US 40 & US 287

Passing Lane Study – Limon to South of Kit Carson

Final Report

May 2018

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Muller Project Number: 17-036.02 Task 104

Version Control

Version	By	Date	Notes
1.0	JDM	11/1/2017	Initial draft
1.1	MJL, KEB	11/3/2017	Internal quality review
1.2	JDM, MJL	03/28/2018	Updated based on additional analysis
1.3	MJL, KEB	04/20/2018	Updated based on CDOT feedback
2.0	MJL	05/09/2018	Final version

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Table of Contents

List of Figures

List of Tables

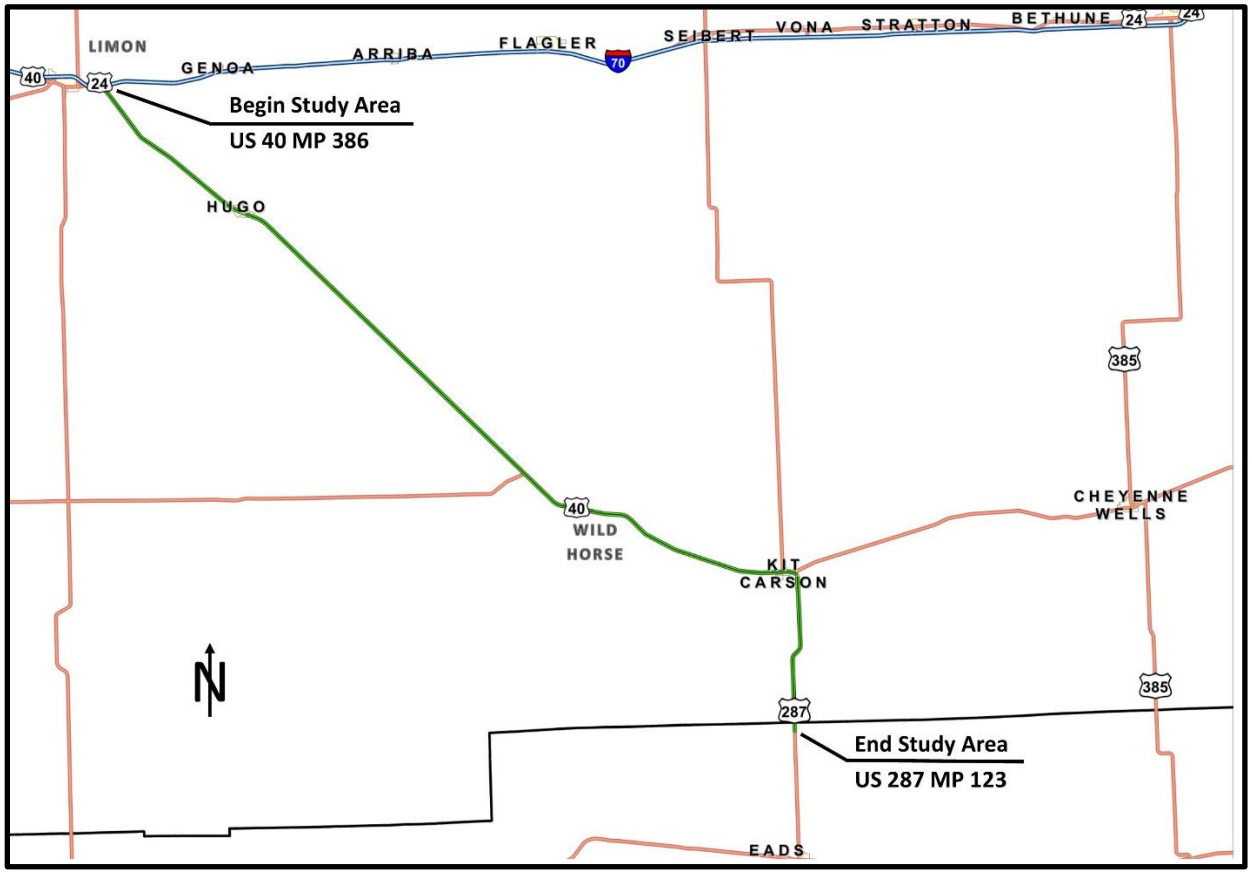
Appendices

1 INTRODUCTION

CDOT Region 4 engaged Muller Engineering Company to conduct a study to evaluate the need for passing lanes on US 40 and US 287 in the southeast area of Region 4. This report presents the analysis and recommendations of the study.

The study area consisted of US 40 between the City of Limon and the Town of Kit Carson (MP 386 to MP 446) and US 287 between Kit Carson and the Cheyenne/Kiowa county line (MP 123 to MP 133). US 40 within the study area traverses three populated areas: the towns of Hugo (MP 398 to MP 400), White Horse (MP 432 to MP 433) and Kit Carson (MP 444.5 to MP 446). US 287 connects Kit Carson with the Town of Eads further to the south and does not traverse any populated areas in the study area. A study area map is provided as **Figure 1**.

Figure 1: US 40 & US 287 Study Area



1.1 Purpose of Passing Lanes

Passing lanes are typically provided for several purposes[1,2]:

1. To improve overall traffic operations on two-lane highways by breaking up traffic platoons and reducing delay caused by inadequate passing opportunities over substantial lengths of highway.
2. To reduce delays at specific bottleneck locations, such as steep upgrades where slow-moving vehicles are present.
3. Improving road safety by reducing the need for passing vehicles in the opposing lane.

The first and third listed purposes are the greater criteria for passing lanes in the study area, although several of the existing passing lanes on the northern portion of the study area are located on the upgrades of rolling hills.

1.2 Roadway Characteristics

The US 40 and US 287 study area is a part of the Ports to Plains corridor that provides a commercial truck route between Laredo, Texas (Mexican border) and Denver, Colorado. With the study area being listed as a truck route, the percentages of trucks are high on the corridor, ranging from approximately 30 to 60 percent.

US 40 is predominantly a concrete two-lane highway. Through-lane width is 12 feet with outside shoulders between 8 and 10 feet in the study area. Rumble strips are installed along US 40 on the shoulders in much of the study area. The posted speed limit is 65 miles per hour (mph) with reductions through Hugo (30 mph), Wild Horse (55 mph) and Kit Carson (35 mph). CDOT OTIS AADT volumes range from 2800 to 5200 (in Kit Carson). Terrain in the area is listed as plains with minor rolling hills near Limon.

US 287 is entirely a concrete two-lane highway. Through-lane width is 12 feet with a 10-foot outside shoulder. Rumble strips are installed along US 287 on the shoulders in the study area. The posted speed limit is 65 mph. CDOT OTIS AADT volumes range from 2900 to 3500 vehicles per day. Terrain in the area is listed as plains with no significant vertical change in roadway elevation.

[1] Harwood, DW & Hoban, CJ 1987, *Low-Cost Methods for Improving Traffic Operations on Two-Lane Roads: Informational Guide*, Report No. FHWA/IP-87/2, FHWA, Washington, DC.
[2] ADOT 2015, *Climbing and Passing Lane Prioritization Study Final Report*, Arizona Department of Transportation, Phoenix, AZ.

2 METHODOLOGY

To determine if additional passing lanes were merited in the study area, analysis of existing operations and safety was performed. The results of the operations and safety review were then compared to criteria identified based on a review of documentation developed by other state Departments of Transportation (DOTs).

Tasks conducted as part of the study method included:

- A background review to identify passing lane guidance and criteria developed in other states.
- A field and desktop review of existing conditions in the study area to identify existing passing zones, passing lanes and other roadway characteristics that are of importance to passing and passing facilities.
- A field visit to determine the frequency and severity of vehicle bunching.
- Traffic data collection (including vehicle bunching).
- Analysis of traffic operations and road crashes in the study area.
- Review of the frequency and length of vehicle bunches in the study area.
- Comparison of performance in the study area against the criteria identified.
- Analysis and prioritization of potential passing lane locations.

3 REVIEW OF PASSING LANE GUIDANCE AND CRITERIA

3.1 Passing Lane Criteria Review

A review was conducted of research and guidance developed by other state DOTs. Research and guidance was identified that had been developed for the Kansas DOT and Missouri DOT. These were used to develop criteria that might apply to the conditions identified in the study area.

3.1.1 Kansas DOT Guidance and Criteria Review

Kansas State University conducted a review of passing lane practices and criteria for the Kansas DOT[3]. As part of the study, recommendations were developed for the minimum AADT that warranted a passing lane (**Table 1**). The warrants considered the proportion of the roadway with no passing zones and the truck percentage.

However, the traffic characteristics on US 40 and US 287 in the study area varied from the assumptions used for the warrants in **Table 1**. A less pronounced peak period was observed in the study area (K value of approximately 0.08) and a higher proportion of trucks (50%). The directional split was nearly 50%/50% and there were wider shoulders (8' to 10'). These make it challenging to apply the table to the conditions identified in the study area.

If the KDOT values were adjusted for a higher truck proportion (50%) and a lower K value (0.08), the projected AADT values are shown in

[3] Mutabazi, M, Russell, ER & Stokes, RW 1999, *Review of the effectiveness, location, design and safety of passing lanes in Kansas*, Report No. K-TRAN: KSU-97-1, Kansas State University, Manhattan, KS.

Table 2. As shown, this suggests that a minimum AADT of between 4400 and 4900 vehicles per day to maintain a Level of Service (LOS) B.

Table 1: KDOT Minimum AADT Warranting a Passing Lane (Level Terrain)

		Projected Design Year AADT									
% Trucks		10		15		20		30		40	
LOS		B	C	B	C	B	C	B	C	B	C
% "no-passing" zones	0%	3900	6200	3700	5890	3520	5600	3210	5110	2950	4690
	20%	3460	5630	3290	5340	3130	5080	2850	4630	2620	4260
	40%	3030	5190	2880	4930	2740	4690	2500	4280	2290	3930
	60%	2740	4900	2600	4660	2480	4430	2260	4040	2080	3710
	80%	2450	4760	2330	4520	2220	4300	2020	3920	1860	3600
	100%	2310	4620	2190	4380	2090	4180	1900	3800	1750	3490

Assumptions: K=0.15, directional split = 60/40, PHF=0.92, Lane width 12 ft, shoulder width 6ft

Source: Mutabazi, Russell and Stokes (1999).

Table 2: Projected AADT Criteria for 50% trucks and a K value of 0.08

% "no-passing" zones	LOS B	LOS C
0%	4900	7800
20%	4400	7100

Notes: Adapted from Mutabazi, Russell and Stokes (1999) values assuming linear relationship for trucks at higher proportions than the original analysis.

The study also conducted crash analysis related to passing lanes. However, no specific criteria were developed to identify where passing lanes were merited based on road safety.

3.1.2 Missouri DOT Criteria Review

A study was conducted for MODOT to develop criteria and guidance for designing and location passing lanes in Missouri[4]. The study provided recommended minimum AADT as a screening criteria for considering passing lanes. Based on the report, site selection for passing lanes should focus on two-lane highways with existing or projected traffic volumes between 5,000 and 20,000 vehicles per day. The study also suggested that for traffic analysis of potential passing lane sites, LOS B is generally considered an acceptable level of service for a two-lane highway.

The study also examined the safety effectiveness of passing lanes and generally found that passing lanes were effective at reducing passing related crashes on two-lane highways. However, no specific criteria were developed for identifying passing lanes based on road safety considerations.

3.1.3 Outcomes of the Review

The review identified AADT criteria that could be used to screen for potential passing lane sites. Based on the data collected in the US 40 and US 287, the study area was on the fringe of the minimum screening criteria for AADT.

The review also identified LOS B as an acceptable level of service for two lane highways. The review did not identify specific criteria for identifying road safety issues.

3.1.4 Recommended Criteria for Passing Lane Analysis

For the purposes of this study, two criteria were identified for considering passing lanes:

- Criterion 1: Study area segments having a LOS C or worse.
- Criterion 2: Identification of crash pattern(s) that could be corrected by addition of a passing lane.

Due to the high volume of trucks on the corridor, the study also reviewed the bunching of trucks on the corridor. The existing documentation review did not identify any specific criteria to assess truck bunching for considering passing lanes, but this was a less common feature of the study area that may contribute to driver discomfort and potential safety risks for passing. This was added as the third passing lane criterion.

[4] Potts, IB & Harwood, DW 2004, *Benefits and design/location criteria for passing lanes*, Report No. RDT 04-008, Midwest Research Institute, Kansas City, MO.

4 DATA COLLECTION AND FIELD OBSERVATIONS

4.1 Traffic Data Collection

4.1.1 September 2017 Data

Twenty-four hour "tube" counts were conducted at three locations to determine daily volume and 85th percentile speeds on the corridor. Two counts were collected on US 40 (MP 396 and MP 438.5) and one count on US 287 (MP 124). All counts were conducted on Tuesday, September 26, 2017. A summary of the 85th percentile speed, and daily/peak hour volumes are provided in **Table 3**.

Table 3: Daily Count Location Summary

Data collected	US 40 MP 396		US 40 MP 438.5		US 287 MP 124	
	Eastbound	Westbound	Eastbound	Westbound	Northbound	Southbound
85th percentile speed (mph)	62	63	57	60	65	66
Daily volume (directional)	1922	1845	1597	1424	1949	1888
Total daily volume	3767		3021		3837	
Peak hour	1:00 p.m.		1:00 p.m.		12:00 p.m.	
Peak hour volume	293		252		316	
	147	146	125	127	155	161
	50.2%	49.8%	49.6%	50.4%	49.1%	50.9%

It should be noted that the speed data from the counts showed that approximately 5 to 15 percent of vehicles were traveling between 1 and 15 miles per hour (mph). Vehicles traveling at this speed may be due, in part, to turning maneuvers entering the highway, agricultural vehicles or other unknown factors. It is unclear the exact reason behind the percentage of vehicles traveling at a low speed. However, the 85th percentile speeds shown in **Table 3** may underrepresent actual travel speeds in the area. Daily count reports of each location can be found in **Appendix A**.

4.1.2 February 2018 Data

An additional 48-hour count was conducted on US 287 at MP 124 on February 13th and February 14th, 2018 (Tuesday and Wednesday respectively). This data was collected to gain an understanding of the frequency and magnitude of vehicle bunching in the area. **Table 4** summarizes the traffic volume and speed data collected. Compared with the count conducted in September 2017, the speeds were slower, and the traffic volumes were less, which may have been due to seasonal differences. Analysis of the vehicle bunching data is provided in **Section 5.4**. Daily count reports for each direction are provided in **Appendix B**.

Table 4: February 2018 Count Speed and Traffic Volume

Data collected	US 287 MP 124	
	Northbound	Southbound
85th percentile speed (mph)	59	61
Daily volume (directional)	1637	1453
Total daily volume	3090	
Peak hour	12:00 p.m.	
Peak hour volume	222	
	117	105
	52.7%	47.3%

4.2 Field Observations

4.2.1 October 2017 Observations

Field observations were conducted in the study area on Tuesday, October 10, 2017. Frequent truck traffic was observed and appeared to be traveling near the posted speed limit. Limited anecdotal observations were made of trucks travelling in bunches. Passing maneuvers of passenger vehicles and commercial trucks were observed being completed without difficulty. Advanced signing, such as "Passing Lane Keep Right" or "Passing Lane ½ Mile" were not observed. In general, observed operations of US 40 and US 287 were found to be satisfactory without any major perceived issues.

During the site visit, anecdotal passing maneuvers were observed in the built-up areas in Hugo and Kit Carson where the road widens to four through-lanes. Drivers may be more comfortable passing in the built-up areas than in the higher speed passing zones in between. However, the study did not focus these areas.

4.2.2 February 2018 Observations

Truck bunching observations were made on Thursday, February 8th, 2018. The observations focused on vehicle bunches and turning traffic in two focused areas, US 40 between approximately MP 427 and MP 443 and US 287 between MP 119.5 and MP 121. Typical headways between vehicles were observed to be between 1 and 3 seconds, average bunch lengths varied from 2 to 6 vehicles. Turning vehicles (both from the major and minor approaches) were minimal.

Analysis based on these observations is further detailed in **Section 5.4**.

5 PASSING LANE ANALYSIS

5.1 Roadway Review

5.1.1 Segmenting Study Area

To determine the LOS and Percent Time Spent Following (PTSF), the study area was divided into approximately five-mile segments, 12 segments on US 40 and two on US 287. Segments that included Hugo and Kit Carson were shortened to remove the lower speed zones within city limits. **Table 5** lists the segments.

Table 5: US 40/US 287 Segment Information

Route	Seg.	From	To	Seg. Length (mi)	Seg. Notes
US 40	1	386	391	5.0	N/a
	2	391	396	5.0	N/a
	3	396	401	3.4	Hugo City limits removed from segment
	4	401	406	5.0	N/a
	5	406	411	5.0	N/a
	6	411	416	5.0	N/a
	7	416	421	5.0	N/a
	8	421	426	5.0	SH 94 intersection
	9	426	431	5.0	N/a
	10	431	436	5.0	Wild Horse
	11	436	441	5.0	N/a
	12	441	446	4.0	Kit Carson City Limits Removed from Segment
US 287	13	123	128	5.3	N/A
	14	128	133	5.2	N/A

5.1.2 Strip Map

To aid with understanding the existing passing lanes and areas, a strip map was created to document current roadway characteristics. Existing striping, passing lanes, county road/driveway intersections and roadside structures that may present challenges to the construction of additional passing lanes were documented on the strip map. The strip map is provided in **Appendix C**.

Existing Passing Areas

Existing passing areas, either a passing lane or passing zones, were identified in much of the study area. Passing lanes are typically 0.5 miles in length in rural areas and approximately 1.0 to 1.9 miles near/within city limits. **Table 6** lists the existing passing lane locations and their length. The westbound passing lane between MP 417.60 and MP 417.95 may have limited effectiveness with a length of 0.35 miles.

Operational observations of the short passing lane were not performed within the scope of the project. It should be noted that there are no existing passing lanes on US 287 in the study area.

Table 6: Existing US 40 Passing Lane Locations and Length

Eastbound				Westbound			
Beg. MP	End MP	Length (mi)	Notes:	Beg. MP	End MP	Length (mi)	Notes:
386.01	386.83	0.82		388.09	387.4	0.69	
390.03	390.49	0.46					
398.78	399.73	0.95	Hugo	399.58	397.69	1.89	Hugo
414.85	415.25	0.40		414.20	413.61	0.59	
				417.95	417.60	0.35	
				427.00	426.61	0.39	
444.74	445.67	0.93	Kit Carson	445.67	444.74	0.93	Kit Carson

No passing zones (double yellow pavement markings) more than a half mile long occur at five locations on US 40, near MP 412, MP 416, MP 425, MP 432 through MP 434 and MP 445 through MP 446. Details of the passing zones include that:

- The no passing zones near MP 412 and MP 416 are due to minor rolling hills in the area that appear to limit sight distance.
- The no passing zone near MP 425 is due to the major intersection of US 40 and SH 94.
- The no passing zones between MP 432 through 434 and MP 445 through 446 are due to the communities of Wild Horse and Kit Carson respectively.
- The no passing area in Wild Horse extends through city limits and continues approximately 0.90 miles to the southeast.

A summary of the percentage of each segment permitted passing, by direction, is provided as **Table 7**.

Table 7: Segment Passing Type, By Direction

	Seg. Num.	From	To	% No Passing	% EB Passing	% WB Passing	% EB & WB Passing
US 40	1	386	391	41%	18%	10%	31%
	2	391	396	1%	22%	27%	49%
	3	396	401	38%	9%	20%	31%
	4	401	406	9%	24%	17%	50%
	5	406	411	6%	13%	14%	66%
	6	411	416	25%	20%	14%	39%
	7	416	421	18%	19%	11%	52%
	8	421	426	23%	13%	9%	55%
	9	426	431	3%	17%	8%	72%
	10	431	436	47%	7%	6%	40%
	11	436	441	0%	6%	5%	90%
	12	441	446	13%	12%	12%	64%

	Seg. Num.	From	To	% No Passing	% EB Passing	% WB Passing	% EB & WB Passing
US 287	13	123	128	0%	19%	16%	65%
	14	128	133	3%	21%	14%	62%

Note: Due to rounding, passing percentages may not sum to 100%.

5.1.3 Existing Access Points

Existing access to US 40 occurs at approximately 40 county roads between the I-70 interchange (MP 386) and the Town of Kit Carson (MP 446), this correlates to approximately 0.67 access points per mile. It should be noted that the Town of Hugo and Town of Kit Carson City limits were excluded from the existing access point analysis. Additionally, while the access points within the Towns of Hugo and Kit Carson are excluded, the four lane segments of US 40 are frequently used as passing lanes through city limits.

Existing access to US 287 occurs at 17 locations between the Town of Kit Carson (MP 133) and MP 119, this correlates to approximately 1.2 access points per mile. There are multiple driveways to residential homes and agriculture land on both US 40 and US 287. These driveways are not considered as access points as the expected volume entering/exiting the access is negligible to the operation of the highways.

As turning movements from existing access points are infrequent, they can create unexpected driver scenarios, including bringing a vehicle to a stop to wait for a turning vehicle to make a turn. While this action was not observed in the field, anecdotal statements highlight the condition occurs and is an uncomfortable situation for both the turning and stopping vehicle. A review of rear-end crashes was completed using five years of crash data (2012-2017). In the study area there were 12 rear-end crashes on US 40 and 11 on US 287. Of the 23 rear-end crashes 5 (21.7 percent) mentioned a passing maneuver as a contributing factor for the crash.

5.2 HCM Analysis

A Highway Capacity Manual analysis was performed on each segment to determine the Level of Service (LOS) and Percent Time Spent Following (PTSF). PTSF values are used to determine LOS. LOS ranges from “A” to “F” with A denoting free flow and F denoting failing conditions. For this study, a LOS A or B was considered an acceptable operation. LOS and PTSF were calculated used Highway Capacity Software developed by McTrans. Analysis focused on peak hour traffic volumes. Several local inputs were required for modeling, including directional volume and speed data, percent trucks, percentage of no passing zones and the number of access points on each segment.

Directional speed and volume criteria for each segment was provided by the daily traffic counts. For segments 1 through 6, the traffic count at US 40 MP 396 was utilized. For segments 7 through 12 the traffic count at US 40 MP 438.5 was applied and for segments 13 and 14, the count at MP 124 was utilized. Percentage of trucks was determined from CDOT Online Transportation Information System (OTIS) data. The percentage of no passing zones and the number of access points were determined through the review of pavement markings and geometry on each segment.

A summary of the inputs for each segment is provided as **Table 8**.

Table 8: HCS Inputs

Route	Seg.	From	To	Percent Trucks	% No Passing	Access Points
US 40	1	386	391	47%	41%	7
	2	391	396	47%	1%	3
	3	396	401	47%	38%	2
	4	401	406	41%	9%	2
	5	406	411	44%	6%	4
	6	411	416	44%	25%	6
	7	416	421	60%	18%	0
	8	421	426	60%	23%	3
	9	426	431	56%	3%	0
	10	431	436	40%	47%	14
	11	436	441	40%	0%	7
	12	441	446	33%	13%	3
US 287	13	123	128	42%	0%	5
	14	128	133	55%	3%	11

5.3 HCS Results

LOS and PTSF were calculated for each segment. Eight segments had a LOS B and four LOS A. PTSF ranged from 24.4 to 47.9 percent. In general LOS B was found in the segments where cities/towns were located or near the SH 94 intersection. A summary of LOS and PTSF by segment is provided as **Table 9**. The HCS report for each segment is attached as **Appendix C**.

Table 9: Level of Service and Percent Time Spent Following by Segment

	Seg.	From	To	LOS	PTSF
US 40	1	386	391	B	47.9%
	2	391	396	A	30.0%
	3	396	401	B	47.1%
	4	401	406	A	34.6%
	5	406	411	A	32.9%
	6	411	416	B	42.9%
	7	416	421	B	35.0%
	8	421	426	B	37.2%
	9	426	431	A	26.3%
	10	431	436	B	43.7%
	11	436	441	A	24.3%
	12	441	446	A	31.5%
US 287	13	123	128	A	28.3%
	14	128	133	A	30.5%

Notes: LOS – Level of Service, PTSF – Percent Time Spent Following.

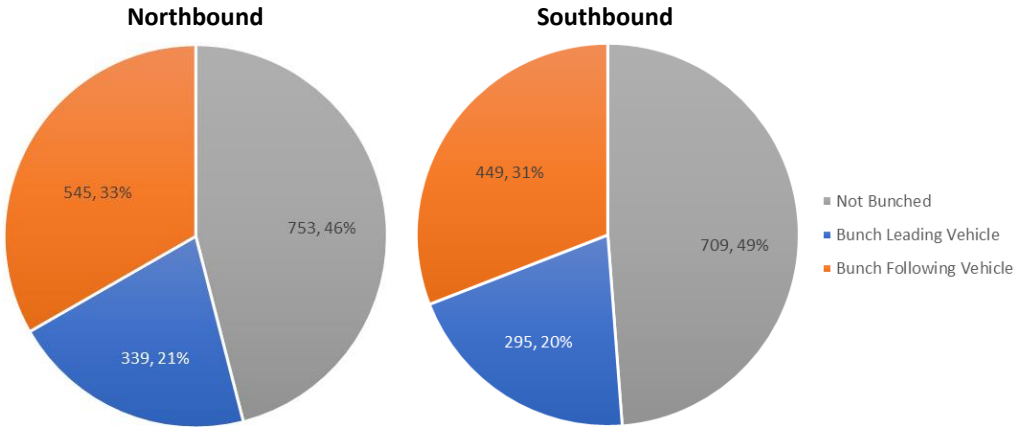
5.4 Truck Bunching Analysis

Truck Bunching Analysis was conducted using data collected in February 2018 on US 287 at MP 124. Due to the 65 mph speed limit in the study area, a headway of 10 seconds between vehicles was used to identify bunched vehicles.

5.4.1 Proportion of Traffic that was Bunched

The proportion of traffic that was bunched is shown in **Figure 2**. As shown, approximately half of traffic were in bunches with 31 to 33 percent of traffic being following vehicles in a bunch and 20 to 21 percent being lead vehicles in a bunch.

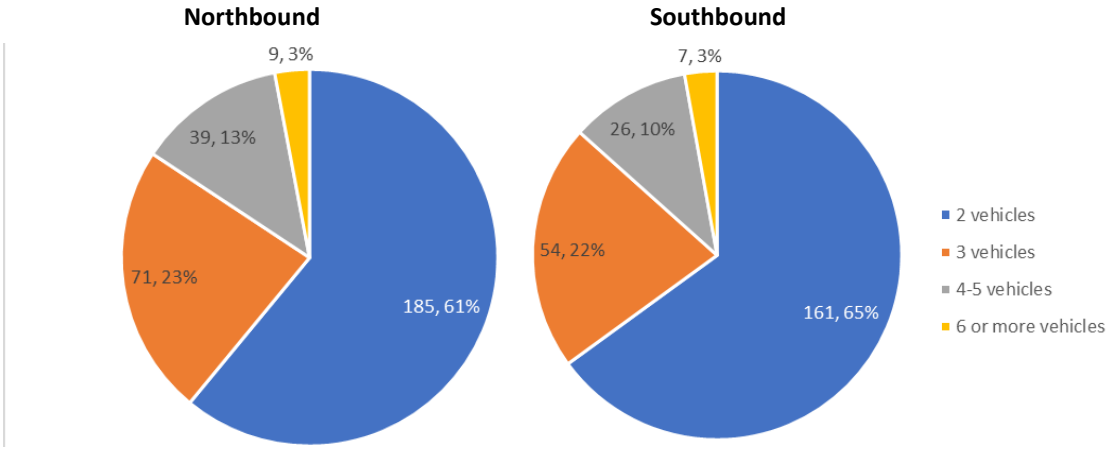
Figure 2: Proportion of Traffic that was Bunched



5.4.2 Number of Vehicles in a Bunch

The number of vehicles in bunches was also determined (**Figure 3**). Two vehicle bunches were most common, but between 35 and 39 percent of bunches involved three or more vehicles.

Figure 3: Size of Vehicle Bunches (with Truck)



The longest vehicle bunches recorded in each direction are shown in **Table 10**. Bunches of up to 20 vehicles with ten trucks were recorded during the two-day data collection period. Speeds of the lead vehicles in these bunches ranged from 51 to 64 mph.

Table 10: Longest Vehicle Bunches Recorded

Direction	Date and time	Total vehicles	Total trucks	Leading vehicle speed (mph)
Northbound	2/13 10:41 a.m.	12	9	51
	2/13 1:33 p.m.	14	8	56
	2/13 5:05 p.m.	14	6	64
	2/14 10:53 a.m.	20	10	55
Southbound	2/13 11:09 a.m.	12	9	54
	2/13 2:16 p.m.	18	12	55
	2/13 4:15 p.m.	15	9	51
	2/14 8:53 a.m.	14	8	57

5.4.3 Vehicle Bunching by Time-of-Day

Vehicle bunching data by time-of day is shown in **Figure 4** (northbound) and **Figure 5** (southbound). The midday hours (approximately 10:00 a.m. to 4:00 p.m. had the highest frequency of vehicle bunches. The midday bunch peak correlated to the periods with the highest traffic volumes as measured by the traffic counts. The maximum number of bunches per hour for the northbound and southbound directions are 33 and 25 respectively equating to an average of a bunch every 1.8 to 2.4 minutes. Based on this frequency, it is highly likely that a motorist traveling between Kit Carson and Eads would encounter a bunch when traveling during the midday hours. The average speed of bunches with trucks was approximately 55 mph during midday hours (10 mph less than the 65 mph posted speed).

Figure 4: Northbound Bunches by Time of Day

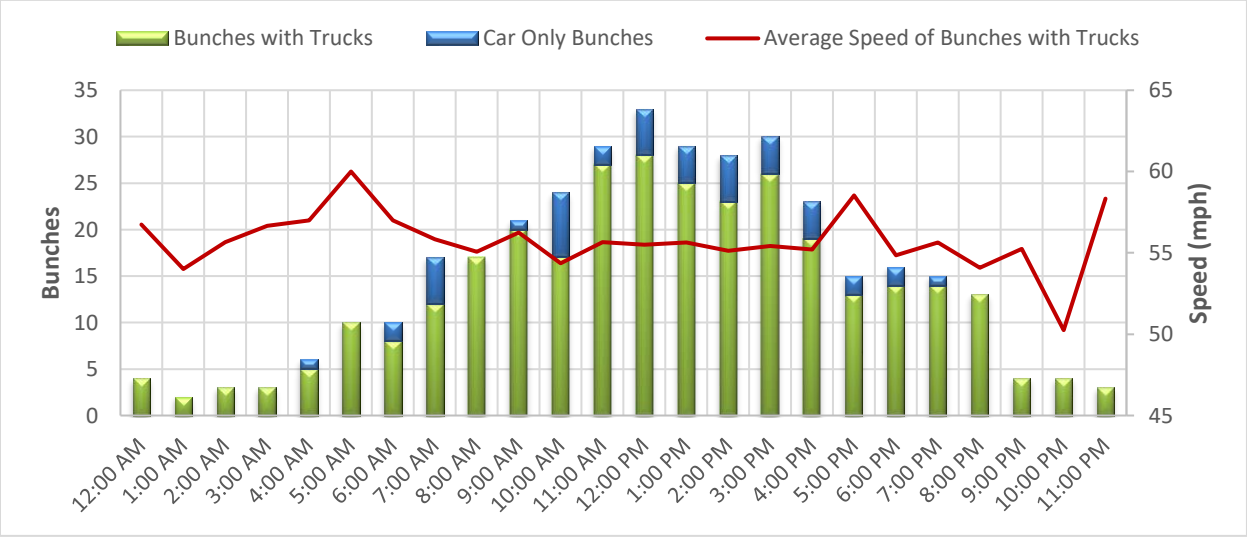
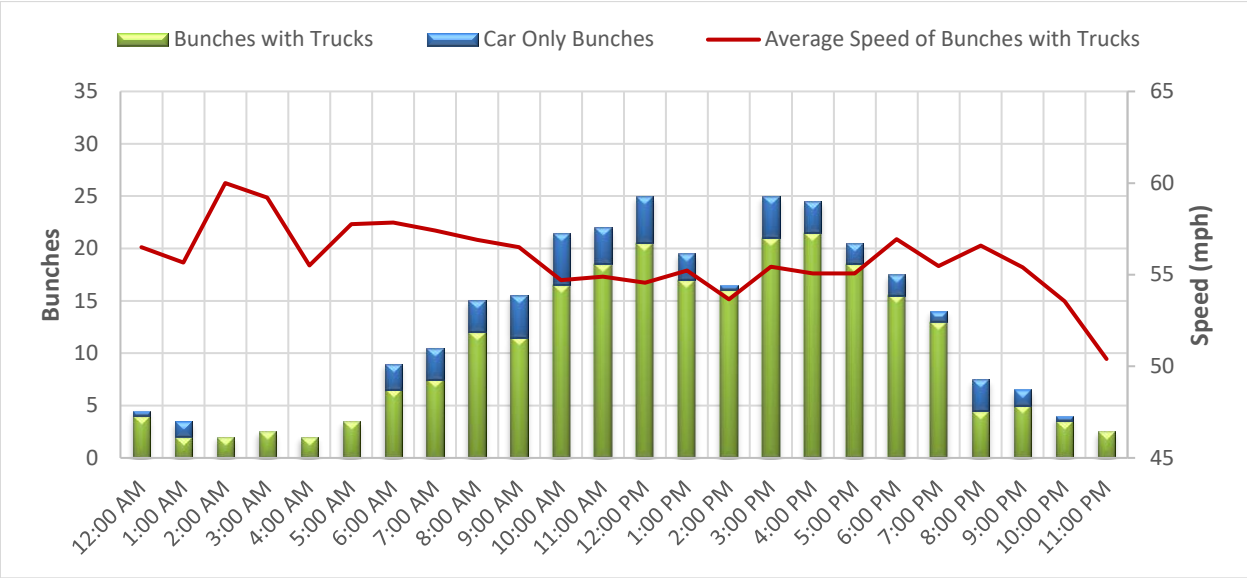


Figure 5: Southbound Bunches by Time of Day



5.4.4 Bunching Analysis Discussion

The analysis found that bunching occurred frequently, particularly during daytime hours between 10 a.m. and 4 p.m. Most bunches contained trucks and 35 to 39 percent of bunches were three vehicles or longer, with some bunches being up to 20 vehicles in length. The speed data recorded found that bunches traveled 55 mph on average, which would delay drivers if they desired to travel at the posted speed (65 mph). This is likely to contribute to driver discomfort on the corridor and may contribute to riskier passing decisions if drivers attempt to pass bunches of vehicles that include trucks.

5.5 Crash Analysis

Crash analysis was performed in the study area to identify existing crash patterns that could be treated using a passing lane. Five years of crash data was collected using CDOT Vision Zero software from July 1, 2011 to June 30, 2016. A total of 153 crashes were recorded in the study area during this time, with 42 causing injury, nine resulting in a fatality and 11 indicating that a passing maneuverer was a contributing factor of the crash. Crash summary by segment is provided as **Table 11** and the Crash Listing is provided as **Appendix D**.

A review of the Level of Service of Safety (LOSS) was completed for the study area. LOSS provides a rating scale I, II, III and IV. LOSS I/II are areas with a below average crash rate for similar facilities. Conversely LOSS III/IV are areas with an above average crash rate for similar facilities. A Total Crash LOSS highlighted two areas with a LOSS of III or IV. These two areas are US 40 at approximately MP 405.5 and US 287 at approximately MP 131.5. The LOSS III area of US 40 is primarily due overturning vehicles on wintry road conditions, none of the crashes were related to passing maneuvers. The LOSS IV area of US 287 is located near the Big Sandy Creek Bridge. Crashes in this area were predominantly due to icy conditions or wild animal collisions. None of crashes on or near the Big Sandy Creek Bridge were related to passing maneuvers.

Approximately 25 percent (4 of 15) of the crashes in Segment 13 occurred in the "S" curve approximately between MP 127.1 and MP 128.3. Half of the crashes (2 of 4) in the "S" curve were due to passing maneuvers. The limited number of crashes do not support a pattern but may reveal a trend in the "S" curve.

Table 11: Crash Summary by Segment

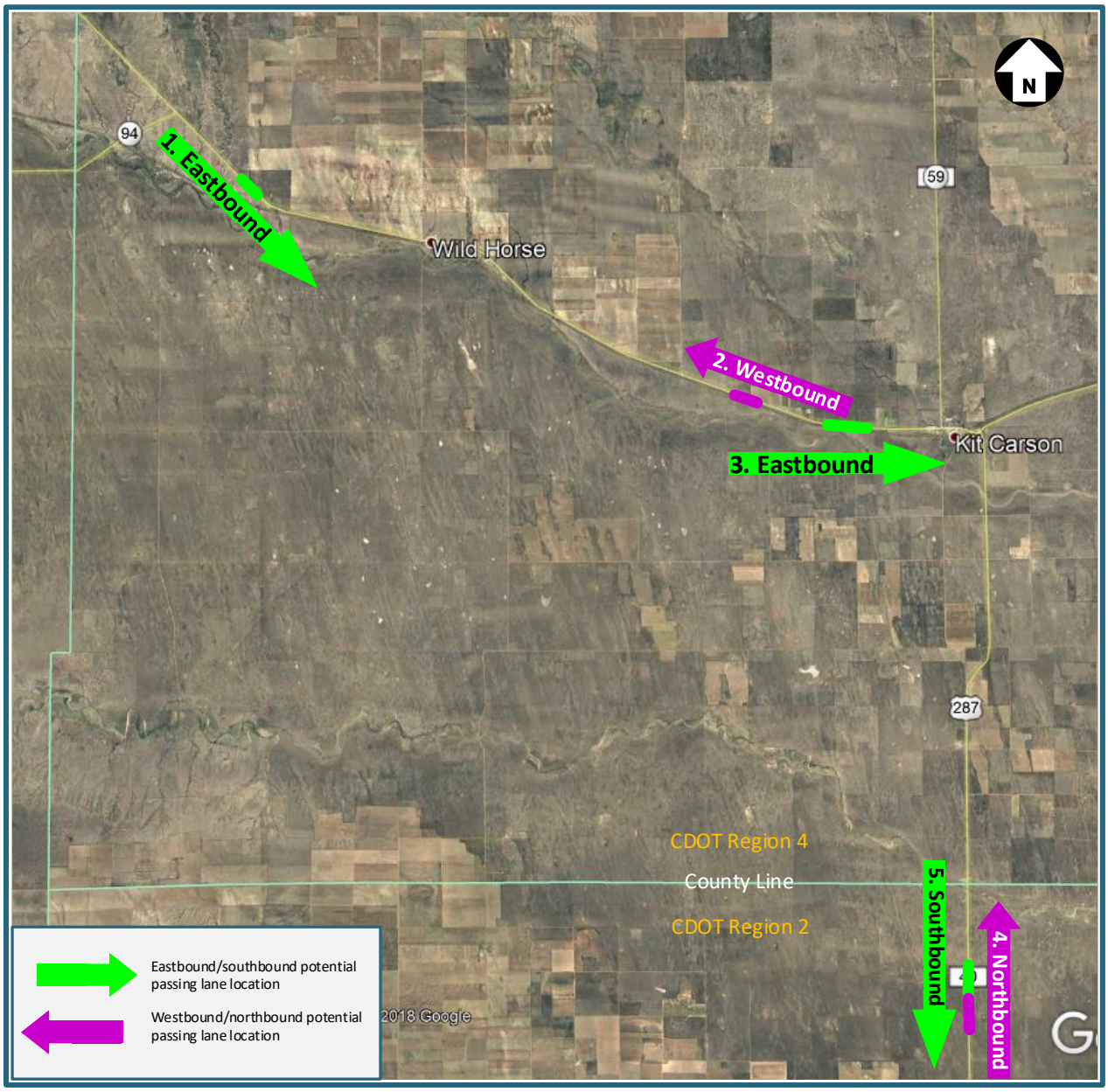
Route	Seg.	From	To	Total Crashes	Injury	Fatal	Passing Related
US 40	1	386	391	9	1	0	0
	2	391	396	7	3	0	0
	3	396	401	7	4	0	1
	4	401	406	10	7	0	0
	5	406	411	7	2	2	1
	6	411	416	4	2	1	0
	7	416	421	3	3	0	1
	8	421	426	9	4	0	2
	9	426	431	14	1	2	1
	10	431	436	18	3	1	1
	11	436	441	12	5	1	0
	12	441	446	20	2	0	0
US 287	13	123	128	15	4	0	3
	14	128	133	18	1	2	1

6 POTENTIAL PASSING LANE LOCATIONS ANALYSIS

Five areas were provided by CDOT Region 4 to consider the potential for additional passing lanes and associated passing issues (**Figure 6**):

1. US 40 Eastbound at MP 427.2
2. US 40 Westbound at MP 441.3
3. US 40 Eastbound at MP 443
4. US 287 Northbound from MP 119.5 to MP 120.3
5. US 287 Southbound from MP 120.3 to MP 121.

Figure 6: Potential Passing Lane Locations Reviewed



Source: Adapted from Google Earth™.

For the segment of US 40 between Limon and SH 94 as there are currently four passing lanes in the eastbound direction and four in the westbound direction (with a fifth westbound passing lane one mile to the east of SH 94). As a result, this segment was considered a lower priority for additional passing lanes and no additional locations were reviewed.

The potential passing lane review considered several factors and considerations including:

- Existing passing zones
- Nearest passing lanes
- Sight distance constraints
- Review of road crashes based on five years of crash data (2012-2017)
- Access points
- Existing site conditions and infrastructure
- Feasibility of providing a passing lane and adequate sight distance at potential lane addition and lane drop tapers.

It was assumed that the passing lane would be constructed within 0.5 miles of the potential passing lane mile post identified. AASHTO[5] identifies that the optimal passing lane length for a one-way flow rate of 100 vph is 0.5 miles. However, due to the 65 mph posted speed limit and frequency of truck bunching, longer passing lane lengths may be desirable. The review considered whether a passing lane of 0.5 to 1.0 miles in length was feasible at the identified areas (exclusive of transition tapers). Another key consideration was access point locations. Traffic movements such as stopping to make a left turn while in a passing lane may create additional safety risks.

6.1 US 40 Eastbound at MP 427.2

6.1.1 Existing Passing Zones

Eastbound US 40 has permitted passing within this potential passing lane location, except for a small hill located near MP 427.8. No permitted passing is striped for the eastbound direction from MP 427.55 to MP 427.80. Sight distance may be limited over this hill.

6.1.2 Nearest Passing Lanes

The nearest passing lanes to the site are:

- 11.6 miles to the west (MP 414.85 – MP 415.25)
- 17.54 miles to the east (MP 444.74 – MP 445.67, within built up area in Kit Carson).

6.1.3 Road Crashes

A review of the crashes between MP 426 and MP 428 found a total of seven crashes. One crash listed a passing maneuver as a possible source of the crash. No passing related correctable patterns were observed in the crash listing.

[5] AASHTO 2011, *A Policy on Geometric Design of Highways and Streets*, Table 3-31, AASHTO, Washington, DC.

6.1.4 Infrastructure

Infrastructure located near the potential passing lane location includes:

- A bridge with guardrail located between MP 427.00 and MP 427.21.
- A culvert located at MP 427.55.

These items may increase the cost and complexity of constructing an eastbound passing lane at this location.

6.1.5 Access Points

- A gravel access road is located on the north side of US 40 at MP 427.86.

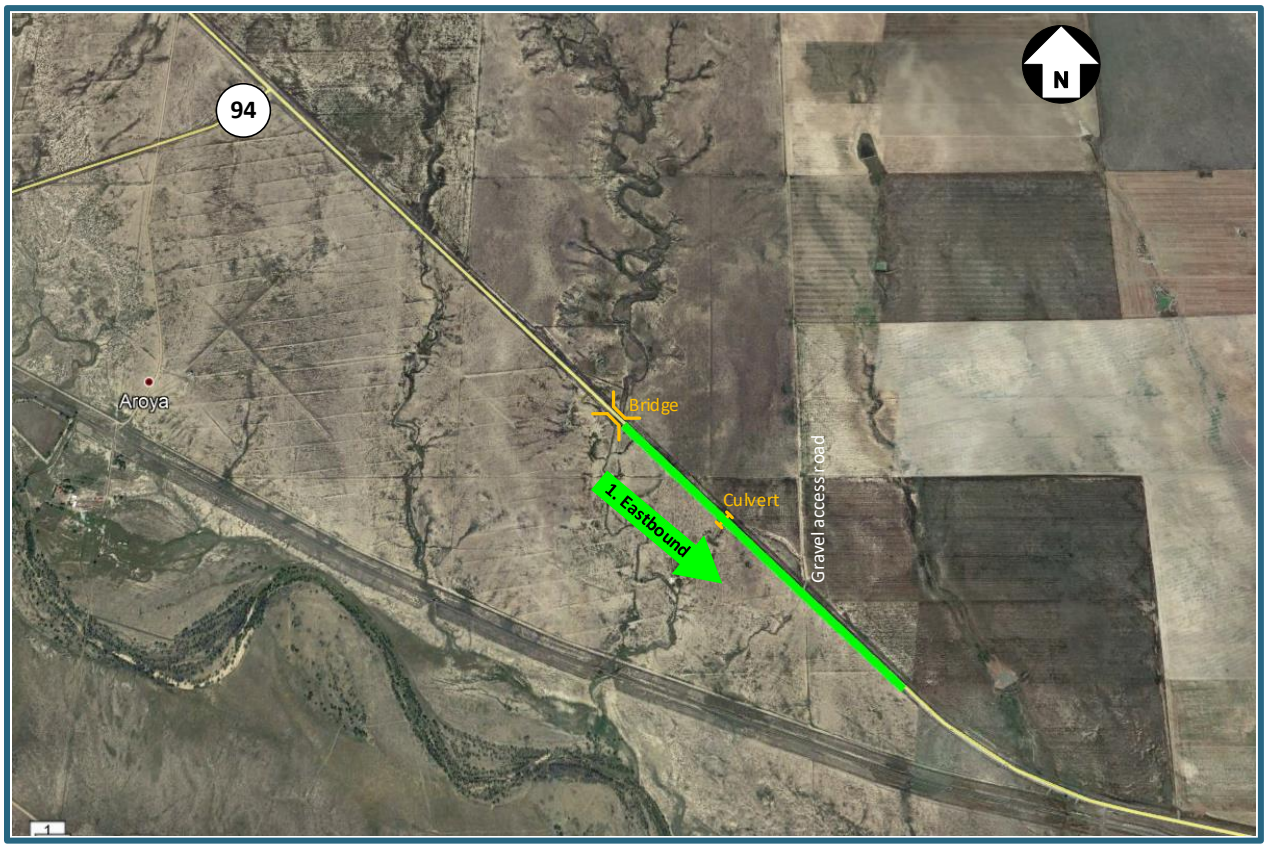
6.1.6 Other Factors

- The eastbound direction is on a slight uphill gradient with sight restrictions. AASHTO (2011) notes "the value of a passing lane is more obvious at locations where passing sight distance is restricted than on long tangents that may provide passing opportunities even without passing lanes".
- The location is 1.7 miles west of the junction of US 40 and SH 94. If slower moving eastbound traffic enters US 40 or bunching occurs at this intersection, a passing zone at MP 427.2 would be well-placed to improve traffic operations in this area.
- A horizontal curve is located further to the east starting at MP 428.25 but passing is permitted on the curve.

6.1.7 Potential Passing Lane Location

A potential passing lane near MP 427.2 could be located beginning just east of the bridge at MP 427.11 and extending to the beginning of the horizontal curve at 428.25 (**Figure 7**). This would provide a passing lane of 0.84 miles in length, excluding approximately 0.3 miles of beginning and end tapers. While the potential passing lane location is less than the preferred 1 mile in length, it could be constructed without impacting existing structures (e.g. culvert relocation or improvements). A potential conflict between traffic making a left turn onto the gravel access road (MP 427.86) and high-speed traffic using eastbound passing lane may require further review to consider turning traffic volumes and the potential for traffic stopping in the passing lane to make a turn. The culvert located at MP 427.55 would require further review to consider implications for cost and complexity of construction.

Figure 7: Potential Passing Lane at Location 1 (Eastbound)



Source: Adapted from Google Earth™.

6.2 US 40 Westbound at MP 441.3

6.2.1 Existing Passing Zones

Westbound US 40 has permitted passing at this location, except near a small hill located near MP 440.8. No permitted passing is striped for the westbound direction from MP 440.70 to MP 440.94. Sight distance may be limited in this area.

6.2.2 Nearest Passing Lanes

The nearest passing lanes to the site are:

- 3.44 miles to the east (MP 445.67– MP 444.74, within built up area in Kit Carson)
- 14.30 miles to the west (MP 427.00 – MP 426.61).

6.2.3 Road Crashes

A review of the crashes between MP 440 and MP 442 found a total of eight crashes. None of the crashes listed a passing maneuver as a possible source of the crash. No passing related correctable patterns were observed in the crash listing.

6.2.4 Infrastructure

A culvert is located at MP 240.2.

6.2.5 Access Points

County Road 16 is located at MP 441.21 and a gravel access point and County Road 15 are located near the northern limits of the area at MP 440.71 and MP 440.02 respectively. If a passing lane is desired at this location, volume data for each access should be acquired to determine the frequency of vehicles turning into the passing lane from a minor street approach.

6.2.6 Other Factors

- The location is on a minor upgrade that may increase speed differentials to facilitate passing.
- A passing lane at this location may provide an alternative to passing through the built-up area in Kit Carson; if drivers were aware of an upcoming passing lane.

6.2.7 Potential Passing Lane Location

Potential passing lane locations near MP 441 are challenged by the proximity of County Roads 14, 15, 16 and 17. However a potential passing lane location may begin west of County Road 16 and extend towards County Road 15 (**Figure 8**). Developing a passing lane at this location needs to consider the spacing between County Roads 15 and 16 (1.1 miles) and avoiding a merging taper near County Road 15. There is also a culvert located at MP 440.2. To minimize these issues, the passing lane could terminate prior to the culvert or extend beyond County Road 15. Further review of turning volumes and constructability challenges would need to further consider these issues.

Figure 8: Potential Passing Lane at Location 2 (Westbound)

Source: Adapted from Google Earth™.

6.3 US 40 Eastbound at MP 443

6.3.1 Existing Passing Zones

Eastbound US 40 has permitted passing at this location except at a small hill located near MP 443.64. No permitted passing is striped for the eastbound direction from MP 443.46 to 443.64 at the crest of the minor hill.

6.3.2 Nearest Passing Lanes

The nearest passing lanes to the site are:

- 25.05 miles to the west (MP 417.6 – MP 417.95)
- 1.74 miles to the east (MP 444.74 – MP 445.67, within built up area in Kit Carson).

6.3.3 Road Crashes

A review of the crashes between MP 442 and MP 444 found a total of four crashes. None of the crashes listed a passing maneuver as a possible source of the crash. No passing related correctable patterns were observed in the crash listing.

6.3.4 Infrastructure

A culvert is located at MP 443.03. This culvert may require reconstruction if a passing lane were to be constructed.

6.3.5 Access Points

An intersection with County Road 17 is located at MP 442.18 on the north side of US 40.

6.3.6 Other Factors

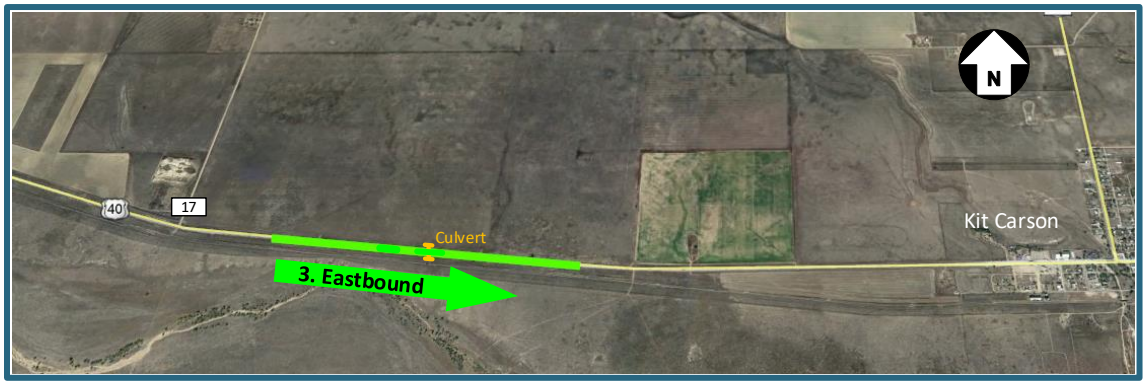
- A passing lane at this location may provide an alternative to passing through the built-up area in Kit Carson.

6.3.7 Potential Passing Lane Location

Potential passing lane locations around MP 443 are limited due to the proximity to the Town of Kit Carson (approximately MP 445) and County Roads 14, 15, 16 and 17. The preferred location for a potential passing lane is at MP 443. However, a culvert passes under US 40 at the MP 443.2. An engineering review may be required to determine feasibility of a passing lane traveling over the culvert. Assuming passing lane construction is feasible, the lane should begin at approximately MP 442.50 and terminate at MP 443.50 (exclusive of tapers). The passing lane would end 0.67 miles prior to the reduced 55 mph speed zone approaching Kit Carson.

The location of the potential passing lane is shown in **Figure 9**.

Figure 9: Potential Passing Lane at Location 3 (Eastbound)



Source: Adapted from Google Earth™.

6.4 US 287 Northbound from MP 119.5 to MP 120.3

6.4.1 Existing Passing Zones

Minor rolling hills are located at this location and limit available sight distance. Northbound passing is permitted but never continuous for more than 0.30 miles at a time. Northbound passing is prohibited between:

- MP 119.22 – MP 119.48
- MP 119.75 – MP 120.04
- MP 120.40 – MP 120.74.

6.4.2 Nearest Passing Lanes

No passing lanes are located on US 287 in the northbound direction between the Town of Eads and the Town of Kit Carson.

6.4.3 Road Crashes

A review of the crashes between MP 118 and MP 120 found no crashes.

6.4.4 Access Points

A gravel driveway and County Road Z are located at MP 120.52 and MP 120.74 respectively. This location is approximately 5 miles north of Eads and 13 miles south of Kit Carson.

6.4.5 Potential Passing Lane Location

A potential passing lane location was identified near MP 119 and extend to MP 120. This location is found south of the Cheyenne/Kiowa County Line in CDOT Region 2. A one mile passing lane may be constructed by widening without any issues due to roadway infrastructure. This location is shown in **Figure 10**.

Figure 10: Potential Passing Lane at Locations 4 (Northbound) and 5 (Southbound)

Source: Adapted from Google Earth™.

6.5 US 287 Southbound from MP 120.3 to MP 121

6.5.1 Existing Passing Zones

Minor rolling hills are found at this location and limit available sight distance. Southbound passing is permitted but is never continuous for more than 0.30 miles at a time. Southbound passing is prohibited between:

- MP 121.43 - MP 121.17
- MP 120.97- MP 120.72
- MP 120.50- MP 120.09

6.5.2 Nearest Passing Lanes

No passing lanes are located on US 287 in the southbound direction between the Town of Kit Carson and the Town of Eads.

6.5.3 Road Crashes

A review of the crashes between MP 120 and MP 118 found a total of one crash. The single crash listed a passing maneuver as a possible source of the crash. However due to the limited number of crashes in the area, no correctable patterns were identified in the crash listing.

6.5.4 Access Points

County Road Z and a gravel driveway are located at MP 120.74 and MP 120.91 respectively.

6.5.5 Potential Passing Lane Location

This location is found south of the Cheyenne/Kiowa County Line in CDOT Region 2. Potential passing lane locations in the area of MP 120 to MP 121 are constrained by County Road Z at MP 120.72. To avoid the passing lane end treatments being near County Road Z, an overlapping or side-by-side southbound passing lane with the northbound passing lane MP 119 to MP 120 would be necessary. This is shown in **Figure 10** (with an overlapping configuration).

6.6 Other Potential Passing Lane Locations

6.6.1 US 40 (SH 94 to Kit Carson)

A westbound passing lane may be considered between MP 436.8 and MP 435.5, three miles to the east of Wild Horse (**Figure 11**). At this location there is a two percent uphill gradient in the westbound direction and a section with a no passing zone. This location is located 9 miles east of the multi-lane section in the Kit Carson town limits (9 miles to the east) and 8.5 miles from the next westbound passing lane to the west near SH 94. Construction considerations include a minor gravel road on the southside of the road and a culvert located both near MP 435.8.

For the eastbound direction, a passing lane may be considered between MP 434.2 and 435.1. There are no passing restrictions currently in this segment but passing is restricted from MP 435.35 to MP 435.75. A passing lane at this location may assist with any traffic that bunches through the reduced speed zone through Wild Horse one mile to the west of this location. This location is located 19 miles from the nearest

passing zone further to the west and 10 miles from the multi-lane section in the Kit Carson town limits. Safety and constructability challenges include an access road at MP 434.2 and a culvert at MP 434.94.

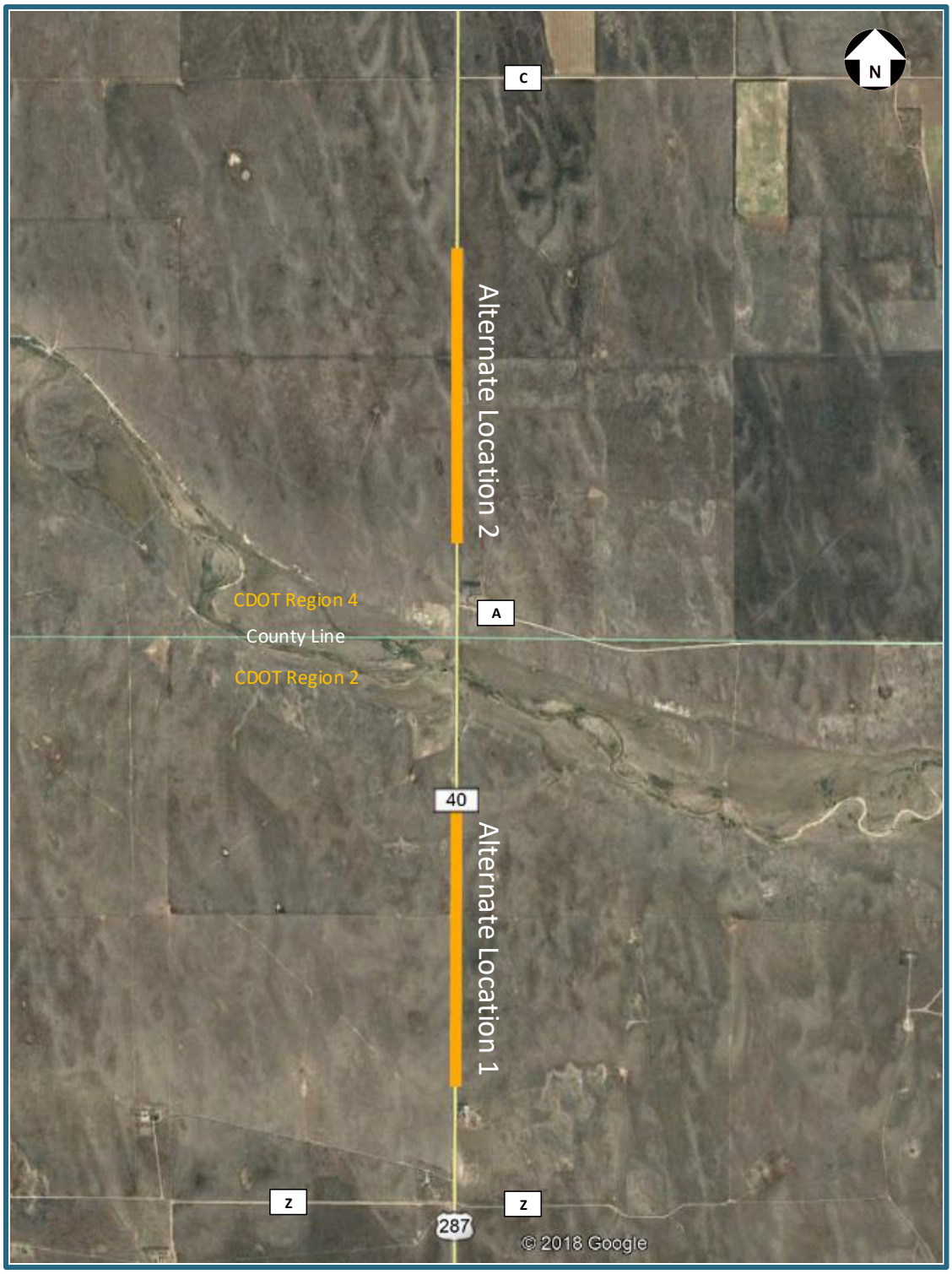
Figure 11: Alternative Passing Lane Locations on Westbound US 40

Source: Adapted from Google Earth™.

6.6.2 US 287 (Eads to Kit Carson)

If a four-lane section is not preferred for the potential passing lane locations on US 287 due to right of way or constructability constraints, a one-mile passing lane may be constructed north of County Road Z from MP 121 to MP 122. Alternatively, a passing lane could be constructed north of the Cheyenne and Kiowa county line border (approximately between MP 123 and MP 124.75). Each passing lane location can be constructed without additional improvements. These alternative passing lane locations are shown in **Figure 12**.

Figure 12: Alternative Passing Lane Locations on US 287



Source: Adapted from Google Earth™.

6.7 Prioritizing Additional Passing Lanes

As funding becomes available to CDOT, prioritization for implementing additional passing lanes in the study area is shown in **Table 12**. Prioritization was based on the considerations identified with Priority 1 being the highest priority.

Table 12: Recommended Passing Lane Prioritization

Priority	Location	Considerations
1	Location 4: US 287 Northbound (MP 119.5 to MP 120.3)	• No passing lanes are currently provided on US 287 between Eads and Kit Carson. • 55 percent of traffic recorded on the section are trucks. • A greater proportion of bunched traffic and longer bunches were recorded in the northbound direction on US 287 than in the southbound direction. • No issues with roadway infrastructure were identified at location.
2	Location 5: US 287 Southbound (MP 120.3 to MP 121)	• No passing lanes are currently provided on US 287 between Eads and Kit Carson. • 55 percent of traffic recorded on the section are trucks. • No issues with roadway infrastructure were identified, but an overlapping or side-by-side passing lane with the northbound direction would likely be required at this location. • May consider alternative locations shown in **Figure 12** if there are challenges with constructing a passing lane at this location.
3	Location 1: US 40 Eastbound at MP 427.2	• Well placed downstream of SH 94 on uphill gradient with sight restrictions and no passing permitted. • 56 to 60 percent of traffic on this section of US 40 are trucks, the highest proportions found in the study area. • Culvert and gravel access road within proposed passing lane may complicate construction and require further review.
4	Location 2: US 40 Westbound at MP 441.3	• May be less effective located 3.44 miles west of four-lane section through Kit Carson. • Constructability challenges with culvert and County Road 15 near the passing lane location.
5	Location 3: US 40 Eastbound at MP 443	• Proximity to four-lane section through Kit Carson (1.74 miles to east) may limit effectiveness of passing lane at this location. However, it may reduce passing maneuvers through lower speed multi-lane sections within the Kit Carson town limits.

7 SUMMARY AND RECOMMENDATIONS

7.1 General Considerations

The US 40 and US 287 study area is a part of the Peaks to Plains corridor and experiences a high volume of trucks. Peak truck percentages range from approximately 30 to 60 percent. The high volume of trucks may present passing challenges when truck bunching occurs.

In addition, US 40 has an outside shoulder width of 8 feet for a substantial portion of the study area. This width of shoulder may limit emergency avoidance if a passing maneuver is miscalculated.

7.2 Criteria Assessment

7.2.1 Level of Service

A HCS analysis was performed to determine the LOS of each segment (**Table 9**). All segments currently operate at LOS B or better. This LOS did not suggest that passing lanes are merited to improve traffic delays.

7.2.2 Road Safety

A crash analysis was conducted to determine if any areas had concentrations of passing related crashes. Based on the review, no passing related crash patterns were identified that could be corrected by a passing lane. This did not suggest that passing lane treatments were merited to address road safety deficiencies.

7.2.3 Truck Bunching

A review of vehicle bunching was completed to determine the frequency and length of bunches on US 287 (at MP 124). The analysis found substantial bunching with a maximum hourly bunching frequency of 30 and 25 bunches per hour respectively for the northbound and southbound directions (i.e. a bunch every 2.0 to 2.4 minutes). Most bunches contained trucks and approximately 40 percent of bunches were three vehicles or longer in length. Truck bunching would be expected to contribute to driver discomfort and may increase the likelihood of riskier passing maneuvers for drivers passing truck bunches. Passing lanes may be merited to aid in addressing these issues.

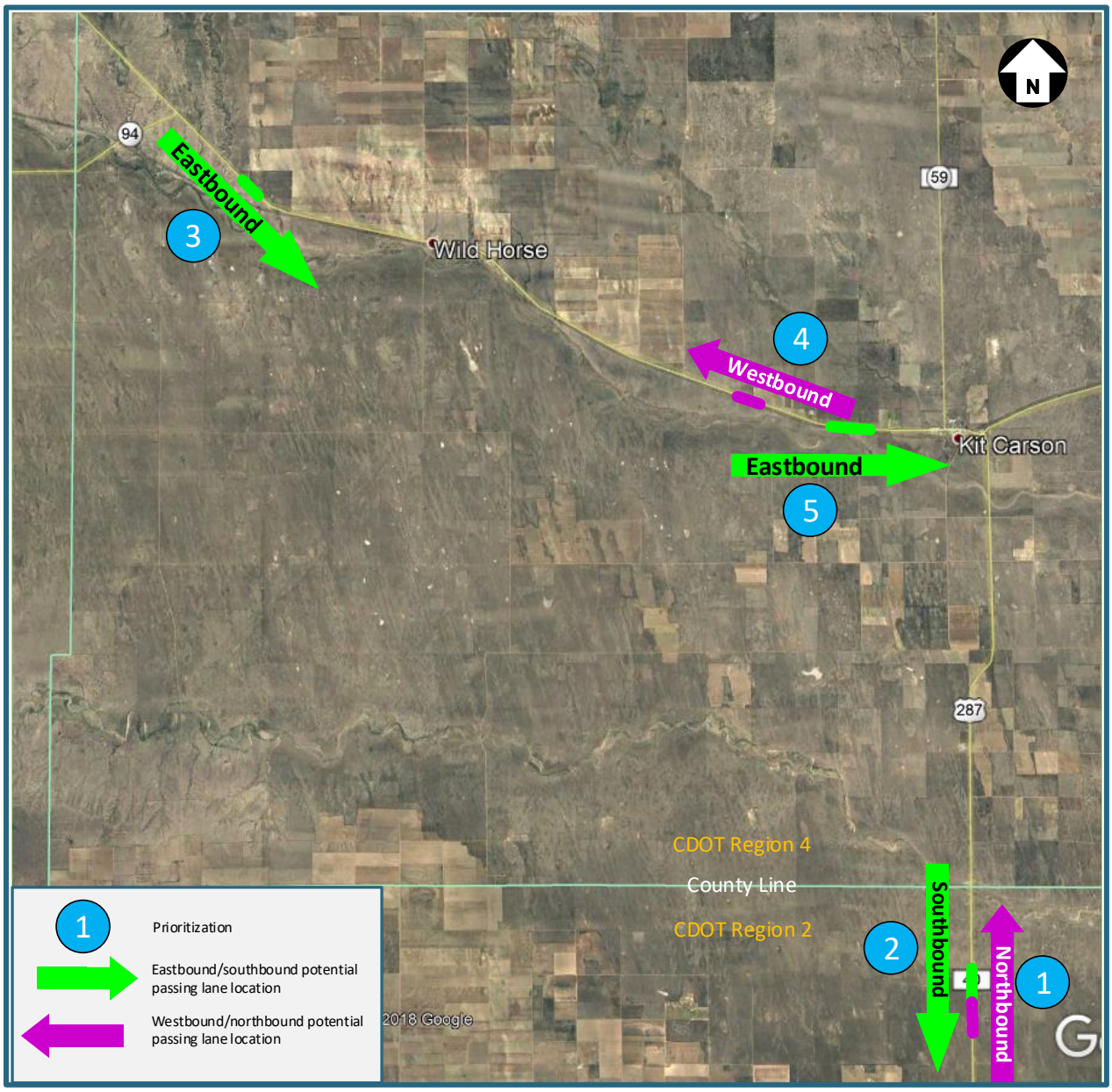
7.3 Potential Passing Lane Locations

Five primary locations were reviewed for potentially adding passing lanes. No new passing lanes were identified for the section of US 40 between Limon and SH 94 as there are four existing passing lanes in each direction of travel and numerous other locations where the pavement markings allow passing in the opposing travel lane. The analysis of the five potential passing lanes located southeast of SH 94, revealed that passing lanes would be beneficial, however, the data does not indicate an urgent or critical need in any of the locations. Due to the challenges with truck bunching in the study area, CDOT may wish to consider adding passing lanes at one or more of the reviewed locations as funding becomes available. The prioritization is shown in **Figure 13**.

A constructability review of access points and culverts crossings, as well as planning level cost estimates would further aid CDOT in determining the need and prioritization of the passing lanes. Four alternate

passing locations were also identified that may be further considered if issues are identified with the other passing lane locations (see **Section 6.6**).

Figure 13: Potential Additional Passing Lane Prioritization



Note: Prioritization is shown in descending order with Priority 1 being the highest priority.

7.4 Conclusions

The US 40 and US 287 study area is frequently traversed by a high percentage of commercial truck traffic. The passing lane study developed a methodology to analyze the need for passing lanes in the study area. This methodology could also be applied to other corridors in the Region.

Although the review of existing traffic operations found that all study area segments operate at a LOS B or better with no crash patterns identified due to passing related maneuvers; the high volume of truck traffic reduces the opportunities for passing when vehicle bunching forms.

Analysis of truck bunching data found that bunching frequently occurs in the study area and that the addition of one or more passing lanes could potentially improve corridor safety. Truck bunching can contribute to driver discomfort and may increase the likelihood of riskier passing maneuvers for drivers passing truck bunches. It's important to note, however, that the historic crash data does not show a pattern of passing maneuver crashes, so it is difficult to assess the level of safety benefit that would be realized by the addition of passing lanes.

7.5 Other Considerations

In addition to passing lanes, several other improvements could be implemented in the corridor that may enhance the existing passing lanes and zones in the study area.

7.5.1 Advanced Signing

The existing passing lanes do not have any advanced signing alerting drivers to an upcoming passing lane. The addition of a D17-2 "Passing Lane XX Miles" may be installed ½ to 2 miles upstream of the passing lane. In addition, a R4-16 "Keep Right Except to Pass" may be installed at the beginning of each passing lane.

7.5.2 Additional Permitted Passing

The segment of US 40 to the southeast of Wild Horse (approximately between MP 433.30 and 434.25) is currently striped as a no passing zone (double yellow pavement marking). It merits reviewing whether adequate sight distance is available to permit re-striping to allow passing in this area.

7.5.3 Removal of Permitted Passing

The "S" curve on US 287 between MP 127.1 and MP 128.3 experienced approximately 25 percent of the crashes in Segment 13. Consideration should be given to removing the permitted passing pavement markings and replacing them with double yellow markings. The no passing zone should include the entirety of the "S" curve to prohibit any passing maneuvers in the area. Passing is currently permitted on the entire five-mile length of Segment 13, by modifying the striping on the "S" curve, the Percent Passing would be reduced from 100 to 77 percent. This reduction in permitted passing areas is not anticipated to significantly impact operations in the segment.

The Big Sandy Creek Bridge is located on US 287 between MP 131.65 and MP 131.79. The bridge, and the surrounding approaches, contain approximately 50 percent of the crashes for Segment 14. While none of the crashes are passing related, consideration may be given to removing the dashed center line pavement

markings (permitted passing in both directions) and replacing with double yellow striping (no passing) due to the limited shoulders on the bridge deck to perform emergency avoidance maneuvers.

7.5.4 Passing Lane Extensions

Existing eastbound passing lanes are located at MP 414.85 and MP 417.60. However, at 0.40 and 0.35 miles in length respectively, they may be too short to be effectively used as a passing lane. Consideration may be given to extending the passing lanes to 0.50 miles or more to provide additional time for a passing maneuver.

Appendix A

Daily Counts

All Traffic Data

Wheat Ridge, CO 80033

Date Start: 26-Sep-17
Date End: 26-Sep-17
Site Code: 1
US 40 E/O MILEPOST 396

EB

Start	1	16	21	26	31	36	41	46	51	56	61	66	71	76		Pace	Number
Time	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total	Speed	in Pace
09/26/17	0	0	0	0	0	0	0	0	2	11	6	1	0	0	20	56-65	17
01:00	3	0	0	0	**1**	0	0	0	1	6	6	0	0	0	17	56-65	12
02:00	1	0	0	0	0	0	0	1	3	10	4	1	0	0	20	54-63	14
03:00	1	0	0	0	0	0	0	0	3	9	4	1	0	2	20	54-63	13
04:00	0	0	0	0	0	0	0	0	2	3	6	2	1	0	14	56-65	9
05:00	3	0	0	0	0	0	0	0	5	14	15	3	0	0	40	56-65	29
06:00	2	0	0	0	0	0	1	3	5	27	21	**6**	1	**3**	69	56-65	48
07:00	5	0	0	0	0	0	0	8	28	52	16	5	1	3	118	51-60	80
08:00	10	0	0	0	0	0	**3**	**9**	32	39	22	4	0	2	121	51-60	71
09:00	6	0	0	0	0	0	0	1	25	43	**27**	5	1	0	108	56-65	70
10:00	**14**	0	0	0	0	**1**	1	0	28	**53**	20	4	0	1	122	51-60	81
11:00	8	0	0	0	0	0	1	3	**39**	39	26	6	**2**	0	**124**	51-60	78
12 PM	7	0	0	0	0	0	1	0	38	56	17	**6**	3	**2**	130	51-60	94
13:00	**13**	0	0	0	0	0	0	1	**42**	64	24	2	0	1	**147**	51-60	106
14:00	4	0	0	0	0	0	**2**	2	25	55	25	4	0	0	117	51-60	80
15:00	4	0	0	0	0	0	0	3	39	**70**	**26**	4	0	0	146	51-60	109
16:00	4	0	0	0	0	0	1	**4**	42	70	18	4	0	1	144	51-60	112
17:00	8	0	0	0	0	0	1	1	22	51	20	1	0	1	105	51-60	73
18:00	4	0	0	0	0	0	1	0	17	55	15	3	1	2	98	51-60	72
19:00	4	0	0	0	0	0	0	0	8	39	11	3	1	0	66	56-65	50
20:00	9	0	0	0	0	0	0	0	12	43	10	2	0	0	76	51-60	55
21:00	3	0	0	0	0	0	1	1	8	9	12	5	**4**	0	43	56-65	21
22:00	1	0	0	0	0	0	0	0	1	13	7	2	2	1	27	56-65	20
23:00	2	0	0	0	0	0	0	1	4	15	7	1	0	0	30	56-65	22
Total	116	0	0	0	1	1	13	38	431	846	365	75	17	19	1922		
Percent	6.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.7%	2.0%	22.4%	44.0%	19.0%	3.9%	0.9%	1.0%			
AM Peak	10:00				01:00	10:00	08:00	08:00	11:00	10:00	09:00	06:00	11:00	06:00	11:00		
Vol.	14				1	1	3	9	39	53	27	6	2	3	124		
PM Peak	13:00						14:00	16:00	13:00	15:00	15:00	12:00	21:00	12:00	13:00		
Vol.	13						2	4	42	70	26	6	4	2	147		
Total	116	0	0	0	1	1	13	38	431	846	365	75	17	19	1922		
Percent	6.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.7%	2.0%	22.4%	44.0%	19.0%	3.9%	0.9%	1.0%			

	15th Percentile :	51 MPH
	50th Percentile :	57 MPH
	85th Percentile :	62 MPH
	95th Percentile :	64 MPH
Stats	10 MPH Pace Speed :	51-60 MPH
	Number in Pace :	1277
	Percent in Pace :	66.4%
	Number of Vehicles > 55 MPH :	1322
	Percent of Vehicles > 55 MPH :	68.8%
	Mean Speed(Average) :	55 MPH

All Traffic Data

Wheat Ridge, CO 80033

Date Start: 26-Sep-17
Date End: 26-Sep-17
Site Code: 1
US 40 E/O MILEPOST 396

WB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
09/26/17	2	0	0	0	0	0	0	0	2	14	10	1	0	1	30	56-65	24
01:00	1	0	0	0	0	0	0	0	1	7	8	2	0	1	20	56-65	15
02:00	1	0	0	0	0	0	0	0	1	10	5	2	0	1	20	56-65	15
03:00	1	0	0	0	0	0	0	0	3	7	2	1	1	0	15	51-60	10
04:00	1	0	0	0	0	0	0	2	0	10	5	1	0	1	20	56-65	15
05:00	2	0	0	0	0	0	0	**4**	1	13	20	**10**	0	1	51	56-65	33
06:00	5	0	**1**	0	0	0	0	0	3	25	24	7	2	0	67	56-65	49
07:00	7	0	0	0	0	0	0	2	7	26	28	4	**3**	0	77	56-65	54
08:00	**10**	0	0	0	0	0	0	3	20	58	**35**	2	2	0	130	56-65	93
09:00	5	**1**	0	0	0	0	0	0	14	50	14	5	0	1	90	51-60	64
10:00	4	1	0	0	0	0	0	1	**22**	62	31	5	0	0	126	56-65	93
11:00	9	1	0	0	0	0	0	1	11	**74**	27	9	1	**2**	**135**	56-65	101
12 PM	7	0	0	0	0	0	0	0	12	63	30	7	0	0	119	56-65	93
13:00	7	0	0	0	0	0	0	0	16	63	**42**	**11**	**7**	0	146	56-65	105
14:00	**12**	0	**1**	0	0	0	0	2	21	65	34	9	0	1	145	56-65	99
15:00	6	0	1	0	0	0	0	1	20	54	29	3	2	0	116	56-65	83
16:00	3	0	0	0	0	0	0	1	**23**	**96**	24	2	4	0	**153**	56-65	120
17:00	5	0	0	0	0	0	0	0	16	56	17	4	0	0	98	54-63	73
18:00	4	0	0	0	0	0	0	**4**	11	35	17	4	1	1	77	56-65	52
19:00	2	0	0	0	0	0	0	1	3	29	20	6	1	0	62	56-65	49
20:00	1	0	0	0	0	0	0	3	4	25	9	1	0	0	43	56-65	34
21:00	2	0	0	0	0	0	0	0	4	9	10	3	1	**2**	31	56-65	19
22:00	1	0	0	0	0	0	0	0	1	4	24	3	1	1	35	56-65	28
23:00	1	**1**	0	0	0	0	0	0	4	18	14	0	0	1	39	56-65	32
Total	99	4	3	0	0	0	0	25	220	873	479	102	26	14	1845		
Percent	5.4%	0.2%	0.2%	0.0%	0.0%	0.0%	0.0%	1.4%	11.9%	47.3%	26.0%	5.5%	1.4%	0.8%			
AM Peak	08:00	09:00	06:00					05:00	10:00	11:00	08:00	05:00	07:00	11:00	11:00		
Vol.	10	1	1					4	22	74	35	10	3	2	135		
PM Peak	14:00	23:00	14:00					18:00	16:00	16:00	13:00	13:00	13:00	21:00	16:00		
Vol.	12	1	1					4	23	96	42	11	7	2	153		
Total	99	4	3	0	0	0	0	25	220	873	479	102	26	14	1845		
Percent	5.4%	0.2%	0.2%	0.0%	0.0%	0.0%	0.0%	1.4%	11.9%	47.3%	26.0%	5.5%	1.4%	0.8%			

15th Percentile :	53 MPH
50th Percentile :	58 MPH
85th Percentile :	63 MPH
95th Percentile :	66 MPH

Stats

10 MPH Pace Speed :	56-65 MPH
Number in Pace :	1352
Percent in Pace :	73.3%
Number of Vehicles > 55 MPH :	1494
Percent of Vehicles > 55 MPH :	81.0%
Mean Speed(Average) :	56 MPH

All Traffic Data

Wheat Ridge, CO 80033

Date Start: 26-Sep-17
Date End: 26-Sep-17
Site Code: 2
US 40 E/O MILEPOST 438.5

EB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
09/26/17	5	0	0	0	0	0	0	1	13	5	2	0	0	0	26	51-60	18
01:00	3	0	0	0	0	0	0	1	11	2	0	0	0	0	17	49-58	13
02:00	2	0	0	0	0	0	0	3	8	3	0	0	0	0	16	51-60	11
03:00	4	0	0	0	0	0	0	1	14	4	3	0	0	0	26	51-60	18
04:00	4	0	0	0	0	0	0	2	9	4	0	1	**1**	0	21	50-59	13
05:00	6	0	0	0	0	0	0	0	13	7	0	0	0	0	26	51-60	20
06:00	7	0	0	0	0	0	0	1	15	16	3	0	0	0	42	51-60	31
07:00	7	0	0	0	0	0	0	2	42	18	**6**	**3**	0	0	78	51-60	60
08:00	6	0	0	0	0	0	0	5	37	25	6	0	0	0	79	51-60	62
09:00	9	0	0	0	0	0	0	3	44	28	5	2	0	0	91	51-60	72
10:00	7	0	0	0	0	0	**6**	**7**	37	22	2	0	1	0	82	51-60	59
11:00	**13**	0	0	0	0	0	0	1	**58**	**35**	2	2	0	0	**111**	51-60	93
12 PM	**20**	0	0	0	0	0	0	12	48	27	**12**	2	0	0	121	51-60	75
13:00	13	0	0	0	0	0	1	9	**73**	**29**	0	0	0	0	**125**	51-60	102
14:00	4	0	**1**	0	0	0	**3**	**33**	51	2	1	1	0	0	96	46-55	84
15:00	4	0	0	0	0	**1**	0	29	61	11	3	1	0	0	110	46-55	90
16:00	8	0	0	0	0	0	0	30	52	12	5	0	0	0	107	46-55	82
17:00	5	0	0	0	0	1	3	27	63	12	1	**3**	0	0	115	46-55	90
18:00	6	0	0	0	0	0	1	8	40	8	1	1	0	0	65	49-58	48
19:00	5	0	0	0	0	0	1	15	54	3	1	0	0	0	79	46-55	69
20:00	7	0	0	0	0	0	0	7	33	9	1	0	0	0	57	50-59	42
21:00	1	0	0	0	0	0	0	2	32	8	1	0	0	0	44	51-60	40
22:00	1	0	0	0	0	0	0	7	15	8	4	0	0	0	35	51-60	23
23:00	3	0	0	0	0	0	0	1	17	6	1	0	0	0	28	51-60	23
Total	150	0	1	0	0	2	15	207	840	304	60	16	2	0	1597		
Percent	9.4%	0.0%	0.1%	0.0%	0.0%	0.1%	0.9%	13.0%	52.6%	19.0%	3.8%	1.0%	0.1%	0.0%			
AM Peak	11:00						10:00	10:00	11:00	11:00	07:00	07:00	04:00		11:00		
Vol.	13						6	7	58	35	6	3	1		111		
PM Peak	12:00		14:00			15:00	14:00	14:00	13:00	13:00	12:00	17:00			13:00		
Vol.	20		1			1	3	33	73	29	12	3			125		
Total	150	0	1	0	0	2	15	207	840	304	60	16	2	0	1597		
Percent	9.4%	0.0%	0.1%	0.0%	0.0%	0.1%	0.9%	13.0%	52.6%	19.0%	3.8%	1.0%	0.1%	0.0%			

15th Percentile :	46 MPH
50th Percentile :	52 MPH
85th Percentile :	57 MPH
95th Percentile :	59 MPH

Stats

10 MPH Pace Speed :	51-60 MPH
Number in Pace :	1144
Percent in Pace :	71.6%
Number of Vehicles > 55 MPH :	382
Percent of Vehicles > 55 MPH :	23.9%
Mean Speed(Average) :	49 MPH

All Traffic Data

Wheat Ridge, CO 80033

Date Start: 26-Sep-17
Date End: 26-Sep-17
Site Code: 2
US 40 E/O MILEPOST 438.5

WB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
09/26/17	2	**2**	0	0	0	0	0	0	8	8	5	0	0	0	25	51-60	16
01:00	3	0	0	0	0	0	0	0	2	8	1	2	0	0	16	51-60	10
02:00	3	0	0	0	0	0	0	0	2	12	2	0	1	0	20	51-60	14
03:00	1	0	0	0	0	0	0	0	2	9	3	1	0	0	16	54-63	12
04:00	2	1	0	0	0	0	0	**2**	5	16	9	1	0	**1**	37	56-65	25
05:00	2	0	0	0	0	0	0	0	9	13	5	2	0	0	31	51-60	22
06:00	6	0	0	0	0	0	0	0	1	18	14	**3**	0	0	42	56-65	32
07:00	4	2	0	0	0	0	0	0	12	41	10	3	1	0	73	51-60	53
08:00	7	2	0	0	0	0	0	1	14	33	12	1	**2**	0	72	51-60	47
09:00	**11**	0	0	0	0	0	0	0	20	36	**20**	0	1	0	88	56-65	56
10:00	5	0	0	0	0	0	**1**	1	**29**	40	15	2	1	1	**95**	51-60	69
11:00	9	2	0	0	0	0	1	1	21	**44**	7	3	2	0	90	51-60	65
12 PM	**16**	1	0	0	0	0	0	4	**46**	41	8	3	**2**	0	121	51-60	87
13:00	12	**2**	0	0	0	0	0	2	34	**62**	**11**	2	2	0	**127**	51-60	96
14:00	10	0	0	0	0	**1**	0	**6**	35	30	8	1	0	1	92	51-60	65
15:00	11	0	0	0	0	0	0	4	31	37	11	1	1	0	96	51-60	68
16:00	5	0	0	0	0	0	0	3	35	27	6	2	0	0	78	51-60	62
17:00	4	0	0	0	0	0	0	1	20	23	6	**4**	1	0	59	51-60	43
18:00	2	0	0	0	0	0	0	5	11	27	9	4	1	0	59	51-60	38
19:00	3	1	0	0	0	0	0	4	9	21	5	1	0	0	44	51-60	30
20:00	2	1	0	0	0	0	**1**	1	7	15	3	0	1	1	32	51-60	22
21:00	5	0	0	0	0	0	0	0	6	17	4	4	0	1	37	51-60	23
22:00	3	1	0	0	0	0	0	5	4	20	3	0	0	**2**	38	51-60	24
23:00	3	1	0	0	0	0	0	3	7	14	7	1	0	0	36	51-60	21
Total	131	16	0	0	0	1	3	43	370	612	184	41	16	7	1424		
Percent	9.2%	1.1%	0.0%	0.0%	0.0%	0.1%	0.2%	3.0%	26.0%	43.0%	12.9%	2.9%	1.1%	0.5%			
AM Peak	09:00	00:00					10:00	04:00	10:00	11:00	09:00	06:00	08:00	04:00	10:00		
Vol.	11	2					1	2	29	44	20	3	2	1	95		
PM Peak	12:00	13:00				14:00	20:00	14:00	12:00	13:00	13:00	17:00	12:00	22:00	13:00		
Vol.	16	2				1	1	6	46	62	11	4	2	2	127		
Total	131	16	0	0	0	1	3	43	370	612	184	41	16	7	1424		
Percent	9.2%	1.1%	0.0%	0.0%	0.0%	0.1%	0.2%	3.0%	26.0%	43.0%	12.9%	2.9%	1.1%	0.5%			

	15th Percentile :	50 MPH
	50th Percentile :	56 MPH
	85th Percentile :	60 MPH
	95th Percentile :	64 MPH
Stats	10 MPH Pace Speed :	51-60 MPH
	Number in Pace :	982
	Percent in Pace :	69.0%
	Number of Vehicles > 55 MPH :	860
	Percent of Vehicles > 55 MPH :	60.4%
	Mean Speed(Average) :	52 MPH

All Traffic Data

Wheat Ridge, CO 80033

Date Start: 26-Sep-17
Date End: 26-Sep-17
Site Code: 3
US287 S/O MILEPOST 124

NB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
09/26/17	8	0	0	0	0	0	0	0	0	7	8	7	0	2	32	59-68	15
01:00	6	**1**	0	0	0	0	0	0	2	6	9	2	0	0	26	56-65	15
02:00	4	1	0	0	0	0	0	0	0	3	6	4	1	1	20	61-70	10
03:00	7	0	0	0	0	0	0	0	0	5	6	2	2	2	24	56-65	11
04:00	7	0	**2**	0	0	0	0	0	0	3	4	9	3	2	30	61-70	13
05:00	4	0	2	0	0	0	0	0	0	1	5	6	5	**8**	31	61-70	11
06:00	10	0	0	0	0	0	0	0	1	1	8	17	5	3	45	61-70	25
07:00	13	0	2	0	0	0	0	0	0	12	31	17	5	3	83	61-70	48
08:00	16	0	1	0	0	0	0	0	3	15	24	**23**	**14**	7	103	61-70	47
09:00	18	0	0	0	0	0	0	0	4	36	31	15	5	2	111	56-65	67
10:00	20	0	0	0	0	0	0	**1**	4	22	32	14	6	0	99	56-65	54
11:00	**23**	0	1	0	0	0	0	1	**13**	**45**	**39**	10	3	0	**135**	56-65	84
12 PM	**35**	1	2	0	0	0	0	0	7	40	**44**	16	**8**	2	**155**	56-65	84
13:00	29	**2**	0	0	0	0	**2**	**4**	14	53	19	4	1	0	128	56-65	72
14:00	21	2	1	0	0	0	2	0	14	**61**	30	9	3	0	143	56-65	91
15:00	23	0	**3**	0	0	**1**	1	0	14	47	36	6	1	2	134	56-65	83
16:00	20	0	0	0	0	0	0	0	16	55	31	10	2	1	135	56-65	86
17:00	25	1	2	0	0	0	0	1	**22**	57	24	2	4	**3**	141	55-64	81
18:00	19	0	1	0	0	0	0	2	3	30	30	6	1	0	92	56-65	60
19:00	11	1	0	0	0	0	0	0	7	39	27	3	3	2	93	56-65	66
20:00	10	1	1	0	0	0	0	0	1	3	14	15	6	3	54	61-70	29
21:00	9	0	2	0	0	0	1	0	3	5	14	**18**	6	2	60	61-70	32
22:00	9	0	3	0	0	0	0	0	0	3	9	7	7	3	41	61-70	16
23:00	7	0	0	0	0	0	0	0	0	0	9	12	4	2	34	61-70	21
Total	354	10	23	0	0	1	6	9	128	549	490	234	95	50	1949		
Percent	18.2%	0.5%	1.2%	0.0%	0.0%	0.1%	0.3%	0.5%	6.6%	28.2%	25.1%	12.0%	4.9%	2.6%			
AM Peak	11:00	01:00	04:00					10:00	11:00	11:00	11:00	08:00	08:00	05:00	11:00		
Vol.	23	1	2					1	13	45	39	23	14	8	135		
PM Peak	12:00	13:00	15:00			15:00	13:00	13:00	17:00	14:00	12:00	21:00	12:00	17:00	12:00		
Vol.	35	2	3			1	2	4	22	61	44	18	8	3	155		
Total	354	10	23	0	0	1	6	9	128	549	490	234	95	50	1949		
Percent	18.2%	0.5%	1.2%	0.0%	0.0%	0.1%	0.3%	0.5%	6.6%	28.2%	25.1%	12.0%	4.9%	2.6%			

	15th Percentile :	12 MPH
	50th Percentile :	58 MPH
	85th Percentile :	65 MPH
	95th Percentile :	70 MPH
Stats	10 MPH Pace Speed :	56-65 MPH
	Number in Pace :	1039
	Percent in Pace :	53.3%
	Number of Vehicles > 65 MPH :	379
	Percent of Vehicles > 65 MPH :	19.4%
	Mean Speed(Average) :	51 MPH

All Traffic Data

Wheat Ridge, CO 80033

Date Start: 26-Sep-17
Date End: 26-Sep-17
Site Code: 3
US287 S/O MILEPOST 124

SB

Start	1	16	21	26	31	36	41	46	51	56	61	66	71	76		Pace	Number
Time	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total	Speed	in Pace
09/26/17	5	0	0	0	0	0	0	1	2	7	7	5	2	0	29	56-65	14
01:00	5	0	0	0	0	0	0	0	0	1	11	2	1	0	20	59-68	13
02:00	6	0	0	0	0	0	0	0	0	3	7	2	1	2	21	56-65	10
03:00	4	0	0	0	0	**2**	0	1	0	3	9	3	3	1	26	56-65	12
04:00	7	0	0	**1**	0	0	**1**	0	2	2	18	8	2	3	44	61-70	26
05:00	12	0	0	0	0	0	0	0	0	1	6	21	**11**	**10**	61	66-75	32
06:00	6	0	0	0	0	0	0	0	0	4	15	21	8	8	62	61-70	36
07:00	9	0	0	0	0	0	0	1	2	15	24	26	5	2	84	61-70	50
08:00	21	0	0	0	0	1	0	0	**5**	18	28	25	7	4	109	61-70	53
09:00	17	0	0	0	0	0	0	**3**	4	22	**54**	6	3	2	111	56-65	76
10:00	7	0	0	0	0	0	0	0	4	17	49	**35**	10	4	126	61-70	84
11:00	**23**	0	0	0	0	0	0	1	2	**37**	41	18	2	4	**128**	56-65	78
12 PM	21	0	0	0	0	0	0	0	4	38	**62**	**27**	**4**	**5**	**161**	56-65	100
13:00	15	0	0	0	0	0	0	1	9	38	34	13	2	1	113	56-65	72
14:00	**24**	0	**1**	0	0	0	0	4	7	43	35	10	2	1	127	56-65	78
15:00	20	0	0	0	0	0	0	5	**14**	**47**	42	8	0	1	137	56-65	89
16:00	21	0	0	0	0	0	0	**6**	7	35	26	4	0	1	100	56-65	61
17:00	23	0	0	0	0	0	0	2	9	34	22	5	0	0	95	56-65	56
18:00	16	0	0	0	0	0	0	0	6	24	34	6	4	1	91	56-65	58
19:00	15	0	0	0	0	0	0	0	5	22	14	1	0	0	57	56-65	36
20:00	7	0	0	0	0	0	0	0	0	9	16	3	3	4	42	56-65	25
21:00	11	0	0	0	0	0	**2**	1	5	5	16	13	2	1	56	61-70	29
22:00	9	0	0	0	0	0	0	0	0	4	19	12	1	3	48	61-70	31
23:00	6	0	0	0	0	0	0	0	1	6	13	9	3	2	40	61-70	22
Total	310	0	1	1	0	3	3	26	88	435	602	283	76	60	1888		
Percent	16.4%	0.0%	0.1%	0.1%	0.0%	0.2%	0.2%	1.4%	4.7%	23.0%	31.9%	15.0%	4.0%	3.2%			
AM Peak	11:00			04:00		03:00	04:00	09:00	08:00	11:00	09:00	10:00	05:00	05:00	11:00		
Vol.	23			1		2	1	3	5	37	54	35	11	10	128		
PM Peak	14:00		14:00				21:00	16:00	15:00	15:00	12:00	12:00	12:00	12:00	12:00		
Vol.	24		1				2	6	14	47	62	27	4	5	161		
Total	310	0	1	1	0	3	3	26	88	435	602	283	76	60	1888		
Percent	16.4%	0.0%	0.1%	0.1%	0.0%	0.2%	0.2%	1.4%	4.7%	23.0%	31.9%	15.0%	4.0%	3.2%			

	15th Percentile :	13 MPH
	50th Percentile :	60 MPH
	85th Percentile :	66 MPH
	95th Percentile :	69 MPH
Stats	10 MPH Pace Speed :	56-65 MPH
	Number in Pace :	1037
	Percent in Pace :	54.9%
	Number of Vehicles > 65 MPH :	419
	Percent of Vehicles > 65 MPH :	22.2%
	Mean Speed(Average) :	53 MPH

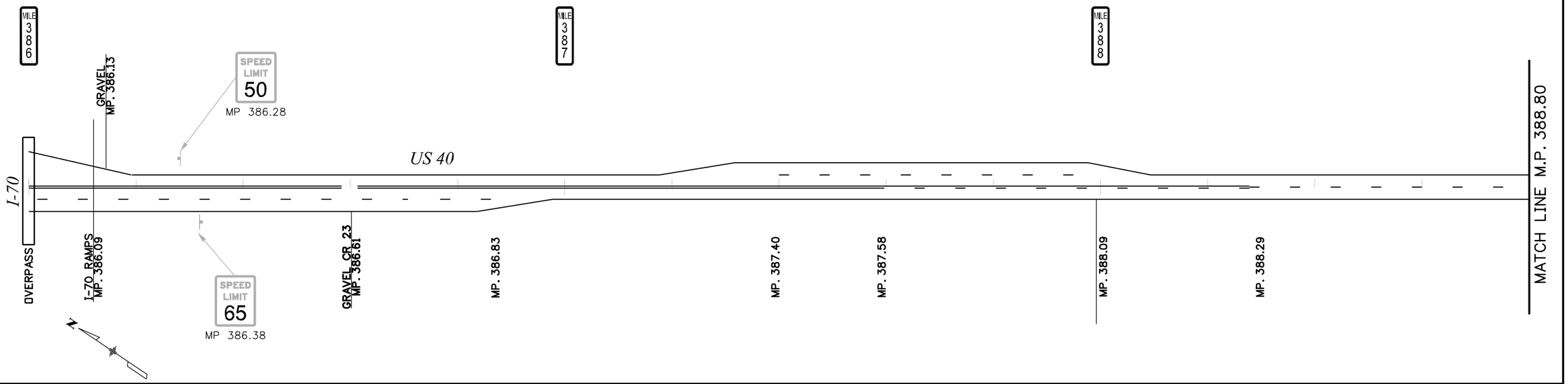
Summary of Truck Bunching Data
February 2018

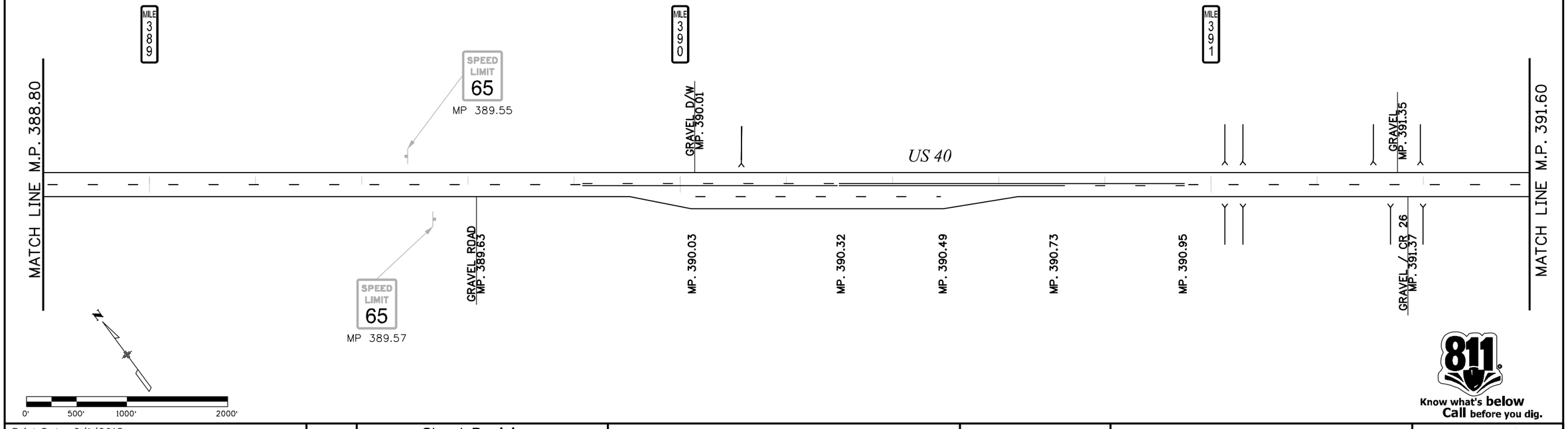
Northbound Bunches						
		2 Veh Bunch	3 Veh Bunch	4-5 Veh Bunch	>6 Veh Bunch	Total
All Bunches	2/13	200	69	40	11	320
	2/14	231	84	37	7	359
	Average	216	77	39	9	340
	% of Total	63%	23%	11%	3%	
Bunch Speed (Average)	2/13					54.3
	2/14					55.8
	Average					55.1
Speed of Non Bunch Vehicles	2/13					55.7
	2/14					56.4
	Average					56.1

Southbound Bunches						
		2 Veh Bunch	3 Veh Bunch	4-5 Veh Bunch	>6 Veh Bunch	Total
All Bunches	2/13	189	60	28	8	285
	2/14	216	53	28	6	303
	Average	203	57	28	7	294
	% of Total	69%	19%	10%	2%	
Bunch Speed	2/13					54.9
	2/14					57
	Average					56.0
Speed of Non Bunch Vehicles	2/13					57
	2/14					57.8
	Average					57.4

Appendix B

Study Area Strip Map





811 Know what's **below** **Call** before you dig.

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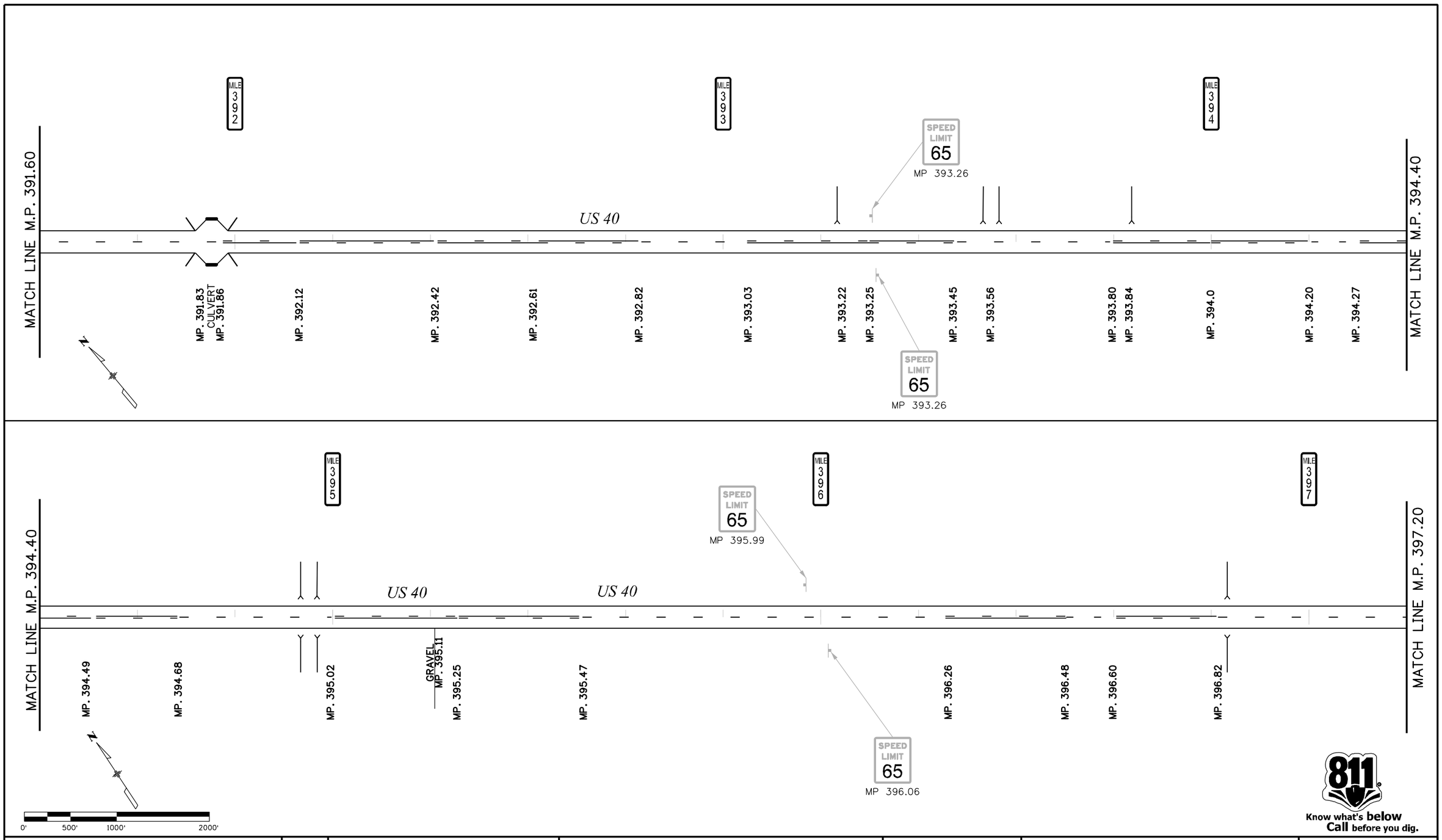
Drawing File Name: 17036DES_Pass_Study_Plan01.dgn		Date:	Comments	Init.	10601 W. 10th Street Greeley, CO 80634 Phone: 970-350-2143 FAX: 970-350-2198	No Revisions:		IM 0252-456
Horiz. Scale: 1:1000 Vert. Scale: As Noted					Region 4 LJH	Revised:	Designer: JDM Structure Numbers	21519
Unit Information Unit Leader Initials						Void:	Detailer: REW	Sheet Number
MULLER ENGINEERING COMPANY							Sheet Subset: PLAN Subset Sheets: 1 of 14	



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Unit Information Unit Leader Initials			Void:
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US 40 & US 287 PASSING LANE STUDY			Project No./Code
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Designer: JDM	Structure Numbers		21519
Detailer: REW			
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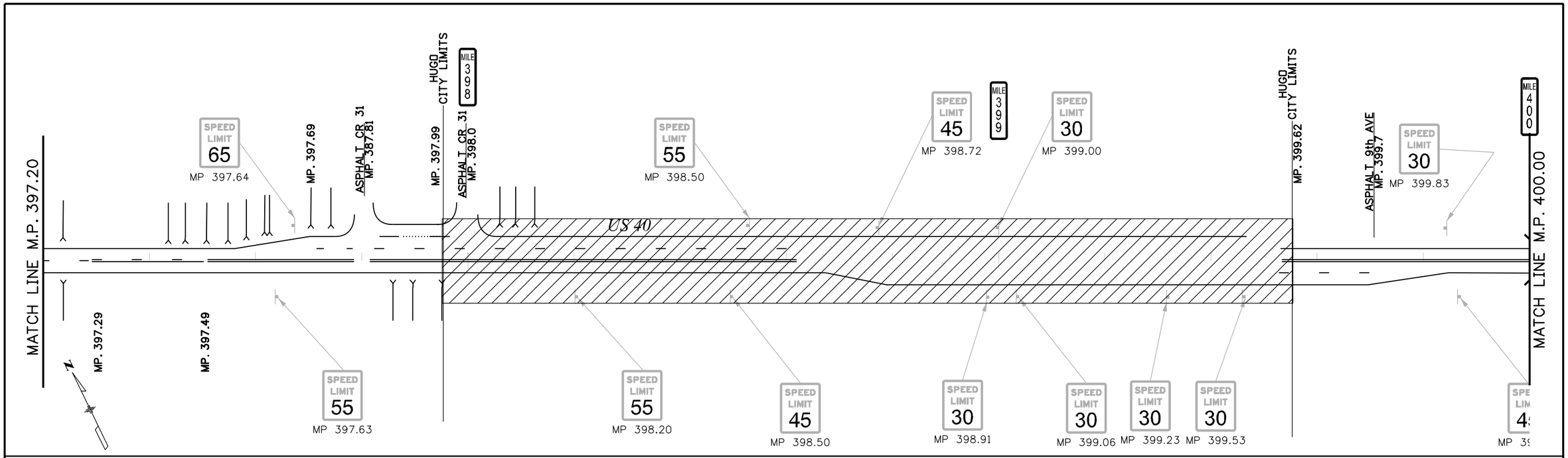

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Detailer:	REW		
Sheet Subset:	PLAN	Subset Sheets:	3 of 14

Project No./Code
IM 0252-456
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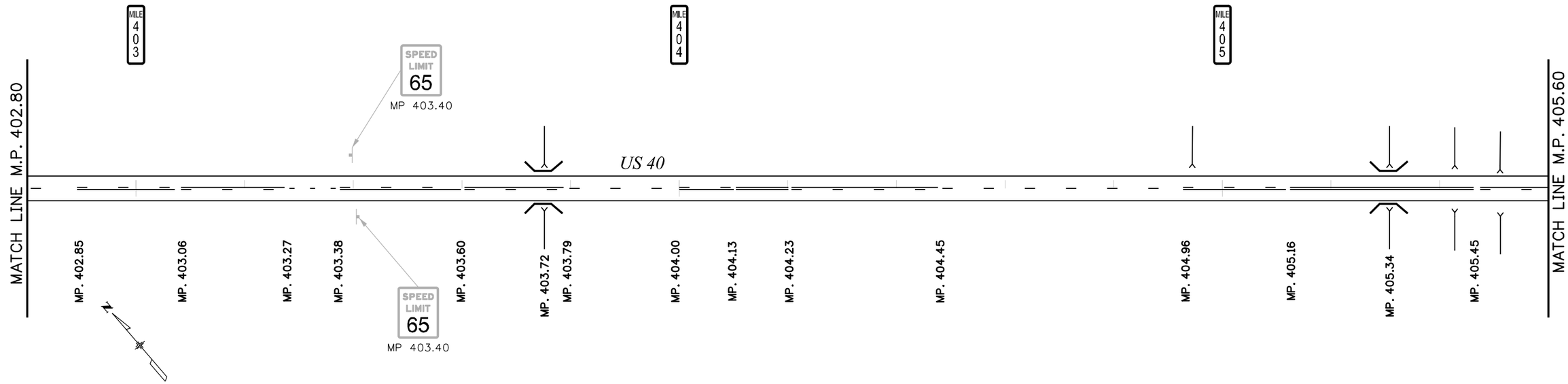

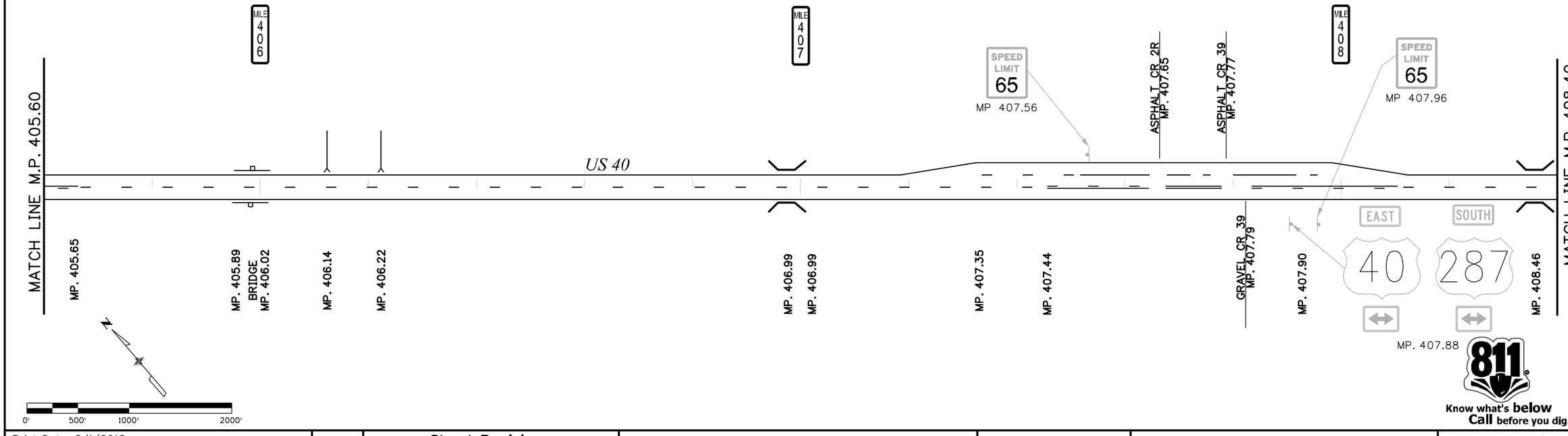

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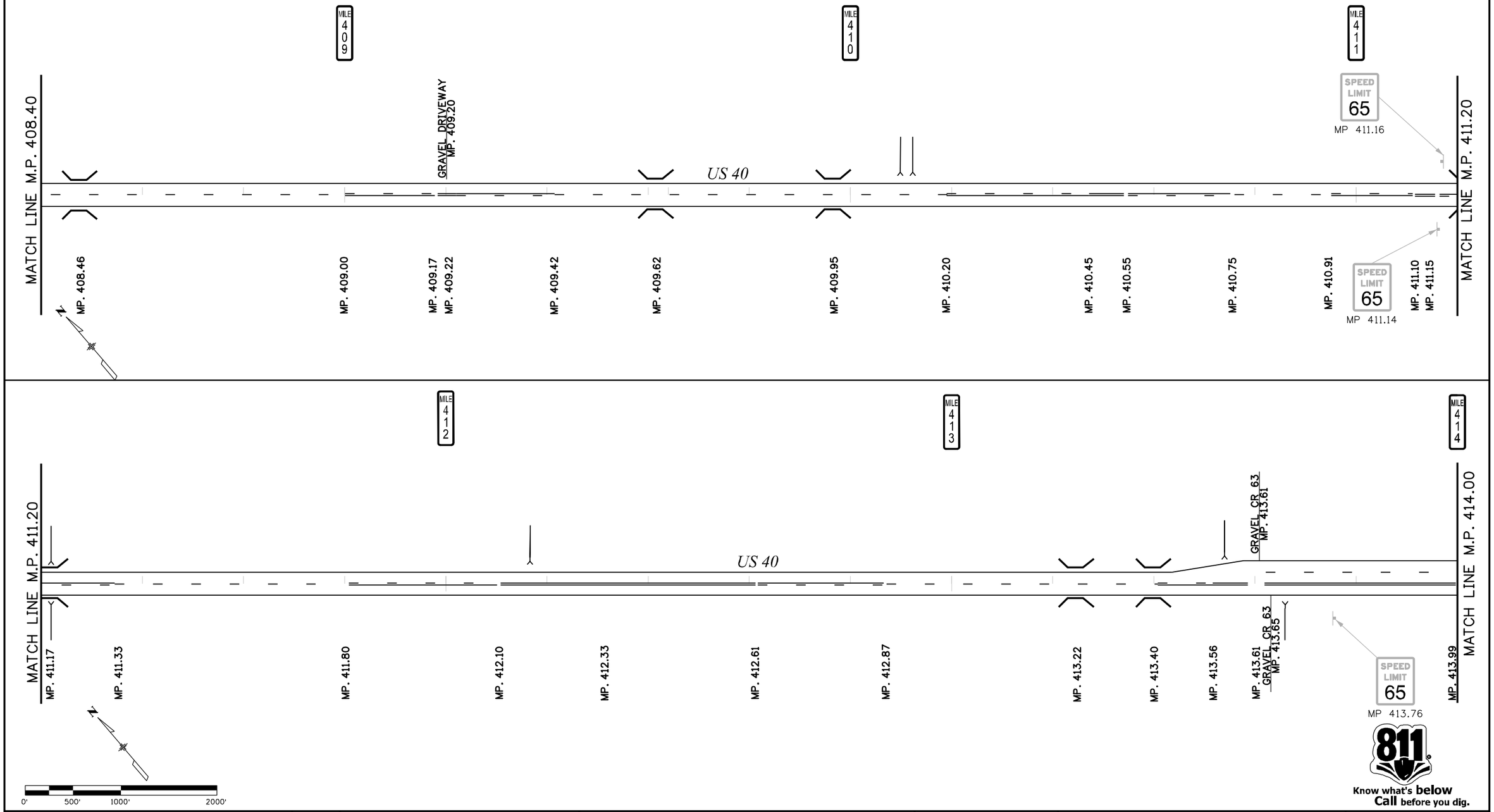
Sheet Number



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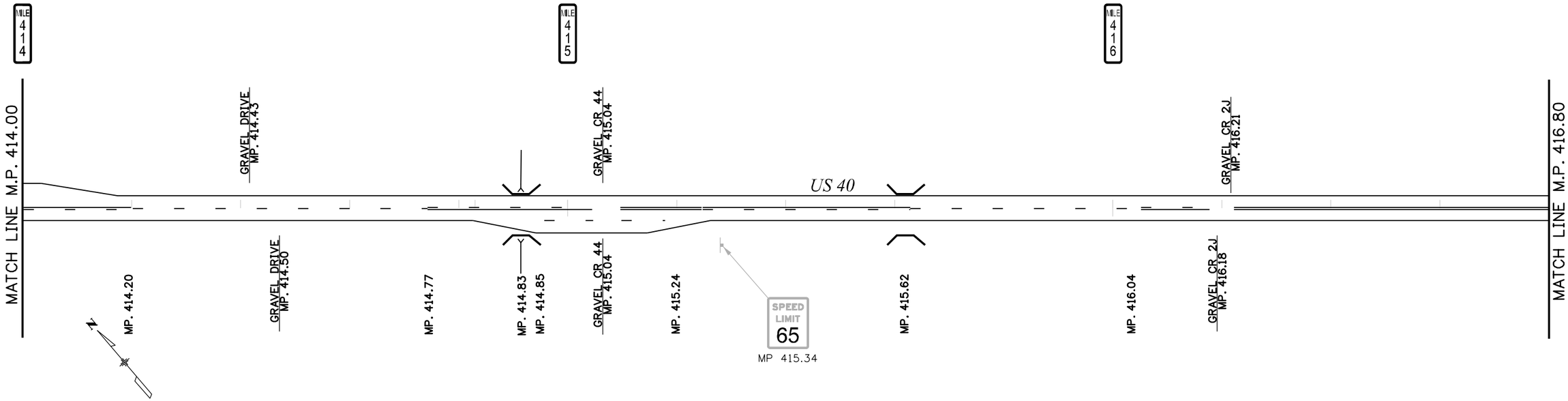

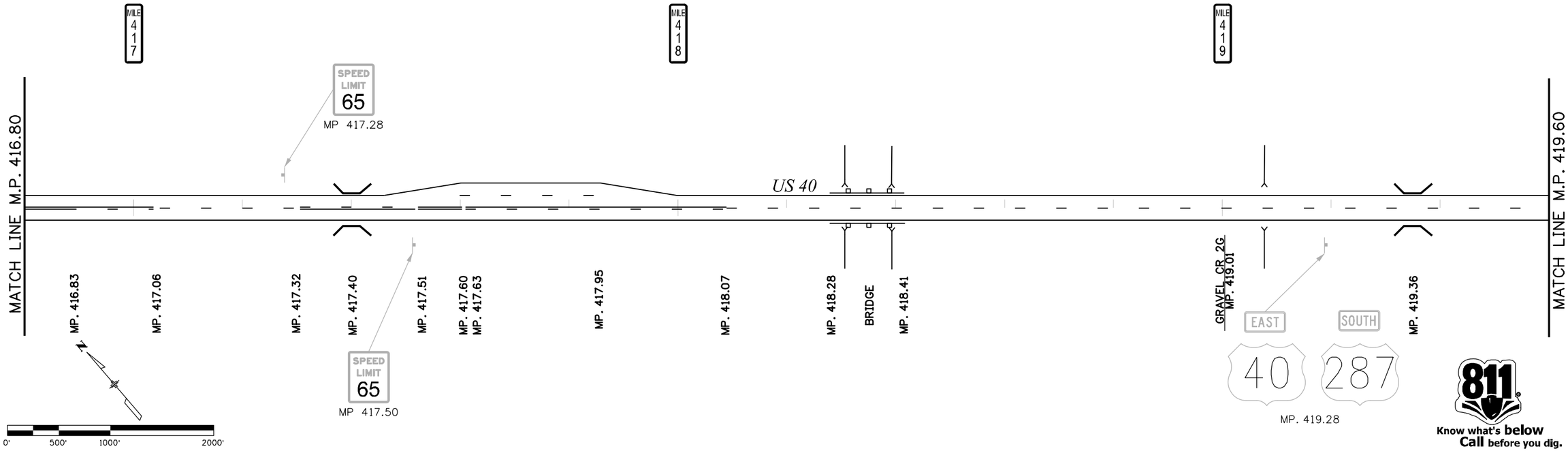

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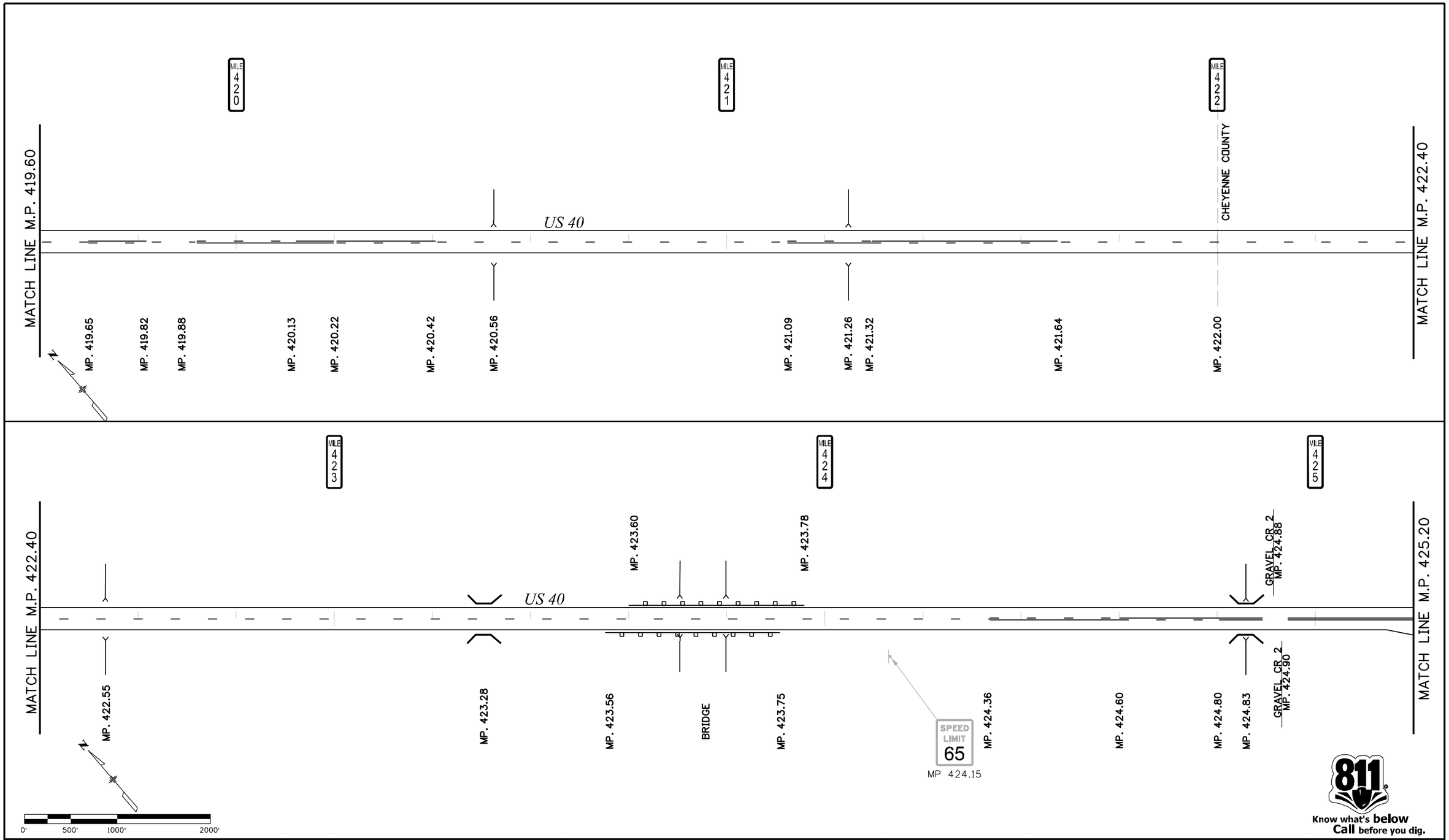

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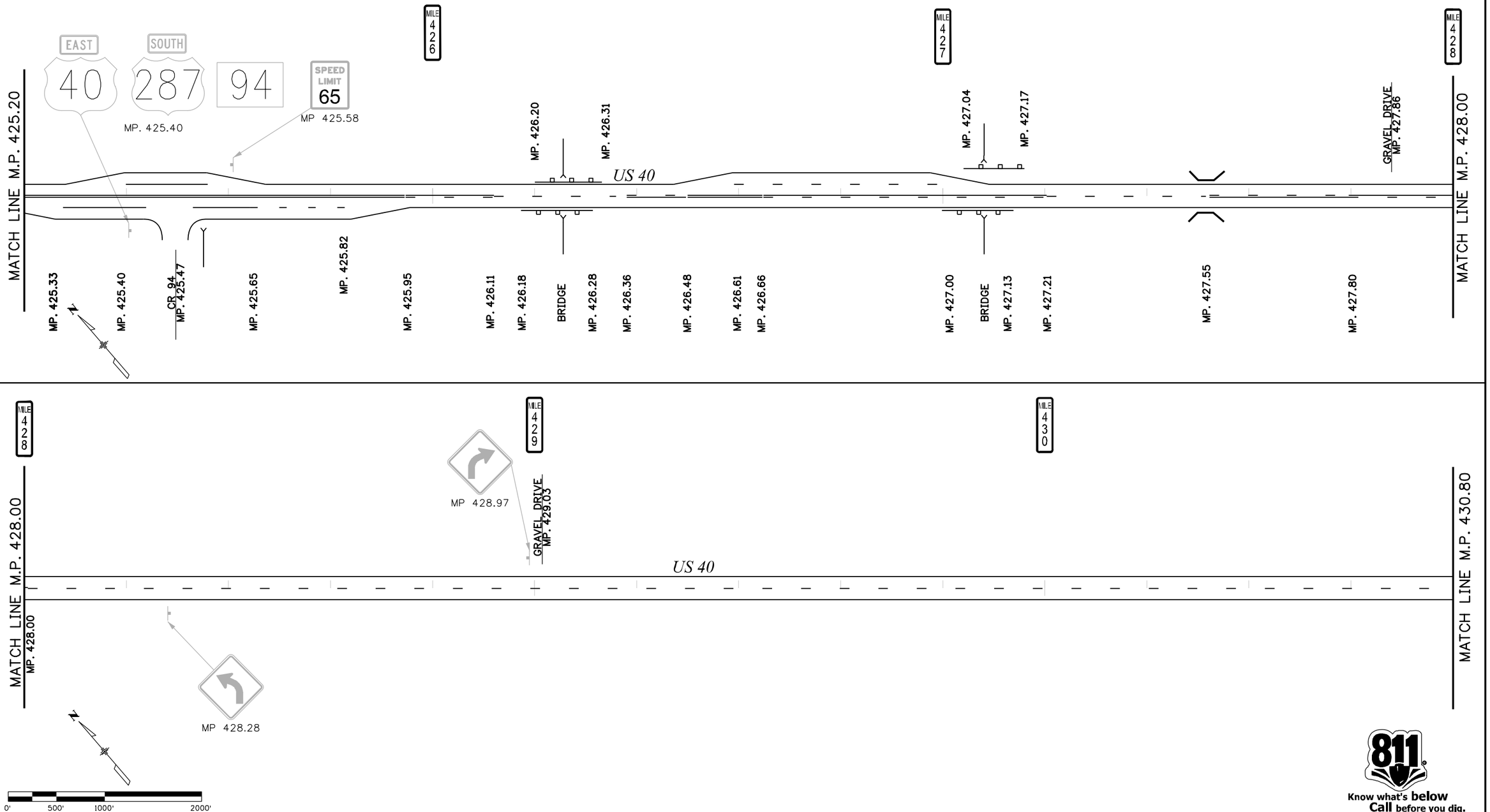

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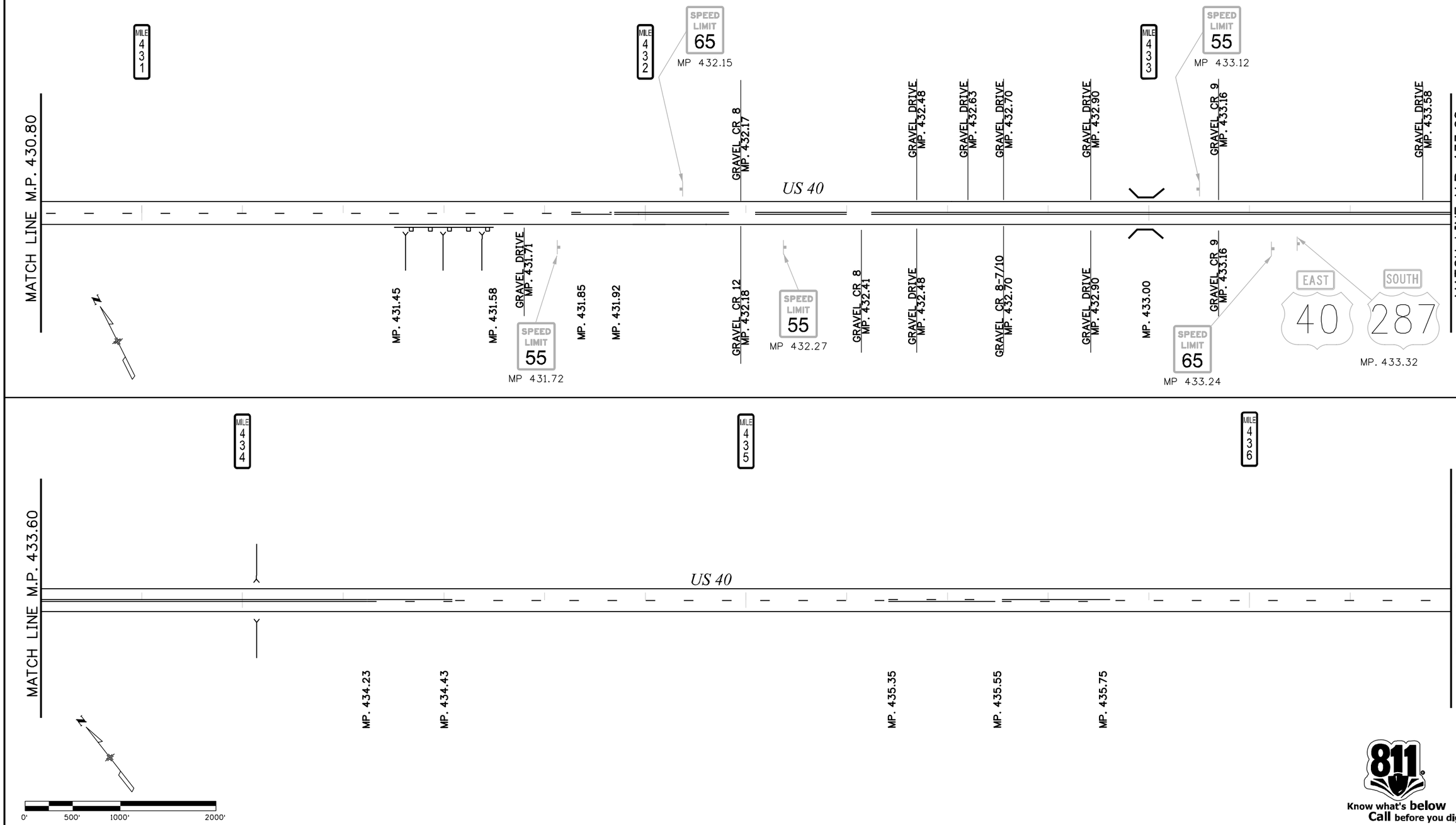

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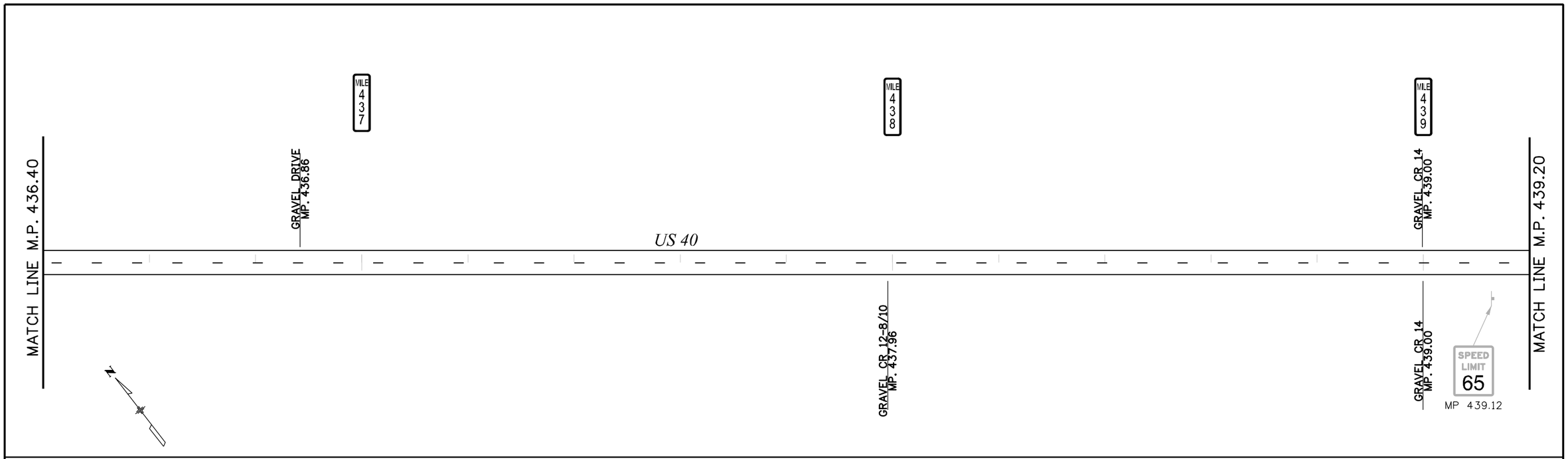

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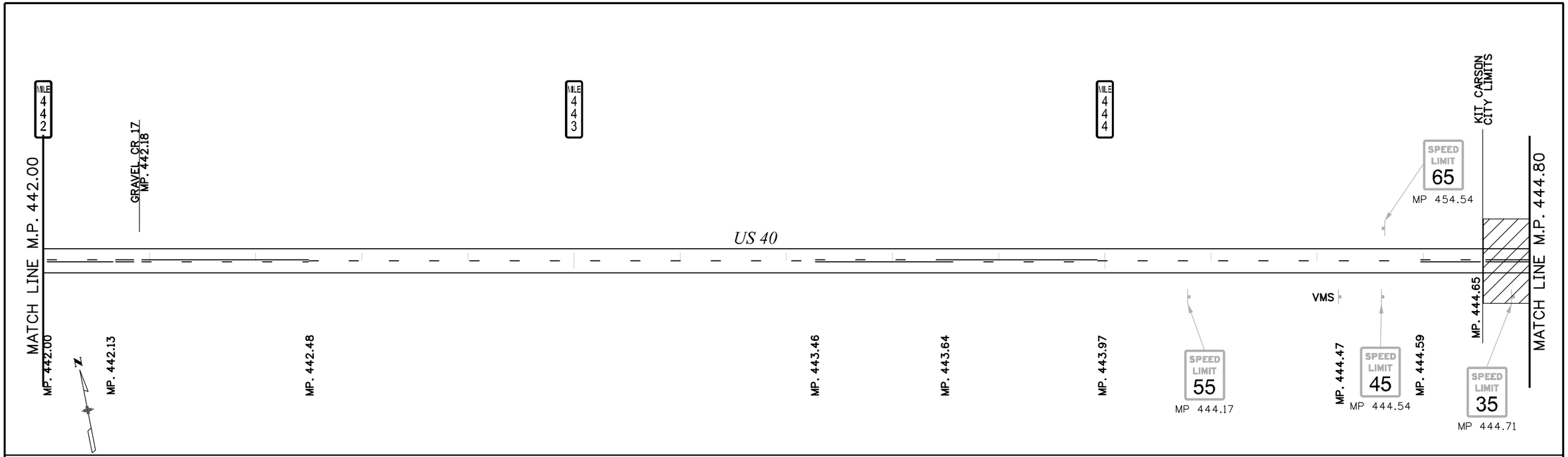

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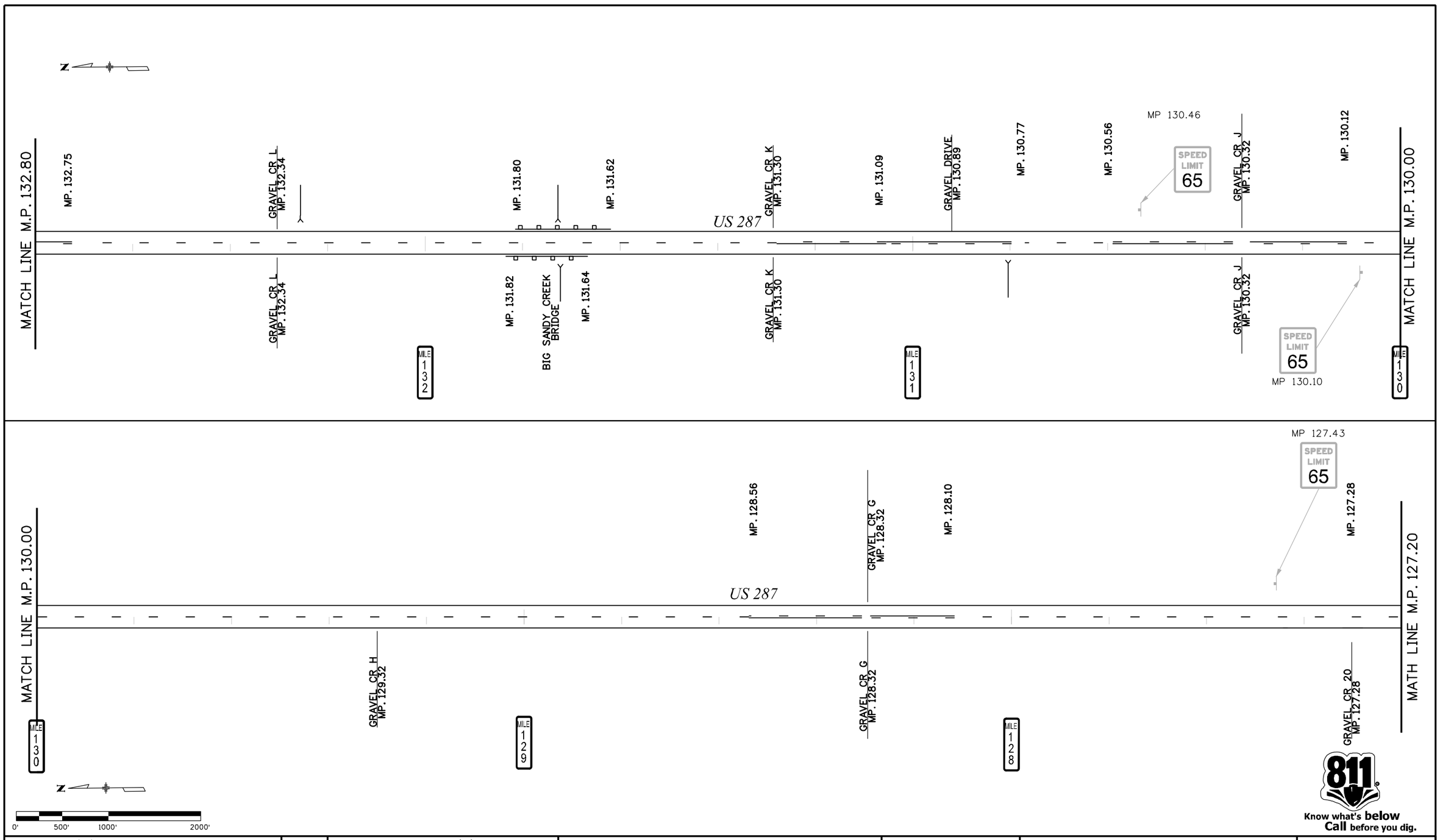

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Unit Information Unit Leader Initials			
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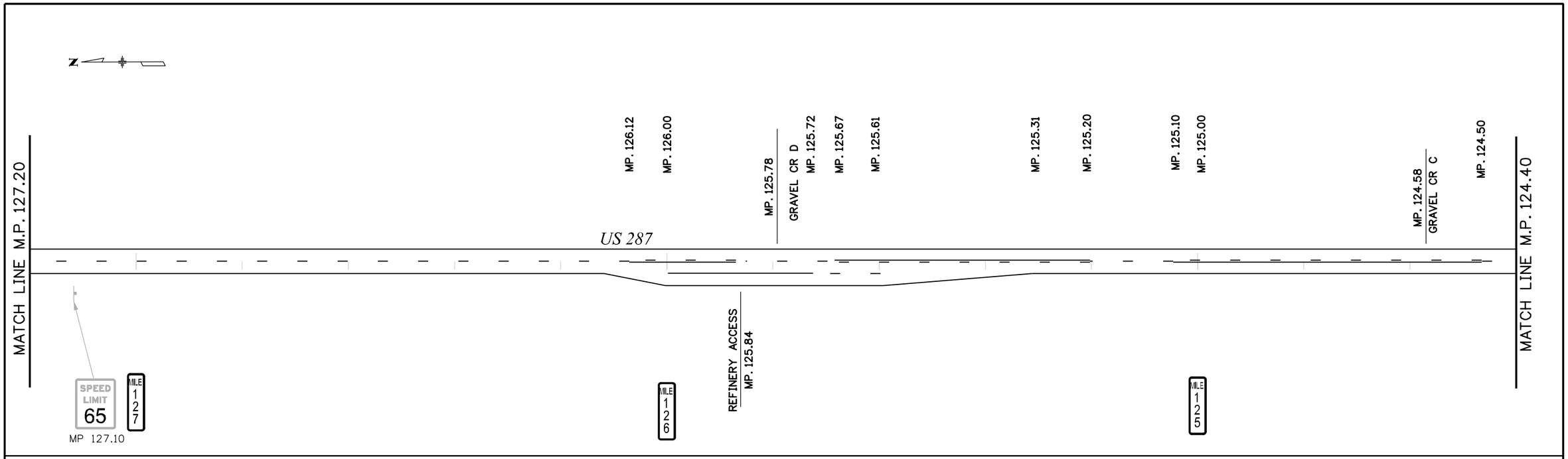

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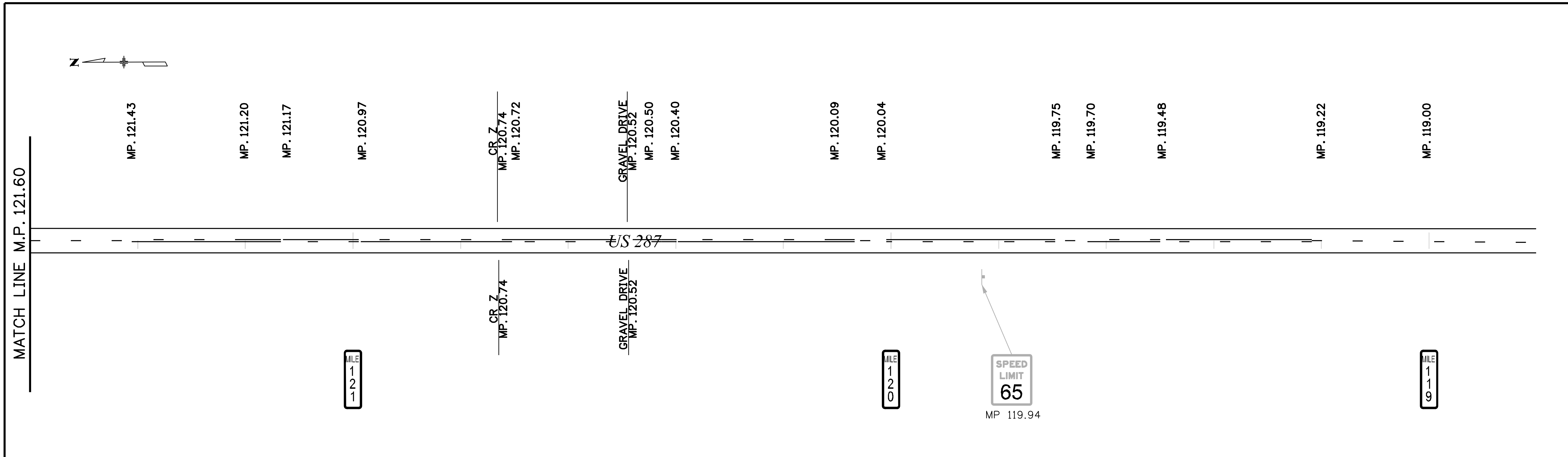

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Detailer:	REW		
Sheet Subset:	PLAN	Subset Sheets:	14 of 14

Project No./Code
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Sheet Number

Appendix C

HCS Reports

Seg. 1 US 40 MP 386 - MP 391

HCS+: Two-Lane Highways Release 5.3

Phone: Fax:
E-Mail:

Two-Way Two-Lane Highway Segment Analysis

Analyst	John Mower
Agency/Co.	Muller Engineering Company
Date Performed	10/3/2017
Analysis Time Period	Peak Hour (1600-1700hrs)
Highway	US 40
From/To	Segment 1 MP 386.01 - MP 391
Jurisdiction	CDOT Region 4
Analysis Year	2017
Description	US 40/US 287 Passing Lane Study

Input Data

Highway class	Class 1				
Shoulder width	8.0	ft	Peak-hour factor, PHF	0.79	
Lane width	12.0	ft	% Trucks and buses	47	%
Segment length	5.0	mi	% Recreational vehicles	0	%
Terrain type	Level		% No-passing zones	41	%
Grade: Length		mi	Access points/mi	1	/mi
Up/down		%			

Two-way hourly volume, V	297		veh/h
Directional split	52	/ 48	%

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,	0.752	
Two-way flow rate,(note-1) vp	500	pc/h
Highest directional split proportion (note-2)	260	pc/h

Free-Flow Speed from Field Measurement:		
Field measured speed, SFM	63	mi/h
Observed volume, Vf	297	veh/h

Seg. 1 US 40 MP 386 - MP 391

Estimated Free-Flow Speed:		
Base free-flow speed, BFFS	-	mi/h
Adj. for lane and shoulder width, fLS	-	mi/h
Adj. for access points, fA	-	mi/h
Free-flow speed, FFS	66.1	mi/h
Adjustment for no-passing zones, fnp	2.6	mi/h
Average travel speed, ATS	59.6	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	0.955	
Two-way flow rate,(note-1) vp	394	pc/h
Highest directional split proportion (note-2)	205	
Base percent time-spent-following, BPTSF	29.3	%
Adj.for directional distribution and no-passing zones, fd/np	18.6	
Percent time-spent-following, PTSF	47.9	%

Level of Service and Other Performance Measures

Level of service, LOS	B	
Volume to capacity ratio, v/c	0.16	
Peak 15-min vehicle-miles of travel, VMT15	470	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1485	veh-mi
Peak 15-min total travel time, TT15	7.9	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.

Seg. 2 US 40 MP 391 - MP 396

HCS+: Two-Lane Highways Release 5.3

Phone: Fax:
E-Mail:

Two-Way Two-Lane Highway Segment Analysis

Analyst	John Mower
Agency/Co.	Muller Engineering Company
Date Performed	10/3/2017
Analysis Time Period	Peak Hour (1600-1700hrs)
Highway	US 40
From/To	Segment 2 MP 391 - MP 396
Jurisdiction	CDOT Region 4
Analysis Year	2017
Description	US 40/US 287 Passing Lane Study

Input Data

Highway class	Class 1				
Shoulder width	10.0	ft	Peak-hour factor, PHF	0.79	
Lane width	12.0	ft	% Trucks and buses	47	%
Segment length	5.0	mi	% Recreational vehicles	0	%
Terrain type	Level		% No-passing zones	1	%
Grade: Length		mi	Access points/mi	1	/mi
Up/down		%			

Two-way hourly volume, V	297		veh/h
Directional split	52	/ 48	%

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,	0.752	
Two-way flow rate,(note-1) vp	500	pc/h
Highest directional split proportion (note-2)	260	pc/h

Free-Flow Speed from Field Measurement:		
Field measured speed, SFM	63	mi/h
Observed volume, Vf	297	veh/h

Seg. 2 US 40 MP 391 - MP 396

Estimated Free-Flow Speed:		
Base free-flow speed, BFFS	-	mi/h
Adj. for lane and shoulder width, fLS	-	mi/h
Adj. for access points, fA	-	mi/h
Free-flow speed, FFS	66.1	mi/h
Adjustment for no-passing zones, fnp	0.1	mi/h
Average travel speed, ATS	62.1	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	0.955	
Two-way flow rate,(note-1) vp	394	pc/h
Highest directional split proportion (note-2)	205	
Base percent time-spent-following, BPTSF	29.3	%
Adj.for directional distribution and no-passing zones, fd/np	0.7	
Percent time-spent-following, PTSF	30.0	%

Level of Service and Other Performance Measures

Level of service, LOS	A	
Volume to capacity ratio, v/c	0.16	
Peak 15-min vehicle-miles of travel, VMT15	470	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1485	veh-mi
Peak 15-min total travel time, TT15	7.6	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.

Seg. 3 US 40 MP 396 - MP 401

HCS+: Two-Lane Highways Release 5.3

Phone: Fax:
E-Mail:

Two-Way Two-Lane Highway Segment Analysis

Analyst	John Mower
Agency/Co.	Muller Engineering Company
Date Performed	10/3/2017
Analysis Time Period	Peak Hour (1600-1700hrs)
Highway	US 40
From/To	Segment 3 MP 396 - MP 401
Jurisdiction	CDOT Region 4
Analysis Year	2017
Description	US 40/US 287 Passing Lane Study

Input Data

Highway class	Class 1				
Shoulder width	8.0	ft	Peak-hour factor, PHF	0.79	
Lane width	12.0	ft	% Trucks and buses	47	%
Segment length	3.4	mi	% Recreational vehicles	0	%
Terrain type	Level		% No-passing zones	38	%
Grade: Length		mi	Access points/mi	0	/mi
Up/down		%			

Two-way hourly volume, V	297		veh/h
Directional split	52	/ 48	%

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,	0.752	
Two-way flow rate,(note-1) vp	500	pc/h
Highest directional split proportion (note-2)	260	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed, SFM	63	mi/h
Observed volume, Vf	297	veh/h

Seg. 3 US 40 MP 396 - MP 401

Estimated Free-Flow Speed:		
Base free-flow speed, BFFS	-	mi/h
Adj. for lane and shoulder width, fLS	-	mi/h
Adj. for access points, fA	-	mi/h
Free-flow speed, FFS	66.1	mi/h
Adjustment for no-passing zones, fnp	2.5	mi/h
Average travel speed, ATS	59.7	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	0.955	
Two-way flow rate,(note-1) vp	394	pc/h
Highest directional split proportion (note-2)	205	
Base percent time-spent-following, BPTSF	29.3	%
Adj.for directional distribution and no-passing zones, fd/np	17.8	
Percent time-spent-following, PTSF	47.1	%

Level of Service and Other Performance Measures

Level of service, LOS	B	
Volume to capacity ratio, v/c	0.16	
Peak 15-min vehicle-miles of travel, VMT15	320	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1010	veh-mi
Peak 15-min total travel time, TT15	5.4	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.

Seg. 4 US 40 MP 401 - MP 406

HCS+: Two-Lane Highways Release 5.3

Phone: Fax:
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Two-Way Two-Lane Highway Segment Analysis

Analyst	John Mower
Agency/Co.	Muller Engineering Company
Date Performed	10/3/2017
Analysis Time Period	Peak Hour (1600-1700hrs)
Highway	US 40
From/To	Segment 4 MP 401 - MP 406
Jurisdiction	CDOT Region 4
Analysis Year	2017
Description	US 40/US 287 Passing Lane Study

Input Data

Highway class	Class 1				
Shoulder width	8.0	ft	Peak-hour factor, PHF	0.79	
Lane width	12.0	ft	% Trucks and buses	41	%
Segment length	5.0	mi	% Recreational vehicles	0	%
Terrain type	Level		% No-passing zones	9	%
Grade: Length		mi	Access points/mi	0	/mi
Up/down		%			

Two-way hourly volume, V	297		veh/h
Directional split	52	/ 48	%

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,	0.777	
Two-way flow rate,(note-1) vp	484	pc/h
Highest directional split proportion (note-2)	252	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed, SFM	63	mi/h
Observed volume, Vf	297	veh/h

Seg. 4 US 40 MP 401 - MP 406

Estimated Free-Flow Speed:		
Base free-flow speed, BFFS	-	mi/h
Adj. for lane and shoulder width, fLS	-	mi/h
Adj. for access points, fA	-	mi/h
Free-flow speed, FFS	66.0	mi/h
Adjustment for no-passing zones, fnp	0.7	mi/h
Average travel speed, ATS	61.5	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	0.961	
Two-way flow rate,(note-1) vp	391	pc/h
Highest directional split proportion (note-2)	203	
Base percent time-spent-following, BPTSF	29.1	%
Adj.for directional distribution and no-passing zones, fd/np	5.5	
Percent time-spent-following, PTSF	34.6	%

Level of Service and Other Performance Measures

Level of service, LOS	A	
Volume to capacity ratio, v/c	0.15	
Peak 15-min vehicle-miles of travel, VMT15	470	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1485	veh-mi
Peak 15-min total travel time, TT15	7.6	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.

Seg. 5 US 40 MP 406 - MP 411

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Two-Way Two-Lane Highway Segment Analysis

Analyst	John Mower
Agency/Co.	Muller Engineering Company
Date Performed	10/3/2017
Analysis Time Period	Peak Hour (1600-1700hrs)
Highway	US 40
From/To	Segment 5 MP 406 - MP 411
Jurisdiction	CDOT Region 4
Analysis Year	2017
Description	US 40/US 287 Passing Lane Study

Input Data

Highway class	Class 1				
Shoulder width	8.0	ft	Peak-hour factor, PHF	0.79	
Lane width	12.0	ft	% Trucks and buses	44	%
Segment length	5.0	mi	% Recreational vehicles	0	%
Terrain type	Level		% No-passing zones	6	%
Grade: Length		mi	Access points/mi	1	/mi
Up/down		%			

Two-way hourly volume, V	297		veh/h
Directional split	52	/ 48	%

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,	0.765	
Two-way flow rate,(note-1) vp	492	pc/h
Highest directional split proportion (note-2)	256	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed, SFM	63	mi/h
Observed volume, Vf	297	veh/h

Seg. 5 US 40 MP 406 - MP 411

Estimated Free-Flow Speed:		
Base free-flow speed, BFFS	-	mi/h
Adj. for lane and shoulder width, fLS	-	mi/h
Adj. for access points, fA	-	mi/h
Free-flow speed, FFS	66.0	mi/h
Adjustment for no-passing zones, fnp	0.5	mi/h
Average travel speed, ATS	61.7	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	0.958	
Two-way flow rate,(note-1) vp	392	pc/h
Highest directional split proportion (note-2)	204	
Base percent time-spent-following, BPTSF	29.1	%
Adj.for directional distribution and no-passing zones, fd/np	3.7	
Percent time-spent-following, PTSF	32.9	%

Level of Service and Other Performance Measures

Level of service, LOS	A	
Volume to capacity ratio, v/c	0.15	
Peak 15-min vehicle-miles of travel, VMT15	470	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1485	veh-mi
Peak 15-min total travel time, TT15	7.6	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.

Seg. 6 US 40 MP 411 - MP 416

HCS+: Two-Lane Highways Release 5.3

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Two-Way Two-Lane Highway Segment Analysis

Analyst	John Mower
Agency/Co.	Muller Engineering Company
Date Performed	10/3/2017
Analysis Time Period	Peak Hour (1600-1700hrs)
Highway	US 40
From/To	Segment 6 MP 411 - MP 416
Jurisdiction	CDOT Region 4
Analysis Year	2017
Description	US 40/US 287 Passing Lane Study

Input Data

Highway class	Class 1				
Shoulder width	8.0	ft	Peak-hour factor, PHF	0.79	
Lane width	12.0	ft	% Trucks and buses	44	%
Segment length	5.0	mi	% Recreational vehicles	0	%
Terrain type	Level		% No-passing zones	25	%
Grade: Length		mi	Access points/mi	1	/mi
Up/down		%			

Two-way hourly volume, V	297		veh/h
Directional split	52	/ 48	%

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,	0.765	
Two-way flow rate,(note-1) vp	492	pc/h
Highest directional split proportion (note-2)	256	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed, SFM	63	mi/h
Observed volume, Vf	297	veh/h

Seg. 6 US 40 MP 411 - MP 416

Estimated Free-Flow Speed:		
Base free-flow speed, BFFS	-	mi/h
Adj. for lane and shoulder width, fLS	-	mi/h
Adj. for access points, fA	-	mi/h
Free-flow speed, FFS	66.0	mi/h
Adjustment for no-passing zones, fnp	1.9	mi/h
Average travel speed, ATS	60.3	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	0.958	
Two-way flow rate,(note-1) vp	392	pc/h
Highest directional split proportion (note-2)	204	
Base percent time-spent-following, BPTSF	29.1	%
Adj.for directional distribution and no-passing zones, fd/np	13.7	
Percent time-spent-following, PTSF	42.9	%

Level of Service and Other Performance Measures

Level of service, LOS	B	
Volume to capacity ratio, v/c	0.15	
Peak 15-min vehicle-miles of travel, VMT15	470	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1485	veh-mi
Peak 15-min total travel time, TT15	7.8	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.

Seg. 7 US 40 MP 416 - MP 421

HCS+: Two-Lane Highways Release 5.3

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Two-Way Two-Lane Highway Segment Analysis

Analyst	John Mower
Agency/Co.	Muller Engineering Company
Date Performed	10/3/2017
Analysis Time Period	Peak Hour (1300-1400hrs)
Highway	US 40
From/To	Segment 7 MP 416 - MP 421
Jurisdiction	CDOT Region 4
Analysis Year	2017
Description	US 40/US 287 Passing Lane Study

Input Data

Highway class	Class 1				
Shoulder width	8.0	ft	Peak-hour factor, PHF	0.83	
Lane width	12.0	ft	% Trucks and buses	60	%
Segment length	5.0	mi	% Recreational vehicles	0	%
Terrain type	Level		% No-passing zones	18	%
Grade: Length		mi	Access points/mi	0	/mi
Up/down		%			

Two-way hourly volume, V	252		veh/h	
Directional split	50	/ 50	%	

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,	0.704	
Two-way flow rate,(note-1) vp	431	pc/h
Highest directional split proportion (note-2)	216	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed, SFM	59	mi/h
Observed volume, Vf	252	veh/h

Seg. 7 US 40 MP 416 - MP 421

Estimated Free-Flow Speed:		
Base free-flow speed, BFFS	-	mi/h
Adj. for lane and shoulder width, fLS	-	mi/h
Adj. for access points, fA	-	mi/h
Free-flow speed, FFS	61.8	mi/h
Adjustment for no-passing zones, fnp	1.5	mi/h
Average travel speed, ATS	56.9	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	0.943	
Two-way flow rate,(note-1) vp	322	pc/h
Highest directional split proportion (note-2)	161	
Base percent time-spent-following, BPTSF	24.7	%
Adj.for directional distribution and no-passing zones, fd/np	10.4	
Percent time-spent-following, PTSF	35.0	%

Level of Service and Other Performance Measures

Level of service, LOS	B	
Volume to capacity ratio, v/c	0.13	
Peak 15-min vehicle-miles of travel, VMT15	380	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1260	veh-mi
Peak 15-min total travel time, TT15	6.7	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.

Seg. 8 US 40 MP 421 - MP 426

HCS+: Two-Lane Highways Release 5.3

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Two-Way Two-Lane Highway Segment Analysis

Analyst	John Mower
Agency/Co.	Muller Engineering Company
Date Performed	10/3/2017
Analysis Time Period	Peak Hour (1300-1400hrs)
Highway	US 40
From/To	Segment 8 MP 421 - MP 426
Jurisdiction	CDOT Region 4
Analysis Year	2017
Description	US 40/US 287 Passing Lane Study

Input Data

Highway class	Class 1				
Shoulder width	10.0	ft	Peak-hour factor, PHF	0.83	
Lane width	12.0	ft	% Trucks and buses	60	%
Segment length	5.0	mi	% Recreational vehicles	0	%
Terrain type	Level		% No-passing zones	23	%
Grade: Length		mi	Access points/mi	1	/mi
Up/down		%			

Two-way hourly volume, V	252		veh/h	
Directional split	50	/ 50	%	

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,	0.704	
Two-way flow rate,(note-1) vp	431	pc/h
Highest directional split proportion (note-2)	216	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed, SFM	59	mi/h
Observed volume, Vf	252	veh/h

Seg. 8 US 40 MP 421 - MP 426

Estimated Free-Flow Speed:		
Base free-flow speed, BFFS	-	mi/h
Adj. for lane and shoulder width, fLS	-	mi/h
Adj. for access points, fA	-	mi/h
Free-flow speed, FFS	61.8	mi/h
Adjustment for no-passing zones, fnp	1.8	mi/h
Average travel speed, ATS	56.6	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	0.943	
Two-way flow rate,(note-1) vp	322	pc/h
Highest directional split proportion (note-2)	161	
Base percent time-spent-following, BPTSF	24.7	%
Adj.for directional distribution and no-passing zones, fd/np	12.5	
Percent time-spent-following, PTSF	37.2	%

Level of Service and Other Performance Measures

Level of service, LOS	B	
Volume to capacity ratio, v/c	0.13	
Peak 15-min vehicle-miles of travel, VMT15	380	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1260	veh-mi
Peak 15-min total travel time, TT15	6.7	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.

Seg. 9 US 40 MP 426 - MP 431

HCS+: Two-Lane Highways Release 5.3

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Two-Way Two-Lane Highway Segment Analysis

Analyst	John Mower
Agency/Co.	Muller Engineering Company
Date Performed	10/3/2017
Analysis Time Period	Peak Hour (1300-1400hrs)
Highway	US 40
From/To	Segment 9 MP 426 - MP 431
Jurisdiction	CDOT Region 4
Analysis Year	2017
Description	US 40/US 287 Passing Lane Study

Input Data

Highway class	Class 1				
Shoulder width	10.0	ft	Peak-hour factor, PHF	0.83	
Lane width	12.0	ft	% Trucks and buses	56	%
Segment length	5.0	mi	% Recreational vehicles	0	%
Terrain type	Level		% No-passing zones	3	%
Grade: Length		mi	Access points/mi	0	/mi
Up/down		%			

Two-way hourly volume, V	252		veh/h
Directional split	50	/ 50	%

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,	0.718	
Two-way flow rate,(note-1) vp	423	pc/h
Highest directional split proportion (note-2)	212	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed, SFM	59	mi/h
Observed volume, Vf	252	veh/h

Seg. 9 US 40 MP 426 - MP 431

Estimated Free-Flow Speed:		
Base free-flow speed, BFFS	-	mi/h
Adj. for lane and shoulder width, fLS	-	mi/h
Adj. for access points, fA	-	mi/h
Free-flow speed, FFS	61.7	mi/h
Adjustment for no-passing zones, fnp	0.3	mi/h
Average travel speed, ATS	58.2	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	0.947	
Two-way flow rate,(note-1) vp	321	pc/h
Highest directional split proportion (note-2)	161	
Base percent time-spent-following, BPTSF	24.6	%
Adj.for directional distribution and no-passing zones, fd/np	1.7	
Percent time-spent-following, PTSF	26.3	%

Level of Service and Other Performance Measures

Level of service, LOS	A	
Volume to capacity ratio, v/c	0.13	
Peak 15-min vehicle-miles of travel, VMT15	380	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1260	veh-mi
Peak 15-min total travel time, TT15	6.5	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.

Seg. 10 US 40 MP 431 - MP 436

HCS+: Two-Lane Highways Release 5.3

Phone: Fax:
E-Mail:

Two-Way Two-Lane Highway Segment Analysis

Analyst	John Mower
Agency/Co.	Muller Engineering Company
Date Performed	10/3/2017
Analysis Time Period	Peak Hour (1300-1400hrs)
Highway	US 40
From/To	Segment 10 MP 431 - MP 436
Jurisdiction	CDOT Region 4
Analysis Year	2017
Description	US 40/US 287 Passing Lane Study

Input Data

Highway class	Class 1				
Shoulder width	10.0	ft	Peak-hour factor, PHF	0.83	
Lane width	12.0	ft	% Trucks and buses	40	%
Segment length	5.0	mi	% Recreational vehicles	0	%
Terrain type	Level		% No-passing zones	47	%
Grade: Length		mi	Access points/mi	3	/mi
Up/down		%			

Two-way hourly volume, V	252		veh/h	
Directional split	50	/ 50	%	

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,	0.781	
Two-way flow rate,(note-1) vp	389	pc/h
Highest directional split proportion (note-2)	195	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed, SFM	59	mi/h
Observed volume, Vf	252	veh/h

Seg. 10 US 40 MP 431 - MP 436

Estimated Free-Flow Speed:		
Base free-flow speed, BFFS	-	mi/h
Adj. for lane and shoulder width, fLS	-	mi/h
Adj. for access points, fA	-	mi/h
Free-flow speed, FFS	61.5	mi/h
Adjustment for no-passing zones, fnp	2.9	mi/h
Average travel speed, ATS	55.6	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	0.962	
Two-way flow rate,(note-1) vp	316	pc/h
Highest directional split proportion (note-2)	158	
Base percent time-spent-following, BPTSF	24.3	%
Adj.for directional distribution and no-passing zones, fd/np	19.4	
Percent time-spent-following, PTSF	43.7	%

Level of Service and Other Performance Measures

Level of service, LOS	B	
Volume to capacity ratio, v/c	0.12	
Peak 15-min vehicle-miles of travel, VMT15	380	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1260	veh-mi
Peak 15-min total travel time, TT15	6.8	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.

Seg. 11 US 40 MP 436 - MP 441

HCS+: Two-Lane Highways Release 5.3

Phone: Fax:
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Two-Way Two-Lane Highway Segment Analysis

Analyst	John Mower
Agency/Co.	Muller Engineering Company
Date Performed	10/3/2017
Analysis Time Period	Peak Hour (1300-1400hrs)
Highway	US 40
From/To	Segment 11 MP 436 - MP 441
Jurisdiction	CDOT Region 4
Analysis Year	2017
Description	US 40/US 287 Passing Lane Study

Input Data

Highway class	Class 1				
Shoulder width	10.0	ft	Peak-hour factor, PHF	0.83	
Lane width	12.0	ft	% Trucks and buses	40	%
Segment length	5.0	mi	% Recreational vehicles	0	%
Terrain type	Level		% No-passing zones	0	%
Grade: Length		mi	Access points/mi	1	/mi
Up/down		%			

Two-way hourly volume, V	252		veh/h	
Directional split	50	/ 50	%	

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,	0.781	
Two-way flow rate,(note-1) vp	389	pc/h
Highest directional split proportion (note-2)	195	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed, SFM	59	mi/h
Observed volume, Vf	252	veh/h

Seg. 11 US 40 MP 436 - MP 441

Estimated Free-Flow Speed:		
Base free-flow speed, BFFS	-	mi/h
Adj. for lane and shoulder width, fLS	-	mi/h
Adj. for access points, fA	-	mi/h
Free-flow speed, FFS	61.5	mi/h
Adjustment for no-passing zones, fnp	0.0	mi/h
Average travel speed, ATS	58.5	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	0.962	
Two-way flow rate,(note-1) vp	316	pc/h
Highest directional split proportion (note-2)	158	
Base percent time-spent-following, BPTSF	24.3	%
Adj.for directional distribution and no-passing zones, fd/np	0.0	
Percent time-spent-following, PTSF	24.3	%

Level of Service and Other Performance Measures

Level of service, LOS	A	
Volume to capacity ratio, v/c	0.12	
Peak 15-min vehicle-miles of travel, VMT15	380	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1260	veh-mi
Peak 15-min total travel time, TT15	6.5	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.

Seg. 12 US 40 MP 441 - MP 446

HCS+: Two-Lane Highways Release 5.3

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Two-Way Two-Lane Highway Segment Analysis

Analyst	John Mower
Agency/Co.	Muller Engineering Company
Date Performed	10/3/2017
Analysis Time Period	Peak Hour (1300-1400hrs)
Highway	US 40
From/To	Segment 12 MP 441 - MP 446
Jurisdiction	CDOT Region 4
Analysis Year	2017
Description	US 40/US 287 Passing Lane Study

Input Data

Highway class	Class 1				
Shoulder width	8.0	ft	Peak-hour factor, PHF	0.83	
Lane width	12.0	ft	% Trucks and buses	33	%
Segment length	4.0	mi	% Recreational vehicles	0	%
Terrain type	Level		% No-passing zones	13	%
Grade: Length		mi	Access points/mi	1	/mi
Up/down		%			

Two-way hourly volume, V	252		veh/h	
Directional split	50	/ 50	%	

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,	0.812	
Two-way flow rate,(note-1) vp	374	pc/h
Highest directional split proportion (note-2)	187	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed, SFM	59	mi/h
Observed volume, Vf	252	veh/h

Seg. 12 US 40 MP 441 - MP 446

Estimated Free-Flow Speed:		
Base free-flow speed, BFFS	-	mi/h
Adj. for lane and shoulder width, fLS	-	mi/h
Adj. for access points, fA	-	mi/h
Free-flow speed, FFS	61.4	mi/h
Adjustment for no-passing zones, fnp	1.0	mi/h
Average travel speed, ATS	57.5	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	0.968	
Two-way flow rate,(note-1) vp	314	pc/h
Highest directional split proportion (note-2)	157	
Base percent time-spent-following, BPTSF	24.1	%
Adj.for directional distribution and no-passing zones, fd/np	7.4	
Percent time-spent-following, PTSF	31.5	%

Level of Service and Other Performance Measures

Level of service, LOS	A	
Volume to capacity ratio, v/c	0.12	
Peak 15-min vehicle-miles of travel, VMT15	304	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1008	veh-mi
Peak 15-min total travel time, TT15	5.3	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.

Seg. 13 US 287 MP 122 - MP 128

HCS+: Two-Lane Highways Release 5.3

Phone: Fax:
E-Mail:

Two-Way Two-Lane Highway Segment Analysis

Analyst	John Mower
Agency/Co.	Muller Engineering Company
Date Performed	10/3/2017
Analysis Time Period	Peak Hour (1200-1300hrs)
Highway	US 287
From/To	Segment 13 MP 122 - MP 128
Jurisdiction	CDOT Region 4
Analysis Year	2017
Description	US 40/US 287 Passing Lane Study

Input Data

Highway class	Class 1				
Shoulder width	10.0	ft	Peak-hour factor, PHF	0.87	
Lane width	12.0	ft	% Trucks and buses	42	%
Segment length	5.3	mi	% Recreational vehicles	0	%
Terrain type	Level		% No-passing zones	0	%
Grade: Length		mi	Access points/mi	1	/mi
Up/down		%			

Two-way hourly volume, V	316		veh/h
Directional split	51	/ 49	%

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,	0.773	
Two-way flow rate,(note-1) vp	470	pc/h
Highest directional split proportion (note-2)	240	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed, SFM	65	mi/h
Observed volume, Vf	316	veh/h

Seg. 13 US 287 MP 122 - MP 128

Estimated Free-Flow Speed:		
Base free-flow speed, BFFS	-	mi/h
Adj. for lane and shoulder width, fLS	-	mi/h
Adj. for access points, fA	-	mi/h
Free-flow speed, FFS	68.2	mi/h
Adjustment for no-passing zones, fnp	0.0	mi/h
Average travel speed, ATS	64.5	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	0.960	
Two-way flow rate,(note-1) vp	378	pc/h
Highest directional split proportion (note-2)	193	
Base percent time-spent-following, BPTSF	28.3	%
Adj.for directional distribution and no-passing zones, fd/np	0.1	
Percent time-spent-following, PTSF	28.3	%

Level of Service and Other Performance Measures

Level of service, LOS	A	
Volume to capacity ratio, v/c	0.15	
Peak 15-min vehicle-miles of travel, VMT15	481	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1675	veh-mi
Peak 15-min total travel time, TT15	7.5	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.

Seg. 14 US 287 MP 128 - MP 133

HCS+: Two-Lane Highways Release 5.3

Phone: Fax:
E-Mail:

Two-Way Two-Lane Highway Segment Analysis

Analyst	John Mower
Agency/Co.	Muller Engineering Company
Date Performed	10/3/2017
Analysis Time Period	Peak Hour (1200-1300hrs)
Highway	US 287
From/To	Segment 14 MP 128 - MP 133
Jurisdiction	CDOT Region 4
Analysis Year	2017
Description	US 40/US 287 Passing Lane Study

Input Data

Highway class	Class 1				
Shoulder width	10.0	ft	Peak-hour factor, PHF	0.87	
Lane width	12.0	ft	% Trucks and buses	55	%
Segment length	5.2	mi	% Recreational vehicles	0	%
Terrain type	Level		% No-passing zones	3	%
Grade: Length		mi	Access points/mi	2	/mi
Up/down		%			

Two-way hourly volume, V	316	veh/h	
Directional split	51 / 49	%	

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,	0.722	
Two-way flow rate,(note-1) vp	503	pc/h
Highest directional split proportion (note-2)	257	pc/h

Free-Flow Speed from Field Measurement:		
Field measured speed, SFM	65	mi/h
Observed volume, Vf	316	veh/h

Seg. 14 US 287 MP 128 - MP 133

Estimated Free-Flow Speed:		
Base free-flow speed, BFFS	-	mi/h
Adj. for lane and shoulder width, fLS	-	mi/h
Adj. for access points, fA	-	mi/h
Free-flow speed, FFS	68.4	mi/h
Adjustment for no-passing zones, fnp	0.2	mi/h
Average travel speed, ATS	64.2	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	0.948	
Two-way flow rate,(note-1) vp	383	pc/h
Highest directional split proportion (note-2)	195	
Base percent time-spent-following, BPTSF	28.6	%
Adj.for directional distribution and no-passing zones, fd/np	1.9	
Percent time-spent-following, PTSF	30.5	%

Level of Service and Other Performance Measures

Level of service, LOS	A	
Volume to capacity ratio, v/c	0.16	
Peak 15-min vehicle-miles of travel, VMT15	472	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1643	veh-mi
Peak 15-min total travel time, TT15	7.3	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.

Appendix D

Crash Listing

system	hwy	sec	mp	date	time	severity	serial	location	road_desc	vehicles	contour	condition	lighting	weather	acctype	dir_1	vehicle_1	dir_2	vehicle_2
STATE HIGHWAY	40	H	386.09	8/6/2013	1635	PDO	13516607	ON	AT INTERS	2	STRAIGHT	DRY	DAYLIGHT	NONE	SIDESWIPE OPPOSITE DIRECTION	E	PASS CAR/VAN	W	SUV
STATE HIGHWAY	40	H	386.09	2/21/2013	1140	PDO	13504053	ON	AT INTERS	2	STRAIGHT	ICY	DAYLIGHT	SNOW/SLE	REAR-END	E	TRUCK GVW > 10K/BUSSES > 15 PEOPLE	E	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	40	H	386.9	2/21/2013	1625	PDO	13504485	OFF RIGH	NON-INTE	1	STRAIGHT	ICY	DAYLIGHT	WIND	DELINEATOR POST	W	PICKUP TRUCK/UTILITY VAN		
STATE HIGHWAY	40	H	388.7	2/20/2015	2145	INJ	15505050	OFF LEFT	NON-INTE	1	STRAIGHT	WET	DARK-UNL	NONE	OVERTURNING	W	PASS CAR/VAN		
STATE HIGHWAY	40	H	389.1	3/12/2013	0730	PDO	13505701	OFF LEFT	NON-INTE	1	STRAIGHT	ICY	DAWN OR	SNOW/SLE	DELINEATOR POST	W	PICKUP TRUCK/UTILITY VAN W/TRAILER		
STATE HIGHWAY	40	H	389.7	10/15/2012	0400	PDO	12519442	ON	NON-INTE	1	STRAIGHT	DRY	DARK-UNL	NONE	WILD ANIMAL	W	TRUCK GVW > 10K/BUSSES > 15 PEOPLE		
STATE HIGHWAY	40	H	389.88	7/8/2015	1200	PDO	15517436	OFF RIGH	NON-INTE	1	STRAIGHT	DRY	DAYLIGHT	NONE	OTHER NON-COLLISION	E	PICKUP TRUCK/UTILITY VAN W/TRAILER		
STATE HIGHWAY	40	H	390.1	9/29/2012	0540	PDO	12518467	ON	NON-INTE	1	CURVE ON	DRY	DARK-UNL	FOG	WILD ANIMAL	W	TRUCK GVW > 10K/BUSSES > 15 PEOPLE		
STATE HIGHWAY	40	H	390.1	8/21/2013	1300	PDO	13517101	OFF RIGH	NON-INTE	1	CURVE ON	DRY	DAYLIGHT	NONE	OTHER NON-COLLISION	E	PICKUP TRUCK/UTILITY VAN W/TRAILER		
STATE HIGHWAY	40	H	391.1	7/11/2012	1640	PDO	12513175	OFF LEFT	NON-INTE	1	STRAIGHT	DRY	DAYLIGHT	NONE	OVERTURNING	W	SUV W/TRAILER		
STATE HIGHWAY	40	H	391.5	9/3/2014	0840	PDO	14521563	ON	NON-INTE	2	STRAIGHT	DRY	DAYLIGHT	NONE	REAR-END	W	PICKUP TRUCK/UTILITY VAN	W	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	40	H	392	3/21/2014	2115	INJ	14506770	ON	NON-INTE	2	STRAIGHT	DRY	DARK-UNL	NONE	SIDESWIPE OPPOSITE DIRECTION	E	PICKUP TRUCK/UTILITY VAN	W	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	40	H	392	2/10/2013	2155	PDO	13503004	OFF LEFT	NON-INTE	1	STRAIGHT	DRY	DARK-UNL	NONE	SIGN	W	PASS CAR/VAN		
STATE HIGHWAY	40	H	392	4/18/2015	0910	INJ	15509643	OFF RIGH	NON-INTE	1	STRAIGHT	SLUSHY	DAYLIGHT	SNOW/SLE	SIGN	E	PASS CAR/VAN		
STATE HIGHWAY	40	H	393.97	2/23/2015	0835	INJ	15504928	ON	NON-INTE	2	STRAIGHT	ICY	DAYLIGHT	WIND	HEAD-ON	E	TRUCK GVW > 10K/BUSSES > 15 PEOPLE	W	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	40	H	395.02	3/9/2013	1237	PDO	13505391	OFF LEFT	NON-INTE	1	STRAIGHT	ICY	DAYLIGHT	SNOW/SLE	OTHER NON-COLLISION	W	SUV W/TRAILER		
STATE HIGHWAY	40	H	396.1	10/28/2011	1910	INJ	11507909	OFF RIGH	NON-INTE	1	STRAIGHT	DRY	DARK-UNL	NONE	OVERTURNING	SE	SUV		
STATE HIGHWAY	40	H	398.7	5/12/2014	0140	PDO	14511065	OFF RIGH	NON-INTE	1	STRAIGHT	SLUSHY	DARK-LIGI	SNOW/SLE	LIGHT/UTILITY POLE	N	TRUCK GVW > 10K/BUSSES > 15 PEOPLE		
STATE HIGHWAY	40	H	398.85	4/9/2012	0729	INJ	12019886	ON	AT INTERS	3	STRAIGHT	DRY	DAYLIGHT	RAIN	REAR-END	SE	PASS CAR/VAN	SE	PICKUP TRUCK/UTILITY VAN
STATE HIGHWAY	40	H	399.2	6/27/2013	1458	INJ	13037199	ON	AT INTERS	2	STRAIGHT	DRY	DAYLIGHT	NONE	REAR-END	S	SUV	S	SUV
STATE HIGHWAY	40	H	400	3/10/2013	1635	PDO	13505700	OFF RIGH	NON-INTE	1	STRAIGHT	DRY	DAYLIGHT	NONE	SIGN	E	TRUCK GVW > 10K/BUSSES > 15 PEOPLE		
STATE HIGHWAY	40	H	400.14	6/3/2015	0815	PDO	15513725	ON	NON-INTE	2	STRAIGHT	DRY	DAYLIGHT	NONE	VEHICLE CARGO/DEBRIS	W	TRUCK GVW > 10K/BUSSES > 15 PEOPLE	E	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	40	H	400.5	3/1/2014	0845	INJ	14505880	OFF RIGH	NON-INTE	1	CURVE ON	ICY	DAYLIGHT	FOG	OVERTURNING	W	PICKUP TRUCK/UTILITY VAN		
STATE HIGHWAY	40	H	401.3	12/13/2011	2300	INJ	11512721	ON	NON-INTE	1	STRAIGHT	DRY	DARK-UNL	FOG	OVERTURNING	W	TRUCK GVW > 10K/BUSSES > 15 PEOPLE		
STATE HIGHWAY	40	H	401.6	5/28/2015	1505	INJ	15513263	OFF RIGH	NON-INTE	1	STRAIGHT	SLUSHY	DAYLIGHT	SNOW/SLE	OVERTURNING	W	PICKUP TRUCK/UTILITY VAN		
STATE HIGHWAY	40	H	403.1	11/30/2012	0150	INJ	12523767	OFF RIGH	NON-INTE	1	STRAIGHT	DRY	DARK-UNL	NONE	OVERTURNING	E	PASS CAR/VAN		
STATE HIGHWAY	40	H	403.7	6/16/2014	0515	PDO	14513738	OFF LEFT	NON-INTE	1	STRAIGHT	DRY	DAWN OR	NONE	BRIDGE RAIL	W	PICKUP TRUCK/UTILITY VAN W/TRAILER		
STATE HIGHWAY	40	H	405.7	2/12/2012	0250	INJ	12503604	OFF RIGH	NON-INTE	1	STRAIGHT	DRY	DARK-UNL	FOG	OVERTURNING	W	TRUCK GVW > 10K/BUSSES > 15 PEOPLE		
STATE HIGHWAY	40	H	405.7	2/23/2012	0620	INJ	12504084	OFF RIGH	NON-INTE	1	STRAIGHT	ICY	DAWN OR	SNOW/SLE	OVERTURNING	W	PICKUP TRUCK/UTILITY VAN		
STATE HIGHWAY	40	H	405.7	3/11/2013	0400	PDO	13505736	ON	NON-INTE	1	STRAIGHT	ICY	DARK-UNL	NONE	OVERTURNING	W	PICKUP TRUCK/UTILITY VAN W/TRAILER		
STATE HIGHWAY	40	H	405.75	5/1/2013	1946	PDO	13509408	OFF RIGH	NON-INTE	1	STRAIGHT	ICY	DAWN OR	SNOW/SLE	OVERTURNING	W	PASS CAR/VAN W/TRAILER		
STATE HIGHWAY	40	H	405.8	2/2/2016	1906	INJ	16504460	OFF RIGH	NON-INTE	1	STRAIGHT	ICY	DARK-UNL	WIND	OVERTURNING	W	TRUCK GVW > 10K/BUSSES > 15 PEOPLE		
STATE HIGHWAY	40	H	406	4/18/2013	0918	INJ	13508507	ON	NON-INTE	3	STRAIGHT	SNOWY	DAYLIGHT	WIND	HEAD-ON	E	TRUCK GVW > 10K/BUSSES > 15 PEOPLE	W	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	40	H	406.7	10/21/2015	1615	FAT	15528834	ON	NON-INTE	4	STRAIGHT	DRY	DAYLIGHT	NONE	SIDESWIPE OPPOSITE DIRECTION	N	TRUCK GVW > 10K/BUSSES > 15 PEOPLE	S	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	40	H	407.2	7/17/2012	0450	PDO	12513259	OFF RIGH	NON-INTE	1	STRAIGHT	DRY	DARK-UNL	NONE	OVERTURNING	E	PICKUP TRUCK/UTILITY VAN		
STATE HIGHWAY	40	H	409.2	5/22/2012	1400	INJ	12509535	ON	NON-INTE	2	STRAIGHT	DRY	DAYLIGHT	NONE	SIDESWIPE OPPOSITE DIRECTION	W	PICKUP TRUCK/UTILITY VAN	E	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	40	H	409.7	11/28/2015	0935	INJ	15532928	OFF LEFT	NON-INTE	1	STRAIGHT	ICY W/VIS	DAYLIGHT	NONE	BRIDGE RAIL	W	SUV		
STATE HIGHWAY	40	H	410.03	11/28/2015	1225	PDO	15532929	OFF LEFT	NON-INTE	1	HILLCRES	ICY W/VIS	DAYLIGHT	NONE	OVERTURNING	E	SUV		
STATE HIGHWAY	40	H	410.25	11/28/2015	2030	FAT	15801129	OFF LEFT	NON-INTE	1	STRAIGHT	ICY	DARK-UNL	NONE	OVERTURNING	S	PICKUP TRUCK/UTILITY VAN	S	MOTORCYCLE
STATE HIGHWAY	40	H	410.7	10/14/2013	1515	PDO	13521399	OFF LEFT	NON-INTE	1	STRAIGHT	DRY	DAYLIGHT	WIND	OVERTURNING	W	PASS CAR/VAN		
STATE HIGHWAY	40	H	411.1	4/17/2012	0340	FAT	12508365	ON	NON-INTE	2	STRAIGHT	DRY	DARK-UNL	NONE	SIDESWIPE OPPOSITE DIRECTION	W	TRUCK GVW > 10K/BUSSES > 15 PEOPLE	E	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	40	H	412.2	2/20/2013	2150	INJ	13504489	ON	NON-INTE	2	STRAIGHT	ICY	DARK-UNL	SNOW/SLE	REAR-END	W	TRUCK GVW > 10K/BUSSES > 15 PEOPLE	W	SUV
STATE HIGHWAY	40	H	412.9	5/8/2012	0520	INJ	12508723	OFF RIGH	NON-INTE	1	STRAIGHT	DRY	DAWN OR	NONE	LIGHT/UTILITY POLE	W	TRUCK GVW > 10K/BUSSES > 15 PEOPLE		
STATE HIGHWAY	40	H	415.1	4/18/2013	0800	PDO	13508512	OFF LEFT	NON-INTE	1	STRAIGHT	ICY	DAYLIGHT	WIND	OVERTURNING	E	PICKUP TRUCK/UTILITY VAN W/TRAILER		
STATE HIGHWAY	40	H	418	2/27/2013	0745	INJ	13504649	OFF LEFT	NON-INTE	1	STRAIGHT	ICY	DAYLIGHT	NONE	EMBANKMENT CUT/FILL SLOPE	W	PICKUP TRUCK/UTILITY VAN		
STATE HIGHWAY	40	H	418.9	7/19/2015	0500	INJ	15518528	OFF LEFT	NON-INTE	1	STRAIGHT	DRY	DARK-UNL	NONE	OVERTURNING	W	TRUCK GVW > 10K/BUSSES > 15 PEOPLE		
STATE HIGHWAY	40	H	420	5/9/2016	0045	INJ	16516454	ON	NON-INTE	2	STRAIGHT	DRY	DARK-UNL	NONE	SIDESWIPE OPPOSITE DIRECTION	W	TRUCK GVW > 10K/BUSSES > 15 PEOPLE	E	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	40	H	421.4	1/31/2014	1949	INJ	14502947	ON	NON-INTE	2	STRAIGHT	ICY	DARK-UNL	SNOW/SLE	SIDESWIPE OPPOSITE DIRECTION	W	PICKUP TRUCK/UTILITY VAN	E	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	40	H	423.7	11/30/2014	1310	INJ	14530987	OFF RIGH	NON-INTE	1	STRAIGHT	DRY	DAYLIGHT	NONE	FENCE	E	PASS CAR/VAN		
STATE HIGHWAY	40	H	423.8	3/27/2012	0235	INJ	12506151	OFF RIGH	NON-INTE	1	STRAIGHT	DRY	DARK-UNL	NONE	FENCE	S	PASS CAR/VAN		
STATE HIGHWAY	40	H	424	6/23/2015	1600	PDO	15038307	ON	NON-INTE	2	HILLCRES	DRY	DAYLIGHT	NONE	SIDESWIPE SAME DIRECTION	W	TRUCK GVW > 10K/BUSSES > 15 PEOPLE	W	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	40	H	424.7	4/23/2013	0640	INJ	13508741	OFF LEFT	NON-INTE	1	STRAIGHT	ICY	DAWN OR	SNOW/SLE	OVERTURNING	E	SUV		
STATE HIGHWAY	40	H	425	10/1/2015	0922	PDO	15526617	ON	NON-INTE	2	STRAIGHT	DRY	DAYLIGHT	NONE	SIDESWIPE SAME DIRECTION	E	TRUCK GVW > 10K/BUSSES > 15 PEOPLE	E	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	40	H	425.4	9/12/2015	1515	PDO	15524653	ON	AT INTERS	2	STRAIGHT	DRY	DAYLIGHT	NONE	SIDESWIPE SAME DIRECTION	SE	TRUCK GVW > 10K/BUSSES > 15 PEOPLE	SE	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	40	H	425.5	7/2/2015	0500	PDO	15516828	ON	NON-INTE	1	STRAIGHT	DRY	DAYLIGHT	NONE	WILD ANIMAL	N	TRUCK GVW > 10K/BUSSES > 15 PEOPLE		
STATE HIGHWAY	40	H	425.9	5/24/2016	0055	PDO	16020785	ON	NON-INTE	1	HILLCRES	DRY	DARK-UNL	NONE	WILD ANIMAL	E	PASS CAR/VAN		
STATE HIGHWAY	40	H	426.4	7/25/2011	2320	PDO	11314506	ON	NON-INTE	2	STRAIGHT	DRY	DARK-UNL	NONE	SIDESWIPE SAME DIRECTION	W	TRUCK GVW > 10K/BUSSES > 15 PEOPLE	W	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	40	H	426.5	10/9/2013	1710	FAT	13520999	OFF RIGH	NON-INTE	2	STRAIGHT	DRY	DAYLIGHT	NONE	PEDESTRIAN	E	TRUCK GVW > 10K/BUSSES > 15 PEOPLE	E	OTHER - SEE REPORT
STATE HIGHWAY	40	H	426.7	4/6/2014	0200	PDO	14507885	ON	NON-INTE	2	CURVE ON	DRY	DARK-UNL	NONE	HEAD-ON	N	PASS CAR/VAN	S	SUV
STATE HIGHWAY	40	H	427.09	11/11/2012	0637	PDO	12521915	OFF RIGH	NON-INTE	1	STRAIGHT	ICY	DAYLIGHT	NONE	GUARD RAIL	W	PICKUP TRUCK/UTILITY VAN		
STATE HIGHWAY	40	H	427.5	2/2/2012	1930	PDO	12502606	OFF RIGH	NON-INTE	1	STRAIGHT	ICY	DARK-UNL	SNOW/SLE	FENCE	E	SUV		
STATE HIGHWAY	40	H	427.7	4/29/2016	1420	PDO	16018646	OFF RIGH	NON-INTE	1	STRAIGHT	SLUSHY	DAYLIGHT	SNOW/SLE	OTHER NON-COLLISION	E	TRUCK GVW > 10K/BUSSES > 15 PEOPLE		
STATE HIGHWAY	40	H	427.8	11/29/2015	0140	PDO	15077763	OFF RIGH	NON-INTE	1	STRAIGHT	ICY	DARK-UNL	SNOW/SLE	OTHER NON-COLLISION	E	PICKUP TRUCK/UTILITY VAN		

system	hwy	sec	mp	date	time	severity	serial	location	road_desc	vehicles	contour	condition	lighting	weather	acctype	dir_1	vehicle_1	dir_2	vehicle_2
STATE HIGHWAY	40	H	428.7	4/5/2015	1430	INJ	15509151	OFF RIGH	NON-INTE	1	STRAIGHT	DRY	DAYLIGHT	NONE	EMBANKMENT CUT/FILL SLOPE	E	PICKUP TRUCK/UTILITY VAN		
STATE HIGHWAY	40	H	428.9	1/21/2014	1915	PDO	14501686	OFF LEFT	NON-INTE	1	STRAIGHT	DRY	DARK-UNL	NONE	SIGN	W	PASS CAR/VAN		
STATE HIGHWAY	40	H	429	11/26/2015	0918	PDO	15077762	OFF RIGH	NON-INTE	1	CURVE ON	ICY	DAYLIGHT	SNOW/SLE	OVERTURNING	E	SUV		
STATE HIGHWAY	40	H	429.01	10/25/2012	1517	FAT	12521371	ON	NON-INTE	2	STRAIGHT	DRY	DAYLIGHT	NONE	HEAD-ON	E	SUV	W	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	40	H	429.6	7/26/2013	1515	PDO	13041055	ON	NON-INTE	2	STRAIGHT	WET	DAYLIGHT	DUST	REAR-END	E	TRUCK GVW > 10K/BUSSES > 15 PEOPLE	E	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	40	H	430	10/5/2014	1945	PDO	14058990	ON	NON-INTE	1	STRAIGHT	DRY	DARK-UNL	NONE	WILD ANIMAL	W	SUV		
STATE HIGHWAY	40	H	430.6	8/1/2014	2313	PDO	14518605	ON	NON-INTE	1	STRAIGHT	DRY	DARK-UNL	NONE	WILD ANIMAL	W	PICKUP TRUCK/UTILITY VAN W/TRAILER		
STATE HIGHWAY	40	H	431.01	11/26/2015	1035	PDO	15077760	OFF RIGH	ROUNDAB	1	STRAIGHT	DRY W/VIS	DAYLIGHT	FOG	OVERTURNING	S	PICKUP TRUCK/UTILITY VAN		
STATE HIGHWAY	40	H	431.04	12/19/2011	1645	PDO	11070162	OFF RIGH	NON-INTE	1	STRAIGHT	DRY	DARK-UNL	SNOW/SLE	DELINEATOR POST	E	TRUCK GVW > 10K/BUSSES > 15 PEOPLE		
STATE HIGHWAY	40	H	431.5	9/18/2014	0035	PDO	14523842	ON	NON-INTE	2	STRAIGHT	DRY	DARK-UNL	NONE	SIDESWIPE OPPOSITE DIRECTION	E	TRUCK GVW > 10K/BUSSES > 15 PEOPLE	W	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	40	H	431.7	7/7/2015	1348	PDO	15040801	OFF RIGH	NON-INTE	1	STRAIGHT	DRY	DAYLIGHT	NONE	DELINEATOR POST	E	PASS CAR/VAN		
STATE HIGHWAY	40	H	432	12/1/2015	1402	PDO	15077868	ON	NON-INTE	2	STRAIGHT	DRY	DAYLIGHT	NONE	SIDESWIPE SAME DIRECTION	E	TRUCK GVW > 10K/BUSSES > 15 PEOPLE	E	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	40	H	432.19	11/7/2015	0510	PDO	15530500	ON	NON-INTE	1	STRAIGHT	DRY	DARK-UNL	NONE	WILD ANIMAL	W	TRUCK GVW > 10K/BUSSES > 15 PEOPLE		
STATE HIGHWAY	40	H	432.35	2/16/2013	2324	FAT	13504140	ON	NON-INTE	2	STRAIGHT	DRY	DARK-UNL	NONE	HEAD-ON	W	SUV	E	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	40	H	433.02	12/30/2015	1442	PDO	15536057	OFF RIGH	NON-INTE	1	STRAIGHT	DRY	DAYLIGHT	NONE	OVERTURNING	N	PICKUP TRUCK/UTILITY VAN		
STATE HIGHWAY	40	H	433.02	9/1/2012	0200	PDO	12516563	OFF RIGH	AT INTERS	1	CURVE ON	DRY	DARK-UNL	NONE	SIGN	W	PASS CAR/VAN		
STATE HIGHWAY	40	H	433.1	3/14/2014	2100	PDO	14506408	ON	NON-INTE	1	CURVE ON	DRY	DARK-UNL	NONE	WILD ANIMAL	W	PASS CAR/VAN		
STATE HIGHWAY	40	H	433.4	3/31/2012	1400	PDO	12506157	ON	NON-INTE	2	STRAIGHT	DRY	DAYLIGHT	NONE	SIDESWIPE OPPOSITE DIRECTION	S	TRUCK GVW > 10K/BUSSES > 15 PEOPLE	N	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	40	H	433.95	8/26/2015	0254	INJ	15522920	ON	NON-INTE	2	STRAIGHT	DRY	DARK-UNL	NONE	REAR-END	NW	TRUCK GVW > 10K/BUSSES > 15 PEOPLE	NW	SUV W/TRAILER
STATE HIGHWAY	40	H	434.1	10/19/2013	1920	PDO	13061032	ON	NON-INTE	1	STRAIGHT	DRY	DARK-UNL	NONE	WILD ANIMAL	E	SUV		
STATE HIGHWAY	40	H	435	12/23/2014	1700	PDO	14079831	ON	NON-INTE	1	STRAIGHT	DRY	DARK-UNL	WIND	WILD ANIMAL	NW	SUV		
STATE HIGHWAY	40	H	435.45	10/5/2012	2000	INJ	12519116	OFF RIGH	NON-INTE	1	CURVE ON	DRY	DARK-UNL	NONE	OVERTURNING	S	PASS CAR/VAN		
STATE HIGHWAY	40	H	435.46	10/6/2015	1915	PDO	15526954	ON	NON-INTE	1	STRAIGHT	DRY	DARK-UNL	NONE	WILD ANIMAL	E	PICKUP TRUCK/UTILITY VAN		
STATE HIGHWAY	40	H	435.9	9/22/2012	0500	PDO	12518310	ON	NON-INTE	1	STRAIGHT	DRY	DARK-UNL	NONE	WILD ANIMAL	E	SUV		
STATE HIGHWAY	40	H	436	11/26/2015	1110	INJ	15077764	OFF RIGH	NON-INTE	1	STRAIGHT	ICY	DAYLIGHT	SNOW/SLE	OVERTURNING	E	SUV		
STATE HIGHWAY	40	H	437.1	11/3/2013	1720	PDO	13522904	ON	NON-INTE	1	STRAIGHT	DRY	DARK-UNL	NONE	WILD ANIMAL	E	PASS CAR/VAN		
STATE HIGHWAY	40	H	437.2	4/29/2014	0947	PDO	14509501	ON	NON-INTE	4	STRAIGHT	DRY	DAYLIGHT	DUST	REAR-END	W	TRUCK GVW > 10K/BUSSES > 15 PEOPLE	W	PASS CAR/VAN
STATE HIGHWAY	40	H	437.8	4/29/2014	0950	INJ	14509500	ON	NON-INTE	2	STRAIGHT	DRY	DAYLIGHT	DUST	REAR-END	W	SUV	W	PICKUP TRUCK/UTILITY VAN
STATE HIGHWAY	40	H	438.1	6/12/2014	1104	INJ	14513300	OFF LEFT	INTERSEC	1	STRAIGHT	DRY	DAYLIGHT	NONE	OVERTURNING	W	PASS CAR/VAN		
STATE HIGHWAY	40	H	438.18	12/3/2012	0142	FAT	12523845	ON	NON-INTE	2	STRAIGHT	DRY	DARK-UNL	NONE	SIDESWIPE OPPOSITE DIRECTION	W	SUV	E	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	40	H	438.3	10/12/2011	1500	PDO	11503872	ON	NON-INTE	2	STRAIGHT	DRY	DAYLIGHT	NONE	VEHICLE CARGO/DEBRIS	E	PICKUP TRUCK/UTILITY VAN W/TRAILER	E	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	40	H	438.92	7/22/2012	0122	PDO	12038725	ON	NON-INTE	1	STRAIGHT	DRY	DARK-UNL	NONE	WILD ANIMAL	E	PASS CAR/VAN W/TRAILER		
STATE HIGHWAY	40	H	439.1	7/2/2015	1510	INJ	15516822	OFF LEFT	AT INTERS	1	STRAIGHT	DRY	DAYLIGHT	NONE	EMBANKMENT CUT/FILL SLOPE	W	PICKUP TRUCK/UTILITY VAN		
STATE HIGHWAY	40	H	440.1	1/4/2014	1200	PDO	14000870	OFF LEFT	AT DRIVE\	1	STRAIGHT	ICY	DAYLIGHT	SNOW/SLE	CULVERT/HEADWALL	E	PASS CAR/VAN		
STATE HIGHWAY	40	H	440.3	5/27/2012	0553	INJ	12510024	OFF LEFT	NON-INTE	1	STRAIGHT	DRY	DAWN OR	NONE	OVERTURNING	E	PICKUP TRUCK/UTILITY VAN		
STATE HIGHWAY	40	H	440.89	12/22/2014	0500	PDO	14533454	ON	NON-INTE	2	STRAIGHT	DRY	DARK-UNL	NONE	SIDESWIPE OPPOSITE DIRECTION	W	TRUCK GVW > 10K/BUSSES > 15 PEOPLE	E	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	40	H	440.93	2/28/2016	0540	INJ	16507525	ON	NON-INTE	2	STRAIGHT	DRY	DAWN OR	NONE	SIDESWIPE OPPOSITE DIRECTION	S	PASS CAR/VAN	N	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	40	H	441.9	8/20/2012	1510	PDO	12515696	ON	NON-INTE	2	STRAIGHT	DRY	DAYLIGHT	NONE	PARKED MOTOR VEHICLE	E	TRUCK GVW > 10K/BUSSES > 15 PEOPLE	E	SUV
STATE HIGHWAY	40	H	442.5	4/18/2013	1030	INJ	13508599	OFF LEFT	NON-INTE	1	STRAIGHT	WET	DAYLIGHT	WIND	OVERTURNING	E	SUV		
STATE HIGHWAY	40	H	442.7	7/1/2011	0350	PDO	11039118	OFF LEFT	NON-INTE	1	STRAIGHT	DRY	DARK-UNL	NONE	OVERTURNING	E	PASS CAR/VAN		
STATE HIGHWAY	40	H	442.97	10/25/2014	1745	PDO	14527554	ON	NON-INTE	1	STRAIGHT	DRY	DARK-UNL	NONE	WILD ANIMAL	W	TRUCK GVW > 10K/BUSSES > 15 PEOPLE		
STATE HIGHWAY	40	H	443.04	11/19/2015	1345	PDO	15532251	ON	NON-INTE	2	STRAIGHT	DRY	DAYLIGHT	NONE	OVERTAKING TURN	W	PICKUP TRUCK/UTILITY VAN	W	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	40	H	444.2	12/7/2013	2100	PDO	13525665	ON	NON-INTE	1	STRAIGHT	DRY	DARK-UNL	SNOW/SLE	WILD ANIMAL	E	SCHOOL BUS < 15 PEOPLE		
STATE HIGHWAY	40	H	444.5	7/10/2011	2215	PDO	11039117	ON	NON-INTE	1	STRAIGHT	DRY	DARK-UNL	NONE	WILD ANIMAL	E	PASS CAR/VAN		
STATE HIGHWAY	40	H	444.96	1/4/2014	1200	PDO	14001044	ON	AT DRIVE\	2	STRAIGHT	ICY	DAYLIGHT	SNOW/SLE	SIDESWIPE SAME DIRECTION	E	PICKUP TRUCK/UTILITY VAN W/TRAILER	E	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	40	H	445	9/9/2014	1310	PDO	14053094	ON	NON-INTE	2	STRAIGHT	DRY	DAYLIGHT	NONE	SIDESWIPE SAME DIRECTION	E	TRUCK GVW > 10K/BUSSES > 15 PEOPLE	E	PASS CAR/VAN
STATE HIGHWAY	40	H	445	4/21/2016	2032	PDO	16015720	OFF RIGH	INTERSEC	1	STRAIGHT	DRY	DARK-LIGI	NONE	LIGHT/UTILITY POLE	SE	TRUCK GVW > 10K/BUSSES > 15 PEOPLE		
STATE HIGHWAY	40	H	445	8/30/2015	1824	PDO	15052352	ON	NON-INTE	1	STRAIGHT	DRY	DAYLIGHT	NONE	OTHER FIXED OBJECT	E	SUV		
STATE HIGHWAY	40	H	445.12	4/17/2013	2120	PDO	13508442	OFF RIGH	NON-INTE	1	STRAIGHT	ICY	DARK-LIGI	SNOW/SLE	OTHER NON-COLLISION	W	TRUCK GVW > 10K/BUSSES > 15 PEOPLE		
STATE HIGHWAY	40	H	445.18	3/11/2015	1721	PDO	15506695	ON	NON-INTE	2	STRAIGHT	DRY	DAYLIGHT	NONE	SIDESWIPE SAME DIRECTION	E	TRUCK GVW > 10K/BUSSES > 15 PEOPLE	E	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	40	H	445.25	8/15/2015	1310	PDO	15521325	ON	AT INTERS	2	STRAIGHT	DRY	DAYLIGHT	NONE	BROADSIDE	S	PASS CAR/VAN	W	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	40	H	445.64	6/30/2016	1500	PDO	16522432	ON	NON-INTE	2	STRAIGHT	DRY	DAYLIGHT	NONE	SIDESWIPE SAME DIRECTION	E	TRUCK GVW > 10K/BUSSES > 15 PEOPLE	E	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	40	H	445.88	12/29/2012	1658	PDO	12526197	ON	INTERSEC	2	STRAIGHT	DRY	DAWN OR	NONE	REAR-END	W	PASS CAR/VAN	W	PICKUP TRUCK/UTILITY VAN
STATE HIGHWAY	40	H	446	11/17/2015	0910	PDO	15072129	OFF RIGH	NON-INTE	1	CURVE ON	ICY	DAYLIGHT	WIND	CONCRETE BARRIER	W	TRUCK GVW > 10K/BUSSES > 15 PEOPLE		
STATE HIGHWAY	40	H	446.05	7/19/2013	0840	INJ	13514640	OFF LEFT	AT INTERS	1	STRAIGHT	DRY	DAYLIGHT	NONE	GUARD RAIL	W	PASS CAR/VAN		
STATE HIGHWAY	40	H	446.06	2/20/2013	1400	PDO	13504156	OFF RIGH	AT INTERS	1	CURVE ON	ICY	DAYLIGHT	FOG	GUARD RAIL	NW	PASS CAR/VAN		
STATE HIGHWAY	40	H	446.1	3/8/2016	1455	PDO	16508686	OFF LEFT	AT INTERS	1	CURVE ON	DRY	DAYLIGHT	NONE	OVERTURNING	W	TRUCK GVW > 10K/BUSSES > 15 PEOPLE		
STATE HIGHWAY	40	H	447.5	7/24/2014	1249	INJ	14518495	ON	NON-INTE	2	STRAIGHT	DRY	DAYLIGHT	WIND	VEHICLE CARGO/DEBRIS	E	TRUCK GVW > 10K/BUSSES > 15 PEOPLE	W	PASS CAR/VAN
STATE HIGHWAY	40	H	450.4	7/28/2015	2115	PDO	15519670	ON	NON-INTE	1	STRAIGHT	DRY	DARK-UNL	NONE	DOMESTIC ANIMAL	E	TRUCK GVW > 10K/BUSSES > 15 PEOPLE		
STATE HIGHWAY	40	H	451	2/2/2016	2139	PDO	16005682	ON	NON-INTE	1	STRAIGHT	ICY	DARK-UNL	SNOW/SLE	DOMESTIC ANIMAL	E	PASS CAR/VAN		
STATE HIGHWAY	40	H	451	2/2/2016	2139	PDO	16004736	ON	NON-INTE	1	STRAIGHT	ICY	DARK-UNL	SNOW/SLE	DOMESTIC ANIMAL	E	PASS CAR/VAN		
STATE HIGHWAY	40	H	453	12/22/2014	0548	PDO	14079023	OFF LEFT	NON-INTE	1	STRAIGHT	WET	DARK-UNL	NONE	FENCE	W	PASS CAR/VAN		
STATE HIGHWAY	40	H	453.4	5/16/2014	1235	PDO	14028054	OFF RIGH	NON-INTE	1	STRAIGHT	DRY	DAYLIGHT	NONE	OTHER NON-COLLISION	W	PASS CAR/VAN		

system	hwy	sec	mp	date	time	severity	serial	location	road_desc	vehicles	contour	condition	lighting	weather	acctype	dir_1	vehicle_1	dir_2	vehicle_2
STATE HIGHWAY	40	H	458.67	1/27/2015	1354	PDO	15502352	OFF LEFT	NON-INTE	1	STRAIGHT	DRY	DAYLIGHT	NONE	FENCE	W	PASS CAR/VAN		
STATE HIGHWAY	40	H	459.43	4/4/2014	1939	FAT	14508861	OFF LEFT	NON-INTE	1	STRAIGHT	DRY	DARK-UNL	NONE	OVERTURNING	E	SUV		
STATE HIGHWAY	40	H	462.2	2/21/2016	1914	INJ	16506907	ON	NON-INTE	2	STRAIGHT	DRY	DARK-UNL	NONE	SIDESWIPE OPPOSITE DIRECTION	E	TRUCK GVW > 10K/BUSSES > 15 PEOPLE	W	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	40	H	464.1	8/21/2014	0430	PDO	14520438	OFF LEFT	NON-INTE	1	STRAIGHT	DRY	DARK-UNL	NONE	OVERTURNING	W	PICKUP TRUCK/UTILITY VAN W/TRAILER		
STATE HIGHWAY	40	H	464.4	4/29/2014	0659	INJ	14509502	OFF RIGH	NON-INTE	1	CURVE OI	DRY	DAYLIGHT	WIND	OVERTURNING	W	PICKUP TRUCK/UTILITY VAN W/TRAILER		
STATE HIGHWAY	40	H	464.43	10/9/2012	1130	FAT	12519468	OFF RIGH	NON-INTE	1	CURVE OI	DRY	DAYLIGHT	WIND	OVERTURNING	E	SUV		
STATE HIGHWAY	40	H	464.9	12/4/2011	2220	PDO	11510995	ON	NON-INTE	2	STRAIGHT	DRY	DARK-UNL	WIND	REAR-END	E	PASS CAR/VAN	E	SUV
STATE HIGHWAY	40	H	464.9	11/24/2015	0600	PDO	15532847	ON	NON-INTE	1	STRAIGHT	DRY	DAWN OR	NONE	WILD ANIMAL	E	PASS CAR/VAN		
STATE HIGHWAY	40	H	465.5	6/25/2013	0915	PDO	13034446	ON	NON-INTE	1	STRAIGHT	DRY	DAYLIGHT	NONE	WILD ANIMAL	W	PICKUP TRUCK/UTILITY VAN		
STATE HIGHWAY	40	H	465.99	6/28/2013	1930	PDO	13037126	ON	NON-INTE	1	CURVE OI	DRY	DAYLIGHT	NONE	WILD ANIMAL	W	PASS CAR/VAN		
STATE HIGHWAY	40	H	466.17	7/10/2015	2040	PDO	15041673	OFF RIGH	NON-INTE	1	CURVE OI	DRY	DARK-UNL	NONE	EMBANKMENT CUT/FILL SLOPE	E	TRUCK GVW > 10K/BUSSES > 15 PEOPLE		
STATE HIGHWAY	40	H	467	9/28/2011	2030	PDO	11055212	ON	NON-INTE	1	STRAIGHT	DRY	DARK-UNL	NONE	WILD ANIMAL	E	PASS CAR/VAN		
STATE HIGHWAY	40	H	470.5	10/24/2015	2120	PDO	15530493	OFF RIGH	NON-INTE	1	STRAIGHT	DRY	DARK-UNL	NONE	OVERTURNING	W	PASS CAR/VAN		
STATE HIGHWAY	40	H	470.5	9/21/2012	1200	INJ	12049364	ON	NON-INTE	2	STRAIGHT	DRY	DAYLIGHT	NONE	REAR-END	E	PASS CAR/VAN W/TRAILER	E	PICKUP TRUCK/UTILITY VAN
STATE HIGHWAY	40	H	471.9	1/14/2014	1847	PDO	14501513	ON	NON-INTE	1	STRAIGHT	DRY	DARK-UNL	NONE	WILD ANIMAL	E	PICKUP TRUCK/UTILITY VAN		
STATE HIGHWAY	40	H	472.2	1/26/2013	1541	PDO	13501833	OFF RIGH	NON-INTE	2	STRAIGHT	WET	DAYLIGHT	RAIN	GUARD RAIL	W	HIT & RUN - UNKNOWN	E	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	40	H	472.5	3/23/2013	1730	PDO	13015879	ON	NON-INTE	2	STRAIGHT	SNOWY W	DAYLIGHT	SNOW/SLE	SIDESWIPE SAME DIRECTION	W	PASS CAR/VAN	W	PASS CAR/VAN
STATE HIGHWAY	40	H	472.6	4/2/2012	0000	PDO	12019825	ON	NON-INTE	1	STRAIGHT	DRY	DARK-UNL	WIND	WILD ANIMAL	W	PASS CAR/VAN		
STATE HIGHWAY	40	H	474	11/17/2015	1715	PDO	15072861	OFF RIGH	NON-INTE	1	STRAIGHT	ICY	DARK-UNL	WIND	SIGN	E	TRUCK GVW > 10K/BUSSES > 15 PEOPLE		
STATE HIGHWAY	40	H	477	11/4/2013	0000	PDO	13522906	ON	NON-INTE	1	STRAIGHT	DRY	DARK-UNL	WIND	DOMESTIC ANIMAL	W	TRUCK GVW > 10K/BUSSES > 15 PEOPLE		
STATE HIGHWAY	40	H	477.2	7/1/2015	0500	PDO	15516824	ON	NON-INTE	1	CURVE OI	DRY	DAWN OR	NONE	WILD ANIMAL	W	PASS CAR/VAN		
STATE HIGHWAY	40	H	478.4	1/18/2014	0246	FAT	14503181	OFF RIGH	NON-INTE	1	CURVE OI	DRY	DARK-UNL	NONE	OVERTURNING	W	PICKUP TRUCK/UTILITY VAN		
STATE HIGHWAY	40	H	478.4	12/15/2015	2145	PDO	15535366	OFF RIGH	INTERSEC	1	CURVE OI	DRY	DARK-UNL	WIND	OVERTURNING	W	PASS CAR/VAN		
STATE HIGHWAY	40	H	485.3	3/13/2015	1330	PDO	15507466	OFF RIGH	NON-INTE	1	STRAIGHT	DRY	DAYLIGHT	NONE	OVERTURNING	W	SUV		
STATE HIGHWAY	40	H	486.54	12/17/2015	1100	INJ	15535375	ON	AT INTERS	2	STRAIGHT	DRY	DAYLIGHT	FOG	BROADSIDE	S	PICKUP TRUCK/UTILITY VAN	E	PASS CAR/VAN

system	hwy	sec	mp	date	time	severity	serial	location	road_desc	vehicles	condition	lighting	weather	acctype	dir_1	vehicle_1	dir_2	vehicle_2
STATE HIGHWAY	287	B	85.8	4/26/2012	2015	INJ	12507832	ON	NON-INTEI	2	DRY	DARK-LIGI	NONE	REAR-END	N	TRUCK GVW > 10K/BUSSES > 15 PEOPLE	N	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	287	B	85.9	1/4/2014	1435	PDO	14500307	OFF LEFT	NON-INTEI	1	SNOWY	DARK-UNL	SNOW/SLE	OVERTURNING	N	PICKUP TRUCK/UTILITY VAN		
STATE HIGHWAY	287	B	87.1	2/10/2014	1550	PDO	14503696	ON	NON-INTEI	2	ICY	DAYLIGHT	SNOW/SLE	SIDESWIPE SAME DIRECTION	S	PASS CAR/VAN	S	PASS CAR/VAN
STATE HIGHWAY	287	B	87.37	9/24/2015	0715	PDO	15524964	ON	AT INTERS	2	DRY	DAYLIGHT	NONE	BROADSIDE	E	SUV	N	PASS CAR/VAN
STATE HIGHWAY	287	B	87.39	2/6/2012	0745	INJ	12502605	ON	AT INTERS	2	DRY	DAYLIGHT	NONE	HEAD-ON	E	PICKUP TRUCK/UTILITY VAN	W	PICKUP TRUCK/UTILITY VAN
STATE HIGHWAY	287	B	87.7	11/14/2011	1840	PDO	11508444	ON	NON-INTEI	1	DRY	DARK-UNL	NONE	WILD ANIMAL	N	PICKUP TRUCK/UTILITY VAN		
STATE HIGHWAY	287	B	87.8	2/11/2014	0830	PDO	14503978	ON	NON-INTEI	2	ICY	DAYLIGHT	FOG	SIDESWIPE SAME DIRECTION	N	PICKUP TRUCK/UTILITY VAN	N	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	287	B	88.5	8/9/2014	1215	PDO	14519858	ON	NON-INTEI	2	DRY	DAYLIGHT	NONE	REAR-END	N	PASS CAR/VAN	N	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	287	B	88.8	11/17/2015	1240	INJ	15532334	OFF LEFT	NON-INTEI	1	SNOWY	DAYLIGHT	WIND	EMBANKMENT CUT/FILL SLOPE	S	PASS CAR/VAN		
STATE HIGHWAY	287	B	89.38	11/6/2015	1425	PDO	15530672	ON	AT INTERS	2	DRY	DAYLIGHT	NONE	REAR-END	S	FARM EQUIPMENT	S	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	287	B	89.4	4/24/2014	1120	PDO	14508878	ON	NON-INTEI	2	DRY	DAYLIGHT	NONE	SIDESWIPE OPPOSITE DIRECTION	N	PICKUP TRUCK/UTILITY VAN	S	PICKUP TRUCK/UTILITY VAN
STATE HIGHWAY	287	B	89.5	12/3/2015	1522	PDO	15534048	ON	INTERSEC	2	DRY	DAYLIGHT	NONE	REAR-END	S	TRUCK GVW > 10K/BUSSES > 15 PEOPLE	S	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	287	B	90.7	10/10/2013	1732	INJ	13521437	ON	NON-INTEI	2	DRY	DAYLIGHT	DUST	REAR-END	N	TRUCK GVW > 10K/BUSSES > 15 PEOPLE	N	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	287	B	91.66	12/29/2014	1735	PDO	14534602	OFF LEFT	NON-INTEI	1	ICY	DARK-UNL	SNOW/SLE	FENCE	N	PICKUP TRUCK/UTILITY VAN		
STATE HIGHWAY	287	B	91.8	12/31/2014	1304	INJ	14534536	OFF RIGHT	NON-INTEI	1	DRY	DAYLIGHT	NONE	LIGHT/UTILITY POLE	N	PASS CAR/VAN		
STATE HIGHWAY	287	B	91.9	2/10/2014	1930	PDO	14503700	OFF LEFT	NON-INTEI	1	ICY	DARK-UNL	SNOW/SLE	OVERTURNING	S	PICKUP TRUCK/UTILITY VAN W/TRAILER		
STATE HIGHWAY	287	B	92.6	11/19/2015	1900	PDO	15531568	ON	NON-INTEI	1	DRY	DARK-UNL	NONE	WILD ANIMAL	N	TRUCK GVW > 10K/BUSSES > 15 PEOPLE		
STATE HIGHWAY	287	B	92.9	11/26/2012	1730	PDO	12523189	ON	NON-INTEI	1	DRY	DARK-UNL	NONE	WILD ANIMAL	S	PASS CAR/VAN		
STATE HIGHWAY	287	B	93	10/25/2013	0135	PDO	13063538	ON	NON-INTEI	1	DRY	DARK-UNL	NONE	WILD ANIMAL	N	TRUCK GVW > 10K/BUSSES > 15 PEOPLE		
STATE HIGHWAY	287	B	93.15	6/21/2015	0600	PDO	15515531	OFF LEFT	NON-INTEI	1	DRY	DAWN OR	NONE	LIGHT/UTILITY POLE	S	TRUCK GVW > 10K/BUSSES > 15 PEOPLE		
STATE HIGHWAY	287	B	94.02	8/25/2013	0200	INJ	13517545	OFF LEFT	NON-INTEI	1	DRY	DARK-UNL	NONE	GUARD RAIL	S	PASS CAR/VAN		
STATE HIGHWAY	287	B	94.4	3/22/2014	2100	PDO	14506615	ON	NON-INTEI	2	ICY	DARK-UNL	SNOW/SLE	SIDESWIPE OPPOSITE DIRECTION	N	TRUCK GVW > 10K/BUSSES > 15 PEOPLE	S	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	287	B	94.8	12/19/2011	1717	INJ	11512572	OFF LEFT	NON-INTEI	1	ICY	DARK-UNL	SNOW/SLE	OVERTURNING	S	TRUCK GVW > 10K/BUSSES > 15 PEOPLE		
STATE HIGHWAY	287	B	95.9	11/10/2014	2245	PDO	14529972	OFF LEFT	NON-INTEI	1	ICY	DARK-UNL	SNOW/SLE	OVERTURNING	S	PASS CAR/VAN		
STATE HIGHWAY	287	B	96.5	8/14/2012	1510	PDO	12515193	ON	NON-INTEI	2	DRY	DAYLIGHT	NONE	SIDESWIPE SAME DIRECTION	N	TRUCK GVW > 10K/BUSSES > 15 PEOPLE	N	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	287	B	97.4	3/4/2015	0703	INJ	15505882	OFF RIGHT	NON-INTEI	1	ICY	DAYLIGHT	SNOW/SLE	OVERTURNING	S	PICKUP TRUCK/UTILITY VAN		
STATE HIGHWAY	287	B	97.8	2/27/2015	1434	PDO	15505865	OFF LEFT	NON-INTEI	1	ICY	DAYLIGHT	SNOW/SLE	OTHER NON-COLLISION	S	TRUCK GVW > 10K/BUSSES > 15 PEOPLE		
STATE HIGHWAY	287	B	98	8/13/2011	2230	PDO	11501899	ON	NON-INTEI	1	DRY	DARK-UNL	NONE	WILD ANIMAL	N	PASS CAR/VAN		
STATE HIGHWAY	287	B	98	8/13/2011	2230	PDO	11501360	ON	NON-INTEI	1	DRY	DARK-UNL	NONE	WILD ANIMAL	N	PASS CAR/VAN		
STATE HIGHWAY	287	B	99.97	3/18/2014	1430	PDO	14506828	ON	NON-INTEI	2	DRY	DAYLIGHT	DUST	REAR-END	S	PASS CAR/VAN	S	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	287	B	100	2/20/2013	2020	PDO	13504161	OFF LEFT	NON-INTEI	1	ICY	DARK-UNL	SNOW/SLE	OTHER NON-COLLISION	N	TRUCK GVW > 10K/BUSSES > 15 PEOPLE		
STATE HIGHWAY	287	B	100	11/9/2013	2300	PDO	13523232	ON	NON-INTEI	1	DRY	DARK-UNL	NONE	DOMESTIC ANIMAL	N	TRUCK GVW > 10K/BUSSES > 15 PEOPLE		
STATE HIGHWAY	287	B	101.3	12/31/2012	1600	PDO	12525955	ON	NON-INTEI	2	ICY	DAYLIGHT	SNOW/SLE	SIDESWIPE SAME DIRECTION	S	PASS CAR/VAN	S	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	287	B	101.6	11/23/2011	1901	PDO	11509468	ON	NON-INTEI	1	DRY	DARK-UNL	NONE	WILD ANIMAL	S	PASS CAR/VAN		
STATE HIGHWAY	287	B	102.4	3/23/2014	0530	PDO	14506619	OFF LEFT	NON-INTEI	1	ICY	DARK-UNL	NONE	FENCE	S	PICKUP TRUCK/UTILITY VAN		
STATE HIGHWAY	287	B	102.5	6/7/2014	1620	PDO	14513112	OFF RIGHT	NON-INTEI	1	DRY	DAYLIGHT	WIND	OVERTURNING	N	PICKUP TRUCK/UTILITY VAN		
STATE HIGHWAY	287	B	103.4	1/3/2015	1715	PDO	15500630	ON	NON-INTEI	2	ICY	DARK-UNL	SNOW/SLE	REAR-END	S	PASS CAR/VAN	S	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	287	B	103.8	10/15/2011	2300	PDO	11504171	ON	NON-INTEI	2	DRY	DARK-UNL	NONE	SIDESWIPE OPPOSITE DIRECTION	S	PICKUP TRUCK/UTILITY VAN	N	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	287	B	103.8	10/15/2011	2300	PDO	11510908	ON	NON-INTEI	2	DRY	DARK-UNL	NONE	SIDESWIPE OPPOSITE DIRECTION	S	TRUCK GVW > 10K/BUSSES > 15 PEOPLE	N	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	287	B	105.3	7/10/2015	1100	PDO	15517807	OFF LEFT	NON-INTEI	1	DRY	DAYLIGHT	NONE	OTHER NON-COLLISION	S	PASS CAR/VAN		
STATE HIGHWAY	287	B	106.9	6/22/2012	2320	PDO	12511757	ON	NON-INTEI	1	DRY	DARK-LIGI	NONE	WILD ANIMAL	N	PICKUP TRUCK/UTILITY VAN		
STATE HIGHWAY	287	B	107	3/26/2013	1615	PDO	13507100	ON	NON-INTEI	2	DRY	DAYLIGHT	NONE	SIDESWIPE OPPOSITE DIRECTION	N	TRUCK GVW > 10K/BUSSES > 15 PEOPLE	S	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	287	B	109.21	12/3/2011	1115	PDO	11510974	OFF RIGHT	NON-INTEI	1	ICY	DAYLIGHT	SNOW/SLE	SIGN	N	PICKUP TRUCK/UTILITY VAN		
STATE HIGHWAY	287	B	109.21	8/11/2011	1615	INJ	11501519	ON	AT INTERS	2	DRY	DAYLIGHT	NONE	OVERTAKING TURN	S	PICKUP TRUCK/UTILITY VAN	S	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	287	B	110.06	4/25/2016	0816	PDO	16046128	OFF LEFT	NON-INTEI	2	DRY	DAYLIGHT	NONE	CURB/RAISED MEDIAN	S	PICKUP TRUCK/UTILITY VAN	S	PASS CAR/VAN
STATE HIGHWAY	287	B	110.4	3/10/2013	0845	PDO	13508722	OFF LEFT	NON-INTEI	1	ICY	DAYLIGHT	NONE	DELINEATOR POST	N	TRUCK GVW > 10K/BUSSES > 15 PEOPLE		
STATE HIGHWAY	287	B	111.5	12/24/2012	0630	PDO	12525942	ON	NON-INTEI	1	DRY	DAYLIGHT	NONE	WILD ANIMAL	N	PASS CAR/VAN		
STATE HIGHWAY	287	B	112.5	2/27/2015	1845	PDO	15506025	OFF LEFT	NON-INTEI	1	ICY	DARK-UNL	WIND	DELINEATOR POST	S	PICKUP TRUCK/UTILITY VAN		
STATE HIGHWAY	287	B	112.6	9/27/2013	2048	INJ	13520893	ON	NON-INTEI	2	DRY	DARK-UNL	RAIN	SIDESWIPE OPPOSITE DIRECTION	W	PASS CAR/VAN	E	PICKUP TRUCK/UTILITY VAN
STATE HIGHWAY	287	B	112.88	7/21/2011	1232	PDO	11041306	ON	INTERSEC	2	DRY	DAYLIGHT	NONE	OVERTAKING TURN	W	TRUCK GVW > 10K/BUSSES > 15 PEOPLE	W	SUV
STATE HIGHWAY	287	B	113	5/6/2016	1517	PDO	16018526	ON	INTERSEC	2	DRY	DAYLIGHT	NONE	REAR-END	S	TRUCK GVW > 10K/BUSSES > 15 PEOPLE	S	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	287	B	113.19	8/26/2011	1320	PDO	11048987	ON	AT INTERS	2	DRY	DAYLIGHT	NONE	BROADSIDE	N	SUV	W	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	287	B	113.47	2/1/2016	2245	PDO	16005386	OFF LEFT	NON-INTEI	1	ICY	DARK-LIGI	SNOW/SLE	CURB/RAISED MEDIAN	N	PASS CAR/VAN		
STATE HIGHWAY	287	B	114.55	2/13/2013	1930	INJ	13503309	ON	NON-INTEI	2	DRY	DARK-UNL	NONE	PEDESTRIAN	N	OTHER - SEE REPORT	N	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	287	B	114.8	11/26/2013	1830	PDO	13525105	ON	NON-INTEI	1	DRY	DARK-UNL	NONE	WILD ANIMAL	N	SUV		
STATE HIGHWAY	287	B	115.3	5/28/2013	2053	PDO	13511005	ON	NON-INTEI	1	DRY	DARK-UNL	WIND	WILD ANIMAL	S	PASS CAR/VAN		
STATE HIGHWAY	287	B	115.3	6/11/2013	0145	INJ	13512435	OFF RIGHT	NON-INTEI	1	DRY	DARK-UNL	NONE	OVERTURNING	S	SUV		
STATE HIGHWAY	287	B	116.6	6/14/2012	2022	PDO	12510814	ON	NON-INTEI	1	DRY	DARK-UNL	NONE	WILD ANIMAL	N	PICKUP TRUCK/UTILITY VAN W/TRAILER		
STATE HIGHWAY	287	B	117.02	2/4/2014	1813	PDO	14011388	OFF LEFT	NON-INTEI	1	ICY	DARK-UNL	SNOW/SLE	FENCE	S	PASS CAR/VAN		
STATE HIGHWAY	287	B	119.1	8/6/2011	1645	PDO	11501274	ON	NON-INTEI	3	DRY	DAYLIGHT	NONE	VEHICLE CARGO/DEBRIS	S	TRUCK GVW > 10K/BUSSES > 15 PEOPLE	S	PASS CAR/VAN
STATE HIGHWAY	287	B	119.6	1/9/2013	0003	INJ	13500373	OFF RIGHT	NON-INTEI	1	DRY	DARK-UNL	NONE	FENCE	N	TRUCK GVW > 10K/BUSSES > 15 PEOPLE		

system	hwy	sec	mp	date	time	severity	serial	location	road_desc	vehicles	condition	lighting	weather	acctype	dir_1	vehicle_1	dir_2	vehicle_2
STATE HIGHWAY	287	B	120.7	9/3/2014	1215	PDO	14523000	ON	NON-INTEI	2	DRY	DAYLIGHT	NONE	VEHICLE CARGO/DEBRIS	N	HIT & RUN - UNKNOWN	S	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	287	B	120.8	8/4/2014	1108	INJ	14519138	ON	INTERSEC	2	DRY	DAYLIGHT	NONE	REAR-END	N	TRUCK GVW > 10K/BUSSES > 15 PEOPLE	N	PASS CAR/VAN
STATE HIGHWAY	287	B	120.99	11/28/2015	2025	PDO	15534223	OFF LEFT	NON-INTEI	1	ICY	DARK-UNL	SNOW/SLE	DELINEATOR POST	N	PASS CAR/VAN		
STATE HIGHWAY	287	B	121.1	4/29/2015	2141	PDO	15511661	ON	NON-INTEI	2	DRY	DARK-UNL	NONE	SIDESWIPE OPPOSITE DIRECTION	N	TRUCK GVW > 10K/BUSSES > 15 PEOPLE	S	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	287	B	121.68	6/28/2013	0745	FAT	13514148	ON	NON-INTEI	2	DRY	DAYLIGHT	NONE	HEAD-ON	S	PICKUP TRUCK/UTILITY VAN	N	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	287	B	122.8	7/22/2012	2130	PDO	12513737	ON	NON-INTEI	1	DRY	DARK-UNL	NONE	WILD ANIMAL	S	TRUCK GVW > 10K/BUSSES > 15 PEOPLE		
STATE HIGHWAY	287	B	123	3/22/2014	2330	PDO	14506617	OFF LEFT	NON-INTEI	1	ICY	DARK-UNL	SNOW/SLE	OVERTURNING	N	PICKUP TRUCK/UTILITY VAN		
STATE HIGHWAY	287	B	123	7/11/2015	2054	PDO	15517810	ON	NON-INTEI	2	DRY	DARK-UNL	NONE	SIDESWIPE OPPOSITE DIRECTION	N	TRUCK GVW > 10K/BUSSES > 15 PEOPLE	S	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	287	B	123.37	4/27/2014	0450	PDO	14509346	ON	NON-INTEI	2	DRY	DARK-UNL	NONE	SIDESWIPE OPPOSITE DIRECTION	N	TRUCK GVW > 10K/BUSSES > 15 PEOPLE	S	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	287	B	123.5	6/17/2014	2105	PDO	14515014	ON	NON-INTEI	1	DRY	DARK-UNL	NONE	WILD ANIMAL	S	PASS CAR/VAN		
STATE HIGHWAY	287	B	124.8	12/9/2011	0630	PDO	11511225	OFF RIGHT	NON-INTEI	1	DRY	DARK-UNL	FOG	FENCE	S	TRUCK GVW > 10K/BUSSES > 15 PEOPLE		
STATE HIGHWAY	287	B	124.94	1/11/2014	1212	INJ	14501294	ON	NON-INTEI	2	DRY	DAYLIGHT	NONE	REAR-END	N	PASS CAR/VAN	N	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	287	B	125.1	4/1/2013	0015	PDO	13507030	ON	NON-INTEI	2	DRY	DARK-UNL	WIND	HEAD-ON	N	TRUCK GVW > 10K/BUSSES > 15 PEOPLE	S	PICKUP TRUCK/UTILITY VAN
STATE HIGHWAY	287	B	126.01	2/15/2014	1830	PDO	14504395	ON	NON-INTEI	1	DRY	DARK-UNL	NONE	WILD ANIMAL	N	SUV		
STATE HIGHWAY	287	B	126.1	11/26/2015	0845	PDO	15532392	OFF LEFT	NON-INTEI	1	ICY	DAYLIGHT	NONE	OVERTURNING	N	PICKUP TRUCK/UTILITY VAN		
STATE HIGHWAY	287	B	126.1	11/4/2014	1745	PDO	14528484	ON	NON-INTEI	1	DRY	DARK-UNL	NONE	WILD ANIMAL	N	TRUCK GVW > 10K/BUSSES > 15 PEOPLE		
STATE HIGHWAY	287	B	127.4	7/2/2015	1739	INJ	15517492	ON	NON-INTEI	2	DRY	DAYLIGHT	NONE	HEAD-ON	N	PASS CAR/VAN	S	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	287	B	127.69	11/25/2013	0755	INJ	13525113	ON	NON-INTEI	2	DRY	DAYLIGHT	WIND	SIDESWIPE SAME DIRECTION	S	PASS CAR/VAN	S	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	287	B	127.7	12/31/2011	1400	INJ	11514060	ON	NON-INTEI	1	DRY	DAYLIGHT	WIND	OVERTURNING	S	TRUCK GVW > 10K/BUSSES > 15 PEOPLE		
STATE HIGHWAY	287	B	127.9	6/23/2012	2100	PDO	12511551	ON	NON-INTEI	1	DRY	DARK-UNL	NONE	WILD ANIMAL	S	PASS CAR/VAN		
STATE HIGHWAY	287	B	129.48	4/4/2014	2310	FAT	14508863	ON	NON-INTEI	2	DRY	DARK-UNL	NONE	PEDESTRIAN	E	OTHER - SEE REPORT	S	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	287	B	129.7	11/11/2013	1800	PDO	13523673	ON	NON-INTEI	1	DRY	DARK-UNL	NONE	WILD ANIMAL	S	TRUCK GVW > 10K/BUSSES > 15 PEOPLE		
STATE HIGHWAY	287	B	130.73	3/8/2013	1845	PDO	13505694	ON	NON-INTEI	1	DRY	DARK-UNL	NONE	WILD ANIMAL	S	PASS CAR/VAN		
STATE HIGHWAY	287	B	131.1	7/1/2011	2150	PDO	11037302	ON	NON-INTEI	1	DRY	DARK-UNL	NONE	WILD ANIMAL	S	TRUCK GVW > 10K/BUSSES > 15 PEOPLE		
STATE HIGHWAY	287	B	131.37	10/13/2011	0730	FAT	11504240	ON	NON-INTEI	2	DRY	DAYLIGHT	NONE	REAR-END	S	PASS CAR/VAN	S	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	287	B	131.42	9/13/2014	1445	PDO	14522512	ON	NON-INTEI	2	DRY	DAYLIGHT	NONE	SIDESWIPE OPPOSITE DIRECTION	N	PICKUP TRUCK/UTILITY VAN	S	TRUCK GVW > 10K/BUSSES > 15 PEOPLE
STATE HIGHWAY	287	B	131.6	5/2/2013	0225	PDO	13509748	ON	NON-INTEI	1	ICY	DARK-UNL	NONE	OTHER NON-COLLISION	N	PICKUP TRUCK/UTILITY VAN W/TRAILER		
STATE HIGHWAY	287	B	131.6	4/13/2014	2346	PDO	14508622	OFF RIGHT	NON-INTEI	1	ICY	DARK-UNL	SNOW/SLE	GUARD RAIL	N	PICKUP TRUCK/UTILITY VAN		
STATE HIGHWAY	287	B	131.61	5/2/2013	0227	PDO	13509402	ON	NON-INTEI	1	ICY	DARK-UNL	NONE	OVERTURNING	N	TRUCK GVW > 10K/BUSSES > 15 PEOPLE		
STATE HIGHWAY	287	B	131.92	11/1/2014	1830	PDO	14064557	ON	NON-INTEI	1	DRY	DAWN OR	NONE	WILD ANIMAL	N	PASS CAR/VAN		
STATE HIGHWAY	287	B	131.97	9/8/2012	0545	PDO	12518315	ON	NON-INTEI	1	DRY	DAWN OR	NONE	WILD ANIMAL	N	TRUCK GVW > 10K/BUSSES > 15 PEOPLE		
STATE HIGHWAY	287	B	132	12/31/2012	1415	PDO	12525951	OFF LEFT	NON-INTEI	1	ICY	DAYLIGHT	SNOW/SLE	LIGHT/UTILITY POLE	S	PASS CAR/VAN		
STATE HIGHWAY	287	B	132.2	4/13/2014	1900	INJ	14508621	OFF RIGHT	NON-INTEI	1	ICY	DAWN OR	SNOW/SLE	OVERTURNING	N	SUV		
STATE HIGHWAY	287	B	132.5	9/8/2015	1500	PDO	15523482	ON	NON-INTEI	2	DRY	DAYLIGHT	NONE	SIDESWIPE SAME DIRECTION	S	PASS CAR/VAN W/TRAILER	S	MOTOR HOME
STATE HIGHWAY	287	B	132.7	11/3/2015	1822	PDO	15529604	ON	NON-INTEI	1	DRY	DARK-UNL	WIND	WILD ANIMAL	N	PASS CAR/VAN		
STATE HIGHWAY	287	B	132.9	4/29/2016	1345	PDO	16514236	OFF RIGHT	NON-INTEI	1	SLUSHY	DAYLIGHT	SNOW/SLE	OVERTURNING	N	PICKUP TRUCK/UTILITY VAN		
STATE HIGHWAY	287	B	132.9	2/23/2015	0901	PDO	15013380	OFF LEFT	INTERSEC	1	SNOWY	DAYLIGHT	NONE	GUARD RAIL	N	PASS CAR/VAN		
STATE HIGHWAY	287	B	133.24	7/28/2011	1936	PDO	11314505	OFF RIGHT	AT INTERS	1	WET	DAWN OR	RAIN	SIGN	N	TRUCK GVW > 10K/BUSSES > 15 PEOPLE		