

Traffic Design Memo - DRAFT

This memorandum presents the traffic engineering analyses and design considerations as part of the design for the US 40 / Colfax Avenue project, which will identify comprehensive street improvements for pedestrian, bicycle, and regional transportation connectivity along US 40 (Colfax Avenue), from Violet Street to I-70 in Golden, Colorado. These analyses are based on guidelines outlined in the Highway Capacity Manual (HCM, 6th Edition). This information will be used for the determination of elements for the project final design.

There are five intersections with public streets along the project corridor. Two intersections are signalized (at US 40/County 93 and at Rooney Road), and the traffic signals are maintained by CDOT Region 1. The intersections at Heritage Road, Zeta Street, and Violet Street are stop-controlled with stop signs on the side streets. Left turns from eastbound US 40 / Colfax are restricted at the Zeta Street intersection.

CDOT classifies US 40 / Colfax as a Minor Arterial roadway through the project area with the following access classifications:

- Regional Highway (R-A) from the County 93 intersection to east of Heritage Road (MP 284.9 to MP 285.9)
- Non-Rural Arterial (NR-B) from east of Heritage Road to east of Rooney Road (MP 285.9 to MP 286.3)
- Non-Rural Principal Highway (NR-A) from east of Rooney Road through the Violet Street intersection (MP 286.3 to MP 286.4)

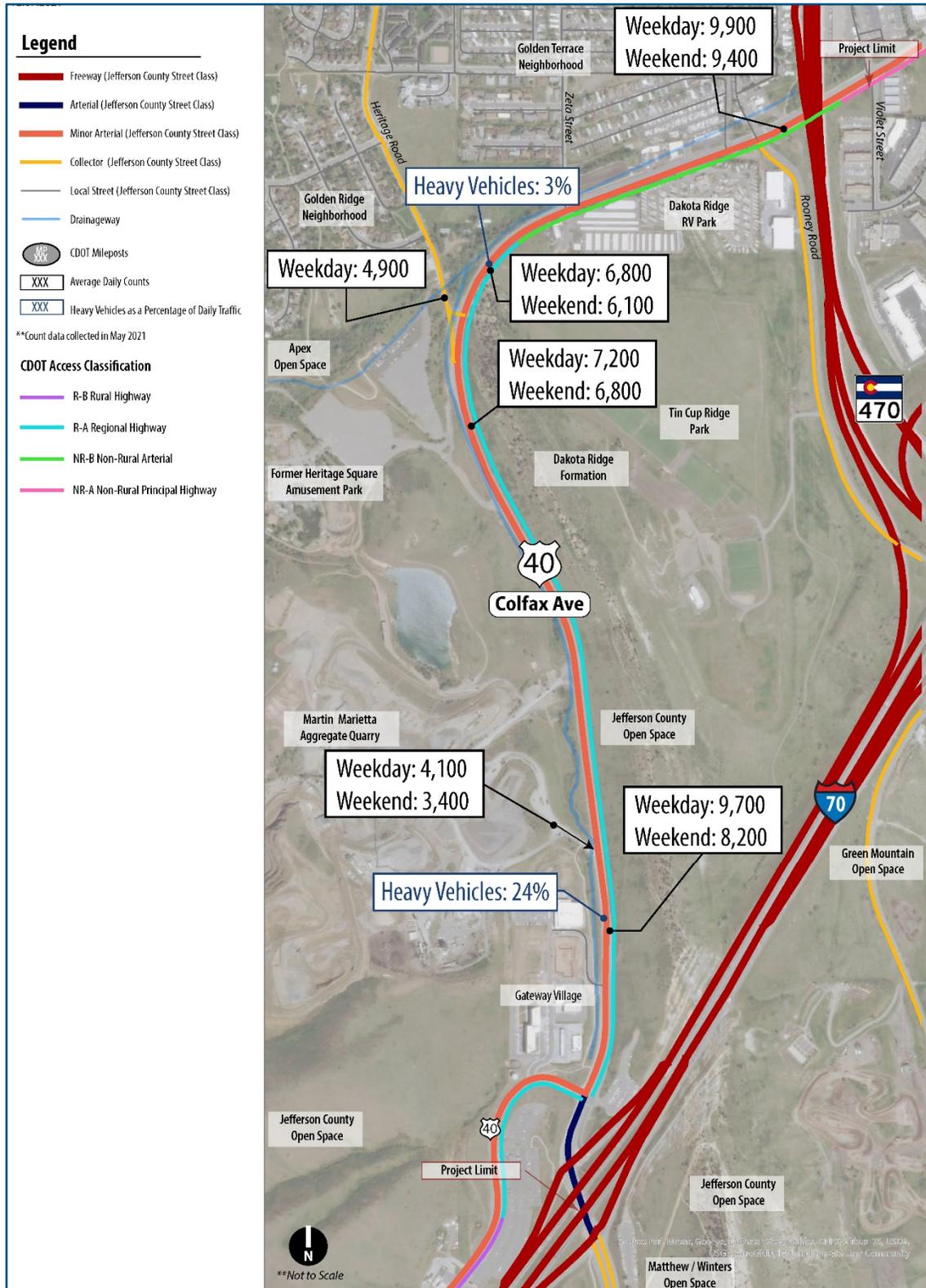
Existing Traffic Volumes

Daily traffic volumes were collected along US 40 / Colfax in the project area on a Thursday, Friday, and Saturday in May 2021. The counts were compared to the Average Annual Daily Traffic (AADT) volumes and other counts collected in recent years from CDOT and DRCOG. After a reduction in travel in 2020 across the region due to the COVID-19 pandemic, the counts collected for the project show a general rebound in traffic volumes along US 40 / Colfax back to pre-COVID levels.

Subsequent to the data collection along US 40 / Colfax, daily traffic counts were also collected on Heritage Road north of the corridor. The traffic count data collected for this project are attached.

The existing daily traffic volumes are shown in **Figure 1**. Weekday traffic volumes are higher than on weekends. There is a significant increase in the volumes of heavy trucks along US 40 / Colfax south of the Martin Marietta Materials quarry, as trucks picking up aggregate travel between the site and I-70. The Martin Marietta Materials truck operations generally operate with one-way circulation, with heavy trucks entering the site by turning left at the north driveway and leaving the site via the exit-only south driveway leading to the I-70 interchange.

Figure 1. Existing Traffic Conditions



Source: CDOT Online Transportation Information System (OTIS); 2021 counts collected by All Traffic Data Services

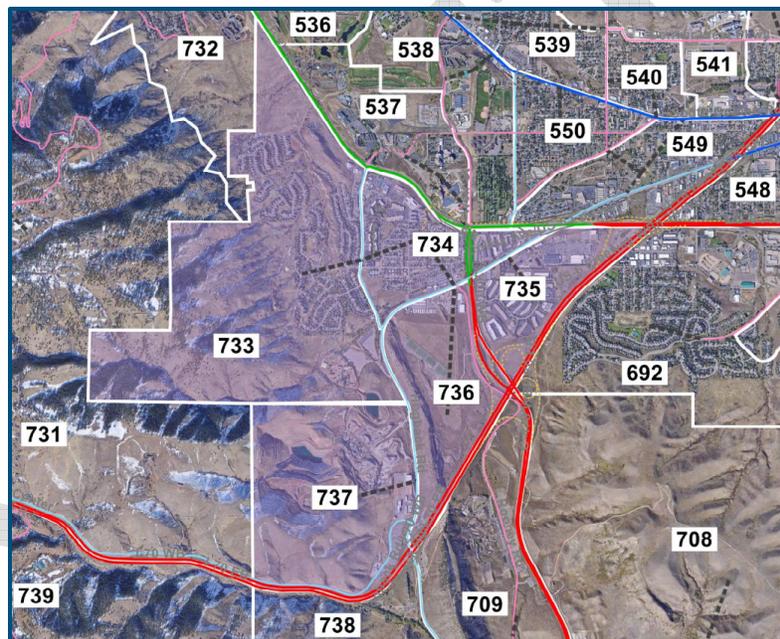
Travel Demand Modeling

The horizon year for this project is 2050, consistent with the horizon year for the current adopted Denver Regional Council of Governments (DRCOG) Regional Transportation Plan (adopted in April 2021). The land use, roadway network, and traffic forecasts from the DRCOG travel demand model were reviewed as part of the project.

Land Use

Socioeconomic data from the DRCOG 2050 model were compiled for the traffic analysis zones (TAZs) surrounding the US 40 / Colfax project corridor. A map of the TAZs from the DRCOG model is shown in **Figure 2**.

Figure 2. US 40 Study Corridor TAZ Map



Source: DRCOG travel demand models

The household and employment totals for each TAZ within the DRCOG travel demand models for the year 2020 and forecasted year 2050 are shown in **Table 1**.

Table 1. DRCOG Model Land Use

Traffic Analysis Zone (TAZ)	Households			Employment		
	2020	2050	Change	2020	2050	Change
733	718	1,086	368	400	1,449	1,049
734	1,312	1,617	305	1,933	3,021	1,088
735	27	28	1	2,902	2,978	76
736	25	29	4	275	518	243
737	21	161	140	70	471	401
TOTAL	2,103	2,921	818	5,580	8,437	2,857

Source: DRCOG travel demand models

The socioeconomic data in the DRCOG model were reviewed by City of Golden planners. The forecasts for several of the TAZs in the DRCOG travel demand model are substantially higher than current land use development plans by the City of Golden and Jefferson County. Therefore, the travel demand forecasts from the model can be considered conservative with more aggressive land use growth than planned.

Roadway Network

The roadway network in the DRCOG travel demand models include four lanes (two lanes in each direction) along US 40 / Colfax between C-470 and US 6 in both the 2020 and 2050 models. The existing US 40 / Colfax corridor consists of two through lanes southbound/westbound and one through lane northbound/eastbound in the project area, between County 93 and Violet Street. However, the US 40 / Colfax corridor lanes in the base (2020) and future (2050) models were kept at four lanes in order to not constrain potential travel demand.

The centroid connectors in the DRCOG model were also reviewed. A new centroid connector was added in the base and future models for TAZ 733 to directly connect with US 40 / Colfax south of Heritage Road, to represent the potential for traffic to/from the TAZ, which includes the former Heritage Square Amusement Park site, to directly access US 40 / Colfax.

Traffic Forecasts

The travel demand model provides output for daily traffic volumes on the roadway network. Due to the complexity of real-world behavior, a travel demand model is not expected to provide precise traffic volume forecasts. A common technique used to improve the reliability of travel demand forecasts is referred to as post-processing adjustments. To improve the reliability of the forecasts, this post-processing adjustment of the 2050 daily traffic volume output from the DRCOG model was performed. The adjustment methodology compares the base year (2020) model traffic volumes to the existing traffic counts compiled for the project area roadways. The 2050 traffic forecasts were adjusted based on factors and/or differences for model versus actual traffic volumes. This post-processing adjustment methodology follows the methods outlined in the National Cooperative Highway Research Program (NCHRP) Report 765. The table showing the detailed NCHRP Report 765 calculations for each roadway segment is attached.

The 2050 daily traffic volumes developed for this project are shown in **Table 2**. The 2050 volume forecasts result in annual growth rates around 1.0% per year, ranging from 1.7% per year on Rooney Road to 0.4% per year on US 40 / Colfax between I-70 and Heritage Road.

Table 2. Traffic Volume Forecasts - 2050

Road Segment (in travel demand model)			2050 Forecast	Annual Growth Rate
US 40 / Colfax Ave	I-70	Heritage Rd	9,400	0.4%
	Heritage Rd	Rooney Rd	10,200	0.8%
	Rooney Rd	US 6	23,000	0.9%
Heritage Rd	US 40 / Colfax Ave	4th Ave	7,300	1.3%
Rooney Rd	I-70	US 40 / Colfax Ave	3,300	1.7%

Source: DRCOG travel demand models with NCHRP adjustments by DEA

Peak hour turning movement volume forecasts were developed from the 2050 adjusted daily forecasts at the US 40/Heritage and US 40/Rooney intersections. Growth rates were calculated for each intersection leg based on the existing and 2050 daily roadway volumes. Utilizing the NCHRP Report 765 methodology, these rates were applied to the existing AM and PM peak hour turning movement volumes with an iterative calculation process to balance the growth of a turning movement based on the leg the movement is coming from and the leg the movement is going to. The 2050 peak hour traffic volume forecasts were used for intersection operations analyses.

Safety Evaluation

An evaluation of crash data along the US 40 / Colfax project corridor was completed to identify areas with potential safety issues. The crash history for the five-year period from July 1, 2015 through June 30, 2020 was examined. The US 40 / Colfax project corridor was divided into the following three segments, consistent with the project’s alternatives evaluation:

- Gateway Village to the north Martin Marietta Aggregate Quarry driveway (MP 284.9 - MP 285.2) – 0.3 mile
- North Martin Marietta Aggregate Quarry driveway to Zeta Street (MP 285.2 - MP 286.0) – 0.8 mile
- Zeta Street to Violet Street (MP 286.0 - MP 286.4) – 0.4 mile

Crash Summary

Table 3 summarizes the crash data along each of the three US 40 / Colfax segments. Within the study period, a total of 80 crashes were reported along US 40 / Colfax within the project area. Of these, there were 25 injury collisions and three fatal collisions.

Table 3. Mainline Crashes by Study Segment

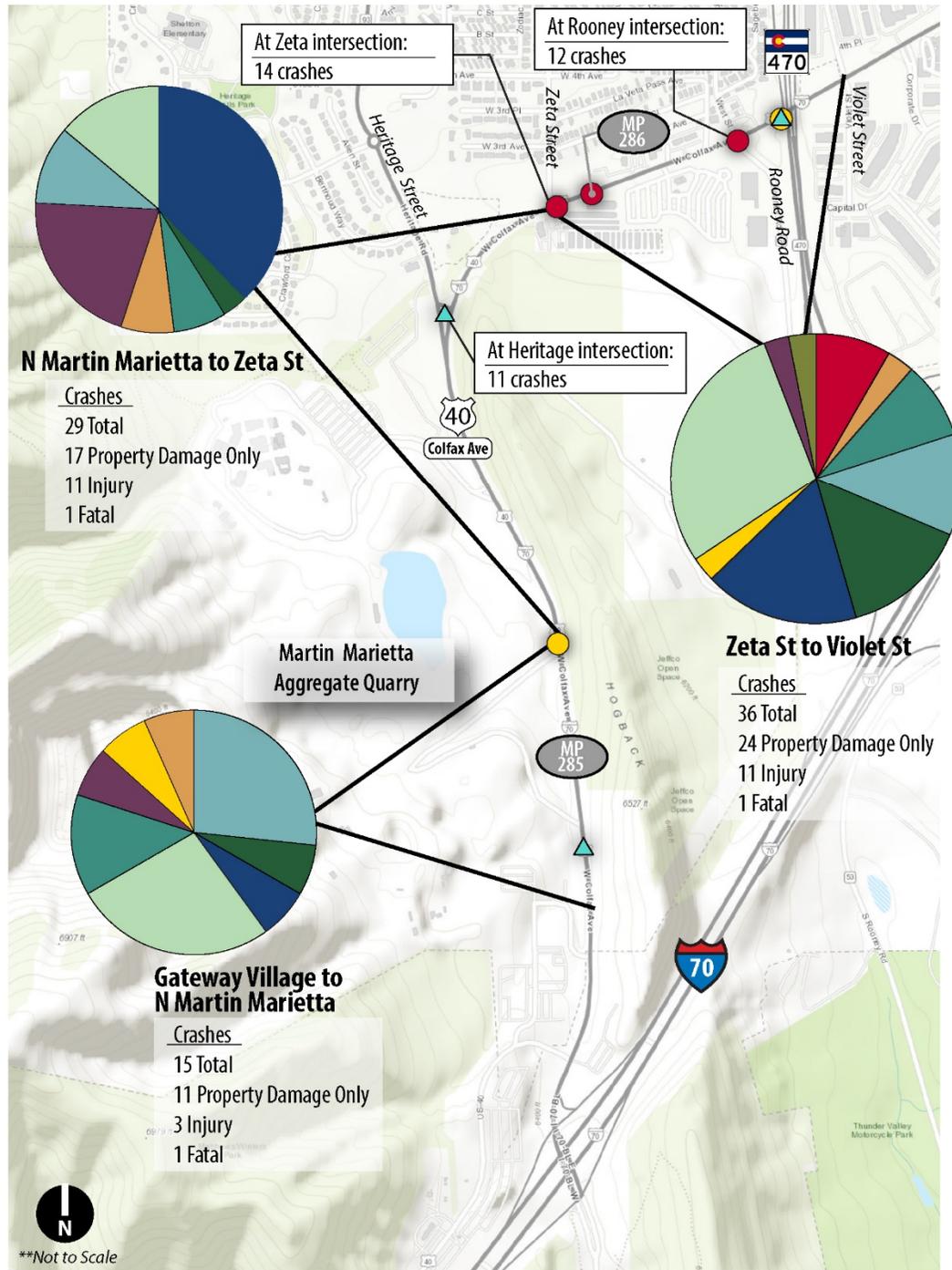
Segment	Number of Crashes			
	PDO	Injury	Fatal	TOTAL
Gateway Village to north Martin Marietta Materials Driveway	11	3	1	15
North Martin Marietta Materials Driveway to Zeta St	17	11	1	29
Zeta St to Violet St	24	11	1	36
TOTAL	52	25	3	80

Source: CDOT crash data 7/1/2015 – 6/30/2020 summarized by DEA

Property Damage Only (PDO) crashes account for 65% of all crashes in the project area. Most crashes occur in the segment between Zeta Street and Violet Street. **Figure 2** summarizes the crash history within the US 40 / Colfax corridor for the period evaluated. Prevalent crash types that were noted within each study segment are displayed on the figure.

The most common crash type for the overall corridor was rear end crash, which accounted for 24% of crashes in the project corridor. Broadside crashes were the most common crash type in the segment from the north Martin Marietta Materials driveway to Zeta Street, with six of the crashes related to the intersection at Heritage Road and five being related to the intersection at Zeta Street.

Figure 2. US 40 / Colfax Crash History (7/1/2015 – 6/30/2020)



Source: CDOT crash data 7/1/2015 – 6/30/2020 summarized by DEA

Fatal Crash Analysis

A separate review and evaluation of each of the three fatal crashes that occurred during the study period were conducted. Information about each fatal crash is described below.

- **MP 284.89 – 9/14/2017 – 10:40 AM:** A motorcycle and passenger car were traveling northbound on a straight segment of US 40 / Colfax in dry, daylight conditions. The motorcyclist was unfamiliar with the area and sideswiped the passenger car. There was no suspected impairment or contributing factor identified. The crash occurred near the intersection of US 40 / Colfax at the south Martin Marietta Materials driveway.
- **MP 285.67 – 8/17/2017 – 12:38 PM:** A SUV was traveling westbound on a curved segment of US 40 / Colfax in dry, daylight conditions. The SUV was changing lanes when it collided with a vehicle traveling in the same direction. There was no suspected impairment or contributing factor identified. The crash occurred near the intersection of US 40 / Colfax at Heritage Road.
- **MP 286.32 – 3/23/2016 – 1:34 PM:** An unknown type of vehicle was traveling westbound on a straight segment of US 40 / Colfax in dark-unlighted, rainy, and wet conditions when it struck a pedestrian traveling in the same direction. The pedestrian was impaired by alcohol at the time of the crash. The crash occurred near the C-470 overpass between Rooney Road and Violet Street.

Two of the three fatal crashes were the result of sideswipe same-direction vehicle collisions in multi-lane sections of the highway.

Bicycle/Pedestrian Crash Analysis

A separate assessment related specifically to bicycle and pedestrian crashes was also conducted. Two pedestrian crashes and three bicycle crashes occurred along the US 40 / Colfax project corridor during the analysis period.

Pedestrian Crashes

- **MP 285.16 – 5/19/2019 – 11:40 AM:** A motorhome was travelling southbound on a straight segment of US 40 / Colfax in dry, daylight conditions when it struck a pedestrian travelling in the same direction. The crash occurred at the intersection of US 40 / Colfax at the north driveway to the Martin Marietta Aggregate Quarry, but it was not reported to be related to the intersection.
- **MP 286.32 – 3/23/2016 – 1:34 PM:** See description above for fatal crash involving a pedestrian near the C-470 overpass between Rooney Road and Violet Street.

Bicycle Crashes

- **MP 285.98 – 9/3/2015 – 10:48 AM:** A pickup truck or utility truck was performing a westbound-left-turning maneuver at the intersection of US 40 / Colfax at Zeta Street when it struck an eastbound bicyclist. The conditions were dry and daylight, however the driver of the vehicle was unfamiliar with their surroundings at the time of the crash.
- **MP 286.00 – 11/15/2019 – 2:54 PM:** An eastbound SUV was in the process of changing lanes when it collided with an eastbound bicyclist. The crash occurred approximately 0.2

miles east of the intersection of US 40 / Colfax at Zeta Street. There were no suspected impairments or contributing factors identified for the crash.

- **MP 286.22 - 9/21/2019 - 11:10 AM:** A vehicle was leaving a parking lot along the north side of US 40 / Colfax west of the intersection at Rooney Road when it collided with an eastbound bicyclist. There were no suspected impairments or contributing factors identified for the crash.

All three of the bicycle crashes occurred along US 40 / Colfax between Zeta Street and Rooney Road and two of them were the result of vehicle/bicycle conflicts with vehicles turning on or off US 40.

Heavy Truck Crashes

Even with the high percentage of heavy trucks accessing and traveling along the US 40 / Colfax corridor between the Martin Marietta Aggregate Quarry driveways and the I-70 interchange, there does not appear to be a crash pattern or trend related to crashes involving heavy trucks.

One crash involving a heavy truck occurred along US 40 / Colfax between the two Martin Marietta Aggregate Quarry driveways during the study period. On 7/19/2017 at 10:44 AM, a heavy truck traveling northbound on US 40 / Colfax rear-ended another vehicle under dry, daylight conditions. The other vehicle was slowing down before the collision occurred. There were no suspected impairments or contributing factors identified for the crash, and it was reported as property damage only.

There was only one other reported crash involving a heavy truck in the study period. It occurred at the US 40 / Colfax and Heritage Road intersection under snowy conditions, and it was noted that the driver was unfamiliar with the area.

Safety Performance Function

The assessment of the magnitude of safety problems on roadway segments has been refined through the use of Safety Performance Functions (SPF). The SPF reflects the complex relationship between average daily traffic volumes and number of crashes for a road section. The SPF models provide an estimate of the normal or expected crash frequency and severity for a range of average daily traffic volumes among similar facilities. Level of Service of Safety (LOSS) reflects how the roadway segment is performing in regard to its expected crash frequency and severity at a specific level of traffic volume.

CDOT does not include this section of US 40 / Colfax in the statewide summary of state highway LOSS results or identified crash patterns. Utilizing the Rural Flat and Rolling 3-Lane Undivided Highways model for US 40 / Colfax through the project area, **Table 4** summarizes the LOSS for each of the three study segments. The SPF charts are attached.

The segment from Gateway Village to the north Martin Marietta Materials driveway has a moderate to high potential for crash reduction in terms of both crash frequency and severity. The other two US 40 / Colfax project segments have a high potential for crash reduction in terms of both crash frequency and severity. The intersections at Heritage and at Zeta have a high potential for crash reduction in terms of both crash frequency and severity. The US 40 / Colfax and Rooney intersection has a moderate to high potential for crash reduction for all crashes and a high potential for crash reduction related to injury and fatal crashes.

Table 4. Level of Service of Safety Summary

Segment / Intersection	Level of Service of Safety (LOSS)	
	All Crashes	Injury + Fatal
Gateway Village to north Martin Marietta Materials Driveway	LOSS III	LOSS III
North Martin Marietta Materials Driveway to Zeta St	LOSS IV	LOSS IV
Zeta St to Violet St	LOSS IV	LOSS IV
Intersection - US 40 / Colfax and Heritage	LOSS IV	LOSS IV
Intersection - US 40 / Colfax and Zeta	LOSS IV	LOSS IV
Intersection - US 40 / Colfax and Rooney	LOSS III	LOSS IV

Source: CDOT crash data 7/1/2015 - 6/30/2020 and Safety Performance Function charts

Intersection/Driveway Crashes

Evaluating the crashes at the Heritage, Zeta, and Rooney intersections did not indicate strong crash patterns that could be addressed with typical countermeasures. However, there were five overtaking turn crashes at Zeta, likely caused by the lack of left turn lanes on US40 / Colfax at the intersection. Almost 40% of the crashes within the segment between Zeta and Violet involved a vehicle making a left turn, either at an intersection or a driveway. Providing left turn lanes at Zeta and a median with access control within this segment would address this safety issue.

Intersection Operations

The existing and future 2050 traffic operations at the primary intersections along the US 40 / Colfax project corridor, at Heritage Road and at Rooney Road, were analyzed using methods outlined in the HCM 6th Edition using Synchro traffic analysis software. The existing intersection lane configurations and existing and future forecasted peak hour volumes were used to analyze the Levels of Service (LOS) and control delay at the intersections for the AM and PM peak hours. The intersection operations are summarized in **Table 5**.

Table 5. Existing (2021) and Future (2050) Intersection Operations

US 40 / Colfax Intersection	Control	Existing (2021)				Future (2050)			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Delay (sec/veh)	LOS						
Heritage Road	Stop ⁽¹⁾ (SB Heritage)	12.9	B	19.3	C	16.9	C	63.6	F
Rooney Road	Signal	7.2	A	6.6	A	8.1	A	7.8	A

⁽¹⁾ Intersections with stop control show results for worst movement

By 2050, traffic operations at the US 40 / Colfax unsignalized intersection at Heritage are forecasted to degrade to LOS F in the PM peak hour with delay for the southbound Heritage left turn movement over 60 seconds/vehicle. The 95th-percentile queues are shown to extend over 125 feet

along Heritage Road. The signalized intersection at US 40 / Colfax and Rooney is forecasted to continue to operate at LOS A in both the AM and PM peak hours.

As part of the conceptual design for the US 40 / Colfax corridor improvements, alternative intersection configurations were considered based on optimization of corridor multimodal operations and stakeholder input. This evaluation was conducted to identify the best options based on current and future traffic conditions and the project goals for enhancing pedestrian and bicyclist connectivity and safety along the corridor.

Heritage Road

Signal Warrant Analysis

With the unacceptable LOS F delays forecasted for the Heritage Road approach to US 40 / Colfax by 2050, a traffic signal warrant analysis was conducted for the intersection per criteria contained in the Manual on Uniform Traffic Control Devices (MUTCD 2009 Edition, Chapter 4C). The analysis was based on hourly traffic volume data collected for each approach to the intersection on a weekday (Thursday) in July 2021.

The existing intersection configuration includes a sweeping, relatively high-speed, free-right turn lane for the southbound Heritage approach. The criteria in the MUTCD recommends adjusting approach traffic volumes to remove some or all of the right-turning traffic from the minor street volume if the right-turning vehicles can enter the intersection with minimal conflict from the major street. With the current intersection configuration, the southbound Heritage right-turning drivers are able to turn onto westbound US 40 / Colfax without notable delay. Therefore, the right-turning traffic volume was removed from the minor approach volume in the warrant analyses for the existing/No Action intersection configuration.

Figure 3. US 40 / Colfax and Heritage Intersection



For the existing/No Action condition, US 40 / Colfax was analyzed as a two-lane approach and the 70% factor was applied for the warrant analysis due to the speed limit of 45 miles per hour on the

major roadway. The Heritage approach was analyzed as a one-lane approach with only the left-turning traffic included.

For the warrant analysis for future 2050 traffic conditions, the growth rates developed for each roadway, as described earlier in this report (Table 2), were applied to each hour of existing traffic volume to develop full 24-hour 2050 traffic forecasts for each approach.

As a minimal project improvement, the unsignalized intersection at Heritage would be modified to reconfigure the southbound Heritage approach to remove the high-speed, free-right turn movement and bring traffic to at least a yield condition, in order to reduce multimodal and vehicular crossing conflicts and improve pedestrian/bicyclist safety at the intersection. Also, US 40 / Colfax lanes would be modified to one through lane in each direction through the intersection. Therefore, for the Action condition, US 40 / Colfax was analyzed as one-lane approaches and the Heritage approach was analyzed as a one-lane approach with the right-turning traffic included in the minor street approach volume. The 70% factor was again applied due to the speed limit of 45 miles per hour on the major roadway.

The nine warrants under which a traffic signal may be justified per the MUTCD are listed in **Table 6** with the results under each condition for the Heritage intersection. The warrant analysis summaries are attached.

Table 6. US 40 / Colfax and Heritage Signal Warrant Analysis

Warrant	Existing Volumes No Action Configuration			2050 Volumes Action Configuration			Comments
	Met	Not Met	N/A	Met	Not Met	N/A	
1 - Eight Hour Vehicular Volume		X		X			Warrant met with 2050 traffic and minimal unsignalized intersection modifications
2 - Four-Hour Vehicular Volume		X		X			Warrant met with 2050 traffic and minimal unsignalized intersection modifications
3 - Peak Hour		X			X		
4 - Pedestrian Volume		X			X		
5 - School Crossing			X			X	No school in the vicinity
6 - Coordinated Signal System			X			X	Not part of a coordinated system
7 - Crash Experience		X			X		Not evaluated in detail
8 - Roadway Network			X			X	Does not connect two major routes
9 - Intersection Near a Grade Crossing			X			X	No grade crossing near the intersection

Source: MUTCD and DEA warrant analysis

As shown, the US 40 / Colfax and Heritage intersection is expected to meet traffic signal warrants by the future design year, under reasonable forecasted traffic growth and assuming minimal intersection modifications for multimodal safety improvements.

Intersection Control

Based on stakeholder input, the surrounding transportation network along Heritage Road north of US 40 / Colfax (which includes a series of roundabout intersections), and the goal of an enhanced multimodal corridor, a roundabout was evaluated at the US 40 / Colfax and Heritage intersection. Traffic operations and queue lengths for the intersection control alternatives are summarized in **Table 7**.

Table 7. 2050 Heritage Intersection Operations

Intersection Control / Movement	AM Peak Hour			PM Peak Hour		
	Delay (sec/veh)	LOS	95th-percentile Queue (ft)	Delay (sec/veh)	LOS	95th-percentile Queue (ft)
Unsignalized Intersection – Minimal Improvements						
Overall	5.6	A	-	9.6	A	-
Eastbound US 40 (left)	8.1	A	< 50	9.4	A	< 50
Westbound US 40	-	-	< 50	-	-	< 50
Southbound Heritage (left)	16.4	C	< 50	55.0	F	< 50
Roundabout						
Overall	5.2	A	-	9.1	A	-
Eastbound US 40	5.1	A	< 50	7.4	A	60
Westbound US 40	5.1	A	< 50	9.6	A	100
Southbound Heritage	5.5	A	< 50	10.3	B	85

As shown, a one-lane roundabout at US 40 / Colfax and Heritage provides improved traffic operations over an unsignalized intersection, particularly for the southbound Heritage approach, and comparatively minimal queuing on all approaches during the AM and PM peak hours. A roundabout also provides pedestrian/bicyclist crossing opportunities for multimodal travel from the south side of US 40 /Colfax to Heritage Road, as well as reduced speeds for drivers along eastbound US 40 / Colfax, entering an area of more dense adjacent land use with more frequent driveways and multimodal traffic.

The project preliminary design includes a roundabout at the US 40 / Colfax and Heritage intersection due to the multimodal safety and overall operational benefits over the No Action condition (unsignalized intersection) and a signalized intersection alternative.

Rooney Road

Intersection Control

The existing US 40 / Colfax and Rooney intersection is a traffic signal that operates with minimal peak hour delay, which is expected to continue under future forecasted conditions. As a minimal project improvement, the US 40 / Colfax westbound lanes would be reduced to one through lane through the intersection to reduce multimodal and vehicular crossing conflicts and improve pedestrian/bicyclist safety through the project corridor. Based on stakeholder input and the goal of an enhanced multimodal corridor, a roundabout was also evaluated at the US 40 / Colfax and Rooney intersection.

A one-lane roundabout at Rooney operates well under existing traffic conditions. However, under the 2050 forecasted traffic conditions, the queues on the westbound US 40 / Colfax approach would extend over 800 feet, even with an acceptable LOS. The westbound left turn from US 40 / Colfax to Rooney Road in the PM peak hour is currently almost half of the approach volume and is forecasted at almost 300 vehicles/hour. With a left turn lane on the westbound approach to the roundabout and two circulating lanes along the north side of the circle, the approach queues are reduced to 115 feet, which is only about 30 feet more than the westbound left turn queue at the existing traffic signal. This roundabout configuration was analyzed to compare to the signalized alternative. Traffic operations and queue lengths for the intersection control alternatives are summarized in **Table 8**.

Table 8. 2050 Rooney Intersection Operations

Intersection Control / Movement	AM Peak Hour			PM Peak Hour		
	Delay (sec/veh)	LOS	95th-percentile Queue (ft)	Delay (sec/veh)	LOS	95th-percentile Queue (ft)
Signalized Intersection – US 40 / Colfax Lane Modifications						
Overall	8.3	A	-	8.4	A	-
Eastbound US 40	6.7	A	115	5.2	A	95
Westbound US 40	6.8	A	90	7.4	A	205
Northbound Rooney Rd	11.7	B	< 50	16.1	B	60
Southbound West St	12.6	B	65	16.3	B	70
Roundabout						
Overall	5.7	A	-	8.6	A	-
Eastbound US 40	6.6	A	< 50	9.5	A	80
Westbound US 40	4.6	A	< 50	8.4	A	115
Northbound Rooney Rd	6.7	A	< 50	7.0	A	< 50
Southbound West St	5.0	A	< 50	8.8	A	< 50

As shown, a roundabout at US 40 / Colfax and Rooney, with a westbound left turn lane on the westbound approach, provides improved traffic operations over the signalized intersection alternative, and shorter queue lengths on all approaches during the AM and PM peak hours. A

roundabout also provides reduced speeds for drivers along eastbound and westbound US 40 / Colfax, particularly during off-peak hours.

The project preliminary design includes a roundabout at the US 40 / Colfax and Rooney intersection due to the overall operational and safety benefits over the No Action condition (signalized intersection).

DRAFT