10 sec	n/a	30%	n/a
	1989	09 min 52 sec	- 00 min 31 sec	03 min 02 sec	- 00 min 08 sec	30%	- no change
	1991	09 min 36 sec	- 00 min 47 sec	02 min 52 sec	- 00 min 18 sec	29%	- 1%
	1993	10 min 14 sec	- 00 min 09 sec	03 min 16 sec	+ 00 min 06 sec	31%	+ 1%
	1995	10 min 16 sec	- 00 min 07 sec	03 min 24 sec	+ 00 min 14 sec	32%	+ 2%
	1997	10 min 00 sec	- 00 min 23 sec	03 min 07 sec	- 00 min 03 sec	31%	+ 1%
	1999	09 min 50 sec	- 00 min 33 sec	03 min 07 sec	- 00 min 03 sec	31%	+ 1%
	2001	08 min 57 sec	- 01 min 26 sec	02 min 51 sec	- 00 min 19 sec	31%	+ 1%
	2003	08 min 12 sec	- 02 min 11 sec	02 min 23 sec	- 00 min 47 sec	25%	- 5%
	2005	10 min 13 sec	- 00 min 10 sec	03 min 05 sec	- 00 min 05 sec	29%	- 1%
	2007	10 min 12 sec	- 00 min 11 sec	03 min 02 sec	- 00 min 08 sec	28%	- 2%
	2010	10 min 04 sec	- 00 min 19 sec	03 min 03 sec	- 00 min 07 sec	29%	- 1%
Pearl	**** No data prior to 2007 ****						
	2007	11 min 11 sec	+ n/a	02 min 49 sec	- n/a	25%	n/a
	2010	11 min 48 sec	+ 00 min 37 sec	03 min 23 sec	+ 00 min 34 sec	28%	+ 3%

**Figure 2** and **Figure 3** show the percent change in mean total trip times and stopped times since 1987. On Arapahoe, the mean total trip time on 2010 is approximately 6% higher in 2010 than 1987 while the mean total time stopped has increased by roughly 16%. On Valmont, both the total trip and stopped times were roughly 3% less in 2010 than in 1987 and have remained relatively constant over the study years.

Figure 2. Arapahoe % Change in Total Trip Times and Stopped Times from 1987

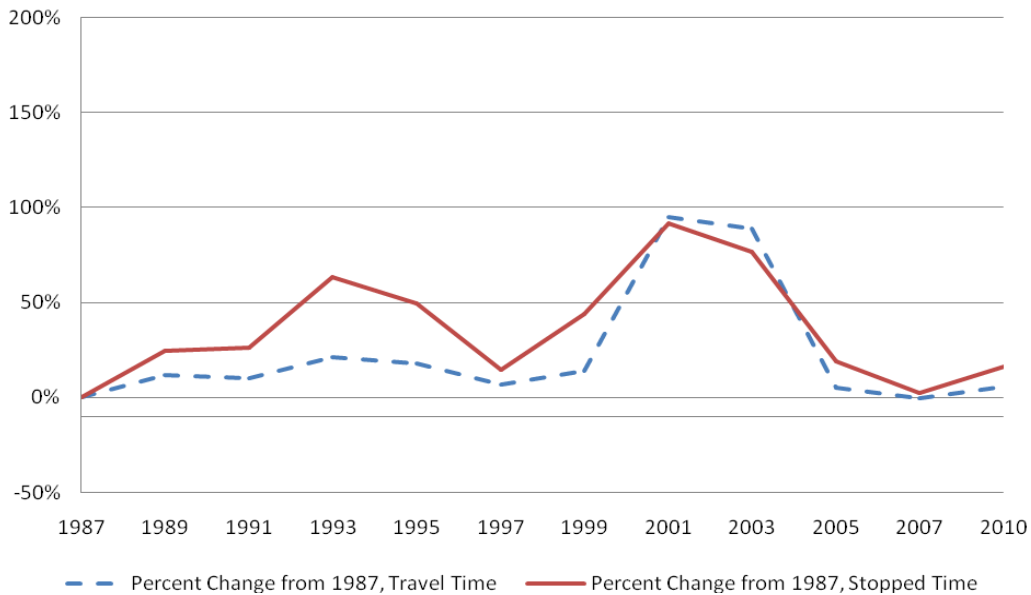
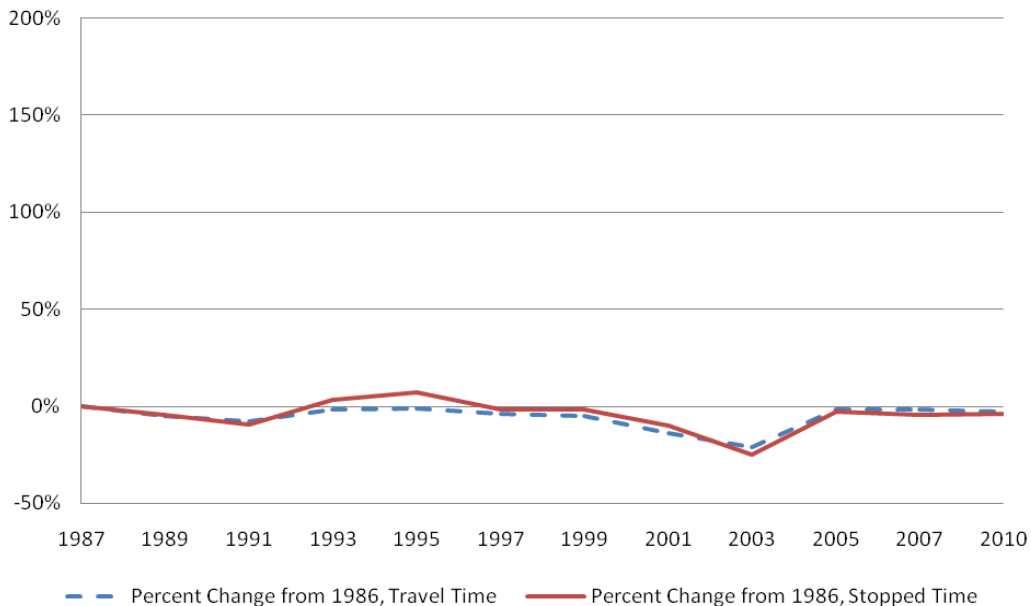


Figure 3. Valmont % Change in Mean Total Trip Times and Stopped Times from 1987



### 3.0 Comparison of Drive Times by Street and Direction

Mean trip time, time stopped, and percent of time stopped were examined for each street by direction. **Table Two** shows that, on Arapahoe, the eastbound and westbound directions are fairly balanced year-to-year with respect to total trip and total stopped times. Neither direction has shown to be predominantly faster or slower over the study years.

**Table Two**  
**Comparison of Arapahoe East and West**  
**Mean Total Trip Time, Mean Total Time Stopped, and Mean Percent of Time Stopped**

Street	Year	Mean Total Trip Time		Mean Total Time Stopped		Mean % of Time Stopped	
		Trip Time	Difference from 1987	Time Stopped	Difference from 1987	Percent of Time Stopped	Difference from 1987
Arapahoe East	1987	09 min 50 sec	n/a	03 min 00 sec	n/a	30%	n/a
	1989	10 min 18 sec	+ 00 min 28 sec	03 min 37 sec	+ 00 min 37 sec	33%	+ 3%
	1991	10 min 05 sec	+ 00 min 15 sec	03 min 35 sec	+ 00 min 35 sec	35%	+ 5%
	1993	10 min 00 sec	+ 00 min 10 sec	03 min 46 sec	+ 00 min 46 sec	38%	+ 8%
	1995	11 min 04 sec	+ 01 min 14 sec	04 min 23 sec	+ 01 min 23 sec	38%	+ 8%
	1997	09 min 49 sec	- 00 min 01 sec	03 min 28 sec	+ 00 min 28 sec	35%	+ 5%
	1999	10 min 30 sec	+ 00 min 40 sec	04 min 07 sec	+ 01 min 07 sec	36%	+ 6%
	2001	17 min 32 sec	+ 07 min 42 sec	05 min 12 sec	+ 02 min 12 sec	29%	- 1%
	2003	16 min 51 sec	+ 07 min 01 sec	04 min 57 sec	+ 01 min 57 sec	29%	- 1%
	2005	09 min 52 sec	+ 00 min 02 sec	03 min 40 sec	+ 00 min 40 sec	35%	+ 5%
	2007	09 min 19 sec	- 00 min 31 sec	03 min 05 sec	+ 00 min 05 sec	32%	+ 2%
	2010	09 min 48 sec	- 00 min 02 sec	03 min 28 sec	+ 00 min 28 sec	33%	+ 3%
Arapahoe West	1987	08 min 24 sec	n/a	02 min 34 sec	n/a	30%	n/a
	1989	10 min 04 sec	+ 01 min 40 sec	03 min 18 sec	+ 00 min 44 sec	32%	+ 2%
	1991	10 min 03 sec	+ 01 min 39 sec	03 min 22 sec	+ 00 min 48 sec	32%	+ 2%
	1993	12 min 06 sec	+ 03 min 42 sec	05 min 00 sec	+ 02 min 26 sec	38%	+ 8%
	1995	10 min 26 sec	+ 02 min 02 sec	03 min 45 sec	+ 01 min 11 sec	35%	+ 5%
	1997	09 min 36 sec	+ 01 min 12 sec	02 min 53 sec	+ 00 min 19 sec	30%	0%
	1999	10 min 18 sec	+ 01 min 54 sec	03 min 51 sec	+ 01 min 17 sec	36%	+ 6%
	2001	18 min 01 sec	+ 09 min 37 sec	05 min 25 sec	+ 02 min 51 sec	29%	- 1%
	2003	17 min 37 sec	+ 09 min 13 sec	04 min 48 sec	+ 02 min 14 sec	29%	- 1%
	2005	09 min 15 sec	+ 00 min 51 sec	02 min 53 sec	+ 00 min 19 sec	30%	0%
	2007	08 min 51 sec	+ 00 min 27 sec	02 min 33 sec	- 00 min 01 sec	28%	- 2%
	2010	09 min 28 sec	+ 01 min 04 sec	02 min 59 sec	+ 00 min 25 sec	31%	+ 1%

As shown on **Table Three** below, Valmont experienced minimal changes in eastbound and westbound total trip and stopped times between 2007 and 2010.

**Table Three**  
**Comparison of Valmont East and West**  
**Mean Total Trip Time, Mean Total Time Stopped, and Mean Percent of Time Stopped**

Street	Year	Mean Total Trip Time		Mean Total Time Stopped		Mean % of Time Stopped	
		Trip Time	Difference from 1987	Time Stopped	Difference from 1987	Percent of Time Stopped	Difference from 1987
Valmont East	1987	10 min 12 sec	n/a	02 min 31 sec	n/a	24%	n/a
	1989	09 min 54 sec	- 00 min 18 sec	02 min 58 sec	+ 00 min 27 sec	30%	+ 6%
	1991	09 min 14 sec	- 00 min 58 sec	02 min 41 sec	+ 00 min 10 sec	29%	+ 5%
	1993	10 min 03 sec	- 00 min 09 sec	03 min 02 sec	+ 00 min 31 sec	31%	+ 7%
	1995	10 min 27 sec	+ 00 min 15 sec	03 min 48 sec	+ 01 min 17 sec	35%	+ 11%
	1997	09 min 48 sec	- 00 min 24 sec	02 min 59 sec	+ 00 min 28 sec	30%	+ 6%
	1999	09 min 34 sec	- 00 min 38 sec	03 min 05 sec	+ 00 min 34 sec	32%	+ 8%
	2001	08 min 55 sec	- 01 min 17 sec	05 min 37 sec	+ 03 min 06 sec	32%	+ 8%
	2003	08 min 12 sec	- 02 min 00 sec	02 min 58 sec	+ 00 min 27 sec	31%	+ 7%
	2005	09 min 48 sec	- 00 min 24 sec	02 min 47 sec	+ 00 min 16 sec	27%	+ 3%
	2007	09 min 57 sec	- 00 min 15 sec	02 min 49 sec	+ 00 min 18 sec	27%	+ 3%
	2010	09 min 47 sec	- 00 min 25 sec	02 min 49 sec	+ 00 min 18 sec	27%	+ 3%
Valmont West	1987	10 min 34 sec	n/a	03 min 49 sec	n/a	35%	n/a
	1989	09 min 50 sec	- 00 min 44 sec	03 min 06 sec	- 00 min 43 sec	30%	- 5%
	1991	09 min 57 sec	- 00 min 37 sec	03 min 03 sec	- 00 min 46 sec	30%	- 5%
	1993	10 min 26 sec	- 00 min 08 sec	03 min 30 sec	- 00 min 19 sec	32%	- 3%
	1995	10 min 04 sec	- 00 min 30 sec	02 min 59 sec	- 00 min 50 sec	28%	- 7%
	1997	10 min 11 sec	- 00 min 23 sec	03 min 16 sec	- 00 min 33 sec	31%	- 4%
	1999	10 min 05 sec	- 00 min 29 sec	03 min 08 sec	- 00 min 41 sec	30%	- 5%
	2001	08 min 59 sec	- 01 min 35 sec	02 min 44 sec	- 01 min 05 sec	30%	- 5%
	2003	08 min 02 sec	- 02 min 32 sec	02 min 13 sec	- 01 min 36 sec	28%	- 7%
	2005	10 min 37 sec	+ 00 min 03 sec	03 min 23 sec	- 00 min 26 sec	30%	- 5%
	2007	10 min 28 sec	- 00 min 06 sec	03 min 17 sec	- 00 min 32 sec	30%	- 5%
	2010	10 min 20 sec	- 00 min 14 sec	03 min 16 sec	- 00 min 33 sec	30%	- 5%



The directional data for the Pearl corridor is summarized in **Table Four**, below. Travel times, stopped times, and percent time stopped were all higher in 2010 than in 2007 for both directions along the Pearl corridor.

**Table Four**  
**Comparison of Pearl East and West**  
**Mean Total Trip Time, Mean Total Time Stopped, and Mean Percent of Time Stopped**

Street	Year	Mean Total Trip Time		Mean Total Time Stopped		Mean % of Time Stopped	
		Trip Time	Difference from 2007	Time Stopped	Difference from 2007	Percent of Time Stopped	Difference from 2007
Pearl East		*** No Data Prior to 2007 ***					
	2007	11 min 17 sec	n/a	02 min 54 sec	n/a	26%	n/a
	2010	11 min 56 sec	+ 00 min 39 sec	03 min 23 sec	+ 00 min 29 sec	27%	+ 1%
Pearl West		*** No Data Prior to 2007 ***					
	2007	11 min 05 sec	n/a	02 min 44 sec	n/a	24%	n/a
	2010	11 min 40 sec	+ 00 min 35 sec	03 min 24 sec	+ 00 min 40 sec	29%	+ 5%

#### 4.0 “Worst” Lights

Each year, the data collected in the Drive Time study are used to determine the ten most frequently stopped-at traffic signals in a given year. These results are categorized into a “ten worst” lights list (worst lights by chance of hitting the red traffic light). Appendix II displays the complete list along with lists of the “ten best” lights.

As shown in **Table Five** below, a red light was experienced during all eastbound runs at the Pearl & 30th intersection and during all westbound runs at the Valmont & Folsom intersection. These were the “worst” lights with respect to chances of hitting a red light.

**Table Five**  
**Worst Lights 2010**

<b>Worst Lights by Chance of Hitting the Traffic Light</b>	
<b>Intersection, Direction</b>	<b>Mean Chance in 2010</b>
Pearl & 30th, East	100%
Valmont & Folsom, West	100%
Arapahoe & 9th, West	93%
Pearl & 30th, West	93%
Pearl & 15th, West	93%
Pearl & Folsom, West	80%
Balsam & Broadway, East	80%
Arapahoe & 28th, East	73%
Arapahoe & 30th, East	73%
Arapahoe & Broadway, West	73%
(6 others)	73%

## **5.0 Methodology**

A similar methodology is used each year for the drive time studies, although the routes alternate from north/south to east/west. In 2004, a new data collection methodology was adopted which utilizes a hand-held GPS device, a laptop computer, and Tru-Traffic software (formerly known as TS-PP Draft) to record the travel time and delay data. This replaced the manual stop-watch method previously used by City staff from 1986 to 2003. Both the old and new methods involve one person who operates the vehicle and performs the data collection simultaneously. In contrast to the old method, however, the new GPS/laptop method does not require any effort on the part of the driver once the study has begun.

GPS coordinates for each traffic signal were mapped into the Tru-Traffic software prior to beginning travel time runs for the new year. Since there is an inherent margin of error in the GPS locations, several mapping runs were performed along each of the corridors to provide the most accurate locations possible. Even so, there is generally a margin of error of 15 feet in all calculations. However, over many runs, the significance of these errors is diminished.

In 2010, 30 total runs were performed on each of the three study corridors per year, with one corridor being studied in both directions during a signal outing (15 runs per direction per corridor per year). Trips are made at 7:30 am, 12:00 noon, or 5:00pm to correspond with peak traffic periods. During an outing, a trip is made in one direction and then back in the opposite direction on the same corridor. Prior to 2006, 60 runs were performed on each corridor per year. Standard deviation calculations indicate that the reduced number of runs has not affected annual result tabulations.

Previous to 2004, it is believed that travel time runs were collected on each corridor regardless of roadway construction, traffic accidents, severe weather, and all other factors. Travel time runs were not aborted under any of these conditions. In 2004, this practice was changed. Now, travel time runs are aborted if there are any uncommon conditions that would cause delays typically not experienced along the corridor. This change was made to provide a more useful evaluation of the corridor signal system under the conditions it is designed to operate. Since lane closures, construction, accidents, etc. are special circumstances which significantly affect traffic flow, speeds, and delays, incorporating these conditions into the data set disables the ability to effectively evaluate corridor timing plans.

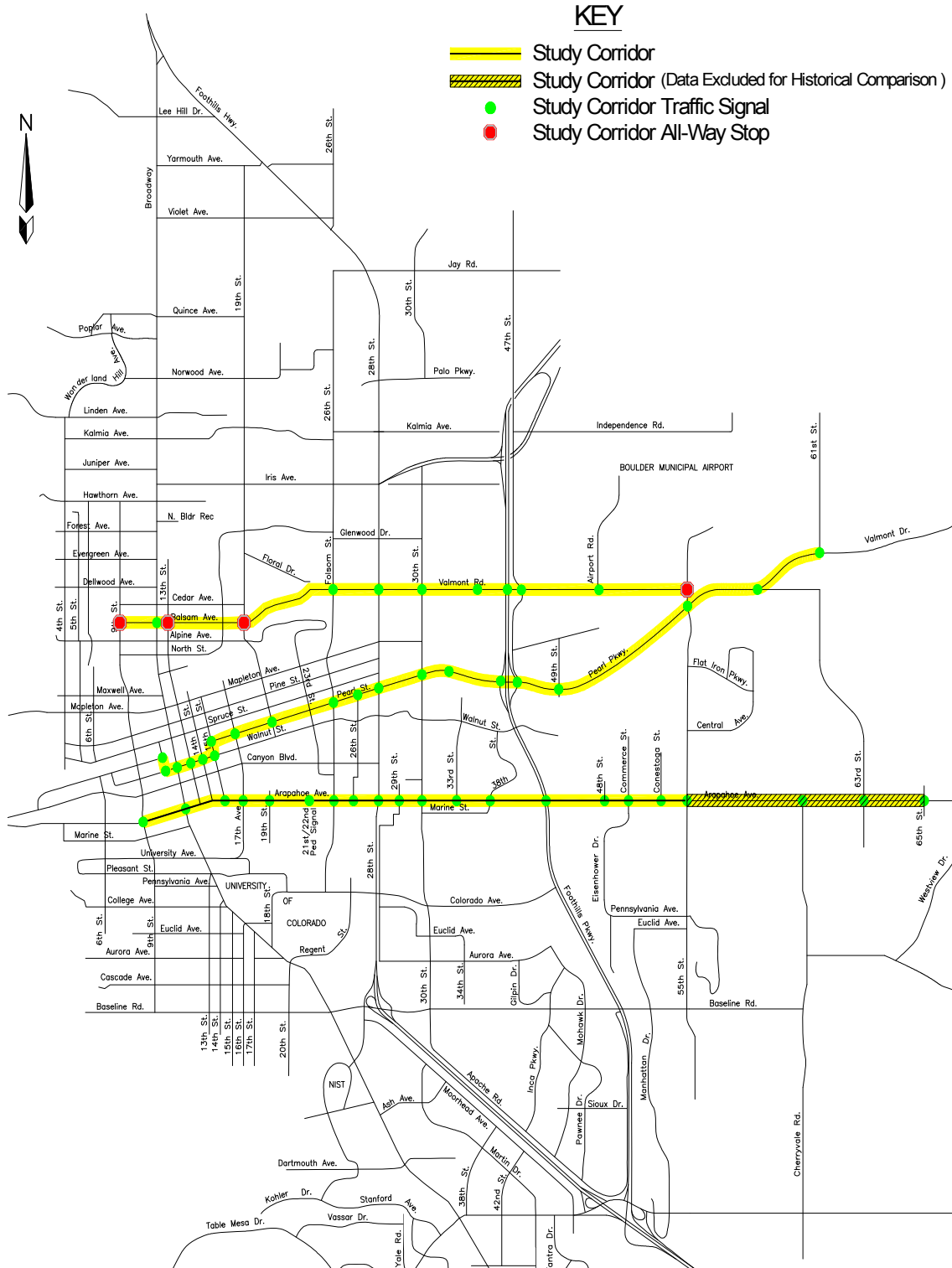
### **Routes**

The east-west streets of Arapahoe and Valmont were historically studied in odd years (1987, 1989, 1991, 1993, 1995, 1997, 1999, 2001, 2003, 2005, and 2007). Due to recent budgetary considerations, the east-west streets were not studied in 2009, but were in 2010. The endpoints of the timed portion of Arapahoe are 9<sup>th</sup> Street on the west to 65<sup>th</sup> Street on the east. The section from 55<sup>th</sup> Street to 65<sup>th</sup> Street was removed from any historical comparisons in this report since the Arapahoe corridor studies did not include the Cherryvale, 63rd, and 65th Street intersections prior to 2005.

The timed segment of Valmont extends from 9<sup>th</sup> Street on the west to 55<sup>th</sup> Street on the east. The timed segment of the Pearl corridor extends from 11<sup>th</sup> Street on the west to

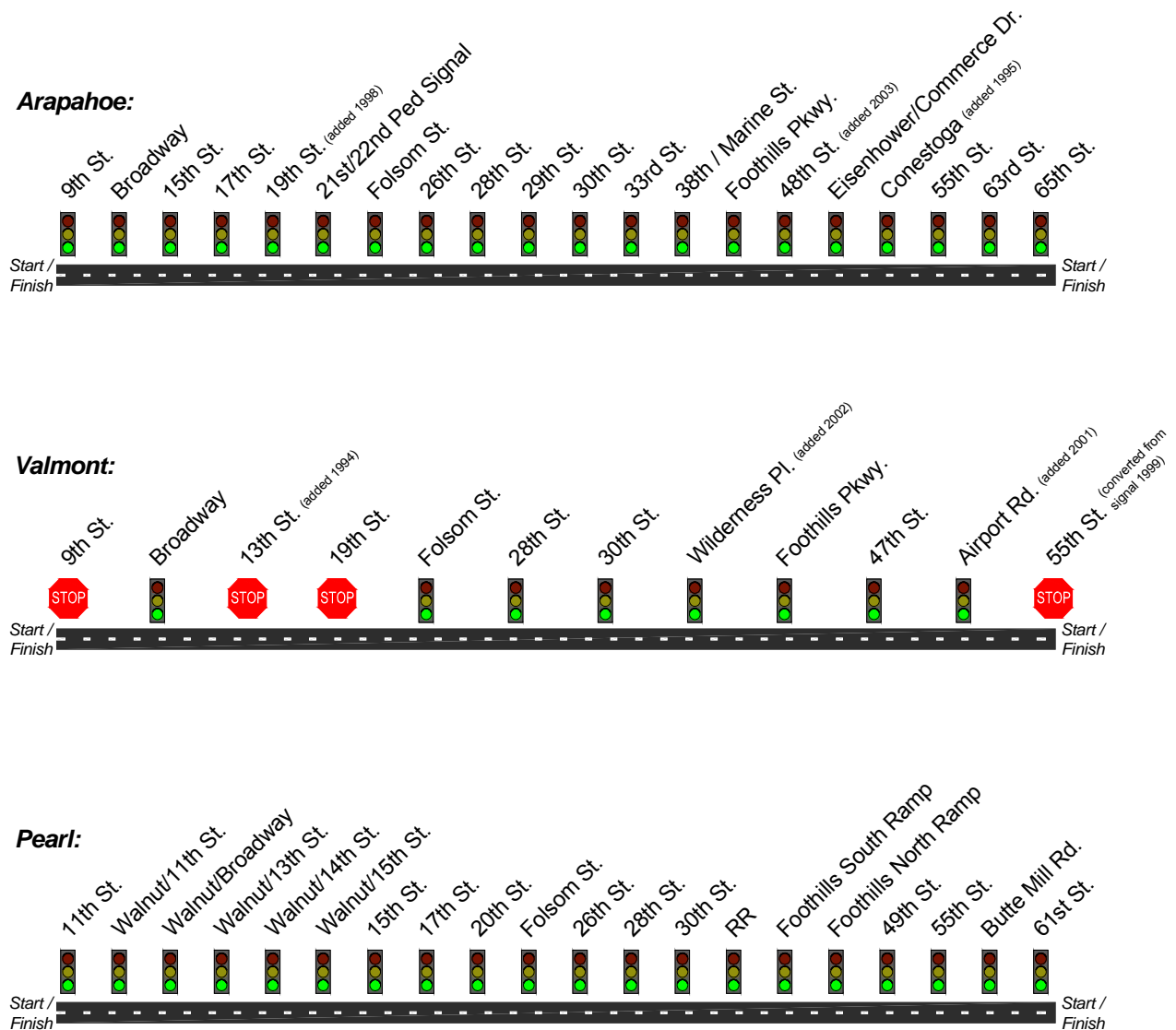
61<sup>st</sup> Street on the east. Figure 4 provides a map showing the Arapahoe, Valmont, and Pearl study corridor limits and signalized or all-way stop-controlled intersections.

**Figure 4. Arapahoe, Valmont, and Pearl Corridor Study Limits**



The north-south streets (Broadway, 28<sup>th</sup> Street, and Foothills Parkway) are typically studied in the even years (1986, 1988, 1990, 1992, 1994, 1996, 1998, 2002, 2004, 2006, and 2008). Due to recent budgetary considerations, the annual schedule has deviated from this routine. The north-south corridors are anticipated to be studied again in 2012.

### Drive Time Map for East-West Routes



*Note:* Historical comparisons in this report were compiled with the Arapahoe corridor terminating at 55<sup>th</sup> Street on the east end to be consistent with previous years. However, since 2005, travel time runs have extended east to 65<sup>th</sup> St. travel time data for the 55<sup>th</sup> St. to 65<sup>th</sup> St. nodes is included in the Appendix.

## **Weighting**

In 1992, 1993, and 2004 not all the scheduled drive time trips for the year were completed. In 1992 there was a major construction project on Broadway which if included in the study would unfairly bias the results for 1992. In 1993, misunderstandings with research assistants resulted in missed trips. In 2004, budget constraints resulted in no data collected for the first four months of the year. Thus, to compensate for the missing data, the results were weighted statistically.

The data were weighted by street driven, direction of trip, and start time so that there were an equal number of trips in each direction on each street for each time of day across all the years. This counterbalances the effect these variables may have on the average trip time.

**Appendix I: Drive Time Comparison for All East-West Years**

Table I-1	Comparison of Drive Time by Street across All Years
Table I-2	Comparison of Drive Time by Street and Direction across All Years
Table I-3	Mean Time Stopped at Four Boulder Intersections
Table I-4	Probability of Being Stopped at Four Boulder Intersections

**Table I-1**  
**Comparison of Drive Time by Street Across all Years**

Street	Year	Distance	Mean Total Trip Time	Mean Speed (mph)	Total Stops Possible	Mean Number of Stops	Mean Total Time Stopped	Mean Percent of Time Stopped	Number of Trips
Arapahoe	1987	3.1 miles	09 min 07 sec	20.1	13	5.8	02 min 46 sec	30%	42
	1989	3.1 miles	10 min 11 sec	18.2	13	5.6	03 min 27 sec	33%	48
	1991	3.1 miles	10 min 04 sec	18.3	14	5.9	03 min 30 sec	34%	59
	1993	3.1 miles	11 min 03 sec	17.0	14	6.0	04 min 31 sec	38%	26
	1995	3.1 miles	10 min 45 sec	17.3	15	6.3	04 min 08 sec	37%	61
	1997	3.1 miles	09 min 43 sec	18.9	15	5.2	03 min 10 sec	33%	59
	1999	3.1 miles	10 min 23 sec	18.1	16	4.8	03 min 59 sec	36%	58
	2001	3.1 miles	17 min 47 sec	10.4	16	8.8	05 min 18 sec	30%	60
	2003	3.1 miles	17 min 14 sec	10.5	17	8.3	data not avail.	29%	60
	2005	3.1 miles	09 min 35 sec	19.4	17	5.1	03 min 18 sec	33%	49
	2007	3.1 miles	09 min 06 sec	20.2	17	4.6	02 min 50 sec	30%	31
	2010	3.1 miles	09 min 38 sec	19.9	17	5.0	03 min 13 sec	32%	30
Valmont	1987	3.2 miles	10 min 23 sec	18.9	8	6.0	03 min 10 sec	30%	42
	1989	3.2 miles	09 min 52 sec	19.9	8	5.5	03 min 02 sec	30%	48
	1991	3.2 miles	09 min 36 sec	20.3	8	5.3	02 min 52 sec	29%	59
	1993	3.2 miles	10 min 14 sec	19.2	8	5.6	03 min 16 sec	31%	22
	1995	3.2 miles	10 min 16 sec	19.1	9	6.7	03 min 24 sec	32%	62
	1997	3.2 miles	10 min 00 sec	19.5	9	6.0	03 min 07 sec	31%	60
	1999	3.2 miles	09 min 50 sec	19.9	9	5.5	03 min 07 sec	31%	58
	2001	3.2 miles	08 min 57 sec	21.8	10 / 11	5.0	02 min 51 sec	31%	60
	2003	3.2 miles	08 min 12 sec	23.5	11	4.7	02 min 23 sec	25%	60
	2005	3.2 miles	10 min 13 sec	19.5	11	6.8	03 min 05 sec	29%	52
	2007	3.2 miles	10 min 12 sec	21.6	11	6.6	03 min 02 sec	28%	31
	2010	3.2 miles	10 min 04 sec	22.2	11	6.3	03 min 03 sec	29%	30
Pearl			**** No data prior to 2007 ****						
	2007	4.1 miles	11 min 11 sec	23.8	19 / 16	5.9	02 min 49 sec	25%	31
	2010	4.1 miles	11 min 48 sec	23.5	19 / 16	5.7	03 min 23 sec	28%	30



**Table I-2a**  
**Comparison of Drive Time by Street and Direction Across all Years**

Street	Year	Distance	Mean Total Trip Time	Mean Speed (mph)	Total Stops Possible at Signals	Mean Number of Stops	Mean Total Time Stopped	Mean Percent of Time Stopped	Number of Trips
Arapahoe East	1987	3.1 miles	09 min 50 sec	18.5	13	6.1	03 min 00 sec	30%	21
	1989	3.1 miles	10 min 18 sec	18.2	13	5.8	03 min 37 sec	33%	27
	1991	3.1 miles	10 min 05 sec	18.1	14	6.3	03 min 35 sec	35%	28
	1993	3.1 miles	10 min 00 sec	18.1	14	6.2	03 min 46 sec	38%	15
	1995	3.1 miles	11 min 04 sec	16.8	15	6.8	04 min 23 sec	38%	28
	1997	3.1 miles	09 min 49 sec	18.6	15	5.5	03 min 28 sec	35%	34
	1999	3.1 miles	10 min 30 sec	18.0	16	4.6	04 min 07 sec	36%	29
	2001	3.1 miles	17 min 32 sec	10.6	16	8.9	05 min 12 sec	29%	30
	2003	3.1 miles	16 min 51 sec	10.7	17	8.2	04 min 57 sec	29%	30
	2005	3.1 miles	09 min 52 sec	18.8	17	5.4	03 min 40 sec	35%	26
	2007	3.1 miles	09 min 19 sec	19.7	17	4.4	03 min 05 sec	32%	16
	2010	3.1 miles	09 min 48 sec	20.0	17	4.7	03 min 28 sec	33%	15
Arapahoe West	1987	3.1 miles	08 min 24 sec	21.8	13	5.6	02 min 34 sec	30%	22
	1989	3.1 miles	10 min 04 sec	18.2	13	5.4	03 min 18 sec	32%	21
	1991	3.1 miles	10 min 03 sec	18.4	14	5.5	03 min 22 sec	32%	31
	1993	3.1 miles	12 min 06 sec	16.0	14	5.8	05 min 00 sec	38%	9
	1995	3.1 miles	10 min 26 sec	17.9	15	5.8	03 min 45 sec	35%	33
	1997	3.1 miles	09 min 36 sec	19.2	15	4.9	02 min 53 sec	30%	25
	1999	3.1 miles	10 min 18 sec	18.1	16	5.1	03 min 51 sec	36%	29
	2001	3.1 miles	18 min 01 sec	10.1	16	8.7	05 min 25 sec	29%	30
	2003	3.1 miles	17 min 37 sec	10.4	17	8.5	04 min 48 sec	29%	30
	2005	3.1 miles	09 min 15 sec	20.0	17	4.8	02 min 53 sec	30%	23
	2007	3.1 miles	08 min 51 sec	20.7	17	4.9	02 min 33 sec	28%	15
	2010	3.1 miles	09 min 28 sec	19.9	17	5.2	02 min 59 sec	31%	15

**Table I-2b**  
**Comparison of Drive Time by Street and Direction Across all Years**

Street	Year	Distance	Mean Total Trip Time	Mean Speed (mph)	Total Stops Possible	Mean Number of Stops	Mean Total Time Stopped	Mean Percent of Time Stopped	Number of Trips
Valmont East	1987	3.2 miles	10 min 12 sec	19.0	8	5.1	02 min 31 sec	24%	22
	1989	3.2 miles	09 min 54 sec	19.7	8	5.5	02 min 58 sec	30%	21
	1991	3.2 miles	09 min 14 sec	20.9	8	5.2	02 min 41 sec	29%	31
	1993	3.2 miles	10 min 03 sec	19.3	8	5.7	03 min 02 sec	31%	8
	1995	3.2 miles	10 min 27 sec	18.6	9	7.0	03 min 48 sec	35%	33
	1997	3.2 miles	09 min 48 sec	19.8	9	6.2	02 min 59 sec	30%	24
	1999	3.2 miles	09 min 34 sec	20.4	9	5.3	03 min 05 sec	32%	28
	2001	3.2 miles	08 min 55 sec	21.8	10	5.0	05 min 37 sec	32%	30
	2003	3.2 miles	08 min 12 sec	23.4	11	4.1	02 min 58 sec	31%	30
	2005	3.2 miles	09 min 48 sec	20.2	11	6.5	02 min 47 sec	27%	26
	2007	3.2 miles	09 min 57 sec	22.2	11	6.4	02 min 49 sec	27%	16
	2010	3.2 miles	09 min 47 sec	22.6	11	6.5	02 min 49 sec	27%	15
Valmont West	1987	3.2 miles	10 min 34 sec	18.9	8	6.9	03 min 49 sec	35%	21
	1989	3.2 miles	09 min 50 sec	20.0	8	5.6	03 min 06 sec	30%	27
	1991	3.2 miles	09 min 57 sec	19.6	8	5.3	03 min 03 sec	30%	28
	1993	3.2 miles	10 min 26 sec	19.0	8	5.6	03 min 30 sec	32%	14
	1995	3.2 miles	10 min 04 sec	19.5	9	6.4	02 min 59 sec	28%	29
	1997	3.2 miles	10 min 11 sec	19.2	9	5.8	03 min 16 sec	31%	36
	1999	3.2 miles	10 min 05 sec	19.4	9	5.6	03 min 08 sec	30%	30
	2001	3.2 miles	08 min 59 sec	21.8	10 / 11	4.9	02 min 44 sec	30%	30
	2003	3.2 miles	08 min 02 sec	23.8	11	4.3	02 min 13 sec	28%	30
	2005	3.2 miles	10 min 37 sec	18.8	11	7.0	03 min 23 sec	30%	26
	2007	3.2 miles	10 min 28 sec	21.0	11	6.9	03 min 17 sec	30%	15
	2010	3.2 miles	10 min 20 sec	21.7	11	6.1	03 min 16 sec	30%	15

**Table I-2c**  
**Comparison of Drive Time by Street and Direction Across all Years**

Street	Year	Distance	Mean Total Trip Time	Mean Speed (mph)	Total Stops Possible	Mean Number of Stops	Mean Total Time Stopped	Mean Percent of Time Stopped	Number of Trips
Pearl East			**** No data prior to 2007 ****						
	2007	4.1 miles	11 min 17 sec	24.2	19	5.3	02 min 54 sec	25%	16
	2010	4.1 miles	11 min 56 sec	23.7	19	5.2	03 min 23 sec	27%	15
Pearl West			**** No data prior to 2007 ****						
	2007	4.0 miles	11 min 05 sec	23.3	16	6.6	02 min 44 sec	24%	15
	2010	4.0 miles	11 min 05 sec	23.3	16	6.3	03 min 24 sec	29%	15

**Table I-3**  
**Mean Time Stopped at Four Boulder Intersections**

Intersection	Direction	Mean Time Spent Stopped at Intersection (seconds)																									
		1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2010	Mean	
Broadway and Arapahoe	East		45		41		45		34		41		40		75		37		35		54		26		47	43	
	West		44		38		46		46		36		36		61		37		34		35		39		36	41	
	North	7		27		35		56		22		32		47		54		74		38		29		52		39	
	South	31		20		21		18		34		43		42		55		69		41		45		35		38	
Broadway and Balsam	East		28		23		31		25		29		30		31		33		32		39		42		37	32	
	West		30		30		32		30		29		36		34		30		31		41		36		36	33	
	North	12		22		28		26		27		28		29		31		51		33		19		0		26	
	South	13		11		31		26		28		22		28		29		64		23		17		29		27	
28th Street and Arapahoe	East		38		54		43		51		39		52		66		46		43		58		62		58	51	
	West		61		64		62		66		48		48		64		49		47		40		49		53	54	
	North	27		27		37		38		50		38		52		51		65		50		84		70		49	
	South	38		36		65		71		56		58		61		61		59		29		50		38		52	
28th Street and Valmont	East		39		50		40		30		41		34		59		39		37		48		79		38	45	
	West		41		54		39		64		42		47		56		41		40		55		74		60	51	
	North	20		21		37		47		43		43		72		71		56		38		47		33		44	
	South	26		26		37		39		34		36		47		47		53		37		44		39		39	

**Table I-4**  
**Probability of Being Stopped at Four Boulder Intersections**

Intersection	Direction	Chance of Stopping at the Intersection (percent)																									
		1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2010	Mean	
Broadway and Arapahoe	East		90%		81%		82%		87%		82%		97%		62%		45%		43%		76%		50%		53%	71%	
	West		77%		86%		77%		56%		70%		88%		93%		42%		41%		67%		93%		73%	72%	
	North	15%		42%		13%		54%		27%		59%		61%		66%		77%		80%		80%		67%		53%	
	South	26%		36%		37%		47%		33%		60%		61%		88%		76%		15%		23%		20%		44%	
Broadway and Balsam	East		77%		76%		65%		38%		76%		79%		68%		28%		27%		85%		63%		80%	64%	
	West		81%		93%		79%		71%		83%		75%		80%		28%		26%		88%		93%		67%	72%	
	North	26%		26%		33%		36%		33%		31%		30%		36%		27%		33%		40%		0%		29%	
	South	41%		9%		41%		42%		56%		50%		50%		28%		23%		62%		38%		40%		40%	
28th Street and Arapahoe	East		33%		52%		68%		73%		71%		68%		69%		43%		41%		72%		88%		73%	63%	
	West		18%		48%		58%		78%		64%		48%		38%		43%		40%		50%		53%		53%	49%	
	North	75%		61%		81%		75%		65%		71%		77%		86%		70%		33%		80%		40%		68%	
	South	93%		82%		67%		67%		77%		75%		77%		67%		56%		53%		63%		47%		69%	
28th Street and Valmont	East		68%		81%		84%		100%		88%		83%		71%		25%		24%		54%		50%		47%	65%	
	West		90%		81%		82%		64%		72%		75%		57%		32%		31%		65%		53%		60%	64%	
	North	61%		22%		44%		40%		54%		58%		65%		81%		86%		40%		55%		60%		56%	
	South	89%		71%		67%		63%		74%		50%		54%		86%		83%		13%		19%		13%		57%	

## **Appendix II: Drive Time 2010**

Table II.1	Time Traveled on Arapahoe, Valmont, and Pearl 2010
Table II.2	Stops on Arapahoe, Valmont, and Pearl 2010
Table II.3	Time Stopped on Arapahoe, Valmont, and Pearl 2010
Table II.4	Drive Time by Time of Day, 2010
Table II.5	Ten Worst Intersections by Chances of Being Stopped, 2010
Table II.6	Ten Worst Intersections by Length of Stop, 2010
Table II.7	Ten Best Intersections by Chances of Being Stopped, 2010
Table II.8	Ten Best Intersections by Length of Stop, 2010
Table II.9	Drive Time and Speed between Intersections, Arapahoe 2010
Table II.10	Drive Time and Speed between Intersections, Valmont 2010
Table II.11	Drive Time and Speed between Intersections, Pearl 2010

<b>Table II.1: Time Traveled on Arapahoe, Valmont, and Pearl 2010</b>					
	<b>Mean Total Trip Time</b>	<b>Shortest Trip Time</b>	<b>Longest Trip Time</b>	<b>Trip Distance (miles)</b>	<b>Average Speed (mph)</b>
<b>Arapahoe</b>					
<b>East</b>	12 min 17 sec	08 min 04 sec	18 min 14 sec	4.4	27.6
<b>West</b>	11 min 55 sec	09 min 24 sec	14 min 33 sec	4.4	27.3
<b>Valmont</b>					
<b>East</b>	09 min 47 sec	07 min 47 sec	14 min 14 sec	3.2	22.6
<b>West</b>	10 min 20 sec	07 min 58 sec	13 min 18 sec	3.2	21.7
<b>Pearl</b>					
<b>East</b>	11 min 56 sec	09 min 17 sec	17 min 24 sec	4.1	23.7
<b>West</b>	11 min 40 sec	09 min 44 sec	13 min 31 sec	4.1	23.3

Note: Above data for Arapahoe corridor includes 63rd and 65th St. intersections whereas Table One in report text does not extend east of 55th, for historical comparison purposes.

Table II.2: Stops on Arapahoe, Valmont, and Pearl 2010						
	Total Stops Possible	Mean Number of Stops	Fewest Stops	Most Stops	Mean Chance of Stopping	Number of Trips
<b>Arapahoe</b>						
East	19	4.4	0	7	26%	16
West	19	4.9	2	9	29%	15
<b>Valmont</b>						
East	11	6.4	4	9	31%	16
West	11	6.9	3	10	35%	15
<b>Pearl</b>						
East	19	5.2	2	11	27%	15
West	16	6.3	4	9	39%	15

Note: Above data for Arapahoe corridor includes 63rd and 65th St. intersections whereas Table One in report text does not extend east of 55th, for historical comparison purposes.

Table II.3: Time Stopped on Arapahoe, Valmont, and Pearl 2010				
	Mean Percent of Time Stopped	Mean Total Time Stopped	Shortest Time Stopped	Longest Time Stopped
<b>Arapahoe</b> <b>East</b> <b>West</b>	29% 27%	03 min 51 sec 03 min 18 sec	00 min 40 sec 01 min 20 sec	08 min 43 sec 05 min 23 sec
<b>Valmont</b> <b>East</b> <b>West</b>	27% 30%	02 min 49 sec 03 min 16 sec	00 min 38 sec 01 min 01 sec	07 min 38 sec 06 min 37 sec
<b>Pearl</b> <b>East</b> <b>West</b>	27% 29%	03 min 23 sec 03 min 24 sec	01 min 21 sec 01 min 54 sec	08 min 20 sec 05 min 12 sec

Note: Above data for Arapahoe corridor includes 63rd and 65th St. intersections whereas Table One in report text does not extend east of 55th, for historical comparison purposes.

<b>Table II.4: Drive Time by Time of Day, 2010</b>			
	<b>Mean Total Trip Time</b>	<b>Mean Number of Stops</b>	<b>Mean Time Stopped</b>
<b>Arapahoe East</b> 7:30 AM 12:00 Noon 5:00 PM	09 min 35 sec 11 min 52 sec 15 min 24 sec	3.4 6.0 8.8	02 min 00 sec 03 min 16 sec 06 min 16 sec
<b>Arapahoe West</b> 7:30 AM 12:00 Noon 5:00 PM	11 min 36 sec 11 min 23 sec 12 min 47 sec	5.0 6.2 7.8	03 min 12 sec 02 min 37 sec 04 min 03 sec
<b>Valmont East</b> 7:30 AM 12:00 Noon 5:00 PM	09 min 12 sec 08 min 52 sec 11 min 18 sec	5.4 6.4 7.6	02 min 11 sec 01 min 57 sec 04 min 18 sec
<b>Valmont West</b> 7:30 AM 12:00 Noon 5:00 PM	08 min 50 sec 10 min 22 sec 11 min 48 sec	4.6 6.6 7.2	01 min 43 sec 03 min 24 sec 04 min 41 sec
<b>Pearl East</b> 7:30 AM 12:00 Noon 5:00 PM	10 min 21 sec 12 min 10 sec 11 min 08 sec	3.2 6.8 5.4	02 min 18 sec 03 min 37 sec 02 min 40 sec
<b>Pearl West</b> 7:30 AM 12:00 Noon 5:00 PM	10 min 18 sec 11 min 22 sec 14 min 08 sec	3.6 5.4 6.6	01 min 52 sec 02 min 51 sec 05 min 26 sec

Note: Above data for Arapahoe corridor includes 63rd and 65th St. intersections whereas Table One in report text does not extend east of 55th, for historical comparison purposes.



<b>Table II.5: Ten Worst Intersections by Chances of Being Stopped, 2010</b>		
<b>Intersection</b>	<b>Direction</b>	<b>Chances of Being Stopped</b>
Pearl & 30th Street	East	100%
Valmont & Folsom	West	100%
Arapahoe & 9th Street	West	93%
Pearl & 30th Street	West	93%
Pearl & 15th Street	West	93%
Pearl & Folsom Street	West	80%
Valmont & Broadway	East	80%
Arapahoe & 28th Street	East	73%
Arapahoe & 30th Street	East	73%
7 others (tied)	---	73%

Note: List above does not include all-way stop intersections.

**Table II.6a: Ten Worst Intersections by Length of Stop, 2010\***

<b>Intersection</b>	<b>Direction</b>	<b>Mean Length of Stop</b>
Arapahoe & 63rd Street	East	01 min 15 sec
Pearl & 30th Street	East	01 min 14 sec
Pearl & Walnut/14th	East	01 min 09 sec
Valmont & 28th	West	01 min 00 sec
Arapahoe & 28th Street	East	00 min 58 sec
Pearl & 28th Street	East	00 min 57 sec
Arapahoe & Folsom	West	00 min 55 sec
Arapahoe & Folsom	East	00 min 55 sec
Arapahoe & Foothills Pkwy	East	00 min 54 sec
3 Intersections (tied)	---	00 min 53 sec

**Table II.6b: Ten Worst Intersections by Length of Stop, 2010\*\***

<b>Intersection</b>	<b>Direction</b>	<b>Mean Length of Stop</b>
Pearl & 30th Street	East	01 min 14 sec
Pearl & 30th Street	West	00 min 45 sec
Arapahoe & 28th Street	East	00 min 43 sec
Pearl & 28th Street	West	00 min 39 sec
Arapahoe & 9th Street	West	00 min 38 sec
Valmont & Foothills	West	00 min 38 sec
Valmont & 28th	West	00 min 36 sec
Pearl & 15th Street	West	00 min 36 sec
Valmont & Folsom	West	00 min 36 sec
Arapahoe & Folsom	East	00 min 33 sec

\* Table II.6a calculations include stopped time only for runs where a stop at this intersection occurred.

\*\* Table II.6b includes ALL runs in averaged stopped times, including runs where no stop occurred (thus 0:00 stopped time included in mean calculation)

**Table II.7: Ten Best Intersections by Chances of Being Stopped, 2010**

<b>Intersection</b>	<b>Direction</b>	<b>Chances of Being Stopped</b>
Arapahoe & 29th Street	East	0%
Arapahoe & 48th Street	East	0%
Arapahoe & Eisenhower	East	0%
Arapahoe & Conestoga	West	0%
Arapahoe & 38th	West	0%
Arapahoe & 33rd	West	0%
Arapahoe & 26th	West	0%
Pearl & Walnut/15th	East	0%
Pearl & 26th	East and West	0%
Pearl & Foothills (SB Ramp)	East and West	0%
6 others (tied)	---	0%

**Table II.8: Ten Best Intersections by Length of Stop, 2010**

<b>Intersection</b>	<b>Direction</b>	<b>Mean Length of Stop</b>
Arapahoe & 26th	East & West	00 min 00 sec
Pearl & 26th	East & West	00 min 00 sec
Pearl & Foothills (SB Ramp)	East & West	00 min 00 sec
Arapahoe & 29th	East	00 min 00 sec
Arapahoe & 48th	East	00 min 00 sec
Pearl & Foothills (NB Ramp)	East	00 min 00 sec
Pearl & Spruce/13th	West	00 min 00 sec
Spruce & Broadway	West	00 min 00 sec
Valmont & 47th	East	00 min 00 sec
Valmont & Wilderness	West	00 min 00 sec
8 others (tied)	---	00 min 00 sec

**Table II.9: Drive Time and Speed Between Intersections, Arapahoe 2010**

Street	Intersection	Mean Speed From Previous Intersections (mph)	Mean Time from Previous Intersection
<b>Arapahoe East</b>	9th Street	n/a	n/a
	Broadway Street	18.9	01 min 03 sec
	15th Street	22.6	00 min 34 sec
	17th Street	22.8	00 min 22 sec
	19th Street	22.3	00 min 27 sec
	Naropa Ped Crossing	23.1	00 min 31 sec
	Folsom Street	17.5	01 min 04 sec
	26th Street	30.7	00 min 14 sec
	28th Street	13.1	00 min 59 sec
	29th Street	30.5	00 min 14 sec
	30th Street	14.8	00 min 49 sec
	33rd Street	31.4	00 min 24 sec
	38th Street	36.1	00 min 24 sec
	Foothills Parkway	22.3	01 min 04 sec
	48th Street	35.7	00 min 31 sec
	Commerce Street	39.0	00 min 14 sec
	Conestoga Street	39.4	00 min 21 sec
	55th Street	27.0	00 min 37 sec
	Cherryvale	39.6	00 min 37 sec
	63rd	32.7	00 min 37 sec
	65th	33.5	00 min 37 sec
<b>Arapahoe West</b>	65th Street	n/a	n/a
	63rd Street	30.5	00 min 42 sec
	Cherryvale	37.6	00 min 32 sec
	55th Street	34.0	01 min 13 sec
	Conestoga Street	34.8	00 min 16 sec
	Commerce Street	36.6	00 min 23 sec
	48th Street	34.1	00 min 21 sec
	Foothills Parkway	30.8	00 min 42 sec
	38th Street	35.8	00 min 28 sec
	33rd Street	35.7	00 min 22 sec
	30th Street	22.7	00 min 48 sec
	29th Street	29.6	00 min 16 sec
	28th Street	16.5	00 min 46 sec
	26th Street	29.3	00 min 15 sec
	Folsom Street	20.5	00 min 40 sec
	Naropa Ped Crossing	21.6	00 min 38 sec
	19th Street	24.3	00 min 26 sec
	17th Street	21.8	00 min 27 sec
	15th Street	20.0	00 min 24 sec
	Broadway Street	15.6	00 min 59 sec
	9th Street	14.3	01 min 17 sec

**Table II.10: Drive Time and Speed Between Intersections, Valmont 2010**

<b>Street</b>	<b>Intersection</b>	<b>Mean Speed From Previous Intersections (mph)</b>	<b>Mean Time from Previous Intersection</b>
<b>Valmont East</b>	9th Street	n/a	n/a
	Broadway Street	12.9	01 min 01 sec
	13th Street	14.2	00 min 26 sec
	19th Street	20.1	01 min 22 sec
	Folsom Street	18.7	01 min 53 sec
	28th Street	23.6	00 min 50 sec
	30th Street	18.7	00 min 56 sec
	Wilderness Place	28.6	00 min 43 sec
	Foothills Parkway	16.6	00 min 40 sec
	47th Street	29.0	00 min 12 sec
	Airport Road	34.9	00 min 47 sec
	55th Street	31.7	00 min 57 sec
<b>Valmont West</b>	55th Street	n/a	n/a
	Airport Road	33.0	00 min 54 sec
	47th Street	34.5	00 min 47 sec
	Foothills Parkway	12.0	00 min 52 sec
	Wilderness Place	31.3	00 min 17 sec
	30th Street	24.4	01 min 01 sec
	28th Street	19.1	01 min 05 sec
	Folsom Street	13.4	01 min 11 sec
	19th Street	20.1	01 min 42 sec
	13th Street	20.9	01 min 10 sec
	Broadway Street	11.7	00 min 41 sec
	9th Street	17.9	00 min 40 sec

**Table II.11: Drive Time and Speed Between Intersections, Pearl 2010**

<b>Street</b>	<b>Intersection</b>	<b>Mean Speed From Previous Intersections (mph)</b>	<b>Mean Time from Previous Intersection</b>
<b>Pearl East</b>	11th / Pearl	n/a	n/a
	11th / Walnut	13.7	00 min 28 sec
	Walnut / Broadway	11.1	00 min 42 sec
	Walnut / 13th	17.9	00 min 15 sec
	Walnut / 14th	19.6	00 min 17 sec
	Walnut / 15th	18.9	00 min 13 sec
	15th Street	15.4	00 min 16 sec
	17th Street	17.2	00 min 31 sec
	20th Street	20.3	00 min 39 sec
	Folsom Street	20.2	01 min 12 sec
	26th Street	28.3	00 min 16 sec
	28th Street	19.0	00 min 41 sec
	30th Street	10.6	01 min 52 sec
	RR Tracks	29.5	00 min 22 sec
	Foothills Pkwy (South Ramp)	34.5	00 min 27 sec
	Foothills Pkwy (North Ramp)	35.1	00 min 11 sec
	49th Street	34.5	00 min 30 sec
	55th Street	30.1	01 min 45 sec
	Butte Mill Rd	37.1	00 min 50 sec
	61st Street	37.2	00 min 29 sec
<b>Pearl West</b>	61st Street	n/a	n/a
	Butte Mill Rd	35.8	00 min 32 sec
	55th Street	28.7	01 min 12 sec
	49th Street	36.6	01 min 22 sec
	Foothills Pkwy (North Ramp)	30.5	00 min 36 sec
	Foothills Pkwy (South Ramp)	34.1	00 min 12 sec
	RR Tracks	34.5	00 min 27 sec
	30th Street	12.6	01 min 10 sec
	28th Street	15.5	01 min 16 sec
	26th Street	28.9	00 min 17 sec
	Folsom Street	12.9	00 min 44 sec
	20th Street	22.8	01 min 00 sec
	17th Street	19.2	00 min 42 sec
	15th Street	9.3	01 min 04 sec
	Spruce / 14th	13.1	00 min 39 sec
	Spruce / 13th	18.6	00 min 14 sec
	Spruce Broadway	19.3	00 min 13 sec