US 50 Corridor
Pueblo To Kansas

Traffic Conditions

DOT

URS

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Traffic Conditions

Introduction

US 50 is a historic highway and the primary truck route connecting the Front Range cities of Pueblo and Colorado Springs to southeast Colorado and Kansas. The 150-mile corridor includes both rural and smaller urban areas such as the towns of La Junta, Las Animas, and Lamar. The following sections summarize the traffic conditions including traffic operations, regional mobility, accident analysis, and safety benefits for the US 50 Corridor from Pueblo, Colorado, to the Kansas State Line.

Existing Corridor Traffic Characteristics

- US 50 is classified as a Federal-Aid Primary (FAP) highway and is designated on the National Highway System.
- The 1999 estimated Average Daily Traffic (ADT) volume over the entire segment ranges from 3,000 to 19,000.
- The 1999 average percentage of trucks over the entire corridor is nearly 16 percent with peak truck percentages exceeding 25 percent north of Lamar, on US 287.
- The corridor is comprised of 96 miles (63 percent) of two-lane and 56 miles (37 percent) of four-lane highways.
- Rocky Ford and Lamar each have at-grade railroad crossings.
- Large farm equipment is prevalent on the roadway during the summer months.
- From 1995 to 2000, the average historical traffic growth rate was 2.8 percent per year for the corridor. This traffic growth rate is nearly 3 times the 10-year census population growth rate.

Existing Highway Levels of Service (LOS)

The existing traffic operations were evaluated along the corridor. The Level of Service (LOS) analysis evaluated both the two- and four-lane highway segments. The planning LOS analysis considered representative traffic volumes, access points, free flow speed, lateral clearance, shoulder widths, directional distribution, percentage of no-passing zones and median areas for each studied segment.

The results for the two-lane traffic analysis determined that overall the LOS is acceptable (LOS of D or better) with average travel speed varying below the posted speed limit. The longest two-lane highway segment with the poorest LOS performance lies between Las Animas and the junction of US 50/ 287. This 23.5 mile long two-lane segment of highway has a Percent-Time-Spent-Following (PTSF) value of 68.1 percent and a Level of Service rating D.

Similarly, the four-lane sections of US 50 had acceptable LOS performance levels.

Regional Transportation Characteristics

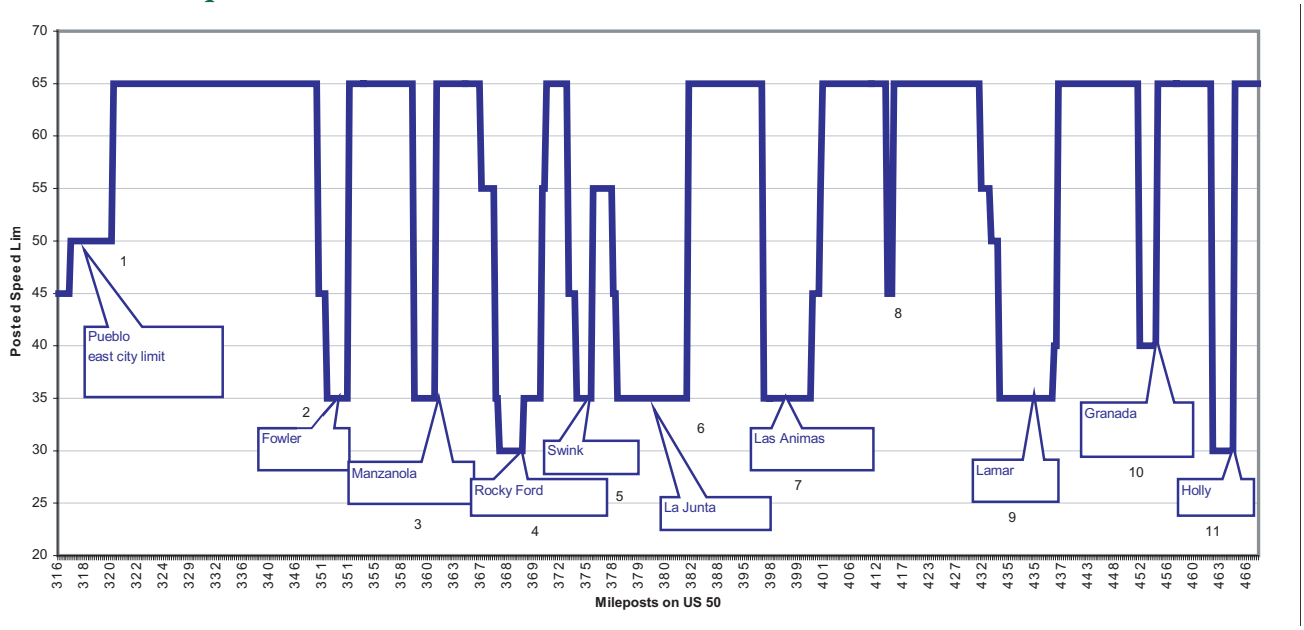
In June 1998, the Transportation Equity Act for the 21st Century (TEA-21) was enacted and authorized highway, safety, transit, and other surface transportation programs for the six-year period from 1998 to 2003. TEA-21 designated the Ports-to-Plains Corridor as the 43rd "High Priority Corridors" on the National Highway System. The importance of the Ports-to-Plains Corridor from the Mexican border to Denver, Colorado, is related to its potential to serve international trade and promote economic development with the implementation of the North American Free Trade Agreement (NAFTA). This treaty has dramatically increased the volume and value of trade between these North American Countries, with the majority of Mexico's trade passing through the Texas ports of entry (Ports-to-Plains Feasibility Study, June 2001, Wilbur Smith Associates Team.)

US 50 serves as a vital connection to the Colorado Front Range cities of Pueblo and Colorado Springs for the southeastern plains communities, as well as cities in Kansas to the Ports-to-Plains Corridor.

Corridor Travel Time Analysis

A planning level travel-time analysis was completed for the 150-mile corridor to evaluate overall travel efficiency. The analysis evaluated corridor mobility by determining the reduction in efficiency caused by speed reduction zones and traffic signal delay. Speed reduction areas were determined where the posted speed limit is below 65 mph. Exhibit 1 below, graphically shows the 11 speed reduction zones and their locations along the corridor. The miles of highways with reduced speeds comprise of 18 percent of the total length of the corridor, this adds an additional 15 minutes of delay to regional travel time.

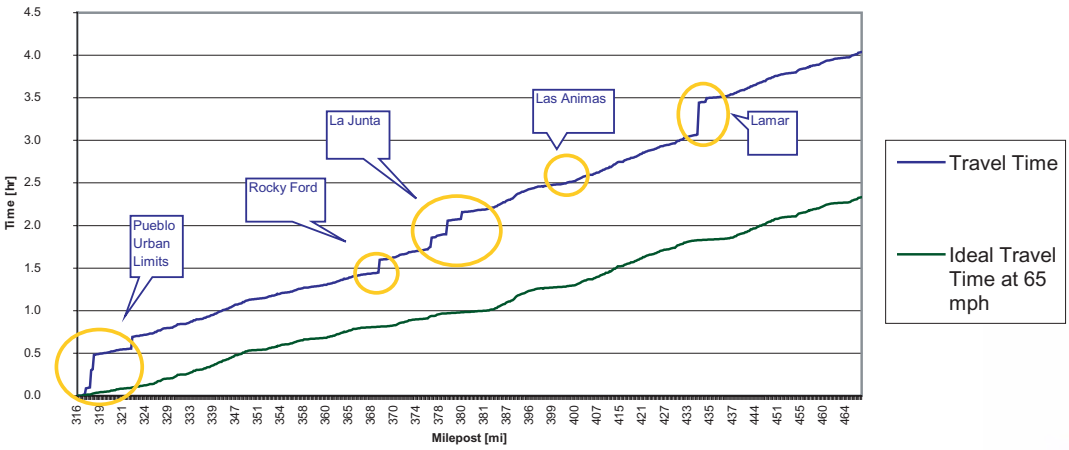
Exhibit 1 - US 50 Speed Reduction Zones



In-addition to speed reduction delays, vehicles stopped at traffic signals will increase corridor travel times. Delay from the thirteen (13) traffic signals can increase the travel time up to an hour and a half.

Exhibit 2 is an ideal travel time line based on 65 mph. The ideal time to traverse the corridor is approximately 2 hours and 15 minutes. The graphic also depicts the corridor travel times, assuming that the traveler had to stop at each signal location. Corridor delay is greatest in the towns where the travel time line appears as a vertical line. The delay caused by the traffic signals and speed reduction zones can increase the total travel time to nearly four hours. These system delays can reduce corridor travel speed by 42 percent to an average speed of 38 mph. The delay from the two railroad crossings can further increase travel time, but was not included in the analysis.

Exhibit 2 - Corridor Travel Time Comparison



Corridor-Wide Accident History

From October 1, 1995, to September 30, 2000, approximately 2,015 total accidents were recorded along the corridor with an average between two and three accidents per mile per year. In general, the segments accidents are on average between two to three accidents per mile per year. Overall, the accident rates for the US 50 Corridor is when compared this to other similar highway segments is comparable.

Accidents distribution along the corridor forms a predictable pattern. Crashes are more densely concentrated in the urban areas, chiefly associated with more intersections and increased traffic volumes. Exhibit 3 and Exhibit 4 depict specific roadway segments through the towns of Rocky Ford, Las Animas, Lamar, and Granada with five-year injury accident rates higher than the corresponding state averages.

Exhibit 3 - Injury Accident Rates

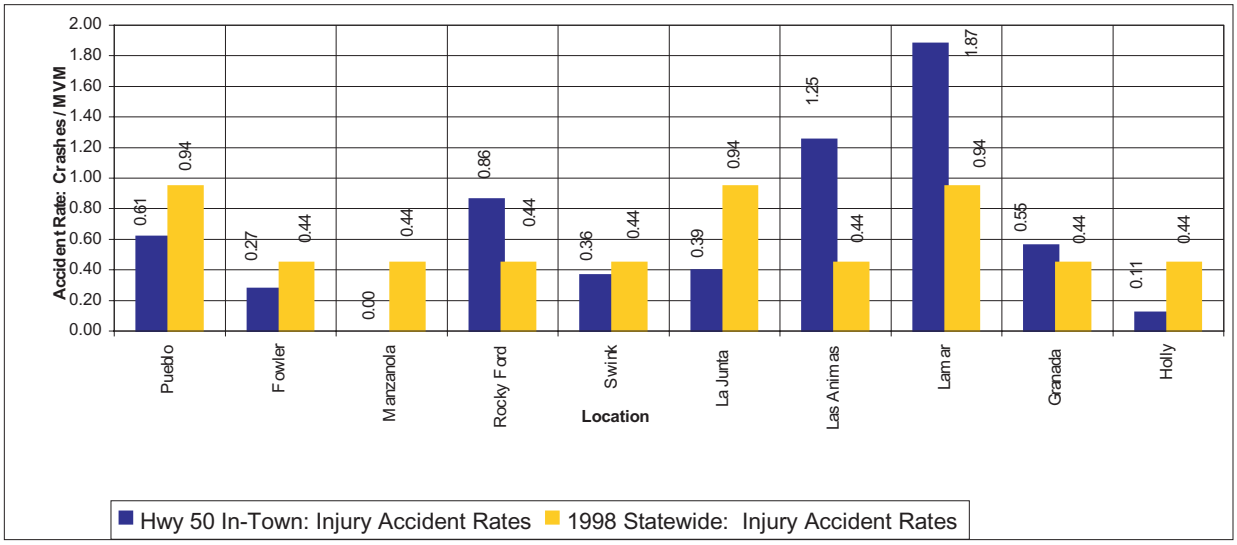
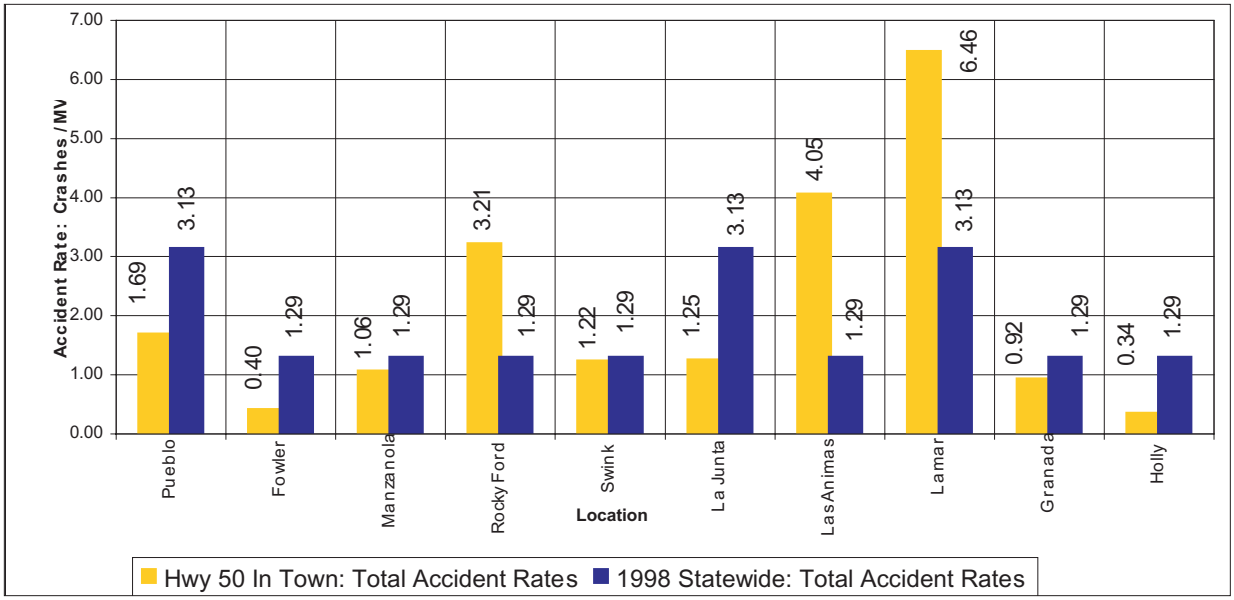


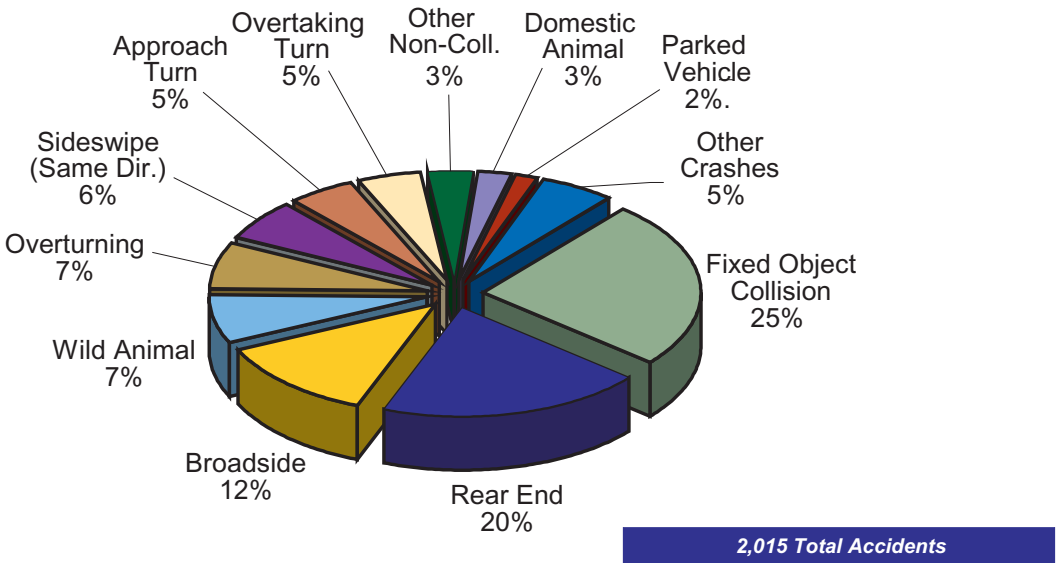
Exhibit 4 - Total Accident Rates



Accident Type and Distribution

The types of accidents occurring along the corridor have been graphically shown in Exhibit 5. The predominant and secondary accident types are the fixed object type (25 percent) and rear-end (20 percent). Approximately 95 percent of the fixed objects collisions are of the single vehicles running-off-the-road, with the majority (58 percent) running off to the right.

Exhibit 5 - Type & Distribution of Accidents



Accident Prone Locations

The CDOT Safety Assessment Report (Safety Assessment Report, US 50 Corridor, Pueblo to Kansas, CDOT Region 2, January 2003) identified accident prone non-intersection and intersection locations. Eighteen accident prone non-intersection related roadway segments (totaling over 41 miles in length) with recommended improvements were identified. Additionally, the study identified 20 accident prone intersection locations. A benefit cost analysis was completed for each intersection using the appropriate accident reduction countermeasures.

Safety Benefits of Widening US 50

The Safety Assessment Report evaluated the safety benefits of upgrading the two-lane roadway segments of US 50 to four lanes with a divided median. The analysis, based on safety performance models developed by CDOT, determined that a 37 percent reduction in total accident frequency and 33 percent reduction in severe accident frequency (injury and fatal) can be obtained by to widening the two-lane segments of US 50.

Future Traffic Conditions

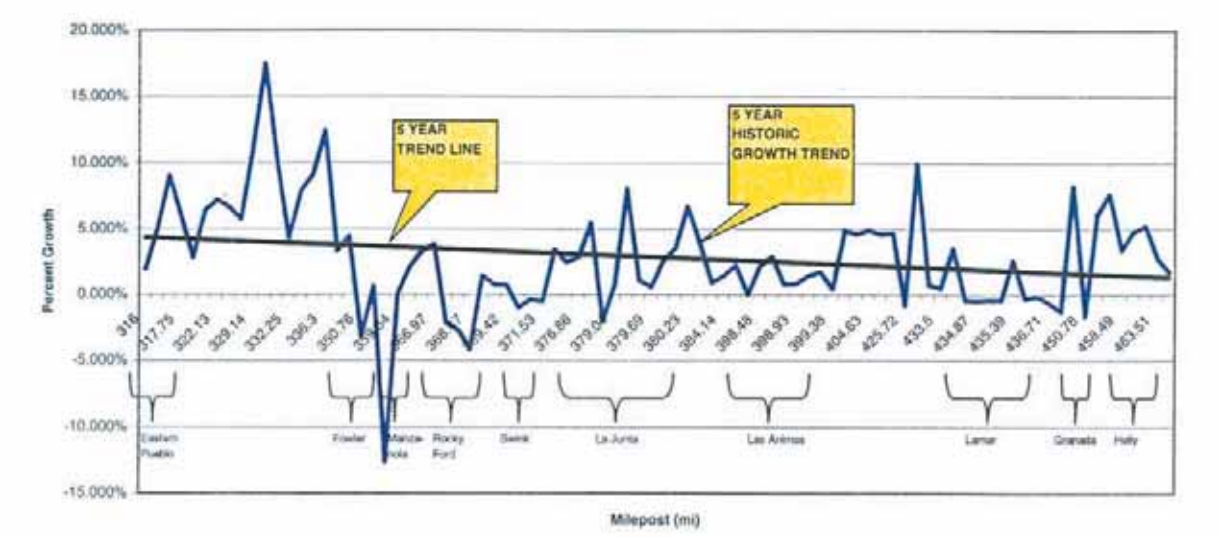
A future conditions traffic report was prepared SH 47 in Pueblo east to the Kansas border. This report summarizes the evaluation of future traffic operations of the two- and four-lane highway segments between the populated areas but does not include intersection operations. This report also summarizes future traffic operations for an unimproved highway or the No-Build condition.

The US 50 corridor future condition traffic analysis determined a planning level average growth rate, future two and four-lane highway traffic operations and future condition safety analysis. For this analysis, existing directional distribution patterns and percentage of trucks were used.

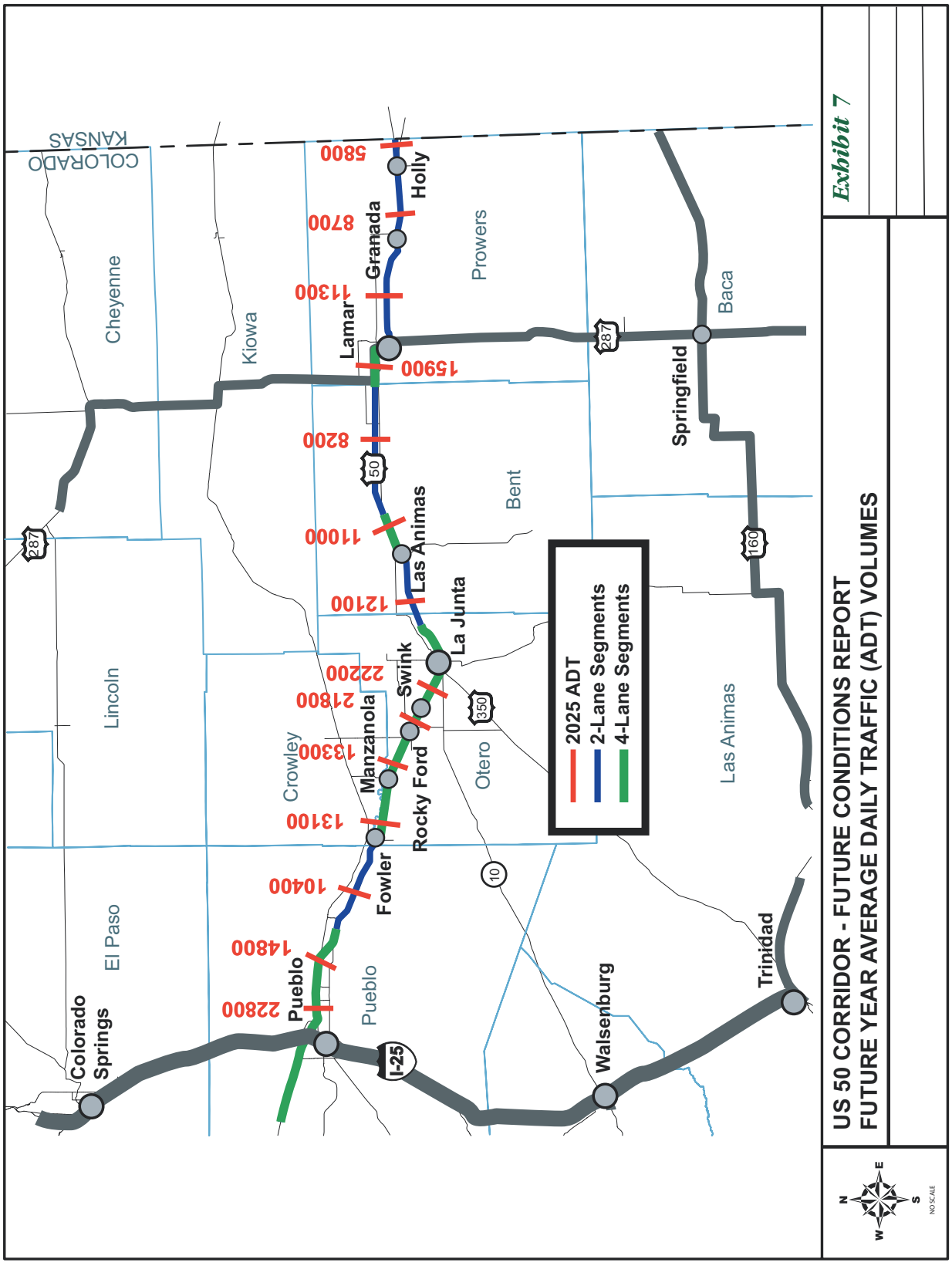
Future Traffic Growth

Historical traffic trends along US 50 were used as the basis for future traffic forecasts. The planning horizon for the future conditions analysis is the year 2025.

Exhibit 6 - Five-Year Traffic Growth Trend



Annual Average Daily Traffic (ADT) data available from the Colorado Department of Transportation (CDOT) provided the basis for determining the five-year historical traffic growth trend. As shown in Exhibit 6 above, the traffic growth rate is greater closer to the City of Pueblo (4 to 5 percent growth) and less near Holly (1.5 to 2 percent growth). For the purpose of this study an average corridor growth rate of 2.8 percent per year was used to develop the 2025 forecast volumes shown in Exhibit 7.


COLORADO
KANSAS
Cheyenne
Kiowa
Prowers
Baca
Lincoln
El Paso
Crowley
Otero
Las Animas
Bent
Pueblo
Holly
Granada
Lamar
Springfield
Las Animas
La Junta
Swink
Manzanola
Rocky Ford
Fowler
Pueblo
Colorado Springs
Walsenburg
Trinidad
I-25
287
50
350
10
160
5800
8700
11300
15900
8200
11000
12100
22200
21800
13300
13100
10400
14800
22800
2025 ADT
2-Lane Segments
4-Lane Segments
US 50 CORRIDOR - FUTURE CONDITIONS REPORT
FUTURE YEAR AVERAGE DAILY TRAFFIC (ADT) VOLUMES
Exhibit 7
N
E
S
W
NO SCALE

Future Highway Level of Service (LOS)

The future traffic operations were evaluated to determine the Level of Service (LOS) for 17 separate highway segments that connect 10 population centers. The LOS analysis evaluated existing lane configurations on US 50 that include nine four-lane and eight two-lane highway segments. The planning LOS analysis considered representative and evaluated traffic volumes, access points, free flow speed, lateral clearance, shoulder widths, directional distribution, percentage of no-passing zones, and median areas for each studied segment.

Methodology

The capacity analysis of the four and two-lane highway segments was completed in accordance with the policies and procedures established in the Highway Capacity Manual (HCM) 2000 issued by the Transportation Research Board.

Summary of Four-Lane Highway LOS

The LOS analysis results for the four-lane segments are summarized below. This analysis does not include signalized intersection LOS operations within the population centers.

Exhibit 8 – US 50 Four-Lane Level of Service Summary

Four-Lane Segment Number	Approximate Mile Post (start - end)	Segment Length [mi]	Eastbound Average Travel Speed [mph]	General Location	Westbound Average Travel Speed [mph]	LOS (eastbound / westbound)
1	318.8 - 322.1	3.3	59.1	east of Pueblo	59.5	C/B
2	322.1 - 332.7	10.6	59.5	east of Pueblo	59.5	B*/C*
3	359.1 - 359.5	0.3	57.9	west of Manzanola	57.9	A/A
4	360.0 - 367.0	7.0	57.9	Manzanola to Rocky Ford	57.9	A/A
5	369.8 - 374.3	4.5	59.3	Rocky Ford to Swink	59.3	B/A
6	374.8 - 337.0	2.1	54.5	Swink to La Junta	54.5	C/B
7	380.9 - 386.1	5.2	59.8	east of La Junta	59.8	A/A
8	399.8 - 405.0	5.2	59.8	east of Las Animas	59.8	A/A
9	428.5 - 434.3	5.8	59.5	west of Lamar	59.5	B/A

* Not signalized intersection delay, LOS results may be poorer.

The analysis determined that the four-lane sections of US 50 would operate at acceptable levels in the future. The forecasted 2025 four-lane highway LOS analysis has been included in **Appendix A.**

Summary of Two-Lane Highway LOS

The LOS results from the two-lane analysis are summarized below in Exhibit 9. This analysis does not include signalized LOS intersection operations within the population centers.

Exhibit 9 – US 50 Two-Lane Level of Service Summary

Two-Lane Segment Number	Approximate Mile Post (start - end)	Segment Length [mi]	General Location	Average Travel Speed [mph]	Percent Time Spent Following [PTSF]	LOS
1	332.7 - 335.8	3.1	east of Pueblo	51.2	77.0%	D
2	335.8 - 350.6	14.9	west of Fowler	52.4	74.1%	D
3	351.3 - 359.1	7.9	east of Fowler	52.1	71.8%	D
4	386.1 - 398.1	12.0	west of Las Animas	54.1	68.8%	D
5	405.0 - 428.5	23.5	west of SH 287	55.5	66.7%	D
6	436.3 - 452.3	16.0	east of Lamar	52.8	70.8%	D
7	453.0 - 462.7	9.8	east of Granada	53.5	69.3%	D
8	463.5 - 467.6	4.1	east of Holly	55.9	63.6%	C

For this type of facility, a desirable LOS for the future condition is LOS B-C. At this condition, traffic flow is stable with a 65 or less PTSF. The LOS analysis determined that 95 percent of the total two-lane highway segments would operate at LOS D. At this LOS passing becomes extremely difficult. Passing demand is high, but passing capacity approaches zero. Future traffic flow conditions are projected to average a 71 percent-time-spent-following (PTSF). The forecasted 2025 two-lane highway LOS analysis is included in **Appendix B**.

Safety Analysis

The future condition safety analysis evaluated the potential increase in total accidents due to growth and the safety benefit differences between the two-lane and four-lane, divided rural highways. This analysis, based on the CDOT Safety Assessment Report, used safety performance function (SPF) data to determine future accident frequencies of the four-lane and two lane highway segments. The four-lane safety analysis evaluated existing and future corridor average ADT's of 5,000 and 10,000, respectively. The results of the analysis are shown below in Exhibit 10.

Exhibit 10 - Future Total Accident Frequencies Summary

Description	Year 2000 Corridor Average ADT	Accidents per Mile per Year (APMPY)	Year 2025 Corridor Average ADT	Accidents per Mile per Year (APMPY)*	Percent Change
Two-Lane Highway	5,000	1.75	10,000	3.17	81%
Four-Lane Highway	5,000	1.1	10,000	1.66	50%

* Extrapolated values.

Over the next 25 years the total accident frequency will increase for both two- and four-lane rural highway segments. As expected, the total accidents per mile for a two-lane highway are high (over 3 total accidents per mile per year). These accident numbers can be reduced by 30 percent as a result of widening to a four-lane, divided highway.

Regional Transportation Needs

In addition to the need for increased safety, the future regional transportation needs of the corridor include improved mobility and travel efficiency. As the Front Range cities of Colorado Springs and Pueblo continue to grow, additional demands will be placed on US 50.

Within the next 10 to 20 years, the Ports-to-Plains Trade Corridor will experience an estimated 4,000 additional trucks per day. This soaring increase in the truck population will have a noticeable impact on east/west mobility of the US 50 Corridor.

The need to use US 50 as a principle transportation corridor has been recognized by Kansas Department of Transportation (KDOT). KDOT plans to improve US 50 across the their state. When completed the US 50 corridor could divert traffic from I-70 to the Front Range cities.

Increasing the transportation demands on US 50 without consideration to maintaining or improving mobility will degrade the service currently provided by this corridor. In addition to the many safety problems identified in the Safety Assessment Report, the future traffic operations of the two-lane roadway segments will compromise the needs of the corridor and the population centers served.

Recommendations

The future condition analysis evaluated the planning level traffic operations, highway safety, and regional transportation needs. The analysis determined that as the corridor grows, the safety and traffic operations of the two-lane roadway segments between the population centers should continue to degrade. In the future these degraded two-lane highway segments will experience more congestion, create unnecessary delays, costs, and increase driver frustration.

The need to improve these segments is congruent to the findings documented in the Safety Assessment Report. The two-lane highway segments should be upgraded to either a four-lane, divided highway or be improved to provide periodic passing lanes.

Appendix A: Four-Lane Traffic Analysis

HCS2000: Multilane Highways Release 4.1c

jlbutler
Wilson & Company
455 E. Pikes Peak Ave.

Phone: 7195205800 Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: LCC
Agency/Co: Wilson & Company
Date: 1/21/2003
Analsis Period: DHV
Highway: US 50B
From/To: 318.831 to 322.131
Jurisdiction: CDOT
Analysis Year: Future yr 2025
Project ID: Four Lane Analysis with access/mi

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	2		2	
Median type	Divided		Divided	
Free-flow speed:	Base		Base	
FFS or BFFS	60.0	mph	60.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.5	mph	0.5	mph
Free-flow speed	59.5	mph	59.5	mph

VOLUME

Direction	1		2	
Volume, V	2758	vph	1484	vph
Peak-hour factor, PHF	0.95		0.95	
Peak 15-minute volume, v15	726		391	
Trucks and buses	10	%	10	%
Recreational vehicles	0	%	0	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	3.30	mi	3.30	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.952		0.952	
Flow rate, vp	1524	pcphpl	820	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	1524	pcphpl	820	pcphpl
Free-flow speed, FFS	59.5	mph	59.5	mph
Avg. passenger-car travel speed, S	59.1	mph	59.5	mph
Level of service, LOS	C		B	
Density, D	25.8	pc/mi/ln	13.8	pc/mi/ln

Overall results are not computed when free-flow speed is less than 45 mph.

HCS2000: Multilane Highways Release 4.1c

jlbutler
Wilson & Company
455 E. Pikes Peak Ave.

Phone: 7195205800 Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: LCC
Agency/Co: Wilson & Company
Date: 1/21/2003
Analsis Period: 2025 DHV
Highway: US 50B
From/To: 322.131 to 332.683
Jurisdiction: CDOT
Analysis Year: Future Yr. 2025
Project ID: Four Lane Analysis with access/mi

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	2		2	
Median type	Divided		Divided	
Free-flow speed:	Base		Base	
FFS or BFFS	60.0	mph	60.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.5	mph	0.5	mph
Free-flow speed	59.5	mph	59.5	mph

VOLUME

Direction	1		2	
Volume, V	1630	vph	880	vph
Peak-hour factor, PHF	0.95		0.95	
Peak 15-minute volume, v15	429		232	
Trucks and buses	10	%	10	%
Recreational vehicles	0	%	0	%
Terrain type	Grade		Grade	
Grade	0.00	%	0.00	%
Segment length	10.55	mi	10.55	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.952		0.952	
Flow rate, vp	900	pcphpl	486	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	900	pcphpl	486	pcphpl
Free-flow speed, FFS	59.5	mph	59.5	mph
Avg. passenger-car travel speed, S	59.5	mph	59.5	mph
Level of service, LOS	B		A	
Density, D	15.1	pc/mi/ln	8.2	pc/mi/ln

Overall results are not computed when free-flow speed is less than

HCS2000: Multilane Highways Release 4.1c

jlbutler
Wilson & Company
455 E. Pikes Peak Ave.

Phone: 7195205800 Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	LCC
Agency/Co:	Wilson & Company
Date:	1/21/2003
Analsis Period:	2025 DHV
Highway:	US 50B
From/To:	359.121 to 359.463
Jurisdiction:	CDOT
Analysis Year:	Future yr. 2025
Project ID:	Four Lane Analysis with access/mi

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	2		2	
Median type	Undivided		Undivided	
Free-flow speed:	Base		Base	
FFS or BFFS	60.0	mph	60.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	1.6	mph	1.6	mph
Access points adjustment, FA	0.5	mph	0.5	mph
Free-flow speed	57.9	mph	57.9	mph

VOLUME

Direction	1		2	
Volume, V	565	vph	460	vph
Peak-hour factor, PHF	0.95		0.95	
Peak 15-minute volume, v15	149		121	
Trucks and buses	17	%	17	%
Recreational vehicles	0	%	0	%
Terrain type	Grade		Grade	
Grade	0.00	%	0.00	%
Segment length	0.34	mi	0.34	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.922		0.922	
Flow rate, vp	322	pcphpl	262	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	322	pcphpl	262	pcphpl
Free-flow speed, FFS	57.9	mph	57.9	mph
Avg. passenger-car travel speed, S	57.9	mph	57.9	mph
Level of service, LOS	A		A	
Density, D	5.6	pc/mi/ln	4.5	pc/mi/ln

Overall results are not computed when free-flow speed is less than 45 mph.

HCS2000: Multilane Highways Release 4.1c

jlbutler
Wilson & Company
455 E. Pikes Peak Ave.

Phone: 7195205800 Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	LCC
Agency/Co:	Wilson & Company
Date:	1/21/2003
Analsis Period:	2025 DHV
Highway:	US 50B
From/To:	360.013 to 366.970
Jurisdiction:	CDOT
Analysis Year:	Future yr. 2025
Project ID:	Four Lane Analysis with access/mi

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	2		2	
Median type	Undivided		Undivided	
Free-flow speed:	Base		Base	
FFS or BFFS	60.0	mph	60.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	1.6	mph	1.6	mph
Access points adjustment, FA	0.5	mph	0.5	mph
Free-flow speed	57.9	mph	57.9	mph

VOLUME

Direction	1		2	
Volume, V	800	vph	650	vph
Peak-hour factor, PHF	0.95		0.95	
Peak 15-minute volume, v15	211		171	
Trucks and buses	16	%	16	%
Recreational vehicles	0	%	0	%
Terrain type	Grade		Grade	
Grade	0.00	%	0.00	%
Segment length	6.96	mi	6.96	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.926		0.926	
Flow rate, vp	454	pcphpl	369	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	454	pcphpl	369	pcphpl
Free-flow speed, FFS	57.9	mph	57.9	mph
Avg. passenger-car travel speed, S	57.9	mph	57.9	mph
Level of service, LOS	A		A	
Density, D	7.8	pc/mi/ln	6.4	pc/mi/ln

Overall results are not computed when free-flow speed is less than 45 mph.

HCS2000: Multilane Highways Release 4.1c

jlbutler
Wilson & Company
455 E. Pikes Peak Ave.

Phone: 7195205800 Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	LCC
Agency/Co:	Wilson & Company
Date:	1/21/2003
Analsis Period:	2025 DHV
Highway:	US 50B
From/To:	369.759 to 374.259
Jurisdiction:	CDOT
Analysis Year:	Future yr. 2025
Project ID:	Four Lane Analysis with access/mi

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	3		3	
Median type	Divided		Divided	
Free-flow speed:	Base		Base	
FFS or BFFS	60.0	mph	60.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.8	mph	0.8	mph
Free-flow speed	59.3	mph	59.3	mph

VOLUME

Direction	1		2	
Volume, V	1320	vph	1075	vph
Peak-hour factor, PHF	0.95		0.95	
Peak 15-minute volume, v15	347		283	
Trucks and buses	10	%	10	%
Recreational vehicles	0	%	0	%
Terrain type	Grade		Grade	
Grade	0.00	%	0.00	%
Segment length	4.50	mi	4.50	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.952		0.952	
Flow rate, vp	729	pcphpl	594	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	729	pcphpl	594	pcphpl
Free-flow speed, FFS	59.3	mph	59.3	mph
Avg. passenger-car travel speed, S	59.3	mph	59.3	mph
Level of service, LOS	B		A	
Density, D	12.3	pc/mi/ln	10.0	pc/mi/ln

Overall results are not computed when free-flow speed is less than 45 mph.

HCS2000: Multilane Highways Release 4.1c

jlbutler
Wilson & Company
455 E. Pikes Peak Ave.

Phone: 7195205800 Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	LCC
Agency/Co:	Wilson & Company
Date:	1/21/2003
Analsis Period:	2025 DHV
Highway:	US 50B
From/To:	374.839 to 376.952
Jurisdiction:	CDOT
Analysis Year:	Future yr. 2025
Project ID:	Four Lane Analysis with access/mi

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	2		2	
Median type	Divided		Divided	
Free-flow speed:	Base		Base	
FFS or BFFS	55.0	mph	55.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.5	mph	0.5	mph
Free-flow speed	54.5	mph	54.5	mph

VOLUME

Direction	1		2	
Volume, V	1810	vph	1480	vph
Peak-hour factor, PHF	0.95		0.95	
Peak 15-minute volume, v15	476		389	
Trucks and buses	8	%	8	%
Recreational vehicles	0	%	0	%
Terrain type	Grade		Grade	
Grade	0.00	%	0.00	%
Segment length	2.11	mi	2.11	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.962		0.962	
Flow rate, vp	990	pcphpl	810	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	990	pcphpl	810	pcphpl
Free-flow speed, FFS	54.5	mph	54.5	mph
Avg. passenger-car travel speed, S	54.5	mph	54.5	mph
Level of service, LOS	C		B	
Density, D	18.2	pc/mi/ln	14.9	pc/mi/ln

Overall results are not computed when free-flow speed is less than 45 mph.

HCS2000: Multilane Highways Release 4.1c

jlbutler
Wilson & Company
455 E. Pikes Peak Ave.

Phone: 7195205800 Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: LCC
Agency/Co: Wilson & Company
Date: 1/21/2003
Analsis Period: 2025 DHV
Highway: US 50B
From/To: 380.861 to 386.085
Jurisdiction: CDOT
Analysis Year: Future yr. 2025
Project ID: Four Lane Analysis with access/mi

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	1		1	
Median type	Divided		Divided	
Free-flow speed:	Base		Base	
FFS or BFFS	60.0	mph	60.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.3	mph	0.3	mph
Free-flow speed	59.8	mph	59.8	mph

VOLUME

Direction	1		2	
Volume, V	560	vph	455	vph
Peak-hour factor, PHF	0.95		0.95	
Peak 15-minute volume, v15	147		120	
Trucks and buses	14	%	14	%
Recreational vehicles	0	%	0	%
Terrain type	Grade		Grade	
Grade	0.00	%	0.00	%
Segment length	5.22	mi	5.22	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.935		0.935	
Flow rate, vp	315	pcphpl	256	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	315	pcphpl	256	pcphpl
Free-flow speed, FFS	59.8	mph	59.8	mph
Avg. passenger-car travel speed, S	59.8	mph	59.8	mph
Level of service, LOS	A		A	
Density, D	5.3	pc/mi/ln	4.3	pc/mi/ln

Overall results are not computed when free-flow speed is less than 45 mph.

HCS2000: Multilane Highways Release 4.1c

jlbutler
Wilson & Company
455 E. Pikes Peak Ave.

Phone: 7195205800 Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	LCC
Agency/Co:	Wilson & Company
Date:	1/21/2003
Analsis Period:	2025 DHV
Highway:	US 50B
From/To:	399.848 to 405.01
Jurisdiction:	CDOT
Analysis Year:	Future yr. 2025
Project ID:	Four Lane Analysis with access/mi

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	1		1	
Median type	Divided		Divided	
Free-flow speed:	Base		Base	
FFS or BFFS	60.0	mph	60.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.3	mph	0.3	mph
Free-flow speed	59.8	mph	59.8	mph

VOLUME

Direction	1		2	
Volume, V	660	vph	540	vph
Peak-hour factor, PHF	0.95		0.95	
Peak 15-minute volume, v15	174		142	
Trucks and buses	12	%	12	%
Recreational vehicles	0	%	0	%
Terrain type	Grade		Grade	
Grade	0.00	%	0.00	%
Segment length	5.16	mi	5.16	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.943		0.943	
Flow rate, vp	368	pcphpl	301	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	368	pcphpl	301	pcphpl
Free-flow speed, FFS	59.8	mph	59.8	mph
Avg. passenger-car travel speed, S	59.8	mph	59.8	mph
Level of service, LOS	A		A	
Density, D	6.2	pc/mi/ln	5.0	pc/mi/ln

Overall results are not computed when free-flow speed is less than 45 mph.

HCS2000: Multilane Highways Release 4.1c

jlbutler
Wilson & Company
455 E. Pikes Peak Ave.

Phone: 7195205800 Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	LCC
Agency/Co:	Wilson & Company
Date:	1/21/2003
Analsis Period:	2025 DHV
Highway:	US 50B
From/To:	428.488 to 434.32
Jurisdiction:	CDOT
Analysis Year:	Future yr. 2025
Project ID:	Four Lane Analysis with access/mi

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	2		2	
Median type	Divided		Divided	
Free-flow speed:	Base		Base	
FFS or BFFS	60.0	mph	60.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	0.5	mph	0.5	mph
Free-flow speed	59.5	mph	59.5	mph

VOLUME

Direction	1		2	
Volume, V	1555	vph	1035	vph
Peak-hour factor, PHF	0.95		0.95	
Peak 15-minute volume, v15	409		272	
Trucks and buses	17	%	17	%
Recreational vehicles	0	%	0	%
Terrain type	Grade		Grade	
Grade	0.00	%	0.00	%
Segment length	5.83	mi	5.83	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.922		0.922	
Flow rate, vp	887	pcphpl	591	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	887	pcphpl	591	pcphpl
Free-flow speed, FFS	59.5	mph	59.5	mph
Avg. passenger-car travel speed, S	59.5	mph	59.5	mph
Level of service, LOS	B		A	
Density, D	14.9	pc/mi/ln	9.9	pc/mi/ln

Overall results are not computed when free-flow speed is less than 45 mph.

Appendix B: Two-Lane Traffic Analysis

HCS2000: Two-Lane Highways Release 4.1c

jlbutler
Wilson & Company
455 E. Pikes Peak Ave.

Phone: 7195205800 Fax:
E-Mail:

Two-Way Two-Lane Highway Segment Analysis

Analyst	LCC
Agency/Co.	Wilson & Company
Date Performed	1/17/2003
Analysis Time Period	DHV
Highway	US 50B
From/To	332.683 to 335.764
Jurisdiction	CDOT
Analysis Year	Future Yr 2025
Description	Two Lane Analysis with no-passing zones and access/mi-

Input Data

Highway class	Class 1				
Shoulder width	8.0	ft	Peak-hour factor, PHF	0.95	
Lane width	12.0	ft	% Trucks and buses	17	%
Segment length	3.1	mi	% Recreational vehicles	0	%
Terrain type	Level		% No-passing zones	55	%
Grade: Length		mi	Access points/mi	2	/mi
Up/down		%			

Two-way hourly volume, V 1280 veh/h
Directional split 60 / 40 %

Average Travel Speed

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.2*	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor,	0.967	
Two-way flow rate,(note-1) vp	1393	pc/h
Highest directional split proportion (note-2)	836	pc/h
Free-Flow Speed from Field Measurement:		
Field measured speed, SFM	-	mi/h
Observed volume, Vf	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed, BFFS	65.0	mi/h
Adj. for lane and shoulder width, fLS	0.0	mi/h
Adj. for access points, fA	0.0*	mi/h
Free-flow speed, FFS	65.0	mi/h
Adjustment for no-passing zones, fnp	3.0*	mi/h
Average travel speed, ATS	51.2	mi/h

Percent Time-Spent-Following

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.1*	
PCE for RVs, ER	1.0*	
Heavy-vehicle adjustment factor, fHV	0.983	
Two-way flow rate,(note-1) vp	1370	pc/h
Highest directional split proportion (note-2)	822	
Base percent time-spent-following, BPTSF	70.0	%
Adj.for directional distribution and no-passing zones, fd/np	7.0	
Percent time-spent-following, PTSF	77.0	%

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.44	
Peak 15-min vehicle-miles of travel, VMT15	1037	veh-mi
Peak-hour vehicle-miles of travel, VMT60	3942	veh-mi
Peak 15-min total travel time, TT15	20.3	veh-h

Notes:

1. If vp >= 3200 pc/h, terminate analysis-the LOS is F.
2. If highest directional split vp >= 1700 pc/h, terminate analysis-the LOS is F.

HCS2000: Two-Lane Highways Release 4.1c

jlbutler
Wilson & Company
455 E. Pikes Peak Ave.

Phone: 7195205800 Fax:
E-Mail:

Two-Way Two-Lane Highway Segment Analysis

Analyst	LCC
Agency/Co.	Wilson & Company
Date Performed	1/17/2003
Analysis Time Period	DHV
Highway	US 50B
From/To	335.764 to 350.642
Jurisdiction	CDOT
Analysis Year	Future Year 2025
Description	Two Lane Analysis with no-passing zones and access/mi

Input Data

Highway class	Class 1				
Shoulder width	8.0	ft	Peak-hour factor, PHF	0.95	
Lane width	12.0	ft	% Trucks and buses	17	%
Segment length	14.8	mi	% Recreational vehicles	0	%
Terrain type	Level		% No-passing zones	55	%
Grade: Length		mi	Access points/mi	2	/mi
Up/down		%			

Two-way hourly volume, V 1138 veh/h
Directional split 60 / 40 %

Average Travel Speed

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.2*	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor,	0.967	
Two-way flow rate,(note-1) vp	1239	pc/h
Highest directional split proportion (note-2)	743	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed, SFM	-	mi/h
Observed volume, Vf	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed, BFFS	65.0	mi/h
Adj. for lane and shoulder width, fLS	0.0	mi/h
Adj. for access points, fA	0.0*	mi/h
Free-flow speed, FFS	65.0	mi/h
Adjustment for no-passing zones, fnp	3.0*	mi/h
Average travel speed, ATS	52.4	mi/h

Percent Time-Spent-Following

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.1*	
PCE for RVs, ER	1.0*	
Heavy-vehicle adjustment factor, fHV	0.983	
Two-way flow rate,(note-1) vp	1218	pc/h
Highest directional split proportion (note-2)	731	
Base percent time-spent-following, BPTSF	65.7	%
Adj.for directional distribution and no-passing zones, fd/np	8.4	
Percent time-spent-following, PTSF	74.1	%

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.39	
Peak 15-min vehicle-miles of travel, VMT15	4432	veh-mi
Peak-hour vehicle-miles of travel, VMT60	16842	veh-mi
Peak 15-min total travel time, TT15	84.6	veh-h

Notes:
1. If vp >= 3200 pc/h, terminate analysis-the LOS is F.

2. If highest directional split vp >= 1700 pc/h, terminate analysis-the LOS is F.

HCS2000: Two-Lane Highways Release 4.1c

jlbutler
Wilson & Company
455 E. Pikes Peak Ave.

Phone: 7195205800 Fax:
E-Mail:

Two-Way Two-Lane Highway Segment Analysis

Analyst	LCC
Agency/Co.	Wilson & Company
Date Performed	1/20/2003
Analysis Time Period	DHV
Highway	US 50B
From/To	351.246 to 359.121
Jurisdiction	CDOT
Analysis Year	Future Yr 2025
Description	Two Lane Analysis with no-passing zones and access/mi

Input Data

Highway class	Class 1				
Shoulder width	8.0	ft	Peak-hour factor, PHF	0.95	
Lane width	12.0	ft	% Trucks and buses	17	%
Segment length	7.9	mi	% Recreational vehicles	0	%
Terrain type	Level		% No-passing zones	56	%
Grade: Length		mi	Access points/mi	2	/mi
Up/down		%			

Two-way hourly volume, V 1026 veh/h
Directional split 55 / 45 %

Average Travel Speed

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.7*	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor,	0.894	
Two-way flow rate,(note-1) vp	1209	pc/h
Highest directional split proportion (note-2)	665	pc/h
Free-Flow Speed from Field Measurement:		
Field measured speed, SFM	-	mi/h
Observed volume, Vf	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed, BFFS	65.0	mi/h
Adj. for lane and shoulder width, fLS	0.0	mi/h
Adj. for access points, fA	0.0*	mi/h
Free-flow speed, FFS	65.0	mi/h
Adjustment for no-passing zones, fnp	3.5*	mi/h
Average travel speed, ATS	52.1	mi/h

Percent Time-Spent-Following

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.1*	
PCE for RVs, ER	1.0*	
Heavy-vehicle adjustment factor, fHV	0.983	
Two-way flow rate,(note-1) vp	1098	pc/h
Highest directional split proportion (note-2)	604	
Base percent time-spent-following, BPTSF	61.9	%
Adj.for directional distribution and no-passing zones, fd/np	9.9	
Percent time-spent-following, PTSF	71.8	%

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.38	
Peak 15-min vehicle-miles of travel, VMT15	2125	veh-mi
Peak-hour vehicle-miles of travel, VMT60	8075	veh-mi
Peak 15-min total travel time, TT15	40.8	veh-h

Notes:
1. If vp >= 3200 pc/h, terminate analysis-the LOS is F.
2. If highest directional split vp >= 1700 pc/h, terminate analysis-the LOS is F.

HCS2000: Two-Lane Highways Release 4.1c

jlbutler
Wilson & Company
455 E. Pikes Peak Ave.

Phone: 7195205800 Fax:
E-Mail:

Two-Way Two-Lane Highway Segment Analysis

Analyst	LCC
Agency/Co.	Wilson & Company
Date Performed	1/20/2003
Analysis Time Period	DHV
Highway	US 50B
From/To	386.085 to 398.067
Jurisdiction	CDOT
Analysis Year	Future Yr 2025
Description	Two Lane Analysis with no-passing zones and access/mi

Input Data

Highway class	Class 1				
Shoulder width	10.0	ft	Peak-hour factor, PHF	0.95	
Lane width	12.0	ft	% Trucks and buses	14	%
Segment length	11.9	mi	% Recreational vehicles	0	%
Terrain type	Level		% No-passing zones	38	%
Grade: Length		mi	Access points/mi	2	/mi
Up/down		%			

Two-way hourly volume, V 1002 veh/h
Directional split 60 / 40 %

Average Travel Speed

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.2	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor,	0.973	
Two-way flow rate,(note-1) vp	1084	pc/h
Highest directional split proportion (note-2)	650	pc/h
Free-Flow Speed from Field Measurement:		
Field measured speed, SFM	-	mi/h
Observed volume, Vf	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed, BFFS	65.0	mi/h
Adj. for lane and shoulder width, fLS	0.0	mi/h
Adj. for access points, fA	0.0*	mi/h
Free-flow speed, FFS	65.0	mi/h
Adjustment for no-passing zones, fnp	2.5*	mi/h
Average travel speed, ATS	54.1	mi/h

Percent Time-Spent-Following

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.1	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor, fHV	0.986	
Two-way flow rate,(note-1) vp	1070	pc/h
Highest directional split proportion (note-2)	642	
Base percent time-spent-following, BPTSF	61.0	%
Adj.for directional distribution and no-passing zones, fd/np	7.9	
Percent time-spent-following, PTSF	68.8	%

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.34	
Peak 15-min vehicle-miles of travel, VMT15	3138	veh-mi
Peak-hour vehicle-miles of travel, VMT60	11924	veh-mi
Peak 15-min total travel time, TT15	58.0	veh-h

Notes:
1. If vp >= 3200 pc/h, terminate analysis-the LOS is F.
2. If highest directional split vp >= 1700 pc/h, terminate analysis-the LOS is F.

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jlbutler
Wilson & Company
455 E. Pikes Peak Ave.

Phone: 7195205800 Fax:
E-Mail:

Two-Way Two-Lane Highway Segment Analysis

Analyst	LCC, rev 6/2/03
Agency/Co.	Wilson & Company
Date Performed	1/20/2003
Analysis Time Period	DHV
Highway	US 50B
From/To	405.01 to 428.488
Jurisdiction	CDOT
Analysis Year	Future Yr 2025
Description	Two Lane Analysis with no-passing zones and access/mi

Input Data

Highway class	Class 1				
Shoulder width	8.0	ft	Peak-hour factor, PHF	0.95	
Lane width	12.0	ft	% Trucks and buses	25	%
Segment length	23.5	mi	% Recreational vehicles	0	%
Terrain type	Level		% No-passing zones	36	%
Grade: Length		mi	Access points/mi	1	/mi
Up/down		%			

Two-way hourly volume, V	906	veh/h		
Directional split	55 /	45 %		

Average Travel Speed

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.2	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor,	0.952	
Two-way flow rate,(note-1) vp	1001	pc/h
Highest directional split proportion (note-2)	551	pc/h
Free-Flow Speed from Field Measurement:		
Field measured speed, SFM	-	mi/h
Observed volume, Vf	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed, BFFS	65.0	mi/h
Adj. for lane and shoulder width, fLS	0.0	mi/h
Adj. for access points, fA	0.0*	mi/h
Free-flow speed, FFS	65.0	mi/h
Adjustment for no-passing zones, fnp	1.7*	mi/h
Average travel speed, ATS	55.5	mi/h

Percent Time-Spent-Following

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.1	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor, fHV	0.976	
Two-way flow rate,(note-1) vp	978	pc/h
Highest directional split proportion (note-2)	538	
Base percent time-spent-following, BPTSF	57.7	%
Adj.for directional distribution and no-passing zones, fd/np	9.0	
Percent time-spent-following, PTSF	66.7	%

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.31	
Peak 15-min vehicle-miles of travel, VMT15	5603	veh-mi
Peak-hour vehicle-miles of travel, VMT60	21291	veh-mi
Peak 15-min total travel time, TT15	100.9	veh-h

Notes:
1. If vp >= 3200 pc/h, terminate analysis-the LOS is F.
2. If highest directional split vp >= 1700 pc/h, terminate analysis-the LOS is F.

HCS2000: Two-Lane Highways Release 4.1c

jlbutler
Wilson & Company
455 E. Pikes Peak Ave.

Phone: 7195205800 Fax:
E-Mail:

Two-Way Two-Lane Highway Segment Analysis

Analyst	LCC
Agency/Co.	Wilson & Company
Date Performed	1/20/2003
Analysis Time Period	2000 ADT DHV
Highway	US 50B
From/To	436.262 to 452.272
Jurisdiction	CDOT
Analysis Year	Future Yr 2025
Description	Two Lane Analysis with no-passing zones and access/mi

Input Data

Highway class	Class 1				
Shoulder width	8.0	ft	Peak-hour factor, PHF	0.95	
Lane width	12.0	ft	% Trucks and buses	23	%
Segment length	16.0	mi	% Recreational vehicles	0	%
Terrain type	Level		% No-passing zones	95	%
Grade: Length		mi	Access points/mi	2	/mi
Up/down		%			

Two-way hourly volume, V	926	veh/h	
Directional split	55 / 45	%	

Average Travel Speed

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.2	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor,	0.956	
Two-way flow rate,(note-1) vp	1020	pc/h
Highest directional split proportion (note-2)	561	pc/h
Free-Flow Speed from Field Measurement:		
Field measured speed, SFM	-	mi/h
Observed volume, Vf	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed, BFFS	65.0	mi/h
Adj. for lane and shoulder width, fLS	0.0	mi/h
Adj. for access points, fA	0.0*	mi/h
Free-flow speed, FFS	65.0	mi/h
Adjustment for no-passing zones, fnp	4.3*	mi/h
Average travel speed, ATS	52.8	mi/h

Percent Time-Spent-Following

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.1	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor, fHV	0.978	
Two-way flow rate,(note-1) vp	997	pc/h
Highest directional split proportion (note-2)	548	
Base percent time-spent-following, BPTSF	58.4	%
Adj.for directional distribution and no-passing zones, fd/np	12.5	
Percent time-spent-following, PTSF	70.8	%

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.32	
Peak 15-min vehicle-miles of travel, VMT15	3899	veh-mi
Peak-hour vehicle-miles of travel, VMT60	14816	veh-mi
Peak 15-min total travel time, TT15	73.9	veh-h

Notes:
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Two-Way Two-Lane Highway Segment Analysis

Analyst	LCC
Agency/Co.	Wilson & Company
Date Performed	1/20/2003
Analysis Time Period	DHV
Highway	US 50B
From/To	452.964 to 462.74
Jurisdiction	CDOT
Analysis Year	Future Yr 2025
Description	Two Lane Analysis with no-passing zones and access/mi

Input Data

Highway class	Class 1				
Shoulder width	8.0	ft	Peak-hour factor, PHF	0.95	
Lane width	12.0	ft	% Trucks and buses	18	%
Segment length	9.8	mi	% Recreational vehicles	0	%
Terrain type	Level		% No-passing zones	80	%
Grade: Length		mi	Access points/mi	2	/mi
Up/down		%			

Two-way hourly volume, V	894	veh/h	
Directional split	55 / 45	%	

Average Travel Speed

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.2	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor,	0.965	
Two-way flow rate,(note-1) vp	975	pc/h
Highest directional split proportion (note-2)	536	pc/h
Free-Flow Speed from Field Measurement:		
Field measured speed, SFM	-	mi/h
Observed volume, Vf	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed, BFFS	65.0	mi/h
Adj. for lane and shoulder width, fLS	0.0	mi/h
Adj. for access points, fA	0.0*	mi/h
Free-flow speed, FFS	65.0	mi/h
Adjustment for no-passing zones, fnp	3.9*	mi/h
Average travel speed, ATS	53.5	mi/h

Percent Time-Spent-Following

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.1	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor, fHV	0.982	
Two-way flow rate,(note-1) vp	958	pc/h
Highest directional split proportion (note-2)	527	
Base percent time-spent-following, BPTSF	56.9	%
Adj.for directional distribution and no-passing zones, fd/np	12.3	
Percent time-spent-following, PTSF	69.3	%

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.30	
Peak 15-min vehicle-miles of travel, VMT15	2306	veh-mi
Peak-hour vehicle-miles of travel, VMT60	8761	veh-mi
Peak 15-min total travel time, TT15	43.1	veh-h

Notes:
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Two-Way Two-Lane Highway Segment Analysis

Analyst	LCC
Agency/Co.	Wilson & Company
Date Performed	1/20/2003
Analysis Time Period	DHV
Highway	US 50B
From/To	463.506 to 467.583
Jurisdiction	CDOT
Analysis Year	Future Yr 2025
Description	Two Lane Analysis with no-passing zones and access/mi

Input Data

Highway class	Class 1				
Shoulder width	10.0	ft	Peak-hour factor, PHF	0.95	
Lane width	12.0	ft	% Trucks and buses	20	%
Segment length	4.0	mi	% Recreational vehicles	0	%
Terrain type	Level		% No-passing zones	80	%
Grade: Length		mi	Access points/mi	2	/mi
Up/down		%			

Two-way hourly volume, V	686	veh/h	
Directional split	55 / 45	%	

Average Travel Speed

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.2	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor,	0.962	
Two-way flow rate,(note-1) vp	751	pc/h
Highest directional split proportion (note-2)	413	pc/h
Free-Flow Speed from Field Measurement:		
Field measured speed, SFM	-	mi/h
Observed volume, Vf	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed, BFFS	65.0	mi/h
Adj. for lane and shoulder width, fLS	0.0	mi/h
Adj. for access points, fA	0.0*	mi/h
Free-flow speed, FFS	65.0	mi/h
Adjustment for no-passing zones, fnp	3.3*	mi/h
Average travel speed, ATS	55.9	mi/h

Percent Time-Spent-Following

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.1	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor, fHV	0.980	
Two-way flow rate,(note-1) vp	737	pc/h
Highest directional split proportion (note-2)	405	
Base percent time-spent-following, BPTSF	47.7	%
Adj.for directional distribution and no-passing zones, fd/np	15.9	
Percent time-spent-following, PTSF	63.6	%

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.23	
Peak 15-min vehicle-miles of travel, VMT15	722	veh-mi
Peak-hour vehicle-miles of travel, VMT60	2744	veh-mi
Peak 15-min total travel time, TT15	12.9	veh-h

Notes:
1. If vp >= 3200 pc/h, terminate analysis-the LOS is F.
2. If highest directional split vp >= 1700 pc/h, terminate analysis-the LOS is F.