MAD-40-0.00 Road Diet Traffic Study

PID No. 112262, Agreement No.38633
Task Order Number 6-M (23), Encumbrance: 741101
Madison County, OH

ODOT District 6
April 25, 2025

Prepared by
HDR Engineering, Inc.

Department of Transportation

Table of Contents

List of Tables

List of Figures

List of Appendices

1 Study Purpose and Background

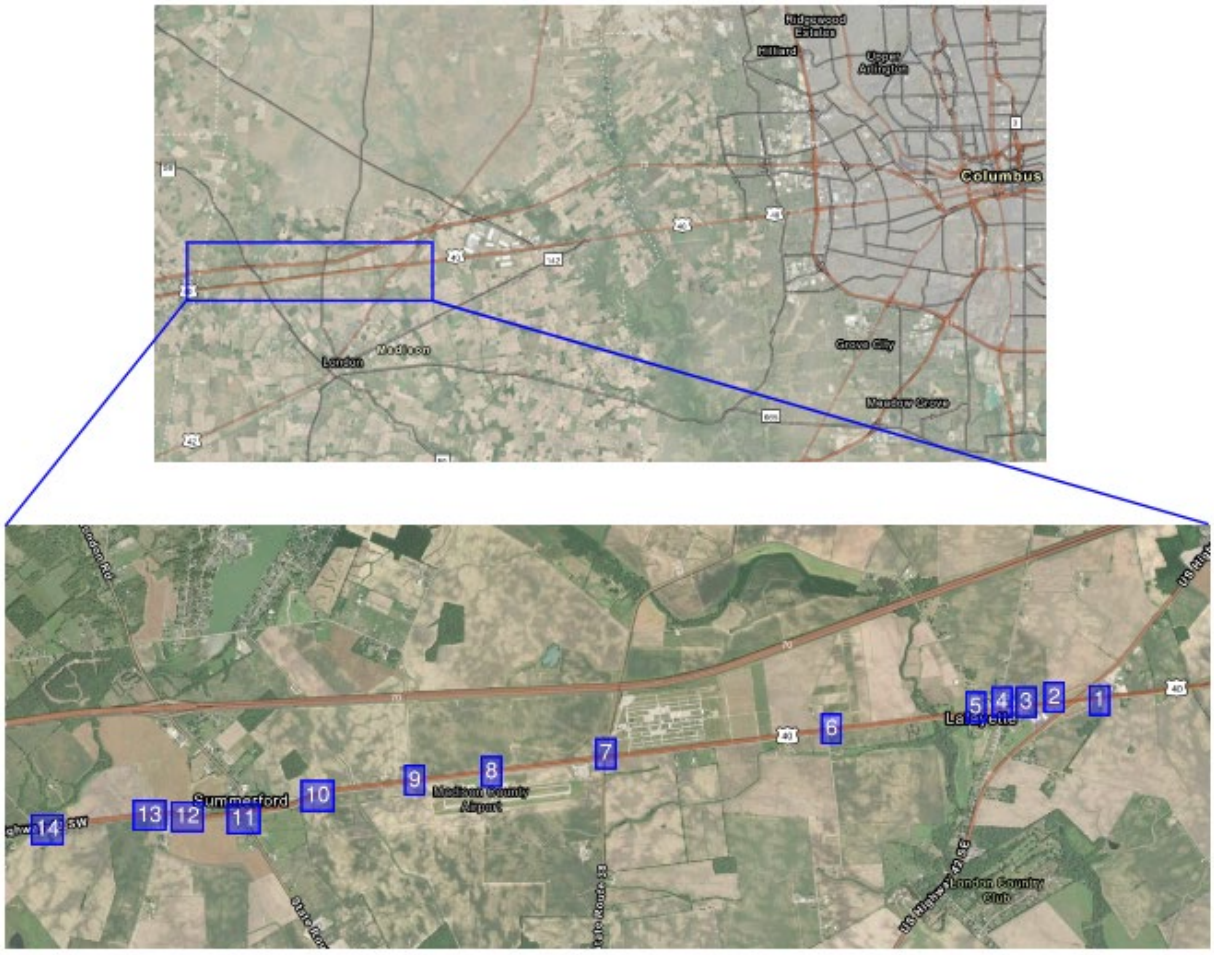
1.1 PURPOSE OF REPORT AND STUDY OBJECTIVES

The purpose of this study is to determine the viability of reducing the cross section of US Route 40, in Madison County, from the existing 4-lane divided highway condition to a 2-lane undivided highway. The project limits extend from just east of the US Route 42 interchange with US Route 40 westward to the Madison County line with Clark County. This corridor extends for a distance of approximately 7.6 miles. The project location is shown in **Figure 1-1**. The objectives include evaluating the impacts of the potential narrowing of this roadway from two lanes in each direction to a single lane in each direction, including identifying any countermeasures to mitigate any roadway deficiencies that will result due to the implementation of this roadway diet.

1.2 PROJECT BACKGROUND

This traffic study is a result of a determination of needed upgrades to the US Route 40 corridor, including roadway repaving. The limited development abutting this section of the corridor, in conjunction with the relatively low traffic volumes, have indicated that this corridor might be appropriate for a road diet, or reduction in the corridor width, which could potentially minimize the improvement needs for the corridor.

FIGURE 1-1: STUDY AREA LOCATION MAP



INTERSECTIONS

Intersection #1 - Route 40 and NB US Route 42 Ramps
Intersection #2 - Route 40 and SB US Route 42 Ramps
Intersection #3 - Route 40 and Middle Street
Intersection #4 - Route 40 and West Street
Intersection #5 - Route 40 and Gay Street/Arbuckle Street
Intersection #6 - Route 40 and Betty Wilson Road
Intersection #7 - Route 40 and Route 38
Intersection #8 - Route 40 and Madison County Airport Access
Intersection #9 - Route 40 and Gwynne Road
Intersection #10 - Route 40 and Old Route 40 (East)
Intersection #11 - Route 40 and Route 56
Intersection #12 - Route 40 and Old Route 40 (West)
Intersection #13 - Route 40 and Roberts Mill Road
Intersection #14 - Route 40 and Potee Road and Markley Road

Department of Transportation

2 Data Collection

2.1 PHYSICAL CHARACTERISTICS STUDY AREA

Field observations were conducted of the project study area. US Route 40 (National Pike) provides two travel lanes in each direction throughout the study area. At the eastern end of the corridor, in the vicinity of the interchange with US Route 42, the roadway has an approximate 12-foot striped median between the two travel directions. Further to the west, there is no median along US Route 40 in the town of Lafayette. To the west of Gay Street/Arbuckle Street and continuing along the rest of the corridor, US Route 40 provides an approximate 40-foot grass median between the east bound and westbound lanes. Paved breaks in this median are provided at cross streets. Gravel crossovers are also provided at other locations along the corridor, such as at driveways and minor cross streets for left turn and U-turn movements. US Route 40 is classified as a Major Collector roadway. The posted speed limit is generally 60 miles per hour with a reduction to 45 miles per hour in the town of Lafayette. For the purposes of this study, it was assumed that the 60 miles per hour limit would be reduced to 55 miles per hour with the lane reduction.

Provided below is a description of the physical and operational characteristics of each of the study area intersections along the corridor.

- **Intersection #1–US Route 40 and NB US Route 42 Ramps**—The US Route 40 intersection with the US Route 42 northbound ramps is an unsignalized intersection. The northbound off-ramp approach is stop-sign controlled and provides two lanes, for separate left- and right-turn lanes. Both US Route 40 approaches are free flow and provide two travel lanes in each direction, a through lane and shared through/right-turn lane in the eastbound direction and a through lane and shared through/left-turn lane in the westbound direction.

- **Intersection #2–US Route 40 and SB US Route 42 Ramps**—The US Route 40 intersection with the US Route 42 southbound ramps is an unsignalized intersection. The southbound off-ramp approach is stop-sign controlled and provides two lanes, a shared through/left-turn lane and a separate right-turn lane. Both US Route 40 approaches are free flow and provide two travel lanes in each direction, a shared through/right-turn lane and a shared through/left-turn lane. An access to a Ford Truck dealership is the fourth leg of the intersection, providing one inbound and one outbound lane. Although there is no traffic control on the Ford access approach, it is assumed that drivers treat it as stop-sign controlled.

- **Intersection #3–US Route 40 and Middle Street—**This intersection is a four-legged intersection with stop-sign control on the northbound and southbound Middle Street approaches. Both of the Middle Street approaches provide one approach lane for all movements, both northbound and southbound. Both US Route 40 approaches provide two lanes in each direction, a shared through/right-turn lane and a shared through/left-turn lane.

- **Intersection #4–US Route 40 and West Street—**This intersection is a four-legged intersection with stop-sign control on the northbound and southbound West Street approaches. Both of the West Street approaches provide one approach lane for all movements, both northbound and southbound. Both US Route 40 approaches provide two lanes in each direction, a shared

through/right-turn lane and a shared through/left-turn lane. It should be noted that painted crosswalks are provided across all four legs of this intersection.

- **Intersection #5–US Route 40 and Gay Street/Arbuckle Road**—This intersection is a four-legged intersection with stop-sign control on the northbound Gay Street and southbound Arbuckle Road approaches. Both of these approaches provide one approach lane for all movements. Both US Route 40 approaches provide two lanes in each direction, a shared through/right-turn lane and a shared through/left-turn lane.

- **Intersection #6–US Route 40 and Betty Wilson Road**—The US Route 40 intersection with the Betty Wilson Road is an unsignalized intersection. The northbound Betty Wilson Road approach is stop-sign controlled and provides for one approach lane for all movements. Both US Route 40 approaches are free flow and provide two travel lanes in each direction, a shared through/right-turn lane and a shared through/left-turn lane. An access to a Beck's Hybrids is the fourth leg of the intersection, providing a wide, unstriped approach. Although there is no traffic control on the Beck's access approach, it is assumed that drivers treat it as stop-sign controlled. A paved break in the US Route 40 median is provided at this intersection.

- **Intersection #7–US Route 40 and State Route 38 (Marysville-London Road)**—This intersection is controlled by a two-phase traffic signal and the signal heads are held in place by span wire. The northbound and southbound State Route 38 approaches are single lane approaches allowing for all movements. The eastbound US Route 40 approach provides four approach lanes, a separate left-turn lane, two through lanes and a separate right-turn lane. The westbound approach provides three approach lanes, a left-turn lane, a through lane and a shared through/right-turn lane.

- **Intersection #8–US Route 40 and the Madison County Airport access**—The US Route 40 intersection with the airport access is an unsignalized intersection. Both US Route 40 approaches are free flow and provide two travel lanes in each direction, a through lane and shared through/right-turn lane in the eastbound direction and a through lane and shared through/left-turn lane in the westbound direction. The northbound airport approach provides one lane for left- and right-turning movements. Although there is no traffic control on the airport approach, it is assumed that drivers treat it as stop-sign controlled.

- **Intersection #9–US Route 40 and Gwynne Road**—The US Route 40 intersection with Gwynne Road is an unsignalized intersection. The southbound Gwynne Road approach is stop-sign controlled and provides one lane for all movements. Both US Route 40 approaches are free flow and provide two travel lanes in each direction, a separate through lane and a shared through/left-turn lane in the eastbound direction and a separate through lane and a shared through/right-turn lane in the westbound direction.

- **Intersection #10–US Route 40 and Old US Route 40 (East intersection)**—This intersection is an unsignalized intersection. The southbound Old US Route 40 approach is stop-sign controlled and provides one lane for all movements. Both US Route 40 approaches are free flow and provide two travel lanes in each direction, a separate through lane and a shared through/left-turn lane in the eastbound direction and a separate through lane and a shared through/right-turn lane in the westbound direction.

- **Intersection #11–US Route 40 and State Route 56**—This intersection is controlled by a two-phase traffic signal and the signal heads are held in place by span wire. The northbound and southbound State Route 56 approaches are single lane approaches allowing for all movements. Both US Route 40 approaches provide four approach lanes, a separate left-turn lane, two through lanes and a separate right-turn lane.

- **Intersection #12–US Route 40 and Old US Route 40 (West intersection)**—This intersection is an unsignalized intersection. The southbound Old US Route 40 approach is stop-sign controlled and provides one lane for all movements. Both US Route 40 approaches are free flow and provide two travel lanes in each direction, a separate through lane and a shared through/left-turn lane in the eastbound direction and a separate through lane and a shared through/right-turn lane in the westbound direction.

- **Intersection #13–US Route 40 and Roberts Mill Road**—This intersection is an unsignalized intersection. The northbound Roberts Mill Road approach is stop-sign controlled and provides for one approach lanes for all movements. Both US Route 40 approaches are free flow and provide two travel lanes in each direction, a shared through/right-turn lane and a shared through/left-turn lane. An access to Madison Lodge, a small hotel located on the north side of US Route 40, is the fourth leg of the intersection, providing one approach lane. Although there is no traffic control on the Madison's Lodge access approach, it is assumed that drivers treat it as stop-sign controlled.

- **Intersection #14–US Route 40 and Potee Road/Markley Road**—This intersection is a four-legged intersection with stop-sign control on the northbound Markley Road and southbound Potee Road approaches. Both of these approaches provide one approach lane for all movements. Both US Route 40 approaches provide two lanes in each direction, a shared through/right-turn lane and a shared through/left-turn lane.

The existing lane configuration for each study area intersection is summarized in **Figure 2-1.**

2.1 TRAFFIC VOLUMES

Manual turning movement counts, which included classification, pedestrians, and bicyclists, were conducted at each of the study area intersections on Wednesday, November 13, 2024, from 6:00 AM to 9:00 AM and 3:00 PM to 6:00 PM. These counts were conducted by A. Loukas Engineering and are summarized by 15-minute increments in **Appendix A**. Lengthier traffic counts were conducted at the following four study-area intersections, to include full-day traffic counts for consideration of traffic signal warrants:

- Intersection #1–US Route 40 and NB US Route 42 Ramps
- Intersection #2–US Route 40 and SB US Route 42 Ramps
- Intersection #7–US Route 40 and State Route 38 (Marysville London Road)
- Intersection #11–US Route 40 and State Route 56 (Urbana London Road)

For each intersection the four highest consecutive 15-minutes increments in the weekday morning and afternoon peak period represent the peak hour traffic volumes for the AM and PM peak hour,

respectively. Based on the turning movement counts the peak hour of each intersection is noted in **TABLE 2-1**, along with the resulting peak hour traffic volume for both peak hour periods. Based on the differing peak hours, minor adjustments were made to balance traffic volumes between intersections. The resulting peak hour traffic volumes for each movement of each study area intersection are noted in **FIGURE 2-2** for the AM and PM peak hours.

TABLE 2-1: SUMMARY OF PEAK HOUR VOLUME DATA

Intersection	AM Peak Hour		PM Peak Hour	
	Peak Hour	Peak Hour Volume	Peak Hour	Peak Hour Volume
#1–US Route 40 and NB US Route 42 Ramps	6:30 AM to 7:30 AM	391	3:30 PM to 4:30 PM	538
#2–US Route 40 and SB US Route 42 Ramps	6:30 AM to 7:30 AM	359	3:30 PM to 4:30 PM	510
#3–US Route 40 and Middle Street	6:30 AM to 7:30 AM	395	3:15 PM to 4:15 PM	514
#4–US Route 40 and West Street	6:30 AM to 7:30 AM	420	3:15 PM to 4:15 PM	592
#5–US Route 40 and Gay Street/Arbuckle Road	6:30 AM to 7:30 AM	377	3:15 PM to 4:15 PM	473
#6–US Route 40 and Betty Wilson Road	6:30 AM to 7:30 AM	384	3:15 PM to 4:15 PM	494
#7–US Route 40 and State Route 38	6:30 AM to 7:30 AM	707	3:15 PM to 4:15 PM	849
#8–US Route 40 and Madison County Airport Access	6:30 AM to 7:30 AM	537	3:15 PM to 4:15 PM	675
#9–US Route 40 and Gwynne Road	6:30 AM to 7:30 AM	521	3:15 PM to 4:15 PM	661
#10–US Route 40 and Old US Route 40 (East)	6:30 AM to 7:30 AM	408	3:15 PM to 4:15 PM	536
#11–US Route 40 and State Route 56	6:30 AM to 7:30 AM	1034	3:15 PM to 4:15 PM	1223
#12–US Route 40 and Old US Route 40 (West)	6:30 AM to 7:30 AM	441	3:15 PM to 4:15 PM	539
#13–US Route 40 and Roberts Mill Road	7:15 AM to 8:15 AM	425	3:00 PM to 4:00 PM	539
#14–US Route 40 and Potee Road/Markley Road	6:30 AM to 7:30 AM	410	3:15 PM to 4:15 PM	525

FIGURE 2-1: EXISTING STUDY AREA LANE CONFIGURATION

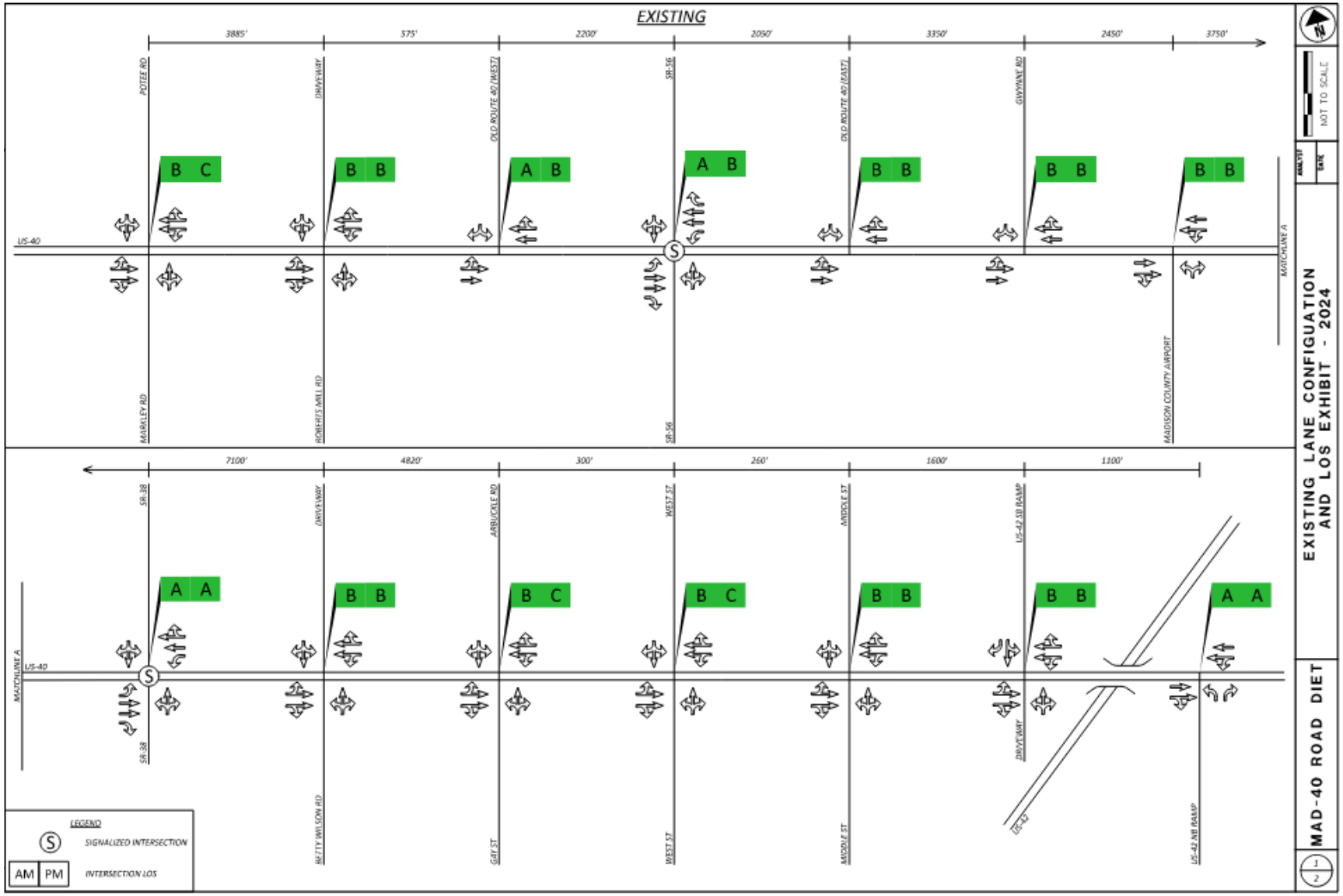
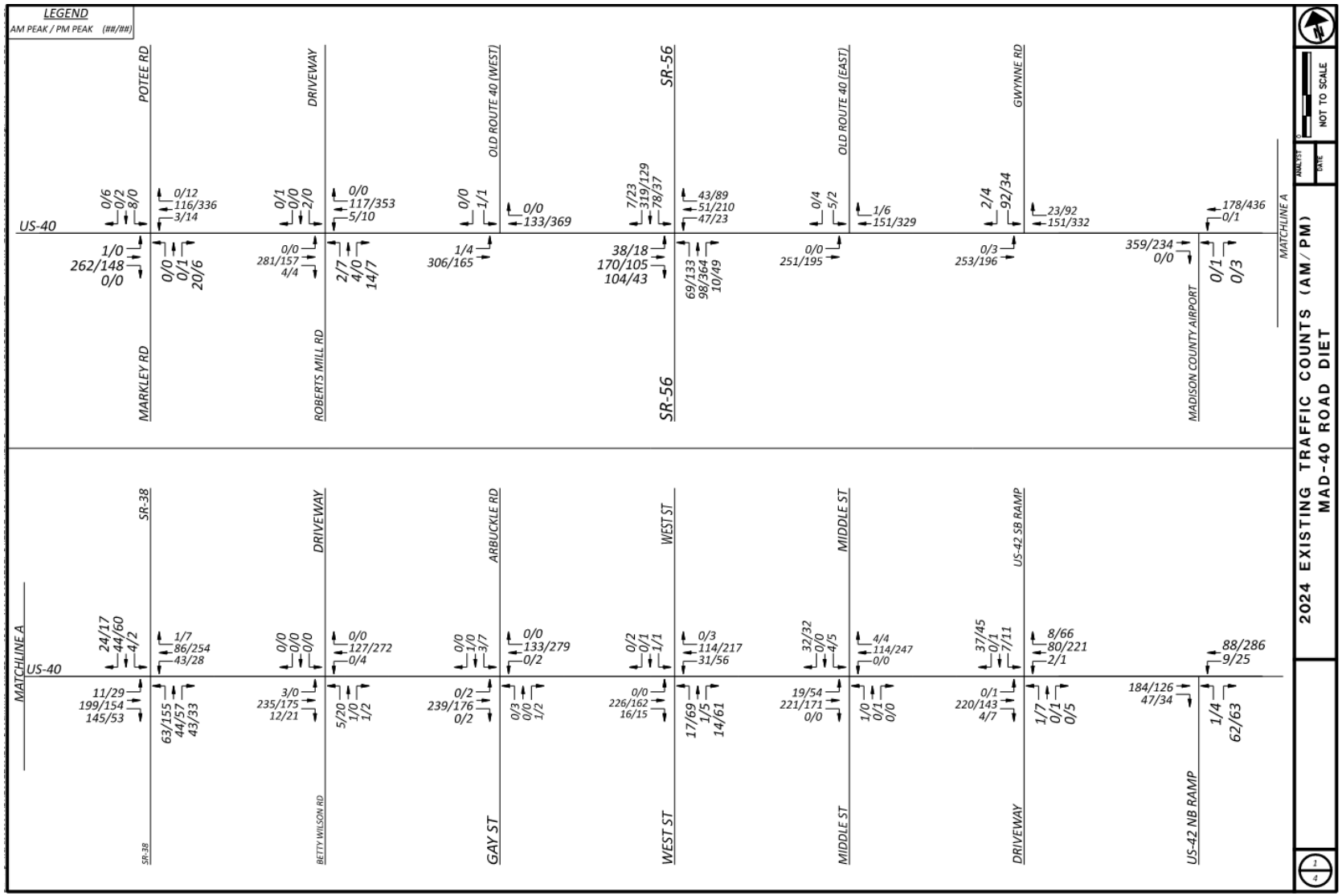


FIGURE 2-2: EXISTING TRAFFIC COUNTS



3 Planning Level Traffic Development

Design hour volumes (DHVs) were developed by factoring the raw turning movement counts at each intersection with the daily adjustment factors from the Ohio Department of Transportation Office of Statewide Planning and Research. The design hour factors utilized to develop the DHV's are dependent upon the roadway's functional classification, as well as the day of the week and month the count was performed. These design hour factors were then applied to the raw movement counts. Since the traffic counts for this project were conducted on a Wednesday in November, the traffic counts were increased by a factor of 1.17 to reflect 2024 DHV's. The ADT volumes were developed for the study area using the intersections with 24-hours of count data. The ADT and design hour volumes were rounded to the nearest 10. Additional traffic was added to the roadway network during the design hours to ensure that all movements show a minimum of 10 vehicles. These existing DHV volumes are summarized in **Figure 3-1**.

Developing the future traffic volumes involved developing a proposed growth rate based on historic traffic volume data. The historical data was extracted from TIMS for the study area, and the results are shown in **Table 3-1**. The data covers 3 years of growth patterns. As shown, traffic growth on this section of US Route 40 has experienced growth of between 1% and 4% over the last 3 years. Additionally, projected population and employment growth was obtained from the Mid-Ohio Regional Planning Commission. This information is summarized in **Table 3-2**. As shown in **Table 3-2**, area population is expected to increase by 18% and employment is expected to increase by 8% by 2050, equating to an average growth rate of 0.6% and 0.3% respectively. As a result, a growth rate of 1% compounded annually was determined to be appropriate for this area. The resulting peak hour traffic volumes are summarized in **Figure 3-2**. Since a potential reduction of the number of travel lanes per direction from two to one along the corridor is not expected to result in a change in traffic volumes, and build conditions are not expected to alter traffic volumes along the corridor, the traffic volumes shown in **Figure 3-2** reflect No Build and Build volumes.

FIGURE 3-1: EXISTING PEAK HOUR DHV

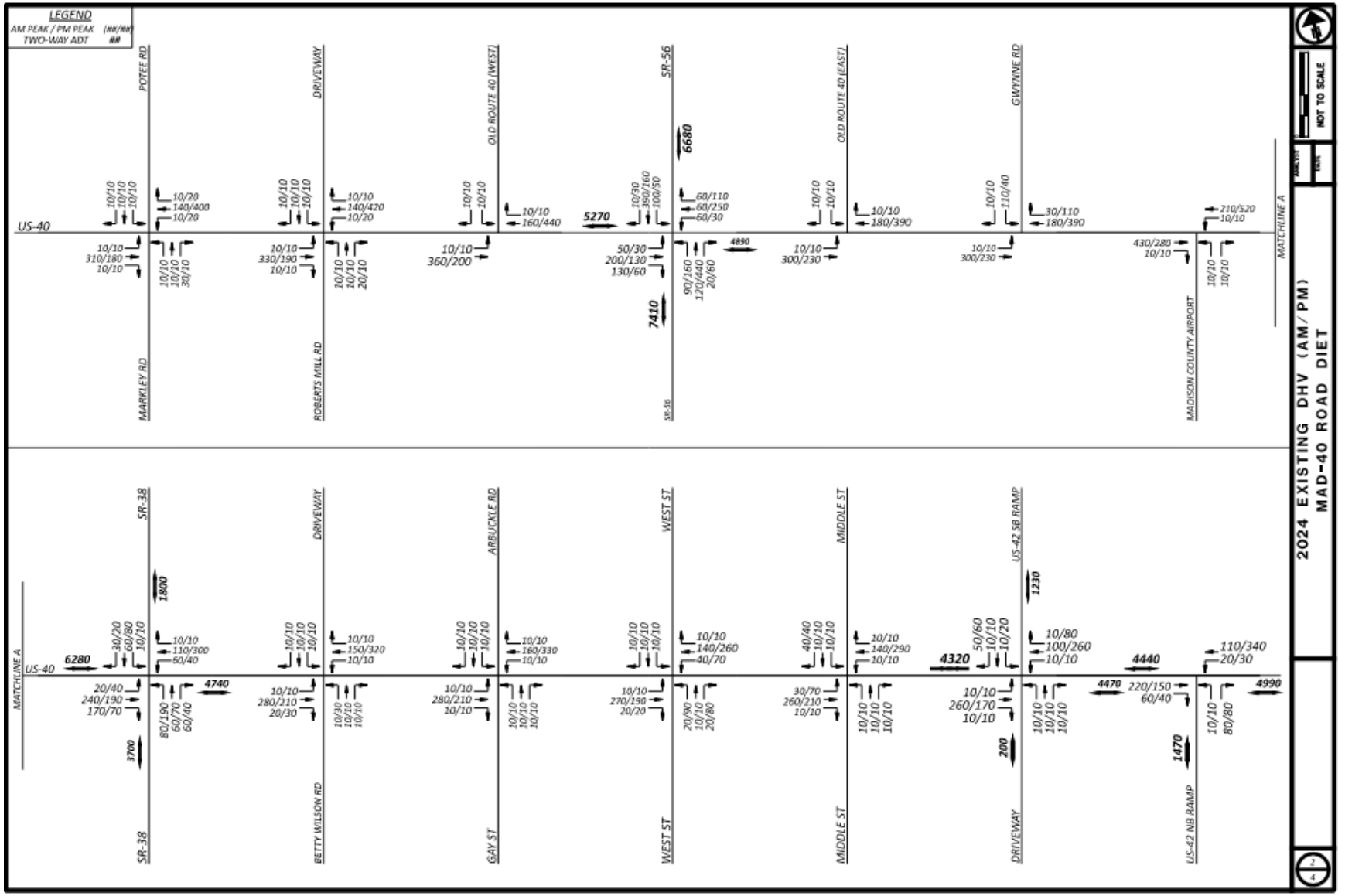


FIGURE 3-2: FUTURE PEAK HOUR NO BUILD AND BUILD DHV

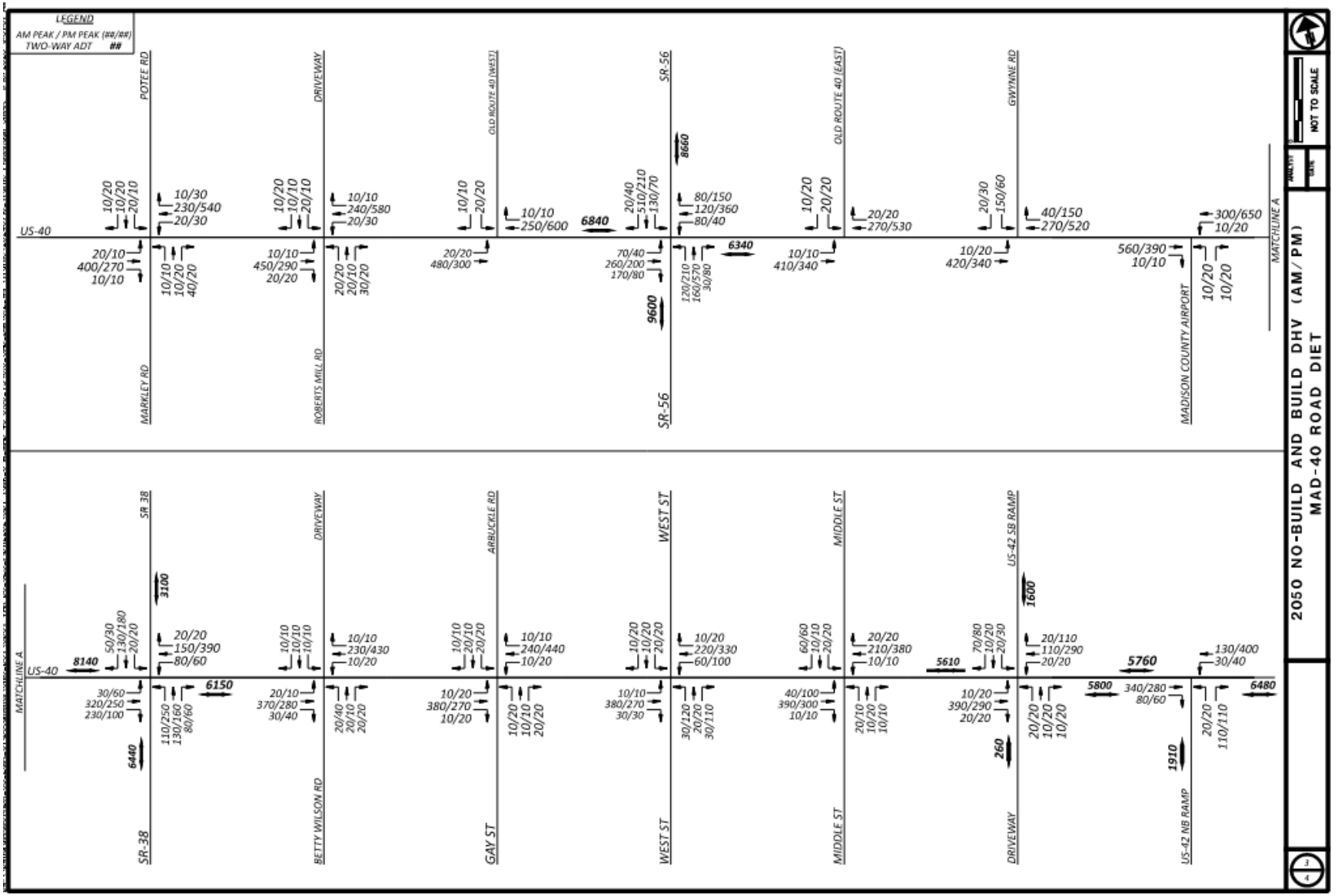


TABLE 3-1: US ROUTE 40 GROWTH RATE BASED ON ADTS

ODOT Count Locations	Between Gwynne and Old 40 East		Between 56 and Old 40 West		Between Arbuckle and Betty Wilson
2023	4189		4754		3850
2022	N/A		N/A		N/A
2021	N/A		N/A		N/A
2020	4072		4305		3446
Growth rate from 2020-2023	1%		3.5%		3.9%

TABLE 3-2: POPULATION AND EMPLOYMENT GROWTH

Population and Employment Growth								
TAZ	2021 Population	2050 Population	Population Increase	% Population Increase	2021 Jobs	2050 Jobs	Jobs Increase	% Jobs Increase
75034	81	87	6	7.41%	270	250	-20	-7.41%
75033	16	16	0	0.00%	210	230	20	9.52%
75036	100	140	40	40.00%	0	0	0	
75033	16	16	0	0.00%	210	230	20	9.52%
99137	2820	3529	709	25.14%	870	940	70	8.05%
75033	16	16	0	0.00%	210	230	20	9.52%
99169	218	282	64	29.36%	50	80	30	60.00%
75033	16	16	0	0.00%	210	230	20	9.52%
99122	2451	2582	131	5.34%	240	250	10	4.17%
99166	314	417	103	32.80%	40	50	10	25.00%
99165	94	196	102	108.51%	0	0	0	
99167	36	28	-8	-22.22%	0	0	0	
	6493	**7685**	**1192**	**18.36%**	**1800**	**1950**	**150**	**8.33%**
Average growth per year				**0.63%**				**0.29%**

4 Traffic Analysis

4.1 SIGNAL WARRANTS

As stated previously, all day manual turning movement traffic counts were conducted at four intersections within the study area for purposes of evaluation of signal warrant criteria. These intersections included the following:

- US Route 40 and NB US Route 42 Ramps
- US Route 40 and SB US Route 42 Ramps
- US Route 40 and State Route 38 (Marysville London Road)
- US Route 40 and State Route 56 (Urbana London Road)

The signal warrant evaluation was based on the *Manual of Uniform Traffic Control Devices*, 11th Edition (MUTCD). Several traffic signal warrants are contained in the MUTCD and only one need be met to warrant the installation of a traffic signal. However, just because traffic volumes meet the signal warrant criteria does not mean that a signal necessarily should be installed at a particular intersection. Based on this evaluation and based on existing 2024 traffic volumes, it is demonstrated that traffic signals are warranted at the two intersections where traffic signals are currently provided, US Route 40/State Route 38 and US Route 40/State Route 56. Based on the warrant criteria, for the State Route 56 intersection, the eight-hour warrant is not met under any existing or future condition. The four-hour warrant is met under the existing two-lanes per direction condition under the reduced (70%) threshold only. Under the single lane per direction condition, it is warranted under both the full (100%) and reduced (70%) threshold. For the State Route 38 intersection, neither the eight-hour warrant nor the four-hour warrant were met under the existing, two-two lane per direction condition. Reducing the cross section to a single lane per direction would allow the four-hour warrant to be met under the reduced (70%) threshold, but not the full (100%) threshold. Note that even though the four-lane warrant may be met, other methods of traffic control could be a better fit for the volumes and could improve safety. Additionally, it is demonstrated that the projected traffic volumes at the two intersections at the interchange with US Route 42 are not expected to meet the warrant criteria for the installation of a traffic signal. The detailed traffic signal warrant evaluation worksheets are contained in **Appendix B** of this report.

4.2 LANE WARRANTS

The projected traffic volumes at the study area intersections were also compared to established left- and right-lane turn lane warrant based on Figures 401-5b and 401-6b from the Ohio DOT publication *Location and Design Manual, Volume 1, Roadway Design*. The turn lane warrant criteria worksheets are provided in **Appendix C.**

Based on that evaluation, the following turn lanes are warranted:

- EB US Route 40 at NB US Route 42 ramps right-turn lane
- WB US Route 40 at SB US Route 42 ramps right-turn lane
- WB US Route 40 at Middle Street left-turn lane

- WB US Route 40 at West Street left-turn lane
- WB US Route 40 at Gwynne Road right-turn lane

It should be noted that given that left-turn lane warrants are met at two of the intersections within Lafayette toward the eastern end of the study corridor, at Middle Street and West Street, a review of the overall US Route 40 intersections in this area was conducted. Several intersections along US Route 40 are closely spaced in this town, with several within approximately 200 feet of each other, it is recommended for overall corridor cross section consistency that a two-way left-turn lane (TWLTL) be provided in this area of the corridor, from Gay Street/Arbuckle Street to 3rd Street.

4.3 TURN LANE DESIGN

The projected traffic volumes at the study area intersections were also compared to established left- and right-lane turn lane warrant based on Figures 401-9 and 401-10 from Ohio DOT publication *Location and Design Manual, Volume 1, Roadway Design*.

Based on that evaluation, the following turn lane lengths are recommended:

- EB US Route 40 at NB US Route 42 ramps right-turn lane—175 feet plus 50-foot taper
- WB US Route 40 at SB US Route 42 ramps right-turn lane—175 feet plus 50-foot taper
- WB US Route 40 at Middle Street left-turn lane—175 feet plus 50-foot taper
- WB US Route 40 at West Street left-turn lane—175 feet plus 50-foot taper
- WB US Route 40 at Gwynne Road right-turn lane—300 feet plus 50-foot taper

4.4 ROUNDABOUT ANALYSIS

Roundabouts have been demonstrated to safely and efficiently accommodate traffic volumes at intersections. They can lower crash frequency and severity compared to standard signalized and stop-sign controlled intersections by reducing travel speeds and number of conflict points. They can also accommodate a relatively high volume of traffic.

As a result, as part of this evaluation, each of the intersections was reviewed to determine if installation of a roundabout would provide benefit to the intersection. This evaluation included a review of traffic volumes, since relative consistency in traffic volumes across the approaches is advantageous to roundabout operation, as well as the roadway geometry and development to determine if a roundabout could fit with minimal impact to the surrounding community. Finally, an operational analysis was conducted where appropriate to confirm if the provision of a roundabout would provide improved operations compared to an intersections existing operation.

For this corridor, roundabouts were determined to be appropriate and beneficial at the intersection of US Route 40 and State Route 38 and at the intersection of US Route 40 and State Route 56.

It should be noted that the intersection of US Route 40 and State Route 38 is projected to operate acceptably as a single-lane roundabout with no additional capacity improvements. However, the analysis indicates that yield-controlled bypass lanes are needed on the eastbound and westbound US Route 40 approaches at State Route 56 in order to achieve acceptable operation for a single-lane roundabout at that location.

4.5 CAPACITY/LEVEL OF SERVICE ANALYSIS

Traffic analyses were performed using Highway Capacity Software (HCS), Version 7, to analyze the signalized and unsignalized intersections, as well as roundabouts, in the study area. HCS models for the AM and PM peak hours were developed based on the lane configurations, signal timings, volumes, truck percentages, etc. to represent the existing conditions in the study area.

HCS software measures driver delay in seconds, as well as Level of Service (LOS), A through F, for each movement of every intersection in the study area. For the purposes of this study, the delay, and LOS for the overall intersection, as well as for each approach, was recorded. LOS is found by procedures outlined in the *"Highway Capacity Manual 6th Edition" (Transportation Research Board, Washington, DC).* Level of Service for unsignalized intersections is based on the average delay a motorist experiences at the intersection for controlled movements, such as a stop-controlled approach or left-turn that has to yield to on-coming traffic. Provided in **Figure 4-1** is a description of the traffic characteristics of the six LOS scales. **Table 4-1** lists the LOS criteria for signalized and unsignalized intersections and roundabouts. The detailed analysis worksheets are provided in **Appendix D**.

FIGURE 4-1: LEVEL OF SERVICE (LOS) DESCRIPTIONS

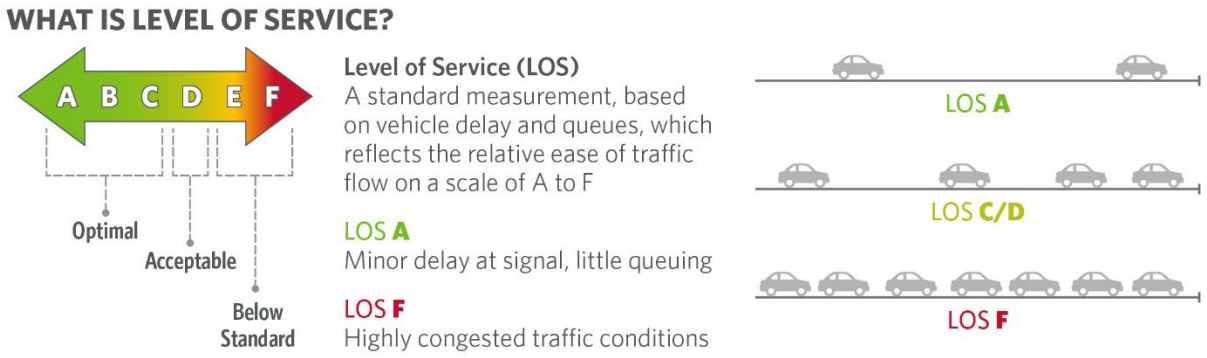


TABLE 4-1: SUMMARY OF HCM LOS THRESHOLDS FOR INTERSECTIONS

	Control Delay (sec/veh)		LOS Description
	Signalized	**Unsignalized and Roundabouts**	
A	≤ 10	≤ 10	Free flow, insignificant delays.
B	> 10-20	> 10-15	Stable operations, minimal delays.
C	> 20-35	> 15-25	Stable operations, acceptable delays
D	> 35-55	> 25-35	Restricted flows, regular delays
E	> 55-80	> 35-50	Maximum capacity, extended delays. Volumes at or near capacity. Long queues form upstream from intersection.
F	> 80	> 50	Forced flow, excessive delays. Represents congested conditions. Facility operates below capacity with low volumes. Queues may block upstream intersections.

1. Unsignalized LOS is for the worst stop-controlled approach.
2. Any v/c > 1.0 results in LOS F regardless of delay.

A Policy on Geometric Design of Highways and Streets, 2018 7th Edition, by The American Association of State Highway and Transportation Officials (AASHTO) provides guidelines for the selection of design LOS. As per *AASHTO Table 2-3*, for an urban/suburban area similar to this project study area the acceptable LOS is D.

To assess the existing capacity constraints and deficiencies of the corridor, analyses were performed using the 2024 AM and PM peak hour volumes. These analyses assumed no improvements within the study area. The results of the capacity analyses are shown in **Table 4-2** and were also depicted on **Figure 2-1** (shown previously). **Appendix D-1** provides the HCS reports for existing and future conditions. The existing operations for the study area intersections are summarized below.

TABLE 4-2: SUMMARY OF 2024 EXISTING LOS

Intersection	Traffic Control Type	AM Peak Hour	PM Peak Hour
#1–US Route 40 and NB US Route 42 Ramps	Minor Street Stop Sign Control	A	A
#2–US Route 40 and SB US Route 42 Ramps	Minor Street Stop Sign Control	B	B
#3–US Route 40 and Middle Street	Minor Street Stop Sign Control	B	B
#4–US Route 40 and West Street	Minor Street Stop Sign Control	B	C
#5–US Route 40 and Gay Street/Arbuckle Road	Minor Street Stop Sign Control	B	C
#6–US Route 40 and Betty Wilson Road	Minor Street Stop Sign Control	B	B
#7–US Route 40 and State Route 38	Traffic Signal	A	A
#8–US Route 40 and Madison County Airport Access	Minor Street Stop Sign Control	B	B
#9–US Route 40 and Gwynne Road	Minor Street Stop Sign Control	B	B
#10–US Route 40 and Old US Route 40 (East)	Minor Street Stop Sign Control	B	B
#11–US Route 40 and State Route 56	Traffic Signal	A	B
#12–US Route 40 and Old US Route 40 (West)	Minor Street Stop Sign Control	A	B
#13–US Route 40 and Roberts Mill Road	Minor Street Stop Sign Control	B	B
#14–US Route 40 and Potee Road/Markley Road	Minor Street Stop Sign Control	B	C

Notes:
1–Unsignalized LOS is the worst stop-controlled approach

As shown, all of the study intersections operate at LOS C or better overall during both peak hours.

A second analysis was completed based on future 2050 traffic volumes. This analysis also assumed a reduction in the number of travel lanes along the US Route 40 corridor from two through lanes per direction to a single through lane in each direction. This analysis indicated heavier delay at some of the study area intersections. The intersections where additional improvements were considered are noted below:

- **Intersection #4 US Route 40 and West Street**—Without improvement, it is expected that this intersection will degrade to LOS F during the PM peak hour with the reducing US Route 40 cross section, even with the warranted left-turn lane in each direction of US Route 40. Even

though the analysis indicates that installation of a traffic signal at this intersection would improve the operation to acceptable levels, it is not expected that future traffic volumes will be sufficient to warrant a traffic signal. Similarly, while a roundabout would operate acceptably at this intersection, the existence of buildings located close to the intersection would make provision of a roundabout difficult to install at this location. Installation of multi-way stop control was investigated and was demonstrated to result in LOS C or better operation. However, while there is insufficient count data to complete a full multi-way stop warrant, is it expected that the traffic volumes would not be adequate to warrant the installation of a multi-way stop. As a result, it is recommended that the existing two-way stop control be continued. It is expected that if delay becomes excessive for the side street approaches, drivers will use the grid roadway network in this area and divert to lower volume intersections along US Route 40, which are expected to have less delay. It is also recommended to continue to monitor this intersection to determine if traffic volumes grow beyond that projected, or if crash rates increase, to determine if changes to the intersection control should be implemented in the future.

- **Intersection #5—US Route 40 and Gay Street/Arbuckle Street**— With the existing lane configuration, this intersection is anticipated to operate acceptably. Although separate turn lanes are not warranted on US Route 40 at this location, a second future analysis was completed accounting for a TWLTL extending along US Route 40 through this intersection. As stated previously, given the close spacing of the intersections in the town of Lafayette and the fact that two of the intersections, at West Street and Middle Street, warrant left-turn lanes, it is recommended that a TWLTL be provided along US Route 40 between Gay Street/Arbuckle Street and 3rd Street. This analysis shows similar LOS results compared to the analysis results without the TWLTL, with minor delay reductions on the side street approaches.

- **Intersection #7–US Route 40 and State Route 38**—This intersection is expected to operate at acceptable LOS B during both peak hours with the US Route 40 lane reduction and maintaining the existing traffic signal. Given the safety benefits of roundabouts, an investigation was conducted to determine if the installation of a roundabout could improve the operation of the intersection. There is minimal development in this immediate area to impede the construction of a roundabout. With a roundabout at the intersection, the intersection would operate at LOS A overall and LOS B or better for all movements.

- **Intersection #11–US Route 40 and State Route 56**—This intersection is anticipated to operate at LOS D overall during afternoon peak hour, with heavy delay, including LOS F operation on one approach to the intersection with the lane reduction on US Route 40. However, it is noted that the intersection operation can be improved significantly to overall LOS B operation overall and LOS C or better operation on all movements with the provision of separate left-turn lanes on both the NB and SB State Route 56.

  A second analysis was also completed for this intersection assuming the installation of a roundabout. The analysis indicated that acceptable operation can be achieved with the installation of a single-lane roundabout and the provision of yield-controlled bypass lanes on the eastbound and westbound approaches. This would result in LOS B operation overall during the AM peak hour and LOS D operation overall during the PM peak hour. All movements

will operate at LOS D or better during both peak hours with the exception of the NB approach, which will operate at LOS E, an acceptable condition. As a result, and given the overall safety benefits of a roundabout, it is recommended that this intersection be replaced with a roundabout with the bypass lanes detailed previously.

4.6 TWO-WAY-LEFT-TURN-LANE ANALYSIS AT THE FARM SCIENCE PROPERTY

The Ohio State Molly Caren Agricultural Center hosts the premier agricultural education and industrial exposition, the Farm Science Review Fair, annually. This annual event is hosted over a three-day period in September. It features more than 600 exhibits, 100 educational sessions and field crops demonstrations. The location along the US Route 40 corridor, just to the east of the intersection with State Route 38 is known locally as the Farm Science Property. Attendance at the event usually exceeds 100,000 people, attracting people from across the nation. Parking for attendees is provided in a grass lot to the east of the exhibit area with access provided via multiple access locations directly from US Route 40.

While traffic counts were not conducted along the corridor during one of these events, the existing ADT on US Route 40 in this area, on a typical day when the event is not occurring, is approximately 4,750 vehicles per day, just below the threshold for TWLTL for two-lane highways, which is 5,000 to 12,000 vehicles per day. Based on the Farm Science Fair attendance of 100,000 people over this three-day period, this could add an additional 10,000 vehicles each day over the three-day period, to US Route 40 during the event, assuming 3-4 people per car.

It is suggested that an adequate number of trained traffic controllers be utilized to direct traffic along US Route 40 in that area during the event. Additionally, it is suggested that the Agriculture Center develop clear signing to direct drivers both into and out of appropriate access points to minimize vehicular conflicts to the extent possible, as well as notifying drivers in advance of the event, both in terms of time prior to the event and distance from the property, to encourage non-Farm Science Fair drivers to use alternative routes such as I-70.

5 Crash Analysis

A crash analysis was conducted of the most recent 4 years (2020-2024) of available crash data from the ODOT Crash Analysis Tool. The crash data has been summarized with the full crash data and collision diagrams for intersections of emphasis included in **Appendix E**. In total, there were 72 crashes (animal type excluded in total, consisting of 0 fatalities, and 7 that resulted in serious injuries. There was a total of 44 (61%) crashes resulting in 4 serious injuries at the intersections listed below:

- Intersection #3—US Route 40 and Middle Street
- Intersection #4—US Route 40 and West Street
- Intersection #5—US Route 40 and Gay Street/Arbuckle Street
- Intersection #7—US Route 40 and State Route 38
- Intersection #11—US Route 40 and State Route 56

Intersection #7 US Route 40 and State Route 38 and intersection #11 US Route 40 and State Route 56 are signalized while US Route 40 from Gay Street/Arbuckle to Middle Street is free-flowing movements EB and WB, with stop signs for NB and SB movements. For each of these intersections, the main crash types were left-turn and angle crashes. Recommendations for safety improvements to mitigate potential crashes in the study area are also shown in Appendix E.

The existing conditions and proposed improvements were further analyzed using ODOT's Economic Crash Analysis Tool (ECAT) for the year 2050 for the following hot spot intersections:

- Intersection #4—US Route 40 and West Street
- Intersection #7—US Route 40 and State Route 38
- Intersection #11—US Route 40 and State Route 56

As shown in **Table 5-1**, both the West Street and State Route 56 intersections results show that there is potential for safety improvements based on existing conditions while the intersection with State Route 38 does not. However, the build scenario with proposed improvements yields other results. As shown in **Table 5-2**, with improvement of changing the intersections of US Route 40 with both State Route 38 and State Route 56 from signalized intersections to roundabouts yields a result of approximately 2 less crashes at each intersection, while the West Street intersection shows 0.67 more crashes. It is important to note that while the proposed improvements for West Street is negative, it is typical for a road diet project to yield a reduction in crashes for the build scenario comparison.

TABLE 5-1: RESULTS OF EXISTING CONDITIONS (ECAT)

Severity of Crash	PSI by Location		
	West Street	SR 38	SR 56
Fatal & Incapacitating Injury	0.016	0.0329	0.0268
Non-Incapacitating Injury	0.033	0.0924	0.0751
Possible Injury	0.0194	0.1042	0.0849
Property Damage Only	0.0763	-0.2912	0.1785
Total	**0.1447**	**-0.0617**	**0.3653**

TABLE 5-2: RESULTS OF PROPOSED CONDITIONS (ECAT)

Severity of Crash	Build Scenario—Crash Reduction		
	West Street	SR 38	SR 56
Fatal & Incapacitating Injury	0.0341	-0.0570	-0.0712
Non-Incapacitating Injury	0.1098	-0.1100	-0.1592
Possible Injury	0.0843	-0.1158	-0.1729
Property Damage Only	0.4399	-1.6411	-1.8561
Total	**0.6681**	**-1.9239**	**-2.2594**

6 Conclusions and Recommendations

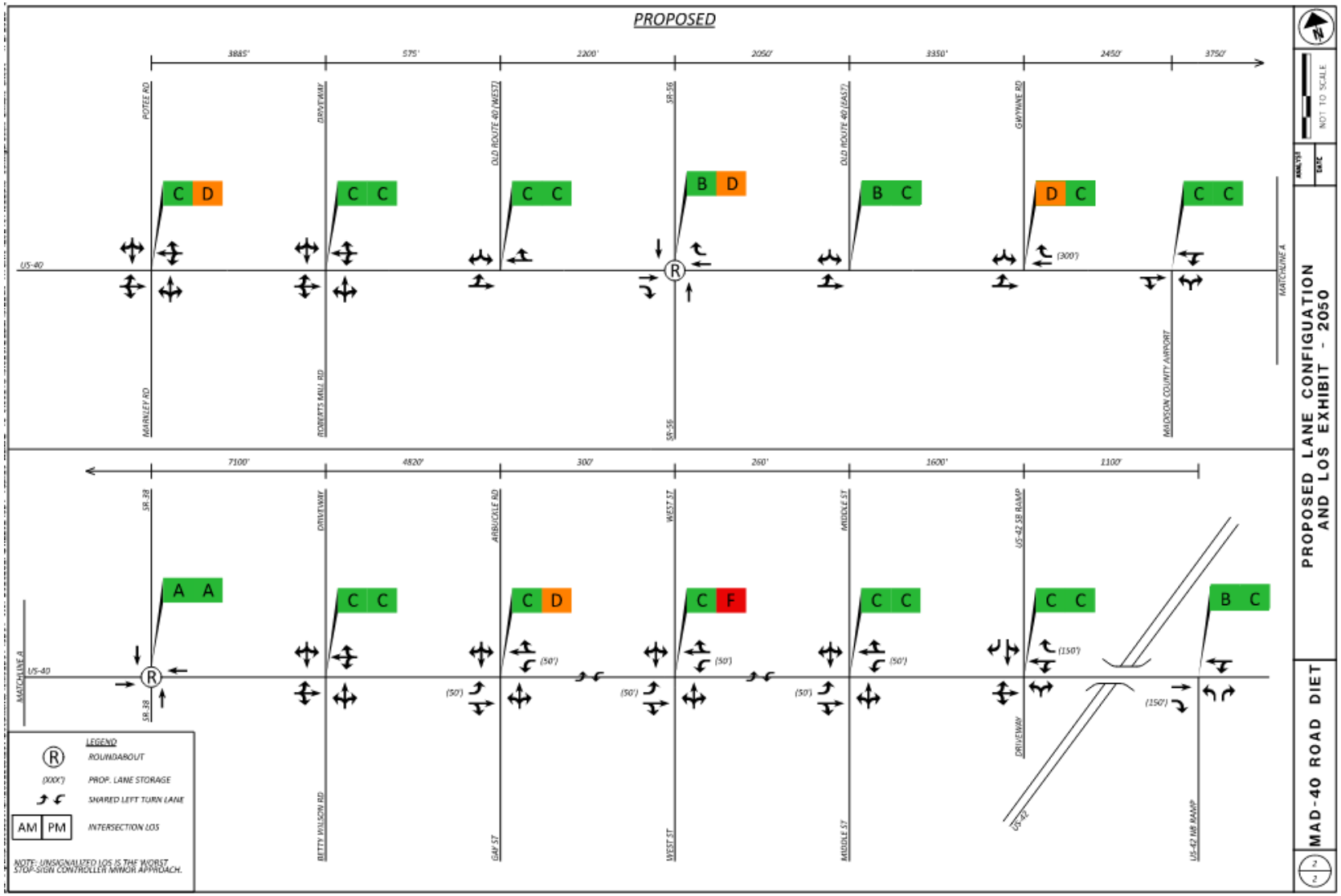
6.1 RECOMMENDATIONS

Based on the traffic analyses addressed in this report, it is suggested that the Department can reduce the lane configuration of the US Route 40 (National Road) corridor from two lanes per direction to a single lane in each direction between the US Route 42 interchange westward to the Madison County line with Clark County, subject to the improvements noted below.

- **Intersection #1–US Route 40 and NB US 42 Ramp Intersection**—Restripe the EB approach to provide a separate right-turn lane for traffic turning onto the ramp.
- **Intersection #2–US Route 40 and SB US Route 42 Ramp Intersection**—Restripe the WB approach to provide a separate right-turn lane for traffic turning onto the ramp.
- **Intersections #3—#5–US Route 40 and Middle Street to US Route 40 and Gay Street/Arbuckle Street**—Provide a TWLTL on US Route 40 from 3rd Street to Gay Street/Arbuckle Street.
- **Intersection #4–US Route 40 and West Street**—Maintain the existing traffic control. In addition to providing a TWLTL through this intersection, monitor the future traffic volumes at this intersection for unexpected traffic growth, as well as monitor crash records to determine if a change in traffic control to a multi-way stop control may be needed in the future. Based on anticipated growth, it is not expected that a multi-way stop installation will be warranted, but future conditions could change.
- **Intersection #7–US Route 40 and State Route 38**—Replace the intersection with a single-lane roundabout.
- **Intersection #9–US Route 40 and Gwynne Road**—Provide a separate WB right-turn lane on US Route 40.
- **Intersection #11–US Route 40 and State Route 56**— Replace the intersection with a single-lane roundabout with yield-controlled bypass lanes on the eastbound and westbound approaches.
- **Farm Science**— Event coordinators should provide an adequate number of trained traffic controllers to direct traffic along US Route 40 in that area during the event. Additionally, it is suggested that the Agriculture Center develop clear signing to direct drivers both into and out of appropriate access points to minimize vehicular conflicts to the extent possible, as well as notifying drivers in advance of the event, both in terms of time prior to the event and distance from the property, to encourage non-Farm Science Fair drivers to use alternative routes such as I-70.US Route 40

The recommended intersection lane configuration is depicted in **FIGURE 6-1**.

FIGURE 6-1: RECOMMENDED FUTURE STUDY AREA LANE CONFIGURATION



Department of Transportation

6.2 SUMMARY

The traffic analyses detailed in this report have demonstrated that acceptable operating conditions can be achieved for the US Route 40 corridor, from the US Route 42 interchange westward to the Madison County line, with the proposed lane reduction, subject to the recommended improvements noted previously. This lane reduction would involve eliminating one of the through lanes in each direction throughout this corridor, resulting in a single through lane in each direction instead of the existing two through lanes in each direction.

With the recommended improvements, most of the study area intersections will operate at LOS C or better conditions overall during both peak hours.

Appendix A
Traffic Count Data

US 40 & US 42 NB Ramp - TMC

Wed Nov 13, 2024
Full Length (12 AM-12 AM (+1))
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1247846, Location: 39.938164, -83.395961

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US

Leg	US 40				US 42 NB Ramp				US 40				
Direction	Westbound				Northbound				Eastbound				
Time	T	L	U	App	R	L	U	App	R	T	U	App	Int
2024-11-13 12:00AM	7	1	0	**8**	1	0	0	**1**	0	3	0	**3**	**12**
12:15AM	3	1	0	**4**	0	0	0	**0**	0	1	0	**1**	**5**
12:30AM	12	1	0	**13**	0	0	0	**0**	0	1	0	**1**	**14**
12:45AM	9	1	0	**10**	0	0	0	**0**	0	1	0	**1**	**11**
Hourly Total	31	4	0	**35**	1	0	0	**1**	0	6	0	**6**	**42**
1:00AM	6	1	0	**7**	0	0	0	**0**	0	2	0	**2**	**9**
1:15AM	9	1	0	**10**	1	0	0	**1**	0	1	0	**1**	**12**
1:30AM	12	1	0	**13**	1	0	0	**1**	0	3	0	**3**	**17**
1:45AM	3	1	0	**4**	1	0	0	**1**	1	2	0	**3**	**8**
Hourly Total	30	4	0	**34**	3	0	0	**3**	1	8	0	**9**	**46**
2:00AM	15	4	0	**19**	1	0	0	**1**	0	2	0	**2**	**22**
2:15AM	3	0	0	**3**	2	0	0	**2**	0	1	0	**1**	**6**
2:30AM	12	0	0	**12**	4	0	0	**4**	0	1	0	**1**	**17**
2:45AM	5	0	0	**5**	0	0	0	**0**	0	1	0	**1**	**6**
Hourly Total	35	4	0	**39**	7	0	0	**7**	0	5	0	**5**	**51**
3:00AM	29	2	0	**31**	1	0	0	**1**	0	2	0	**2**	**34**
3:15AM	18	1	0	**19**	4	0	0	**4**	0	5	0	**5**	**28**
3:30AM	8	1	0	**9**	4	0	0	**4**	0	10	0	**10**	**23**
3:45AM	5	0	0	**5**	2	0	0	**2**	1	8	0	**9**	**16**
Hourly Total	60	4	0	**64**	11	0	0	**11**	1	25	0	**26**	**101**
4:00AM	7	2	0	**9**	3	0	0	**3**	0	7	0	**7**	**19**
4:15AM	11	2	0	**13**	6	0	0	**6**	0	16	0	**16**	**35**
4:30AM	41	0	0	**41**	9	0	0	**9**	2	19	0	**21**	**71**
4:45AM	25	2	0	**27**	8	0	0	**8**	2	19	0	**21**	**56**
Hourly Total	84	6	0	**90**	26	0	0	**26**	4	61	0	**65**	**181**
5:00AM	40	6	0	**46**	10	0	0	**10**	3	16	0	**19**	**75**
5:15AM	61	2	0	**63**	14	0	0	**14**	4	34	0	**38**	**115**
5:30AM	13	1	0	**14**	20	0	0	**20**	3	50	0	**53**	**87**
5:45AM	12	1	0	**13**	20	0	0	**20**	4	41	0	**45**	**78**
Hourly Total	126	10	0	**136**	64	0	0	**64**	14	141	0	**155**	**355**
6:00AM	17	4	0	**21**	4	0	0	**4**	7	17	0	**24**	**49**
6:15AM	12	1	0	**13**	13	0	0	**13**	11	40	0	**51**	**77**
6:30AM	19	0	0	**19**	14	0	0	**14**	12	56	0	**68**	**101**
6:45AM	26	3	0	**29**	15	0	0	**15**	7	46	0	**53**	**97**
Hourly Total	74	8	0	**82**	46	0	0	**46**	37	159	0	**196**	**324**
7:00AM	14	4	0	**18**	10	0	0	**10**	13	49	0	**62**	**90**
7:15AM	29	2	0	**31**	23	1	0	**24**	15	33	0	**48**	**103**
7:30AM	11	5	0	**16**	16	0	0	**16**	8	26	0	**34**	**66**
7:45AM	28	3	0	**31**	5	0	0	**5**	6	23	0	**29**	**65**
Hourly Total	82	14	0	**96**	54	1	0	**55**	42	131	0	**173**	**324**
8:00AM	21	0	0	**21**	3	1	0	**4**	8	18	0	**26**	**51**
8:15AM	16	4	0	**20**	4	0	0	**4**	13	12	0	**25**	**49**
8:30AM	22	3	0	**25**	2	0	0	**2**	6	18	0	**24**	**51**
8:45AM	16	1	0	**17**	11	1	0	**12**	4	17	0	**21**	**50**
Hourly Total	75	8	0	**83**	20	2	0	**22**	31	65	0	**96**	**201**
9:00AM	17	2	0	**19**	9	0	0	**9**	8	15	0	**23**	**51**
9:15AM	9	2	0	**11**	4	0	0	**4**	2	8	0	**10**	**25**
9:30AM	29	7	0	**36**	8	0	0	**8**	5	13	0	**18**	**62**
9:45AM	29	3	0	**32**	9	0	0	**9**	7	14	0	**21**	**62**
Hourly Total	84	14	0	**98**	30	0	0	**30**	22	50	0	**72**	**200**
10:00AM	14	3	0	**17**	4	1	0	**5**	6	15	0	**21**	**43**
10:15AM	14	1	0	**15**	13	1	0	**14**	7	21	0	**28**	**57**
10:30AM	14	7	0	**21**	6	1	0	**7**	9	20	0	**29**	**57**
10:45AM	23	2	0	**25**	6	0	0	**6**	8	13	0	**21**	**52**

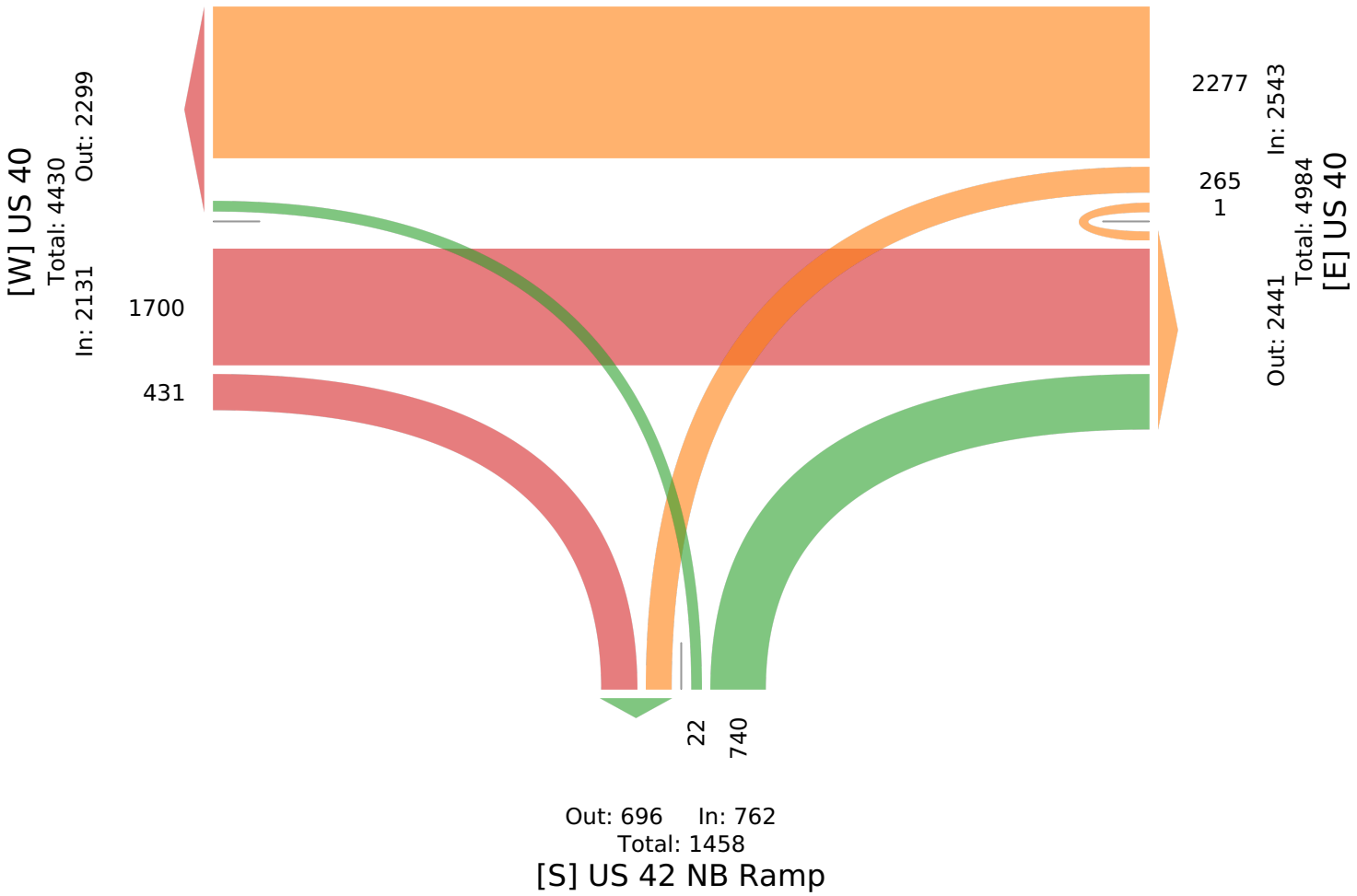
Leg	US 40				US 42 NB Ramp				US 40				
Direction	Westbound				Northbound				Eastbound				
Time	T	L	U	**App**	R	L	U	**App**	R	T	U	**App**	**Int**
Hourly Total	65	13	0	**78**	29	3	0	**32**	30	69	0	**99**	**209**
11:00AM	21	4	0	**25**	6	1	0	**7**	9	20	0	**29**	**61**
11:15AM	18	4	0	**22**	10	0	0	**10**	6	16	0	**22**	**54**
11:30AM	27	8	0	**35**	10	0	0	**10**	7	17	0	**24**	**69**
11:45AM	17	4	0	**21**	9	0	0	**9**	3	29	0	**32**	**62**
Hourly Total	83	20	0	**103**	35	1	0	**36**	25	82	0	**107**	**246**
12:00PM	28	10	0	**38**	11	0	0	**11**	4	23	0	**27**	**76**
12:15PM	17	3	0	**20**	10	0	0	**10**	8	24	0	**32**	**62**
12:30PM	26	1	0	**27**	6	0	0	**6**	6	25	0	**31**	**64**
12:45PM	13	6	1	**20**	15	1	0	**16**	6	30	0	**36**	**72**
Hourly Total	84	20	1	**105**	42	1	0	**43**	24	102	0	**126**	**274**
1:00PM	27	6	0	**33**	11	0	0	**11**	5	25	0	**30**	**74**
1:15PM	30	1	0	**31**	10	1	0	**11**	8	17	0	**25**	**67**
1:30PM	27	1	0	**28**	10	2	0	**12**	9	22	0	**31**	**71**
1:45PM	25	4	0	**29**	12	0	0	**12**	3	20	0	**23**	**64**
Hourly Total	109	12	0	**121**	43	3	0	**46**	25	84	0	**109**	**276**
2:00PM	32	5	0	**37**	7	0	0	**7**	6	14	0	**20**	**64**
2:15PM	33	6	0	**39**	16	1	0	**17**	15	24	0	**39**	**95**
2:30PM	87	3	0	**90**	5	0	0	**5**	7	16	0	**23**	**118**
2:45PM	66	7	0	**73**	14	1	0	**15**	11	23	0	**34**	**122**
Hourly Total	218	21	0	**239**	42	2	0	**44**	39	77	0	**116**	**399**
3:00PM	56	3	0	**59**	18	0	0	**18**	7	30	0	**37**	**114**
3:15PM	43	2	0	**45**	14	0	0	**14**	7	45	0	**52**	**111**
3:30PM	85	7	0	**92**	14	2	0	**16**	13	35	0	**48**	**156**
3:45PM	64	8	0	**72**	16	0	0	**16**	12	36	0	**48**	**136**
Hourly Total	248	20	0	**268**	62	2	0	**64**	39	146	0	**185**	**517**
4:00PM	69	5	0	**74**	17	1	0	**18**	6	30	0	**36**	**128**
4:15PM	68	5	0	**73**	16	1	0	**17**	3	25	0	**28**	**118**
4:30PM	61	6	0	**67**	12	2	0	**14**	4	21	0	**25**	**106**
4:45PM	52	4	0	**56**	11	0	0	**11**	4	15	0	**19**	**86**
Hourly Total	250	20	0	**270**	56	4	0	**60**	17	91	0	**108**	**438**
5:00PM	46	3	0	**49**	10	0	0	**10**	5	23	0	**28**	**87**
5:15PM	45	7	0	**52**	10	0	0	**10**	5	34	0	**39**	**101**
5:30PM	54	7	0	**61**	13	0	0	**13**	11	59	0	**70**	**144**
5:45PM	37	3	0	**40**	20	0	0	**20**	8	41	0	**49**	**109**
Hourly Total	182	20	0	**202**	53	0	0	**53**	29	157	0	**186**	**441**
6:00PM	43	5	0	**48**	8	1	0	**9**	5	53	0	**58**	**115**
6:15PM	63	6	0	**69**	15	0	0	**15**	3	43	0	**46**	**130**
6:30PM	30	2	0	**32**	6	2	0	**8**	5	15	0	**20**	**60**
6:45PM	20	2	0	**22**	1	0	0	**1**	1	9	0	**10**	**33**
Hourly Total	156	15	0	**171**	30	3	0	**33**	14	120	0	**134**	**338**
7:00PM	22	2	0	**24**	11	0	0	**11**	5	7	0	**12**	**47**
7:15PM	12	1	0	**13**	3	0	0	**3**	4	10	0	**14**	**30**
7:30PM	18	0	0	**18**	6	0	0	**6**	7	2	0	**9**	**33**
7:45PM	15	3	0	**18**	6	0	0	**6**	2	4	0	**6**	**30**
Hourly Total	67	6	0	**73**	26	0	0	**26**	18	23	0	**41**	**140**
8:00PM	11	1	0	**12**	8	0	0	**8**	0	11	0	**11**	**31**
8:15PM	10	1	0	**11**	6	0	0	**6**	3	6	0	**9**	**26**
8:30PM	8	5	0	**13**	8	0	0	**8**	2	5	0	**7**	**28**
8:45PM	9	0	0	**9**	6	0	0	**6**	0	12	0	**12**	**27**
Hourly Total	38	7	0	**45**	28	0	0	**28**	5	34	0	**39**	**112**
9:00PM	11	1	0	**12**	2	0	0	**2**	2	6	0	**8**	**22**
9:15PM	8	2	0	**10**	6	0	0	**6**	5	6	0	**11**	**27**
9:30PM	10	2	0	**12**	4	0	0	**4**	0	7	0	**7**	**23**
9:45PM	9	4	0	**13**	5	0	0	**5**	0	8	0	**8**	**26**
Hourly Total	38	9	0	**47**	17	0	0	**17**	7	27	0	**34**	**98**
10:00PM	4	2	0	**6**	2	0	0	**2**	0	8	0	**8**	**16**
10:15PM	9	0	0	**9**	3	0	0	**3**	2	7	0	**9**	**21**
10:30PM	9	0	0	**9**	2	0	0	**2**	3	7	0	**10**	**21**
10:45PM	12	1	0	**13**	3	0	0	**3**	0	3	0	**3**	**19**

Leg Direction	US 40 Westbound				US 42 NB Ramp Northbound				US 40 Eastbound				
Time	T	L	U	**App**	R	L	U	**App**	R	T	U	**App**	**Int**
Hourly Total	34	3	0	**37**	10	0	0	**10**	5	25	0	**30**	**77**
11:00PM	5	0	0	**5**	2	0	0	**2**	0	2	0	**2**	**9**
11:15PM	7	1	0	**8**	1	0	0	**1**	2	3	0	**5**	**14**
11:30PM	5	1	0	**6**	1	0	0	**1**	0	6	0	**6**	**13**
11:45PM	7	1	0	**8**	1	0	0	**1**	0	1	0	**1**	**10**
Hourly Total	24	3	0	**27**	5	0	0	**5**	2	12	0	**14**	**46**
Total	2277	265	1	**2543**	740	22	0	**762**	431	1700	0	**2131**	**5436**
% Approach	89.5%	10.4%	0%	**-**	97.1%	2.9%	0%	**-**	20.2%	79.8%	0%	**-**	-
% Total	41.9%	4.9%	0%	**46.8%**	13.6%	0.4%	0%	**14.0%**	7.9%	31.3%	0%	**39.2%**	-
Lights	2096	218	1	**2315**	670	20	0	**690**	412	1571	0	**1983**	4988
% Lights	92.1%	82.3%	100%	**91.0%**	90.5%	90.9%	0%	**90.6%**	95.6%	92.4%	0%	**93.1%**	91.8%
Articulated Trucks	88	29	0	**117**	44	0	0	**44**	5	50	0	**55**	216
% Articulated Trucks	3.9%	10.9%	0%	**4.6%**	5.9%	0%	0%	**5.8%**	1.2%	2.9%	0%	**2.6%**	4.0%
Buses and Single-Unit Trucks	93	18	0	**111**	26	2	0	**28**	14	79	0	**93**	232
% Buses and Single-Unit Trucks	4.1%	6.8%	0%	**4.4%**	3.5%	9.1%	0%	**3.7%**	3.2%	4.6%	0%	**4.4%**	4.3%

*L: Left, R: Right, T: Thru, U: U-Turn

US 40 & US 42 NB Ramp - TMC
Wed Nov 13, 2024
Full Length (12 AM-12 AM (+1))
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1247846, Location: 39.938164, -83.395961

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US



US 40 & US 42 NB Ramp - TMC

Wed Nov 13, 2024
AM Peak (Nov 13 2024 6:30AM - 7:30 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1247846, Location: 39.938164, -83.395961

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US

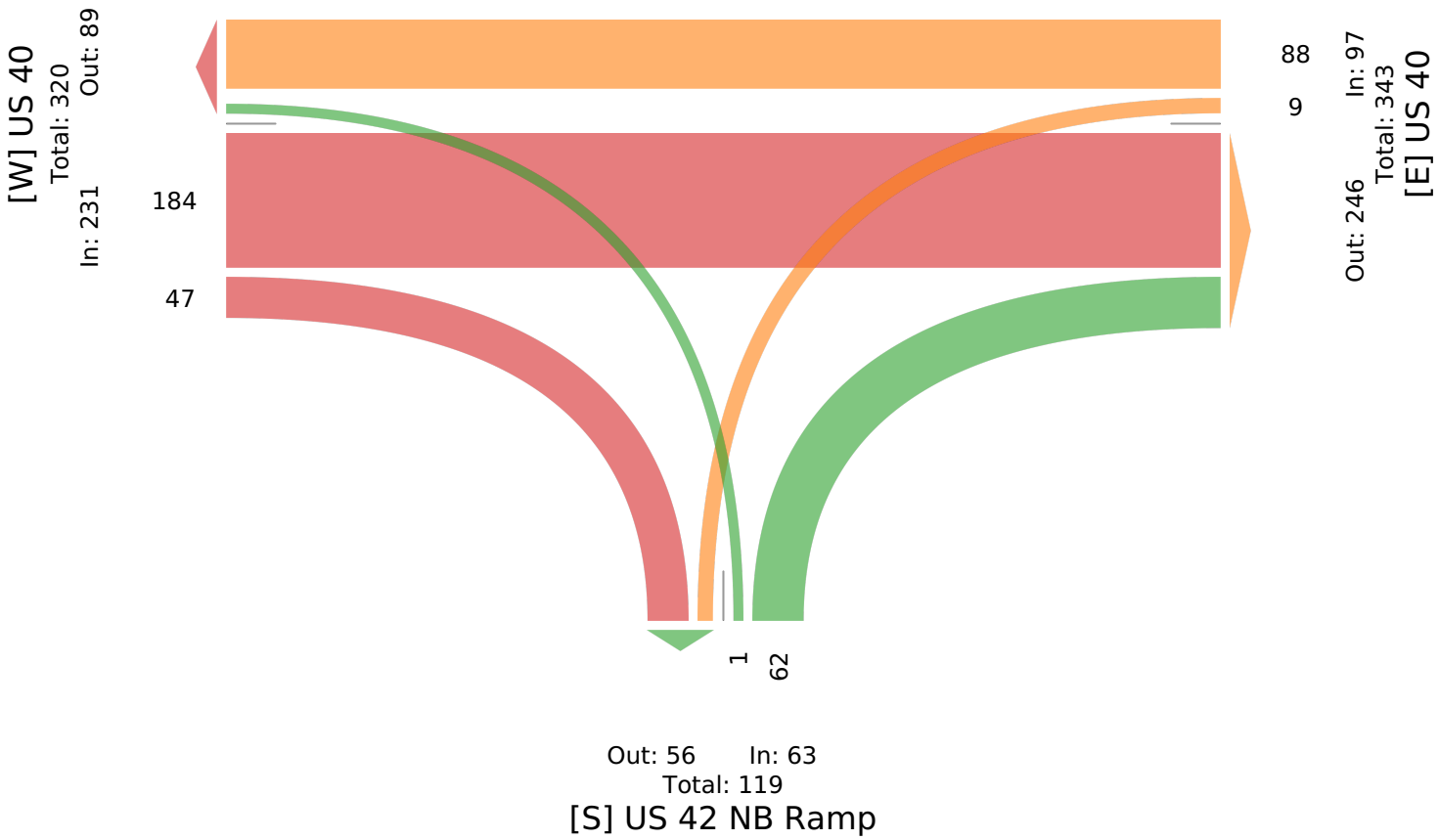
Leg / Direction	US 40 Westbound				US 42 NB Ramp Northbound				US 40 Eastbound				
Time	T	L	U	**App**	R	L	U	**App**	R	T	U	**App**	**Int**
2024-11-13 6:30AM	19	0	0	**19**	14	0	0	**14**	12	56	0	**68**	**101**
6:45AM	26	3	0	**29**	15	0	0	**15**	7	46	0	**53**	**97**
7:00AM	14	4	0	**18**	10	0	0	**10**	13	49	0	**62**	**90**
7:15AM	29	2	0	**31**	23	1	0	**24**	15	33	0	**48**	**103**
Total	88	9	0	**97**	62	1	0	**63**	47	184	0	**231**	**391**
% Approach	90.7%	9.3%	0%	**-**	98.4%	1.6%	0%	**-**	20.3%	79.7%	0%	**-**	-
% Total	22.5%	2.3%	0%	**24.8%**	15.9%	0.3%	0%	**16.1%**	12.0%	47.1%	0%	**59.1%**	-
PHF	0.759	0.563	-	**0.782**	0.674	0.250	-	**0.656**	0.783	0.821	-	**0.849**	0.949
Lights	83	8	0	**91**	59	1	0	**60**	47	182	0	**229**	380
% Lights	94.3%	88.9%	0%	**93.8%**	95.2%	100%	0%	**95.2%**	100%	98.9%	0%	**99.1%**	97.2%
Articulated Trucks	2	0	0	**2**	0	0	0	**0**	0	1	0	**1**	3
% Articulated Trucks	2.3%	0%	0%	**2.1%**	0%	0%	0%	**0%**	0%	0.5%	0%	**0.4%**	0.8%
Buses and Single-Unit Trucks	3	1	0	**4**	3	0	0	**3**	0	1	0	**1**	8
% Buses and Single-Unit Trucks	3.4%	11.1%	0%	**4.1%**	4.8%	0%	0%	**4.8%**	0%	0.5%	0%	**0.4%**	2.0%

*L: Left, R: Right, T: Thru, U: U-Turn

US 40 & US 42 NB Ramp - TMC
Wed Nov 13, 2024
AM Peak (Nov 13 2024 6:30AM - 7:30 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1247846, Location: 39.938164, -83.395961

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US



US 40 & US 42 NB Ramp - TMC

Wed Nov 13, 2024
Midday Peak (Nov 13 2024 12:45PM - 1:45 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1247846, Location: 39.938164, -83.395961

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US

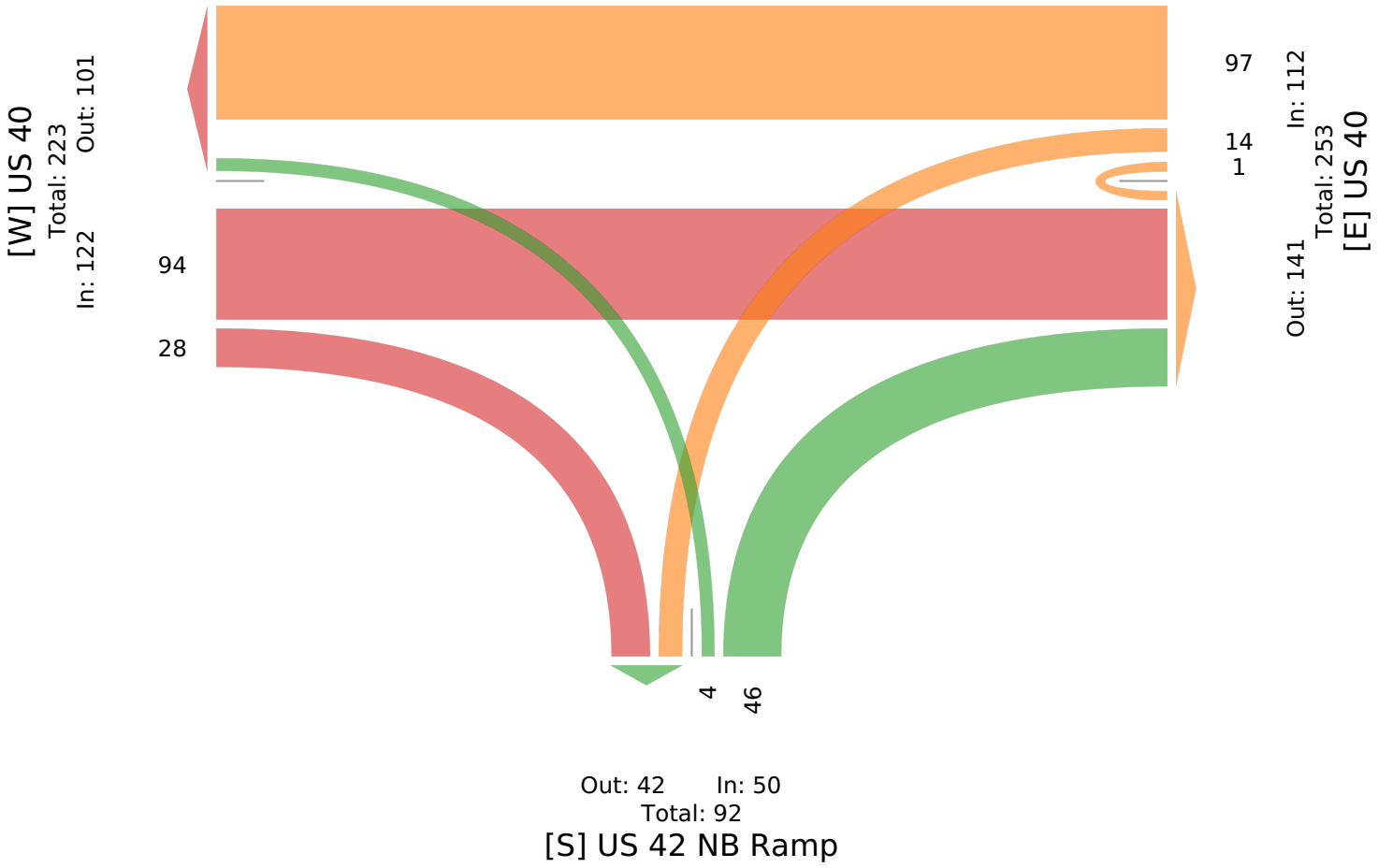
Leg / Direction	US 40 Westbound				US 42 NB Ramp Northbound				US 40 Eastbound				
Time	T	L	U	**App**	R	L	U	**App**	R	T	U	**App**	**Int**
2024-11-13 12:45PM	13	6	1	**20**	15	1	0	**16**	6	30	0	**36**	**72**
1:00PM	27	6	0	**33**	11	0	0	**11**	5	25	0	**30**	**74**
1:15PM	30	1	0	**31**	10	1	0	**11**	8	17	0	**25**	**67**
1:30PM	27	1	0	**28**	10	2	0	**12**	9	22	0	**31**	**71**
Total	97	14	1	**112**	46	4	0	**50**	28	94	0	**122**	**284**
% Approach	86.6%	12.5%	0.9%	**-**	92.0%	8.0%	0%	**-**	23.0%	77.0%	0%	**-**	-
% Total	34.2%	4.9%	0.4%	**39.4%**	16.2%	1.4%	0%	**17.6%**	9.9%	33.1%	0%	**43.0%**	-
PHF	0.808	0.583	0.250	**0.848**	0.767	0.500	-	**0.781**	0.778	0.783	-	**0.847**	0.959
Lights	78	9	1	**88**	44	4	0	**48**	24	85	0	**109**	245
% Lights	80.4%	64.3%	100%	**78.6%**	95.7%	100%	0%	**96.0%**	85.7%	90.4%	0%	**89.3%**	86.3%
Articulated Trucks	8	3	0	**11**	1	0	0	**1**	1	2	0	**3**	15
% Articulated Trucks	8.2%	21.4%	0%	**9.8%**	2.2%	0%	0%	**2.0%**	3.6%	2.1%	0%	**2.5%**	5.3%
Buses and Single-Unit Trucks	11	2	0	**13**	1	0	0	**1**	3	7	0	**10**	24
% Buses and Single-Unit Trucks	11.3%	14.3%	0%	**11.6%**	2.2%	0%	0%	**2.0%**	10.7%	7.4%	0%	**8.2%**	8.5%

*L: Left, R: Right, T: Thru, U: U-Turn

US 40 & US 42 NB Ramp - TMC
Wed Nov 13, 2024
Midday Peak (Nov 13 2024 12:45PM - 1:45 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1247846, Location: 39.938164, -83.395961

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US



US 40 & US 42 NB Ramp - TMC

Wed Nov 13, 2024
PM Peak (Nov 13 2024 3:30PM - 4:30 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1247846, Location: 39.938164, -83.395961

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US

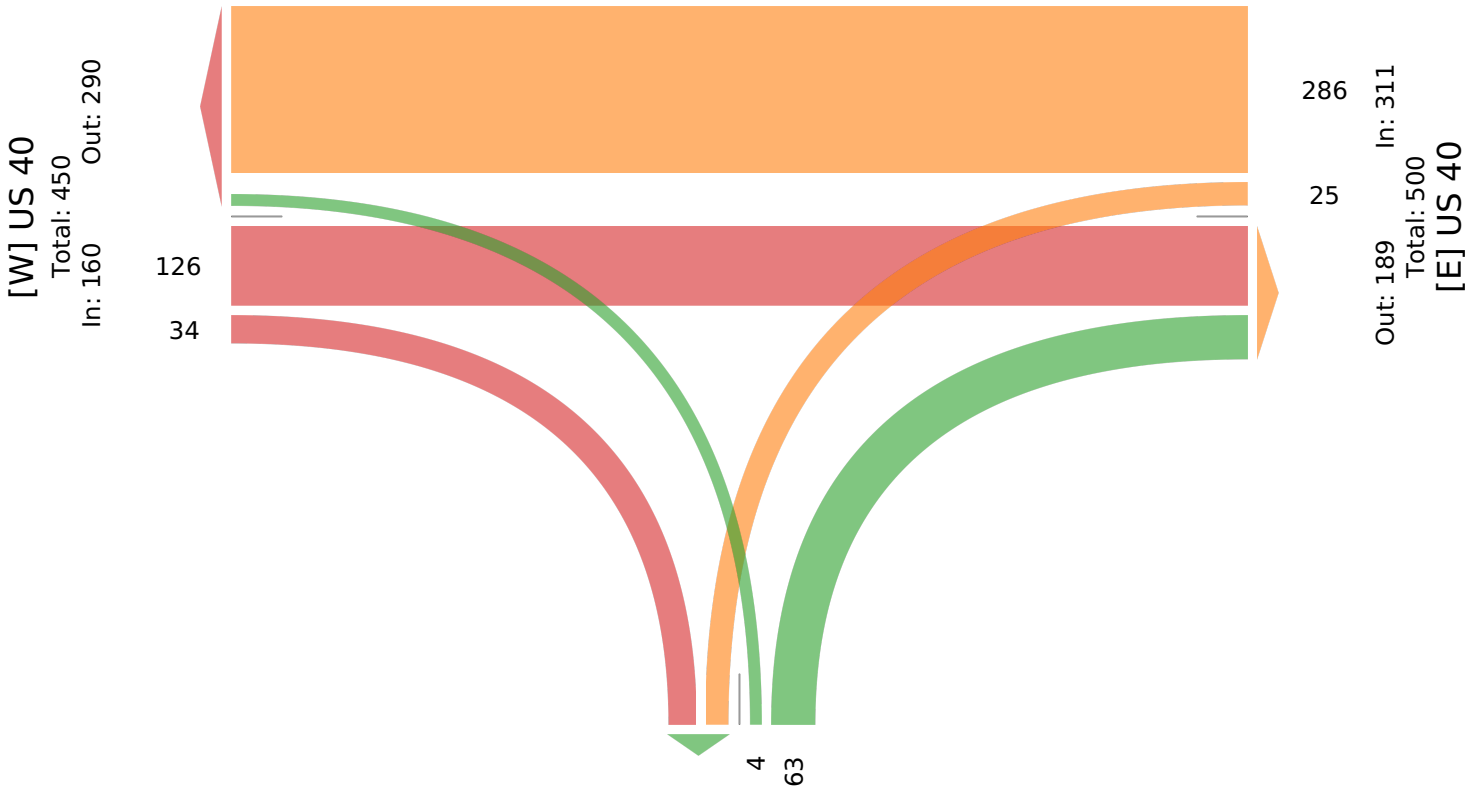
Leg	US 40				US 42 NB Ramp				US 40				
Direction	Westbound				Northbound				Eastbound				
Time	T	L	U	**App**	R	L	U	**App**	R	T	U	**App**	**Int**
2024-11-13 3:30PM	85	7	0	**92**	14	2	0	**16**	13	35	0	**48**	**156**
3:45PM	64	8	0	**72**	16	0	0	**16**	12	36	0	**48**	**136**
4:00PM	69	5	0	**74**	17	1	0	**18**	6	30	0	**36**	**128**
4:15PM	68	5	0	**73**	16	1	0	**17**	3	25	0	**28**	**118**
Total	286	25	0	**311**	63	4	0	**67**	34	126	0	**160**	**538**
% Approach	92.0%	8.0%	0%	**-**	94.0%	6.0%	0%	**-**	21.3%	78.8%	0%	**-**	-
% Total	53.2%	4.6%	0%	**57.8%**	11.7%	0.7%	0%	**12.5%**	6.3%	23.4%	0%	**29.7%**	-
PHF	0.841	0.781	-	**0.845**	0.926	0.500	-	**0.931**	0.654	0.875	-	**0.833**	0.862
Lights	279	24	0	**303**	60	4	0	**64**	34	118	0	**152**	519
% Lights	97.6%	96.0%	0%	**97.4%**	95.2%	100%	0%	**95.5%**	100%	93.7%	0%	**95.0%**	96.5%
Articulated Trucks	0	0	0	**0**	2	0	0	**2**	0	3	0	**3**	5
% Articulated Trucks	0%	0%	0%	**0%**	3.2%	0%	0%	**3.0%**	0%	2.4%	0%	**1.9%**	0.9%
Buses and Single-Unit Trucks	7	1	0	**8**	1	0	0	**1**	0	5	0	**5**	14
% Buses and Single-Unit Trucks	2.4%	4.0%	0%	**2.6%**	1.6%	0%	0%	**1.5%**	0%	4.0%	0%	**3.1%**	2.6%

*L: Left, R: Right, T: Thru, U: U-Turn

US 40 & US 42 NB Ramp - TMC
Wed Nov 13, 2024
PM Peak (Nov 13 2024 3:30PM - 4:30 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1247846, Location: 39.938164, -83.395961

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US



US 40 & US 42 SB Ramp - TMC

Wed Nov 13, 2024
Full Length (12 AM-12 AM (+1))
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1247830, Location: 39.937991, -83.399851

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US

Leg	US 42 SB Ramp					US 40					Buckeye Ford drive					US 40					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2024-11-13 12:00AM	0	0	1	0	**1**	0	6	0	0	**6**	0	0	0	0	**0**	0	2	0	0	**2**	**9**
12:15AM	0	0	1	0	**1**	2	2	0	0	**4**	0	0	0	0	**0**	0	0	1	0	**1**	**6**
12:30AM	1	0	1	0	**2**	2	9	0	0	**11**	0	0	0	0	**0**	0	0	0	0	**0**	**13**
12:45AM	0	0	1	0	**1**	0	10	0	0	**10**	0	0	0	0	**0**	0	0	0	0	**0**	**11**
Hourly Total	1	0	4	0	**5**	4	27	0	0	**31**	0	0	0	0	**0**	0	2	1	0	**3**	**39**
1:00AM	2	0	0	0	**2**	3	3	0	0	**6**	0	0	0	0	**0**	0	2	0	0	**2**	**10**
1:15AM	0	0	0	0	**0**	3	6	0	0	**9**	0	0	0	0	**0**	0	1	0	0	**1**	**10**
1:30AM	1	0	0	0	**1**	2	9	0	0	**11**	0	0	0	0	**0**	0	3	0	0	**3**	**15**
1:45AM	0	0	0	0	**0**	1	3	0	0	**4**	0	0	0	0	**0**	0	3	0	0	**3**	**7**
Hourly Total	3	0	0	0	**3**	9	21	0	0	**30**	0	0	0	0	**0**	0	9	0	0	**9**	**42**
2:00AM	0	0	0	0	**0**	3	10	0	0	**13**	0	0	0	0	**0**	0	2	0	0	**2**	**15**
2:15AM	0	0	0	0	**0**	0	5	0	0	**5**	0	0	0	0	**0**	0	1	0	0	**1**	**6**
2:30AM	0	0	0	0	**0**	3	7	0	0	**10**	0	0	0	0	**0**	0	1	0	0	**1**	**11**
2:45AM	1	0	0	0	**1**	2	5	0	0	**7**	0	0	0	0	**0**	0	1	0	0	**1**	**9**
Hourly Total	1	0	0	0	**1**	8	27	0	0	**35**	0	0	0	0	**0**	0	5	0	0	**5**	**41**
3:00AM	1	0	1	0	**2**	6	23	0	0	**29**	0	0	0	0	**0**	0	1	0	0	**1**	**32**
3:15AM	0	0	0	0	**0**	2	18	0	0	**20**	0	0	0	0	**0**	0	6	0	0	**6**	**26**
3:30AM	0	0	0	0	**0**	2	6	0	0	**8**	0	0	0	0	**0**	0	10	0	0	**10**	**18**
3:45AM	0	0	1	0	**1**	3	0	0	0	**3**	0	0	0	0	**0**	0	8	0	0	**8**	**12**
Hourly Total	1	0	2	0	**3**	13	47	0	0	**60**	0	0	0	0	**0**	0	25	0	0	**25**	**88**
4:00AM	2	0	0	0	**2**	1	7	0	0	**8**	0	0	0	0	**0**	0	7	0	0	**7**	**17**
4:15AM	1	0	0	0	**1**	1	11	0	0	**12**	0	0	0	0	**0**	0	18	0	0	**18**	**31**
4:30AM	0	0	1	0	**1**	5	30	0	0	**35**	0	0	0	0	**0**	0	18	0	0	**18**	**54**
4:45AM	0	0	0	0	**0**	3	28	0	0	**31**	0	0	0	0	**0**	0	21	0	0	**21**	**52**
Hourly Total	3	0	1	0	**4**	10	76	0	0	**86**	0	0	0	0	**0**	0	64	0	0	**64**	**154**
5:00AM	0	0	1	0	**1**	1	32	0	0	**33**	0	0	0	0	**0**	0	21	0	0	**21**	**55**
5:15AM	1	0	0	0	**1**	6	67	0	0	**73**	0	0	0	0	**0**	0	38	0	0	**38**	**112**
5:30AM	3	0	2	0	**5**	4	11	0	0	**15**	0	0	0	0	**0**	0	52	0	0	**52**	**72**
5:45AM	4	0	1	0	**5**	2	8	0	0	**10**	0	0	0	0	**0**	0	43	0	0	**43**	**58**
Hourly Total	8	0	4	0	**12**	13	118	0	0	**131**	0	0	0	0	**0**	0	154	0	0	**154**	**297**
6:00AM	3	0	2	0	**5**	2	16	0	0	**18**	0	0	0	0	**0**	0	24	0	0	**24**	**47**
6:15AM	6	0	4	0	**10**	2	8	0	0	**10**	0	0	0	0	**0**	0	50	0	0	**50**	**70**
6:30AM	10	0	2	0	**12**	2	19	0	0	**21**	0	0	0	0	**0**	0	64	0	0	**64**	**97**
6:45AM	11	0	1	0	**12**	4	23	0	0	**27**	0	0	0	0	**0**	0	55	0	0	**55**	**94**
Hourly Total	30	0	9	0	**39**	10	66	0	0	**76**	0	0	0	0	**0**	0	193	0	0	**193**	**308**
7:00AM	7	0	1	0	**8**	1	13	0	0	**14**	0	0	0	0	**0**	3	56	0	0	**59**	**81**
7:15AM	9	0	3	0	**12**	1	25	2	0	**28**	0	0	1	0	**1**	1	45	0	0	**46**	**87**
7:30AM	7	2	3	0	**12**	2	11	0	0	**13**	0	0	0	0	**0**	1	30	0	0	**31**	**56**
7:45AM	8	0	2	0	**10**	9	17	1	0	**27**	2	0	0	0	**2**	9	26	0	0	**35**	**74**
Hourly Total	31	2	9	0	**42**	13	66	3	0	**82**	2	0	1	0	**3**	14	157	0	0	**171**	**298**
8:00AM	11	0	3	0	**14**	4	19	0	0	**23**	0	0	0	0	**0**	1	24	0	0	**25**	**62**
8:15AM	2	1	2	0	**5**	2	13	0	0	**15**	1	0	0	0	**1**	0	21	1	0	**22**	**43**
8:30AM	5	0	0	0	**5**	6	16	1	0	**23**	1	0	0	0	**1**	1	23	0	0	**24**	**53**
8:45AM	8	1	3	0	**12**	8	10	0	0	**18**	2	0	1	0	**3**	2	17	0	0	**19**	**52**
Hourly Total	26	2	8	0	**36**	20	58	1	0	**79**	4	0	1	0	**5**	4	85	1	0	**90**	**210**
9:00AM	9	0	3	0	**12**	3	15	1	0	**19**	1	0	1	0	**2**	1	19	0	0	**20**	**53**
9:15AM	5	1	3	0	**9**	1	7	0	0	**8**	0	0	0	0	**0**	0	7	0	0	**7**	**24**
9:30AM	6	0	1	0	**7**	10	21	0	0	**31**	1	0	1	0	**2**	0	17	0	0	**17**	**57**
9:45AM	6	1	3	0	**10**	9	18	1	0	**28**	0	1	0	0	**1**	1	18	0	0	**19**	**58**
Hourly Total	26	2	10	0	**38**	23	61	2	0	**86**	2	1	2	0	**5**	2	61	0	0	**63**	**192**
10:00AM	5	1	3	0	**9**	6	9	1	0	**16**	1	0	0	0	**1**	1	17	0	0	**18**	**44**
10:15AM	7	2	3	0	**12**	2	14	1	0	**17**	0	0	0	0	**0**	1	23	2	0	**26**	**55**
10:30AM	3	1	3	0	**7**	5	13	0	0	**18**	3	0	1	0	**4**	1	23	0	0	**24**	**53**
10:45AM	6	0	5	0	**11**	4	18	1	0	**23**	2	0	0	0	**2**	0	14	0	0	**14**	**50**

Leg	US 42 SB Ramp					US 40					Buckeye Ford drive					US 40					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	**Int**
Hourly Total	21	4	14	0	**39**	17	54	3	0	**74**	6	0	1	0	**7**	3	77	2	0	**82**	**202**
11:00AM	9	0	7	0	**16**	2	18	2	0	**22**	1	0	0	0	**1**	1	21	0	0	**22**	**61**
11:15AM	4	1	4	0	**9**	3	17	0	0	**20**	0	0	1	0	**1**	1	19	1	0	**21**	**51**
11:30AM	6	0	4	0	**10**	4	21	0	0	**25**	1	0	1	0	**2**	1	19	3	0	**23**	**60**
11:45AM	5	0	8	0	**13**	6	12	0	1	**19**	1	0	0	0	**1**	1	22	0	0	**23**	**56**
Hourly Total	24	1	23	0	**48**	15	68	2	1	**86**	3	0	2	0	**5**	4	81	4	0	**89**	**228**
12:00PM	5	0	4	0	**9**	13	16	0	0	**29**	5	0	1	0	**6**	1	21	0	0	**22**	**66**
12:15PM	7	0	8	0	**15**	5	12	1	0	**18**	1	1	0	0	**2**	1	24	0	0	**25**	**60**
12:30PM	11	1	3	0	**15**	14	12	1	0	**27**	0	0	0	0	**0**	1	26	0	0	**27**	**69**
12:45PM	3	0	5	0	**8**	2	13	1	0	**16**	0	0	0	0	**0**	0	32	0	0	**32**	**56**
Hourly Total	26	1	20	0	**47**	34	53	3	0	**90**	6	1	1	0	**8**	3	103	0	0	**106**	**251**
1:00PM	5	0	4	0	**9**	7	16	3	0	**26**	2	0	2	0	**4**	0	27	0	0	**27**	**66**
1:15PM	8	0	2	0	**10**	12	19	0	0	**31**	1	0	2	0	**3**	1	19	0	0	**20**	**64**
1:30PM	12	0	1	0	**13**	4	23	0	0	**27**	0	0	2	0	**2**	1	29	0	0	**30**	**72**
1:45PM	10	0	2	0	**12**	7	22	0	0	**29**	0	0	2	0	**2**	2	18	1	0	**21**	**64**
Hourly Total	35	0	9	0	**44**	30	80	3	0	**113**	3	0	8	0	**11**	4	93	1	0	**98**	**266**
2:00PM	2	0	5	0	**7**	8	21	2	0	**31**	2	0	2	0	**4**	3	16	0	0	**19**	**61**
2:15PM	9	1	2	0	**12**	11	22	1	0	**34**	0	0	1	0	**1**	0	35	1	0	**36**	**83**
2:30PM	7	2	2	0	**11**	18	62	0	0	**80**	0	0	4	0	**4**	1	21	1	0	**23**	**118**
2:45PM	14	2	3	0	**19**	18	57	0	0	**75**	0	0	1	0	**1**	1	32	0	0	**33**	**128**
Hourly Total	32	5	12	0	**49**	55	162	3	0	**220**	2	0	8	0	**10**	5	104	2	0	**111**	**390**
3:00PM	4	0	3	0	**7**	12	44	0	0	**56**	0	0	3	0	**3**	1	35	0	0	**36**	**102**
3:15PM	9	0	1	0	**10**	8	36	1	0	**45**	2	0	1	0	**3**	1	50	0	0	**51**	**109**
3:30PM	18	0	4	0	**22**	22	59	0	0	**81**	0	1	0	0	**1**	1	43	0	0	**44**	**148**
3:45PM	11	1	5	0	**17**	16	51	2	0	**69**	4	0	3	0	**7**	3	39	1	0	**43**	**136**
Hourly Total	42	1	13	0	**56**	58	190	3	0	**251**	6	1	7	0	**14**	6	167	1	0	**174**	**495**
4:00PM	9	0	1	0	**10**	11	54	0	0	**65**	0	0	1	0	**1**	0	35	0	0	**35**	**111**
4:15PM	7	0	1	0	**8**	17	57	0	0	**74**	1	0	3	0	**4**	3	26	0	0	**29**	**115**
4:30PM	10	0	3	0	**13**	14	48	0	0	**62**	2	0	0	0	**2**	0	20	0	0	**20**	**97**
4:45PM	18	0	2	0	**20**	14	38	0	0	**52**	0	0	0	0	**0**	0	16	1	0	**17**	**89**
Hourly Total	44	0	7	0	**51**	56	197	0	0	**253**	3	0	4	0	**7**	3	97	1	0	**101**	**412**
5:00PM	9	1	2	0	**12**	11	36	0	0	**47**	1	0	3	0	**4**	0	27	1	0	**28**	**91**
5:15PM	17	1	4	0	**22**	7	39	1	0	**47**	3	1	3	0	**7**	2	30	0	0	**32**	**108**
5:30PM	9	0	0	1	**10**	12	39	0	0	**51**	4	1	2	0	**7**	2	68	2	0	**72**	**140**
5:45PM	11	0	1	0	**12**	5	34	1	0	**40**	0	0	0	0	**0**	0	48	1	0	**49**	**101**
Hourly Total	46	2	7	1	**56**	35	148	2	0	**185**	8	2	8	0	**18**	4	173	4	0	**181**	**440**
6:00PM	13	0	4	0	**17**	6	36	0	0	**42**	1	0	3	0	**4**	0	53	0	0	**53**	**116**
6:15PM	7	0	3	0	**10**	8	53	1	0	**62**	0	0	0	0	**0**	0	42	0	0	**42**	**114**
6:30PM	3	0	2	0	**5**	6	25	0	0	**31**	0	0	0	0	**0**	0	18	0	0	**18**	**54**
6:45PM	10	0	1	0	**11**	5	19	0	0	**24**	0	0	0	0	**0**	0	9	0	0	**9**	**44**
Hourly Total	33	0	10	0	**43**	25	133	1	0	**159**	1	0	3	0	**4**	0	122	0	0	**122**	**328**
7:00PM	8	1	1	0	**10**	7	11	0	0	**18**	0	0	0	0	**0**	0	11	0	0	**11**	**39**
7:15PM	4	0	1	0	**5**	6	7	0	0	**13**	0	0	0	0	**0**	0	14	1	0	**15**	**33**
7:30PM	3	0	0	0	**3**	4	16	0	0	**20**	0	0	0	0	**0**	0	8	0	0	**8**	**31**
7:45PM	2	0	0	0	**2**	6	9	0	0	**15**	0	0	0	0	**0**	0	6	0	0	**6**	**23**
Hourly Total	17	1	2	0	**20**	23	43	0	0	**66**	0	0	0	0	**0**	0	39	1	0	**40**	**126**
8:00PM	5	0	5	0	**10**	2	8	0	0	**10**	0	0	0	0	**0**	0	6	0	0	**6**	**26**
8:15PM	3	0	1	0	**4**	3	9	0	0	**12**	0	0	0	0	**0**	0	9	0	0	**9**	**25**
8:30PM	5	0	2	0	**7**	2	6	0	0	**8**	0	0	0	0	**0**	0	4	0	0	**4**	**19**
8:45PM	7	0	3	0	**10**	2	6	0	0	**8**	0	0	0	0	**0**	0	9	0	0	**9**	**27**
Hourly Total	20	0	11	0	**31**	9	29	0	0	**38**	0	0	0	0	**0**	0	28	0	0	**28**	**97**
9:00PM	2	0	1	0	**3**	4	6	0	0	**10**	0	0	0	0	**0**	0	8	1	0	**9**	**22**
9:15PM	3	0	2	0	**5**	3	7	0	0	**10**	0	0	0	0	**0**	0	8	0	0	**8**	**23**
9:30PM	2	0	0	0	**2**	5	5	0	0	**10**	0	0	0	0	**0**	0	7	0	0	**7**	**19**
9:45PM	0	0	0	0	**0**	3	4	0	0	**7**	0	0	0	0	**0**	0	8	0	0	**8**	**15**
Hourly Total	7	0	3	0	**10**	15	22	0	0	**37**	0	0	0	0	**0**	0	31	1	0	**32**	**79**
10:00PM	1	0	1	0	**2**	1	3	0	0	**4**	0	0	0	0	**0**	0	7	0	0	**7**	**13**
10:15PM	1	0	1	0	**2**	1	8	0	0	**9**	0	0	0	0	**0**	0	8	0	0	**8**	**19**
10:30PM	2	0	1	0	**3**	1	7	0	0	**8**	0	0	0	0	**0**	0	10	0	0	**10**	**21**
10:45PM	2	0	0	0	**2**	0	14	0	0	**14**	0	0	0	0	**0**	0	2	0	0	**2**	**18**

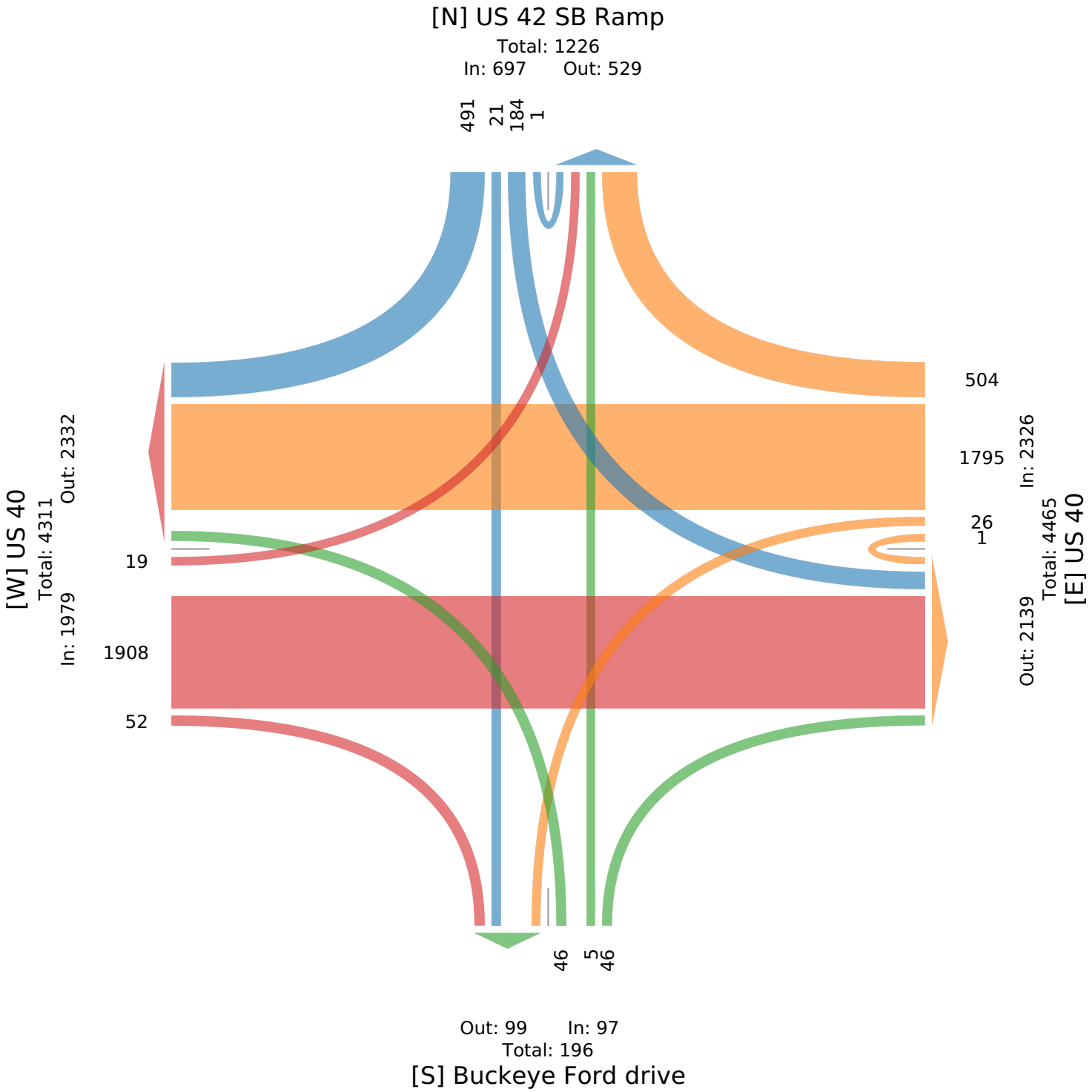
Leg	US 42 SB Ramp					US 40					Buckeye Ford drive					US 40					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	**Int**
Hourly Total	6	0	3	0	**9**	3	32	0	0	**35**	0	0	0	0	**0**	0	27	0	0	**27**	**71**
11:00PM	1	0	0	0	**1**	0	5	0	0	**5**	0	0	0	0	**0**	0	2	0	0	**2**	**8**
11:15PM	0	0	1	0	**1**	2	5	0	0	**7**	0	0	0	0	**0**	0	4	0	0	**4**	**12**
11:30PM	3	0	2	0	**5**	3	2	0	0	**5**	0	0	0	0	**0**	0	5	0	0	**5**	**15**
11:45PM	4	0	0	0	**4**	1	5	0	0	**6**	0	0	0	0	**0**	0	0	0	0	**0**	**10**
Hourly Total	8	0	3	0	**11**	6	17	0	0	**23**	0	0	0	0	**0**	0	11	0	0	**11**	**45**
Total	491	21	184	1	**697**	504	1795	26	1	**2326**	46	5	46	0	**97**	52	1908	19	0	**1979**	**5099**
% Approach	70.4%	3.0%	26.4%	0.1%	**-**	21.7%	77.2%	1.1%	0%	**-**	47.4%	5.2%	47.4%	0%	**-**	2.6%	96.4%	1.0%	0%	**-**	**-**
% Total	9.6%	0.4%	3.6%	0%	**13.7%**	9.9%	35.2%	0.5%	0%	**45.6%**	0.9%	0.1%	0.9%	0%	**1.9%**	1.0%	37.4%	0.4%	0%	**38.8%**	**-**
Lights	467	21	146	1	**635**	442	1670	25	1	**2138**	43	5	45	0	**93**	45	1792	18	0	**1855**	4721
% Lights	95.1%	100%	79.3%	100%	**91.1%**	87.7%	93.0%	96.2%	100%	**91.9%**	93.5%	100%	97.8%	0%	**95.9%**	86.5%	93.9%	94.7%	0%	**93.7%**	92.6%
Articulated Trucks	3	0	24	0	**27**	40	54	0	0	**94**	0	0	1	0	**1**	2	32	0	0	**34**	156
% Articulated Trucks	0.6%	0%	13.0%	0%	**3.9%**	7.9%	3.0%	0%	0%	**4.0%**	0%	0%	2.2%	0%	**1.0%**	3.8%	1.7%	0%	0%	**1.7%**	3.1%
Buses and Single-Unit Trucks	21	0	14	0	**35**	22	71	1	0	**94**	3	0	0	0	**3**	5	84	1	0	**90**	222
% Buses and Single-Unit Trucks	4.3%	0%	7.6%	0%	**5.0%**	4.4%	4.0%	3.8%	0%	**4.0%**	6.5%	0%	0%	0%	**3.1%**	9.6%	4.4%	5.3%	0%	**4.5%**	4.4%

*L: Left, R: Right, T: Thru, U: U-Turn

US 40 & US 42 SB Ramp - TMC
Wed Nov 13, 2024
Full Length (12 AM-12 AM (+1))
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1247830, Location: 39.937991, -83.399851

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US



US 40 & US 42 SB Ramp - TMC

Wed Nov 13, 2024
AM Peak (Nov 13 2024 6:30AM - 7:30 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1247830, Location: 39.937991, -83.399851

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US

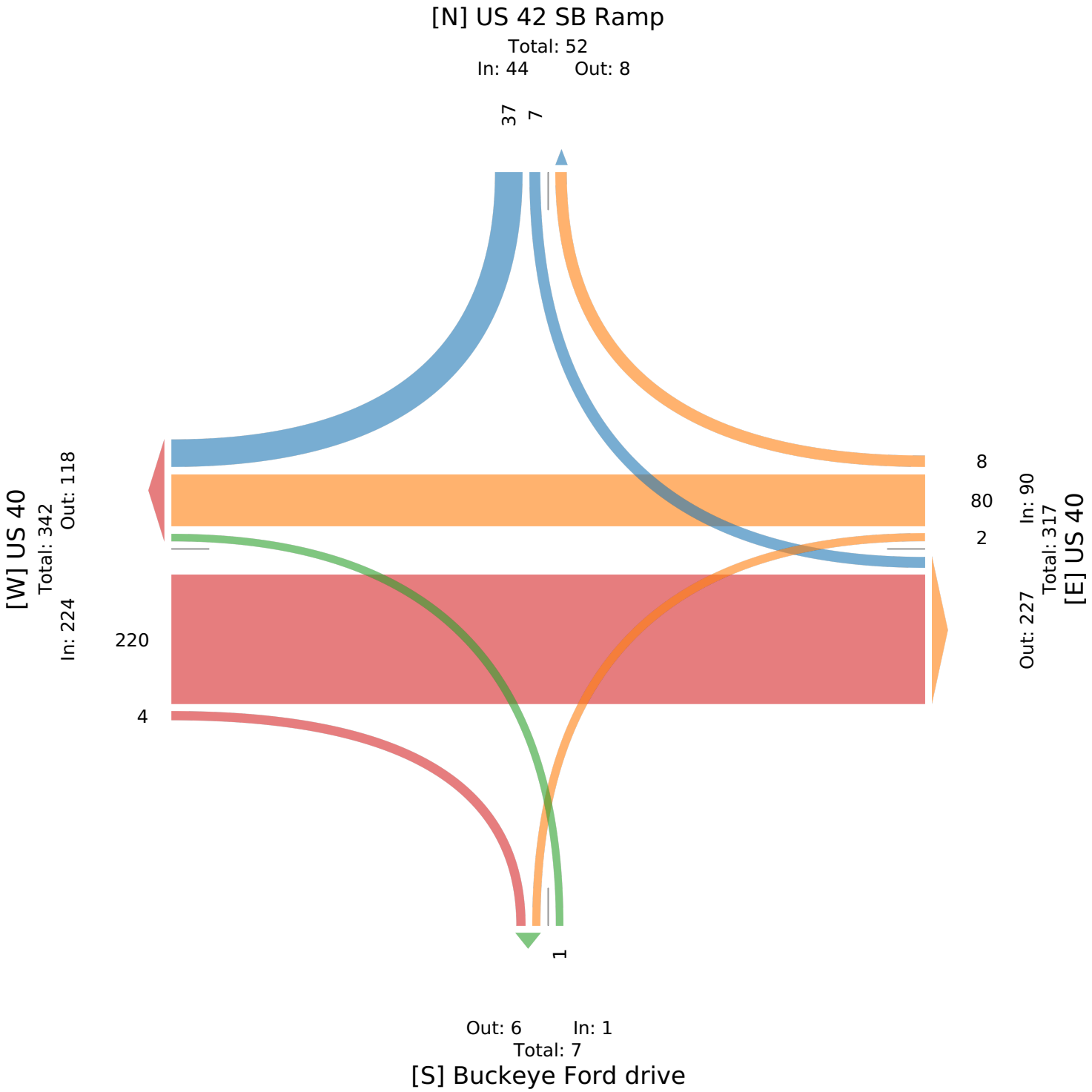
Leg	US 42 SB Ramp					US 40					Buckeye Ford drive					US 40					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2024-11-13 6:30AM	10	0	2	0	**12**	2	19	0	0	**21**	0	0	0	0	**0**	0	64	0	0	**64**	**97**
6:45AM	11	0	1	0	**12**	4	23	0	0	**27**	0	0	0	0	**0**	0	55	0	0	**55**	**94**
7:00AM	7	0	1	0	**8**	1	13	0	0	**14**	0	0	0	0	**0**	3	56	0	0	**59**	**81**
7:15AM	9	0	3	0	**12**	1	25	2	0	**28**	0	0	1	0	**1**	1	45	0	0	**46**	**87**
Total	37	0	7	0	**44**	8	80	2	0	**90**	0	0	1	0	**1**	4	220	0	0	**224**	**359**
% Approach	84.1%	0%	15.9%	0%	**-**	8.9%	88.9%	2.2%	0%	**-**	0%	0%	100%	0%	**-**	1.8%	98.2%	0%	0%	**-**	-
% Total	10.3%	0%	1.9%	0%	**12.3%**	2.2%	22.3%	0.6%	0%	**25.1%**	0%	0%	0.3%	0%	**0.3%**	1.1%	61.3%	0%	0%	**62.4%**	-
PHF	0.841	-	0.583	-	**0.917**	0.500	0.800	0.250	-	**0.804**	-	-	0.250	-	**0.250**	0.333	0.859	-	-	**0.875**	0.925
Lights	36	0	7	0	**43**	4	79	2	0	**85**	0	0	0	0	**0**	3	217	0	0	**220**	348
% Lights	97.3%	0%	100%	0%	**97.7%**	50.0%	98.8%	100%	0%	**94.4%**	0%	0%	0%	0%	**0%**	75.0%	98.6%	0%	0%	**98.2%**	96.9%
Articulated Trucks	1	0	0	0	**1**	2	0	0	0	**2**	0	0	1	0	**1**	1	1	0	0	**2**	6
% Articulated Trucks	2.7%	0%	0%	0%	**2.3%**	25.0%	0%	0%	0%	**2.2%**	0%	0%	100%	0%	**100%**	25.0%	0.5%	0%	0%	**0.9%**	1.7%
Buses and Single-Unit Trucks	0	0	0	0	**0**	2	1	0	0	**3**	0	0	0	0	**0**	0	2	0	0	**2**	5
% Buses and Single-Unit Trucks	0%	0%	0%	0%	**0%**	25.0%	1.3%	0%	0%	**3.3%**	0%	0%	0%	0%	**0%**	0%	0.9%	0%	0%	**0.9%**	1.4%

*L: Left, R: Right, T: Thru, U: U-Turn

US 40 & US 42 SB Ramp - TMC
Wed Nov 13, 2024
AM Peak (Nov 13 2024 6:30AM - 7:30 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1247830, Location: 39.937991, -83.399851

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US



US 40 & US 42 SB Ramp - TMC

Wed Nov 13, 2024
Midday Peak (Nov 13 2024 1PM - 2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1247830, Location: 39.937991, -83.399851

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US

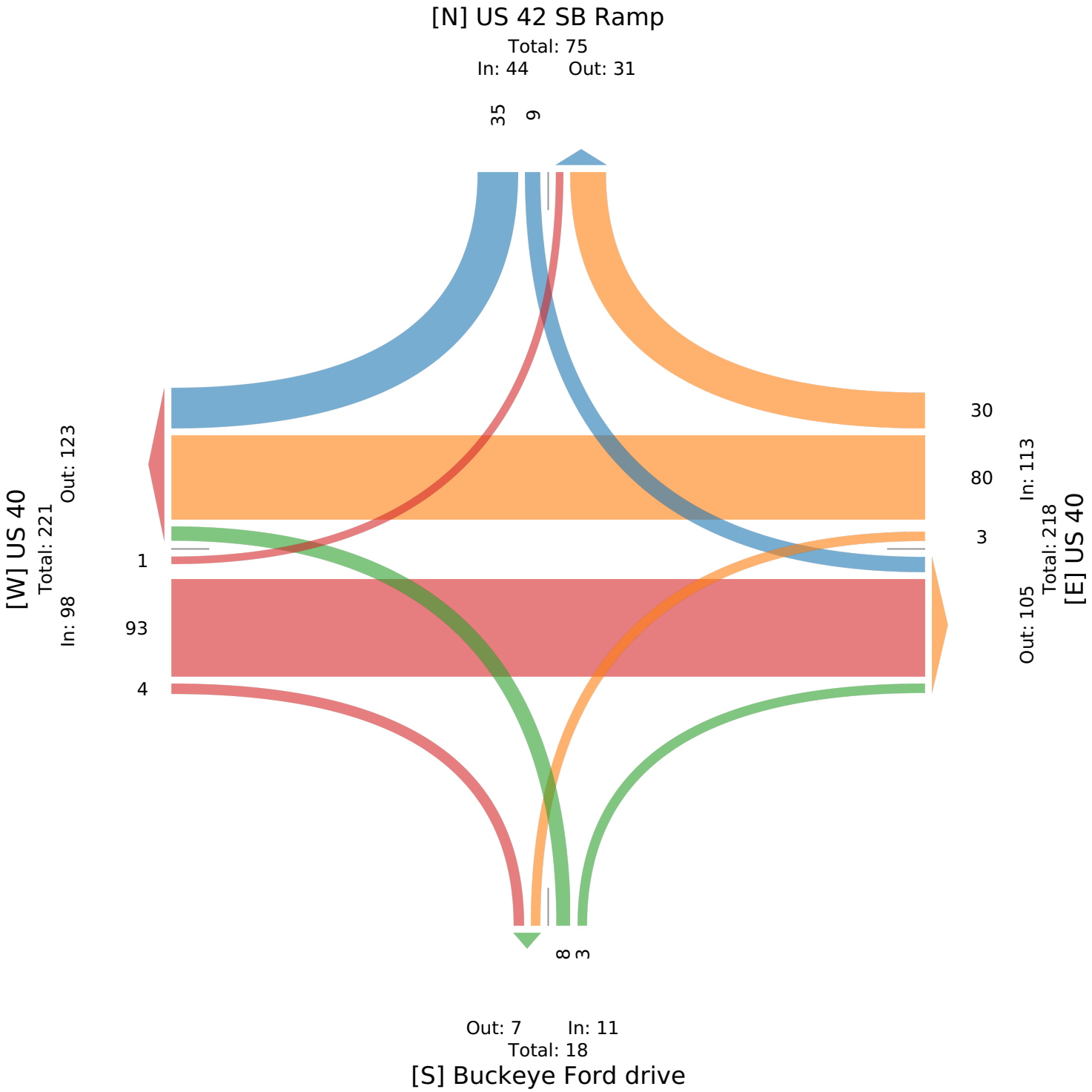
Leg / Direction	US 42 SB Ramp Southbound					US 40 Westbound					Buckeye Ford drive Northbound					US 40 Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2024-11-13 1:00PM	5	0	4	0	**9**	7	16	3	0	**26**	2	0	2	0	**4**	0	27	0	0	**27**	**66**
1:15PM	8	0	2	0	**10**	12	19	0	0	**31**	1	0	2	0	**3**	1	19	0	0	**20**	**64**
1:30PM	12	0	1	0	**13**	4	23	0	0	**27**	0	0	2	0	**2**	1	29	0	0	**30**	**72**
1:45PM	10	0	2	0	**12**	7	22	0	0	**29**	0	0	2	0	**2**	2	18	1	0	**21**	**64**
Total	35	0	9	0	**44**	30	80	3	0	**113**	3	0	8	0	**11**	4	93	1	0	**98**	**266**
% Approach	79.5%	0%	20.5%	0%	**-**	26.5%	70.8%	2.7%	0%	**-**	27.3%	0%	72.7%	0%	**-**	4.1%	94.9%	1.0%	0%	**-**	-
% Total	13.2%	0%	3.4%	0%	**16.5%**	11.3%	30.1%	1.1%	0%	**42.5%**	1.1%	0%	3.0%	0%	**4.1%**	1.5%	35.0%	0.4%	0%	**36.8%**	-
PHF	0.729	-	0.563	-	**0.846**	0.625	0.870	0.250	-	**0.911**	0.375	-	1.000	-	**0.688**	0.500	0.802	0.250	-	**0.817**	0.924
Lights	33	0	7	0	**40**	24	68	3	0	**95**	3	0	8	0	**11**	4	85	1	0	**90**	236
% Lights	94.3%	0%	77.8%	0%	**90.9%**	80.0%	85.0%	100%	0%	**84.1%**	100%	0%	100%	0%	**100%**	100%	91.4%	100%	0%	**91.8%**	88.7%
Articulated Trucks	0	0	0	0	**0**	4	3	0	0	**7**	0	0	0	0	**0**	0	1	0	0	**1**	8
% Articulated Trucks	0%	0%	0%	0%	**0%**	13.3%	3.8%	0%	0%	**6.2%**	0%	0%	0%	0%	**0%**	0%	1.1%	0%	0%	**1.0%**	3.0%
Buses and Single-Unit Trucks	2	0	2	0	**4**	2	9	0	0	**11**	0	0	0	0	**0**	0	7	0	0	**7**	22
% Buses and Single-Unit Trucks	5.7%	0%	22.2%	0%	**9.1%**	6.7%	11.3%	0%	0%	**9.7%**	0%	0%	0%	0%	**0%**	0%	7.5%	0%	0%	**7.1%**	8.3%

*L: Left, R: Right, T: Thru, U: U-Turn

US 40 & US 42 SB Ramp - TMC
Wed Nov 13, 2024
Midday Peak (Nov 13 2024 1PM - 2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1247830, Location: 39.937991, -83.399851

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US



US 40 & US 42 SB Ramp - TMC

Wed Nov 13, 2024
PM Peak (Nov 13 2024 3:30PM - 4:30 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1247830, Location: 39.937991, -83.399851

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US

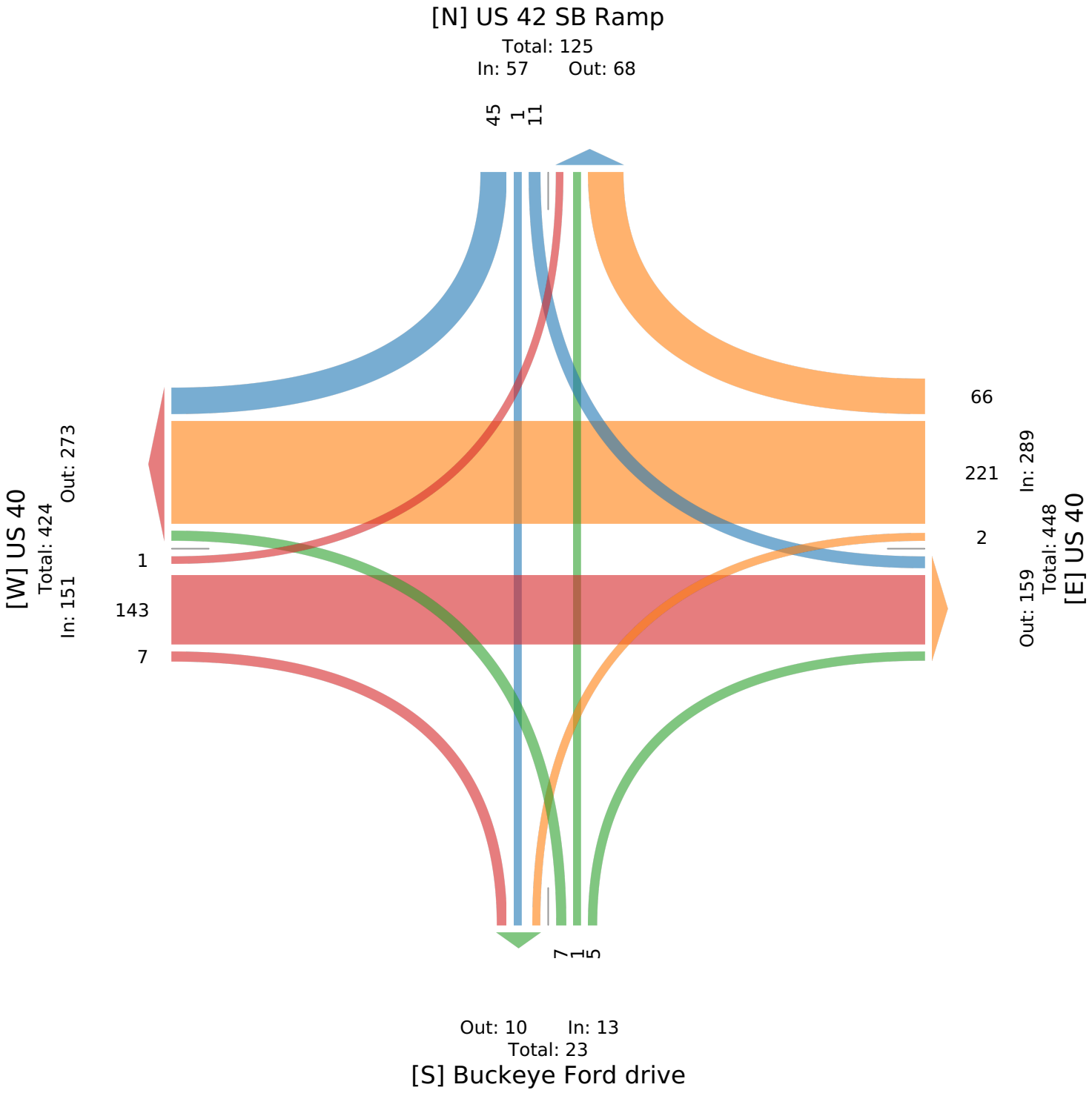
Leg / Direction	US 42 SB Ramp Southbound					US 40 Westbound					Buckeye Ford drive Northbound					US 40 Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2024-11-13 3:30PM	18	0	4	0	**22**	22	59	0	0	**81**	0	1	0	0	**1**	1	43	0	0	**44**	**148**
3:45PM	11	1	5	0	**17**	16	51	2	0	**69**	4	0	3	0	**7**	3	39	1	0	**43**	**136**
4:00PM	9	0	1	0	**10**	11	54	0	0	**65**	0	0	1	0	**1**	0	35	0	0	**35**	**111**
4:15PM	7	0	1	0	**8**	17	57	0	0	**74**	1	0	3	0	**4**	3	26	0	0	**29**	**115**
Total	45	1	11	0	**57**	66	221	2	0	**289**	5	1	7	0	**13**	7	143	1	0	**151**	**510**
% Approach	78.9%	1.8%	19.3%	0%	**-**	22.8%	76.5%	0.7%	0%	**-**	38.5%	7.7%	53.8%	0%	**-**	4.6%	94.7%	0.7%	0%	**-**	-
% Total	8.8%	0.2%	2.2%	0%	**11.2%**	12.9%	43.3%	0.4%	0%	**56.7%**	1.0%	0.2%	1.4%	0%	**2.5%**	1.4%	28.0%	0.2%	0%	**29.6%**	-
PHF	0.625	0.250	0.550	-	**0.648**	0.750	0.936	0.250	-	**0.892**	0.313	0.250	0.583	-	**0.464**	0.583	0.831	0.250	-	**0.858**	0.861
Lights	44	1	9	0	**54**	65	215	2	0	**282**	4	1	7	0	**12**	6	138	1	0	**145**	493
% Lights	97.8%	100%	81.8%	0%	**94.7%**	98.5%	97.3%	100%	0%	**97.6%**	80.0%	100%	100%	0%	**92.3%**	85.7%	96.5%	100%	0%	**96.0%**	96.7%
Articulated Trucks	0	0	0	0	**0**	1	1	0	0	**2**	0	0	0	0	**0**	0	3	0	0	**3**	5
% Articulated Trucks	0%	0%	0%	0%	**0%**	1.5%	0.5%	0%	0%	**0.7%**	0%	0%	0%	0%	**0%**	0%	2.1%	0%	0%	**2.0%**	1.0%
Buses and Single-Unit Trucks	1	0	2	0	**3**	0	5	0	0	**5**	1	0	0	0	**1**	1	2	0	0	**3**	12
% Buses and Single-Unit Trucks	2.2%	0%	18.2%	0%	**5.3%**	0%	2.3%	0%	0%	**1.7%**	20.0%	0%	0%	0%	**7.7%**	14.3%	1.4%	0%	0%	**2.0%**	2.4%

*L: Left, R: Right, T: Thru, U: U-Turn

US 40 & US 42 SB Ramp - TMC
Wed Nov 13, 2024
PM Peak (Nov 13 2024 3:30PM - 4:30 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1247830, Location: 39.937991, -83.399851

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US



US 40 & Middle St. SE - TMC

Wed Nov 13, 2024
Full Length (6 AM-9 AM, 3 PM-6 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1247888, Location: 39.937776, -83.405584

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US

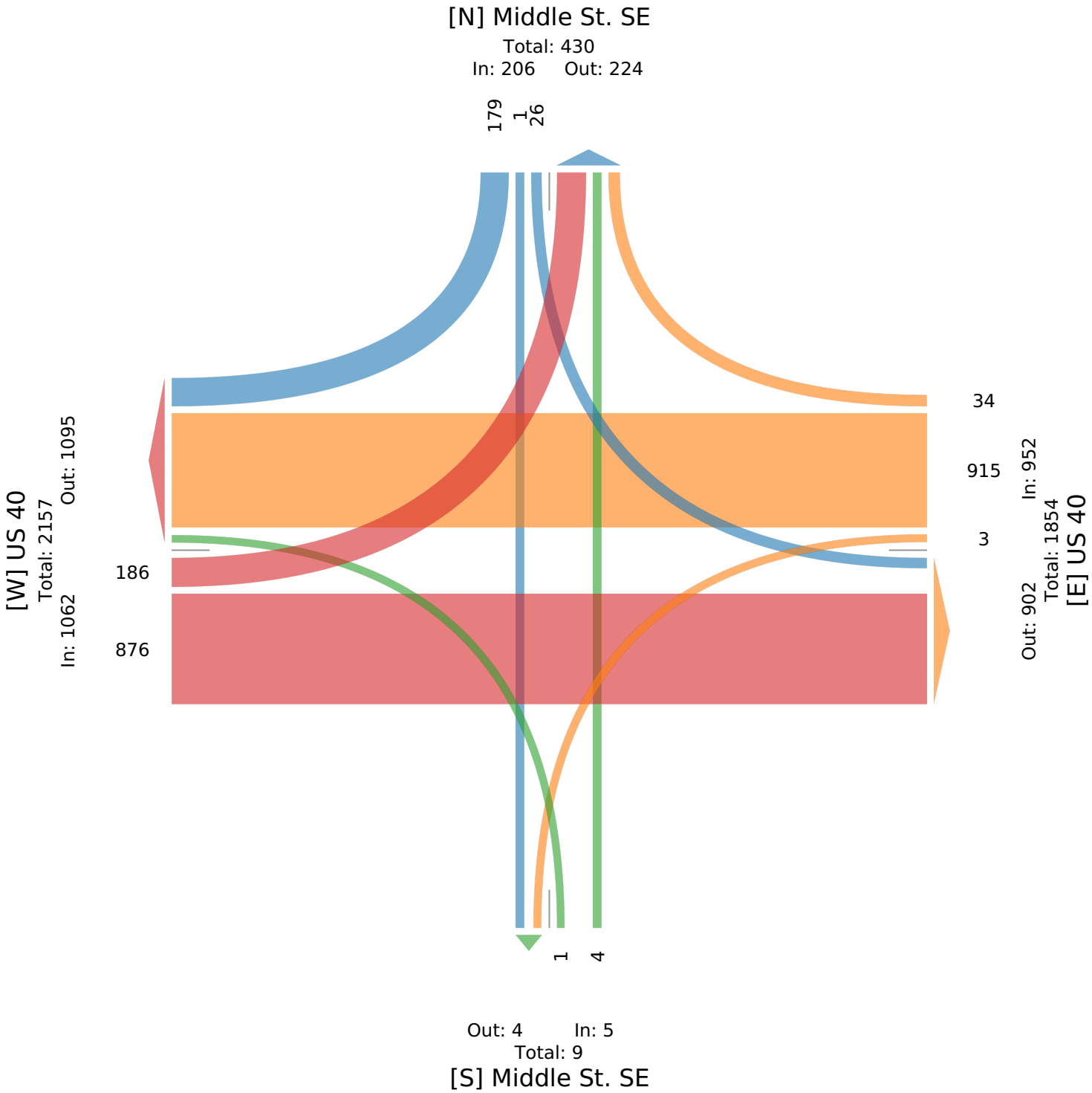
Leg	Middle St. SE					US 40					Middle St. SE					US 40					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2024-11-13 6:00AM	8	0	0	0	**8**	0	19	0	0	**19**	0	0	0	0	**0**	0	22	1	0	**23**	**50**
6:15AM	2	0	0	0	**2**	2	12	0	0	**14**	0	0	0	0	**0**	0	50	3	0	**53**	**69**
6:30AM	11	0	2	0	**13**	0	29	0	0	**29**	0	0	0	0	**0**	0	65	1	0	**66**	**108**
6:45AM	8	0	0	0	**8**	0	34	0	0	**34**	0	0	0	0	**0**	0	56	9	0	**65**	**107**
Hourly Total	29	0	2	0	**31**	2	94	0	0	**96**	0	0	0	0	**0**	0	193	14	0	**207**	**334**
7:00AM	8	0	1	0	**9**	4	16	0	0	**20**	0	0	1	0	**1**	0	57	5	0	**62**	**92**
7:15AM	5	0	1	0	**6**	0	35	0	0	**35**	0	0	0	0	**0**	0	43	4	0	**47**	**88**
7:30AM	2	0	2	0	**4**	1	16	0	0	**17**	0	1	0	0	**1**	0	29	7	0	**36**	**58**
7:45AM	6	0	5	0	**11**	2	22	0	0	**24**	0	0	0	0	**0**	0	31	6	0	**37**	**72**
Hourly Total	21	0	9	0	**30**	7	89	0	0	**96**	0	1	1	0	**2**	0	160	22	0	**182**	**310**
8:00AM	10	0	0	0	**10**	0	30	0	0	**30**	0	0	0	0	**0**	0	23	5	0	**28**	**68**
8:15AM	7	0	1	0	**8**	1	14	0	0	**15**	0	0	0	0	**0**	0	17	7	0	**24**	**47**
8:30AM	6	0	1	0	**7**	1	20	1	0	**22**	0	0	0	0	**0**	0	23	2	0	**25**	**54**
8:45AM	3	0	0	0	**3**	0	17	0	0	**17**	0	0	0	0	**0**	0	17	7	0	**24**	**44**
Hourly Total	26	0	2	0	**28**	2	81	1	0	**84**	0	0	0	0	**0**	0	80	21	0	**101**	**213**
3:00PM	9	0	1	0	**10**	3	47	0	0	**50**	0	0	0	0	**0**	0	33	8	0	**41**	**101**
3:15PM	6	0	1	0	**7**	0	45	0	0	**45**	0	0	0	0	**0**	0	49	11	0	**60**	**112**
3:30PM	7	0	0	0	**7**	3	74	0	0	**77**	0	1	0	0	**1**	0	46	12	0	**58**	**143**
3:45PM	12	0	3	0	**15**	0	64	0	0	**64**	0	0	0	0	**0**	0	40	19	0	**59**	**138**
Hourly Total	34	0	5	0	**39**	6	230	0	0	**236**	0	1	0	0	**1**	0	168	50	0	**218**	**494**
4:00PM	7	0	1	0	**8**	1	64	0	0	**65**	0	0	0	0	**0**	0	36	12	0	**48**	**121**
4:15PM	5	0	2	0	**7**	3	63	0	0	**66**	0	0	0	0	**0**	0	26	5	0	**31**	**104**
4:30PM	9	0	0	0	**9**	3	55	0	0	**58**	0	0	0	0	**0**	0	20	13	0	**33**	**100**
4:45PM	7	0	0	0	**7**	1	52	2	0	**55**	0	0	0	0	**0**	0	17	7	0	**24**	**86**
Hourly Total	28	0	3	0	**31**	8	234	2	0	**244**	0	0	0	0	**0**	0	99	37	0	**136**	**411**
5:00PM	10	1	0	0	**11**	4	44	0	0	**48**	0	1	0	0	**1**	0	29	19	0	**48**	**108**
5:15PM	12	0	1	0	**13**	1	55	0	0	**56**	0	1	0	0	**1**	0	34	7	0	**41**	**111**
5:30PM	7	0	1	0	**8**	2	47	0	0	**49**	0	0	0	0	**0**	0	71	8	0	**79**	**136**
5:45PM	12	0	3	0	**15**	2	41	0	0	**43**	0	0	0	0	**0**	0	42	8	0	**50**	**108**
Hourly Total	41	1	5	0	**47**	9	187	0	0	**196**	0	2	0	0	**2**	0	176	42	0	**218**	**463**
Total	179	1	26	0	**206**	34	915	3	0	**952**	0	4	1	0	**5**	0	876	186	0	**1062**	**2225**
% Approach	86.9%	0.5%	12.6%	0%	**-**	3.6%	96.1%	0.3%	0%	**-**	0%	80.0%	20.0%	0%	**-**	0%	82.5%	17.5%	0%	**-**	-
% Total	8.0%	0%	1.2%	0%	**9.3%**	1.5%	41.1%	0.1%	0%	**42.8%**	0%	0.2%	0%	0%	**0.2%**	0%	39.4%	8.4%	0%	**47.7%**	-
Lights	175	1	25	0	**201**	33	884	3	0	**920**	0	4	1	0	**5**	0	845	183	0	**1028**	2154
% Lights	97.8%	100%	96.2%	0%	**97.6%**	97.1%	96.6%	100%	0%	**96.6%**	0%	100%	100%	0%	**100%**	0%	96.5%	98.4%	0%	**96.8%**	96.8%
Articulated Trucks	2	0	0	0	**2**	0	10	0	0	**10**	0	0	0	0	**0**	0	10	0	0	**10**	22
% Articulated Trucks	1.1%	0%	0%	0%	**1.0%**	0%	1.1%	0%	0%	**1.1%**	0%	0%	0%	0%	**0%**	0%	1.1%	0%	0%	**0.9%**	1.0%
Buses and Single-Unit Trucks	2	0	1	0	**3**	1	21	0	0	**22**	0	0	0	0	**0**	0	21	3	0	**24**	49
% Buses and Single-Unit Trucks	1.1%	0%	3.8%	0%	**1.5%**	2.9%	2.3%	0%	0%	**2.3%**	0%	0%	0%	0%	**0%**	0%	2.4%	1.6%	0%	**2.3%**	2.2%

*L: Left, R: Right, T: Thru, U: U-Turn

US 40 & Middle St. SE - TMC
Wed Nov 13, 2024
Full Length (6 AM-9 AM, 3 PM-6 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1247888, Location: 39.937776, -83.405584

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US



US 40 & Middle St. SE - TMC

Wed Nov 13, 2024
AM Peak (6:30 AM - 7:30 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1247888, Location: 39.937776, -83.405584

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US

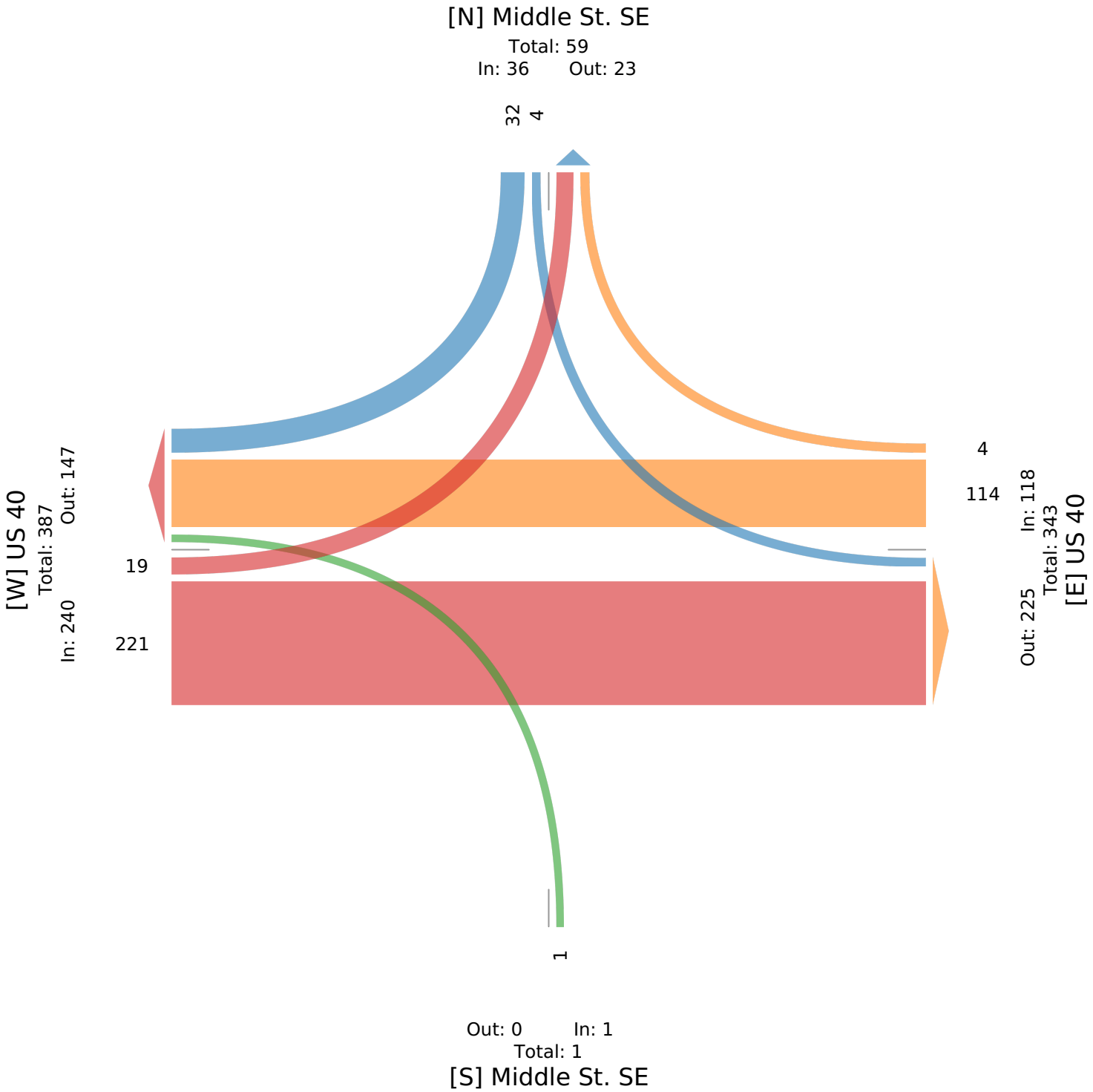
Leg	Middle St. SE					US 40					Middle St. SE					US 40					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2024-11-13 6:30AM	11	0	2	0	**13**	0	29	0	0	**29**	0	0	0	0	**0**	0	65	1	0	**66**	**108**
6:45AM	8	0	0	0	**8**	0	34	0	0	**34**	0	0	0	0	**0**	0	56	9	0	**65**	**107**
7:00AM	8	0	1	0	**9**	4	16	0	0	**20**	0	0	1	0	**1**	0	57	5	0	**62**	**92**
7:15AM	5	0	1	0	**6**	0	35	0	0	**35**	0	0	0	0	**0**	0	43	4	0	**47**	**88**
Total	32	0	4	0	**36**	4	114	0	0	**118**	0	0	1	0	**1**	0	221	19	0	**240**	**395**
% Approach	88.9%	0%	11.1%	0%	**-**	3.4%	96.6%	0%	0%	**-**	0%	0%	100%	0%	**-**	0%	92.1%	7.9%	0%	**-**	-
% Total	8.1%	0%	1.0%	0%	**9.1%**	1.0%	28.9%	0%	0%	**29.9%**	0%	0%	0.3%	0%	**0.3%**	0%	55.9%	4.8%	0%	**60.8%**	-
PHF	0.727	-	0.500	-	**0.692**	0.250	0.814	-	-	**0.843**	-	-	0.250	-	**0.250**	-	0.850	0.528	-	**0.909**	0.914
Lights	32	0	4	0	**36**	4	111	0	0	**115**	0	0	1	0	**1**	0	217	19	0	**236**	388
% Lights	100%	0%	100%	0%	**100%**	100%	97.4%	0%	0%	**97.5%**	0%	0%	100%	0%	**100%**	0%	98.2%	100%	0%	**98.3%**	98.2%
Articulated Trucks	0	0	0	0	**0**	0	2	0	0	**2**	0	0	0	0	**0**	0	2	0	0	**2**	4
% Articulated Trucks	0%	0%	0%	0%	**0%**	0%	1.8%	0%	0%	**1.7%**	0%	0%	0%	0%	**0%**	0%	0.9%	0%	0%	**0.8%**	1.0%
Buses and Single-Unit Trucks	0	0	0	0	**0**	0	1	0	0	**1**	0	0	0	0	**0**	0	2	0	0	**2**	3
% Buses and Single-Unit Trucks	0%	0%	0%	0%	**0%**	0%	0.9%	0%	0%	**0.8%**	0%	0%	0%	0%	**0%**	0%	0.9%	0%	0%	**0.8%**	0.8%

*L: Left, R: Right, T: Thru, U: U-Turn

US 40 & Middle St. SE - TMC
Wed Nov 13, 2024
AM Peak (6:30 AM - 7:30 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1247888, Location: 39.937776, -83.405584

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US



US 40 & Middle St. SE - TMC

Wed Nov 13, 2024
PM Peak (3:15 PM - 4:15 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1247888, Location: 39.937776, -83.405584

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US

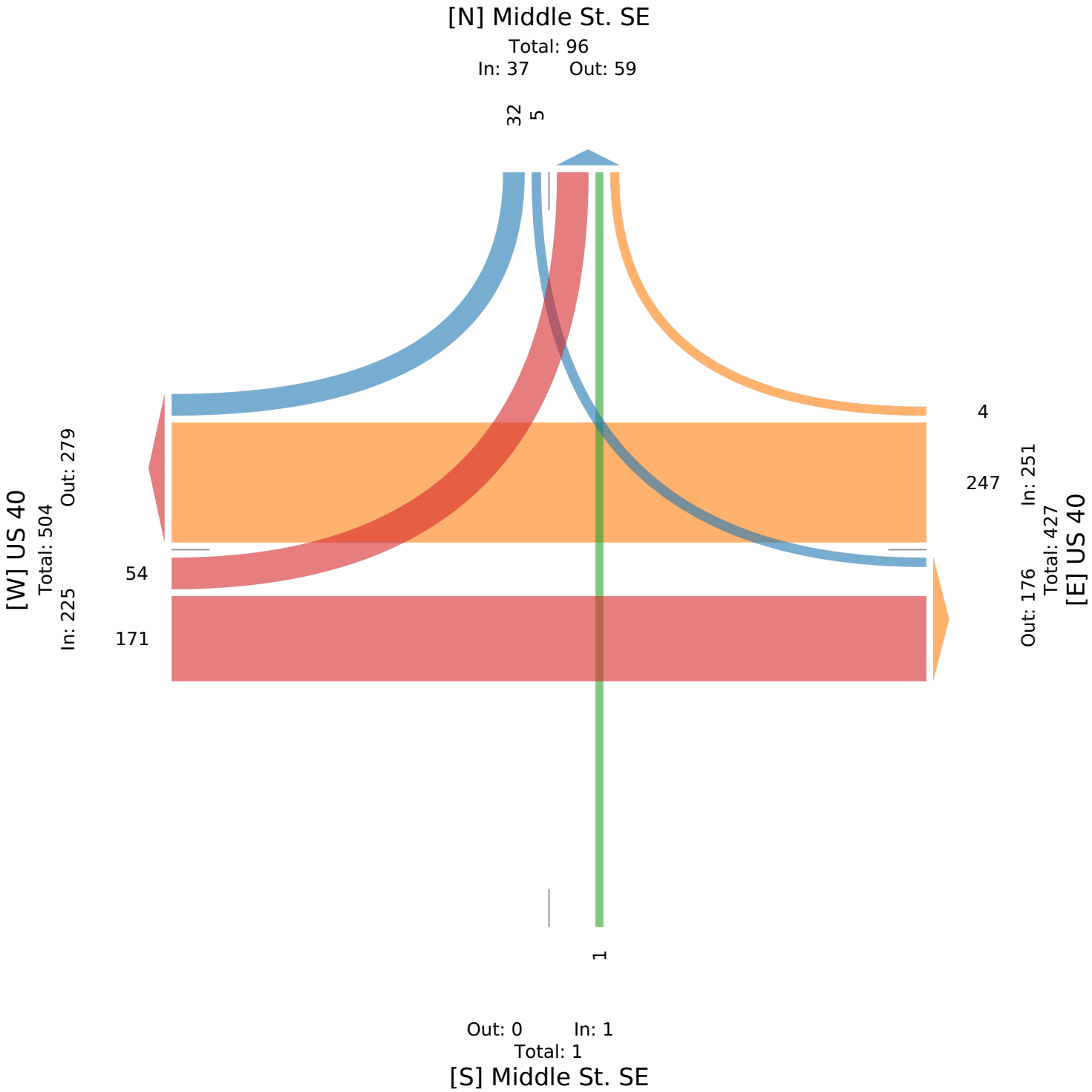
Leg	Middle St. SE					US 40					Middle St. SE					US 40					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2024-11-13 3:15PM	6	0	1	0	**7**	0	45	0	0	**45**	0	0	0	0	**0**	0	49	11	0	**60**	**112**
3:30PM	7	0	0	0	**7**	3	74	0	0	**77**	0	1	0	0	**1**	0	46	12	0	**58**	**143**
3:45PM	12	0	3	0	**15**	0	64	0	0	**64**	0	0	0	0	**0**	0	40	19	0	**59**	**138**
4:00PM	7	0	1	0	**8**	1	64	0	0	**65**	0	0	0	0	**0**	0	36	12	0	**48**	**121**
Total	32	0	5	0	**37**	4	247	0	0	**251**	0	1	0	0	**1**	0	171	54	0	**225**	**514**
% Approach	86.5%	0%	13.5%	0%	**-**	1.6%	98.4%	0%	0%	**-**	0%	100%	0%	0%	**-**	0%	76.0%	24.0%	0%	**-**	-
% Total	6.2%	0%	1.0%	0%	**7.2%**	0.8%	48.1%	0%	0%	**48.8%**	0%	0.2%	0%	0%	**0.2%**	0%	33.3%	10.5%	0%	**43.8%**	-
PHF	0.667	-	0.417	-	**0.617**	0.333	0.834	-	-	**0.815**	-	0.250	-	-	**0.250**	-	0.872	0.711	-	**0.938**	0.899
Lights	32	0	5	0	**37**	4	245	0	0	**249**	0	1	0	0	**1**	0	163	54	0	**217**	504
% Lights	100%	0%	100%	0%	**100%**	100%	99.2%	0%	0%	**99.2%**	0%	100%	0%	0%	**100%**	0%	95.3%	100%	0%	**96.4%**	98.1%
Articulated Trucks	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	2	0	0	**2**	2
% Articulated Trucks	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	0%	1.2%	0%	0%	**0.9%**	0.4%
Buses and Single-Unit Trucks	0	0	0	0	**0**	0	2	0	0	**2**	0	0	0	0	**0**	0	6	0	0	**6**	8
% Buses and Single-Unit Trucks	0%	0%	0%	0%	**0%**	0%	0.8%	0%	0%	**0.8%**	0%	0%	0%	0%	**0%**	0%	3.5%	0%	0%	**2.7%**	1.6%

*L: Left, R: Right, T: Thru, U: U-Turn

US 40 & Middle St. SE - TMC
Wed Nov 13, 2024
PM Peak (3:15 PM - 4:15 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1247888, Location: 39.937776, -83.405584

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US



US 40 & West St. - TMC

Wed Nov 13, 2024
Full Length (6 AM-9 AM, 3 PM-6 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1247879, Location: 39.937719, -83.406523

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US

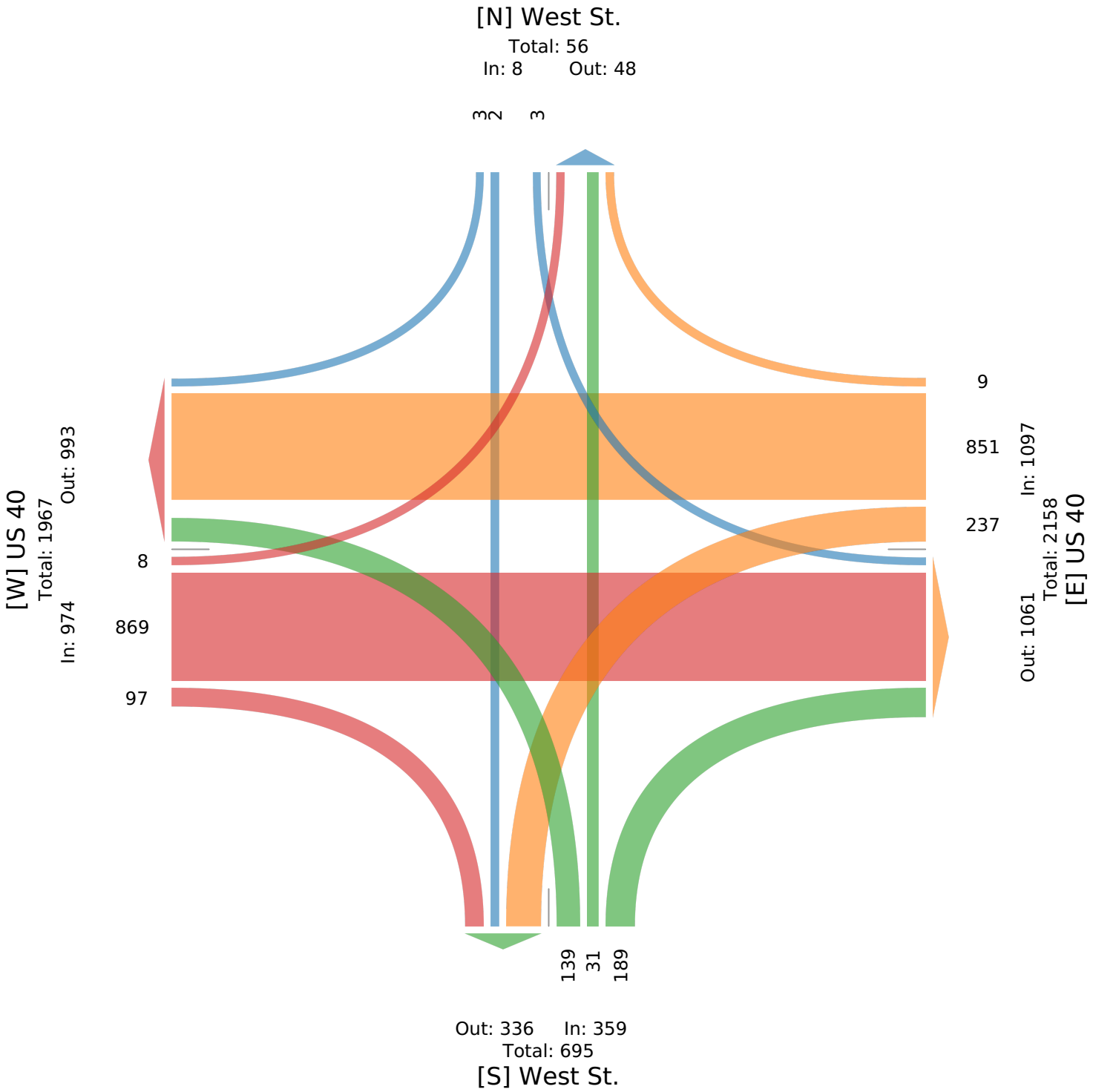
Leg	West St.					US 40					West St.					US 40					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2024-11-13 6:00AM	0	0	0	0	**0**	0	17	10	0	**27**	3	0	1	0	**4**	5	20	0	0	**25**	**56**
6:15AM	0	0	0	0	**0**	0	12	2	0	**14**	2	1	2	0	**5**	8	49	0	0	**57**	**76**
6:30AM	0	0	0	0	**0**	0	30	9	0	**39**	1	0	1	0	**2**	6	65	0	0	**71**	**112**
6:45AM	0	0	0	0	**0**	0	30	11	0	**41**	6	1	6	0	**13**	3	58	0	0	**61**	**115**
Hourly Total	0	0	0	0	**0**	0	89	32	0	**121**	12	2	10	0	**24**	22	192	0	0	**214**	**359**
7:00AM	0	0	1	0	**1**	0	19	8	0	**27**	4	0	8	0	**12**	5	58	0	0	**63**	**103**
7:15AM	0	0	0	0	**0**	0	35	3	0	**38**	3	0	2	0	**5**	2	45	0	0	**47**	**90**
7:30AM	0	0	0	0	**0**	0	12	6	0	**18**	7	2	3	0	**12**	4	29	0	0	**33**	**63**
7:45AM	0	0	0	0	**0**	0	23	5	0	**28**	3	0	0	0	**3**	6	32	0	0	**38**	**69**
Hourly Total	0	0	1	0	**1**	0	89	22	0	**111**	17	2	13	0	**32**	17	164	0	0	**181**	**325**
8:00AM	0	0	0	0	**0**	0	34	8	0	**42**	5	2	5	0	**12**	4	26	0	0	**30**	**84**
8:15AM	0	0	1	0	**1**	0	12	9	0	**21**	5	1	1	0	**7**	5	19	0	0	**24**	**53**
8:30AM	0	0	0	0	**0**	0	20	6	0	**26**	3	0	0	0	**3**	3	21	0	0	**24**	**53**
8:45AM	0	0	0	0	**0**	0	18	3	0	**21**	8	2	2	0	**12**	6	19	0	0	**25**	**58**
Hourly Total	0	0	1	0	**1**	0	84	26	0	**110**	21	5	8	0	**34**	18	85	0	0	**103**	**248**
3:00PM	0	0	0	0	**0**	0	38	18	0	**56**	7	0	5	0	**12**	4	32	0	0	**36**	**104**
3:15PM	0	0	0	0	**0**	0	40	12	0	**52**	10	0	5	0	**15**	4	49	0	0	**53**	**120**
3:30PM	0	1	0	0	**1**	1	65	14	0	**80**	16	2	34	0	**52**	2	43	0	0	**45**	**178**
3:45PM	1	0	1	0	**2**	0	60	16	0	**76**	22	2	23	0	**47**	4	37	0	0	**41**	**166**
Hourly Total	1	1	1	0	**3**	1	203	60	0	**264**	55	4	67	0	**126**	14	161	0	0	**175**	**568**
4:00PM	1	0	0	0	**1**	2	52	14	0	**68**	13	1	7	0	**21**	5	33	0	0	**38**	**128**
4:15PM	0	0	0	0	**0**	0	53	16	0	**69**	8	1	5	0	**14**	5	24	0	0	**29**	**112**
4:30PM	0	0	0	0	**0**	0	48	17	0	**65**	13	4	6	0	**23**	5	21	1	0	**27**	**115**
4:45PM	0	0	0	0	**0**	0	49	9	0	**58**	6	8	4	0	**18**	1	19	5	0	**25**	**101**
Hourly Total	1	0	0	0	**1**	2	202	56	0	**260**	40	14	22	0	**76**	16	97	6	0	**119**	**456**
5:00PM	0	0	0	0	**0**	1	46	8	0	**55**	19	3	6	0	**28**	1	30	0	0	**31**	**114**
5:15PM	0	0	0	0	**0**	1	57	11	0	**69**	8	0	6	0	**14**	3	31	0	0	**34**	**117**
5:30PM	0	1	0	0	**1**	1	44	7	0	**52**	10	1	4	0	**15**	2	67	1	0	**70**	**138**
5:45PM	1	0	0	0	**1**	3	37	15	0	**55**	7	0	3	0	**10**	4	42	1	0	**47**	**113**
Hourly Total	1	1	0	0	**2**	6	184	41	0	**231**	44	4	19	0	**67**	10	170	2	0	**182**	**482**
Total	3	2	3	0	**8**	9	851	237	0	**1097**	189	31	139	0	**359**	97	869	8	0	**974**	**2438**
% Approach	37.5%	25.0%	37.5%	0%	**-**	0.8%	77.6%	21.6%	0%	**-**	52.6%	8.6%	38.7%	0%	**-**	10.0%	89.2%	0.8%	0%	**-**	-
% Total	0.1%	0.1%	0.1%	0%	**0.3%**	0.4%	34.9%	9.7%	0%	**45.0%**	7.8%	1.3%	5.7%	0%	**14.7%**	4.0%	35.6%	0.3%	0%	**40.0%**	-
Lights	3	2	3	0	**8**	9	816	235	0	**1060**	185	31	134	0	**350**	94	841	8	0	**943**	2361
% Lights	100%	100%	100%	0%	**100%**	100%	95.9%	99.2%	0%	**96.6%**	97.9%	100%	96.4%	0%	**97.5%**	96.9%	96.8%	100%	0%	**96.8%**	96.8%
Articulated Trucks	0	0	0	0	**0**	0	7	2	0	**9**	2	0	0	0	**2**	0	8	0	0	**8**	19
% Articulated Trucks	0%	0%	0%	0%	**0%**	0%	0.8%	0.8%	0%	**0.8%**	1.1%	0%	0%	0%	**0.6%**	0%	0.9%	0%	0%	**0.8%**	0.8%
Buses and Single-Unit Trucks	0	0	0	0	**0**	0	28	0	0	**28**	2	0	5	0	**7**	3	20	0	0	**23**	58
% Buses and Single-Unit Trucks	0%	0%	0%	0%	**0%**	0%	3.3%	0%	0%	**2.6%**	1.1%	0%	3.6%	0%	**1.9%**	3.1%	2.3%	0%	0%	**2.4%**	2.4%

*L: Left, R: Right, T: Thru, U: U-Turn

US 40 & West St. - TMC
Wed Nov 13, 2024
Full Length (6 AM-9 AM, 3 PM-6 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1247879, Location: 39.937719, -83.406523

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US



US 40 & West St. - TMC

Wed Nov 13, 2024
AM Peak (6:30 AM - 7:30 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1247879, Location: 39.937719, -83.406523

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US

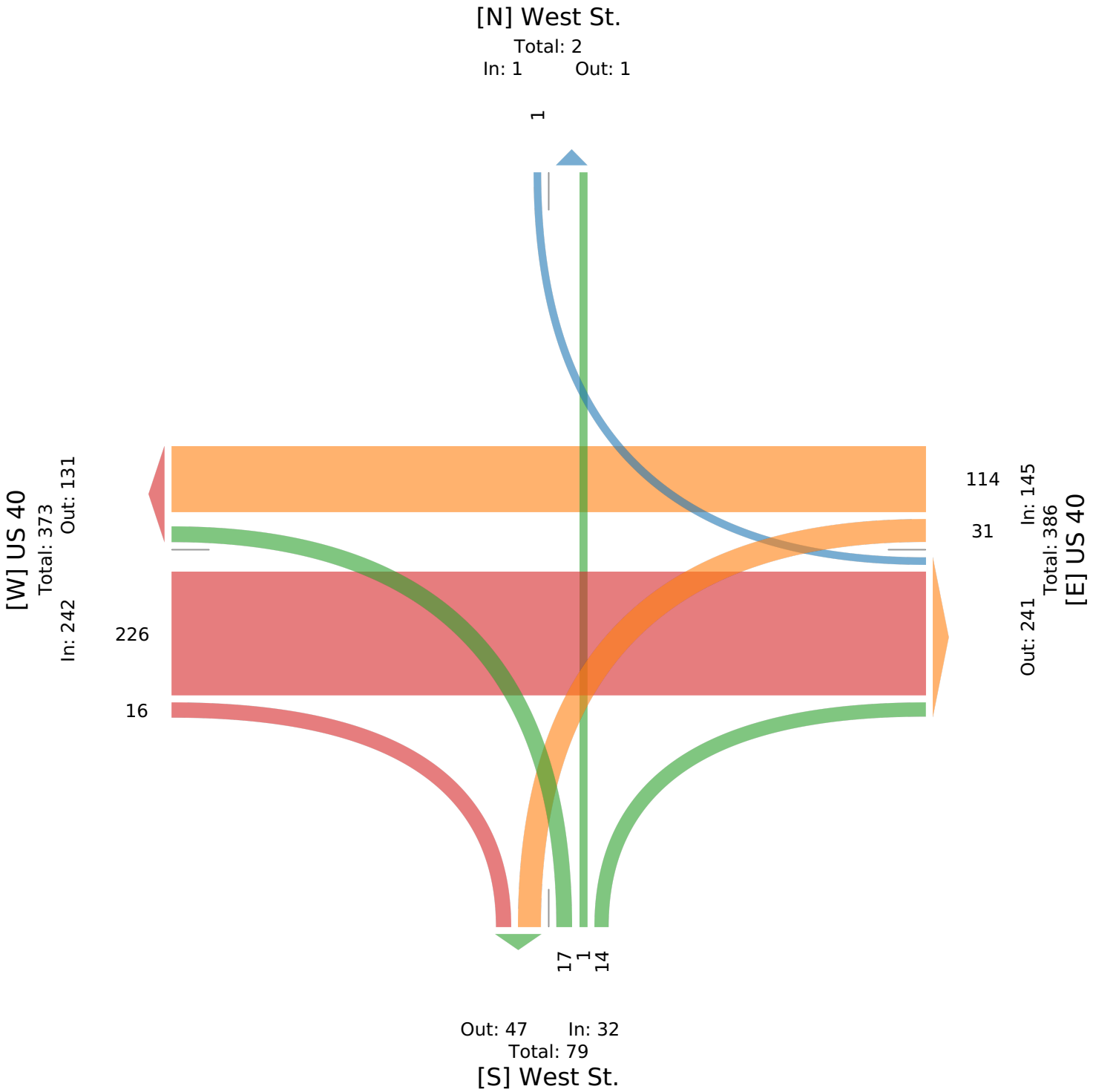
Leg / Direction	West St. Southbound					US 40 Westbound					West St. Northbound					US 40 Eastbound					
Time	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	**Int**
2024-11-13 6:30AM	0	0	0	0	**0**	0	30	9	0	**39**	1	0	1	0	**2**	6	65	0	0	**71**	**112**
6:45AM	0	0	0	0	**0**	0	30	11	0	**41**	6	1	6	0	**13**	3	58	0	0	**61**	**115**
7:00AM	0	0	1	0	**1**	0	19	8	0	**27**	4	0	8	0	**12**	5	58	0	0	**63**	**103**
7:15AM	0	0	0	0	**0**	0	35	3	0	**38**	3	0	2	0	**5**	2	45	0	0	**47**	**90**
Total	0	0	1	0	**1**	0	114	31	0	**145**	14	1	17	0	**32**	16	226	0	0	**242**	**420**
% Approach	0%	0%	100%	0%	**-**	0%	78.6%	21.4%	0%	**-**	43.8%	3.1%	53.1%	0%	**-**	6.6%	93.4%	0%	0%	**-**	-
% Total	0%	0%	0.2%	0%	**0.2%**	0%	27.1%	7.4%	0%	**34.5%**	3.3%	0.2%	4.0%	0%	**7.6%**	3.8%	53.8%	0%	0%	**57.6%**	-
PHF	-	-	0.250	-	**0.250**	-	0.814	0.705	-	**0.884**	0.583	0.250	0.531	-	**0.615**	0.667	0.869	-	-	**0.852**	0.913
Lights	0	0	1	0	**1**	0	111	31	0	**142**	14	1	16	0	**31**	16	222	0	0	**238**	412
% Lights	0%	0%	100%	0%	**100%**	0%	97.4%	100%	0%	**97.9%**	100%	100%	94.1%	0%	**96.9%**	100%	98.2%	0%	0%	**98.3%**	98.1%
Articulated Trucks	0	0	0	0	**0**	0	2	0	0	**2**	0	0	0	0	**0**	0	2	0	0	**2**	4
% Articulated Trucks	0%	0%	0%	0%	**0%**	0%	1.8%	0%	0%	**1.4%**	0%	0%	0%	0%	**0%**	0%	0.9%	0%	0%	**0.8%**	1.0%
Buses and Single-Unit Trucks	0	0	0	0	**0**	0	1	0	0	**1**	0	0	1	0	**1**	0	2	0	0	**2**	4
% Buses and Single-Unit Trucks	0%	0%	0%	0%	**0%**	0%	0.9%	0%	0%	**0.7%**	0%	0%	5.9%	0%	**3.1%**	0%	0.9%	0%	0%	**0.8%**	1.0%

*L: Left, R: Right, T: Thru, U: U-Turn

US 40 & West St. - TMC
Wed Nov 13, 2024
AM Peak (6:30 AM - 7:30 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1247879, Location: 39.937719, -83.406523

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US



US 40 & West St. - TMC

Wed Nov 13, 2024
PM Peak (3:15 PM - 4:15 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1247879, Location: 39.937719, -83.406523

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US

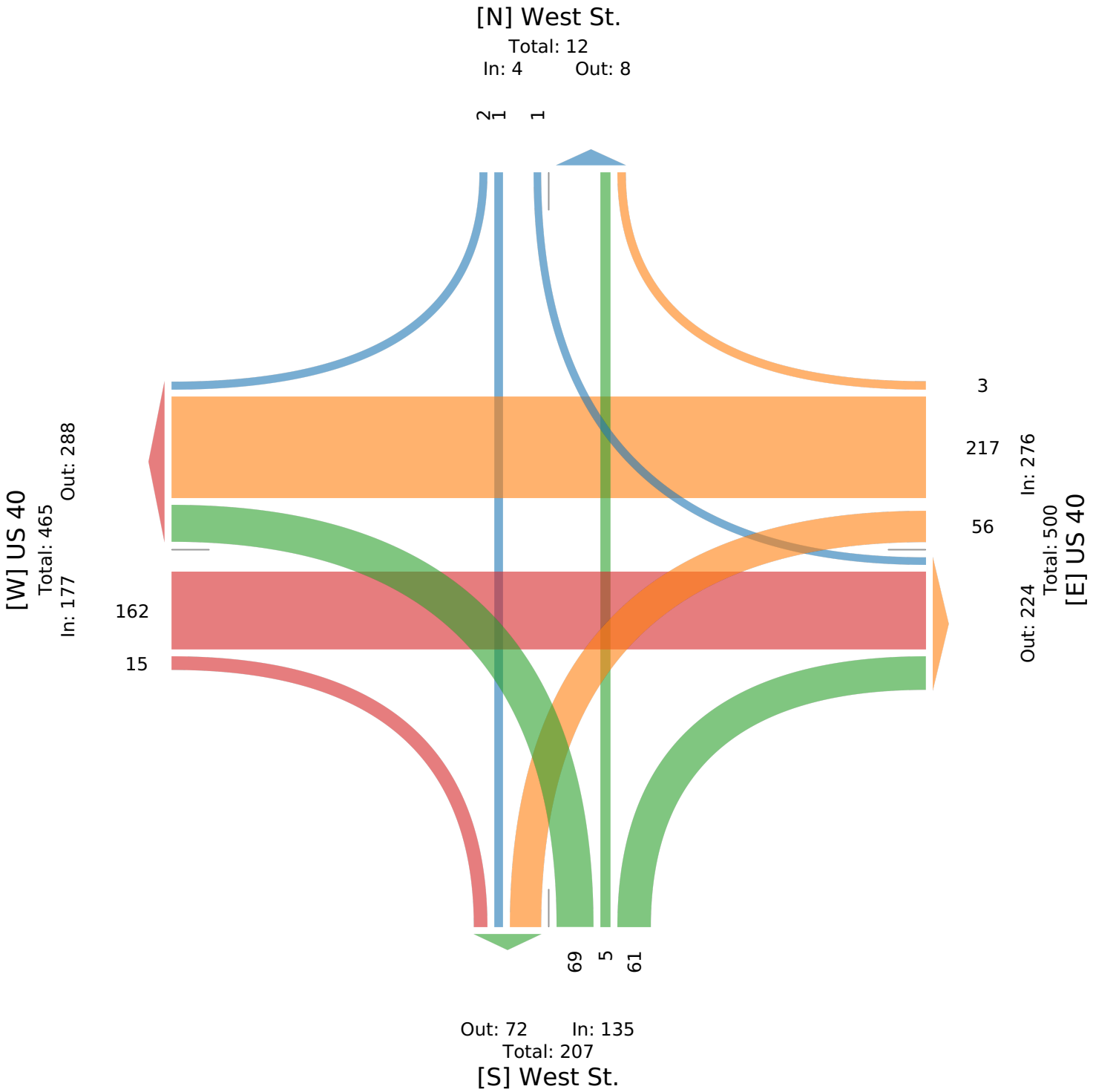
Leg / Direction	West St. Southbound					US 40 Westbound					West St. Northbound					US 40 Eastbound					
Time	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	**Int**
2024-11-13 3:15PM	0	0	0	0	**0**	0	40	12	0	**52**	10	0	5	0	**15**	4	49	0	0	**53**	**120**
3:30PM	0	1	0	0	**1**	1	65	14	0	**80**	16	2	34	0	**52**	2	43	0	0	**45**	**178**
3:45PM	1	0	1	0	**2**	0	60	16	0	**76**	22	2	23	0	**47**	4	37	0	0	**41**	**166**
4:00PM	1	0	0	0	**1**	2	52	14	0	**68**	13	1	7	0	**21**	5	33	0	0	**38**	**128**
Total	2	1	1	0	**4**	3	217	56	0	**276**	61	5	69	0	**135**	15	162	0	0	**177**	**592**
% Approach	50.0%	25.0%	25.0%	0%	**-**	1.1%	78.6%	20.3%	0%	**-**	45.2%	3.7%	51.1%	0%	**-**	8.5%	91.5%	0%	0%	**-**	-
% Total	0.3%	0.2%	0.2%	0%	**0.7%**	0.5%	36.7%	9.5%	0%	**46.6%**	10.3%	0.8%	11.7%	0%	**22.8%**	2.5%	27.4%	0%	0%	**29.9%**	-
PHF	0.500	0.250	0.250		**0.500**	0.375	0.835	0.875		**0.863**	0.693	0.625	0.507		**0.649**	0.750	0.827			**0.835**	0.831
Lights	2	1	1	0	**4**	3	215	56	0	**274**	60	5	68	0	**133**	12	155	0	0	**167**	578
% Lights	100%	100%	100%	0%	**100%**	100%	99.1%	100%	0%	**99.3%**	98.4%	100%	98.6%	0%	**98.5%**	80.0%	95.7%	0%	0%	**94.4%**	97.6%
Articulated Trucks	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	2	0	0	**2**	2
% Articulated Trucks	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	0%	1.2%	0%	0%	**1.1%**	0.3%
Buses and Single-Unit Trucks	0	0	0	0	**0**	0	2	0	0	**2**	1	0	1	0	**2**	3	5	0	0	**8**	12
% Buses and Single-Unit Trucks	0%	0%	0%	0%	**0%**	0%	0.9%	0%	0%	**0.7%**	1.6%	0%	1.4%	0%	**1.5%**	20.0%	3.1%	0%	0%	**4.5%**	2.0%

*L: Left, R: Right, T: Thru, U: U-Turn

US 40 & West St. - TMC
Wed Nov 13, 2024
PM Peak (3:15 PM - 4:15 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1247879, Location: 39.937719, -83.406523

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US



US 40 & Gay St. - TMC

Wed Nov 13, 2024
Full Length (6 AM-9 AM, 3 PM-6 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1247891, Location: 39.937622, -83.408521

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US

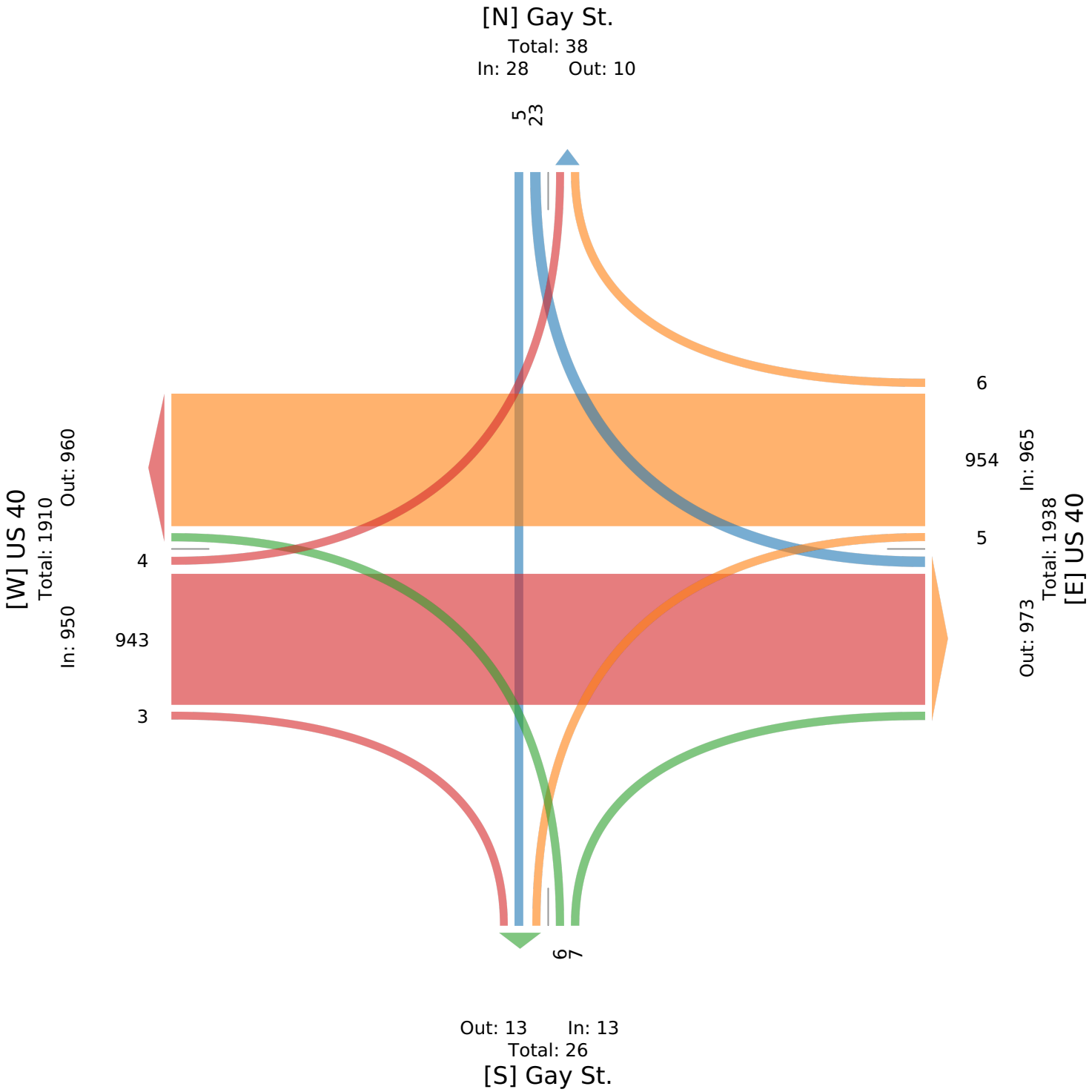
Leg	Gay St.					US 40					Gay St.					US 40					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2024-11-13 6:00AM	0	0	0	0	**0**	0	18	0	0	**18**	0	0	0	0	**0**	0	24	0	0	**24**	**42**
6:15AM	0	0	0	0	**0**	0	15	0	0	**15**	1	0	0	0	**1**	0	56	0	0	**56**	**72**
6:30AM	0	0	0	0	**0**	0	34	0	0	**34**	0	0	0	0	**0**	0	73	0	0	**73**	**107**
6:45AM	0	1	2	0	**3**	0	37	0	0	**37**	0	0	0	0	**0**	0	59	0	0	**59**	**99**
Hourly Total	0	1	2	0	**3**	0	104	0	0	**104**	1	0	0	0	**1**	0	212	0	0	**212**	**320**
7:00AM	0	0	0	0	**0**	0	24	0	0	**24**	1	0	0	0	**1**	0	61	0	0	**61**	**86**
7:15AM	0	0	1	0	**1**	0	38	0	0	**38**	0	0	0	0	**0**	0	46	0	0	**46**	**85**
7:30AM	0	1	0	0	**1**	1	13	0	0	**14**	0	0	0	0	**0**	0	31	0	0	**31**	**46**
7:45AM	0	0	1	0	**1**	1	24	0	0	**25**	0	0	0	0	**0**	0	40	0	0	**40**	**66**
Hourly Total	0	1	2	0	**3**	2	99	0	0	**101**	1	0	0	0	**1**	0	178	0	0	**178**	**283**
8:00AM	0	0	1	0	**1**	0	36	0	0	**36**	0	0	0	0	**0**	0	23	0	0	**23**	**60**
8:15AM	0	0	0	0	**0**	0	14	0	0	**14**	0	0	0	0	**0**	0	24	0	0	**24**	**38**
8:30AM	0	0	0	0	**0**	3	17	0	0	**20**	0	0	0	0	**0**	0	25	0	0	**25**	**45**
8:45AM	0	0	0	0	**0**	0	19	0	0	**19**	0	0	2	0	**2**	1	23	0	0	**24**	**45**
Hourly Total	0	0	1	0	**1**	3	86	0	0	**89**	0	0	2	0	**2**	1	95	0	0	**96**	**188**
3:00PM	0	0	1	0	**1**	0	42	0	0	**42**	0	0	0	0	**0**	0	34	0	0	**34**	**77**
3:15PM	0	0	1	0	**1**	0	41	1	0	**42**	1	0	0	0	**1**	2	55	0	0	**57**	**101**
3:30PM	0	0	3	0	**3**	0	106	0	0	**106**	1	0	3	0	**4**	0	44	1	0	**45**	**158**
3:45PM	0	0	2	0	**2**	0	72	1	0	**73**	0	0	0	0	**0**	0	37	0	0	**37**	**112**
Hourly Total	0	0	7	0	**7**	0	261	2	0	**263**	2	0	3	0	**5**	2	170	1	0	**173**	**448**
4:00PM	0	0	1	0	**1**	0	60	0	0	**60**	0	0	0	0	**0**	0	40	1	0	**41**	**102**
4:15PM	0	0	1	0	**1**	0	55	0	0	**55**	0	0	0	0	**0**	0	25	0	0	**25**	**81**
4:30PM	0	0	2	0	**2**	0	51	0	0	**51**	0	0	0	0	**0**	0	22	0	0	**22**	**75**
4:45PM	0	0	0	0	**0**	1	51	0	0	**52**	3	0	0	0	**3**	0	25	1	0	**26**	**81**
Hourly Total	0	0	4	0	**4**	1	217	0	0	**218**	3	0	0	0	**3**	0	112	2	0	**114**	**339**
5:00PM	0	0	2	0	**2**	0	47	0	0	**47**	0	0	1	0	**1**	0	31	1	0	**32**	**82**
5:15PM	0	1	1	0	**2**	0	56	0	0	**56**	0	0	0	0	**0**	0	31	0	0	**31**	**89**
5:30PM	0	2	3	0	**5**	0	45	2	0	**47**	0	0	0	0	**0**	0	71	0	0	**71**	**123**
5:45PM	0	0	1	0	**1**	0	39	1	0	**40**	0	0	0	0	**0**	0	43	0	0	**43**	**84**
Hourly Total	0	3	7	0	**10**	0	187	3	0	**190**	0	0	1	0	**1**	0	176	1	0	**177**	**378**
Total	0	5	23	0	**28**	6	954	5	0	**965**	7	0	6	0	**13**	3	943	4	0	**950**	**1956**
% Approach	0%	17.9%	82.1%	0%	**-**	0.6%	98.9%	0.5%	0%	**-**	53.8%	0%	46.2%	0%	**-**	0.3%	99.3%	0.4%	0%	**-**	-
% Total	0%	0.3%	1.2%	0%	**1.4%**	0.3%	48.8%	0.3%	0%	**49.3%**	0.4%	0%	0.3%	0%	**0.7%**	0.2%	48.2%	0.2%	0%	**48.6%**	-
Lights	0	5	21	0	**26**	4	920	5	0	**929**	5	0	6	0	**11**	3	915	4	0	**922**	1888
% Lights	0%	100%	91.3%	0%	**92.9%**	66.7%	96.4%	100%	0%	**96.3%**	71.4%	0%	100%	0%	**84.6%**	100%	97.0%	100%	0%	**97.1%**	96.5%
Articulated Trucks	0	0	1	0	**1**	0	9	0	0	**9**	0	0	0	0	**0**	0	9	0	0	**9**	19
% Articulated Trucks	0%	0%	4.3%	0%	**3.6%**	0%	0.9%	0%	0%	**0.9%**	0%	0%	0%	0%	**0%**	0%	1.0%	0%	0%	**0.9%**	1.0%
Buses and Single-Unit Trucks	0	0	1	0	**1**	2	25	0	0	**27**	2	0	0	0	**2**	0	19	0	0	**19**	49
% Buses and Single-Unit Trucks	0%	0%	4.3%	0%	**3.6%**	33.3%	2.6%	0%	0%	**2.8%**	28.6%	0%	0%	0%	**15.4%**	0%	2.0%	0%	0%	**2.0%**	2.5%

*L: Left, R: Right, T: Thru, U: U-Turn

US 40 & Gay St. - TMC
Wed Nov 13, 2024
Full Length (6 AM-9 AM, 3 PM-6 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1247891, Location: 39.937622, -83.408521

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US



US 40 & Gay St. - TMC

Wed Nov 13, 2024
AM Peak (6:30 AM - 7:30 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1247891, Location: 39.937622, -83.408521

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US

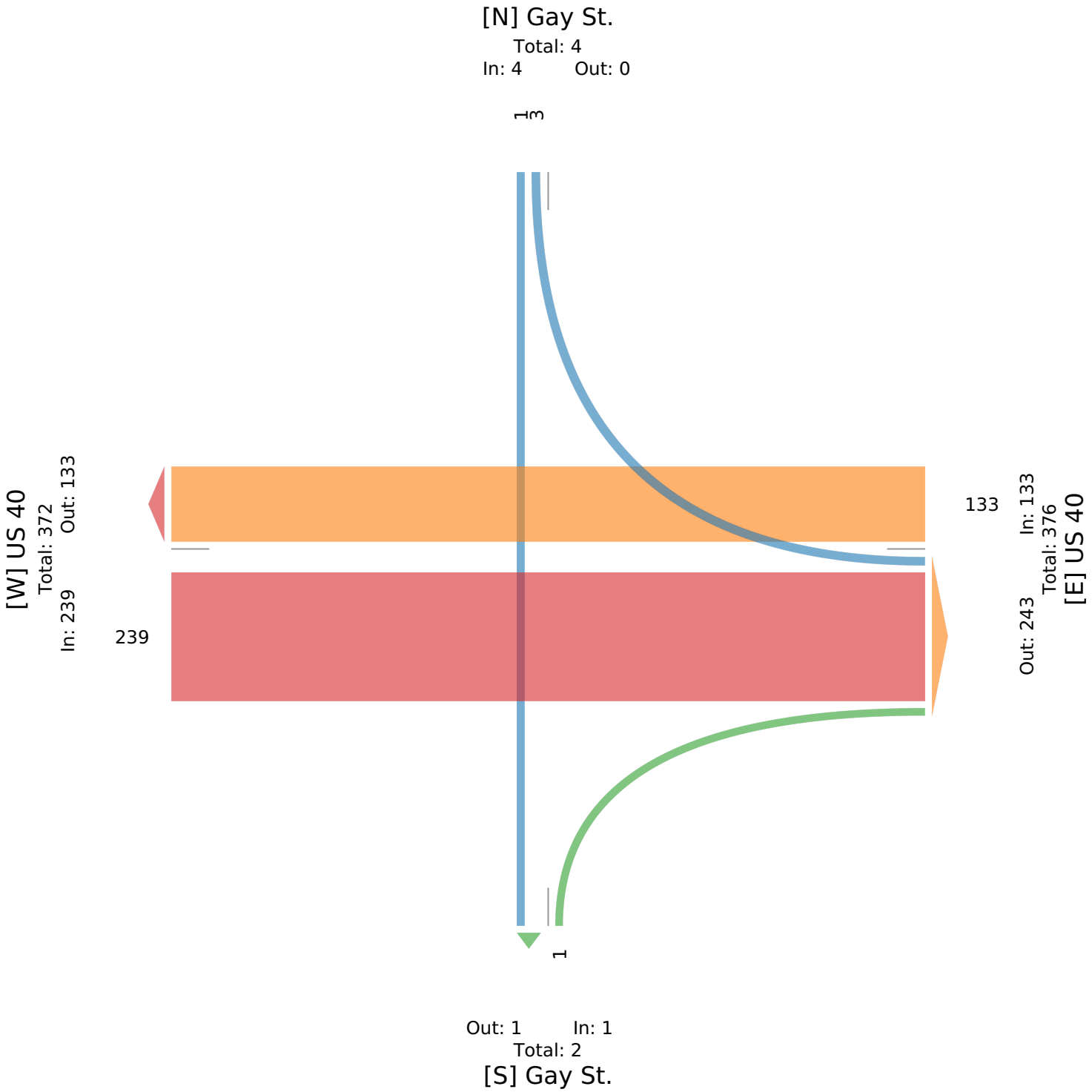
Leg / Direction	Gay St. Southbound					US 40 Westbound					Gay St. Northbound					US 40 Eastbound					
Time	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	**Int**
2024-11-13 6:30AM	0	0	0	0	**0**	0	34	0	0	**34**	0	0	0	0	**0**	0	73	0	0	**73**	**107**
6:45AM	0	1	2	0	**3**	0	37	0	0	**37**	0	0	0	0	**0**	0	59	0	0	**59**	**99**
7:00AM	0	0	0	0	**0**	0	24	0	0	**24**	1	0	0	0	**1**	0	61	0	0	**61**	**86**
7:15AM	0	0	1	0	**1**	0	38	0	0	**38**	0	0	0	0	**0**	0	46	0	0	**46**	**85**
Total	0	1	3	0	**4**	0	133	0	0	**133**	1	0	0	0	**1**	0	239	0	0	**239**	**377**
% Approach	0%	25.0%	75.0%	0%	**-**	0%	100%	0%	0%	**-**	100%	0%	0%	0%	**-**	0%	100%	0%	0%	**-**	-
% Total	0%	0.3%	0.8%	0%	**1.1%**	0%	35.3%	0%	0%	**35.3%**	0.3%	0%	0%	0%	**0.3%**	0%	63.4%	0%	0%	**63.4%**	-
PHF	-	0.250	0.375	-	**0.333**	-	0.875	-	-	**0.875**	0.250	-	-	-	**0.250**	-	0.818	-	-	**0.818**	0.881
Lights	0	1	3	0	**4**	0	129	0	0	**129**	1	0	0	0	**1**	0	236	0	0	**236**	370
% Lights	0%	100%	100%	0%	**100%**	0%	97.0%	0%	0%	**97.0%**	100%	0%	0%	0%	**100%**	0%	98.7%	0%	0%	**98.7%**	98.1%
Articulated Trucks	0	0	0	0	**0**	0	2	0	0	**2**	0	0	0	0	**0**	0	2	0	0	**2**	4
% Articulated Trucks	0%	0%	0%	0%	**0%**	0%	1.5%	0%	0%	**1.5%**	0%	0%	0%	0%	**0%**	0%	0.8%	0%	0%	**0.8%**	1.1%
Buses and Single-Unit Trucks	0	0	0	0	**0**	0	2	0	0	**2**	0	0	0	0	**0**	0	1	0	0	**1**	3
% Buses and Single-Unit Trucks	0%	0%	0%	0%	**0%**	0%	1.5%	0%	0%	**1.5%**	0%	0%	0%	0%	**0%**	0%	0.4%	0%	0%	**0.4%**	0.8%

*L: Left, R: Right, T: Thru, U: U-Turn

US 40 & Gay St. - TMC
Wed Nov 13, 2024
AM Peak (6:30 AM - 7:30 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1247891, Location: 39.937622, -83.408521

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US



US 40 & Gay St. - TMC

Wed Nov 13, 2024
PM Peak (3:15 PM - 4:15 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1247891, Location: 39.937622, -83.408521

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US

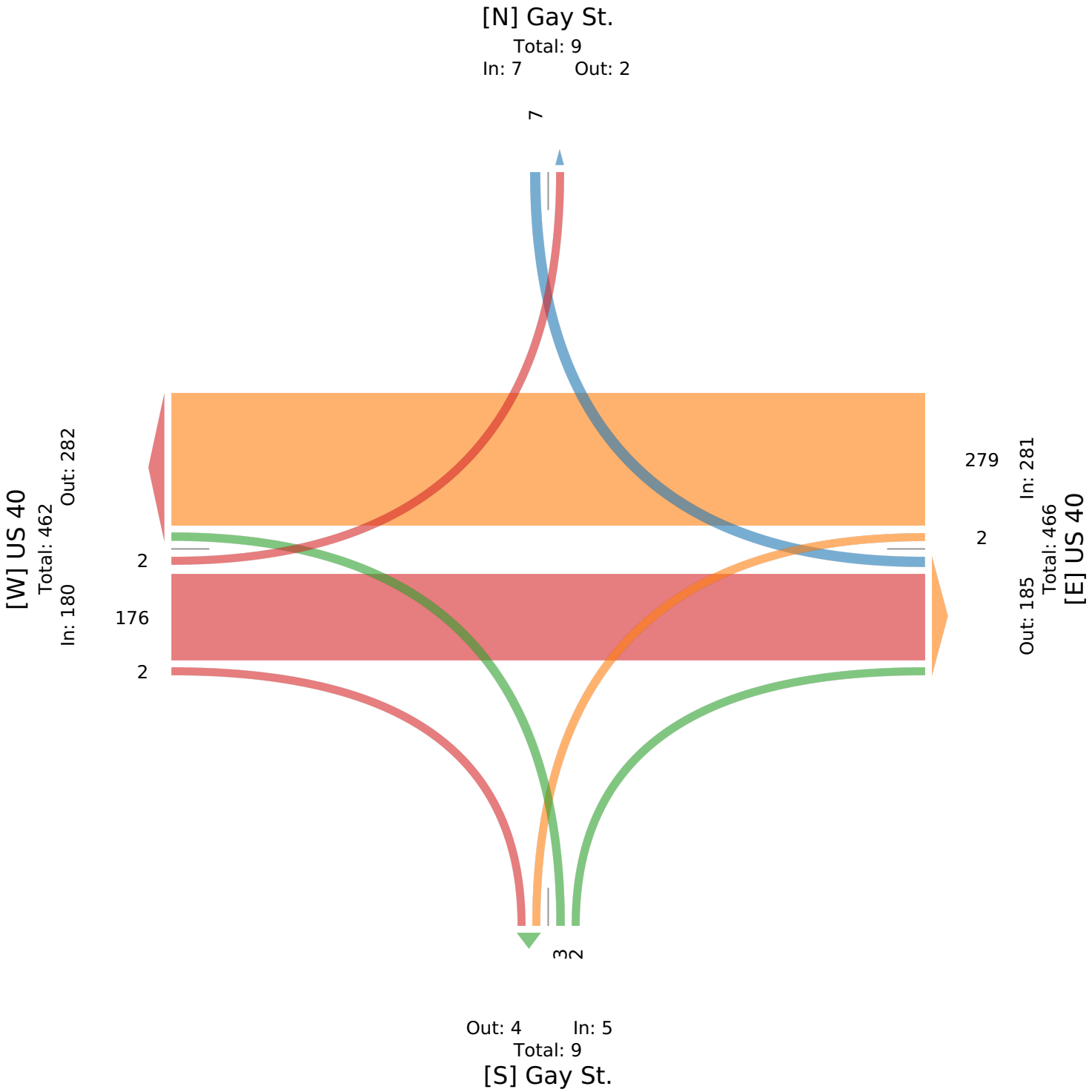
Leg	Gay St.					US 40					Gay St.					US 40					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	**Int**
2024-11-13 3:15PM	0	0	1	0	**1**	0	41	1	0	**42**	1	0	0	0	**1**	2	55	0	0	**57**	**101**
3:30PM	0	0	3	0	**3**	0	106	0	0	**106**	1	0	3	0	**4**	0	44	1	0	**45**	**158**
3:45PM	0	0	2	0	**2**	0	72	1	0	**73**	0	0	0	0	**0**	0	37	0	0	**37**	**112**
4:00PM	0	0	1	0	**1**	0	60	0	0	**60**	0	0	0	0	**0**	0	40	1	0	**41**	**102**
Total	0	0	7	0	**7**	0	279	2	0	**281**	2	0	3	0	**5**	2	176	2	0	**180**	**473**
% Approach	0%	0%	100%	0%	**-**	0%	99.3%	0.7%	0%	**-**	40.0%	0%	60.0%	0%	**-**	1.1%	97.8%	1.1%	0%	**-**	-
% Total	0%	0%	1.5%	0%	**1.5%**	0%	59.0%	0.4%	0%	**59.4%**	0.4%	0%	0.6%	0%	**1.1%**	0.4%	37.2%	0.4%	0%	**38.1%**	-
PHF	-	-	0.583	-	**0.583**	-	0.658	0.500	-	**0.663**	0.500	-	0.250	-	**0.313**	0.250	0.800	0.500	-	**0.789**	0.748
Lights	0	0	6	0	**6**	0	277	2	0	**279**	2	0	3	0	**5**	2	168	2	0	**172**	462
% Lights	0%	0%	85.7%	0%	**85.7%**	0%	99.3%	100%	0%	**99.3%**	100%	0%	100%	0%	**100%**	100%	95.5%	100%	0%	**95.6%**	97.7%
Articulated Trucks	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	2	0	0	**2**	2
% Articulated Trucks	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	0%	1.1%	0%	0%	**1.1%**	0.4%
Buses and Single-Unit Trucks	0	0	1	0	**1**	0	2	0	0	**2**	0	0	0	0	**0**	0	6	0	0	**6**	9
% Buses and Single-Unit Trucks	0%	0%	14.3%	0%	**14.3%**	0%	0.7%	0%	0%	**0.7%**	0%	0%	0%	0%	**0%**	0%	3.4%	0%	0%	**3.3%**	1.9%

*L: Left, R: Right, T: Thru, U: U-Turn

US 40 & Gay St. - TMC
Wed Nov 13, 2024
PM Peak (3:15 PM - 4:15 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1247891, Location: 39.937622, -83.408521

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US



US 40 & Betty Wilson Rd. - TMC

Wed Nov 13, 2024
Full Length (6 AM-9 AM, 3 PM-6 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1248030, Location: 39.936864, -83.425756

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US

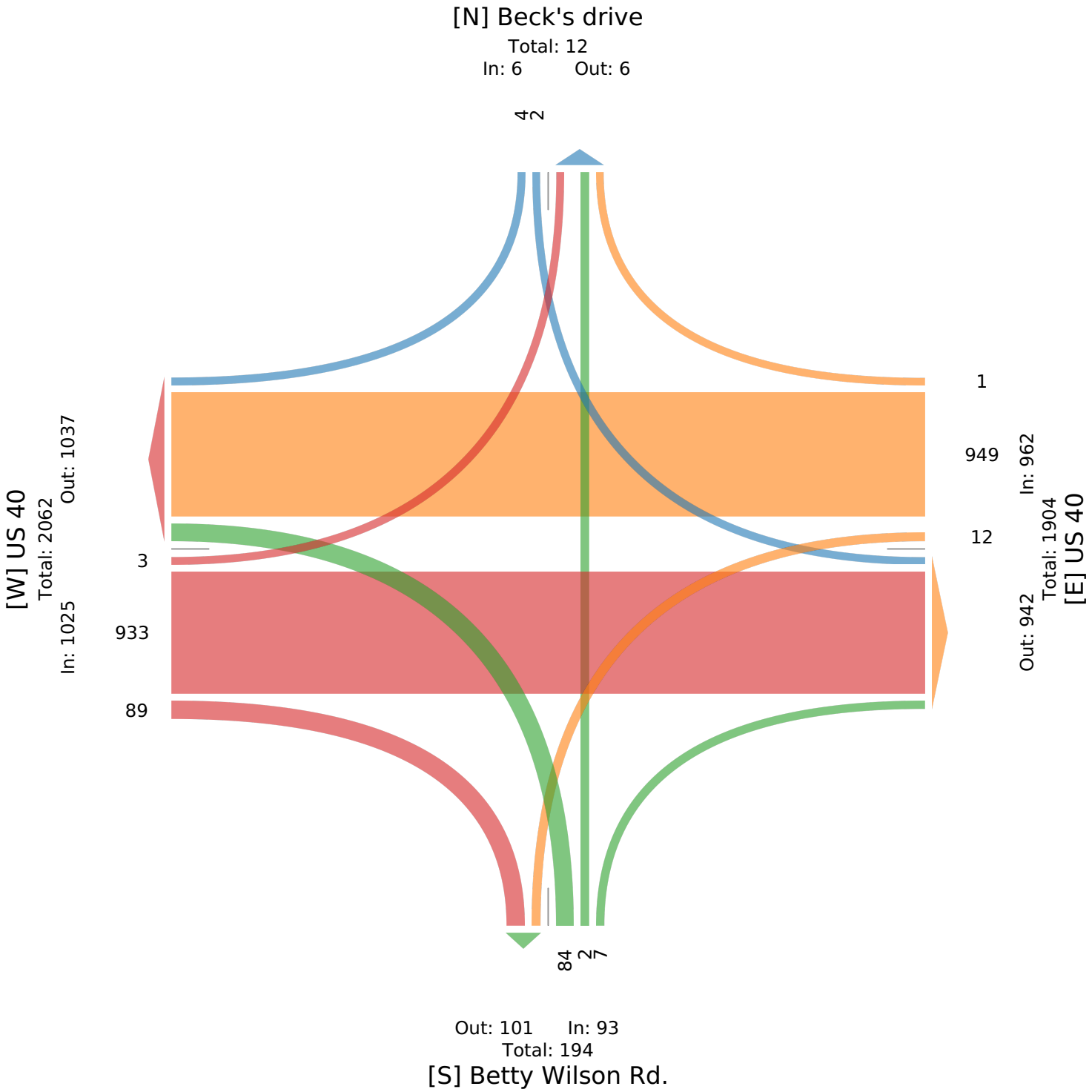
Leg	Beck's drive					US 40					Betty Wilson Rd.					US 40					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2024-11-13 6:00AM	0	0	0	0	**0**	0	17	0	0	**17**	0	0	3	0	**3**	2	24	0	0	**26**	**46**
6:15AM	0	0	0	0	**0**	0	14	0	0	**14**	0	0	2	0	**2**	1	53	0	0	**54**	**70**
6:30AM	0	0	0	0	**0**	0	29	0	0	**29**	1	0	0	0	**1**	2	71	0	0	**73**	**103**
6:45AM	0	0	0	0	**0**	0	37	0	0	**37**	0	0	0	0	**0**	1	57	0	0	**58**	**95**
Hourly Total	0	0	0	0	**0**	0	97	0	0	**97**	1	0	5	0	**6**	6	205	0	0	**211**	**314**
7:00AM	0	0	0	0	**0**	0	27	0	0	**27**	0	0	2	0	**2**	6	60	2	0	**68**	**97**
7:15AM	0	0	0	0	**0**	0	34	0	0	**34**	0	1	3	0	**4**	3	47	1	0	**51**	**89**
7:30AM	0	0	0	0	**0**	0	16	1	0	**17**	0	0	2	0	**2**	2	31	0	0	**33**	**52**
7:45AM	0	0	0	0	**0**	0	22	0	0	**22**	0	0	4	0	**4**	5	39	0	0	**44**	**70**
Hourly Total	0	0	0	0	**0**	0	99	1	0	**100**	0	1	11	0	**12**	16	177	3	0	**196**	**308**
8:00AM	0	0	1	0	**1**	0	33	2	0	**35**	0	1	1	0	**2**	5	22	0	0	**27**	**65**
8:15AM	0	0	1	0	**1**	0	17	0	0	**17**	1	0	2	0	**3**	7	22	0	0	**29**	**50**
8:30AM	0	0	0	0	**0**	0	16	0	0	**16**	0	0	1	0	**1**	4	25	0	0	**29**	**46**
8:45AM	0	0	0	0	**0**	1	21	0	0	**22**	1	0	0	0	**1**	1	22	0	0	**23**	**46**
Hourly Total	0	0	2	0	**2**	1	87	2	0	**90**	2	1	4	0	**7**	17	91	0	0	**108**	**207**
3:00PM	0	0	0	0	**0**	0	44	1	0	**45**	1	0	4	0	**5**	3	34	0	0	**37**	**87**
3:15PM	0	0	0	0	**0**	0	42	1	0	**43**	0	0	6	0	**6**	7	57	0	0	**64**	**113**
3:30PM	0	0	0	0	**0**	0	89	1	0	**90**	1	0	3	0	**4**	2	43	0	0	**45**	**139**
3:45PM	0	0	0	0	**0**	0	87	1	0	**88**	0	0	7	0	**7**	3	36	0	0	**39**	**134**
Hourly Total	0	0	0	0	**0**	0	262	4	0	**266**	2	0	20	0	**22**	15	170	0	0	**185**	**473**
4:00PM	0	0	0	0	**0**	0	54	1	0	**55**	1	0	4	0	**5**	9	39	0	0	**48**	**108**
4:15PM	1	0	0	0	**1**	0	59	3	0	**62**	0	0	1	0	**1**	4	27	0	0	**31**	**95**
4:30PM	0	0	0	0	**0**	0	51	0	0	**51**	0	0	7	0	**7**	3	22	0	0	**25**	**83**
4:45PM	0	0	0	0	**0**	0	51	0	0	**51**	1	0	9	0	**10**	7	25	0	0	**32**	**93**
Hourly Total	1	0	0	0	**1**	0	215	4	0	**219**	2	0	21	0	**23**	23	113	0	0	**136**	**379**
5:00PM	3	0	0	0	**3**	0	51	0	0	**51**	0	0	10	0	**10**	5	33	0	0	**38**	**102**
5:15PM	0	0	0	0	**0**	0	58	1	0	**59**	0	0	10	0	**10**	4	30	0	0	**34**	**103**
5:30PM	0	0	0	0	**0**	0	39	0	0	**39**	0	0	3	0	**3**	1	72	0	0	**73**	**115**
5:45PM	0	0	0	0	**0**	0	41	0	0	**41**	0	0	0	0	**0**	2	42	0	0	**44**	**85**
Hourly Total	3	0	0	0	**3**	0	189	1	0	**190**	0	0	23	0	**23**	12	177	0	0	**189**	**405**
Total	4	0	2	0	**6**	1	949	12	0	**962**	7	2	84	0	**93**	89	933	3	0	**1025**	**2086**
% Approach	66.7%	0%	33.3%	0%	**-**	0.1%	98.6%	1.2%	0%	**-**	7.5%	2.2%	90.3%	0%	**-**	8.7%	91.0%	0.3%	0%	**-**	-
% Total	0.2%	0%	0.1%	0%	**0.3%**	0%	45.5%	0.6%	0%	**46.1%**	0.3%	0.1%	4.0%	0%	**4.5%**	4.3%	44.7%	0.1%	0%	**49.1%**	-
Lights	4	0	1	0	**5**	1	915	11	0	**927**	6	1	82	0	**89**	87	906	3	0	**996**	2017
% Lights	100%	0%	50.0%	0%	**83.3%**	100%	96.4%	91.7%	0%	**96.4%**	85.7%	50.0%	97.6%	0%	**95.7%**	97.8%	97.1%	100%	0%	**97.2%**	96.7%
Articulated Trucks	0	0	0	0	**0**	0	7	0	0	**7**	1	0	0	0	**1**	0	8	0	0	**8**	16
% Articulated Trucks	0%	0%	0%	0%	**0%**	0%	0.7%	0%	0%	**0.7%**	14.3%	0%	0%	0%	**1.1%**	0%	0.9%	0%	0%	**0.8%**	0.8%
Buses and Single-Unit Trucks	0	0	1	0	**1**	0	27	1	0	**28**	0	1	2	0	**3**	2	19	0	0	**21**	53
% Buses and Single-Unit Trucks	0%	0%	50.0%	0%	**16.7%**	0%	2.8%	8.3%	0%	**2.9%**	0%	50.0%	2.4%	0%	**3.2%**	2.2%	2.0%	0%	0%	**2.0%**	2.5%

*L: Left, R: Right, T: Thru, U: U-Turn

US 40 & Betty Wilson Rd. - TMC
Wed Nov 13, 2024
Full Length (6 AM-9 AM, 3 PM-6 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1248030, Location: 39.936864, -83.425756

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US



US 40 & Betty Wilson Rd. - TMC

Wed Nov 13, 2024
AM Peak (6:30 AM - 7:30 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1248030, Location: 39.936864, -83.425756

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US

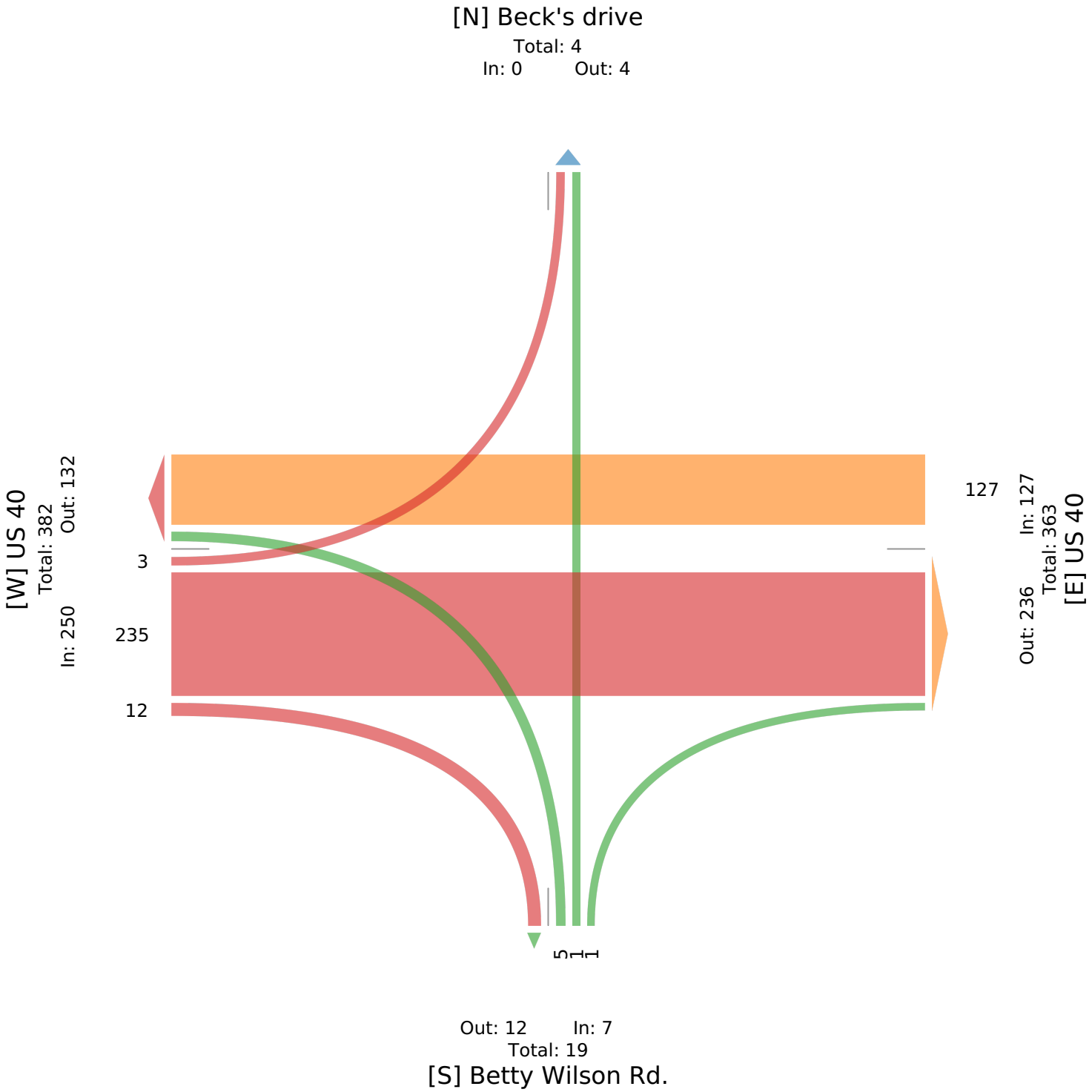
Leg	Beck's drive					US 40					Betty Wilson Rd.					US 40					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	**Int**
2024-11-13 6:30AM	0	0	0	0	**0**	0	29	0	0	**29**	1	0	0	0	**1**	2	71	0	0	**73**	**103**
6:45AM	0	0	0	0	**0**	0	37	0	0	**37**	0	0	0	0	**0**	1	57	0	0	**58**	**95**
7:00AM	0	0	0	0	**0**	0	27	0	0	**27**	0	0	2	0	**2**	6	60	2	0	**68**	**97**
7:15AM	0	0	0	0	**0**	0	34	0	0	**34**	0	1	3	0	**4**	3	47	1	0	**51**	**89**
Total	0	0	0	0	**0**	0	127	0	0	**127**	1	1	5	0	**7**	12	235	3	0	**250**	**384**
% Approach	0%	0%	0%	0%	**-**	0%	100%	0%	0%	**-**	14.3%	14.3%	71.4%	0%	**-**	4.8%	94.0%	1.2%	0%	**-**	-
% Total	0%	0%	0%	0%	**0%**	0%	33.1%	0%	0%	**33.1%**	0.3%	0.3%	1.3%	0%	**1.8%**	3.1%	61.2%	0.8%	0%	**65.1%**	-
PHF	-	-	-	-	**-**	-	0.858	-	-	**0.858**	0.250	0.250	0.417	-	**0.438**	0.500	0.827	0.375	-	**0.856**	0.932
Lights	0	0	0	0	**0**	0	123	0	0	**123**	1	1	5	0	**7**	11	232	3	0	**246**	376
% Lights	0%	0%	0%	0%	**-**	0%	96.9%	0%	0%	**96.9%**	100%	100%	100%	0%	**100%**	91.7%	98.7%	100%	0%	**98.4%**	97.9%
Articulated Trucks	0	0	0	0	**0**	0	2	0	0	**2**	0	0	0	0	**0**	0	2	0	0	**2**	4
% Articulated Trucks	0%	0%	0%	0%	**-**	0%	1.6%	0%	0%	**1.6%**	0%	0%	0%	0%	**0%**	0%	0.9%	0%	0%	**0.8%**	1.0%
Buses and Single-Unit Trucks	0	0	0	0	**0**	0	2	0	0	**2**	0	0	0	0	**0**	1	1	0	0	**2**	4
% Buses and Single-Unit Trucks	0%	0%	0%	0%	**-**	0%	1.6%	0%	0%	**1.6%**	0%	0%	0%	0%	**0%**	8.3%	0.4%	0%	0%	**0.8%**	1.0%

*L: Left, R: Right, T: Thru, U: U-Turn

US 40 & Betty Wilson Rd. - TMC
Wed Nov 13, 2024
AM Peak (6:30 AM - 7:30 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1248030, Location: 39.936864, -83.425756

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US



US 40 & Betty Wilson Rd. - TMC

Wed Nov 13, 2024
PM Peak (3:15 PM - 4:15 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1248030, Location: 39.936864, -83.425756

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US

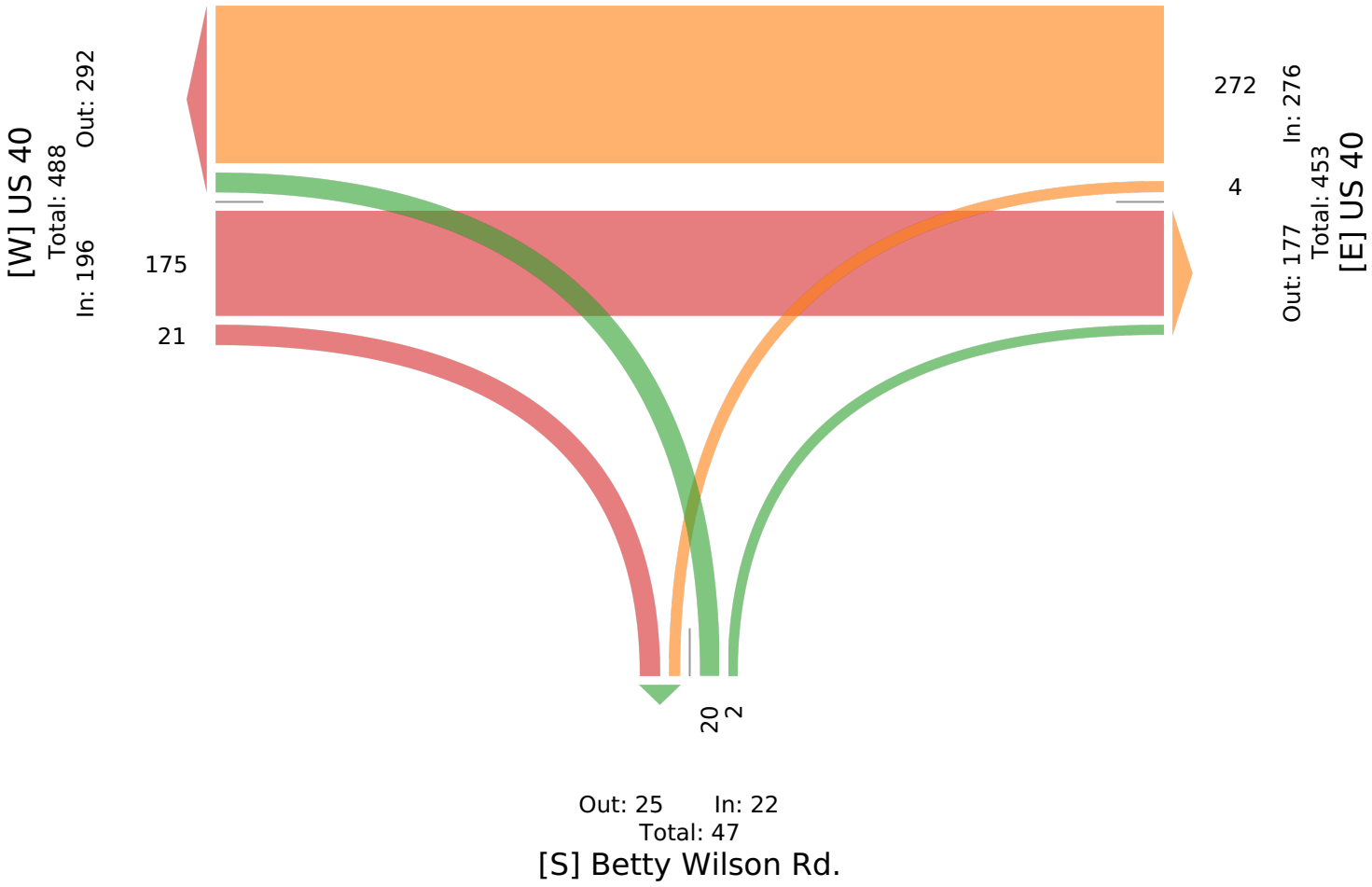
Leg	Beck's drive					US 40					Betty Wilson Rd.					US 40					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2024-11-13 3:15PM	0	0	0	0	**0**	0	42	1	0	**43**	0	0	6	0	**6**	7	57	0	0	**64**	**113**
3:30PM	0	0	0	0	**0**	0	89	1	0	**90**	1	0	3	0	**4**	2	43	0	0	**45**	**139**
3:45PM	0	0	0	0	**0**	0	87	1	0	**88**	0	0	7	0	**7**	3	36	0	0	**39**	**134**
4:00PM	0	0	0	0	**0**	0	54	1	0	**55**	1	0	4	0	**5**	9	39	0	0	**48**	**108**
Total	0	0	0	0	**0**	0	272	4	0	**276**	2	0	20	0	**22**	21	175	0	0	**196**	**494**
% Approach	0%	0%	0%	0%	**-**	0%	98.6%	1.4%	0%	**-**	9.1%	0%	90.9%	0%	**-**	10.7%	89.3%	0%	0%	**-**	-
% Total	0%	0%	0%	0%	**0%**	0%	55.1%	0.8%	0%	**55.9%**	0.4%	0%	4.0%	0%	**4.5%**	4.3%	35.4%	0%	0%	**39.7%**	-
PHF	-	-	-	-	**-**	-	0.764	1.000	-	**0.767**	0.500	-	0.714	-	**0.786**	0.583	0.768	-	-	**0.766**	0.888
Lights	0	0	0	0	**0**	0	269	4	0	**273**	2	0	19	0	**21**	21	167	0	0	**188**	482
% Lights	0%	0%	0%	0%	**-**	0%	98.9%	100%	0%	**98.9%**	100%	0%	95.0%	0%	**95.5%**	100%	95.4%	0%	0%	**95.9%**	97.6%
Articulated Trucks	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	2	0	0	**2**	2
% Articulated Trucks	0%	0%	0%	0%	**-**	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	0%	1.1%	0%	0%	**1.0%**	0.4%
Buses and Single-Unit Trucks	0	0	0	0	**0**	0	3	0	0	**3**	0	0	1	0	**1**	0	6	0	0	**6**	10
% Buses and Single-Unit Trucks	0%	0%	0%	0%	**-**	0%	1.1%	0%	0%	**1.1%**	0%	0%	5.0%	0%	**4.5%**	0%	3.4%	0%	0%	**3.1%**	2.0%

*L: Left, R: Right, T: Thru, U: U-Turn

US 40 & Betty Wilson Rd. - TMC
Wed Nov 13, 2024
PM Peak (3:15 PM - 4:15 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1248030, Location: 39.936864, -83.425756

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US



US 40 & Marysville-London Rd. (SR 38) - TMC

Wed Nov 13, 2024
Full Length (12 AM-12 AM (+1))
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1248031, Location: 39.935693, -83.450953

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US

Leg	Marysville-London Rd. (SR 38)					US 40					Marysville-London Rd. (SR 38)					US 40					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2024-11-13 12:00AM	0	0	0	0	**0**	0	7	0	0	**7**	0	1	3	0	**4**	0	2	0	0	**2**	**13**
12:15AM	0	2	0	0	**2**	0	3	0	0	**3**	0	0	0	0	**0**	0	0	0	0	**0**	**5**
12:30AM	0	1	0	0	**1**	0	6	0	0	**6**	0	0	1	0	**1**	0	0	0	0	**0**	**8**
12:45AM	0	0	0	0	**0**	0	11	0	0	**11**	0	1	1	0	**2**	0	1	0	0	**1**	**14**
Hourly Total	0	3	0	0	**3**	0	27	0	0	**27**	0	2	5	0	**7**	0	3	0	0	**3**	**40**
1:00AM	0	2	0	0	**2**	0	3	1	0	**4**	0	0	0	0	**0**	0	2	0	0	**2**	**8**
1:15AM	1	0	0	0	**1**	0	4	0	0	**4**	0	1	1	0	**2**	1	4	0	0	**5**	**12**
1:30AM	0	3	0	0	**3**	0	8	1	0	**9**	0	0	1	0	**1**	0	1	0	0	**1**	**14**
1:45AM	0	2	0	0	**2**	0	3	0	0	**3**	0	1	0	0	**1**	0	1	0	0	**1**	**7**
Hourly Total	1	7	0	0	**8**	0	18	2	0	**20**	0	2	2	0	**4**	1	8	0	0	**9**	**41**
2:00AM	0	1	0	0	**1**	0	5	1	0	**6**	0	0	1	0	**1**	1	2	0	0	**3**	**11**
2:15AM	1	1	0	0	**2**	0	8	1	0	**9**	0	0	0	0	**0**	0	1	0	0	**1**	**12**
2:30AM	1	3	0	0	**4**	0	6	0	0	**6**	0	0	0	0	**0**	0	1	0	0	**1**	**11**
2:45AM	0	3	0	0	**3**	0	5	0	0	**5**	0	0	1	0	**1**	0	1	0	0	**1**	**10**
Hourly Total	2	8	0	0	**10**	0	24	2	0	**26**	0	0	2	0	**2**	1	5	0	0	**6**	**44**
3:00AM	0	3	0	0	**3**	1	14	0	0	**15**	0	2	0	0	**2**	0	0	0	0	**0**	**20**
3:15AM	0	0	0	0	**0**	0	24	0	0	**24**	1	1	1	0	**3**	1	7	0	0	**8**	**35**
3:30AM	0	0	0	0	**0**	0	2	0	0	**2**	0	1	0	0	**1**	0	10	0	0	**10**	**13**
3:45AM	0	0	0	0	**0**	0	2	0	0	**2**	0	1	0	0	**1**	0	13	0	0	**13**	**16**
Hourly Total	0	3	0	0	**3**	1	42	0	0	**43**	1	5	1	0	**7**	1	30	0	0	**31**	**84**
4:00AM	0	2	0	0	**2**	0	6	0	0	**6**	0	1	0	0	**1**	2	5	0	0	**7**	**16**
4:15AM	1	0	0	0	**1**	0	14	1	0	**15**	1	2	1	0	**4**	5	21	0	0	**26**	**46**
4:30AM	0	2	0	0	**2**	0	20	0	0	**20**	0	2	0	0	**2**	5	19	0	0	**24**	**48**
4:45AM	0	1	0	0	**1**	0	35	0	0	**35**	1	4	0	0	**5**	2	23	1	0	**26**	**67**
Hourly Total	1	5	0	0	**6**	0	75	1	0	**76**	2	9	1	0	**12**	14	68	1	0	**83**	**177**
5:00AM	0	2	0	0	**2**	1	18	2	0	**21**	2	3	3	0	**8**	1	20	1	0	**22**	**53**
5:15AM	2	2	0	0	**4**	0	74	0	0	**74**	3	6	0	0	**9**	3	36	2	0	**41**	**128**
5:30AM	3	1	0	0	**4**	0	12	0	0	**12**	5	10	4	0	**19**	7	52	3	0	**62**	**97**
5:45AM	0	6	1	0	**7**	0	12	3	0	**15**	6	7	1	0	**14**	7	24	1	0	**32**	**68**
Hourly Total	5	11	1	0	**17**	1	116	5	0	**122**	16	26	8	0	**50**	18	132	7	0	**157**	**346**
6:00AM	2	7	1	0	**10**	0	15	3	0	**18**	4	10	3	0	**17**	7	21	2	0	**30**	**75**
6:15AM	1	8	3	0	**12**	0	14	5	0	**19**	6	7	5	0	**18**	12	53	1	0	**66**	**115**
6:30AM	6	7	0	0	**13**	1	15	12	0	**28**	13	9	3	0	**25**	32	62	1	0	**95**	**161**
6:45AM	4	12	2	0	**18**	0	20	17	0	**37**	8	10	7	0	**25**	40	54	3	0	**97**	**177**
Hourly Total	13	34	6	0	**53**	1	64	37	0	**102**	31	36	18	0	**85**	91	190	7	0	**288**	**528**
7:00AM	8	14	1	0	**23**	0	23	7	0	**30**	6	9	20	0	**35**	59	51	4	0	**114**	**202**
7:15AM	6	11	1	0	**18**	0	28	7	0	**35**	16	16	33	0	**65**	14	32	3	0	**49**	**167**
7:30AM	8	12	1	0	**21**	2	15	1	0	**18**	6	13	14	0	**33**	6	31	2	0	**39**	**111**
7:45AM	7	16	1	0	**24**	0	20	8	0	**28**	3	6	14	0	**23**	27	33	4	0	**64**	**139**
Hourly Total	29	53	4	0	**86**	2	86	23	0	**111**	31	44	81	0	**156**	106	147	13	0	**266**	**619**
8:00AM	2	11	2	0	**15**	2	21	12	0	**35**	4	9	4	0	**17**	15	22	5	0	**42**	**109**
8:15AM	8	7	1	0	**16**	1	12	5	0	**18**	3	13	9	0	**25**	22	27	4	0	**53**	**112**
8:30AM	4	8	0	0	**12**	0	13	5	0	**18**	8	11	26	0	**45**	28	20	3	0	**51**	**126**
8:45AM	3	12	2	0	**17**	1	9	10	0	**20**	5	7	12	0	**24**	15	19	0	0	**34**	**95**
Hourly Total	17	38	5	0	**60**	4	55	32	0	**91**	20	40	51	0	**111**	80	88	12	0	**180**	**442**
9:00AM	6	5	2	0	**13**	0	17	4	0	**21**	5	7	11	0	**23**	5	12	2	0	**19**	**76**
9:15AM	2	7	0	0	**9**	0	13	3	0	**16**	3	6	5	0	**14**	4	16	1	0	**21**	**60**
9:30AM	5	8	2	0	**15**	2	20	0	0	**22**	4	6	5	0	**15**	12	18	2	0	**32**	**84**
9:45AM	0	11	2	0	**13**	0	24	6	0	**30**	3	7	7	0	**17**	12	16	1	0	**29**	**89**
Hourly Total	13	31	6	0	**50**	2	74	13	0	**89**	15	26	28	0	**69**	33	62	6	0	**101**	**309**
10:00AM	4	0	1	0	**5**	1	19	0	0	**20**	4	9	8	0	**21**	11	17	5	0	**33**	**79**
10:15AM	5	9	0	0	**14**	0	13	2	0	**15**	2	5	11	0	**18**	9	21	3	0	**33**	**80**
10:30AM	1	10	2	0	**13**	1	14	1	0	**16**	2	9	8	0	**19**	8	19	5	0	**32**	**80**
10:45AM	2	4	1	0	**7**	0	21	3	0	**24**	3	3	7	0	**13**	16	16	2	0	**34**	**78**

Leg	Marysville-London Rd. (SR 38)					US 40					Marysville-London Rd. (SR 38)					US 40					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
Hourly Total	12	23	4	0	**39**	2	67	6	0	**75**	11	26	34	0	**71**	44	73	15	0	**132**	**317**
11:00AM	3	1	2	0	**6**	1	16	5	0	**22**	4	9	16	0	**29**	10	20	1	0	**31**	**88**
11:15AM	2	7	2	0	**11**	1	22	6	0	**29**	2	3	15	0	**20**	12	21	2	0	**35**	**95**
11:30AM	6	9	3	0	**18**	2	27	2	0	**31**	4	8	16	0	**28**	10	20	3	1	**34**	**111**
11:45AM	1	6	2	0	**9**	1	20	3	0	**24**	4	11	12	0	**27**	13	30	0	0	**43**	**103**
Hourly Total	12	23	9	0	**44**	5	85	16	0	**106**	14	31	59	0	**104**	45	91	6	1	**143**	**397**
12:00PM	3	4	2	0	**9**	0	18	2	0	**20**	3	14	12	0	**29**	6	30	3	0	**39**	**97**
12:15PM	1	5	0	0	**6**	1	19	6	0	**26**	7	9	14	0	**30**	15	29	2	0	**46**	**108**
12:30PM	2	6	1	0	**9**	2	24	5	0	**31**	7	5	13	0	**25**	7	26	6	0	**39**	**104**
12:45PM	7	4	1	0	**12**	2	21	2	0	**25**	2	9	13	0	**24**	12	31	3	0	**46**	**107**
Hourly Total	13	19	4	0	**36**	5	82	15	0	**102**	19	37	52	0	**108**	40	116	14	0	**170**	**416**
1:00PM	3	8	1	0	**12**	0	19	4	0	**23**	3	10	8	0	**21**	3	32	0	0	**35**	**91**
1:15PM	4	8	0	0	**12**	4	34	2	0	**40**	2	4	20	0	**26**	15	22	5	0	**42**	**120**
1:30PM	2	6	2	0	**10**	2	28	5	0	**35**	4	9	20	0	**33**	14	23	4	0	**41**	**119**
1:45PM	5	11	0	0	**16**	1	32	5	0	**38**	1	11	3	0	**15**	10	17	8	0	**35**	**104**
Hourly Total	14	33	3	0	**50**	7	113	16	0	**136**	10	34	51	0	**95**	42	94	17	0	**153**	**434**
2:00PM	0	8	1	0	**9**	0	28	4	0	**32**	2	9	13	0	**24**	22	31	2	0	**55**	**120**
2:15PM	5	6	1	0	**12**	1	35	2	0	**38**	7	12	31	0	**50**	13	27	6	0	**46**	**146**
2:30PM	5	12	1	0	**18**	4	51	8	0	**63**	9	9	22	0	**40**	14	22	4	0	**40**	**161**
2:45PM	5	12	0	0	**17**	3	68	11	0	**82**	8	8	12	0	**28**	18	21	6	0	**45**	**172**
Hourly Total	15	38	3	0	**56**	8	182	25	0	**215**	26	38	78	0	**142**	67	101	18	0	**186**	**599**
3:00PM	4	15	1	0	**20**	3	38	6	0	**47**	7	7	10	0	**24**	22	37	5	0	**64**	**155**
3:15PM	2	10	0	0	**12**	2	39	7	0	**48**	10	12	43	0	**65**	13	46	5	0	**64**	**189**
3:30PM	7	17	1	0	**25**	1	80	6	0	**87**	10	20	34	0	**64**	11	41	3	0	**55**	**231**
3:45PM	3	14	1	0	**18**	2	82	9	0	**93**	7	13	49	0	**69**	12	26	9	0	**47**	**227**
Hourly Total	16	56	3	0	**75**	8	239	28	0	**275**	34	52	136	0	**222**	58	150	22	0	**230**	**802**
4:00PM	5	19	0	0	**24**	2	53	6	0	**61**	6	12	29	0	**47**	17	41	12	0	**70**	**202**
4:15PM	7	14	1	0	**22**	3	49	4	0	**56**	2	17	23	0	**42**	11	28	8	0	**47**	**167**
4:30PM	7	15	0	0	**22**	3	48	6	0	**57**	4	12	20	0	**36**	11	16	3	0	**30**	**145**
4:45PM	3	28	1	0	**32**	1	50	11	0	**62**	6	9	26	0	**41**	10	24	7	0	**41**	**176**
Hourly Total	22	76	2	0	**100**	9	200	27	0	**236**	18	50	98	0	**166**	49	109	30	0	**188**	**690**
5:00PM	8	17	1	0	**26**	4	49	4	0	**57**	8	12	26	0	**46**	9	33	7	0	**49**	**178**
5:15PM	4	21	1	0	**26**	1	63	6	0	**70**	4	22	31	0	**57**	20	30	7	0	**57**	**210**
5:30PM	4	13	3	0	**20**	2	37	3	0	**42**	3	9	21	0	**33**	13	68	7	1	**89**	**184**
5:45PM	3	13	0	0	**16**	1	39	10	0	**50**	4	11	25	0	**40**	18	38	6	0	**62**	**168**
Hourly Total	19	64	5	0	**88**	8	188	23	0	**219**	19	54	103	0	**176**	60	169	27	1	**257**	**740**
6:00PM	4	13	0	0	**17**	0	34	7	0	**41**	6	11	9	0	**26**	11	64	2	0	**77**	**161**
6:15PM	1	6	0	0	**7**	3	57	8	0	**68**	2	11	14	0	**27**	7	30	0	0	**37**	**139**
6:30PM	1	7	1	0	**9**	3	23	2	0	**28**	1	7	22	0	**30**	8	11	5	0	**24**	**91**
6:45PM	1	7	1	0	**9**	2	26	5	0	**33**	3	6	9	0	**18**	15	9	2	0	**26**	**86**
Hourly Total	7	33	2	0	**42**	8	140	22	0	**170**	12	35	54	0	**101**	41	114	9	0	**164**	**477**
7:00PM	2	4	2	0	**8**	1	20	4	0	**25**	1	7	25	0	**33**	5	14	0	0	**19**	**85**
7:15PM	0	5	1	0	**6**	1	16	2	0	**19**	3	8	11	0	**22**	9	11	1	0	**21**	**68**
7:30PM	1	3	0	0	**4**	0	16	2	0	**18**	2	7	18	0	**27**	5	8	1	0	**14**	**63**
7:45PM	1	2	1	0	**4**	0	12	2	0	**14**	1	2	10	0	**13**	3	9	1	0	**13**	**44**
Hourly Total	4	14	4	0	**22**	2	64	10	0	**76**	7	24	64	0	**95**	22	42	3	0	**67**	**260**
8:00PM	0	2	0	0	**2**	0	16	3	0	**19**	0	4	6	0	**10**	10	8	0	0	**18**	**49**
8:15PM	1	3	0	0	**4**	1	14	2	0	**17**	1	5	4	0	**10**	7	5	2	0	**14**	**45**
8:30PM	1	3	0	0	**4**	0	9	2	0	**11**	1	1	9	0	**11**	5	5	0	0	**10**	**36**
8:45PM	1	1	0	0	**2**	0	9	2	0	**11**	1	4	11	0	**16**	4	7	2	0	**13**	**42**
Hourly Total	3	9	0	0	**12**	1	48	9	0	**58**	3	14	30	0	**47**	26	25	4	0	**55**	**172**
9:00PM	1	3	0	0	**4**	0	12	1	0	**13**	8	3	7	0	**18**	2	8	0	0	**10**	**45**
9:15PM	2	2	0	0	**4**	0	12	0	0	**12**	3	6	5	0	**14**	0	2	0	0	**2**	**32**
9:30PM	0	0	0	0	**0**	1	4	1	0	**6**	0	1	5	0	**6**	1	10	1	0	**12**	**24**
9:45PM	0	4	0	0	**4**	0	5	1	0	**6**	0	1	3	0	**4**	5	9	3	0	**17**	**31**
Hourly Total	3	9	0	0	**12**	1	33	3	0	**37**	11	11	20	0	**42**	8	29	4	0	**41**	**132**
10:00PM	0	2	1	0	**3**	0	7	1	0	**8**	0	1	2	0	**3**	6	15	1	0	**22**	**36**
10:15PM	0	1	0	0	**1**	0	7	1	0	**8**	0	1	4	0	**5**	3	9	0	0	**12**	**26**
10:30PM	0	0	1	0	**1**	0	9	1	0	**10**	1	2	0	0	**3**	7	4	0	0	**11**	**25**
10:45PM	0	2	0	0	**2**	0	13	1	0	**14**	0	1	1	0	**2**	3	3	0	0	**6**	**24**

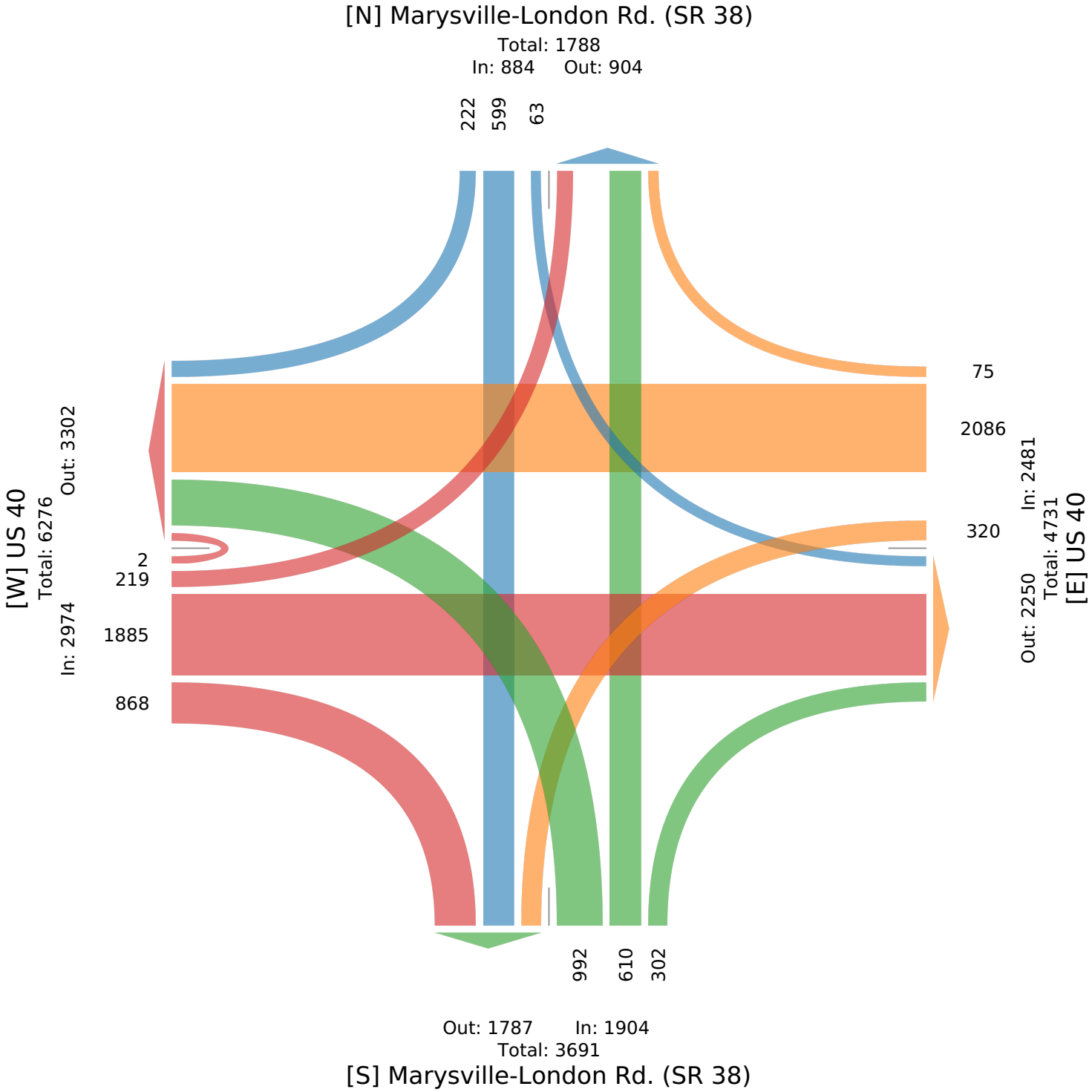
Leg	Marysville-London Rd. (SR 38)					US 40					Marysville-London Rd. (SR 38)					US 40					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	**Int**
Hourly Total	0	5	2	0	**7**	0	36	4	0	**40**	1	5	7	0	**13**	19	31	1	0	**51**	**111**
11:00PM	0	1	0	0	**1**	0	7	0	0	**7**	0	3	1	0	**4**	0	3	0	0	**3**	**15**
11:15PM	0	1	0	0	**1**	0	6	0	0	**6**	1	4	2	0	**7**	0	2	1	0	**3**	**17**
11:30PM	1	1	0	0	**2**	0	7	0	0	**7**	0	2	2	0	**4**	1	3	1	0	**5**	**18**
11:45PM	0	1	0	0	**1**	0	8	1	0	**9**	0	0	4	0	**4**	1	0	1	0	**2**	**16**
Hourly Total	1	4	0	0	**5**	0	28	1	0	**29**	1	9	9	0	**19**	2	8	3	0	**13**	**66**
Total	222	599	63	0	**884**	75	2086	320	0	**2481**	302	610	992	0	**1904**	868	1885	219	2	**2974**	**8243**
% Approach	25.1%	67.8%	7.1%	0%	**-**	3.0%	84.1%	12.9%	0%	**-**	15.9%	32.0%	52.1%	0%	**-**	29.2%	63.4%	7.4%	0.1%	**-**	**-**
% Total	2.7%	7.3%	0.8%	0%	**10.7%**	0.9%	25.3%	3.9%	0%	**30.1%**	3.7%	7.4%	12.0%	0%	**23.1%**	10.5%	22.9%	2.7%	0%	**36.1%**	**-**
Lights	208	534	59	0	**801**	72	1949	312	0	**2333**	297	548	979	0	**1824**	849	1785	206	2	**2842**	7800
% Lights	93.7%	89.1%	93.7%	0%	**90.6%**	96.0%	93.4%	97.5%	0%	**94.0%**	98.3%	89.8%	98.7%	0%	**95.8%**	97.8%	94.7%	94.1%	100%	**95.6%**	94.6%
Articulated Trucks	5	44	1	0	**50**	1	50	2	0	**53**	1	36	3	0	**40**	4	31	8	0	**43**	186
% Articulated Trucks	2.3%	7.3%	1.6%	0%	**5.7%**	1.3%	2.4%	0.6%	0%	**2.1%**	0.3%	5.9%	0.3%	0%	**2.1%**	0.5%	1.6%	3.7%	0%	**1.4%**	2.3%
Buses and Single-Unit Trucks	9	21	3	0	**33**	2	87	6	0	**95**	4	26	10	0	**40**	15	69	5	0	**89**	257
% Buses and Single-Unit Trucks	4.1%	3.5%	4.8%	0%	**3.7%**	2.7%	4.2%	1.9%	0%	**3.8%**	1.3%	4.3%	1.0%	0%	**2.1%**	1.7%	3.7%	2.3%	0%	**3.0%**	3.1%

*L: Left, R: Right, T: Thru, U: U-Turn

US 40 & Marysville-London Rd. (SR 38) - TMC
Wed Nov 13, 2024
Full Length (12 AM-12 AM (+1))
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1248031, Location: 39.935693, -83.450953

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US



US 40 & Marysville-London Rd. (SR 38) - TMC

Wed Nov 13, 2024
AM Peak (Nov 13 2024 6:30AM - 7:30 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1248031, Location: 39.935693, -83.450953

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US

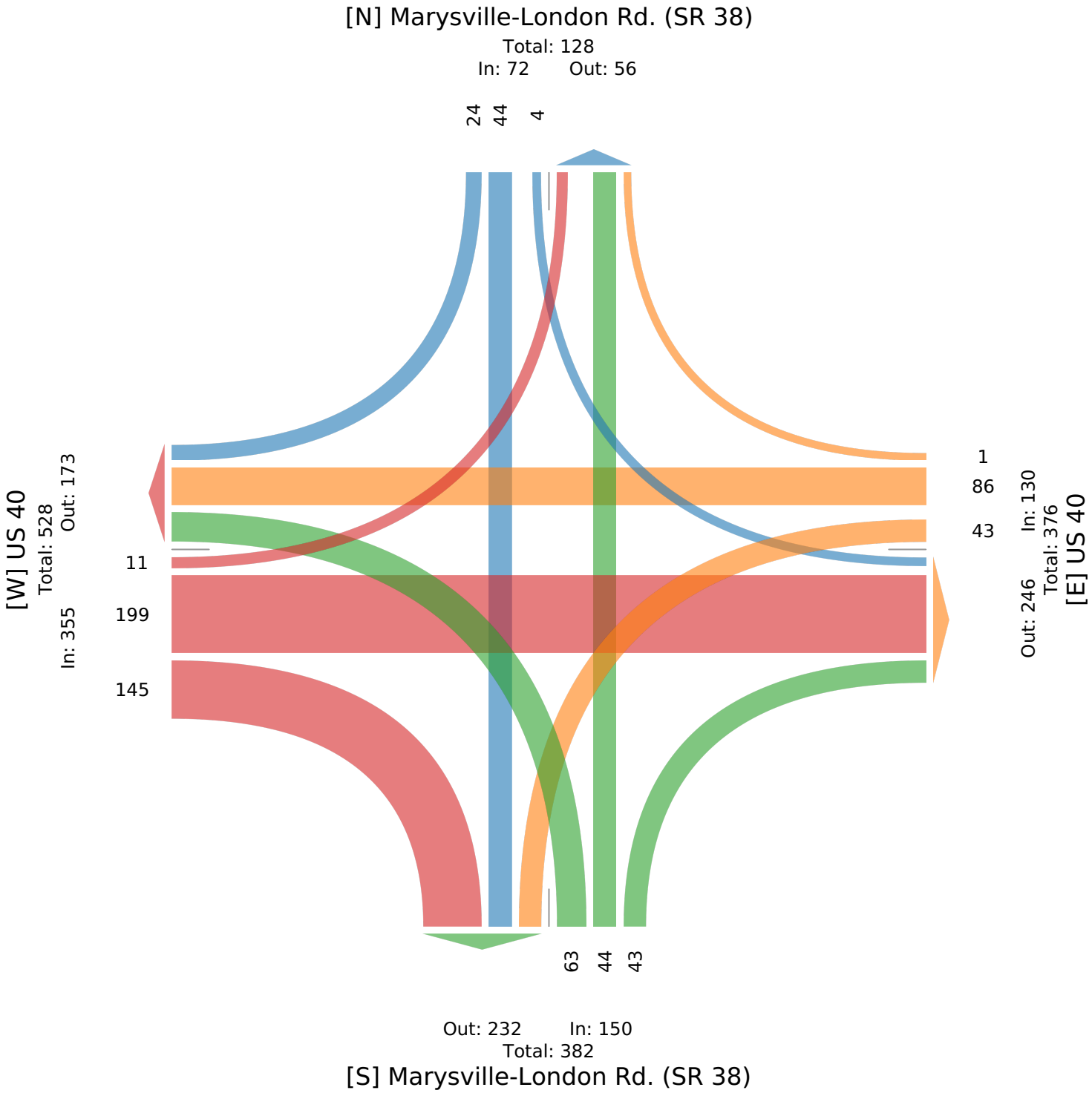
Leg	Marysville-London Rd. (SR 38)					US 40					Marysville-London Rd. (SR 38)					US 40					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2024-11-13 6:30AM	6	7	0	0	**13**	1	15	12	0	**28**	13	9	3	0	**25**	32	62	1	0	**95**	**161**
6:45AM	4	12	2	0	**18**	0	20	17	0	**37**	8	10	7	0	**25**	40	54	3	0	**97**	**177**
7:00AM	8	14	1	0	**23**	0	23	7	0	**30**	6	9	20	0	**35**	59	51	4	0	**114**	**202**
7:15AM	6	11	1	0	**18**	0	28	7	0	**35**	16	16	33	0	**65**	14	32	3	0	**49**	**167**
Total	24	44	4	0	**72**	1	86	43	0	**130**	43	44	63	0	**150**	145	199	11	0	**355**	**707**
% Approach	33.3%	61.1%	5.6%	0%	-	0.8%	66.2%	33.1%	0%	-	28.7%	29.3%	42.0%	0%	-	40.8%	56.1%	3.1%	0%	-	-
% Total	3.4%	6.2%	0.6%	0%	**10.2%**	0.1%	12.2%	6.1%	0%	**18.4%**	6.1%	6.2%	8.9%	0%	**21.2%**	20.5%	28.1%	1.6%	0%	**50.2%**	-
PHF	0.750	0.786	0.500	-	**0.783**	0.250	0.768	0.632	-	**0.878**	0.672	0.688	0.477	-	**0.577**	0.614	0.802	0.688	-	**0.779**	0.875
Lights	24	42	4	0	**70**	1	82	43	0	**126**	42	43	63	0	**148**	141	196	10	0	**347**	691
% Lights	100%	95.5%	100%	0%	**97.2%**	100%	95.3%	100%	0%	**96.9%**	97.7%	97.7%	100%	0%	**98.7%**	97.2%	98.5%	90.9%	0%	**97.7%**	97.7%
Articulated Trucks	0	0	0	0	**0**	0	2	0	0	**2**	0	1	0	0	**1**	0	2	1	0	**3**	6
% Articulated Trucks	0%	0%	0%	0%	**0%**	0%	2.3%	0%	0%	**1.5%**	0%	2.3%	0%	0%	**0.7%**	0%	1.0%	9.1%	0%	**0.8%**	0.8%
Buses and Single-Unit Trucks	0	2	0	0	**2**	0	2	0	0	**2**	1	0	0	0	**1**	4	1	0	0	**5**	10
% Buses and Single-Unit Trucks	0%	4.5%	0%	0%	**2.8%**	0%	2.3%	0%	0%	**1.5%**	2.3%	0%	0%	0%	**0.7%**	2.8%	0.5%	0%	0%	**1.4%**	1.4%

*L: Left, R: Right, T: Thru, U: U-Turn

US 40 & Marysville-London Rd. (SR 38) - TMC
Wed Nov 13, 2024
AM Peak (Nov 13 2024 6:30AM - 7:30 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1248031, Location: 39.935693, -83.450953

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US



US 40 & Marysville-London Rd. (SR 38) - TMC

Wed Nov 13, 2024
Midday Peak (Nov 13 2024 12:45PM - 1:45 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1248031, Location: 39.935693, -83.450953

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US

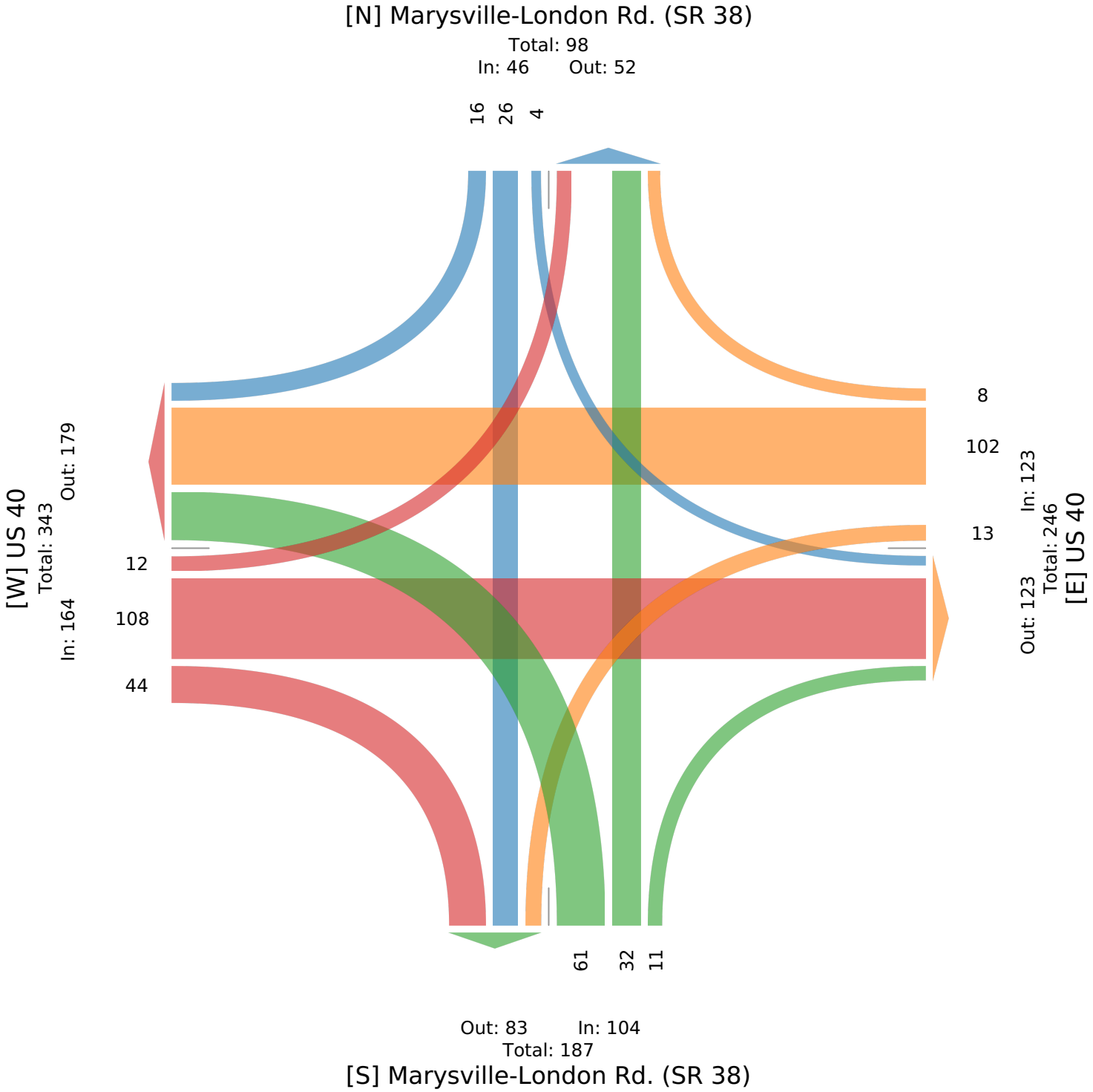
Leg	Marysville-London Rd. (SR 38)					US 40					Marysville-London Rd. (SR 38)					US 40					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2024-11-13 12:45PM	7	4	1	0	**12**	2	21	2	0	**25**	2	9	13	0	**24**	12	31	3	0	**46**	**107**
1:00PM	3	8	1	0	**12**	0	19	4	0	**23**	3	10	8	0	**21**	3	32	0	0	**35**	**91**
1:15PM	4	8	0	0	**12**	4	34	2	0	**40**	2	4	20	0	**26**	15	22	5	0	**42**	**120**
1:30PM	2	6	2	0	**10**	2	28	5	0	**35**	4	9	20	0	**33**	14	23	4	0	**41**	**119**
Total	16	26	4	0	**46**	8	102	13	0	**123**	11	32	61	0	**104**	44	108	12	0	**164**	**437**
% Approach	34.8%	56.5%	8.7%	0%	-	6.5%	82.9%	10.6%	0%	-	10.6%	30.8%	58.7%	0%	-	26.8%	65.9%	7.3%	0%	-	-
% Total	3.7%	5.9%	0.9%	0%	**10.5%**	1.8%	23.3%	3.0%	0%	**28.1%**	2.5%	7.3%	14.0%	0%	**23.8%**	10.1%	24.7%	2.7%	0%	**37.5%**	-
PHF	0.571	0.813	0.500	-	**0.958**	0.500	0.750	0.650	-	**0.769**	0.688	0.800	0.763	-	**0.788**	0.733	0.844	0.600	-	**0.891**	0.910
Lights	15	22	3	0	**40**	8	90	13	0	**111**	10	31	59	0	**100**	44	101	10	0	**155**	406
% Lights	93.8%	84.6%	75.0%	0%	**87.0%**	100%	88.2%	100%	0%	**90.2%**	90.9%	96.9%	96.7%	0%	**96.2%**	100%	93.5%	83.3%	0%	**94.5%**	92.9%
Articulated Trucks	0	3	1	0	**4**	0	2	0	0	**2**	0	1	2	0	**3**	0	1	1	0	**2**	11
% Articulated Trucks	0%	11.5%	25.0%	0%	**8.7%**	0%	2.0%	0%	0%	**1.6%**	0%	3.1%	3.3%	0%	**2.9%**	0%	0.9%	8.3%	0%	**1.2%**	2.5%
Buses and Single-Unit Trucks	1	1	0	0	**2**	0	10	0	0	**10**	1	0	0	0	**1**	0	6	1	0	**7**	20
% Buses and Single-Unit Trucks	6.3%	3.8%	0%	0%	**4.3%**	0%	9.8%	0%	0%	**8.1%**	9.1%	0%	0%	0%	**1.0%**	0%	5.6%	8.3%	0%	**4.3%**	4.6%

*L: Left, R: Right, T: Thru, U: U-Turn

US 40 & Marysville-London Rd. (SR 38) - TMC
Wed Nov 13, 2024
Midday Peak (Nov 13 2024 12:45PM - 1:45 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1248031, Location: 39.935693, -83.450953

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US



US 40 & Marysville-London Rd. (SR 38) - TMC

Wed Nov 13, 2024
PM Peak (Nov 13 2024 3:15PM - 4:15 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1248031, Location: 39.935693, -83.450953

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US

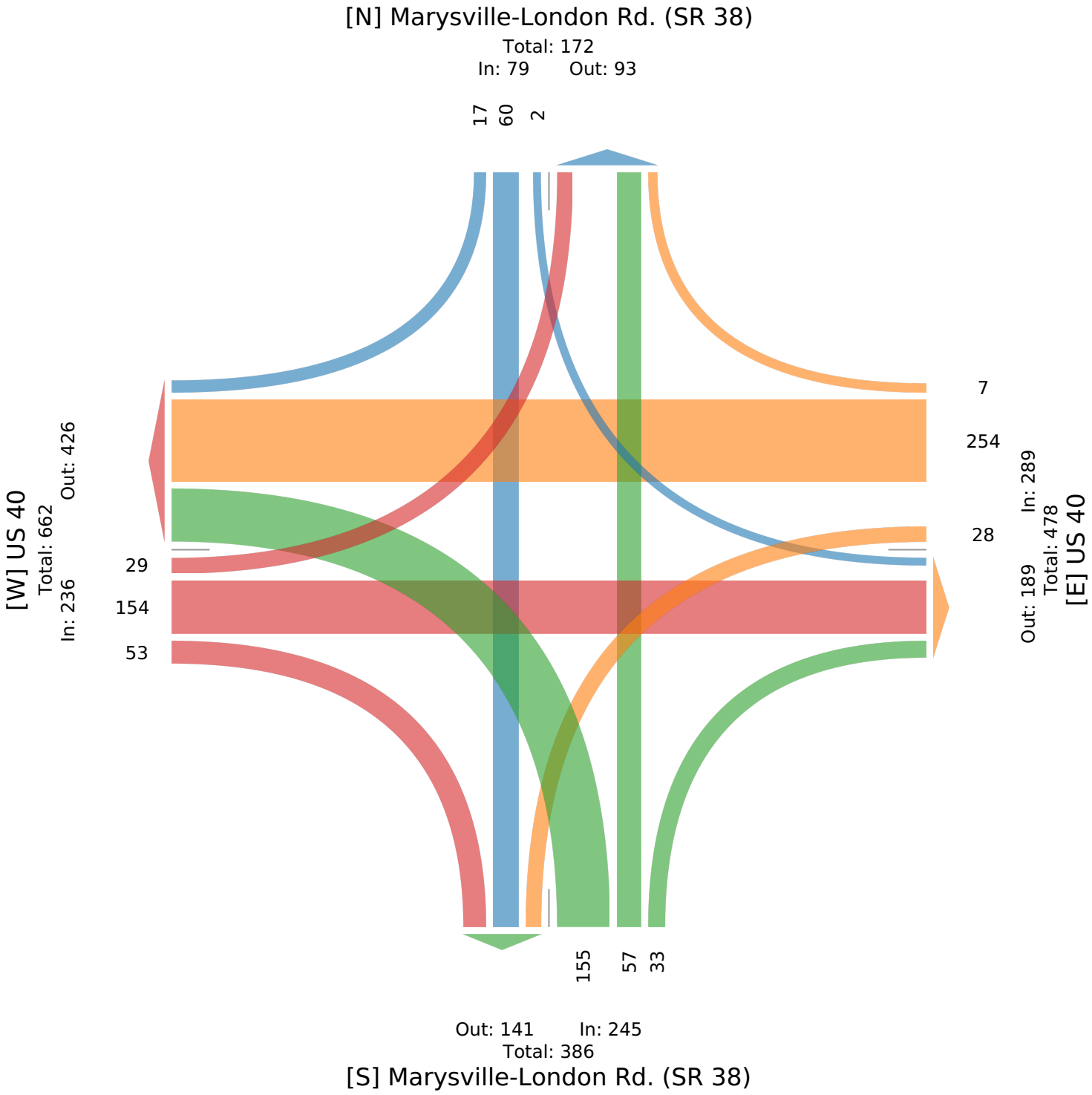
Leg	Marysville-London Rd. (SR 38)					US 40					Marysville-London Rd. (SR 38)					US 40					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2024-11-13 3:15PM	2	10	0	0	**12**	2	39	7	0	**48**	10	12	43	0	**65**	13	46	5	0	**64**	**189**
3:30PM	7	17	1	0	**25**	1	80	6	0	**87**	10	20	34	0	**64**	11	41	3	0	**55**	**231**
3:45PM	3	14	1	0	**18**	2	82	9	0	**93**	7	13	49	0	**69**	12	26	9	0	**47**	**227**
4:00PM	5	19	0	0	**24**	2	53	6	0	**61**	6	12	29	0	**47**	17	41	12	0	**70**	**202**
Total	17	60	2	0	**79**	7	254	28	0	**289**	33	57	155	0	**245**	53	154	29	0	**236**	**849**
% Approach	21.5%	75.9%	2.5%	0%	-	2.4%	87.9%	9.7%	0%	-	13.5%	23.3%	63.3%	0%	-	22.5%	65.3%	12.3%	0%	-	-
% Total	2.0%	7.1%	0.2%	0%	**9.3%**	0.8%	29.9%	3.3%	0%	**34.0%**	3.9%	6.7%	18.3%	0%	**28.9%**	6.2%	18.1%	3.4%	0%	**27.8%**	-
PHF	0.607	0.789	0.500	-	**0.790**	0.875	0.774	0.778	-	**0.777**	0.825	0.713	0.791	-	**0.888**	0.779	0.837	0.604	-	**0.843**	0.919
Lights	16	52	2	0	**70**	7	252	27	0	**286**	32	56	155	0	**243**	49	149	27	0	**225**	824
% Lights	94.1%	86.7%	100%	0%	**88.6%**	100%	99.2%	96.4%	0%	**99.0%**	97.0%	98.2%	100%	0%	**99.2%**	92.5%	96.8%	93.1%	0%	**95.3%**	97.1%
Articulated Trucks	0	6	0	0	**6**	0	0	0	0	**0**	1	1	0	0	**2**	1	1	1	0	**3**	11
% Articulated Trucks	0%	10.0%	0%	0%	**7.6%**	0%	0%	0%	0%	**0%**	3.0%	1.8%	0%	0%	**0.8%**	1.9%	0.6%	3.4%	0%	**1.3%**	1.3%
Buses and Single-Unit Trucks	1	2	0	0	**3**	0	2	1	0	**3**	0	0	0	0	**0**	3	4	1	0	**8**	14
% Buses and Single-Unit Trucks	5.9%	3.3%	0%	0%	**3.8%**	0%	0.8%	3.6%	0%	**1.0%**	0%	0%	0%	0%	**0%**	5.7%	2.6%	3.4%	0%	**3.4%**	1.6%

*L: Left, R: Right, T: Thru, U: U-Turn

US 40 & Marysville-London Rd. (SR 38) - TMC
Wed Nov 13, 2024
PM Peak (Nov 13 2024 3:15PM - 4:15 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1248031, Location: 39.935693, -83.450953

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US



US 40 & Madison Co. Airport - TMC

Wed Nov 13, 2024
Full Length (6 AM-9 AM, 3 PM-6 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1248032, Location: 39.93507, -83.464206

LOUKAS engineering
TRAFFIC DATA & CONSULTING

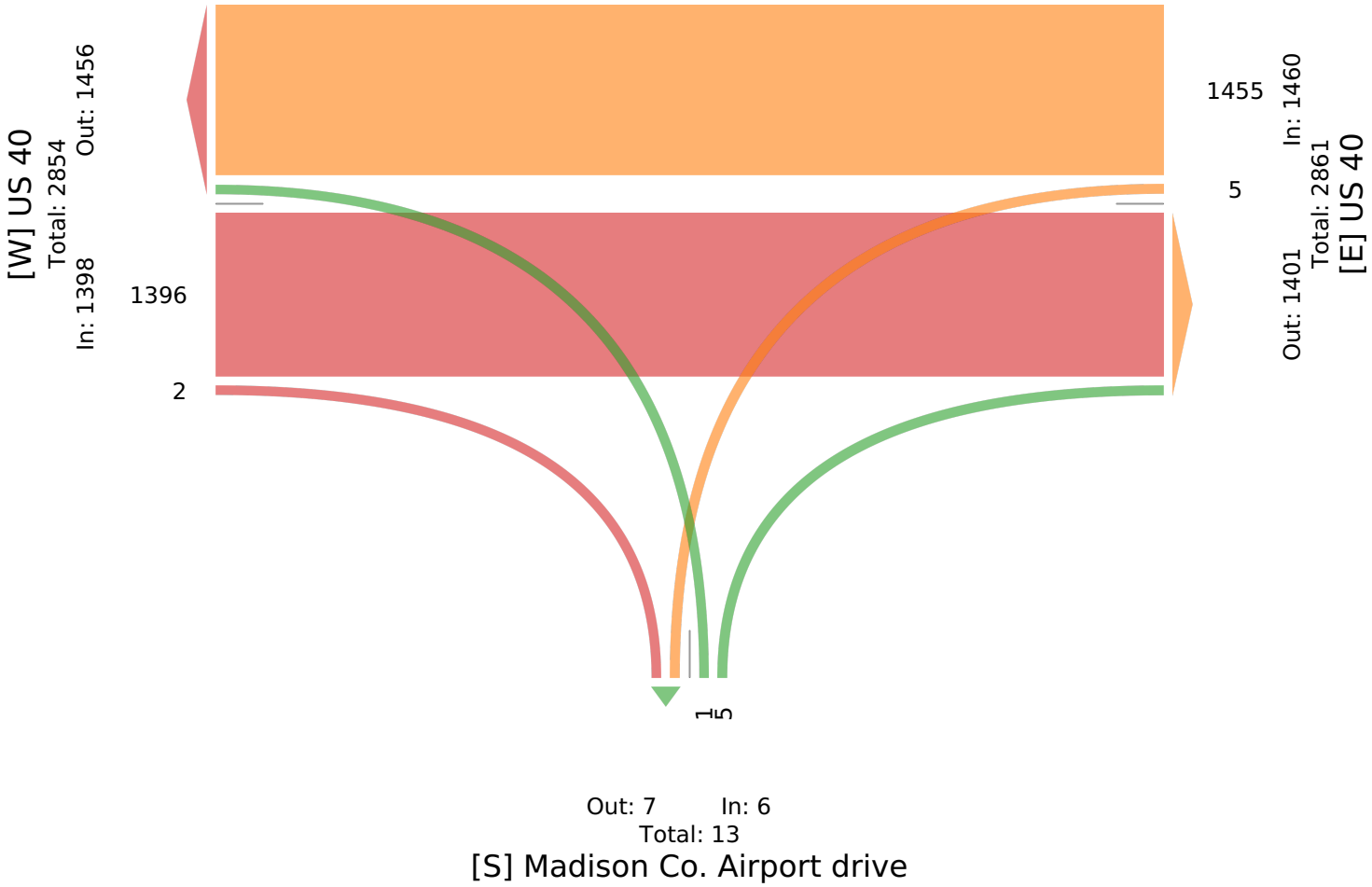
Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US

Leg	US 40				Madison Co. Airport drive				US 40				
Direction	Westbound				Northbound				Eastbound				
Time	T	L	U	App	R	L	U	App	R	T	U	App	Int
2024-11-13 6:00AM	17	0	0	**17**	0	0	0	**0**	0	28	0	**28**	**45**
6:15AM	19	0	0	**19**	0	0	0	**0**	0	60	0	**60**	**79**
6:30AM	20	0	0	**20**	0	0	0	**0**	0	93	0	**93**	**113**
6:45AM	34	0	0	**34**	0	0	0	**0**	0	104	0	**104**	**138**
Hourly Total	90	0	0	**90**	0	0	0	**0**	0	285	0	**285**	**375**
7:00AM	48	0	0	**48**	0	0	0	**0**	0	114	0	**114**	**162**
7:15AM	76	0	0	**76**	0	0	0	**0**	0	48	0	**48**	**124**
7:30AM	36	1	0	**37**	0	0	0	**0**	0	35	0	**35**	**72**
7:45AM	42	2	0	**44**	1	0	0	**1**	1	65	0	**66**	**111**
Hourly Total	202	3	0	**205**	1	0	0	**1**	1	262	0	**263**	**469**
8:00AM	31	0	0	**31**	0	0	0	**0**	0	43	0	**43**	**74**
8:15AM	27	0	0	**27**	0	0	0	**0**	0	51	0	**51**	**78**
8:30AM	44	0	0	**44**	0	0	0	**0**	1	51	0	**52**	**96**
8:45AM	23	1	0	**24**	0	0	0	**0**	0	36	0	**36**	**60**
Hourly Total	125	1	0	**126**	0	0	0	**0**	1	181	0	**182**	**308**
3:00PM	58	0	0	**58**	0	0	0	**0**	0	59	0	**59**	**117**
3:15PM	82	0	0	**82**	1	0	0	**1**	0	63	0	**63**	**146**
3:30PM	112	0	0	**112**	0	0	0	**0**	0	53	0	**53**	**165**
3:45PM	152	0	0	**152**	2	0	0	**2**	0	47	0	**47**	**201**
Hourly Total	404	0	0	**404**	3	0	0	**3**	0	222	0	**222**	**629**
4:00PM	90	1	0	**91**	0	1	0	**1**	0	71	0	**71**	**163**
4:15PM	83	0	0	**83**	0	0	0	**0**	0	43	0	**43**	**126**
4:30PM	67	0	0	**67**	0	0	0	**0**	0	35	0	**35**	**102**
4:45PM	87	0	0	**87**	0	0	0	**0**	0	44	0	**44**	**131**
Hourly Total	327	1	0	**328**	0	1	0	**1**	0	193	0	**193**	**522**
5:00PM	84	0	0	**84**	0	0	0	**0**	0	47	0	**47**	**131**
5:15PM	93	0	0	**93**	0	0	0	**0**	0	57	0	**57**	**150**
5:30PM	55	0	0	**55**	0	0	0	**0**	0	89	0	**89**	**144**
5:45PM	75	0	0	**75**	1	0	0	**1**	0	60	0	**60**	**136**
Hourly Total	307	0	0	**307**	1	0	0	**1**	0	253	0	**253**	**561**
Total	1455	5	0	**1460**	5	1	0	**6**	2	1396	0	**1398**	**2864**
% Approach	99.7%	0.3%	0%	-	83.3%	16.7%	0%	-	0.1%	99.9%	0%	-	-
% Total	50.8%	0.2%	0%	**51.0%**	0.2%	0%	0%	**0.2%**	0.1%	48.7%	0%	**48.8%**	-
Lights	1419	5	0	**1424**	5	1	0	**6**	2	1351	0	**1353**	2783
% Lights	97.5%	100%	0%	**97.5%**	100%	100%	0%	**100%**	100%	96.8%	0%	**96.8%**	97.2%
Articulated Trucks	10	0	0	**10**	0	0	0	**0**	0	12	0	**12**	22
% Articulated Trucks	0.7%	0%	0%	**0.7%**	0%	0%	0%	**0%**	0%	0.9%	0%	**0.9%**	0.8%
Buses and Single-Unit Trucks	26	0	0	**26**	0	0	0	**0**	0	33	0	**33**	59
% Buses and Single-Unit Trucks	1.8%	0%	0%	**1.8%**	0%	0%	0%	**0%**	0%	2.4%	0%	**2.4%**	2.1%

*L: Left, R: Right, T: Thru, U: U-Turn

US 40 & Madison Co. Airport - TMC
Wed Nov 13, 2024
Full Length (6 AM-9 AM, 3 PM-6 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1248032, Location: 39.93507, -83.464206

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US



US 40 & Madison Co. Airport - TMC

Wed Nov 13, 2024
AM Peak (6:30 AM - 7:30 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1248032, Location: 39.93507, -83.464206

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US

Leg	US 40				Madison Co. Airport drive				US 40				
Direction	Westbound				Northbound				Eastbound				
Time	T	L	U	**App**	R	L	U	**App**	R	T	U	**App**	**Int**
2024-11-13 6:30AM	20	0	0	**20**	0	0	0	**0**	0	93	0	**93**	**113**
6:45AM	34	0	0	**34**	0	0	0	**0**	0	104	0	**104**	**138**
7:00AM	48	0	0	**48**	0	0	0	**0**	0	114	0	**114**	**162**
7:15AM	76	0	0	**76**	0	0	0	**0**	0	48	0	**48**	**124**
Total	178	0	0	**178**	0	0	0	**0**	0	359	0	**359**	**537**
% Approach	100%	0%	0%	**-**	0%	0%	0%	**-**	0%	100%	0%	**-**	-
% Total	33.1%	0%	0%	**33.1%**	0%	0%	0%	**0%**	0%	66.9%	0%	**66.9%**	-
PHF	0.586	-	-	**0.586**	-	-	-	**-**	-	0.787	-	**0.787**	0.829
Lights	173	0	0	**173**	0	0	0	**0**	0	351	0	**351**	524
% Lights	97.2%	0%	0%	**97.2%**	0%	0%	0%	**-**	0%	97.8%	0%	**97.8%**	97.6%
Articulated Trucks	3	0	0	**3**	0	0	0	**0**	0	3	0	**3**	6
% Articulated Trucks	1.7%	0%	0%	**1.7%**	0%	0%	0%	**-**	0%	0.8%	0%	**0.8%**	1.1%
Buses and Single-Unit Trucks	2	0	0	**2**	0	0	0	**0**	0	5	0	**5**	7
% Buses and Single-Unit Trucks	1.1%	0%	0%	**1.1%**	0%	0%	0%	**-**	0%	1.4%	0%	**1.4%**	1.3%

*L: Left, R: Right, T: Thru, U: U-Turn

US 40 & Madison Co. Airport - TMC

Wed Nov 13, 2024
AM Peak (6:30 AM - 7:30 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1248032, Location: 39.93507, -83.464206

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US

US 40 & Madison Co. Airport - TMC

Wed Nov 13, 2024
PM Peak (3:15 PM - 4:15 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1248032, Location: 39.93507, -83.464206

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US

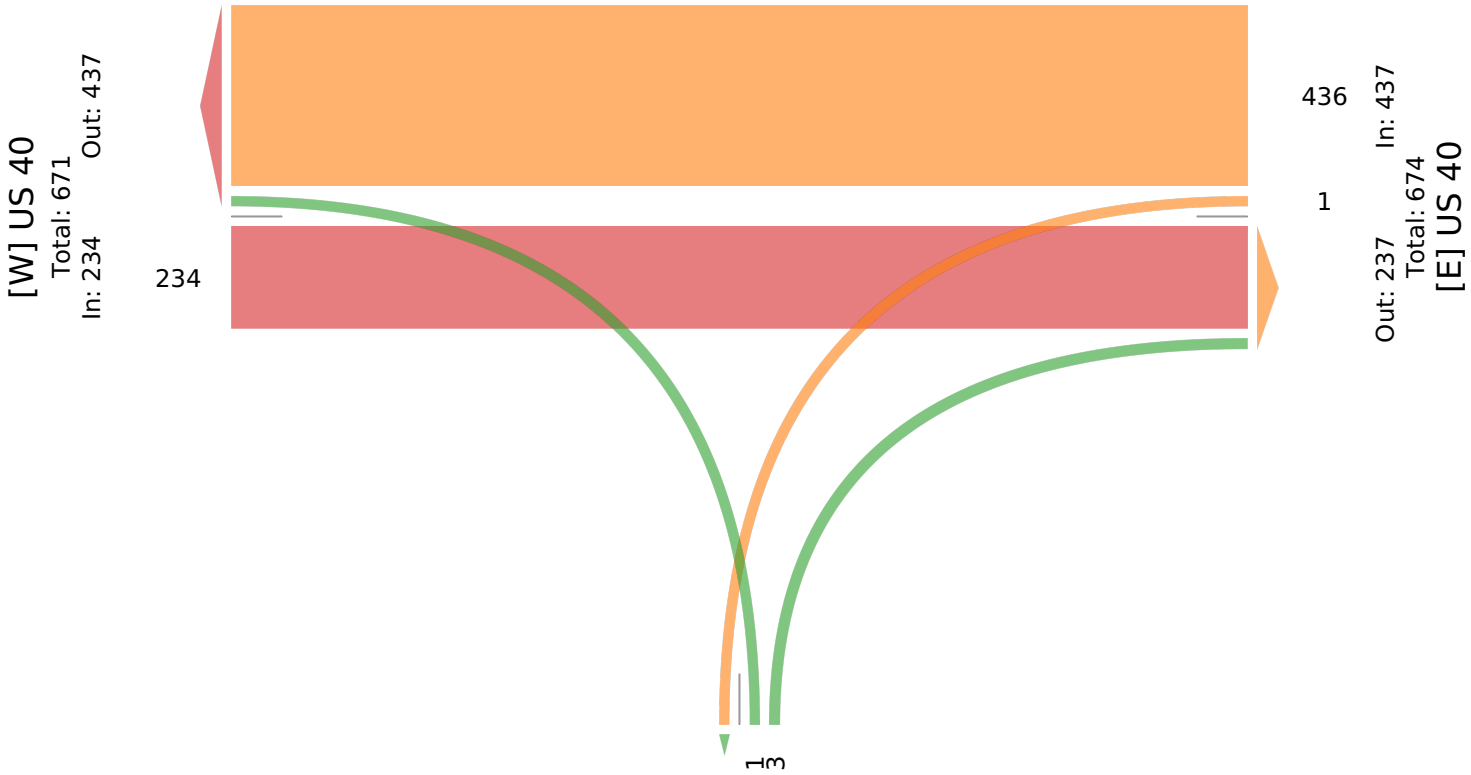
Leg	US 40				Madison Co. Airport drive				US 40				
Direction	Westbound				Northbound				Eastbound				
Time	T	L	U	**App**	R	L	U	**App**	R	T	U	**App**	**Int**
2024-11-13 3:15PM	82	0	0	**82**	1	0	0	**1**	0	63	0	**63**	**146**
3:30PM	112	0	0	**112**	0	0	0	**0**	0	53	0	**53**	**165**
3:45PM	152	0	0	**152**	2	0	0	**2**	0	47	0	**47**	**201**
4:00PM	90	1	0	**91**	0	1	0	**1**	0	71	0	**71**	**163**
Total	436	1	0	**437**	3	1	0	**4**	0	234	0	**234**	**675**
% Approach	99.8%	0.2%	0%	**-**	75.0%	25.0%	0%	**-**	0%	100%	0%	**-**	-
% Total	64.6%	0.1%	0%	**64.7%**	0.4%	0.1%	0%	**0.6%**	0%	34.7%	0%	**34.7%**	-
PHF	0.717	0.250	-	**0.719**	0.375	0.250	-	**0.500**	-	0.824	-	**0.824**	0.840
Lights	433	1	0	**434**	3	1	0	**4**	0	223	0	**223**	661
% Lights	99.3%	100%	0%	**99.3%**	100%	100%	0%	**100%**	0%	95.3%	0%	**95.3%**	97.9%
Articulated Trucks	0	0	0	**0**	0	0	0	**0**	0	3	0	**3**	3
% Articulated Trucks	0%	0%	0%	**0%**	0%	0%	0%	**0%**	0%	1.3%	0%	**1.3%**	0.4%
Buses and Single-Unit Trucks	3	0	0	**3**	0	0	0	**0**	0	8	0	**8**	11
% Buses and Single-Unit Trucks	0.7%	0%	0%	**0.7%**	0%	0%	0%	**0%**	0%	3.4%	0%	**3.4%**	1.6%

*L: Left, R: Right, T: Thru, U: U-Turn

US 40 & Madison Co. Airport - TMC
Wed Nov 13, 2024
PM Peak (3:15 PM - 4:15 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1248032, Location: 39.93507, -83.464206

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US



US 40 & Gwynne Rd. - TMC

Wed Nov 13, 2024
Full Length (6 AM-9 AM, 3 PM-6 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1248033, Location: 39.934673, -83.472946

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US

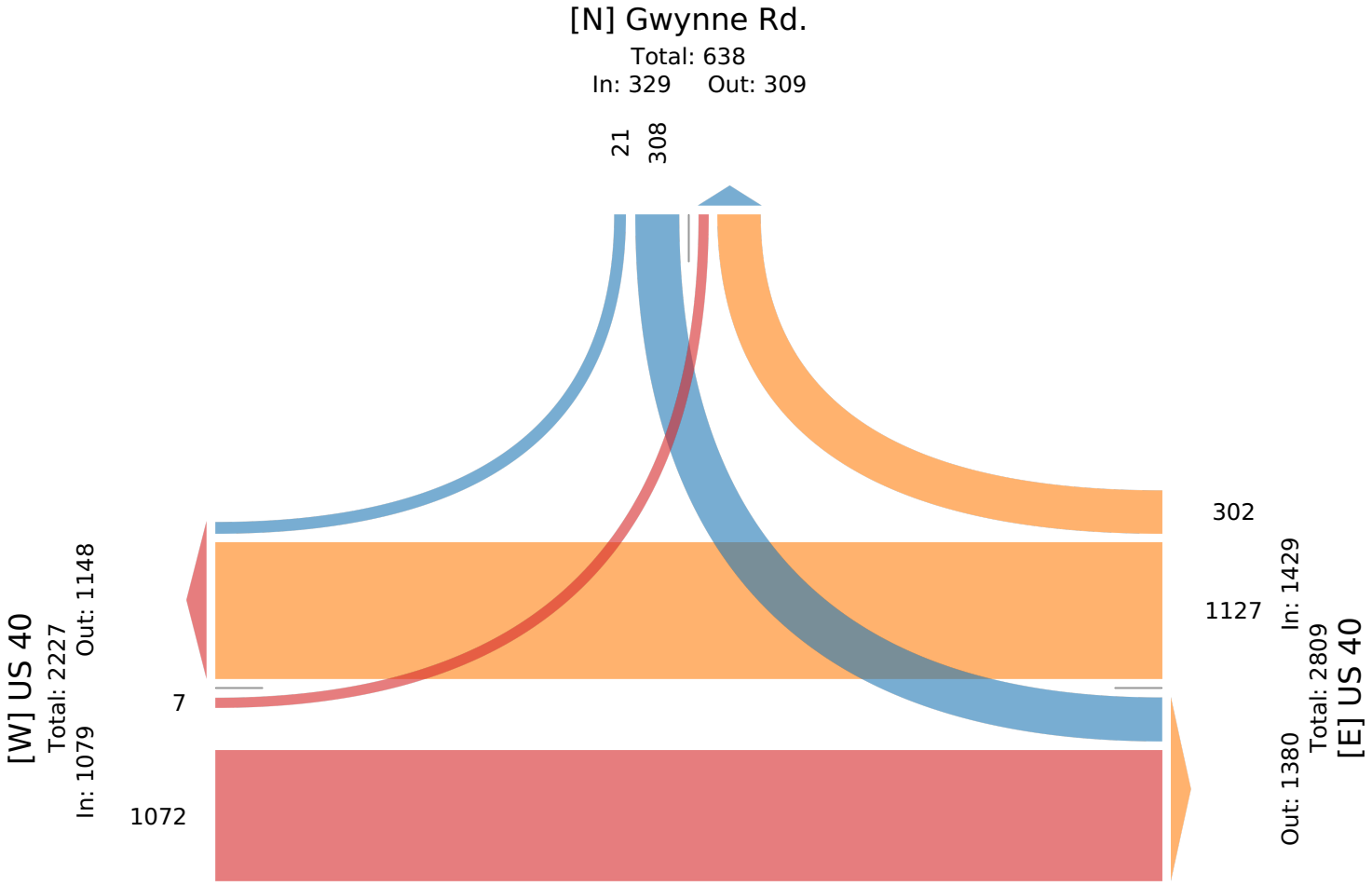
Leg	Gwynne Rd.				US 40				US 40				
Direction	Southbound				Westbound				Eastbound				
Time	R	L	U	**App**	R	T	U	**App**	T	L	U	**App**	**Int**
2024-11-13 6:00AM	0	6	0	**6**	1	18	0	**19**	21	0	0	**21**	**46**
6:15AM	0	6	0	**6**	3	17	0	**20**	53	0	0	**53**	**79**
6:30AM	0	15	0	**15**	0	21	0	**21**	77	0	0	**77**	**113**
6:45AM	0	26	0	**26**	3	30	0	**33**	70	0	0	**70**	**129**
Hourly Total	0	53	0	**53**	7	86	0	**93**	221	0	0	**221**	**367**
7:00AM	0	42	0	**42**	8	37	0	**45**	68	0	0	**68**	**155**
7:15AM	2	9	0	**11**	12	63	0	**75**	38	0	0	**38**	**124**
7:30AM	0	5	0	**5**	3	28	0	**31**	31	0	0	**31**	**67**
7:45AM	4	16	0	**20**	2	41	0	**43**	49	0	0	**49**	**112**
Hourly Total	6	72	0	**78**	25	169	0	**194**	186	0	0	**186**	**458**
8:00AM	1	10	0	**11**	4	25	0	**29**	33	1	0	**34**	**74**
8:15AM	4	15	0	**19**	6	22	0	**28**	37	0	0	**37**	**84**
8:30AM	1	22	0	**23**	15	28	0	**43**	29	0	0	**29**	**95**
8:45AM	0	11	0	**11**	9	16	0	**25**	25	0	0	**25**	**61**
Hourly Total	6	58	0	**64**	34	91	0	**125**	124	1	0	**125**	**314**
3:00PM	0	10	0	**10**	11	46	0	**57**	54	0	0	**54**	**121**
3:15PM	0	9	0	**9**	24	56	0	**80**	49	0	0	**49**	**138**
3:30PM	0	6	0	**6**	21	94	0	**115**	48	1	0	**49**	**170**
3:45PM	3	10	0	**13**	31	109	0	**140**	38	0	0	**38**	**191**
Hourly Total	3	35	0	**38**	87	305	0	**392**	189	1	0	**190**	**620**
4:00PM	1	9	0	**10**	16	73	0	**89**	61	2	0	**63**	**162**
4:15PM	1	12	0	**13**	21	62	0	**83**	33	0	0	**33**	**129**
4:30PM	0	13	0	**13**	16	54	0	**70**	17	0	0	**17**	**100**
4:45PM	0	9	0	**9**	24	59	0	**83**	31	1	0	**32**	**124**
Hourly Total	2	43	0	**45**	77	248	0	**325**	142	3	0	**145**	**515**
5:00PM	1	10	0	**11**	22	63	0	**85**	42	1	0	**43**	**139**
5:15PM	1	15	0	**16**	23	72	0	**95**	40	1	0	**41**	**152**
5:30PM	1	14	0	**15**	7	49	0	**56**	75	0	0	**75**	**146**
5:45PM	1	8	0	**9**	20	44	0	**64**	53	0	0	**53**	**126**
Hourly Total	4	47	0	**51**	72	228	0	**300**	210	2	0	**212**	**563**
Total	21	308	0	**329**	302	1127	0	**1429**	1072	7	0	**1079**	**2837**
% Approach	6.4%	93.6%	0%	**-**	21.1%	78.9%	0%	**-**	99.4%	0.6%	0%	**-**	-
% Total	0.7%	10.9%	0%	**11.6%**	10.6%	39.7%	0%	**50.4%**	37.8%	0.2%	0%	**38.0%**	-
Lights	19	299	0	**318**	301	1090	0	**1391**	1037	7	0	**1044**	2753
% Lights	90.5%	97.1%	0%	**96.7%**	99.7%	96.7%	0%	**97.3%**	96.7%	100%	0%	**96.8%**	97.0%
Articulated Trucks	0	0	0	**0**	0	9	0	**9**	13	0	0	**13**	22
% Articulated Trucks	0%	0%	0%	**0%**	0%	0.8%	0%	**0.6%**	1.2%	0%	0%	**1.2%**	0.8%
Buses and Single-Unit Trucks	2	9	0	**11**	1	28	0	**29**	22	0	0	**22**	62
% Buses and Single-Unit Trucks	9.5%	2.9%	0%	**3.3%**	0.3%	2.5%	0%	**2.0%**	2.1%	0%	0%	**2.0%**	2.2%

*L: Left, R: Right, T: Thru, U: U-Turn

US 40 & Gwynne Rd. - TMC
Wed Nov 13, 2024
Full Length (6 AM-9 AM, 3 PM-6 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1248033, Location: 39.934673, -83.472946

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US



US 40 & Gwynne Rd. - TMC

Wed Nov 13, 2024
AM Peak (6:30 AM - 7:30 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1248033, Location: 39.934673, -83.472946

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US

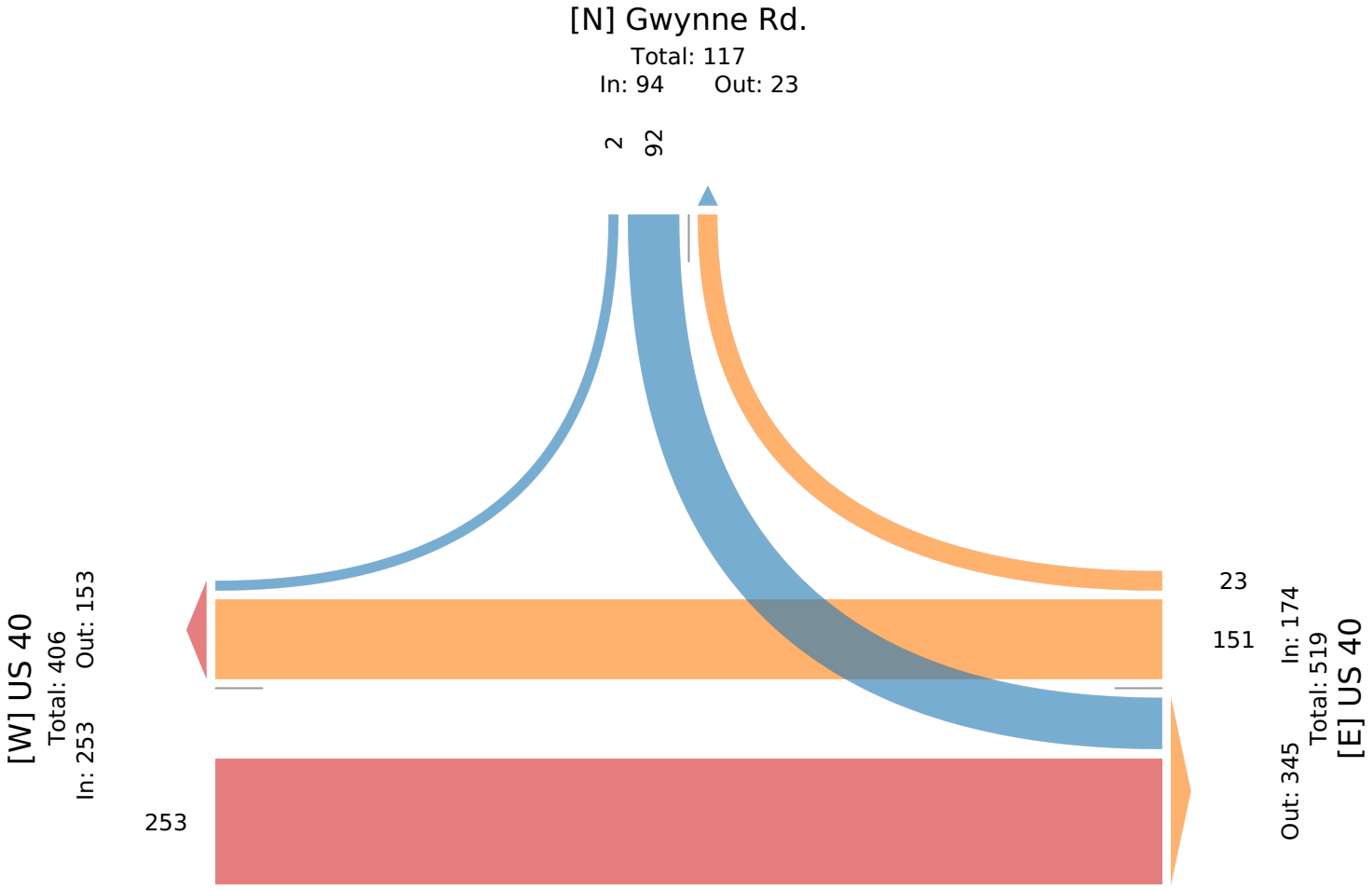
Leg	Gwynne Rd.				US 40				US 40				
Direction	Southbound				Westbound				Eastbound				
Time	R	L	U	**App**	R	T	U	**App**	T	L	U	**App**	**Int**
2024-11-13 6:30AM	0	15	0	**15**	0	21	0	**21**	77	0	0	**77**	**113**
6:45AM	0	26	0	**26**	3	30	0	**33**	70	0	0	**70**	**129**
7:00AM	0	42	0	**42**	8	37	0	**45**	68	0	0	**68**	**155**
7:15AM	2	9	0	**11**	12	63	0	**75**	38	0	0	**38**	**124**
Total	2	92	0	**94**	23	151	0	**174**	253	0	0	**253**	**521**
% Approach	2.1%	97.9%	0%	**-**	13.2%	86.8%	0%	**-**	100%	0%	0%	**-**	-
% Total	0.4%	17.7%	0%	**18.0%**	4.4%	29.0%	0%	**33.4%**	48.6%	0%	0%	**48.6%**	-
PHF	0.250	0.548	-	**0.560**	0.479	0.599	-	**0.580**	0.821	-	-	**0.821**	0.840
Lights	2	89	0	**91**	23	147	0	**170**	248	0	0	**248**	509
% Lights	100%	96.7%	0%	**96.8%**	100%	97.4%	0%	**97.7%**	98.0%	0%	0%	**98.0%**	97.7%
Articulated Trucks	0	0	0	**0**	0	2	0	**2**	3	0	0	**3**	5
% Articulated Trucks	0%	0%	0%	**0%**	0%	1.3%	0%	**1.1%**	1.2%	0%	0%	**1.2%**	1.0%
Buses and Single-Unit Trucks	0	3	0	**3**	0	2	0	**2**	2	0	0	**2**	7
% Buses and Single-Unit Trucks	0%	3.3%	0%	**3.2%**	0%	1.3%	0%	**1.1%**	0.8%	0%	0%	**0.8%**	1.3%

*L: Left, R: Right, T: Thru, U: U-Turn

US 40 & Gwynne Rd. - TMC
Wed Nov 13, 2024
AM Peak (6:30 AM - 7:30 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1248033, Location: 39.934673, -83.472946

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US



US 40 & Gwynne Rd. - TMC

Wed Nov 13, 2024
PM Peak (3:15 PM - 4:15 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1248033, Location: 39.934673, -83.472946

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US

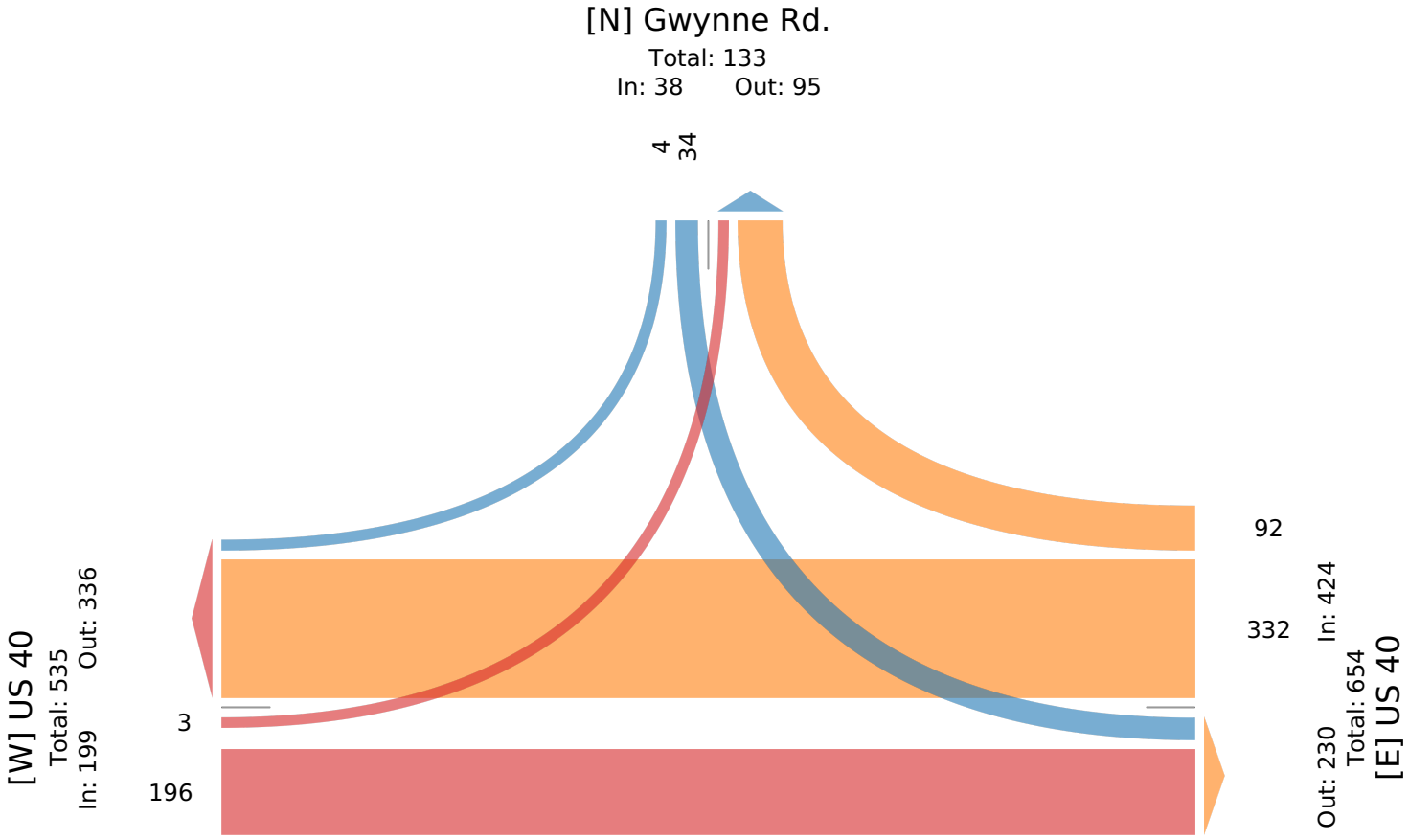
Leg	Gwynne Rd.				US 40				US 40				
Direction	Southbound				Westbound				Eastbound				
Time	R	L	U	**App**	R	T	U	**App**	T	L	U	**App**	**Int**
2024-11-13 3:15PM	0	9	0	**9**	24	56	0	**80**	49	0	0	**49**	**138**
3:30PM	0	6	0	**6**	21	94	0	**115**	48	1	0	**49**	**170**
3:45PM	3	10	0	**13**	31	109	0	**140**	38	0	0	**38**	**191**
4:00PM	1	9	0	**10**	16	73	0	**89**	61	2	0	**63**	**162**
Total	4	34	0	**38**	92	332	0	**424**	196	3	0	**199**	**661**
% Approach	10.5%	89.5%	0%	**-**	21.7%	78.3%	0%	**-**	98.5%	1.5%	0%	**-**	-
% Total	0.6%	5.1%	0%	**5.7%**	13.9%	50.2%	0%	**64.1%**	29.7%	0.5%	0%	**30.1%**	-
PHF	0.333	0.850	-	**0.731**	0.742	0.761	-	**0.757**	0.803	0.375	-	**0.790**	0.865
Lights	4	33	0	**37**	92	329	0	**421**	188	3	0	**191**	649
% Lights	100%	97.1%	0%	**97.4%**	100%	99.1%	0%	**99.3%**	95.9%	100%	0%	**96.0%**	98.2%
Articulated Trucks	0	0	0	**0**	0	0	0	**0**	3	0	0	**3**	3
% Articulated Trucks	0%	0%	0%	**0%**	0%	0%	0%	**0%**	1.5%	0%	0%	**1.5%**	0.5%
Buses and Single-Unit Trucks	0	1	0	**1**	0	3	0	**3**	5	0	0	**5**	9
% Buses and Single-Unit Trucks	0%	2.9%	0%	**2.6%**	0%	0.9%	0%	**0.7%**	2.6%	0%	0%	**2.5%**	1.4%

*L: Left, R: Right, T: Thru, U: U-Turn

US 40 & Gwynne Rd. - TMC
Wed Nov 13, 2024
PM Peak (3:15 PM - 4:15 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1248033, Location: 39.934673, -83.472946

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US



US 40 & Old US 40 NW (East) - TMC

Wed Nov 13, 2024
Full Length (6 AM-9 AM, 3 PM-6 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1248034, Location: 39.933738, -83.484699

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US

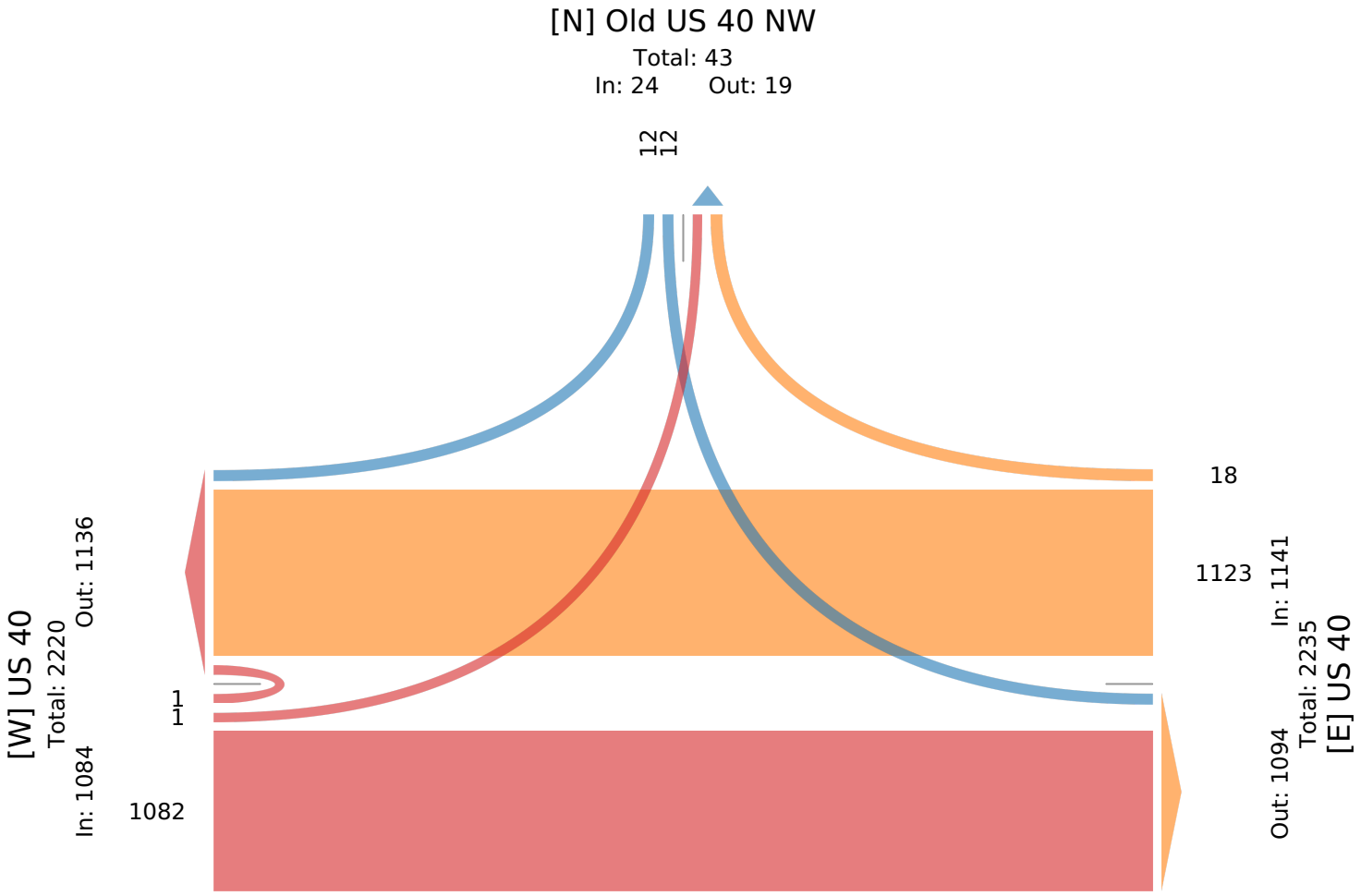
Leg	Old US 40 NW				US 40				US 40				
Direction	Southbound				Westbound				Eastbound				
Time	R	L	U	**App**	R	T	U	**App**	T	L	U	**App**	**Int**
2024-11-13 6:00AM	0	1	0	**1**	0	17	0	**17**	24	0	0	**24**	**42**
6:15AM	0	1	0	**1**	0	17	0	**17**	57	0	0	**57**	**75**
6:30AM	0	0	0	**0**	1	18	0	**19**	79	0	0	**79**	**98**
6:45AM	0	1	0	**1**	0	29	0	**29**	74	0	0	**74**	**104**
Hourly Total	0	3	0	**3**	1	81	0	**82**	234	0	0	**234**	**319**
7:00AM	0	1	0	**1**	0	40	0	**40**	70	0	0	**70**	**111**
7:15AM	0	3	0	**3**	0	64	0	**64**	28	0	0	**28**	**95**
7:30AM	2	0	0	**2**	0	29	0	**29**	34	0	0	**34**	**65**
7:45AM	1	0	0	**1**	0	45	0	**45**	49	0	0	**49**	**95**
Hourly Total	3	4	0	**7**	0	178	0	**178**	181	0	0	**181**	**366**
8:00AM	0	1	0	**1**	2	23	0	**25**	30	0	0	**30**	**56**
8:15AM	0	0	0	**0**	2	25	0	**27**	39	0	0	**39**	**66**
8:30AM	1	0	0	**1**	0	28	0	**28**	28	0	0	**28**	**57**
8:45AM	1	1	0	**2**	0	14	0	**14**	22	0	0	**22**	**38**
Hourly Total	2	2	0	**4**	4	90	0	**94**	119	0	0	**119**	**217**
3:00PM	0	0	0	**0**	0	44	0	**44**	57	0	0	**57**	**101**
3:15PM	2	1	0	**3**	0	58	0	**58**	47	0	0	**47**	**108**
3:30PM	0	1	0	**1**	3	81	0	**84**	48	0	0	**48**	**133**
3:45PM	1	0	0	**1**	1	120	0	**121**	37	0	0	**37**	**159**
Hourly Total	3	2	0	**5**	4	303	0	**307**	189	0	0	**189**	**501**
4:00PM	1	0	0	**1**	2	70	0	**72**	63	0	0	**63**	**136**
4:15PM	0	0	0	**0**	0	66	0	**66**	31	0	0	**31**	**97**
4:30PM	0	0	0	**0**	1	50	0	**51**	20	0	1	**21**	**72**
4:45PM	0	0	0	**0**	0	60	0	**60**	29	0	0	**29**	**89**
Hourly Total	1	0	0	**1**	3	246	0	**249**	143	0	1	**144**	**394**
5:00PM	1	0	0	**1**	1	63	0	**64**	45	0	0	**45**	**110**
5:15PM	0	0	0	**0**	2	67	0	**69**	46	1	0	**47**	**116**
5:30PM	1	0	0	**1**	1	49	0	**50**	70	0	0	**70**	**121**
5:45PM	1	1	0	**2**	2	46	0	**48**	55	0	0	**55**	**105**
Hourly Total	3	1	0	**4**	6	225	0	**231**	216	1	0	**217**	**452**
Total	12	12	0	**24**	18	1123	0	**1141**	1082	1	1	**1084**	**2249**
% Approach	50.0%	50.0%	0%	**-**	1.6%	98.4%	0%	**-**	99.8%	0.1%	0.1%	**-**	-
% Total	0.5%	0.5%	0%	**1.1%**	0.8%	49.9%	0%	**50.7%**	48.1%	0%	0%	**48.2%**	-
Lights	11	11	0	**22**	18	1085	0	**1103**	1051	1	1	**1053**	2178
% Lights	91.7%	91.7%	0%	**91.7%**	100%	96.6%	0%	**96.7%**	97.1%	100%	100%	**97.1%**	96.8%
Articulated Trucks	0	0	0	**0**	0	9	0	**9**	11	0	0	**11**	20
% Articulated Trucks	0%	0%	0%	**0%**	0%	0.8%	0%	**0.8%**	1.0%	0%	0%	**1.0%**	0.9%
Buses and Single-Unit Trucks	1	1	0	**2**	0	29	0	**29**	20	0	0	**20**	51
% Buses and Single-Unit Trucks	8.3%	8.3%	0%	**8.3%**	0%	2.6%	0%	**2.5%**	1.8%	0%	0%	**1.8%**	2.3%

*L: Left, R: Right, T: Thru, U: U-Turn

US 40 & Old US 40 NW (East) - TMC
Wed Nov 13, 2024
Full Length (6 AM-9 AM, 3 PM-6 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1248034, Location: 39.933738, -83.484699

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US



US 40 & Old US 40 NW (East) - TMC

Wed Nov 13, 2024
AM Peak (6:30 AM - 7:30 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1248034, Location: 39.933738, -83.484699

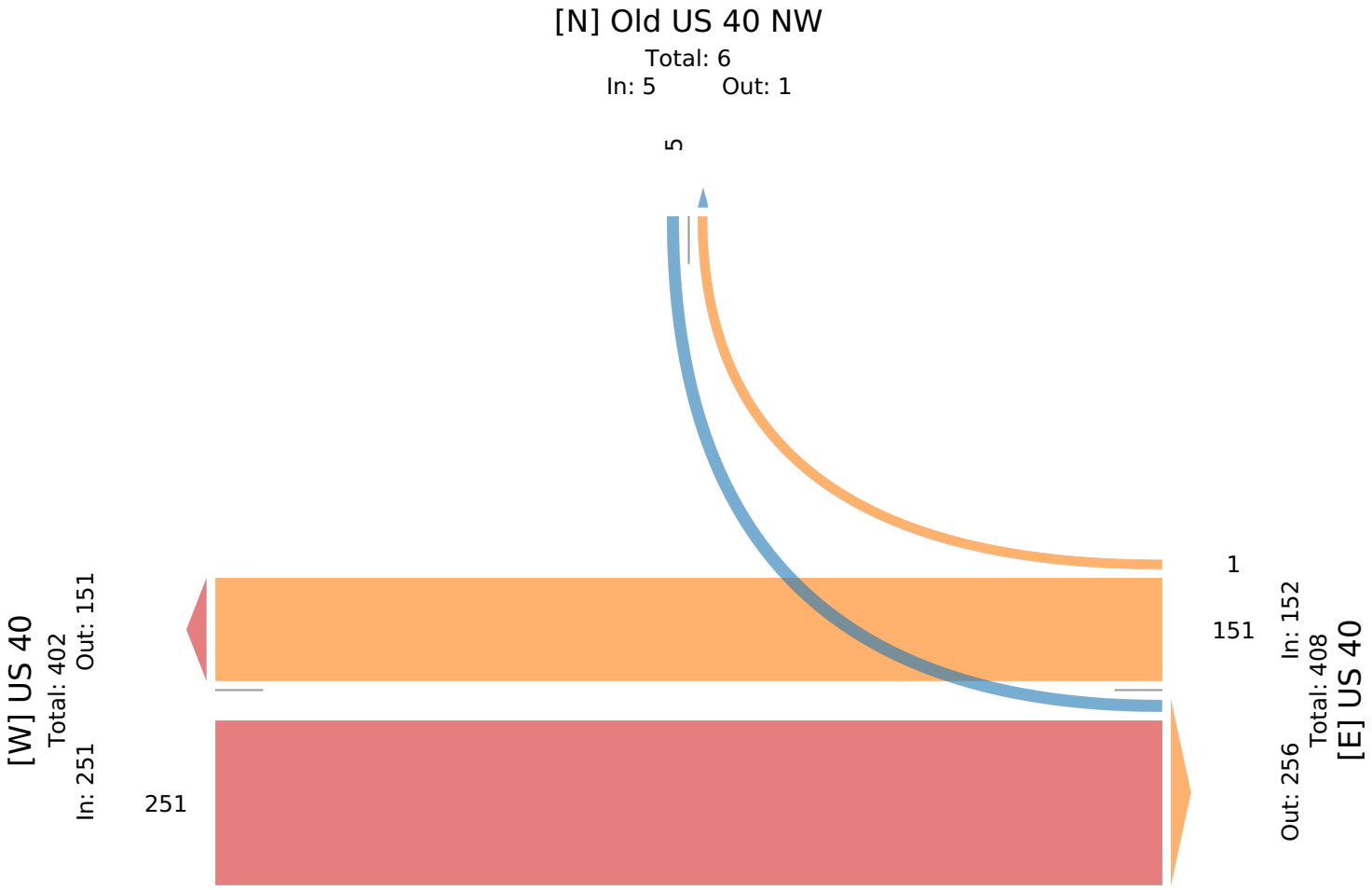
Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US

Leg	Old US 40 NW				US 40				US 40				
Direction	Southbound				Westbound				Eastbound				
Time	R	L	U	**App**	R	T	U	**App**	T	L	U	**App**	**Int**
2024-11-13 6:30AM	0	0	0	**0**	1	18	0	**19**	79	0	0	**79**	**98**
6:45AM	0	1	0	**1**	0	29	0	**29**	74	0	0	**74**	**104**
7:00AM	0	1	0	**1**	0	40	0	**40**	70	0	0	**70**	**111**
7:15AM	0	3	0	**3**	0	64	0	**64**	28	0	0	**28**	**95**
Total	0	5	0	**5**	1	151	0	**152**	251	0	0	**251**	**408**
% Approach	0%	100%	0%	**-**	0.7%	99.3%	0%	**-**	100%	0%	0%	**-**	-
% Total	0%	1.2%	0%	**1.2%**	0.2%	37.0%	0%	**37.3%**	61.5%	0%	0%	**61.5%**	-
PHF	-	0.417	-	**0.417**	0.250	0.590	-	**0.594**	0.794	-	-	**0.794**	0.919
Lights	0	4	0	**4**	1	147	0	**148**	248	0	0	**248**	400
% Lights	0%	80.0%	0%	**80.0%**	100%	97.4%	0%	**97.4%**	98.8%	0%	0%	**98.8%**	98.0%
Articulated Trucks	0	0	0	**0**	0	2	0	**2**	2	0	0	**2**	4
% Articulated Trucks	0%	0%	0%	**0%**	0%	1.3%	0%	**1.3%**	0.8%	0%	0%	**0.8%**	1.0%
Buses and Single-Unit Trucks	0	1	0	**1**	0	2	0	**2**	1	0	0	**1**	4
% Buses and Single-Unit Trucks	0%	20.0%	0%	**20.0%**	0%	1.3%	0%	**1.3%**	0.4%	0%	0%	**0.4%**	1.0%

*L: Left, R: Right, T: Thru, U: U-Turn

US 40 & Old US 40 NW (East) - TMC
Wed Nov 13, 2024
AM Peak (6:30 AM - 7:30 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1248034, Location: 39.933738, -83.484699

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US



US 40 & Old US 40 NW (East) - TMC

Wed Nov 13, 2024
PM Peak (3:15 PM - 4:15 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1248034, Location: 39.933738, -83.484699

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US

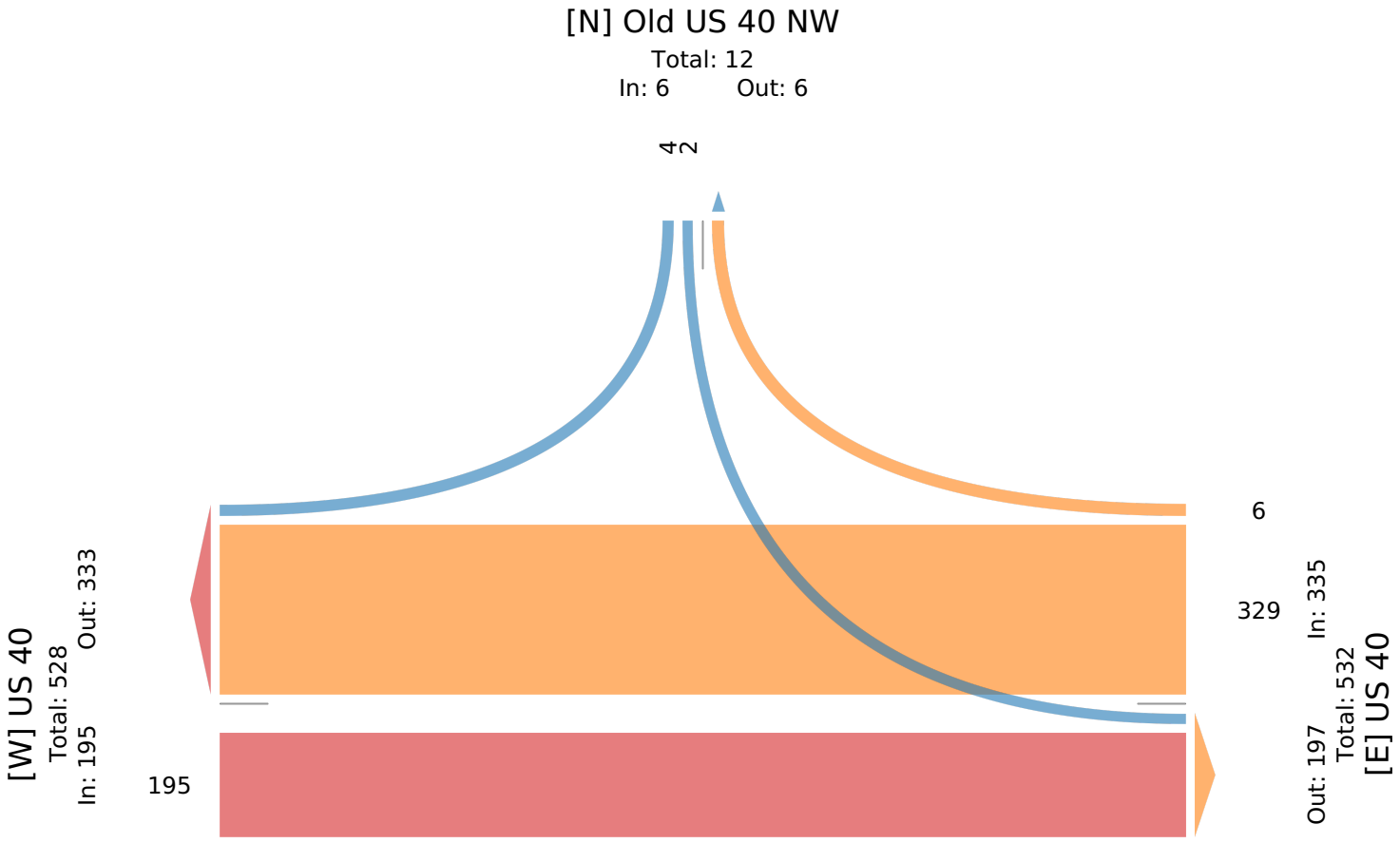
Leg	Old US 40 NW				US 40				US 40				
Direction	Southbound				Westbound				Eastbound				
Time	R	L	U	**App**	R	T	U	**App**	T	L	U	**App**	**Int**
2024-11-13 3:15PM	2	1	0	**3**	0	58	0	**58**	47	0	0	**47**	**108**
3:30PM	0	1	0	**1**	3	81	0	**84**	48	0	0	**48**	**133**
3:45PM	1	0	0	**1**	1	120	0	**121**	37	0	0	**37**	**159**
4:00PM	1	0	0	**1**	2	70	0	**72**	63	0	0	**63**	**136**
Total	4	2	0	**6**	6	329	0	**335**	195	0	0	**195**	**536**
% Approach	66.7%	33.3%	0%	**-**	1.8%	98.2%	0%	**-**	100%	0%	0%	**-**	-
% Total	0.7%	0.4%	0%	**1.1%**	1.1%	61.4%	0%	**62.5%**	36.4%	0%	0%	**36.4%**	-
PHF	0.500	0.500	-	**0.500**	0.500	0.685	-	**0.692**	0.774	-	-	**0.774**	0.843
Lights	4	2	0	**6**	6	325	0	**331**	187	0	0	**187**	524
% Lights	100%	100%	0%	**100%**	100%	98.8%	0%	**98.8%**	95.9%	0%	0%	**95.9%**	97.8%
Articulated Trucks	0	0	0	**0**	0	1	0	**1**	3	0	0	**3**	4
% Articulated Trucks	0%	0%	0%	**0%**	0%	0.3%	0%	**0.3%**	1.5%	0%	0%	**1.5%**	0.7%
Buses and Single-Unit Trucks	0	0	0	**0**	0	3	0	**3**	5	0	0	**5**	8
% Buses and Single-Unit Trucks	0%	0%	0%	**0%**	0%	0.9%	0%	**0.9%**	2.6%	0%	0%	**2.6%**	1.5%

*L: Left, R: Right, T: Thru, U: U-Turn

US 40 & Old US 40 NW (East) - TMC
Wed Nov 13, 2024
PM Peak (3:15 PM - 4:15 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1248034, Location: 39.933738, -83.484699

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US



US 40 & Urbana-London Rd. (SR 56) - TMC

Wed Nov 13, 2024
Full Length (12 AM-12 AM (+1))
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1248036, Location: 39.932878, -83.491829

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US

Leg	Urbana-London Rd. (SR 56)					US 40					Urbana-London Rd. (SR 56)					US 40					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2024-11-13 12:00AM	0	2	0	0	**2**	3	6	0	0	**9**	1	1	2	0	**4**	3	1	0	0	**4**	**19**
12:15AM	0	2	0	0	**2**	2	3	0	0	**5**	0	0	3	0	**3**	0	0	0	0	**0**	**10**
12:30AM	0	2	0	0	**2**	0	5	0	0	**5**	0	3	0	0	**3**	1	0	0	0	**1**	**11**
12:45AM	0	2	0	0	**2**	1	13	0	0	**14**	0	2	3	0	**5**	0	1	0	0	**1**	**22**
Hourly Total	0	8	0	0	**8**	6	27	0	0	**33**	1	6	8	0	**15**	4	2	0	0	**6**	**62**
1:00AM	0	0	0	0	**0**	0	3	0	0	**3**	0	2	0	0	**2**	1	2	0	0	**3**	**8**
1:15AM	0	1	2	0	**3**	2	4	0	0	**6**	0	2	1	0	**3**	1	2	0	0	**3**	**15**
1:30AM	0	0	1	0	**1**	1	6	0	0	**7**	0	0	0	0	**0**	1	0	0	0	**1**	**9**
1:45AM	1	2	0	0	**3**	3	1	0	0	**4**	0	1	1	0	**2**	1	1	0	0	**2**	**11**
Hourly Total	1	3	3	0	**7**	6	14	0	0	**20**	0	5	2	0	**7**	4	5	0	0	**9**	**43**
2:00AM	2	1	0	0	**3**	2	2	0	0	**4**	0	0	2	0	**2**	0	2	0	0	**2**	**11**
2:15AM	0	1	0	0	**1**	3	8	0	0	**11**	0	1	1	0	**2**	0	1	0	0	**1**	**15**
2:30AM	0	2	0	0	**2**	0	6	0	0	**6**	0	2	0	0	**2**	1	1	0	0	**2**	**12**
2:45AM	0	3	0	0	**3**	0	6	0	0	**6**	0	2	0	0	**2**	1	1	0	0	**2**	**13**
Hourly Total	2	7	0	0	**9**	5	22	0	0	**27**	0	5	3	0	**8**	2	5	0	0	**7**	**51**
3:00AM	0	2	0	0	**2**	1	5	0	0	**6**	0	0	0	0	**0**	1	0	0	0	**1**	**9**
3:15AM	1	2	2	0	**5**	4	27	0	0	**31**	0	2	4	0	**6**	1	5	1	0	**7**	**49**
3:30AM	0	2	3	0	**5**	2	1	0	0	**3**	0	1	0	0	**1**	0	9	2	0	**11**	**20**
3:45AM	0	3	4	0	**7**	2	1	0	0	**3**	0	1	0	0	**1**	2	9	0	0	**11**	**22**
Hourly Total	1	9	9	0	**19**	9	34	0	0	**43**	0	4	4	0	**8**	4	23	3	0	**30**	**100**
4:00AM	0	3	1	0	**4**	2	0	0	0	**2**	0	1	0	0	**1**	2	5	0	0	**7**	**14**
4:15AM	0	9	4	0	**13**	4	12	0	0	**16**	0	3	1	0	**4**	5	15	0	0	**20**	**53**
4:30AM	0	5	3	0	**8**	4	10	1	0	**15**	1	4	1	0	**6**	11	16	2	0	**29**	**58**
4:45AM	0	8	0	0	**8**	6	36	1	0	**43**	0	2	1	0	**3**	4	21	0	1	**26**	**80**
Hourly Total	0	25	8	0	**33**	16	58	2	0	**76**	1	10	3	0	**14**	22	57	2	1	**82**	**205**
5:00AM	0	16	2	0	**18**	4	7	1	0	**12**	0	9	5	0	**14**	4	20	5	0	**29**	**73**
5:15AM	0	30	9	0	**39**	7	72	1	0	**80**	3	3	4	0	**10**	10	28	3	0	**41**	**170**
5:30AM	0	28	9	0	**37**	2	6	6	0	**14**	1	6	1	0	**8**	16	40	4	0	**60**	**119**
5:45AM	0	29	8	0	**37**	6	5	5	0	**16**	2	16	0	0	**18**	21	18	7	0	**46**	**117**
Hourly Total	0	103	28	0	**131**	19	90	13	0	**122**	6	34	10	0	**50**	51	106	19	0	**176**	**479**
6:00AM	1	42	4	0	**47**	5	6	4	0	**15**	1	18	10	0	**29**	29	18	4	0	**51**	**142**
6:15AM	1	47	14	0	**62**	5	9	6	0	**20**	1	34	8	0	**43**	32	42	5	0	**79**	**204**
6:30AM	2	78	26	0	**106**	4	4	7	0	**15**	0	21	7	0	**28**	43	61	9	0	**113**	**262**
6:45AM	1	90	22	0	**113**	7	14	12	0	**33**	5	14	2	0	**21**	21	45	10	0	**76**	**243**
Hourly Total	5	257	66	0	**328**	21	33	29	0	**83**	7	87	27	0	**121**	125	166	28	0	**319**	**851**
7:00AM	3	71	22	0	**96**	14	7	14	0	**35**	4	28	14	0	**46**	18	39	6	0	**63**	**240**
7:15AM	1	80	8	0	**89**	18	26	14	0	**58**	1	35	46	0	**82**	22	25	13	0	**60**	**289**
7:30AM	1	85	8	0	**94**	8	17	10	0	**35**	1	35	20	0	**56**	25	24	8	0	**57**	**242**
7:45AM	2	83	11	0	**96**	15	14	15	0	**44**	0	33	19	0	**52**	27	36	4	0	**67**	**259**
Hourly Total	7	319	49	0	**375**	55	64	53	0	**172**	6	131	99	0	**236**	92	124	31	0	**247**	**1030**
8:00AM	4	51	8	0	**63**	4	10	15	0	**29**	5	23	8	0	**36**	16	20	7	0	**43**	**171**
8:15AM	1	61	8	0	**70**	2	9	10	0	**21**	7	29	6	0	**42**	18	23	7	0	**48**	**181**
8:30AM	2	58	10	0	**70**	8	11	10	0	**29**	2	34	7	0	**43**	22	17	1	0	**40**	**182**
8:45AM	4	63	8	0	**75**	7	4	7	0	**18**	1	21	4	0	**26**	17	14	2	0	**33**	**152**
Hourly Total	11	233	34	0	**278**	21	34	42	0	**97**	15	107	25	0	**147**	73	74	17	0	**164**	**686**
9:00AM	3	32	7	0	**42**	9	13	7	0	**29**	3	29	5	0	**37**	9	7	2	0	**18**	**126**
9:15AM	3	30	2	0	**35**	4	9	3	0	**16**	3	38	6	0	**47**	11	8	8	0	**27**	**125**
9:30AM	1	36	7	0	**44**	4	8	5	0	**17**	3	20	9	0	**32**	13	13	1	0	**27**	**120**
9:45AM	2	35	6	0	**43**	8	19	4	0	**31**	4	11	4	0	**19**	9	14	4	0	**27**	**120**
Hourly Total	9	133	22	0	**164**	25	49	19	0	**93**	13	98	24	0	**135**	42	42	15	0	**99**	**491**
10:00AM	4	32	8	0	**44**	5	11	4	0	**20**	2	21	6	0	**29**	8	13	1	0	**22**	**115**
10:15AM	0	38	7	0	**45**	7	14	4	0	**25**	5	24	8	0	**37**	21	19	3	0	**43**	**150**
10:30AM	3	23	4	0	**30**	9	5	3	0	**17**	6	30	14	0	**50**	14	16	1	0	**31**	**128**
10:45AM	1	32	4	0	**37**	6	13	6	0	**25**	3	14	5	0	**22**	9	13	1	0	**23**	**107**

Leg	Urbana-London Rd. (SR 56)					US 40					Urbana-London Rd. (SR 56)					US 40					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
Hourly Total	8	125	23	0	**156**	27	43	17	0	**87**	16	89	33	0	**138**	52	61	6	0	**119**	**500**
11:00AM	4	36	6	0	**46**	7	15	3	0	**25**	5	34	11	0	**50**	2	15	0	0	**17**	**138**
11:15AM	5	44	5	0	**54**	9	12	5	0	**26**	3	29	5	0	**37**	8	16	0	0	**24**	**141**
11:30AM	1	40	7	0	**48**	3	12	11	0	**26**	3	28	13	0	**44**	8	12	5	0	**25**	**143**
11:45AM	2	39	5	0	**46**	9	13	9	0	**31**	10	29	8	0	**47**	3	17	4	0	**24**	**148**
Hourly Total	12	159	23	0	**194**	28	52	28	0	**108**	21	120	37	0	**178**	21	60	9	0	**90**	**570**
12:00PM	2	43	8	0	**53**	8	11	3	0	**22**	9	49	12	0	**70**	7	19	4	0	**30**	**175**
12:15PM	3	34	6	0	**43**	9	15	4	0	**28**	4	36	6	0	**46**	11	17	4	0	**32**	**149**
12:30PM	4	42	11	0	**57**	8	7	5	0	**20**	3	22	5	0	**30**	14	20	6	0	**40**	**147**
12:45PM	4	38	8	0	**50**	4	12	8	0	**24**	9	33	7	0	**49**	8	13	2	0	**23**	**146**
Hourly Total	13	157	33	0	**203**	29	45	20	0	**94**	25	140	30	0	**195**	40	69	16	0	**125**	**617**
1:00PM	3	33	7	0	**43**	9	13	5	0	**27**	3	43	7	0	**53**	11	18	2	0	**31**	**154**
1:15PM	4	36	11	0	**51**	12	23	6	0	**41**	3	34	9	0	**46**	15	16	2	0	**33**	**171**
1:30PM	3	38	11	0	**52**	9	14	2	0	**25**	6	37	8	0	**51**	13	17	1	0	**31**	**159**
1:45PM	0	33	7	0	**40**	8	27	5	0	**40**	7	37	5	0	**49**	17	11	2	0	**30**	**159**
Hourly Total	10	140	36	0	**186**	38	77	18	0	**133**	19	151	29	0	**199**	56	62	7	0	**125**	**643**
2:00PM	0	31	12	0	**43**	6	19	4	0	**29**	8	56	17	0	**81**	24	19	1	0	**44**	**197**
2:15PM	1	25	10	0	**36**	18	22	1	0	**41**	10	55	11	0	**76**	15	11	1	0	**27**	**180**
2:30PM	4	32	7	0	**43**	16	38	3	0	**57**	8	50	21	0	**79**	12	15	0	0	**27**	**206**
2:45PM	7	32	10	0	**49**	23	48	6	0	**77**	5	46	14	0	**65**	10	15	2	0	**27**	**218**
Hourly Total	12	120	39	0	**171**	63	127	14	0	**204**	31	207	63	0	**301**	61	60	4	0	**125**	**801**
3:00PM	5	31	11	0	**47**	15	27	4	0	**46**	7	67	22	0	**96**	17	39	4	0	**60**	**249**
3:15PM	7	31	4	0	**42**	18	33	7	0	**58**	6	70	40	0	**116**	11	35	4	0	**50**	**266**
3:30PM	5	41	7	0	**53**	18	41	8	0	**67**	17	91	32	0	**140**	10	24	8	0	**42**	**302**
3:45PM	7	27	9	0	**43**	36	80	7	0	**123**	11	93	33	0	**137**	9	18	4	0	**31**	**334**
Hourly Total	24	130	31	0	**185**	87	181	26	0	**294**	41	321	127	0	**489**	47	116	20	0	**183**	**1151**
4:00PM	4	30	17	0	**51**	17	56	1	0	**74**	15	110	28	0	**153**	13	28	2	0	**43**	**321**
4:15PM	10	40	7	0	**57**	7	43	4	0	**54**	8	85	22	0	**115**	13	16	7	0	**36**	**262**
4:30PM	6	35	6	0	**47**	10	37	6	0	**53**	3	79	22	0	**104**	20	10	5	0	**35**	**239**
4:45PM	2	30	7	0	**39**	12	40	5	0	**57**	9	52	19	0	**80**	13	15	5	0	**33**	**209**
Hourly Total	22	135	37	0	**194**	46	176	16	0	**238**	35	326	91	0	**452**	59	69	19	0	**147**	**1031**
5:00PM	6	29	10	0	**45**	21	42	3	0	**66**	12	73	18	0	**103**	8	22	8	0	**38**	**252**
5:15PM	7	34	9	0	**50**	21	41	7	0	**69**	6	61	12	0	**79**	10	27	9	0	**46**	**244**
5:30PM	10	39	10	0	**59**	10	37	5	0	**52**	13	57	24	0	**94**	11	56	7	0	**74**	**279**
5:45PM	3	31	11	0	**45**	22	35	3	0	**60**	3	38	21	0	**62**	13	36	2	0	**51**	**218**
Hourly Total	26	133	40	0	**199**	74	155	18	0	**247**	34	229	75	0	**338**	42	141	26	0	**209**	**993**
6:00PM	7	40	9	0	**56**	10	21	1	0	**32**	3	42	10	0	**55**	14	56	4	0	**74**	**217**
6:15PM	9	11	3	0	**23**	14	56	4	0	**74**	2	32	8	0	**42**	7	24	3	0	**34**	**173**
6:30PM	1	19	3	0	**23**	6	21	1	0	**28**	1	29	15	0	**45**	3	12	3	0	**18**	**114**
6:45PM	8	13	6	0	**27**	5	19	4	0	**28**	2	24	4	0	**30**	10	11	3	0	**24**	**109**
Hourly Total	25	83	21	0	**129**	35	117	10	0	**162**	8	127	37	0	**172**	34	103	13	0	**150**	**613**
7:00PM	2	19	0	0	**21**	9	15	2	0	**26**	2	22	5	0	**29**	5	8	0	0	**13**	**89**
7:15PM	0	11	10	0	**21**	11	6	0	0	**17**	1	28	12	0	**41**	8	7	4	0	**19**	**98**
7:30PM	5	12	0	0	**17**	4	11	1	0	**16**	1	20	7	0	**28**	4	7	0	0	**11**	**72**
7:45PM	2	24	4	0	**30**	3	14	0	0	**17**	1	19	5	0	**25**	5	5	1	0	**11**	**83**
Hourly Total	9	66	14	0	**89**	27	46	3	0	**76**	5	89	29	0	**123**	22	27	5	0	**54**	**342**
8:00PM	5	15	3	0	**23**	2	8	3	0	**13**	3	17	7	0	**27**	13	11	4	0	**28**	**91**
8:15PM	6	5	2	0	**13**	2	11	2	0	**15**	2	13	5	0	**20**	10	5	1	0	**16**	**64**
8:30PM	1	11	4	0	**16**	5	5	1	0	**11**	0	17	0	0	**17**	7	7	2	0	**16**	**60**
8:45PM	2	8	4	0	**14**	4	4	3	0	**11**	2	10	2	0	**14**	4	4	0	0	**8**	**47**
Hourly Total	14	39	13	0	**66**	13	28	9	0	**50**	7	57	14	0	**78**	34	27	7	0	**68**	**262**
9:00PM	3	12	3	0	**18**	8	9	1	0	**18**	1	7	2	0	**10**	6	3	0	0	**9**	**55**
9:15PM	0	21	0	0	**21**	5	5	2	0	**12**	0	9	2	0	**11**	8	2	1	0	**11**	**55**
9:30PM	1	19	1	0	**21**	6	4	2	0	**12**	5	14	6	0	**25**	8	9	0	0	**17**	**75**
9:45PM	2	10	0	0	**12**	0	2	0	0	**2**	2	10	2	0	**14**	13	9	0	0	**22**	**50**
Hourly Total	6	62	4	0	**72**	19	20	5	0	**44**	8	40	12	0	**60**	35	23	1	0	**59**	**235**
10:00PM	0	11	6	0	**17**	1	8	2	0	**11**	3	28	3	0	**34**	19	15	2	0	**36**	**98**
10:15PM	0	8	2	0	**10**	4	4	0	0	**8**	3	36	3	0	**42**	8	6	0	0	**14**	**74**
10:30PM	0	7	4	0	**11**	1	6	0	0	**7**	0	5	2	0	**7**	4	10	0	0	**14**	**39**
10:45PM	1	2	1	0	**4**	1	12	0	0	**13**	0	8	0	0	**8**	1	3	1	0	**5**	**30**

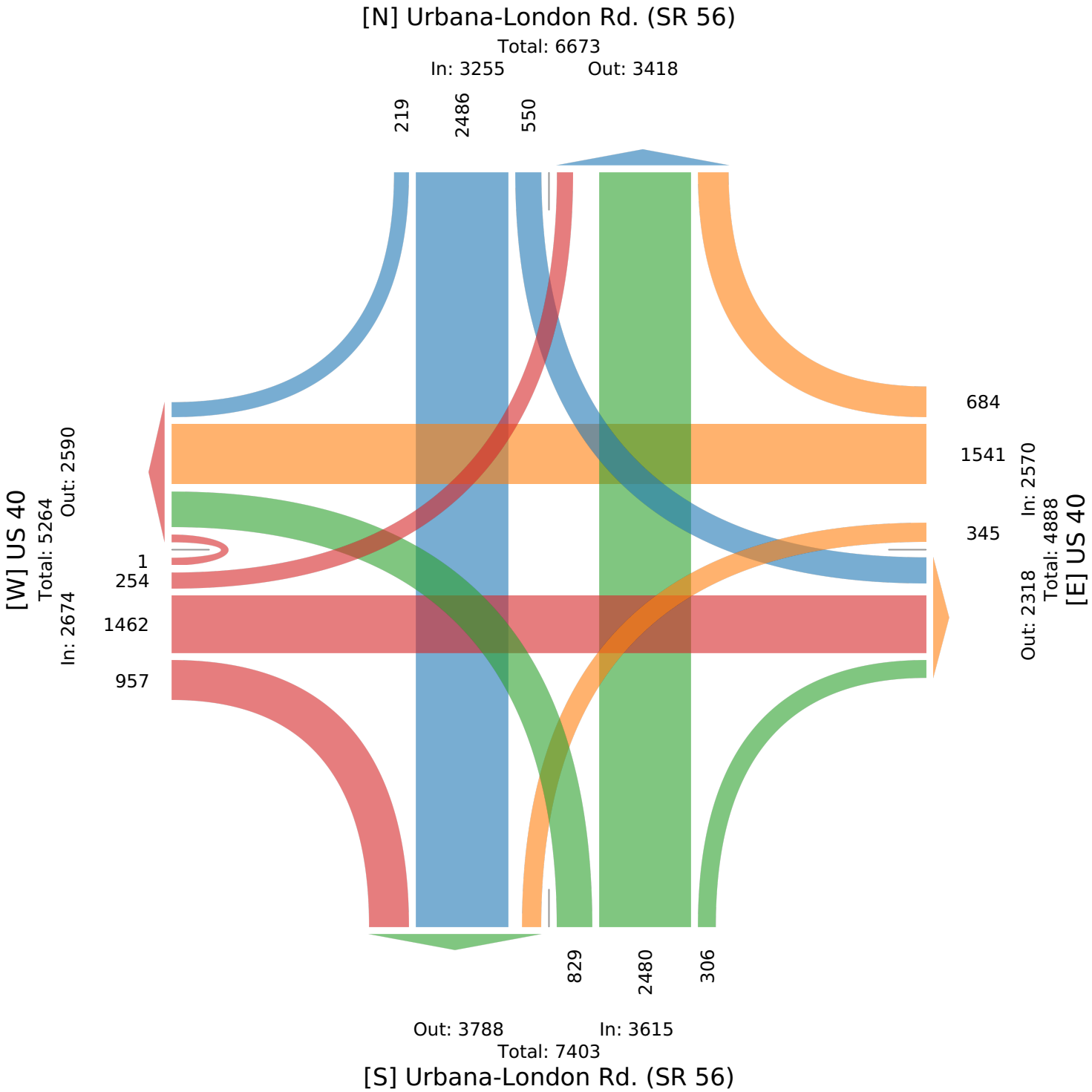
Leg	Urbana-London Rd. (SR 56)					US 40					Urbana-London Rd. (SR 56)					US 40					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	**Int**
Hourly Total	1	28	13	0	**42**	7	30	2	0	**39**	6	77	8	0	**91**	32	34	3	0	**69**	**241**
11:00PM	1	6	0	0	**7**	1	5	1	0	**7**	0	5	8	0	**13**	0	3	1	0	**4**	**31**
11:15PM	0	4	0	0	**4**	2	3	0	0	**5**	0	7	16	0	**23**	3	1	0	0	**4**	**36**
11:30PM	0	2	2	0	**4**	1	5	0	0	**6**	1	6	1	0	**8**	0	2	1	0	**3**	**21**
11:45PM	0	0	2	0	**2**	4	6	0	0	**10**	0	2	14	0	**16**	0	0	1	0	**1**	**29**
Hourly Total	1	12	4	0	**17**	8	19	1	0	**28**	1	20	39	0	**60**	3	6	3	0	**12**	**117**
Total	219	2486	550	0	**3255**	684	1541	345	0	**2570**	306	2480	829	0	**3615**	957	1462	254	1	**2674**	**12114**
% Approach	6.7%	76.4%	16.9%	0%	**-**	26.6%	60.0%	13.4%	0%	**-**	8.5%	68.6%	22.9%	0%	**-**	35.8%	54.7%	9.5%	0%	**-**	**-**
% Total	1.8%	20.5%	4.5%	0%	**26.9%**	5.6%	12.7%	2.8%	0%	**21.2%**	2.5%	20.5%	6.8%	0%	**29.8%**	7.9%	12.1%	2.1%	0%	**22.1%**	**-**
Lights	215	2334	524	0	**3073**	618	1502	288	0	**2408**	260	2314	795	0	**3369**	915	1413	244	1	**2573**	11423
% Lights	98.2%	93.9%	95.3%	0%	**94.4%**	90.4%	97.5%	83.5%	0%	**93.7%**	85.0%	93.3%	95.9%	0%	**93.2%**	95.6%	96.6%	96.1%	100%	**96.2%**	94.3%
Articulated Trucks	2	84	15	0	**101**	40	18	4	0	**62**	1	80	7	0	**88**	8	23	3	0	**34**	285
% Articulated Trucks	0.9%	3.4%	2.7%	0%	**3.1%**	5.8%	1.2%	1.2%	0%	**2.4%**	0.3%	3.2%	0.8%	0%	**2.4%**	0.8%	1.6%	1.2%	0%	**1.3%**	2.4%
Buses and Single-Unit Trucks	2	68	11	0	**81**	26	21	53	0	**100**	45	86	27	0	**158**	34	26	7	0	**67**	406
% Buses and Single-Unit Trucks	0.9%	2.7%	2.0%	0%	**2.5%**	3.8%	1.4%	15.4%	0%	**3.9%**	14.7%	3.5%	3.3%	0%	**4.4%**	3.6%	1.8%	2.8%	0%	**2.5%**	3.4%

*L: Left, R: Right, T: Thru, U: U-Turn

US 40 & Urbana-London Rd. (SR 56) - TMC
Wed Nov 13, 2024
Full Length (12 AM-12 AM (+1))
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1248036, Location: 39.932878, -83.491829

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US



US 40 & Urbana-London Rd. (SR 56) - TMC

Wed Nov 13, 2024
AM Peak (Nov 13 2024 6:30AM - 7:30 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1248036, Location: 39.932878, -83.491829

LOUKAS engineering
TRAFFIC DATA & CONSULTING
Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US

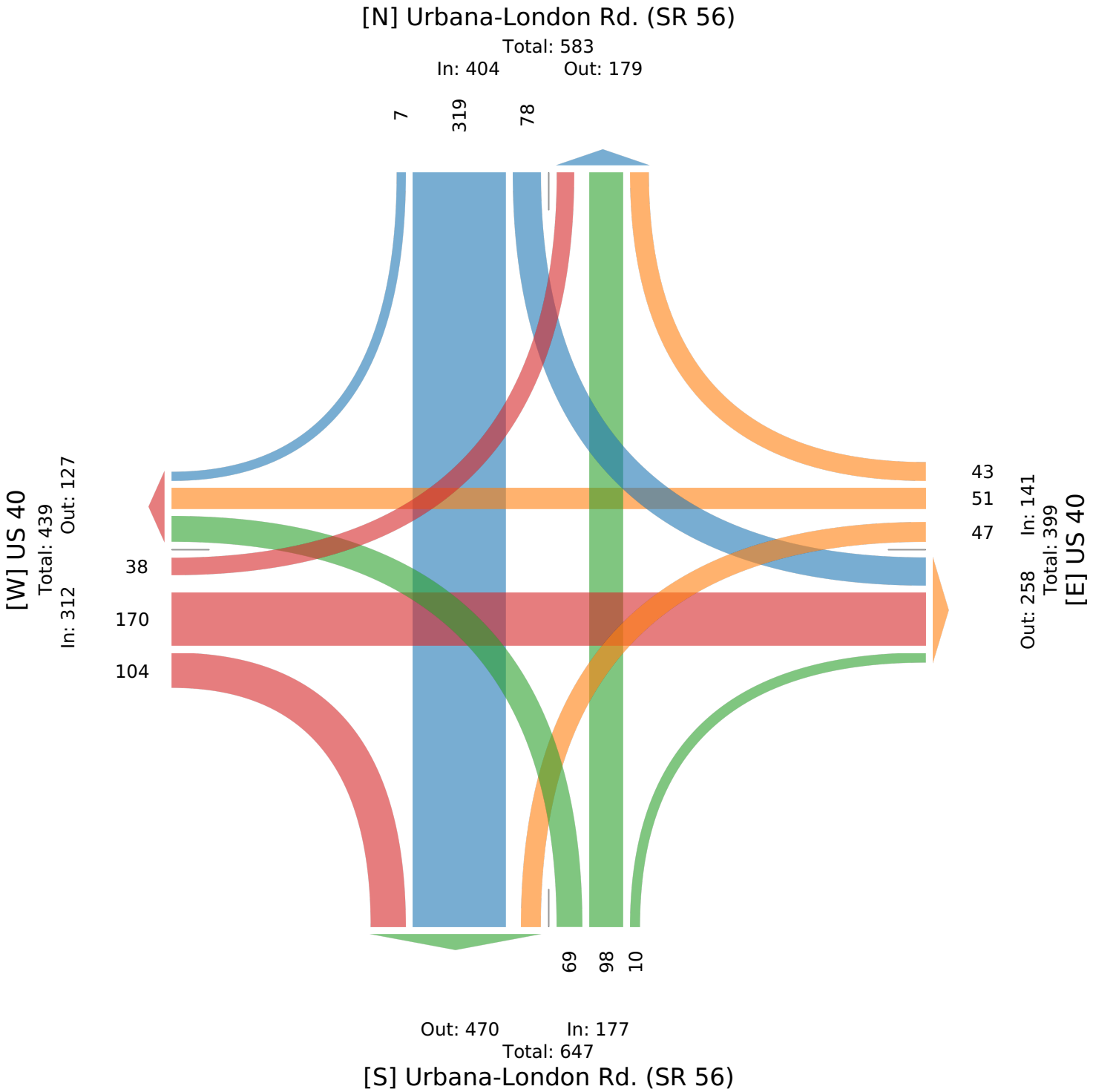
Leg	Urbana-London Rd. (SR 56)					US 40					Urbana-London Rd. (SR 56)					US 40					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2024-11-13 6:30AM	2	78	26	0	**106**	4	4	7	0	**15**	0	21	7	0	**28**	43	61	9	0	**113**	**262**
6:45AM	1	90	22	0	**113**	7	14	12	0	**33**	5	14	2	0	**21**	21	45	10	0	**76**	**243**
7:00AM	3	71	22	0	**96**	14	7	14	0	**35**	4	28	14	0	**46**	18	39	6	0	**63**	**240**
7:15AM	1	80	8	0	**89**	18	26	14	0	**58**	1	35	46	0	**82**	22	25	13	0	**60**	**289**
Total	7	319	78	0	**404**	43	51	47	0	**141**	10	98	69	0	**177**	104	170	38	0	**312**	**1034**
% Approach	1.7%	79.0%	19.3%	0%	-	30.5%	36.2%	33.3%	0%	-	5.6%	55.4%	39.0%	0%	-	33.3%	54.5%	12.2%	0%	-	-
% Total	0.7%	30.9%	7.5%	0%	**39.1%**	4.2%	4.9%	4.5%	0%	**13.6%**	1.0%	9.5%	6.7%	0%	**17.1%**	10.1%	16.4%	3.7%	0%	**30.2%**	-
PHF	0.583	0.886	0.750	-	**0.894**	0.597	0.490	0.839	-	**0.608**	0.500	0.700	0.375	-	**0.540**	0.605	0.697	0.731	-	**0.690**	0.894
Lights	7	305	76	0	**388**	40	50	47	0	**137**	10	91	67	0	**168**	101	168	37	0	**306**	999
% Lights	100%	95.6%	97.4%	0%	**96.0%**	93.0%	98.0%	100%	0%	**97.2%**	100%	92.9%	97.1%	0%	**94.9%**	97.1%	98.8%	97.4%	0%	**98.1%**	96.6%
Articulated Trucks	0	11	2	0	**13**	2	0	0	0	**2**	0	4	1	0	**5**	0	1	0	0	**1**	21
% Articulated Trucks	0%	3.4%	2.6%	0%	**3.2%**	4.7%	0%	0%	0%	**1.4%**	0%	4.1%	1.4%	0%	**2.8%**	0%	0.6%	0%	0%	**0.3%**	2.0%
Buses and Single-Unit Trucks	0	3	0	0	**3**	1	1	0	0	**2**	0	3	1	0	**4**	3	1	1	0	**5**	14
% Buses and Single-Unit Trucks	0%	0.9%	0%	0%	**0.7%**	2.3%	2.0%	0%	0%	**1.4%**	0%	3.1%	1.4%	0%	**2.3%**	2.9%	0.6%	2.6%	0%	**1.6%**	1.4%

*L: Left, R: Right, T: Thru, U: U-Turn

US 40 & Urbana-London Rd. (SR 56) - TMC
Wed Nov 13, 2024
AM Peak (Nov 13 2024 6:30AM - 7:30 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1248036, Location: 39.932878, -83.491829

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US



US 40 & Urbana-London Rd. (SR 56) - TMC

Wed Nov 13, 2024
Midday Peak (Nov 13 2024 1PM - 2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1248036, Location: 39.932878, -83.491829

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US

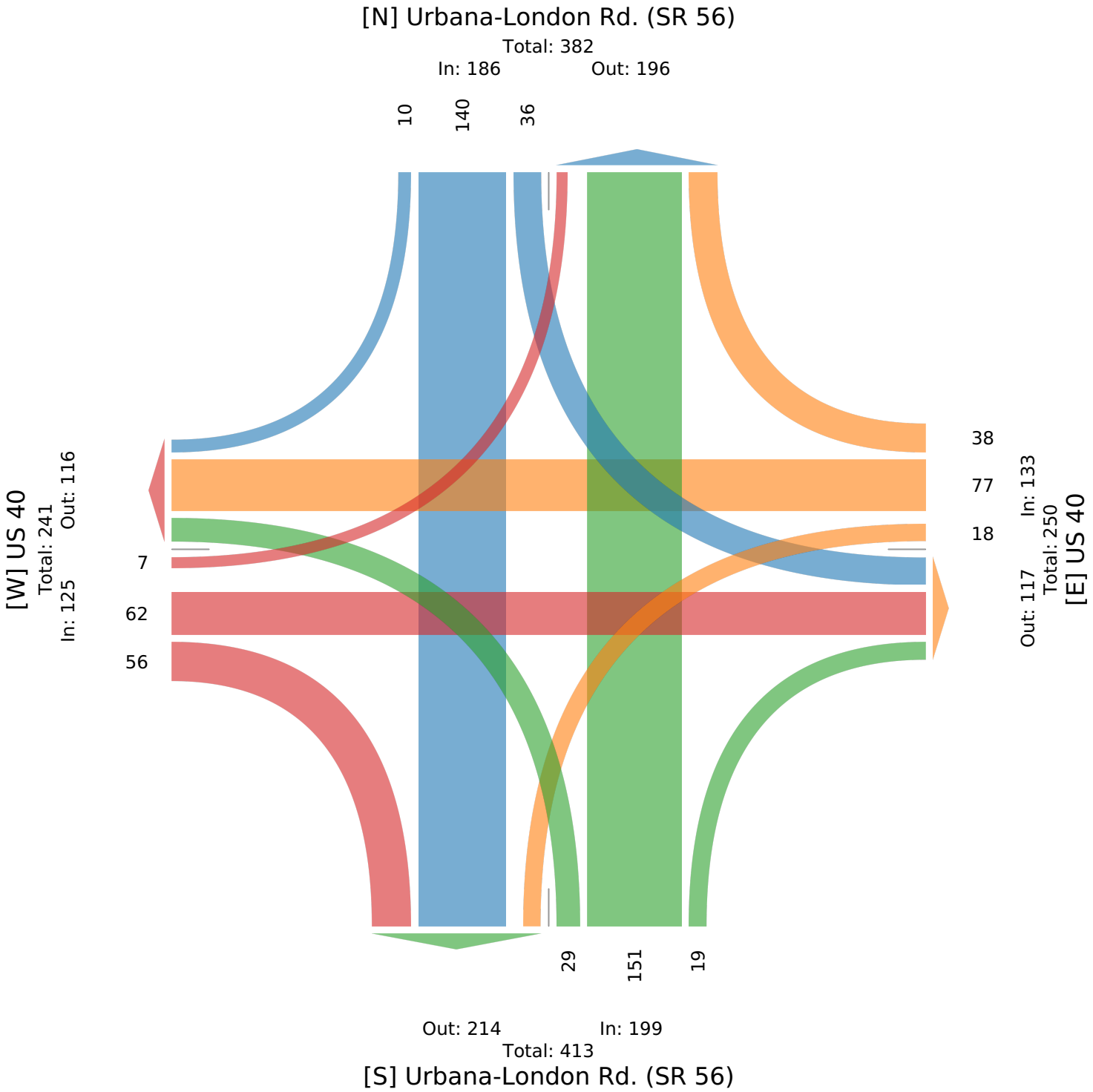
Leg	Urbana-London Rd. (SR 56)					US 40					Urbana-London Rd. (SR 56)					US 40					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2024-11-13 1:00PM	3	33	7	0	**43**	9	13	5	0	**27**	3	43	7	0	**53**	11	18	2	0	**31**	**154**
1:15PM	4	36	11	0	**51**	12	23	6	0	**41**	3	34	9	0	**46**	15	16	2	0	**33**	**171**
1:30PM	3	38	11	0	**52**	9	14	2	0	**25**	6	37	8	0	**51**	13	17	1	0	**31**	**159**
1:45PM	0	33	7	0	**40**	8	27	5	0	**40**	7	37	5	0	**49**	17	11	2	0	**30**	**159**
Total	10	140	36	0	**186**	38	77	18	0	**133**	19	151	29	0	**199**	56	62	7	0	**125**	**643**
% Approach	5.4%	75.3%	19.4%	0%	**-**	28.6%	57.9%	13.5%	0%	**-**	9.5%	75.9%	14.6%	0%	**-**	44.8%	49.6%	5.6%	0%	**-**	-
% Total	1.6%	21.8%	5.6%	0%	**28.9%**	5.9%	12.0%	2.8%	0%	**20.7%**	3.0%	23.5%	4.5%	0%	**30.9%**	8.7%	9.6%	1.1%	0%	**19.4%**	-
PHF	0.625	0.921	0.818	-	**0.894**	0.792	0.713	0.750	-	**0.811**	0.679	0.878	0.806	-	**0.939**	0.824	0.861	0.875	-	**0.947**	0.940
Lights	9	131	32	0	**172**	33	71	13	0	**117**	15	132	28	0	**175**	51	60	7	0	**118**	582
% Lights	90.0%	93.6%	88.9%	0%	**92.5%**	86.8%	92.2%	72.2%	0%	**88.0%**	78.9%	87.4%	96.6%	0%	**87.9%**	91.1%	96.8%	100%	0%	**94.4%**	90.5%
Articulated Trucks	0	2	1	0	**3**	3	2	1	0	**6**	0	8	0	0	**8**	1	2	0	0	**3**	20
% Articulated Trucks	0%	1.4%	2.8%	0%	**1.6%**	7.9%	2.6%	5.6%	0%	**4.5%**	0%	5.3%	0%	0%	**4.0%**	1.8%	3.2%	0%	0%	**2.4%**	3.1%
Buses and Single-Unit Trucks	1	7	3	0	**11**	2	4	4	0	**10**	4	11	1	0	**16**	4	0	0	0	**4**	41
% Buses and Single-Unit Trucks	10.0%	5.0%	8.3%	0%	**5.9%**	5.3%	5.2%	22.2%	0%	**7.5%**	21.1%	7.3%	3.4%	0%	**8.0%**	7.1%	0%	0%	0%	**3.2%**	6.4%

*L: Left, R: Right, T: Thru, U: U-Turn

US 40 & Urbana-London Rd. (SR 56) - TMC
Wed Nov 13, 2024
Midday Peak (Nov 13 2024 1PM - 2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1248036, Location: 39.932878, -83.491829

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US



US 40 & Urbana-London Rd. (SR 56) - TMC

Wed Nov 13, 2024
PM Peak (Nov 13 2024 3:15PM - 4:15 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1248036, Location: 39.932878, -83.491829

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US

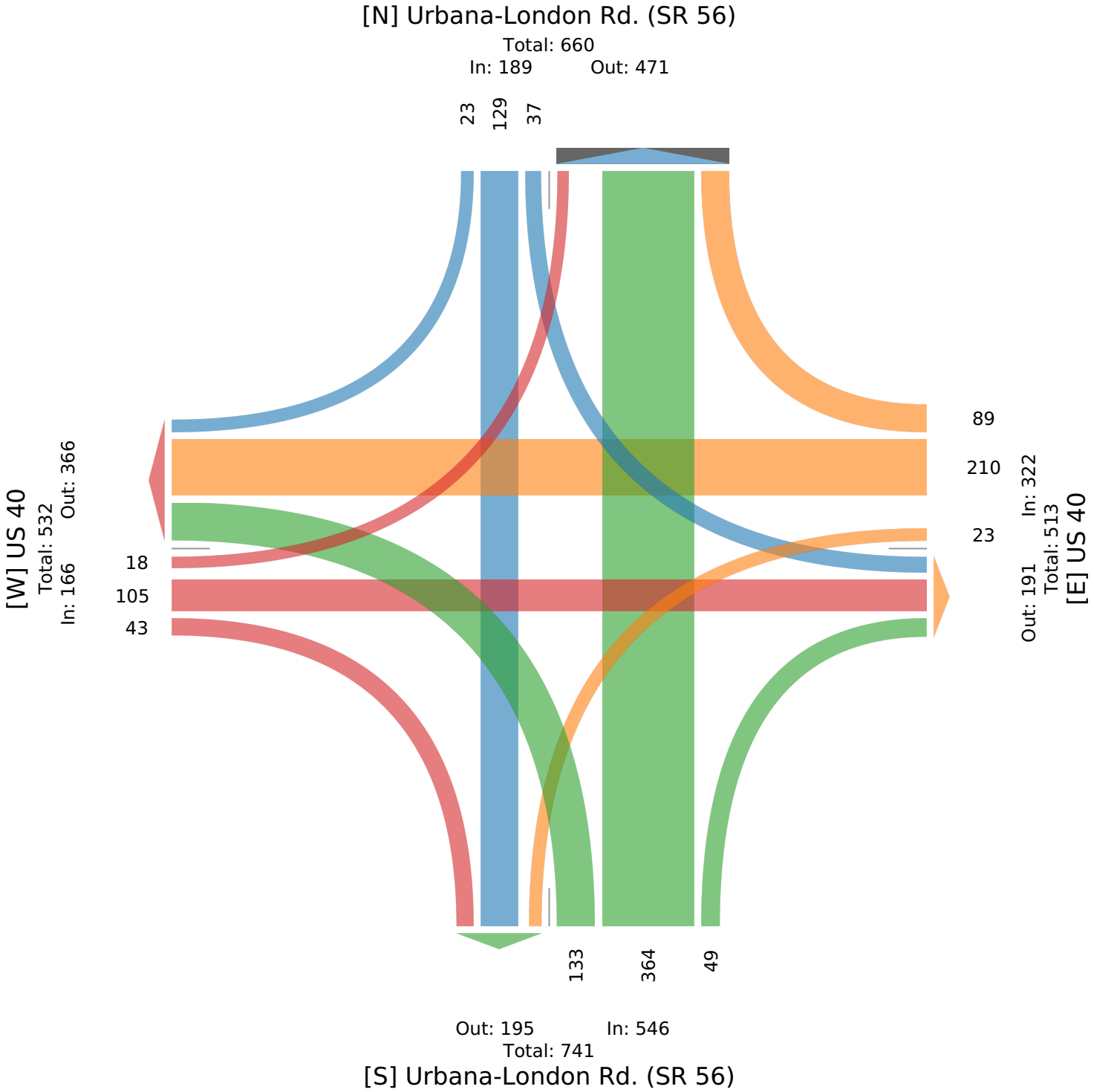
Leg	Urbana-London Rd. (SR 56)					US 40					Urbana-London Rd. (SR 56)					US 40					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2024-11-13 3:15PM	7	31	4	0	**42**	18	33	7	0	**58**	6	70	40	0	**116**	11	35	4	0	**50**	**266**
3:30PM	5	41	7	0	**53**	18	41	8	0	**67**	17	91	32	0	**140**	10	24	8	0	**42**	**302**
3:45PM	7	27	9	0	**43**	36	80	7	0	**123**	11	93	33	0	**137**	9	18	4	0	**31**	**334**
4:00PM	4	30	17	0	**51**	17	56	1	0	**74**	15	110	28	0	**153**	13	28	2	0	**43**	**321**
Total	23	129	37	0	**189**	89	210	23	0	**322**	49	364	133	0	**546**	43	105	18	0	**166**	**1223**
% Approach	12.2%	68.3%	19.6%	0%	**-**	27.6%	65.2%	7.1%	0%	**-**	9.0%	66.7%	24.4%	0%	**-**	25.9%	63.3%	10.8%	0%	**-**	-
% Total	1.9%	10.5%	3.0%	0%	**15.5%**	7.3%	17.2%	1.9%	0%	**26.3%**	4.0%	29.8%	10.9%	0%	**44.6%**	3.5%	8.6%	1.5%	0%	**13.6%**	-
PHF	0.821	0.787	0.544	-	**0.892**	0.618	0.656	0.719	-	**0.654**	0.721	0.827	0.831	-	**0.892**	0.827	0.750	0.563	-	**0.830**	0.915
Lights	23	119	37	0	**179**	89	208	21	0	**318**	46	347	129	0	**522**	43	100	17	0	**160**	1179
% Lights	100%	92.2%	100%	0%	**94.7%**	100%	99.0%	91.3%	0%	**98.8%**	93.9%	95.3%	97.0%	0%	**95.6%**	100%	95.2%	94.4%	0%	**96.4%**	96.4%
Articulated Trucks	0	4	0	0	**4**	0	0	0	0	**0**	0	4	1	0	**5**	0	3	0	0	**3**	12
% Articulated Trucks	0%	3.1%	0%	0%	**2.1%**	0%	0%	0%	0%	**0%**	0%	1.1%	0.8%	0%	**0.9%**	0%	2.9%	0%	0%	**1.8%**	1.0%
Buses and Single-Unit Trucks	0	6	0	0	**6**	0	2	2	0	**4**	3	13	3	0	**19**	0	2	1	0	**3**	32
% Buses and Single-Unit Trucks	0%	4.7%	0%	0%	**3.2%**	0%	1.0%	8.7%	0%	**1.2%**	6.1%	3.6%	2.3%	0%	**3.5%**	0%	1.9%	5.6%	0%	**1.8%**	2.6%

*L: Left, R: Right, T: Thru, U: U-Turn

US 40 & Urbana-London Rd. (SR 56) - TMC
Wed Nov 13, 2024
PM Peak (Nov 13 2024 3:15PM - 4:15 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1248036, Location: 39.932878, -83.491829

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US



US 40 & Old US 40 NW (West) - TMC

Wed Nov 13, 2024
Full Length (6 AM-9 AM, 3 PM-6 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1248035, Location: 39.933074, -83.499399

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US

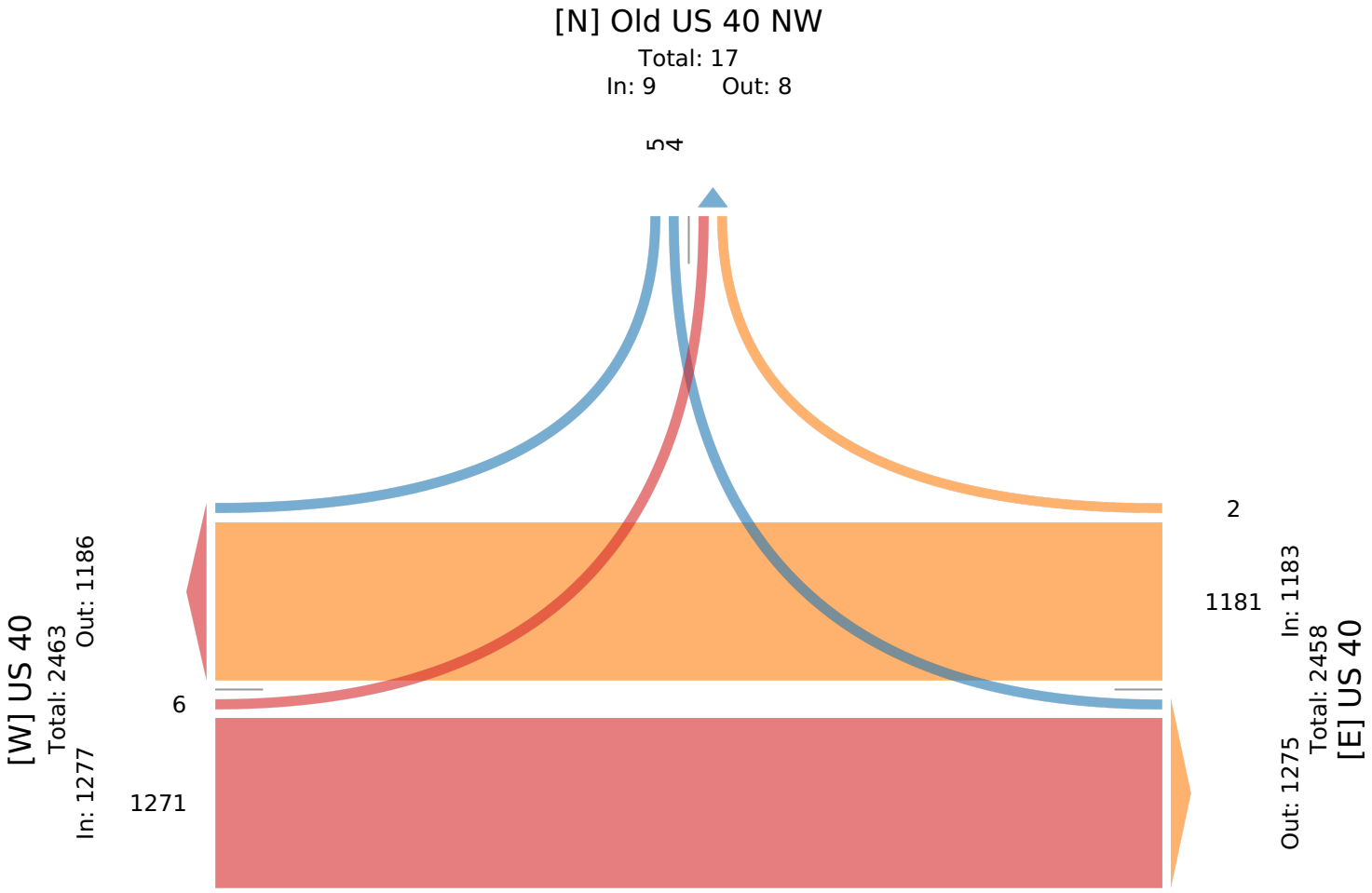
Leg	Old US 40 NW				US 40				US 40				
Direction	Southbound				Westbound				Eastbound				
Time	R	L	U	**App**	R	T	U	**App**	T	L	U	**App**	**Int**
2024-11-13 6:00AM	0	0	0	**0**	0	16	0	**16**	54	0	0	**54**	**70**
6:15AM	1	0	0	**1**	0	11	0	**11**	76	0	0	**76**	**88**
6:30AM	0	1	0	**1**	0	15	0	**15**	109	0	0	**109**	**125**
6:45AM	0	0	0	**0**	0	16	0	**16**	73	1	0	**74**	**90**
Hourly Total	1	1	0	**2**	0	58	0	**58**	312	1	0	**313**	**373**
7:00AM	0	0	0	**0**	0	25	0	**25**	75	0	0	**75**	**100**
7:15AM	0	0	0	**0**	0	77	0	**77**	49	0	0	**49**	**126**
7:30AM	0	0	0	**0**	0	37	0	**37**	59	0	0	**59**	**96**
7:45AM	0	0	0	**0**	0	34	0	**34**	67	0	0	**67**	**101**
Hourly Total	0	0	0	**0**	0	173	0	**173**	250	0	0	**250**	**423**
8:00AM	0	1	0	**1**	0	20	0	**20**	44	0	0	**44**	**65**
8:15AM	0	0	0	**0**	0	16	0	**16**	47	0	0	**47**	**63**
8:30AM	0	0	0	**0**	0	21	0	**21**	39	0	0	**39**	**60**
8:45AM	0	0	0	**0**	0	13	0	**13**	32	0	0	**32**	**45**
Hourly Total	0	1	0	**1**	0	70	0	**70**	162	0	0	**162**	**233**
3:00PM	0	1	0	**1**	0	54	0	**54**	62	0	0	**62**	**117**
3:15PM	0	0	0	**0**	0	78	0	**78**	47	3	0	**50**	**128**
3:30PM	0	0	0	**0**	0	82	0	**82**	37	0	0	**37**	**119**
3:45PM	0	1	0	**1**	0	123	0	**123**	33	1	0	**34**	**158**
Hourly Total	0	2	0	**2**	0	337	0	**337**	179	4	0	**183**	**522**
4:00PM	0	0	0	**0**	0	86	0	**86**	48	0	0	**48**	**134**
4:15PM	1	0	0	**1**	0	83	0	**83**	34	0	0	**34**	**118**
4:30PM	0	0	0	**0**	0	61	0	**61**	33	0	0	**33**	**94**
4:45PM	1	0	0	**1**	0	62	0	**62**	36	0	0	**36**	**99**
Hourly Total	2	0	0	**2**	0	292	0	**292**	151	0	0	**151**	**445**
5:00PM	0	0	0	**0**	0	65	0	**65**	34	0	0	**34**	**99**
5:15PM	1	0	0	**1**	1	56	0	**57**	57	0	0	**57**	**115**
5:30PM	1	0	0	**1**	0	72	0	**72**	66	1	0	**67**	**140**
5:45PM	0	0	0	**0**	1	58	0	**59**	60	0	0	**60**	**119**
Hourly Total	2	0	0	**2**	2	251	0	**253**	217	1	0	**218**	**473**
Total	5	4	0	**9**	2	1181	0	**1183**	1271	6	0	**1277**	**2469**
% Approach	55.6%	44.4%	0%	**-**	0.2%	99.8%	0%	**-**	99.5%	0.5%	0%	**-**	-
% Total	0.2%	0.2%	0%	**0.4%**	0.1%	47.8%	0%	**47.9%**	51.5%	0.2%	0%	**51.7%**	-
Lights	5	2	0	**7**	2	1156	0	**1158**	1235	6	0	**1241**	2406
% Lights	100%	50.0%	0%	**77.8%**	100%	97.9%	0%	**97.9%**	97.2%	100%	0%	**97.2%**	97.4%
Articulated Trucks	0	0	0	**0**	0	4	0	**4**	13	0	0	**13**	17
% Articulated Trucks	0%	0%	0%	**0%**	0%	0.3%	0%	**0.3%**	1.0%	0%	0%	**1.0%**	0.7%
Buses and Single-Unit Trucks	0	2	0	**2**	0	21	0	**21**	23	0	0	**23**	46
% Buses and Single-Unit Trucks	0%	50.0%	0%	**22.2%**	0%	1.8%	0%	**1.8%**	1.8%	0%	0%	**1.8%**	1.9%

*L: Left, R: Right, T: Thru, U: U-Turn

US 40 & Old US 40 NW (West) - TMC
Wed Nov 13, 2024
Full Length (6 AM-9 AM, 3 PM-6 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1248035, Location: 39.933074, -83.499399

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US



US 40 & Old US 40 NW (West) - TMC

Wed Nov 13, 2024
AM Peak (6:30 AM - 7:30 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1248035, Location: 39.933074, -83.499399

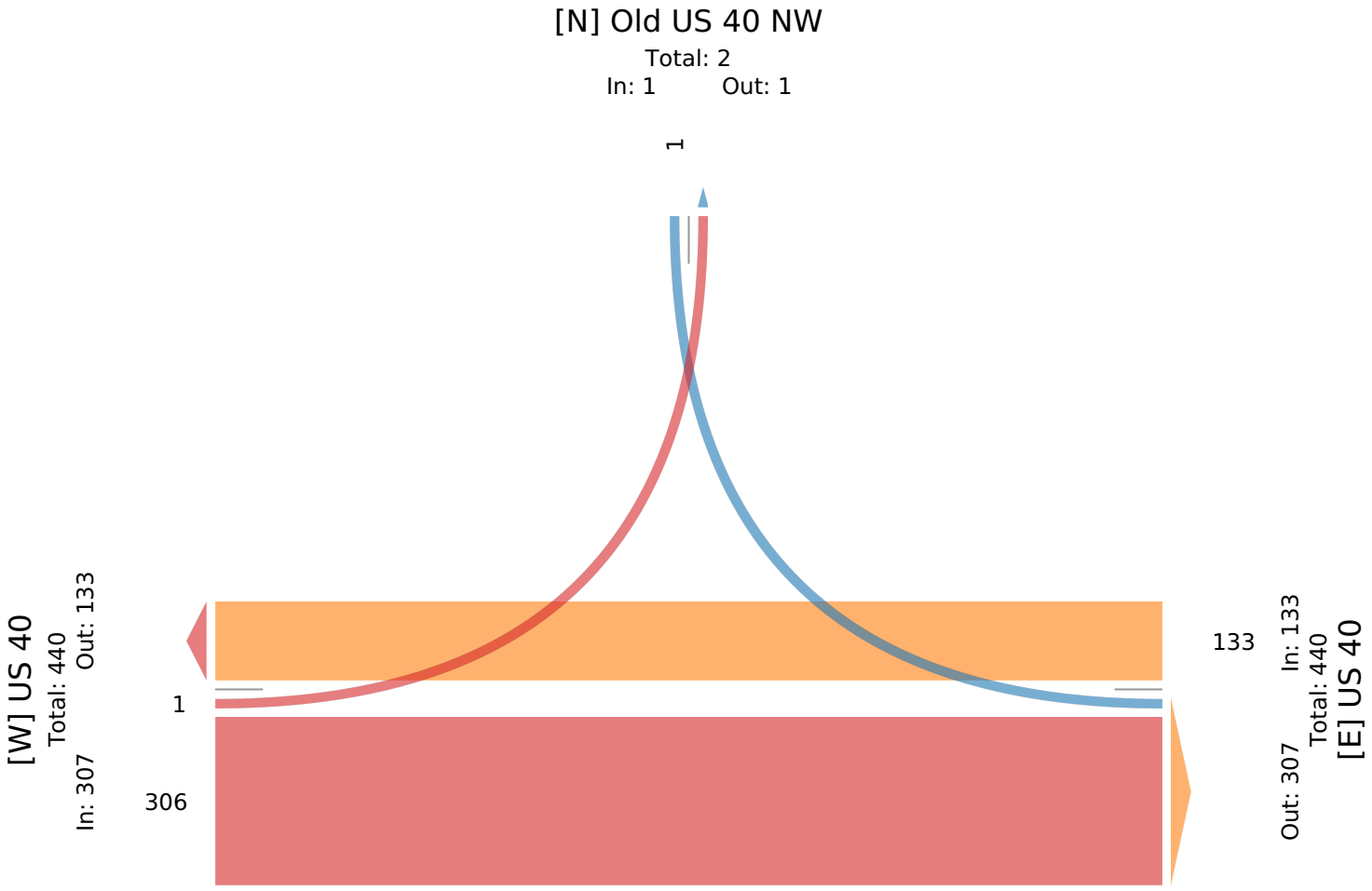
Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US

Leg	Old US 40 NW				US 40				US 40				
Direction	Southbound				Westbound				Eastbound				
Time	R	L	U	**App**	R	T	U	**App**	T	L	U	**App**	**Int**
2024-11-13 6:30AM	0	1	0	**1**	0	15	0	**15**	109	0	0	**109**	**125**
6:45AM	0	0	0	**0**	0	16	0	**16**	73	1	0	**74**	**90**
7:00AM	0	0	0	**0**	0	25	0	**25**	75	0	0	**75**	**100**
7:15AM	0	0	0	**0**	0	77	0	**77**	49	0	0	**49**	**126**
Total	0	1	0	**1**	0	133	0	**133**	306	1	0	**307**	**441**
% Approach	0%	100%	0%	**-**	0%	100%	0%	**-**	99.7%	0.3%	0%	**-**	-
% Total	0%	0.2%	0%	**0.2%**	0%	30.2%	0%	**30.2%**	69.4%	0.2%	0%	**69.6%**	-
PHF	-	0.250	-	**0.250**	-	0.432	-	**0.432**	0.702	0.250	-	**0.704**	0.875
Lights	0	0	0	**0**	0	130	0	**130**	302	1	0	**303**	433
% Lights	0%	0%	0%	**0%**	0%	97.7%	0%	**97.7%**	98.7%	100%	0%	**98.7%**	98.2%
Articulated Trucks	0	0	0	**0**	0	1	0	**1**	1	0	0	**1**	2
% Articulated Trucks	0%	0%	0%	**0%**	0%	0.8%	0%	**0.8%**	0.3%	0%	0%	**0.3%**	0.5%
Buses and Single-Unit Trucks	0	1	0	**1**	0	2	0	**2**	3	0	0	**3**	6
% Buses and Single-Unit Trucks	0%	100%	0%	**100%**	0%	1.5%	0%	**1.5%**	1.0%	0%	0%	**1.0%**	1.4%

*L: Left, R: Right, T: Thru, U: U-Turn

US 40 & Old US 40 NW (West) - TMC
Wed Nov 13, 2024
AM Peak (6:30 AM - 7:30 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1248035, Location: 39.933074, -83.499399

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US



US 40 & Old US 40 NW (West) - TMC

Wed Nov 13, 2024
PM Peak (3:15 PM - 4:15 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1248035, Location: 39.933074, -83.499399

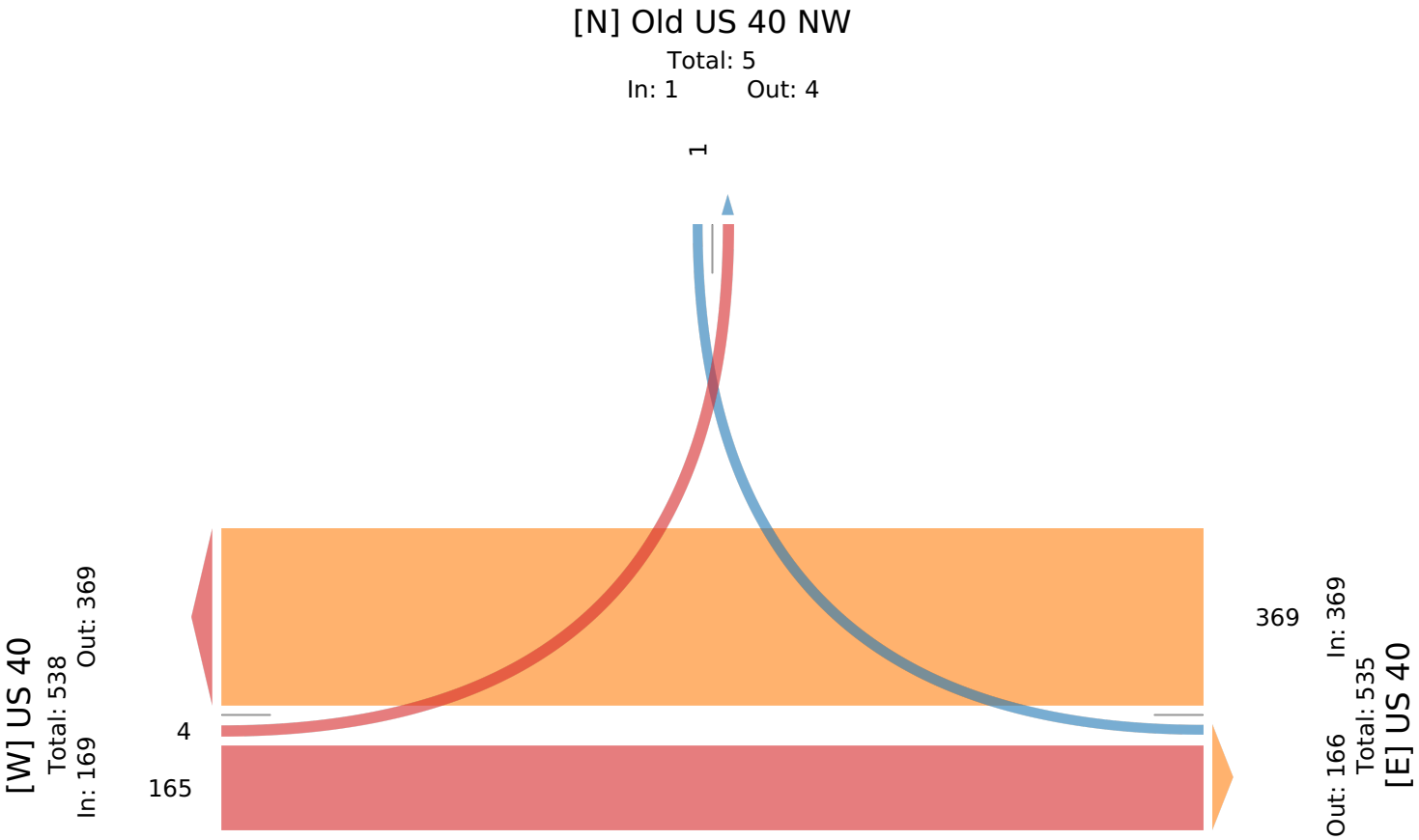
Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US

Leg	Old US 40 NW				US 40				US 40				
Direction	Southbound				Westbound				Eastbound				
Time	R	L	U	**App**	R	T	U	**App**	T	L	U	**App**	**Int**
2024-11-13 3:15PM	0	0	0	**0**	0	78	0	**78**	47	3	0	**50**	**128**
3:30PM	0	0	0	**0**	0	82	0	**82**	37	0	0	**37**	**119**
3:45PM	0	1	0	**1**	0	123	0	**123**	33	1	0	**34**	**158**
4:00PM	0	0	0	**0**	0	86	0	**86**	48	0	0	**48**	**134**
Total	0	1	0	**1**	0	369	0	**369**	165	4	0	**169**	**539**
% Approach	0%	100%	0%	**-**	0%	100%	0%	**-**	97.6%	2.4%	0%	**-**	-
% Total	0%	0.2%	0%	**0.2%**	0%	68.5%	0%	**68.5%**	30.6%	0.7%	0%	**31.4%**	-
PHF	-	0.250	-	**0.250**	-	0.750	-	**0.750**	0.859	0.333	-	**0.845**	0.853
Lights	0	1	0	**1**	0	363	0	**363**	158	4	0	**162**	526
% Lights	0%	100%	0%	**100%**	0%	98.4%	0%	**98.4%**	95.8%	100%	0%	**95.9%**	97.6%
Articulated Trucks	0	0	0	**0**	0	1	0	**1**	3	0	0	**3**	4
% Articulated Trucks	0%	0%	0%	**0%**	0%	0.3%	0%	**0.3%**	1.8%	0%	0%	**1.8%**	0.7%
Buses and Single-Unit Trucks	0	0	0	**0**	0	5	0	**5**	4	0	0	**4**	9
% Buses and Single-Unit Trucks	0%	0%	0%	**0%**	0%	1.4%	0%	**1.4%**	2.4%	0%	0%	**2.4%**	1.7%

*L: Left, R: Right, T: Thru, U: U-Turn

US 40 & Old US 40 NW (West) - TMC
Wed Nov 13, 2024
PM Peak (3:15 PM - 4:15 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1248035, Location: 39.933074, -83.499399

LOUKAS engineering
TRAFFIC DATA & CONSULTING
Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US



US 40 & Robert Mill Rd. - TMC

Wed Nov 13, 2024
Full Length (6 AM-9 AM, 3 PM-6 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1250458, Location: 39.933221, -83.501381

LOUKAS engineering
TRAFFIC DATA & CONSULTING

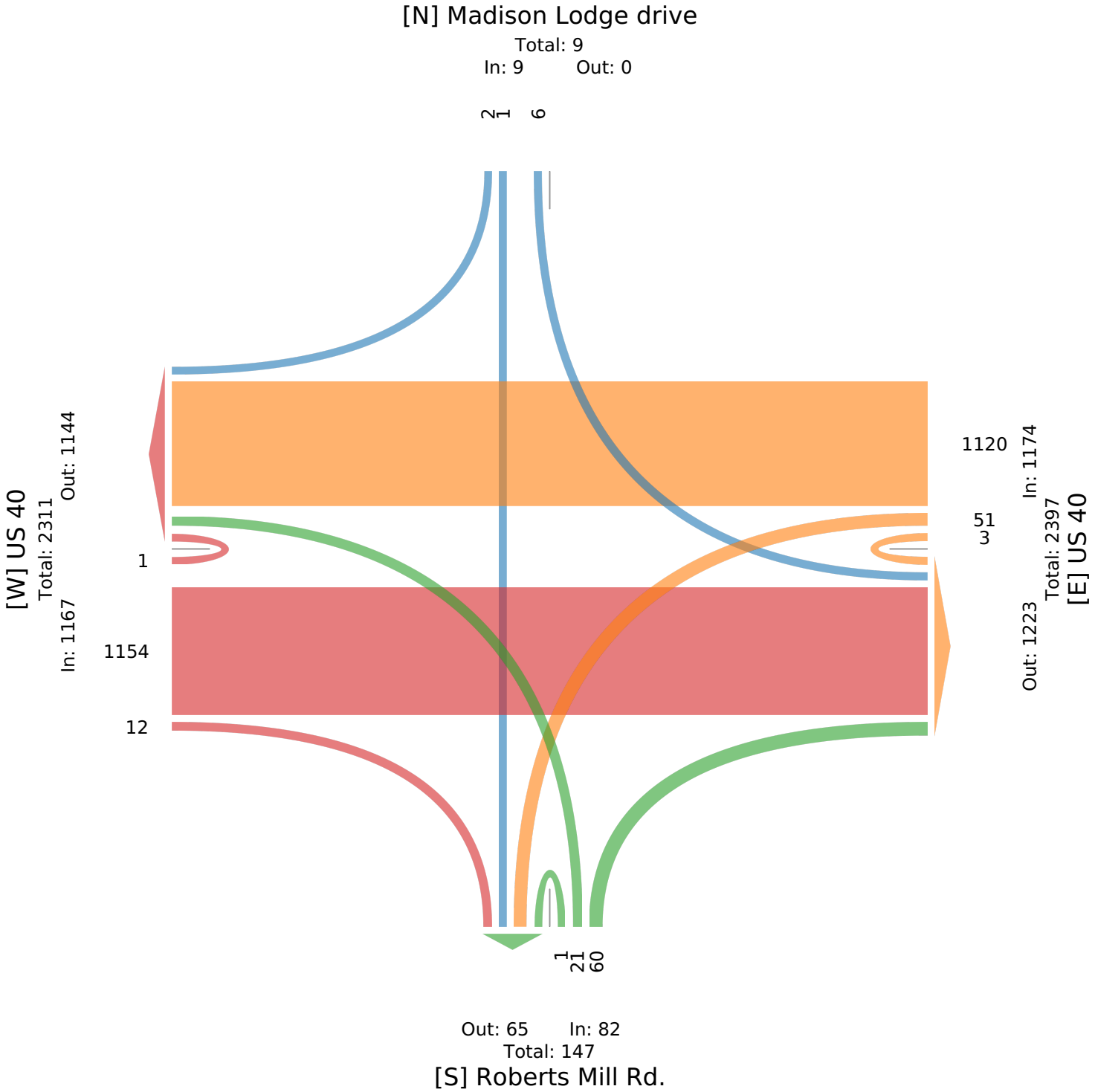
Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US

Leg	Madison Lodge drive					US 40					Roberts Mill Rd.					US 40					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2024-11-13 6:00AM	0	0	0	0	**0**	0	17	1	0	**18**	2	0	0	0	**2**	0	48	0	0	**48**	**68**
6:15AM	0	0	1	0	**1**	0	18	1	0	**19**	1	0	1	0	**2**	0	69	0	0	**69**	**91**
6:30AM	0	0	2	0	**2**	0	10	0	0	**10**	6	0	1	0	**7**	1	101	0	0	**102**	**121**
6:45AM	0	0	0	0	**0**	0	17	1	0	**18**	1	0	0	0	**1**	3	69	0	0	**72**	**91**
Hourly Total	0	0	3	0	**3**	0	62	3	0	**65**	10	0	2	0	**12**	4	287	0	0	**291**	**371**
7:00AM	0	0	0	0	**0**	0	21	1	0	**22**	5	0	0	0	**5**	0	67	0	0	**67**	**94**
7:15AM	0	0	0	0	**0**	0	69	3	0	**72**	2	0	1	0	**3**	0	44	0	0	**44**	**119**
7:30AM	0	0	0	0	**0**	0	37	1	0	**38**	5	0	0	0	**5**	0	48	0	0	**48**	**91**
7:45AM	0	0	0	0	**0**	0	34	3	0	**37**	2	0	0	0	**2**	0	58	0	0	**58**	**97**
Hourly Total	0	0	0	0	**0**	0	161	8	0	**169**	14	0	1	0	**15**	0	217	0	0	**217**	**401**
8:00AM	0	0	0	0	**0**	0	17	4	0	**21**	2	0	0	0	**2**	1	39	0	0	**40**	**63**
8:15AM	0	0	0	0	**0**	0	15	1	0	**16**	3	0	1	0	**4**	1	43	0	0	**44**	**64**
8:30AM	0	0	0	0	**0**	0	19	0	0	**19**	2	0	0	0	**2**	0	37	0	0	**37**	**58**
8:45AM	0	0	0	0	**0**	0	10	2	0	**12**	2	0	0	0	**2**	0	29	0	0	**29**	**43**
Hourly Total	0	0	0	0	**0**	0	61	7	0	**68**	9	0	1	0	**10**	2	148	0	0	**150**	**228**
3:00PM	1	0	0	0	**1**	0	46	4	0	**50**	0	0	3	0	**3**	0	59	0	0	**59**	**113**
3:15PM	0	0	0	0	**0**	0	75	2	1	**78**	0	0	1	0	**1**	1	49	0	0	**50**	**129**
3:30PM	0	0	0	0	**0**	0	72	0	0	**72**	5	0	5	0	**10**	1	32	0	0	**33**	**115**
3:45PM	1	0	0	0	**1**	0	117	2	1	**120**	0	0	0	0	**0**	2	32	0	0	**34**	**155**
Hourly Total	2	0	0	0	**2**	0	310	8	2	**320**	5	0	9	0	**14**	4	172	0	0	**176**	**512**
4:00PM	0	0	0	0	**0**	0	89	4	0	**93**	2	0	1	0	**3**	0	44	0	0	**44**	**140**
4:15PM	0	0	1	0	**1**	0	77	4	0	**81**	5	0	0	0	**5**	0	29	0	1	**30**	**117**
4:30PM	0	0	0	0	**0**	0	61	4	0	**65**	2	0	3	0	**5**	0	30	0	0	**30**	**100**
4:45PM	0	0	1	0	**1**	0	60	3	0	**63**	2	0	2	0	**4**	1	33	0	0	**34**	**102**
Hourly Total	0	0	2	0	**2**	0	287	15	0	**302**	11	0	6	0	**17**	1	136	0	1	**138**	**459**
5:00PM	0	0	0	0	**0**	0	56	3	1	**60**	6	0	0	1	**7**	0	26	0	0	**26**	**93**
5:15PM	0	1	0	0	**1**	0	59	2	0	**61**	2	0	1	0	**3**	1	50	0	0	**51**	**116**
5:30PM	0	0	1	0	**1**	0	63	4	0	**67**	3	0	0	0	**3**	0	62	0	0	**62**	**133**
5:45PM	0	0	0	0	**0**	0	61	1	0	**62**	0	0	1	0	**1**	0	56	0	0	**56**	**119**
Hourly Total	0	1	1	0	**2**	0	239	10	1	**250**	11	0	2	1	**14**	1	194	0	0	**195**	**461**
Total	2	1	6	0	**9**	0	1120	51	3	**1174**	60	0	21	1	**82**	12	1154	0	1	**1167**	**2432**
% Approach	22.2%	11.1%	66.7%	0%	**-**	0%	95.4%	4.3%	0.3%	**-**	73.2%	0%	25.6%	1.2%	**-**	1.0%	98.9%	0%	0.1%	**-**	-
% Total	0.1%	0%	0.2%	0%	**0.4%**	0%	46.1%	2.1%	0.1%	**48.3%**	2.5%	0%	0.9%	0%	**3.4%**	0.5%	47.5%	0%	0%	**48.0%**	-
Lights	2	1	6	0	**9**	0	1092	46	3	**1141**	58	0	20	1	**79**	12	1129	0	0	**1141**	2370
% Lights	100%	100%	100%	0%	**100%**	0%	97.5%	90.2%	100%	**97.2%**	96.7%	0%	95.2%	100%	**96.3%**	100%	97.8%	0%	0%	**97.8%**	97.5%
Articulated Trucks	0	0	0	0	**0**	0	5	0	0	**5**	0	0	0	0	**0**	0	8	0	0	**8**	13
% Articulated Trucks	0%	0%	0%	0%	**0%**	0%	0.4%	0%	0%	**0.4%**	0%	0%	0%	0%	**0%**	0%	0.7%	0%	0%	**0.7%**	0.5%
Buses and Single-Unit Trucks	0	0	0	0	**0**	0	23	5	0	**28**	2	0	1	0	**3**	0	17	0	1	**18**	49
% Buses and Single-Unit Trucks	0%	0%	0%	0%	**0%**	0%	2.1%	9.8%	0%	**2.4%**	3.3%	0%	4.8%	0%	**3.7%**	0%	1.5%	0%	100%	**1.5%**	2.0%

*L: Left, R: Right, T: Thru, U: U-Turn

US 40 & Robert Mill Rd. - TMC
Wed Nov 13, 2024
Full Length (6 AM-9 AM, 3 PM-6 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1250458, Location: 39.933221, -83.501381

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US



US 40 & Robert Mill Rd. - TMC

Wed Nov 13, 2024
AM Peak (6:30 AM - 7:30 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1250458, Location: 39.933221, -83.501381

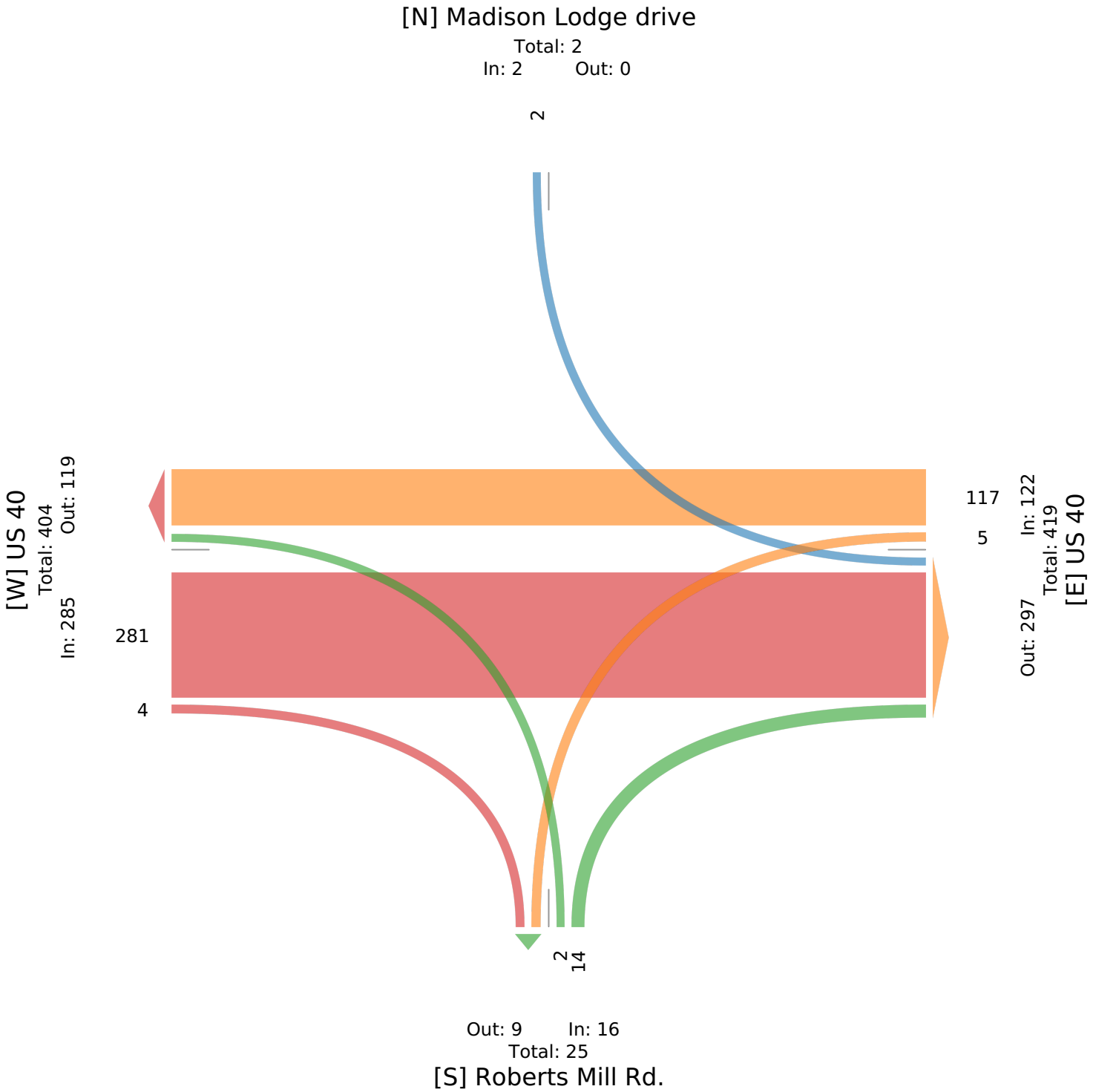
Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US

Leg	Madison Lodge drive					US 40					Roberts Mill Rd.					US 40					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2024-11-13 6:30AM	0	0	2	0	**2**	0	10	0	0	**10**	6	0	1	0	**7**	1	101	0	0	**102**	**121**
6:45AM	0	0	0	0	**0**	0	17	1	0	**18**	1	0	0	0	**1**	3	69	0	0	**72**	**91**
7:00AM	0	0	0	0	**0**	0	21	1	0	**22**	5	0	0	0	**5**	0	67	0	0	**67**	**94**
7:15AM	0	0	0	0	**0**	0	69	3	0	**72**	2	0	1	0	**3**	0	44	0	0	**44**	**119**
Total	0	0	2	0	**2**	0	117	5	0	**122**	14	0	2	0	**16**	4	281	0	0	**285**	**425**
% Approach	0%	0%	100%	0%	**-**	0%	95.9%	4.1%	0%	**-**	87.5%	0%	12.5%	0%	**-**	1.4%	98.6%	0%	0%	**-**	-
% Total	0%	0%	0.5%	0%	**0.5%**	0%	27.5%	1.2%	0%	**28.7%**	3.3%	0%	0.5%	0%	**3.8%**	0.9%	66.1%	0%	0%	**67.1%**	-
PHF	-	-	0.250	-	**0.250**	-	0.424	0.417	-	**0.424**	0.583	-	0.500	-	**0.571**	0.333	0.696	-	-	**0.699**	0.878
Lights	0	0	2	0	**2**	0	115	5	0	**120**	14	0	1	0	**15**	4	280	0	0	**284**	421
% Lights	0%	0%	100%	0%	**100%**	0%	98.3%	100%	0%	**98.4%**	100%	0%	50.0%	0%	**93.8%**	100%	99.6%	0%	0%	**99.6%**	99.1%
Articulated Trucks	0	0	0	0	**0**	0	1	0	0	**1**	0	0	0	0	**0**	0	1	0	0	**1**	2
% Articulated Trucks	0%	0%	0%	0%	**0%**	0%	0.9%	0%	0%	**0.8%**	0%	0%	0%	0%	**0%**	0%	0.4%	0%	0%	**0.4%**	0.5%
Buses and Single-Unit Trucks	0	0	0	0	**0**	0	1	0	0	**1**	0	0	1	0	**1**	0	0	0	0	**0**	2
% Buses and Single-Unit Trucks	0%	0%	0%	0%	**0%**	0%	0.9%	0%	0%	**0.8%**	0%	0%	50.0%	0%	**6.3%**	0%	0%	0%	0%	**0%**	0.5%

*L: Left, R: Right, T: Thru, U: U-Turn

US 40 & Robert Mill Rd. - TMC
Wed Nov 13, 2024
AM Peak (6:30 AM - 7:30 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1250458, Location: 39.933221, -83.501381

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US



US 40 & Robert Mill Rd. - TMC

Wed Nov 13, 2024
PM Peak (3:15 PM - 4:15 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1250458, Location: 39.933221, -83.501381

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US

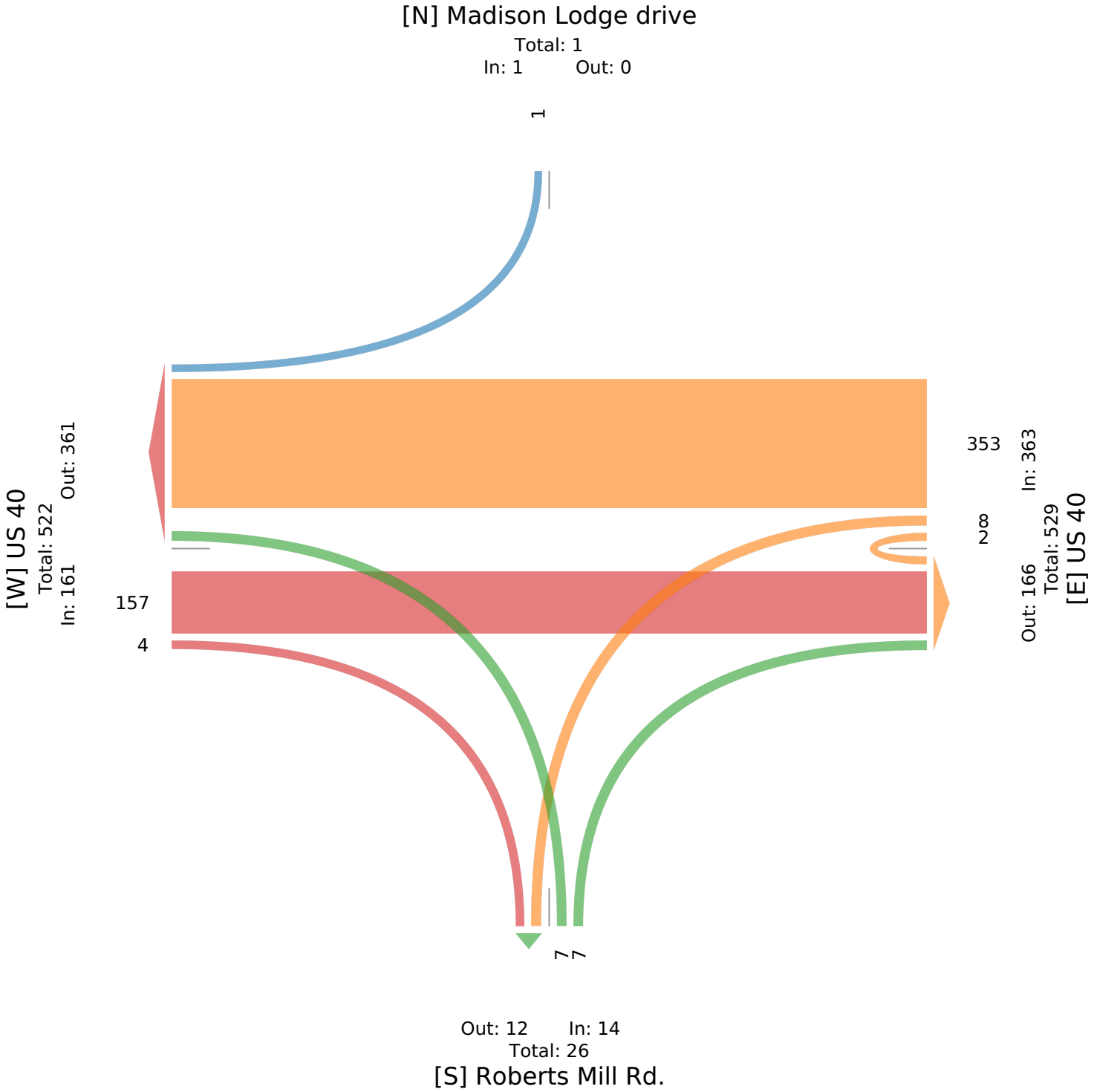
Leg	Madison Lodge drive					US 40					Roberts Mill Rd.					US 40					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2024-11-13 3:15PM	0	0	0	0	**0**	0	75	2	1	**78**	0	0	1	0	**1**	1	49	0	0	**50**	**129**
3:30PM	0	0	0	0	**0**	0	72	0	0	**72**	5	0	5	0	**10**	1	32	0	0	**33**	**115**
3:45PM	1	0	0	0	**1**	0	117	2	1	**120**	0	0	0	0	**0**	2	32	0	0	**34**	**155**
4:00PM	0	0	0	0	**0**	0	89	4	0	**93**	2	0	1	0	**3**	0	44	0	0	**44**	**140**
Total	1	0	0	0	**1**	0	353	8	2	**363**	7	0	7	0	**14**	4	157	0	0	**161**	**539**
% Approach	100%	0%	0%	0%	**-**	0%	97.2%	2.2%	0.6%	**-**	50.0%	0%	50.0%	0%	**-**	2.5%	97.5%	0%	0%	**-**	-
% Total	0.2%	0%	0%	0%	**0.2%**	0%	65.5%	1.5%	0.4%	**67.3%**	1.3%	0%	1.3%	0%	**2.6%**	0.7%	29.1%	0%	0%	**29.9%**	-
PHF	0.250	-	-	-	**0.250**	-	0.754	0.500	0.500	**0.756**	0.350	-	0.350	-	**0.350**	0.500	0.801	-	-	**0.805**	0.869
Lights	1	0	0	0	**1**	0	344	6	2	**352**	6	0	7	0	**13**	4	152	0	0	**156**	522
% Lights	100%	0%	0%	0%	**100%**	0%	97.5%	75.0%	100%	**97.0%**	85.7%	0%	100%	0%	**92.9%**	100%	96.8%	0%	0%	**96.9%**	96.8%
Articulated Trucks	0	0	0	0	**0**	0	1	0	0	**1**	0	0	0	0	**0**	0	1	0	0	**1**	2
% Articulated Trucks	0%	0%	0%	0%	**0%**	0%	0.3%	0%	0%	**0.3%**	0%	0%	0%	0%	**0%**	0%	0.6%	0%	0%	**0.6%**	0.4%
Buses and Single-Unit Trucks	0	0	0	0	**0**	0	8	2	0	**10**	1	0	0	0	**1**	0	4	0	0	**4**	15
% Buses and Single-Unit Trucks	0%	0%	0%	0%	**0%**	0%	2.3%	25.0%	0%	**2.8%**	14.3%	0%	0%	0%	**7.1%**	0%	2.5%	0%	0%	**2.5%**	2.8%

*L: Left, R: Right, T: Thru, U: U-Turn

US 40 & Robert Mill Rd. - TMC
Wed Nov 13, 2024
PM Peak (3:15 PM - 4:15 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1250458, Location: 39.933221, -83.501381

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US



US 40 & Potee Rd. - TMC

Wed Nov 13, 2024
Full Length (6 AM-9 AM, 3 PM-6 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1247810, Location: 39.932638, -83.515071

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US

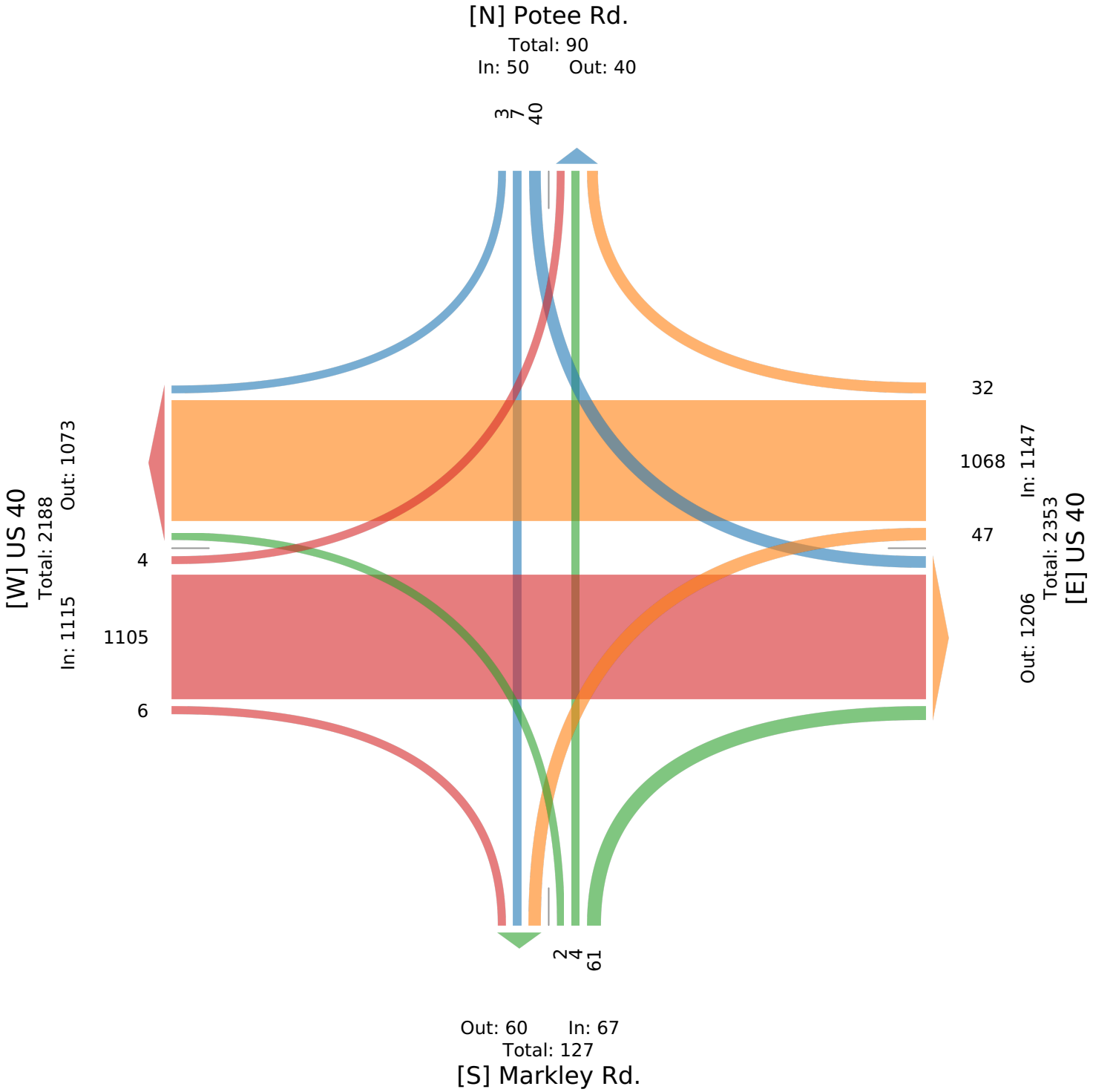
Leg	Potee Rd.					US 40					Markley Rd.					US 40					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2024-11-13 6:00AM	0	1	2	0	**3**	0	15	0	0	**15**	2	0	0	0	**2**	0	47	0	0	**47**	**67**
6:15AM	0	0	3	0	**3**	0	19	2	0	**21**	6	0	0	0	**6**	0	70	1	0	**71**	**101**
6:30AM	0	0	1	0	**1**	0	7	0	0	**7**	5	0	0	0	**5**	0	100	0	0	**100**	**113**
6:45AM	0	0	1	0	**1**	0	18	1	0	**19**	1	0	0	0	**1**	0	68	0	0	**68**	**89**
Hourly Total	0	1	7	0	**8**	0	59	3	0	**62**	14	0	0	0	**14**	0	285	1	0	**286**	**370**
7:00AM	0	0	4	0	**4**	0	18	1	0	**19**	8	0	0	0	**8**	0	58	1	0	**59**	**90**
7:15AM	0	0	2	0	**2**	0	73	1	0	**74**	6	0	0	0	**6**	0	36	0	0	**36**	**118**
7:30AM	0	0	1	0	**1**	0	37	1	0	**38**	2	0	0	0	**2**	0	52	0	0	**52**	**93**
7:45AM	1	1	3	0	**5**	1	33	0	0	**34**	5	0	0	0	**5**	0	56	0	0	**56**	**100**
Hourly Total	1	1	10	0	**12**	1	161	3	0	**165**	21	0	0	0	**21**	0	202	1	0	**203**	**401**
8:00AM	0	0	0	0	**0**	0	16	2	0	**18**	3	0	0	0	**3**	0	36	0	0	**36**	**57**
8:15AM	0	0	2	0	**2**	0	16	0	0	**16**	3	0	1	0	**4**	0	42	0	0	**42**	**64**
8:30AM	0	1	3	0	**4**	1	18	0	0	**19**	1	0	0	0	**1**	1	35	0	0	**36**	**60**
8:45AM	0	0	1	0	**1**	0	9	1	0	**10**	3	0	0	0	**3**	0	23	0	0	**23**	**37**
Hourly Total	0	1	6	0	**7**	1	59	3	0	**63**	10	0	1	0	**11**	1	136	0	0	**137**	**218**
3:00PM	0	0	1	0	**1**	2	46	3	0	**51**	1	0	0	0	**1**	1	57	0	0	**58**	**111**
3:15PM	0	1	2	0	**3**	0	75	2	0	**77**	3	1	0	0	**4**	0	45	0	0	**45**	**129**
3:30PM	0	0	2	0	**2**	7	68	3	0	**78**	0	0	0	0	**0**	0	31	0	0	**31**	**111**
3:45PM	0	1	2	0	**3**	4	109	4	0	**117**	2	0	0	0	**2**	0	29	0	0	**29**	**151**
Hourly Total	0	2	7	0	**9**	13	298	12	0	**323**	6	1	0	0	**7**	1	162	0	0	**163**	**502**
4:00PM	0	0	0	0	**0**	1	84	5	0	**90**	1	0	0	0	**1**	0	43	0	0	**43**	**134**
4:15PM	1	1	0	0	**2**	2	69	6	0	**77**	1	0	0	0	**1**	1	29	2	0	**32**	**112**
4:30PM	0	0	2	0	**2**	5	58	2	0	**65**	0	1	0	0	**1**	0	28	0	0	**28**	**96**
4:45PM	0	0	2	0	**2**	2	61	1	0	**64**	0	0	0	0	**0**	0	31	0	0	**31**	**97**
Hourly Total	1	1	4	0	**6**	10	272	14	0	**296**	2	1	0	0	**3**	1	131	2	0	**134**	**439**
5:00PM	1	0	0	0	**1**	3	48	3	0	**54**	2	0	1	0	**3**	1	29	0	0	**30**	**88**
5:15PM	0	0	2	0	**2**	0	56	5	0	**61**	3	2	0	0	**5**	1	45	0	0	**46**	**114**
5:30PM	0	0	2	0	**2**	1	61	0	0	**62**	1	0	0	0	**1**	1	60	0	0	**61**	**126**
5:45PM	0	1	2	0	**3**	3	54	4	0	**61**	2	0	0	0	**2**	0	55	0	0	**55**	**121**
Hourly Total	1	1	6	0	**8**	7	219	12	0	**238**	8	2	1	0	**11**	3	189	0	0	**192**	**449**
Total	3	7	40	0	**50**	32	1068	47	0	**1147**	61	4	2	0	**67**	6	1105	4	0	**1115**	**2379**
% Approach	6.0%	14.0%	80.0%	0%	**-**	2.8%	93.1%	4.1%	0%	**-**	91.0%	6.0%	3.0%	0%	**-**	0.5%	99.1%	0.4%	0%	**-**	-
% Total	0.1%	0.3%	1.7%	0%	**2.1%**	1.3%	44.9%	2.0%	0%	**48.2%**	2.6%	0.2%	0.1%	0%	**2.8%**	0.3%	46.4%	0.2%	0%	**46.9%**	-
Lights	3	4	40	0	**47**	30	1048	46	0	**1124**	60	4	2	0	**66**	6	1075	4	0	**1085**	2322
% Lights	100%	57.1%	100%	0%	**94.0%**	93.8%	98.1%	97.9%	0%	**98.0%**	98.4%	100%	100%	0%	**98.5%**	100%	97.3%	100%	0%	**97.3%**	97.6%
Articulated Trucks	0	0	0	0	**0**	0	4	0	0	**4**	0	0	0	0	**0**	0	12	0	0	**12**	16
% Articulated Trucks	0%	0%	0%	0%	**0%**	0%	0.4%	0%	0%	**0.3%**	0%	0%	0%	0%	**0%**	0%	1.1%	0%	0%	**1.1%**	0.7%
Buses and Single-Unit Trucks	0	3	0	0	**3**	2	16	1	0	**19**	1	0	0	0	**1**	0	18	0	0	**18**	41
% Buses and Single-Unit Trucks	0%	42.9%	0%	0%	**6.0%**	6.3%	1.5%	2.1%	0%	**1.7%**	1.6%	0%	0%	0%	**1.5%**	0%	1.6%	0%	0%	**1.6%**	1.7%

*L: Left, R: Right, T: Thru, U: U-Turn

US 40 & Potee Rd. - TMC
Wed Nov 13, 2024
Full Length (6 AM-9 AM, 3 PM-6 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1247810, Location: 39.932638, -83.515071

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US



US 40 & Potee Rd. - TMC

Wed Nov 13, 2024
AM Peak (6:30 AM - 7:30 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1247810, Location: 39.932638, -83.515071

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US

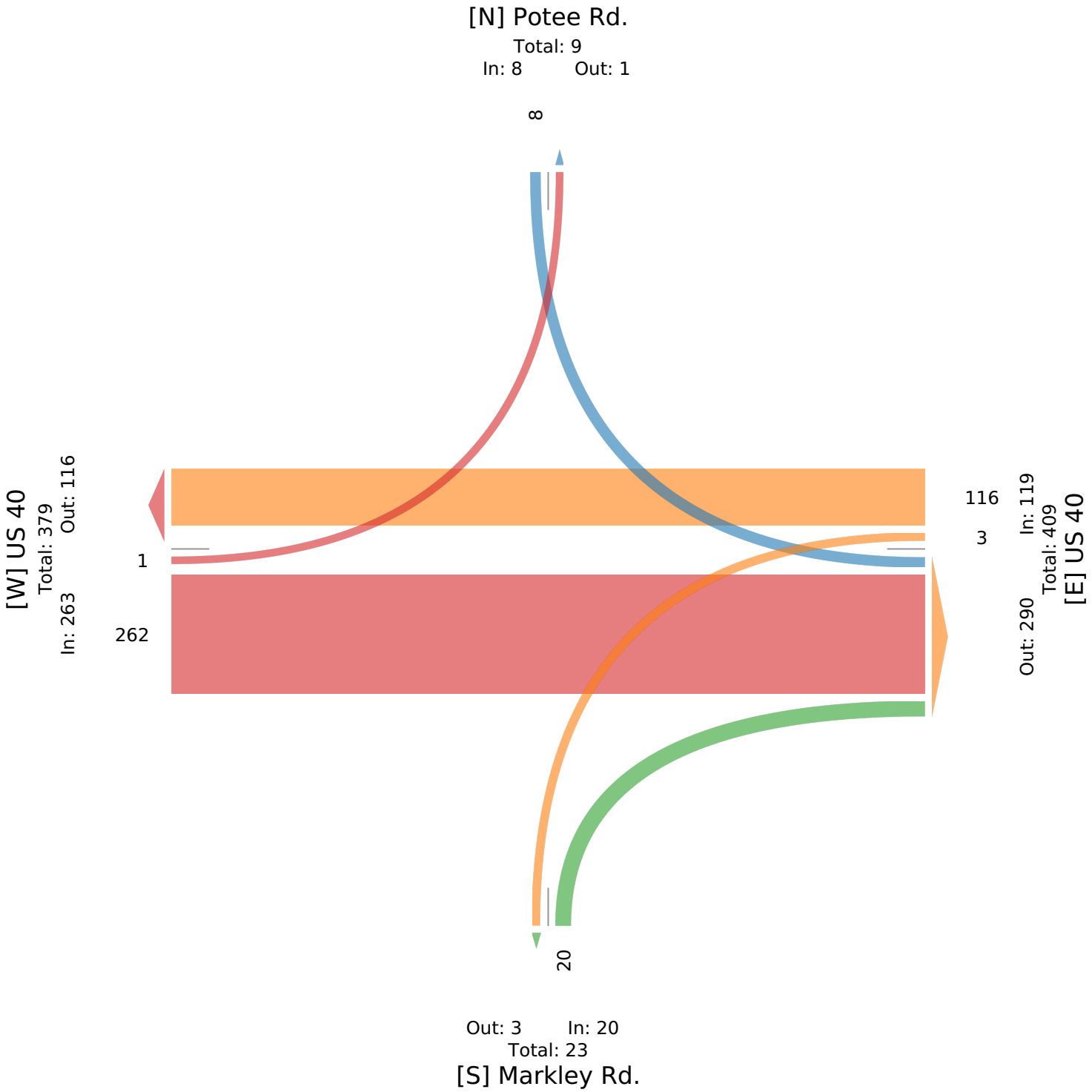
Leg	Potee Rd.					US 40					Markley Rd.					US 40					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2024-11-13 6:30AM	0	0	1	0	**1**	0	7	0	0	**7**	5	0	0	0	**5**	0	100	0	0	**100**	**113**
6:45AM	0	0	1	0	**1**	0	18	1	0	**19**	1	0	0	0	**1**	0	68	0	0	**68**	**89**
7:00AM	0	0	4	0	**4**	0	18	1	0	**19**	8	0	0	0	**8**	0	58	1	0	**59**	**90**
7:15AM	0	0	2	0	**2**	0	73	1	0	**74**	6	0	0	0	**6**	0	36	0	0	**36**	**118**
Total	0	0	8	0	**8**	0	116	3	0	**119**	20	0	0	0	**20**	0	262	1	0	**263**	**410**
% Approach	0%	0%	100%	0%	**-**	0%	97.5%	2.5%	0%	**-**	100%	0%	0%	0%	**-**	0%	99.6%	0.4%	0%	**-**	-
% Total	0%	0%	2.0%	0%	**2.0%**	0%	28.3%	0.7%	0%	**29.0%**	4.9%	0%	0%	0%	**4.9%**	0%	63.9%	0.2%	0%	**64.1%**	-
PHF	-	-	0.500	-	**0.500**	-	0.397	0.750	-	**0.402**	0.625	-	-	-	**0.625**	-	0.655	0.250	-	**0.658**	0.869
Lights	0	0	8	0	**8**	0	115	3	0	**118**	20	0	0	0	**20**	0	259	1	0	**260**	406
% Lights	0%	0%	100%	0%	**100%**	0%	99.1%	100%	0%	**99.2%**	100%	0%	0%	0%	**100%**	0%	98.9%	100%	0%	**98.9%**	99.0%
Articulated Trucks	0	0	0	0	**0**	0	1	0	0	**1**	0	0	0	0	**0**	0	1	0	0	**1**	2
% Articulated Trucks	0%	0%	0%	0%	**0%**	0%	0.9%	0%	0%	**0.8%**	0%	0%	0%	0%	**0%**	0%	0.4%	0%	0%	**0.4%**	0.5%
Buses and Single-Unit Trucks	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	2	0	0	**2**	2
% Buses and Single-Unit Trucks	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	0%	0.8%	0%	0%	**0.8%**	0.5%

*L: Left, R: Right, T: Thru, U: U-Turn

US 40 & Potee Rd. - TMC
Wed Nov 13, 2024
AM Peak (6:30 AM - 7:30 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1247810, Location: 39.932638, -83.515071

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US



US 40 & Potee Rd. - TMC

Wed Nov 13, 2024
PM Peak (3:15 PM - 4:15 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1247810, Location: 39.932638, -83.515071

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US

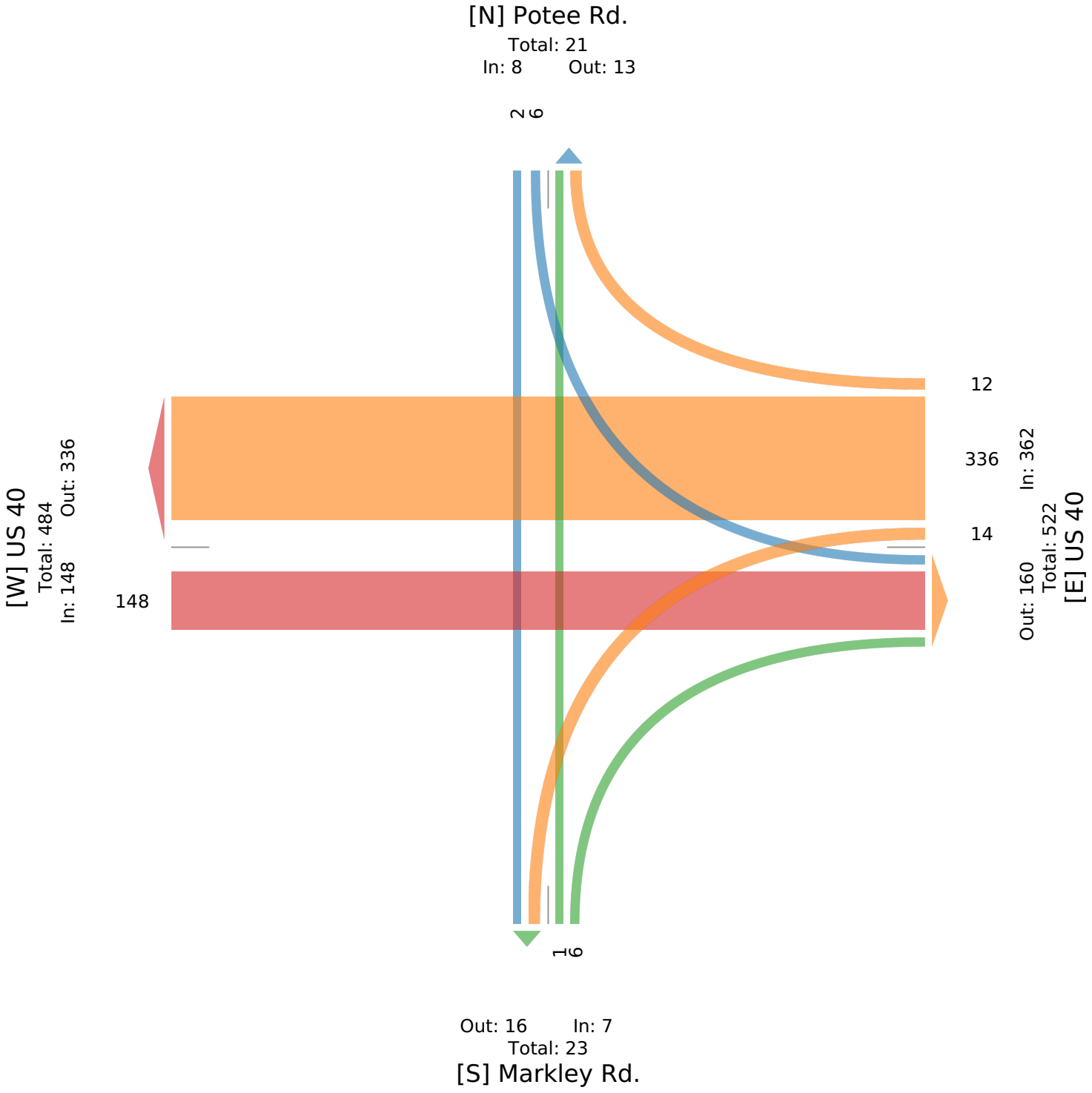
Leg	Potee Rd.					US 40					Markley Rd.					US 40					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	**Int**
2024-11-13 3:15PM	0	1	2	0	**3**	0	75	2	0	**77**	3	1	0	0	**4**	0	45	0	0	**45**	**129**
3:30PM	0	0	2	0	**2**	7	68	3	0	**78**	0	0	0	0	**0**	0	31	0	0	**31**	**111**
3:45PM	0	1	2	0	**3**	4	109	4	0	**117**	2	0	0	0	**2**	0	29	0	0	**29**	**151**
4:00PM	0	0	0	0	**0**	1	84	5	0	**90**	1	0	0	0	**1**	0	43	0	0	**43**	**134**
Total	0	2	6	0	**8**	12	336	14	0	**362**	6	1	0	0	**7**	0	148	0	0	**148**	**525**
% Approach	0%	25.0%	75.0%	0%	**-**	3.3%	92.8%	3.9%	0%	**-**	85.7%	14.3%	0%	0%	**-**	0%	100%	0%	0%	**-**	-
% Total	0%	0.4%	1.1%	0%	**1.5%**	2.3%	64.0%	2.7%	0%	**69.0%**	1.1%	0.2%	0%	0%	**1.3%**	0%	28.2%	0%	0%	**28.2%**	-
PHF	-	0.500	0.750	-	**0.667**	0.429	0.771	0.700	-	**0.774**	0.500	0.250	-	-	**0.438**	-	0.822	-	-	**0.822**	0.869
Lights	0	0	6	0	**6**	11	334	14	0	**359**	6	1	0	0	**7**	0	143	0	0	**143**	515
% Lights	0%	0%	100%	0%	**75.0%**	91.7%	99.4%	100%	0%	**99.2%**	100%	100%	0%	0%	**100%**	0%	96.6%	0%	0%	**96.6%**	98.1%
Articulated Trucks	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	3	0	0	**3**	3
% Articulated Trucks	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	0%	2.0%	0%	0%	**2.0%**	0.6%
Buses and Single-Unit Trucks	0	2	0	0	**2**	1	2	0	0	**3**	0	0	0	0	**0**	0	2	0	0	**2**	7
% Buses and Single-Unit Trucks	0%	100%	0%	0%	**25.0%**	8.3%	0.6%	0%	0%	**0.8%**	0%	0%	0%	0%	**0%**	0%	1.4%	0%	0%	**1.4%**	1.3%

*L: Left, R: Right, T: Thru, U: U-Turn

US 40 & Potee Rd. - TMC
Wed Nov 13, 2024
PM Peak (3:15 PM - 4:15 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1247810, Location: 39.932638, -83.515071

LOUKAS engineering
TRAFFIC DATA & CONSULTING

Provided by: Loukas Engineering
232 19th St. NW, Canton, OH, 44709, US



Appendix B
Traffic Signal and Multi-Stop Warrant Worksheets

STUDY AND ANALYSIS INFORMATION

Municipality:	West Jefferson	**Traffic Volumes Obtained By:**	Loukas Engineering
County:	Madison	**Analysis Date:**	12/6/2024
ODOT Engineering District:	6	**Agency/ Company Name Performing Warrant Analysis:**	HDR Engineering

Google map link: Map

Analysis Information

Data Collection Date: 11/13/2024

Day of the Week: Wednesday

Is the intersection in a built-up area of an isolated community of <10,000 population? Yes

Existing Traffic Signal at intersection: Yes

Total Number of Approaches at Intersection: 4

Major Street Information

Major Street Name and Route Number: National Pike (US40)

Major Street Approach Direction: E-Bound / W-Bound

Number of Thru Lanes on Each Major Street Approach: 2 **LANE(S)**

Speed Limit or 85th Percentile Speed on the Major Street*: 55 **MPH**

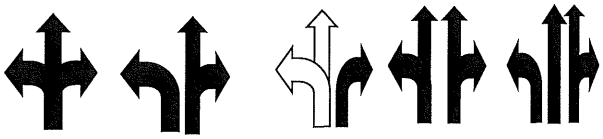
*Unknown assumes below 45 mph

Minor Street Information

Minor Street Name and Route Number: SR 56

Minor Street Approach Configuration:

1	N-Bound
1	S-Bound



1 2 3 4 5

Number of Thru Lanes on Each Minor Street Approach: 1 **LANE(S)**

Apply Right Turn Lane Reduction*: Yes

*Right Turn Lane Reduction Shall be used for Warrants 1, 2, & 3 for New ODOT Signals. Please refer to TEM 402-3.2 for clarification and criteria under which Right Turn Reduction is not required.

TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

	Warrant Applicable?	Warrant Satisfied?	Notes and Comments:
Warrant 1, Eight-Hour Vehicular Volume	Yes	**No**	
Warrant 2, Four-Hour Vehicular Volume	Yes	**Yes**	Figure 4C-2 (70% Factor)
Warrant 3, Peak Hour	Yes	**Yes**	Signals installed under Warrant 3 should be traffic actuated.
Warrant 4, Pedestrian Volume	No		If this warrant is met, and a traffic control signal is justified by an engineering study, the traffic control signal shall be equipped with pedestrian signal heads complying with the provisions set forth in Chapter 4E of the OMUTCD.
Warrant 5, School Crossing	No		N/A
Warrant 6, Coordinated Signal System	No		(Shall not be used as the sole warrant in the analysis)
Warrant 7, Crash Experience	Yes	**No**	If this is the sole warrant, signal must be semi-actuated with control devices which provide proper coordination if installed at an intersection within a coordinated system and normally should be fully traffic actuated if installed at an isolated intersection.
Warrant 8, Roadway Network	No		(Shall not be used as the sole warrant in the analysis)
Warrant 9, Intersection Near a Grade Crossing	No		Figure 4C-9
Multi-Way Stop Warrant	No		May be used as an interim measure if traffic signal warrants are satisfied.

Peak Hour
3:15 PM
4:15 PM

For Warrants 1-3, new ODOT signals must be based off of 100% volume thresholds (TEM 402-3.2)

Peak Hour
3:15 PM
4:15 PM

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

If no warrants are satisfied, additional options may be considered:
1. An engineering study, performed by a firm prequalified by ODOT for signal design, if approved by the ODOT district, may be used to justify a new signal installation or retention of an existing signal that otherwise does not meet the published warrants. An example of such an instance is a traffic signal in proximity to a railroad crossing that serves to reduce queuing across the tracks.
2. According to TEM 402-2, If the actual turning movement counts fail to satisfy a signal warrant, it may be acceptable to use traffic volumes projected to the second year after project completion. The **Modeling and Forecasting Section** should provide the projected traffic volumes.
3. A pedestrian hybrid beacon may be considered for installation to facilitate pedestrian crossings at a location that does not meet traffic signal warrants (see Chapter 4C of TEM) or at a location that meets traffic signal warrants under Sections 4C.05 and/or 4C.06 but a decision is made to not install a traffic control signal. **Please fill inputs on PHB Score Sheet and submit to ODOT.**

Considerations such as geometrics and lack of sight distance generally have not been accepted in lieu of satisfying signal warrants. These considerations may allow an otherwise unwarranted traffic signal to be retained at **100 percent** local cost. Please review TEM 402-4 for details.

Conclusion: Install New Traffic Signal

Notes:

OMUTCD WARRANT 1, EIGHT-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	2 or More Lanes
Minor Street:	1 Lane

Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? Yes

**Only applicable after an adequate trial of other alternatives (See section 4C.02.06 of the 2012 OMUTCD)*

Lanes Major/ Minor	Adjusted Volumes		Condition A				Condition B				Combination A/B*							
											Cond. A		Cond. B		Cond. A		Cond. B	
	Major	Minor	100%		70%		100%		70%		80%		80%		56%		56%	
			Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.
1 / 1			500	150	350	105	750	75	525	53	400	120	600	60	280	84	420	42
2+ / 1	X		600	150	420	105	900	75	630	53	480	120	720	60	336	84	504	42
2+ / 2+			600	200	420	140	900	100	630	70	480	160	720	80	336	112	504	56
1 / 2+			500	200	350	140	750	100	525	70	400	160	600	80	280	112	420	56
12:00 AM	39	15																
12:15 AM	32	13																
12:30 AM	36	13																
12:45 AM	38	10																
1:00 AM	29	7																
1:15 AM	29	10																
1:30 AM	32	7																
1:45 AM	32	9																
2:00 AM	34	9																
2:15 AM	35	8																
2:30 AM	61	12																
2:45 AM	67	15																
3:00 AM	73	19																
3:15 AM	75	21																
3:30 AM	73	29																
3:45 AM	103	32																
4:00 AM	157	33																
4:15 AM	189	47																
4:30 AM	274	73																
4:45 AM	304	102																
5:00 AM	298	131																
5:15 AM	323	160																
5:30 AM	301	183																
5:45 AM	355	252													1	1		
6:00 AM	402	327																
6:15 AM	434	376			1	1												
6:30 AM	453	403																
6:45 AM	417	391													1	1		
7:00 AM	419	374																
7:15 AM	393	341																
7:30 AM	344	322																
7:45 AM	321	298																
8:00 AM	261	276																
8:15 AM	236	255																
8:30 AM	210	220																
8:45 AM	185	194																
9:00 AM	192	163																
9:15 AM	187	164																
9:30 AM	212	175																
9:45 AM	216	161																

10:00 AM	206	155																
10:15 AM	206	157																
10:30 AM	188	165																
10:45 AM	191	183																
11:00 AM	198	192																
11:15 AM	208	199																
11:30 AM	218	202																
11:45 AM	227	197																
12:00 PM	219	201																
12:15 PM	225	191																
12:30 PM	239	198																
12:45 PM	235	195																
1:00 PM	258	196																
1:15 PM	273	223																
1:30 PM	267	251																
1:45 PM	295	279																
2:00 PM	329	295																
2:15 PM	362	310													1	1		
2:30 PM	402	351																
2:45 PM	427	410			1	1												
3:00 PM	477	481																
3:15 PM	488	537									1	1			1	1		
3:30 PM	470	535																
3:45 PM	449	502			1	1												
4:00 PM	386	445																
4:15 PM	373	396													1	1		
4:30 PM	398	360																
4:45 PM	436	348			1	1												
5:00 PM	456	332																
5:15 PM	458	285													1	1		
5:30 PM	451	249																
5:45 PM	371	203																
6:00 PM	312	171																
6:15 PM	245	145																
6:30 PM	173	144																
6:45 PM	154	127																
7:00 PM	130	122																
7:15 PM	132	120																
7:30 PM	127	99																
7:45 PM	127	88																
8:00 PM	118	77																
8:15 PM	104	60																
8:30 PM	96	68																
8:45 PM	98	73																
9:00 PM	103	71																
9:15 PM	123	82																
9:30 PM	122	113																
9:45 PM	114	96																
HOURS MET			**0**	**0**	**4**	**4**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**6**	**6**	**0**	**0**
WARRANT SATISFIED?			**NO**		**NO**		**NO**		**NO**		**NO**				**NO**			

Warrant Met: **No**

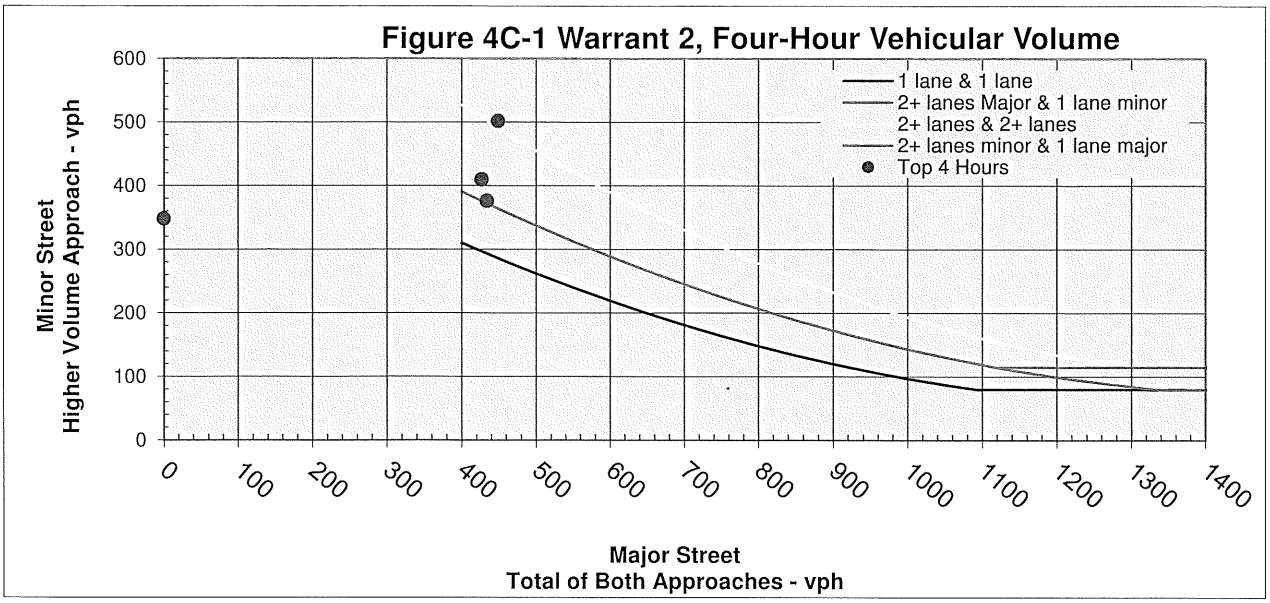
Notes:

OMUTCD WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach		Total Number of Unique Hours Met on Figure 4C-1	3
Major street:	2 or More Lanes	Total Number of Unique Hours Met on Figure 4C-2 (70% Factor)	7
Minor Street:	1 Lane		

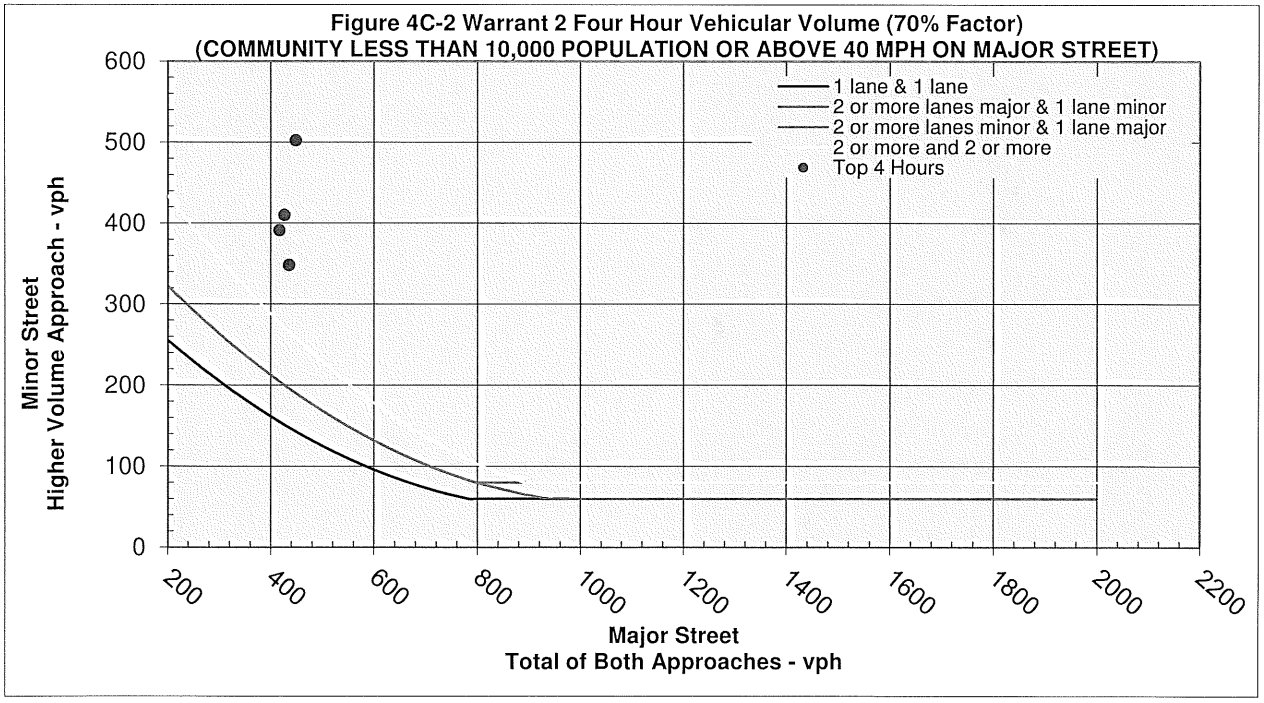
Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street?	Yes

Hour Interval Beginning At	Raw Traffic Counts				Total Major Approach Volumes	Highest Actual Minor Street Approach Volumes	Hour Met?	Hour Met? (70% Factor)
	Minor - SR 56		Major - National Pike (US40)					
	N-Bound	S-Bound	W-Bound	E-Bound				
6:00 AM	120	327	83	319	402	327		
6:15 AM	136	376	103	331	434	376	Met	
6:30 AM	175	403	141	312	453	403		
6:45 AM	203	391	161	256	417	391		Met
7:00 AM	235	374	172	247	419	374		
7:15 AM	225	341	166	227	393	341		
7:30 AM	184	322	129	215	344	322		
7:45 AM	171	298	123	198	321	298		Met
8:00 AM	144	276	97	164	261	276		
8:15 AM	146	255	97	139	236	255		
8:30 AM	152	220	92	118	210	220		
8:45 AM	140	194	80	105	185	194		
9:00 AM	133	163	93	99	192	163		
9:15 AM	125	164	84	103	187	164		
9:30 AM	115	175	93	119	212	175		
9:45 AM	132	161	93	123	216	161		
10:00 AM	135	155	87	119	206	155		
10:15 AM	156	157	92	114	206	157		
10:30 AM	156	165	93	95	188	165		
10:45 AM	151	183	102	89	191	183		
11:00 AM	174	192	108	90	198	192		
11:15 AM	193	199	105	103	208	199		
11:30 AM	202	189	107	111	218	202		
11:45 AM	188	197	101	126	227	197		
12:00 PM	190	201	94	125	219	201		
12:15 PM	175	191	99	126	225	191		
12:30 PM	175	198	112	127	239	198		
12:45 PM	195	194	117	118	235	195		
1:00 PM	196	184	133	125	258	196		
1:15 PM	223	185	135	138	273	223		
1:30 PM	251	171	135	132	267	251		
1:45 PM	279	161	167	128	295	279		Met
2:00 PM	295	169	204	125	329	295		
2:15 PM	310	172	221	141	362	310		
2:30 PM	351	177	238	164	402	351		
2:45 PM	410	187	248	179	427	410	Met	Met
3:00 PM	481	181	294	183	477	481		
3:15 PM	537	185	322	166	488	537		
3:30 PM	535	199	318	152	470	535		
3:45 PM	502	193	304	145	449	502	Met	Met
4:00 PM	445	190	238	148	386	445		
4:15 PM	396	184	230	143	373	396		
4:30 PM	360	177	245	153	398	360		
4:45 PM	348	188	244	192	436	348		Met
5:00 PM	332	194	247	209	456	332		
5:15 PM	285	205	213	245	458	285		
5:30 PM	249	178	218	233	451	249		
5:45 PM	203	143	194	177	371	203		
6:00 PM	171	124	162	150	312	171		
6:15 PM	145	90	156	89	245	145		
6:30 PM	144	90	99	74	173	144		
6:45 PM	127	83	87	67	154	127		
7:00 PM	122	88	76	54	130	122		
7:15 PM	120	89	63	69	132	120		
7:30 PM	99	80	61	66	127	99		
7:45 PM	88	80	56	71	127	88		
8:00 PM	77	64	50	68	118	77		



Top Hours for Figure 4C-1	Start Time	End Time	Major Street	Minor Street
Top Hour	3:45 PM	4:45 PM	449	502
2nd Highest Hour	2:45 PM	3:45 PM	427	410
3rd Highest Hour	6:15 AM	7:15 AM	434	376
4th Highest Hour	12:00 AM	1:00 AM	0	348

Top Hours for Figure 4C-2	Start Time	End Time	Major Street	Minor Street
Top Hour	3:45 PM	4:45 PM	449	502
2nd Highest Hour	2:45 PM	3:45 PM	427	410
3rd Highest Hour	6:45 AM	7:45 AM	417	391
4th Highest Hour	4:45 PM	5:45 PM	436	348



Are the requirements for Warrant 2 met?: Yes

STUDY AND ANALYSIS INFORMATION

Municipality:	West Jefferson	**Traffic Volumes Obtained By:**	Loukas Engineering
County:	Madison	**Analysis Date:**	12/6/2024
ODOT Engineering District:	6	**Agency/ Company Name Performing Warrant Analysis:**	HDR Engineering

Google map link: Map

Analysis Information

Data Collection Date: 11/13/2024

Day of the Week: Wednesday

Is the intersection in a built-up area of an isolated community of <10,000 population? Yes

Existing Traffic Signal at intersection: Yes

Total Number of Approaches at Intersection: 4

Major Street Information

Major Street Name and Route Number: National Pike (US40)

Major Street Approach Direction: E-Bound / W-Bound

Number of Thru Lanes on Each Major Street Approach: 1 **LANE(S)**

Speed Limit or 85th Percentile Speed on the Major Street*: 55 **MPH**

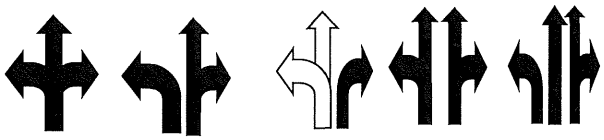
*Unknown assumes below 45 mph

Minor Street Information

Minor Street Name and Route Number: SR 56

Minor Street Approach Configuration:

1	N-Bound
1	S-Bound



1 2 3 4 5

Number of Thru Lanes on Each Minor Street Approach: 1 **LANE(S)**

Apply Right Turn Lane Reduction*: Yes

*Right Turn Lane Reduction Shall be used for Warrants 1, 2, & 3 for New ODOT Signals. Please refer to TEM 402-3.2 for clarification and criteria under which Right Turn Reduction is not required.

TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

	Applicable?	Warrant Satisfied?	Notes and Comments:
Warrant 1, Eight-Hour Vehicular Volume	Yes	**No**	
Warrant 2, Four-Hour Vehicular Volume	Yes	**Yes**	Figure 4C-2 (70% Factor)
Warrant 3, Peak Hour	Yes	**Yes**	Signals installed under Warrant 3 should be traffic actuated.
Warrant 4, Pedestrian Volume	No		If this warrant is met, and a traffic control signal is justified by an engineering study, the traffic control signal shall be equipped with pedestrian signal heads complying with the provisions set forth in Chapter 4E of the OMUTCD.
Warrant 5, School Crossing	No		N/A
Warrant 6, Coordinated Signal System	No		(Shall not be used as the sole warrant in the analysis)
Warrant 7, Crash Experience	Yes	**Yes**	If this is the sole warrant, signal must be semi-actuated with control devices which provide proper coordination if installed at an intersection within a coordinated system and normally should be fully traffic actuated if installed at an isolated intersection.
Warrant 8, Roadway Network	No		(Shall not be used as the sole warrant in the analysis)
Warrant 9, Intersection Near a Grade Crossing	No		Figure 4C-9
Multi-Way Stop Warrant	No		May be used as an interim measure if traffic signal warrants are satisfied.

Peak Hour
3:15 PM
4:15 PM

For Warrants 1-3, new ODOT signals must be based off of 100% volume thresholds (TEM 402-3.2)

Peak Hour
3:15 PM
4:15 PM

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

If no warrants are satisfied, additional options may be considered:
1. An engineering study, performed by a firm prequalified by ODOT for signal design, if approved by the ODOT district, may be used to justify a new signal installation or retention of an existing signal that otherwise does not meet the published warrants. An example of such an instance is a traffic signal in proximity to a railroad crossing that serves to reduce queuing across the tracks.
2. According to TEM 402-2, If the actual turning movement counts fail to satisfy a signal warrant, it may be acceptable to use traffic volumes projected to the second year after project completion. The **Modeling and Forecasting Section** should provide the projected traffic volumes.
3. A pedestrian hybrid beacon may be considered for installation to facilitate pedestrian crossings at a location that does not meet traffic signal warrants (see Chapter 4C of TEM) or at a location that meets traffic signal warrants under Sections 4C.05 and/or 4C.06 but a decision is made to not install a traffic control signal. **Please fill inputs on PHB Score Sheet and submit to ODOT.**

Considerations such as geometrics and lack of sight distance generally have not been accepted in lieu of satisfying signal warrants. These considerations may allow an otherwise unwarranted traffic signal to be retained at **100 percent** local cost. Please review TEM 402-4 for details.

Conclusion: Install New Traffic Signal

Notes:

OMUTCD WARRANT 1, EIGHT-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	1 Lane
Minor Street:	1 Lane

Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? Yes

**Only applicable after an adequate trial of other alternatives (See section 4C.02.06 of the 2012 OMUTCD)*

Lanes Major/ Minor	Adjusted Volumes		Condition A				Condition B				Combination A/B*							
											Cond. A		Cond. B		Cond. A		Cond. B	
	Major	Minor	100%		70%		100%		70%		80%		80%		56%		56%	
			Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.
1 / 1	X		500	150	350	105	750	75	525	53	400	120	600	60	280	84	420	42
2+ / 1			600	150	420	105	900	75	630	53	480	120	720	60	336	84	504	42
2+ / 2+			600	200	420	140	900	100	630	70	480	160	720	80	336	112	504	56
1 / 2+			500	200	350	140	750	100	525	70	400	160	600	80	280	112	420	56
12:00 AM	39	15																
12:15 AM	32	13																
12:30 AM	36	13																
12:45 AM	38	10																
1:00 AM	29	7																
1:15 AM	29	10																
1:30 AM	32	7																
1:45 AM	32	9																
2:00 AM	34	9																
2:15 AM	35	8																
2:30 AM	61	12																
2:45 AM	67	15																
3:00 AM	73	19																
3:15 AM	75	21																
3:30 AM	73	29																
3:45 AM	103	32																
4:00 AM	157	33																
4:15 AM	189	47																
4:30 AM	274	73																
4:45 AM	304	102													1	1		
5:00 AM	298	131																
5:15 AM	323	160																
5:30 AM	301	183																
5:45 AM	355	252			1	1									1	1		
6:00 AM	402	327									1	1						
6:15 AM	434	376															1	1
6:30 AM	453	403																
6:45 AM	417	391			1	1									1	1		
7:00 AM	419	374									1	1						
7:15 AM	393	341																
7:30 AM	344	322																
7:45 AM	321	298													1	1		
8:00 AM	261	276																
8:15 AM	236	255																
8:30 AM	210	220																
8:45 AM	185	194																
9:00 AM	192	163																
9:15 AM	187	164																
9:30 AM	212	175																
9:45 AM	216	161																

10:00 AM	206	155																
10:15 AM	206	157																
10:30 AM	188	165																
10:45 AM	191	183																
11:00 AM	198	192																
11:15 AM	208	199																
11:30 AM	218	202																
11:45 AM	227	197																
12:00 PM	219	201																
12:15 PM	225	191																
12:30 PM	239	198																
12:45 PM	235	195																
1:00 PM	258	196																
1:15 PM	273	223																
1:30 PM	267	251																
1:45 PM	295	279													1	1		
2:00 PM	329	295																
2:15 PM	362	310			1	1												
2:30 PM	402	351									1	1						
2:45 PM	427	410													1	1	1	1
3:00 PM	477	481																
3:15 PM	488	537			1	1												
3:30 PM	470	535									1	1						
3:45 PM	449	502													1	1	1	1
4:00 PM	386	445																
4:15 PM	373	396			1	1												
4:30 PM	398	360																
4:45 PM	436	348									1	1			1	1	1	1
5:00 PM	456	332																
5:15 PM	458	285			1	1												
5:30 PM	451	249																
5:45 PM	371	203													1	1		
6:00 PM	312	171																
6:15 PM	245	145																
6:30 PM	173	144																
6:45 PM	154	127																
7:00 PM	130	122																
7:15 PM	132	120																
7:30 PM	127	99																
7:45 PM	127	88																
8:00 PM	118	77																
8:15 PM	104	60																
8:30 PM	96	68																
8:45 PM	98	73																
9:00 PM	103	71																
9:15 PM	123	82																
9:30 PM	122	113																
9:45 PM	114	96																
HOURS MET			**0**	**0**	**6**	**6**	**0**	**0**	**0**	**0**	**5**	**5**	**0**	**0**	**9**	**9**	**4**	**4**
WARRANT SATISFIED?			**NO**		**NO**		**NO**		**NO**		**NO**				**NO**			

Warrant Met: **No**

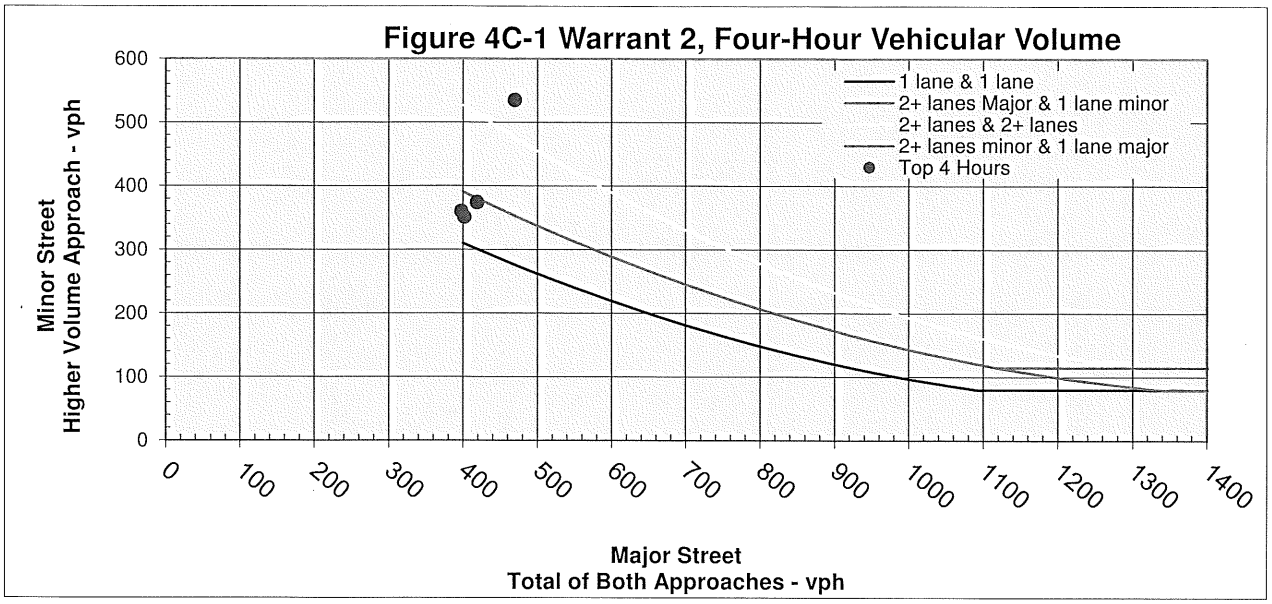
Notes:

OMUTCD WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach		Total Number of Unique Hours Met on Figure 4C-1	5
Major street:	1 Lane	Total Number of Unique Hours Met on Figure 4C-2 (70% Factor)	8
Minor Street:	1 Lane		

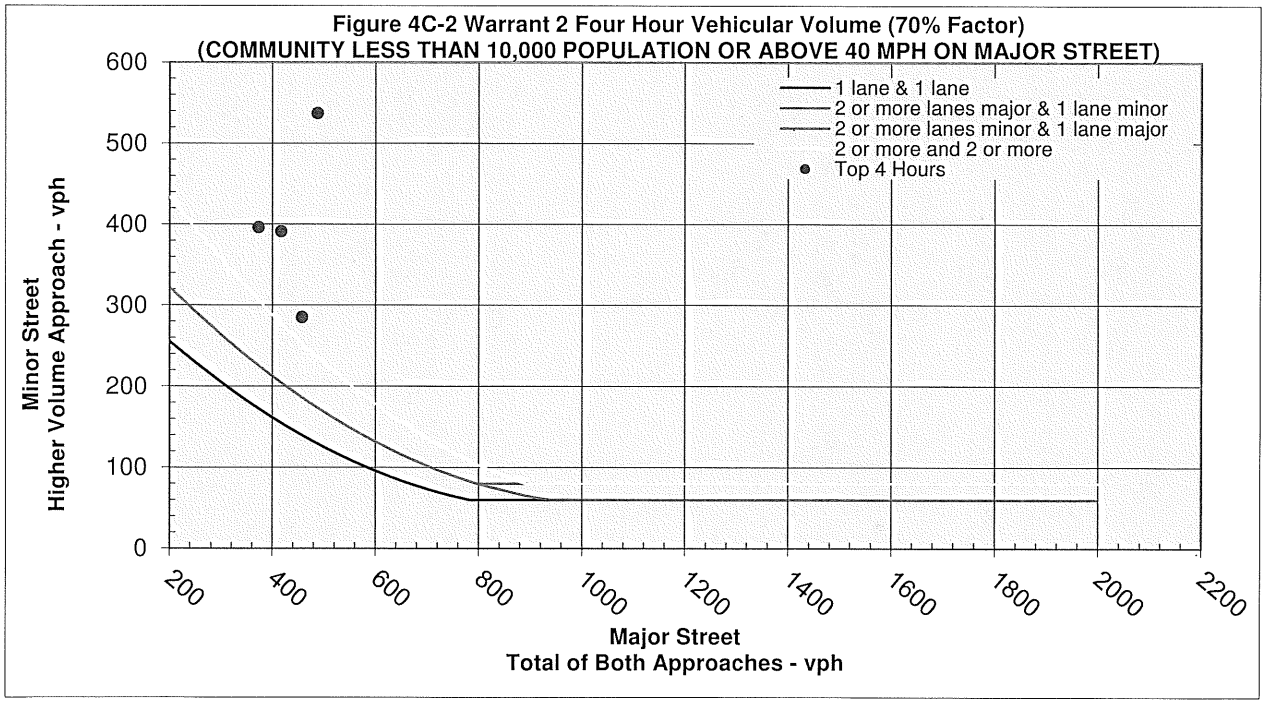
Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street?	Yes

Hour Interval Beginning At	Raw Traffic Counts				Total Major Approach Volumes	Highest Actual Minor Street Approach Volumes	Hour Met?	Hour Met? (70% Factor)
	Minor - SR 56		Major - National Pike (US40)					
	N-Bound	S-Bound	W-Bound	E-Bound				
6:00 AM	120	327	83	319	402	327	Met	
6:15 AM	136	376	103	331	434	376		
6:30 AM	175	403	141	312	453	403		
6:45 AM	203	391	161	256	417	391		Met
7:00 AM	235	374	172	247	419	374	Met	
7:15 AM	225	341	166	227	393	341		
7:30 AM	184	322	129	215	344	322		
7:45 AM	171	298	123	198	321	298		Met
8:00 AM	144	276	97	164	261	276		
8:15 AM	146	255	97	139	236	255		
8:30 AM	152	220	92	118	210	220		
8:45 AM	140	194	80	105	185	194		
9:00 AM	133	163	93	99	192	163		
9:15 AM	125	164	84	103	187	164		
9:30 AM	115	175	93	119	212	175		
9:45 AM	132	161	93	123	216	161		
10:00 AM	135	155	87	119	206	155		
10:15 AM	156	157	92	114	206	157		
10:30 AM	156	165	93	95	188	165		
10:45 AM	151	183	102	89	191	183		
11:00 AM	174	192	108	90	198	192		
11:15 AM	193	199	105	103	208	199		
11:30 AM	202	189	107	111	218	202		
11:45 AM	188	197	101	126	227	197		
12:00 PM	190	201	94	125	219	201		
12:15 PM	175	191	99	126	225	191		
12:30 PM	175	198	112	127	239	198		
12:45 PM	195	194	117	118	235	195		
1:00 PM	196	184	133	125	258	196		
1:15 PM	223	185	135	138	273	223		Met
1:30 PM	251	171	135	132	267	251		
1:45 PM	279	161	167	128	295	279		
2:00 PM	295	169	204	125	329	295		
2:15 PM	310	172	221	141	362	310		Met
2:30 PM	351	177	238	164	402	351	Met	
2:45 PM	410	187	248	179	427	410		
3:00 PM	481	181	294	183	477	481		
3:15 PM	537	185	322	166	488	537		Met
3:30 PM	535	199	318	152	470	535	Met	
3:45 PM	502	193	304	145	449	502		
4:00 PM	445	190	238	148	386	445		
4:15 PM	396	184	230	143	373	396		Met
4:30 PM	360	177	245	153	398	360	Met	
4:45 PM	348	188	244	192	436	348		
5:00 PM	332	194	247	209	456	332		
5:15 PM	285	205	213	245	458	285		Met
5:30 PM	249	178	218	233	451	249		
5:45 PM	203	143	194	177	371	203		
6:00 PM	171	124	162	150	312	171		
6:15 PM	145	90	156	89	245	145		
6:30 PM	144	90	99	74	173	144		
6:45 PM	127	83	87	67	154	127		
7:00 PM	122	88	76	54	130	122		
7:15 PM	120	89	63	69	132	120		
7:30 PM	99	80	61	66	127	99		
7:45 PM	88	80	56	71	127	88		
8:00 PM	77	64	50	68	118	77		



Top Hours for Figure 4C-1	Start Time	End Time	Major Street	Minor Street
Top Hour	3:30 PM	4:30 PM	470	535
2nd Highest Hour	7:00 AM	8:00 AM	419	374
3rd Highest Hour	4:30 PM	5:30 PM	398	360
4th Highest Hour	2:30 PM	3:30 PM	402	351

Top Hours for Figure 4C-2	Start Time	End Time	Major Street	Minor Street
Top Hour	3:15 PM	4:15 PM	488	537
2nd Highest Hour	6:45 AM	7:45 AM	417	391
3rd Highest Hour	4:15 PM	5:15 PM	373	396
4th Highest Hour	5:15 PM	6:15 PM	458	285



Are the requirements for Warrant 2 met?: Yes

STUDY AND ANALYSIS INFORMATION

Municipality:	West Jefferson	**Traffic Volumes Obtained By:**	Loukas Engineering
County:	Madison	**Analysis Date:**	12/6/2024
ODOT Engineering District:	6	**Agency/ Company Name Performing Warrant Analysis:**	HDR Engineering

Google map link: Map

Analysis Information

Data Collection Date: 11/13/2024

Day of the Week: Wednesday

Is the intersection in a built-up area of an isolated community of <10,000 population? Yes

Existing Traffic Signal at intersection: Yes

Total Number of Approaches at Intersection: 4

Major Street Information

Major Street Name and Route Number: National Pike (US40)

Major Street Approach Direction: E-Bound / W-Bound

Number of Thru Lanes on Each Major Street Approach: 2 **LANE(S)**

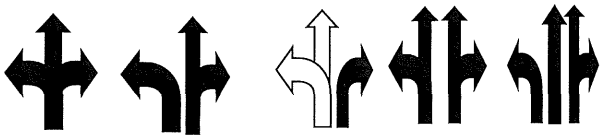
Speed Limit or 85th Percentile Speed on the Major Street*: 55 **MPH**

*Unknown assumes below 45 mph

Minor Street Information

Minor Street Name and Route Number: SR 38

Minor Street Approach Configuration: 1 N-Bound / 1 S-Bound



1 2 3 4 5

Number of Thru Lanes on Each Minor Street Approach: 1 **LANE(S)**

Apply Right Turn Lane Reduction*: Yes

*Right Turn Lane Reduction Shall be used for Warrants 1, 2, & 3 for New ODOT Signals. Please refer to TEM 402-3.2 for clarification and criteria under which Right Turn Reduction is not required.

TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

	Warrant Applicable?	Warrant Satisfied?	Notes and Comments:
Warrant 1, Eight-Hour Vehicular Volume	Yes	**No**	
Warrant 2, Four-Hour Vehicular Volume	Yes	**No**	
Warrant 3, Peak Hour	Yes	**No**	Signals installed under Warrant 3 should be traffic actuated.

Peak Hour
3:15 PM
4:15 PM

For Warrants 1-3, new ODOT signals must be based off of 100% volume thresholds (TEM 402-3.2)

Warrant 4, Pedestrian Volume	No		If this warrant is met, and a traffic control signal is justified by an engineering study, the traffic control signal shall be equipped with pedestrian signal heads complying with the provisions set forth in Chapter 4E of the OMUTCD.
Warrant 5, School Crossing	No		N/A
Warrant 6, Coordinated Signal System	No		(Shall not be used as the sole warrant in the analysis)
Warrant 7, Crash Experience	Yes	**No**	If this is the sole warrant, signal must be semi-actuated with control devices which provide proper coordination if installed at an intersection within a coordinated system and normally should be fully traffic actuated if installed at an isolated intersection.
Warrant 8, Roadway Network	No		(Shall not be used as the sole warrant in the analysis)
Warrant 9, Intersection Near a Grade Crossing	No		Figure 4C-9
Multi-Way Stop Warrant	No		May be used as an interim measure if traffic signal warrants are satisfied.

Peak Hour
3:15 PM
4:15 PM

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

If no warrants are satisfied, additional options may be considered:
1. An engineering study, performed by a firm prequalified by ODOT for signal design, if approved by the ODOT district, may be used to justify a new signal installation or retention of an existing signal that otherwise does not meet the published warrants. An example of such an instance is a traffic signal in proximity to a railroad crossing that serves to reduce queuing across the tracks.
2. According to TEM 402-2, If the actual turning movement counts fail to satisfy a signal warrant, it may be acceptable to use traffic volumes projected to the second year after project completion. The **Modeling and Forecasting Section** should provide the projected traffic volumes.
3. A pedestrian hybrid beacon may be considered for installation to facilitate pedestrian crossings at a location that does not meet traffic signal warrants (see Chapter 4C of TEM) or at a location that meets traffic signal warrants under Sections 4C.05 and/or 4C.06 but a decision is made to not install a traffic control signal. **Please fill inputs on PHB Score Sheet and submit to ODOT.**

Considerations such as geometrics and lack of sight distance generally have not been accepted in lieu of satisfying signal warrants. These considerations may allow an otherwise unwarranted traffic signal to be retained at **100 percent** local cost. Please review TEM 402-4 for details.

Conclusion: Do Not Retain Existing Traffic Signal

Notes:

OMUTCD WARRANT 1, EIGHT-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	2 or More Lanes
Minor Street:	1 Lane

Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? Yes

**Only applicable after an adequate trial of other alternatives (See section 4C.02.06 of the 2012 OMUTCD)*

Lanes Major/ Minor	Adjusted Volumes		Condition A				Condition B				Combination A/B*							
											Cond. A		Cond. B		Cond. A		Cond. B	
	Major	Minor	100%		70%		100%		70%		80%		80%		56%		56%	
			Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.
1 / 1			500	150	350	105	750	75	525	53	400	120	600	60	280	84	420	42
2+ / 1	X		600	150	420	105	900	75	630	53	480	120	720	60	336	84	504	42
2+ / 2+			600	200	420	140	900	100	630	70	480	160	720	80	336	112	504	56
1 / 2+			500	200	350	140	750	100	525	70	400	160	600	80	280	112	420	56
12:00 AM	30	7																
12:15 AM	27	5																
12:30 AM	33	5																
12:45 AM	37	6																
1:00 AM	29	8																
1:15 AM	32	7																
1:30 AM	33	8																
1:45 AM	30	8																
2:00 AM	32	9																
2:15 AM	38	11																
2:30 AM	60	9																
2:45 AM	65	7																
3:00 AM	74	7																
3:15 AM	72	6																
3:30 AM	81	7																
3:45 AM	113	8																
4:00 AM	159	12																
4:15 AM	189	19																
4:30 AM	263	23																
4:45 AM	293	39																
5:00 AM	279	47																
5:15 AM	284	56																
5:30 AM	254	64																
5:45 AM	303	63																
6:00 AM	390	73													1			
6:15 AM	486	97			1						1							
6:30 AM	485	142																
6:45 AM	419	151																
7:00 AM	377	150													1	1		
7:15 AM	310	133																
7:30 AM	297	95																
7:45 AM	309	107																
8:00 AM	271	107																
8:15 AM	234	113																
8:30 AM	200	102																
8:45 AM	185	73																
9:00 AM	190	66																
9:15 AM	203	65																
9:30 AM	214	69																
9:45 AM	208	73																

10:00 AM	207	69																
10:15 AM	207	77																
10:30 AM	223	79																
10:45 AM	239	88																
11:00 AM	248	102																
11:15 AM	254	102																
11:30 AM	262	111																
11:45 AM	268	107																
12:00 PM	272	105																
12:15 PM	271	97																
12:30 PM	281	94																
12:45 PM	287	102																
1:00 PM	289	93																
1:15 PM	318	97																
1:30 PM	320	120																
1:45 PM	347	126													1	1		
2:00 PM	401	137																
2:15 PM	425	136			1	1												
2:30 PM	453	151																
2:45 PM	492	174									1	1			1	1		
3:00 PM	505	216															1	1
3:15 PM	525	239			1	1												
3:30 PM	516	217																
3:45 PM	461	191													1	1		
4:00 PM	424	163																
4:15 PM	399	161																
4:30 PM	423	176			1	1												
4:45 PM	466	173													1	1		
5:00 PM	475	173																
5:15 PM	487	153									1	1						
5:30 PM	465	123			1	1												
5:45 PM	387	121													1	1		
6:00 PM	334	99																
6:15 PM	260	107																
6:30 PM	195	102																
6:45 PM	175	99																
7:00 PM	143	94																
7:15 PM	136	71																
7:30 PM	127	60																
7:45 PM	116	44																
8:00 PM	113	47																
8:15 PM	99	53																
8:30 PM	82	57																
8:45 PM	79	52																
9:00 PM	78	40																
9:15 PM	85	27																
9:30 PM	91	18																
9:45 PM	94	15																
HOURS MET			**0**	**0**	**5**	**4**	**0**	**0**	**0**	**0**	**3**	**2**	**0**	**0**	**7**	**6**	**1**	**1**
WARRANT SATISFIED?			**NO**		**NO**		**NO**		**NO**		**NO**				**NO**			

Warrant Met: **No**

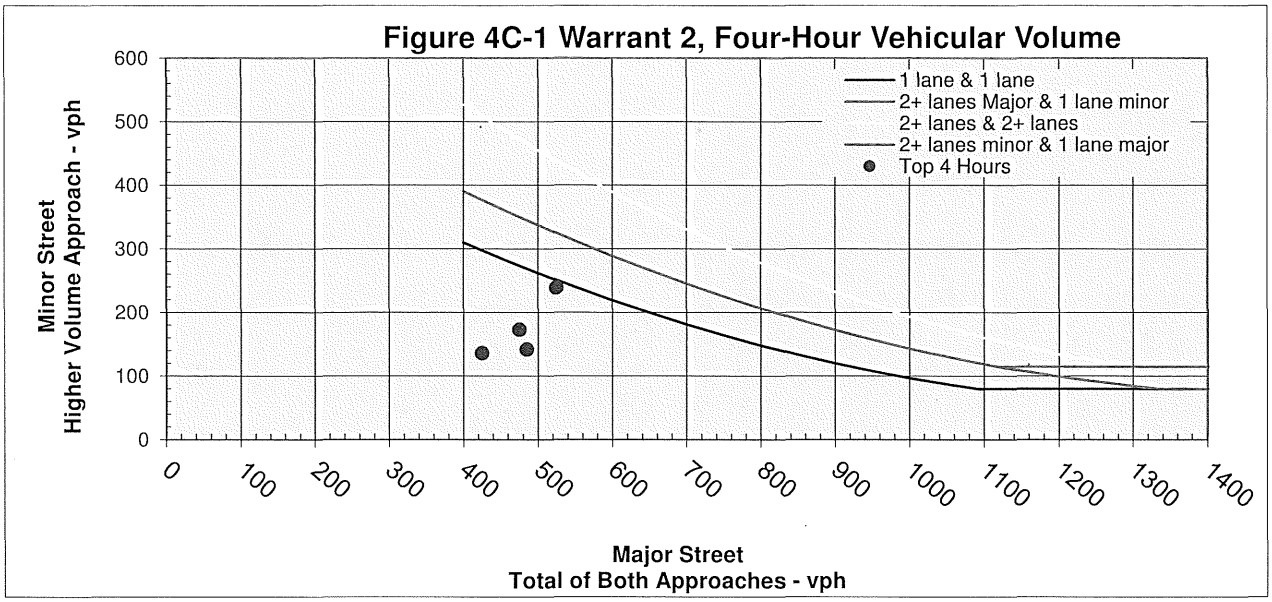
Notes:

OMUTCD WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach		Total Number of Unique Hours Met on Figure 4C-1	0
Major street:	2 or More Lanes	Total Number of Unique Hours Met on Figure 4C-2 (70% Factor)	2
Minor Street:	1 Lane		

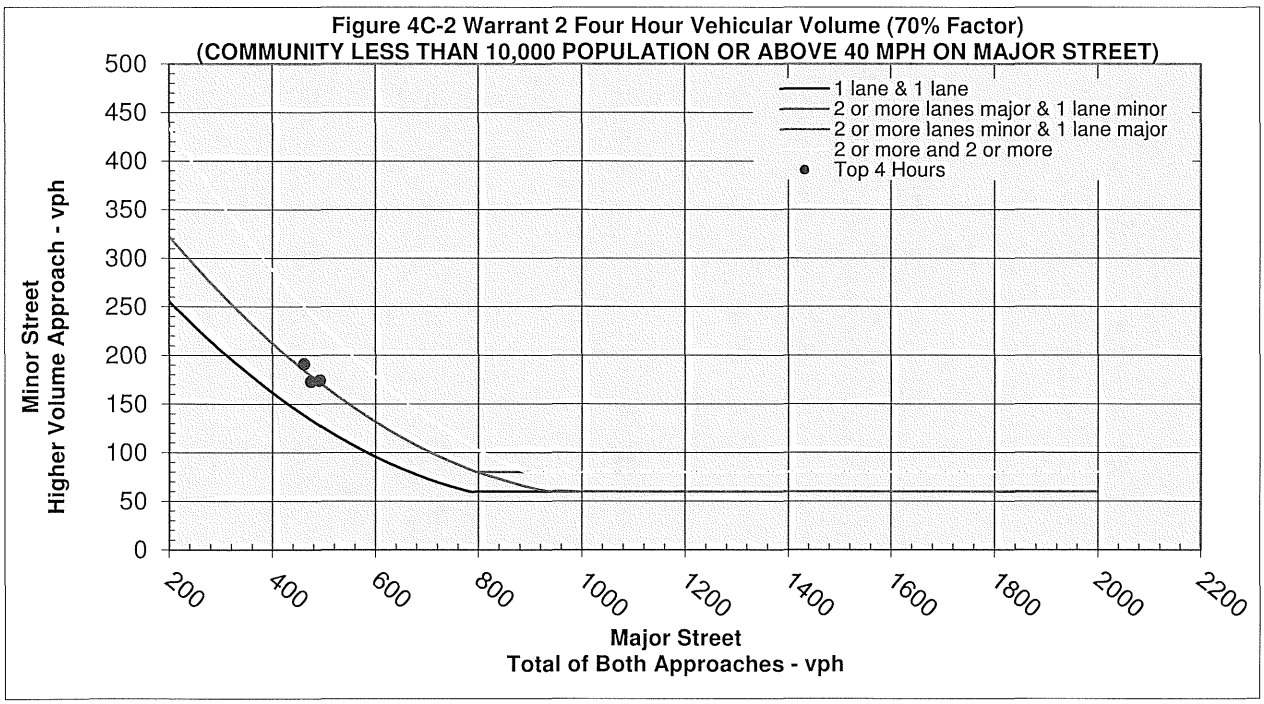
Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street?	Yes

Hour Interval Beginning At	Raw Traffic Counts				Total Major Approach Volumes	Highest Actual Minor Street Approach Volumes	Hour Met?	Hour Met? (70% Factor)
	Minor - SR 38		Major - National Pike (US40)					
	N-Bound	S-Bound	W-Bound	E-Bound				
6:00 AM	73	51	102	288	390	73		
6:15 AM	97	63	114	372	486	97		
6:30 AM	142	68	130	355	485	142		
6:45 AM	151	75	120	299	419	151		
7:00 AM	150	81	111	266	377	150		
7:15 AM	133	74	116	194	310	133		
7:30 AM	95	71	99	198	297	95		
7:45 AM	107	63	99	210	309	107		
8:00 AM	107	57	91	180	271	107		
8:15 AM	113	50	77	157	234	113		
8:30 AM	102	48	75	125	200	102		
8:45 AM	73	51	79	106	185	73		
9:00 AM	66	48	89	101	190	66		
9:15 AM	65	40	88	115	203	65		
9:30 AM	69	45	87	127	214	69		
9:45 AM	73	43	81	127	208	73		
10:00 AM	69	37	75	132	207	69		
10:15 AM	77	38	77	130	207	77		
10:30 AM	79	36	91	132	223	79		
10:45 AM	88	40	106	133	239	88		
11:00 AM	102	42	106	142	248	102		
11:15 AM	102	45	104	150	254	102		
11:30 AM	111	40	101	161	262	111		
11:45 AM	107	32	101	167	268	107		
12:00 PM	105	31	102	170	272	105		
12:15 PM	97	37	105	166	271	97		
12:30 PM	94	39	119	162	281	94		
12:45 PM	102	43	123	164	287	102		
1:00 PM	93	48	136	153	289	93		
1:15 PM	97	45	145	173	318	97		
1:30 PM	120	45	143	177	320	120		
1:45 PM	126	52	171	176	347	126		
2:00 PM	137	53	215	186	401	137		
2:15 PM	136	64	230	195	425	136		
2:30 PM	151	64	240	213	453	151		
2:45 PM	174	71	264	228	492	174		Met
3:00 PM	216	72	275	230	505	216		
3:15 PM	239	76	289	236	525	239		
3:30 PM	217	85	297	219	516	217		
3:45 PM	191	82	267	194	461	191		Met
4:00 PM	163	96	236	188	424	163		
4:15 PM	161	97	232	167	399	161		
4:30 PM	176	102	246	177	423	176		
4:45 PM	173	101	231	235	466	173		
5:00 PM	173	85	219	256	475	173		
5:15 PM	153	76	203	284	487	153		
5:30 PM	123	58	201	264	465	123		
5:45 PM	121	48	187	200	387	121		
6:00 PM	99	41	170	164	334	99		
6:15 PM	107	32	154	106	260	107		
6:30 PM	102	32	105	90	195	102		
6:45 PM	99	27	95	80	175	99		
7:00 PM	94	22	76	67	143	94		
7:15 PM	71	16	70	66	136	71		
7:30 PM	60	14	68	59	127	60		
7:45 PM	44	14	61	55	116	44		
8:00 PM	47	12	58	55	113	47		



Top Hours for Figure 4C-1	Start Time	End Time	Major Street	Minor Street
Top Hour	3:15 PM	4:15 PM	525	239
2nd Highest Hour	5:00 PM	6:00 PM	475	173
3rd Highest Hour	6:30 AM	7:30 AM	485	142
4th Highest Hour	2:15 PM	3:15 PM	425	136

Top Hours for Figure 4C-2	Start Time	End Time	Major Street	Minor Street
Top Hour	3:45 PM	4:45 PM	461	191
2nd Highest Hour	2:45 PM	3:45 PM	492	174
3rd Highest Hour	12:00 AM	1:00 AM	0	173
4th Highest Hour	5:00 PM	6:00 PM	475	173



Are the requirements for Warrant 2 met?: No

STUDY AND ANALYSIS INFORMATION

Municipality:	City of West Jefferson	**Traffic Volumes Obtained By:**	Loukas Engineering
County:	Madison	**Analysis Date:**	12/6/2024
ODOT Engineering District:	6	**Agency/ Company Name Performing Warrant Analysis:**	HDR Engineering
Google map link:	Map		

Analysis Information

Data Collection Date:	11/13/2024
Day of the Week:	Wednesday

Is the intersection in a built-up area of an isolated community of <10,000 population?	Yes
Existing Traffic Signal at intersection:	Yes
Total Number of Approaches at Intersection:	4

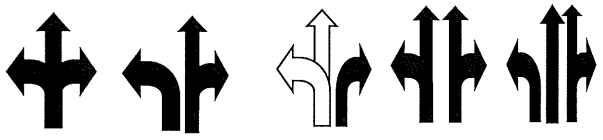
Major Street Information

Major Street Name and Route Number:	National Pike (US40)	
Major Street Approach Direction:	E-Bound	
	W-Bound	
Number of Thru Lanes on Each Major Street Approach:	1	**LANE(S)**
Speed Limit or 85th Percentile Speed on the Major Street*:	55	**MPH**

*Unknown assumes below 45 mph

Minor Street Information

Minor Street Name and Route Number:	SR 38	
Minor Street Approach Configuration:	1	N-Bound
	1	S-Bound



1 2 3 4 5

Number of Thru Lanes on Each Minor Street Approach:	1	**LANE(S)**
Apply Right Turn Lane Reduction*:	Yes	

*Right Turn Lane Reduction Shall be used for Warrants 1, 2, & 3 for New ODOT Signals. Please refer to TEM 402-3.2 for clarification and criteria under which Right Turn Reduction is not required.

TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

	Applicable?	Warrant Satisfied?	Notes and Comments:
Warrant 1, Eight-Hour Vehicular Volume	Yes	**No**	
Warrant 2, Four-Hour Vehicular Volume	Yes	**Yes**	Figure 4C-2 (70% Factor)
Warrant 3, Peak Hour	Yes	**Yes**	Signals installed under Warrant 3 should be traffic actuated.

Peak Hour
3:15 PM
4:15 PM

For Warrants 1-3, new ODOT signals must be based off of 100% volume thresholds (TEM 402-3.2)

Warrant 4, Pedestrian Volume	No		If this warrant is met, and a traffic control signal is justified by an engineering study, the traffic control signal shall be equipped with pedestrian signal heads complying with the provisions set forth in Chapter 4E of the OMUTCD.
Warrant 5, School Crossing	No		N/A
Warrant 6, Coordinated Signal System	No		(Shall not be used as the sole warrant in the analysis)
Warrant 7, Crash Experience	Yes	**Yes**	If this is the sole warrant, signal must be semi-actuated with control devices which provide proper coordination if installed at an intersection within a coordinated system and normally should be fully traffic actuated if installed at an isolated intersection.
Warrant 8, Roadway Network	No		(Shall not be used as the sole warrant in the analysis)
Warrant 9, Intersection Near a Grade Crossing	No		Figure 4C-9
Multi-Way Stop Warrant	No		May be used as an interim measure if traffic signal warrants are satisfied.

Peak Hour
3:15 PM
4:15 PM

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

If no warrants are satisfied, additional options may be considered:
1. An engineering study, performed by a firm prequalified by ODOT for signal design, if approved by the ODOT district, may be used to justify a new signal installation or retention of an existing signal that otherwise does not meet the published warrants. An example of such an instance is a traffic signal in proximity to a railroad crossing that serves to reduce queuing across the tracks.
2. According to TEM 402-2, If the actual turning movement counts fail to satisfy a signal warrant, it may be acceptable to use traffic volumes projected to the second year after project completion. The **Modeling and Forecasting Section** should provide the projected traffic volumes.
3. A pedestrian hybrid beacon may be considered for installation to facilitate pedestrian crossings at a location that does not meet traffic signal warrants (see Chapter 4C of TEM) or at a location that meets traffic signal warrants under Sections 4C.05 and/or 4C.06 but a decision is made to not install a traffic control signal. **Please fill inputs on PHB Score Sheet and submit to ODOT.**

Considerations such as geometrics and lack of sight distance generally have not been accepted in lieu of satisfying signal warrants. These considerations may allow an otherwise unwarranted traffic signal to be retained at **100 percent** local cost. Please review TEM 402-4 for details.

Conclusion: Install New Traffic Signal

Notes: Signal is warranted, however intersection runs at acceptable LOS as a roundabout.

OMUTCD WARRANT 1, EIGHT-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	1 Lane
Minor Street:	1 Lane

Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? Yes

**Only applicable after an adequate trial of other alternatives (See section 4C.02.06 of the 2012 OMUTCD)*

Lanes Major/ Minor	Adjusted Volumes		Condition A				Condition B				Combination A/B*							
											Cond. A		Cond. B		Cond. A		Cond. B	
	Major	Minor	100%		70%		100%		70%		80%		80%		56%		56%	
			Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.
1 / 1	X		500	150	350	105	750	75	525	53	400	120	600	60	280	84	420	42
2+ / 1			600	150	420	105	900	75	630	53	480	120	720	60	336	84	504	42
2+ / 2+			600	200	420	140	900	100	630	70	480	160	720	80	336	112	504	56
1 / 2+			500	200	350	140	750	100	525	70	400	160	600	80	280	112	420	56
12:00 AM	30	7																
12:15 AM	27	5																
12:30 AM	33	5																
12:45 AM	37	6																
1:00 AM	29	8																
1:15 AM	32	7																
1:30 AM	33	8																
1:45 AM	30	8																
2:00 AM	32	9																
2:15 AM	38	11																
2:30 AM	60	9																
2:45 AM	65	7																
3:00 AM	74	7																
3:15 AM	72	6																
3:30 AM	81	7																
3:45 AM	113	8																
4:00 AM	159	12																
4:15 AM	189	19																
4:30 AM	263	23																
4:45 AM	293	39													1			
5:00 AM	279	47																
5:15 AM	284	56																
5:30 AM	254	64																
5:45 AM	303	63													1			
6:00 AM	390	73			1													
6:15 AM	486	97									1						1	1
6:30 AM	485	142																
6:45 AM	419	151													1	1		
7:00 AM	377	150			1	1												
7:15 AM	310	133																
7:30 AM	297	95																
7:45 AM	309	107													1	1		
8:00 AM	271	107																
8:15 AM	234	113																
8:30 AM	200	102																
8:45 AM	185	73																
9:00 AM	190	66																
9:15 AM	203	65																
9:30 AM	214	69																
9:45 AM	208	73																
10:00 AM	207	69																
10:15 AM	207	77																

10:30 AM	223	79													1	1		
10:45 AM	239	88																
11:00 AM	248	102																
11:15 AM	254	102																
11:30 AM	262	111																
11:45 AM	268	107																
12:00 PM	272	105																
12:15 PM	271	97																
12:30 PM	281	94													1	1		
12:45 PM	287	102																
1:00 PM	289	93																
1:15 PM	318	97																
1:30 PM	320	120													1	1		
1:45 PM	347	126																
2:00 PM	401	137			1	1					1	1						
2:15 PM	425	136															1	1
2:30 PM	453	151													1	1		
2:45 PM	492	174																
3:00 PM	505	216	1	1	1	1					1	1						
3:15 PM	525	239							1	1							1	1
3:30 PM	516	217													1	1		
3:45 PM	461	191																
4:00 PM	424	163			1	1					1	1						
4:15 PM	399	161																
4:30 PM	423	176													1	1	1	1
4:45 PM	466	173																
5:00 PM	475	173			1	1					1	1						
5:15 PM	487	153																
5:30 PM	465	123													1	1	1	1
5:45 PM	387	121																
6:00 PM	334	99																
6:15 PM	260	107																
6:30 PM	195	102																
6:45 PM	175	99																
7:00 PM	143	94																
7:15 PM	136	71																
7:30 PM	127	60																
7:45 PM	116	44																
8:00 PM	113	47																
8:15 PM	99	53																
8:30 PM	82	57																
8:45 PM	79	52																
9:00 PM	78	40																
9:15 PM	85	27																
9:30 PM	91	18																
9:45 PM	94	15																
HOURS MET			**1**	**1**	**6**	**5**	**0**	**0**	**1**	**1**	**5**	**4**	**0**	**0**	**10**	**8**	**5**	**5**
WARRANT SATISFIED?			**NO**		**NO**		**NO**		**NO**		**NO**				**NO**			

Warrant Met: **No**

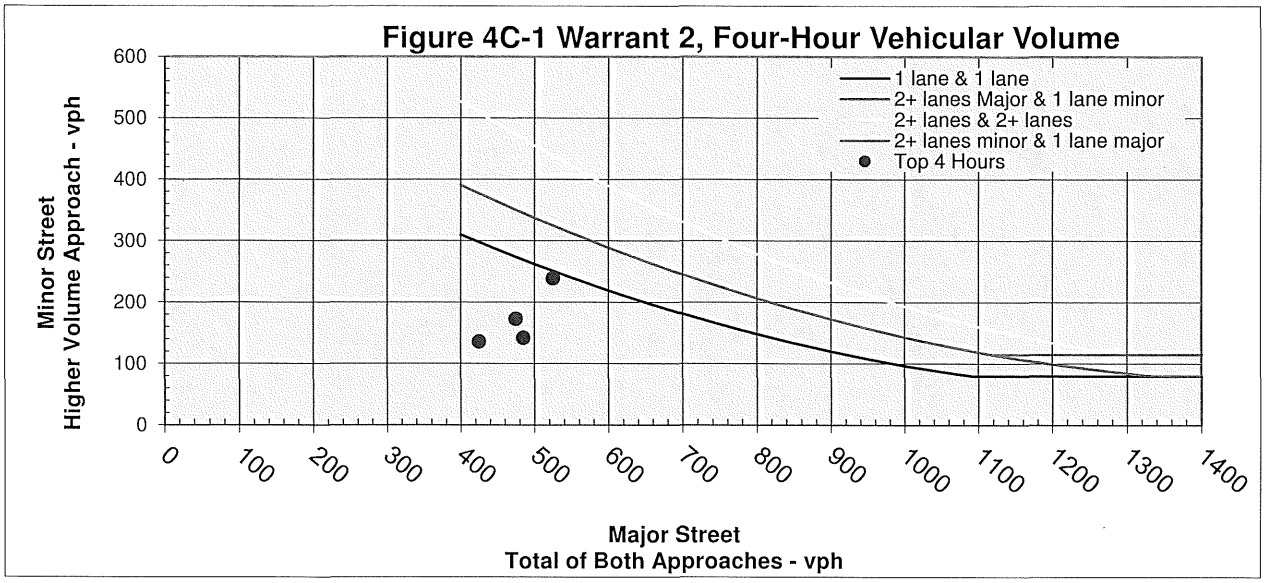
Notes:

OMUTCD WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach		Total Number of Unique Hours Met on Figure 4C-1	0
Major street:	1 Lane	Total Number of Unique Hours Met on Figure 4C-2 (70% Factor)	4
Minor Street:	1 Lane		

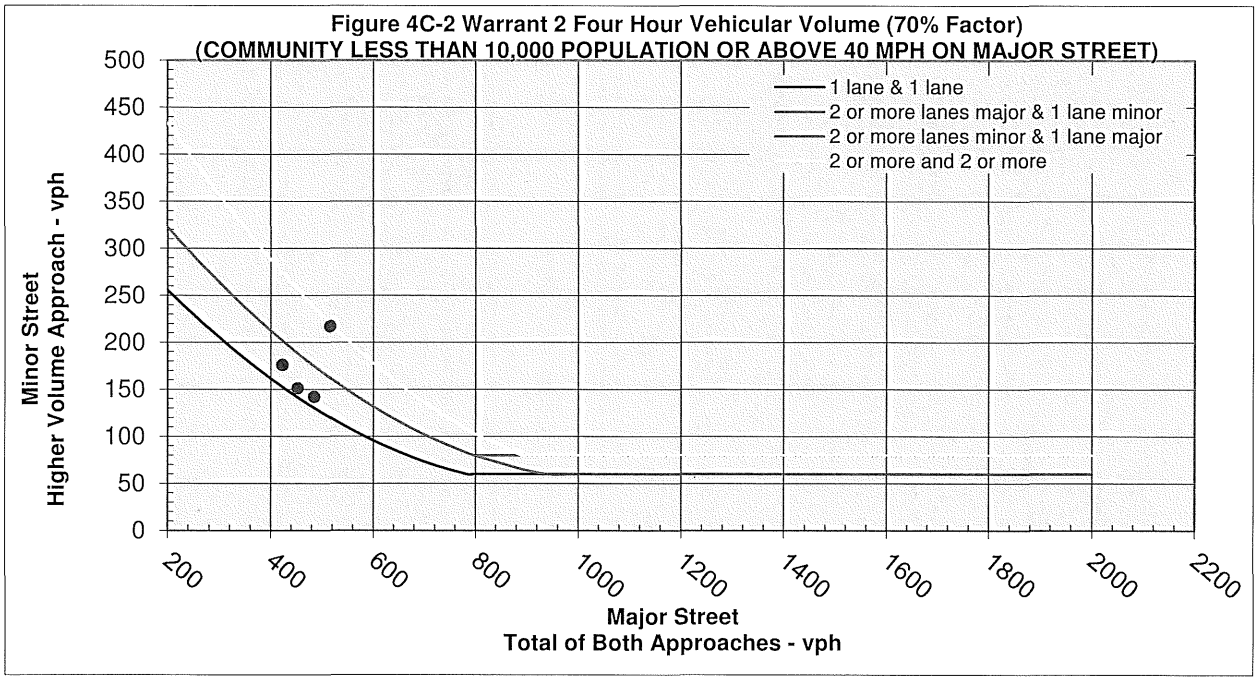
Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street?	Yes

Hour Interval Beginning At	Raw Traffic Counts				Total Major Approach Volumes	Highest Actual Minor Street Approach Volumes	Hour Met?	Hour Met? (70% Factor)
	Minor - SR 38		Major - National Pike (US40)					
	N-Bound	S-Bound	W-Bound	E-Bound				
6:00 AM	73	51	102	288	390	73		
6:15 AM	97	63	114	372	486	97		
6:30 AM	142	68	130	355	485	142		Met
6:45 AM	151	75	120	299	419	151		
7:00 AM	150	81	111	266	377	150		
7:15 AM	133	74	116	194	310	133		
7:30 AM	95	71	99	198	297	95		
7:45 AM	107	63	99	210	309	107		
8:00 AM	107	57	91	180	271	107		
8:15 AM	113	50	77	157	234	113		
8:30 AM	102	48	75	125	200	102		
8:45 AM	73	51	79	106	185	73		
9:00 AM	66	48	89	101	190	66		
9:15 AM	65	40	88	115	203	65		
9:30 AM	69	45	87	127	214	69		
9:45 AM	73	43	81	127	208	73		
10:00 AM	69	37	75	132	207	69		
10:15 AM	77	38	77	130	207	77		
10:30 AM	79	36	91	132	223	79		
10:45 AM	88	40	106	133	239	88		
11:00 AM	102	42	106	142	248	102		
11:15 AM	102	45	104	150	254	102		
11:30 AM	111	40	101	161	262	111		
11:45 AM	107	32	101	167	268	107		
12:00 PM	105	31	102	170	272	105		
12:15 PM	97	37	105	166	271	97		
12:30 PM	94	39	119	162	281	94		
12:45 PM	102	43	123	164	287	102		
1:00 PM	93	48	136	153	289	93		
1:15 PM	97	45	145	173	318	97		
1:30 PM	120	45	143	177	320	120		
1:45 PM	126	52	171	176	347	126		
2:00 PM	137	53	215	186	401	137		
2:15 PM	136	64	230	195	425	136		
2:30 PM	151	64	240	213	453	151		Met
2:45 PM	174	71	264	228	492	174		
3:00 PM	216	72	275	230	505	216		
3:15 PM	239	76	289	236	525	239		
3:30 PM	217	85	297	219	516	217		Met
3:45 PM	191	82	267	194	461	191		
4:00 PM	163	96	236	188	424	163		
4:15 PM	161	97	232	167	399	161		
4:30 PM	176	102	246	177	423	176		Met
4:45 PM	173	101	231	235	466	173		
5:00 PM	173	85	219	256	475	173		
5:15 PM	153	76	203	284	487	153		
5:30 PM	123	58	201	264	465	123		
5:45 PM	121	48	187	200	387	121		
6:00 PM	99	41	170	164	334	99		
6:15 PM	107	32	154	106	260	107		
6:30 PM	102	32	105	90	195	102		
6:45 PM	99	27	95	80	175	99		
7:00 PM	94	22	76	67	143	94		
7:15 PM	71	16	70	66	136	71		
7:30 PM	60	14	68	59	127	60		
7:45 PM	44	14	61	55	116	44		
8:00 PM	47	12	58	55	113	47		



Top Hours for Figure 4C-1	Start Time	End Time	Major Street	Minor Street
Top Hour	3:15 PM	4:15 PM	525	239
2nd Highest Hour	5:00 PM	6:00 PM	475	173
3rd Highest Hour	6:30 AM	7:30 AM	485	142
4th Highest Hour	2:15 PM	3:15 PM	425	136

Top Hours for Figure 4C-2	Start Time	End Time	Major Street	Minor Street
Top Hour	3:30 PM	4:30 PM	516	217
2nd Highest Hour	4:30 PM	5:30 PM	423	176
3rd Highest Hour	6:30 AM	7:30 AM	485	142
4th Highest Hour	2:30 PM	3:30 PM	453	151



Are the requirements for Warrant 2 met?: Yes

STUDY AND ANALYSIS INFORMATION

Municipality:	West Jefferson	**Traffic Volumes Obtained By:**	Loukas Engineering
County:	Madison	**Analysis Date:**	3/31/2025
ODOT Engineering District:	6	**Agency/ Company Name Performing Warrant Analysis:**	HDR Engineering
Google map link:	Map		

Analysis Information

Data Collection Date: 11/13/2024

Day of the Week: Wednesday

Is the intersection in a built-up area of an isolated community of <10,000 population? Yes

Existing Traffic Signal at intersection: No

Total Number of Approaches at Intersection: 4

Major Street Information

Major Street Name and Route Number: National Pike (US40)

Major Street Approach Direction: N-Bound / S-Bound

Number of Thru Lanes on Each Major Street Approach: 1 **LANE(S)**

Speed Limit or 85th Percentile Speed on the Major Street*: 45 **MPH**

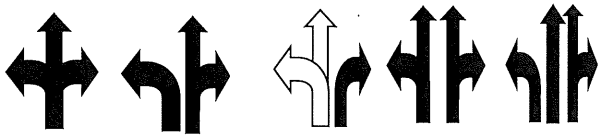
*Unknown assumes below 45 mph

Minor Street Information

Minor Street Name and Route Number: West St

Minor Street Approach Configuration:

1	E-Bound
1	W-Bound



1 2 3 4 5

Number of Thru Lanes on Each Minor Street Approach: 1 **LANE(S)**

Apply Right Turn Lane Reduction*: Yes

*Right Turn Lane Reduction Shall be used for Warrants 1, 2, & 3 for New ODOT Signals. Please refer to TEM 402-3.2 for clarification and criteria under which Right Turn Reduction is not required.

TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

	Applicable?	100% Warrant Satisfied?	Notes and Comments: *Known error: if Speed Limit < 45mph, it may not s passes at 70%.
Warrant 1, Eight-Hour Vehicular Volume	Yes	**No**	
Warrant 2, Four-Hour Vehicular Volume	Yes	**No**	
Warrant 3, Peak Hour	Yes	**No**	Signals installed under Warrant 3 should be traffic actuated.

For Warrants 1-3, new ODOT signals must be based off of 100% volume thresholds (TEM 402-3.2)

Warrant 4, Pedestrian Volume	No		If this warrant is met, and a traffic control signal is justified by an engineering study, the traffic control signal shall be equipped with pedestrian signal heads complying with the provisions set forth in Chapter 4E of the OMUTCD.
Warrant 5, School Crossing	No		N/A
Warrant 6, Coordinated Signal System	No		(Shall not be used as the sole warrant in the ana
Warrant 7, Crash Experience	No		If this is the sole warrant, signal must be semi-actuated devices which provide proper coordination if installed at a within a coordinated system and normally should be f actuated if installed at an isolated intersectior
Warrant 8, Roadway Network	No		(Shall not be used as the sole warrant in the ana
Warrant 9, Intersection Near a Grade Crossing	No		Figure 4C-9
Multi-Way Stop Warrant	No		May be used as an interim measure if traffic signal wa satisfied.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traf signal.

If no warrants are satisfied, additional options may be considered:

1. An engineering study, performed by a firm prequalified by ODOT for signal design, if approved by the ODOT may be used to justify a new signal installation or retention of an existing signal that otherwise does not meet th published warrants. An example of such an instance is a traffic signal in proximity to a railroad crossing that se reduce queuing across the tracks.

2. According to TEM 402-2, If the actual turning movement counts fail to satisfy a signal warrant, it may be acc use traffic volumes projected to the second year after project completion. The **Modeling and Forecasting Sec** should provide the projected traffic volumes.

3. A pedestrian hybrid beacon may be considered for installation to facilitate pedestrian crossings at a location not meet traffic signal warrants (see Chapter 4C of TEM) or at a location that meets traffic signal warrants unde 4C.05 and/or 4C.06 but a decision is made to not install a traffic control signal. **Please fill inputs on PHB Sco and submit to ODOT.**

Considerations such as geometrics and lack of sight distance generally have not been accepted in lieu of satisf warrants. These considerations may allow an otherwise unwarranted traffic signal to be retained at **100 percen** cost. Please review TEM 402-4 for details.

Conclusion:

Notes:

tate that it

Peak Hour
3:15 PM
4:15 PM

Peak Hour
3:15 PM
4:15 PM

lysis)

with control
n intersection
ully traffic
ı.

lysis)

ırrants are

fic control

district,
ıe
ves to

eptable to
tion

that does
ır Sections
re Sheet

ying signal
t local

Multi-Way Stop Application

OMUTCD Section 2B.07

A. Where traffic control signals are justified, the multi-way stop is an interim measure that can be installed quickly to control traffic while arrangements are being made for the installation of the traffic control signal.

B. Five or more reported crashes in a 12-month period that are susceptible to correction by a multiway stop installation. Such crashes include right-turn and left-turn collisions as well as right-angle collisions.

C. Minimum Volumes:

1 The vehicular volume entering the intersection from the major street approaches (total of both approaches) averages at least 300 vehicles per hour for any 8 hours of an average day.

2 The combined vehicular, pedestrian, and bicycle volume entering the intersection from the minor street approaches (total of both approaches) averages at least 200 units per hour for the same 8 hours, with an average delay to minor-street vehicular traffic of at least 30 seconds per vehicle during the highest hour.*
*If this condition is satisfied, there must also be an average delay of at least 30 seconds per vehicle during the peak hour.

3 If the 85th-percentile approach speed of the major-street traffic exceeds 40 mph, the minimum volume warrants are 70 percent of the values provided in Items 1 and 2.

D. Where no single criterion is satisfied, but where Criteria B, C.1, and C.2 are all satisfied to 80 percent of the minimum values. Criterion C.3 is excluded from this condition.

Other criteria that may be considered in an engineering study include:

A. The need to control left-turn conflicts;
B. The need to control vehicle/pedestrian conflicts near locations that generate high pedestrian volumes;
C. Locations where a road user, after stopping, cannot see conflicting traffic and is not able to negotiate the intersection unless conflicting cross traffic is also required to stop; and
D. An intersection of two residential neighborhood collector (through) streets of similar design and operating characteristics where multi-way stop control would improve traffic operational characteristics of the intersection.

Are the requirements for Multi-Way Stop Satisfied?: No

AUTOCALC table Each hour is individually checked and tallied if "met"								
Lanes Major/ Minor	ADJUSTED VOLUMES		Condition C.1		Condition C.2		Condition D	
	MAJOR	MINOR	100%		70%		80%	
			MAJ.	MIN.	MAJ.	MIN.	MAJ.	MIN.
Required Volumes			300	200	210	140	240	160
6:00 AM	24	210						
6:15 AM	33	248						
6:30 AM	33	239						
6:45 AM	43	202						
7:00 AM	33	178						
7:15 AM	32	145						
7:30 AM	35	122						
7:45 AM	26	117						
8:00 AM	35	110						
8:15 AM	23	81						
8:30 AM	15	69						
8:45 AM	14	57						
9:00 AM	2	44						
9:15 AM	2	44						
9:30 AM	2	44						
9:45 AM	2	44						
10:00 AM	2	44						
10:15 AM	2	44						
10:30 AM	2	44						
10:45 AM	2	44						
11:00 AM	2	44						
11:15 AM	2	44						
11:30 AM	2	44						
11:45 AM	2	44						
12:00 PM	2	44						
12:15 PM	2	44						
12:30 PM	2	44						
12:45 PM	2	44						
1:00 PM	2	44						
1:15 PM	2	44						
1:30 PM	2	44						
1:45 PM	2	44						
2:00 PM	2	44						
2:15 PM	14	89						
2:30 PM	29	130						
2:45 PM	80	198						
3:00 PM	129	263						
3:15 PM	139	275						
3:30 PM	138	262						
3:45 PM	108	248						
4:00 PM	77	230						
4:15 PM	83	217						
4:30 PM	83	247						
4:45 PM	75	234						
5:00 PM	68	230						
5:15 PM	40	186						
5:30 PM	26	138						

5:45 PM	13	88						
6:00 PM	2	44						
6:15 PM	2	44						
6:30 PM	2	44						
6:45 PM	2	44						
7:00 PM	2	44						
7:15 PM	2	33						
7:30 PM	2	22						
7:45 PM	0	11						
8:00 PM	0	0						
8:15 PM	0	0						
8:30 PM	0	0						
8:45 PM	0	0						
9:00 PM	0	0						
9:15 PM	0	0						
9:30 PM	0	0						
9:45 PM	0	0						
10:00 PM	0	0						
10:15 PM	0	0						
10:30 PM	0	0						
10:45 PM	0	0						
11:00 PM	0	0						
11:15 PM	0	0						
11:30 PM	0	0						
11:45 PM	0	0						
HOURS MET			**0**	**0**	**0**	**0**	**0**	**0**
CONDITION SATISFIED?			**NO**		**NO**		**NO**	

Warranted ?
No

No
No
No
Yes
No
No
No
No
No

Appendix C
Turn Lane Warrant Worksheets

GWYNNE RD

AM WB
Advancing: 310
Right Turn: 40

PM WB
Advancing: 670
Right Turn: 150

LEGEND:

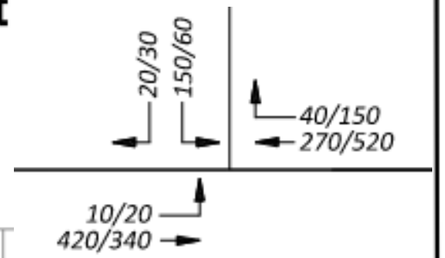
Warranted - ●

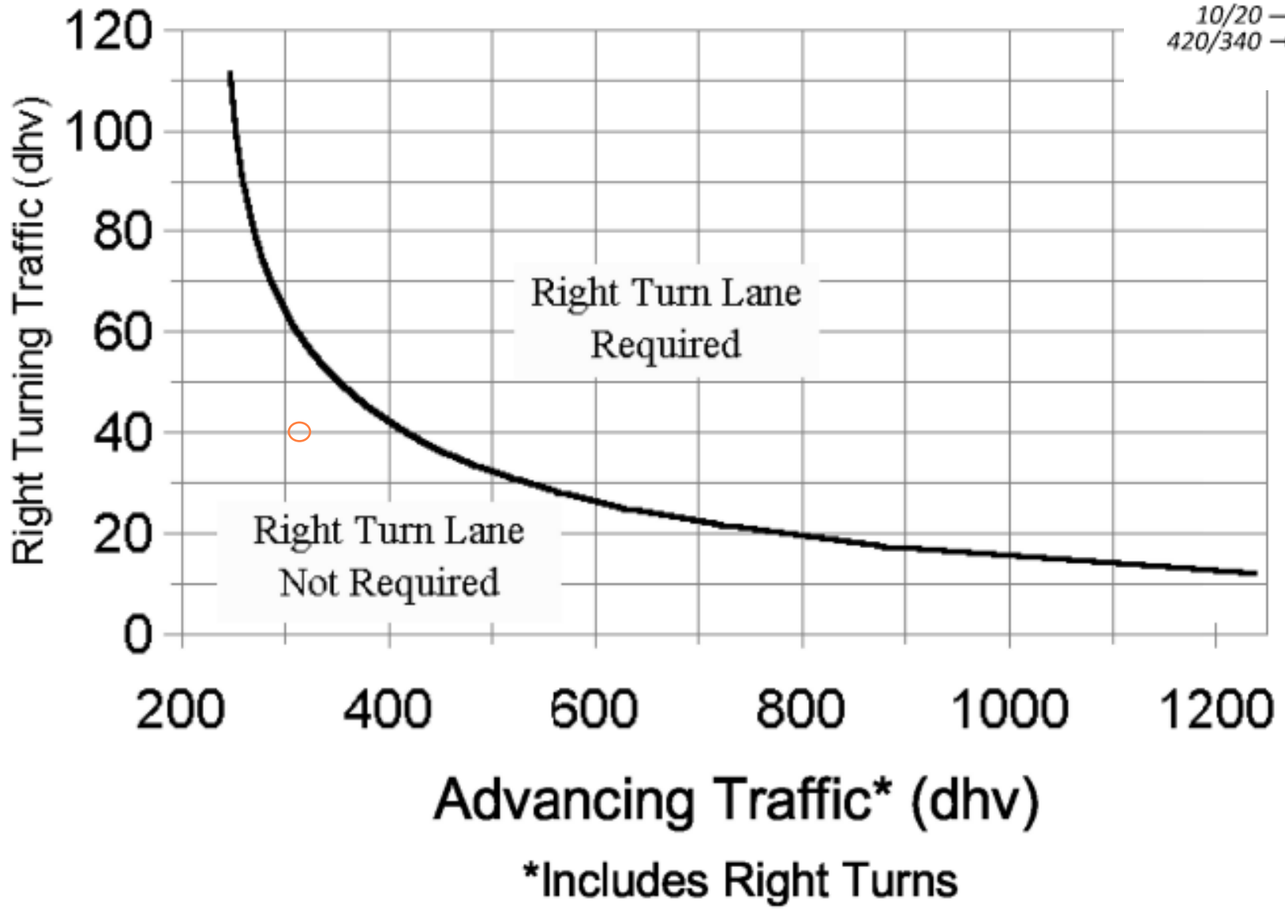
Not Warranted - ○

October 2004

2-Lane Highway Right Turn Lane Warrant

> 40 mph or 70 kph Posted Speed



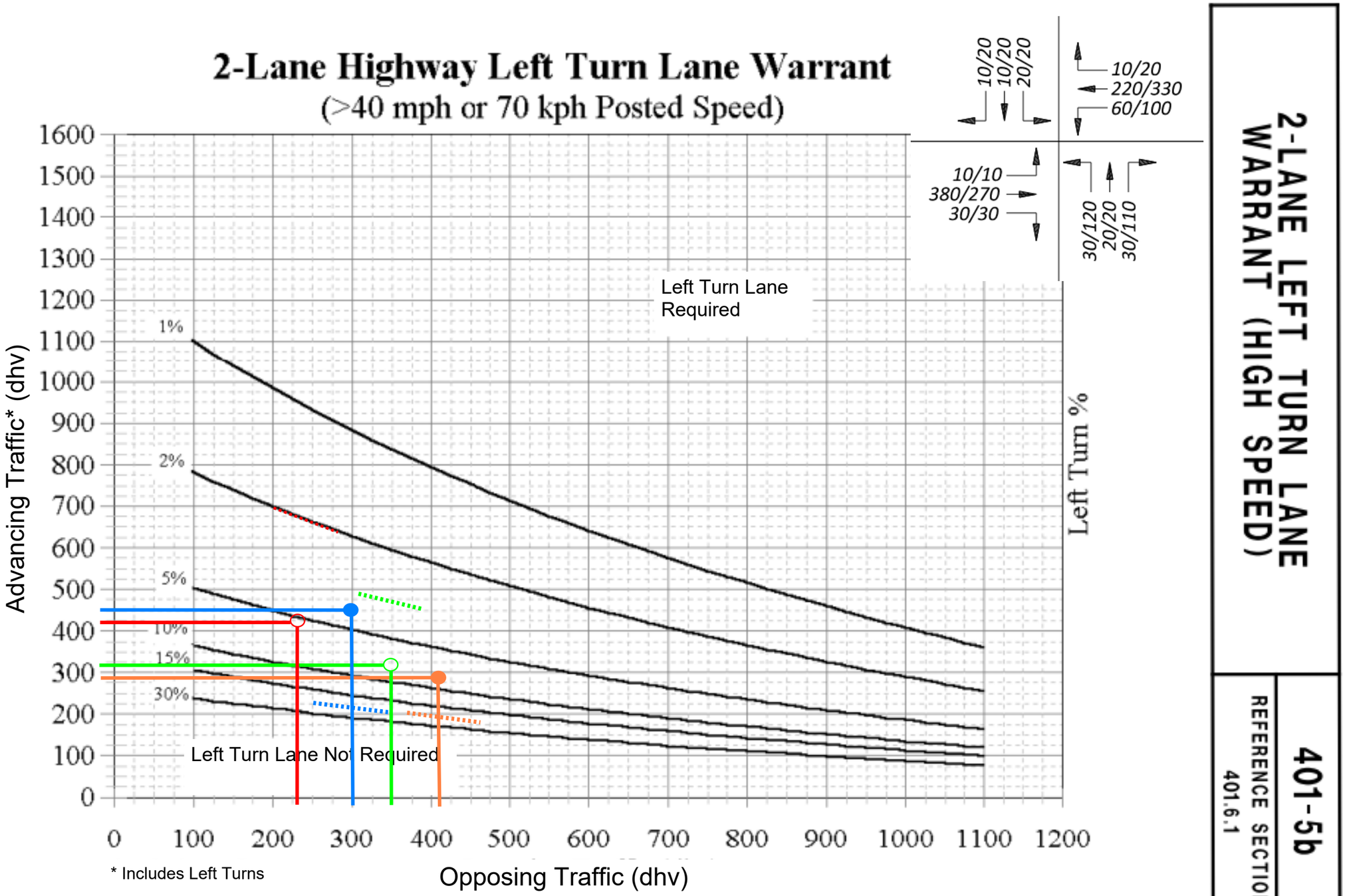


2-LANE RIGHT TURN LANE WARRANT (HIGH SPEED)

401-6b

REFERENCE SECTION 401.6.3

WEST ST



* Includes Left Turns

AM EB
Advancing: 420
Percentage: 2%
Opposing: 230

AM WB
Advancing: 290
Percentage: 21%
Opposing: 410

PM EB
Advancing: 310
Percentage: 3%
Opposing: 350

PM WB
Advancing: 450
Percentage: 22%
Opposing: 300

LEGEND:

Warranted - ●

Not Warranted - ○

2-LANE LEFT TURN LANE WARRANT (HIGH SPEED)

401-5b

REFERENCE SECTION 401.6.1

MIDDLE ST

2-LANE LEFT TURN LANE WARRANT (HIGH SPEED)

401-5b

REFERENCE SECTION 401.6.1

AM EB
Advancing: 440
Percentage: 9%
Opposing: 230

AM WB
Advancing: 250
Percentage: 42%
Opposing: 310

PM EB
Advancing: 410
Percentage: 25%
Opposing: 400

PM WB
Advancing: 410
Percentage: 3%
Opposing: 310

LEGEND:

Warranted - ●

Not Warranted - ○

US-42 SB RAMP

AM EB
Advancing: 420
Right Turn: 20

AM WB
Advancing: 150
Right Turn: 20

PM EB
Advancing: 330
Right Turn: 20

PM WB
Advancing: 420
Right Turn: 110

LEGEND:

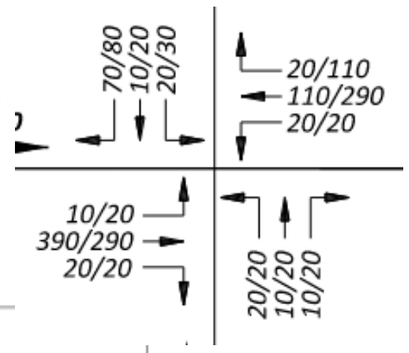
Warranted - ●

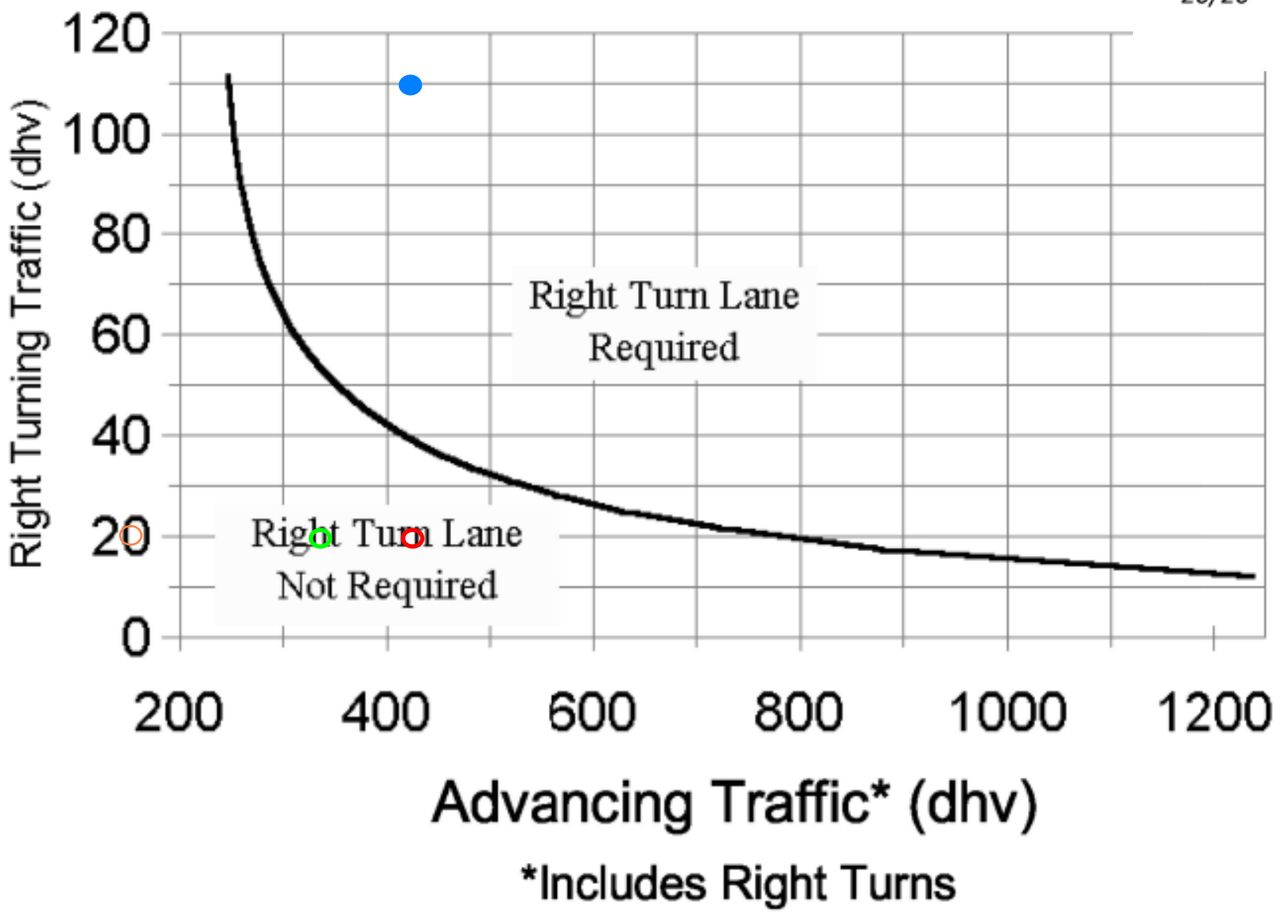
Not Warranted - ○

October 2004

2-Lane Highway Right Turn Lane Warrant

> 40 mph or 70 kph Posted Speed





2-LANE RIGHT TURN LANE WARRANT (HIGH SPEED)

401-6b

REFERENCE SECTION 401.6.3

US-42 NB RAMP

AM EB
Advancing: 420
Right Turn: 80

AM WB
Advancing: 160
Right Turn: 30

PM EB
Advancing: 340
Right Turn: 60

PM WB
Advancing: 400
Opposing: 40

LEGEND:

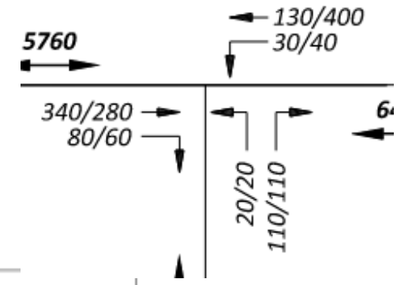
Warranted - ●

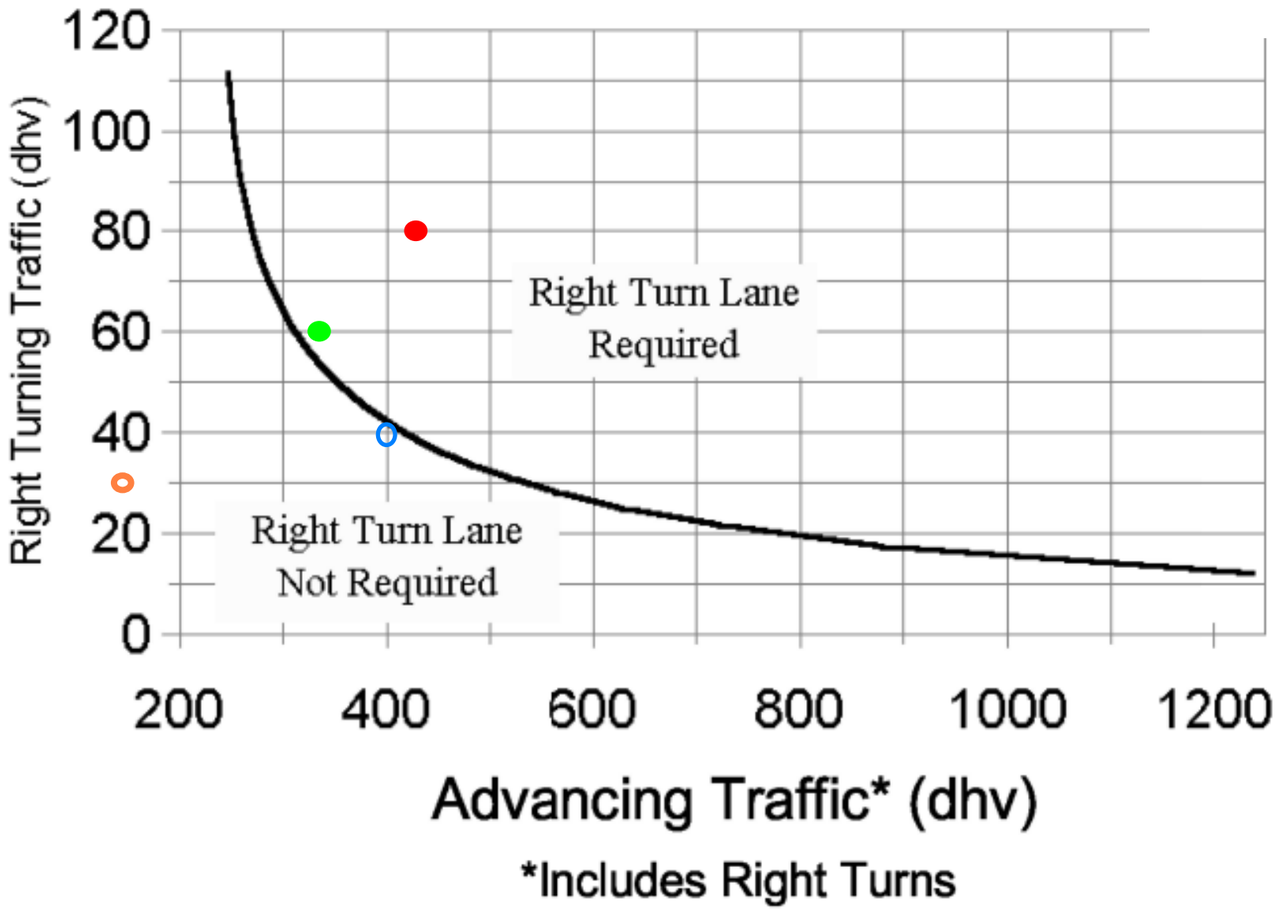
Not Warranted - ○

October 2004

2-Lane Highway Right Turn Lane Warrant

> 40 mph or 70 kph Posted Speed





2-LANE RIGHT TURN LANE WARRANT (HIGH SPEED)

401-6b

REFERENCE SECTION 401.6.3

Appendix D
Highway Capacity Analysis

Appendix D - 1
Highway Capacity Analysis
Existing Conditions

HCS7 Two-Way Stop-Control Report

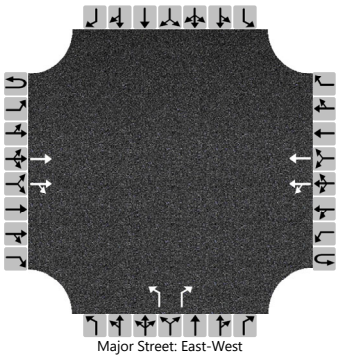
General Information

Analyst	SR
Agency/Co.	HDR
Date Performed	11/25/2024
Analysis Year	2024
Time Analyzed	AM
Intersection Orientation	East-West
Project Description	Madison Ohio 40

Site Information

Intersection	US 40 @ US 42 NB Ramp
Jurisdiction	Madison
East/West Street	US 40
North/South Street	US 42
Peak Hour Factor	0.95
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	0	2	0		1	0	1		0	0	0
Configuration			T	TR		LT	T			L		R				
Volume (veh/h)			220	60		20	110			10		80				
Percent Heavy Vehicles (%)						11				0		5				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized										No						
Median Type | Storage						Undivided										

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.5		6.9				
Critical Headway (sec)						4.32				6.80		7.00				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.31				3.50		3.35				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						21				11		84				
Capacity, c (veh/h)						1201				603		864				
v/c Ratio						0.02				0.02		0.10				
95% Queue Length, Q_{95} (veh)						0.1				0.1		0.3				
Control Delay (s/veh)						8.1				11.1		9.6				
Level of Service (LOS)						A				B		A				
Approach Delay (s/veh)						1.3				9.8						
Approach LOS										A						

HCS7 Two-Way Stop-Control Report

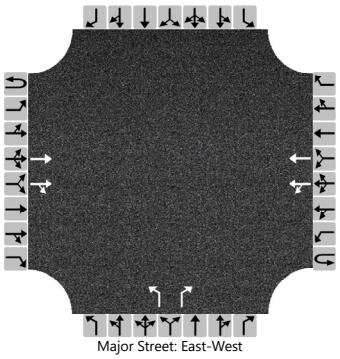
General Information

Analyst	SR
Agency/Co.	HDR
Date Performed	11/25/2024
Analysis Year	2024
Time Analyzed	PM
Intersection Orientation	East-West
Project Description	Madison Ohio 40

Site Information

Intersection	US 40 @ US 42 NB Ramp
Jurisdiction	Madison
East/West Street	US 40
North/South Street	US 42
Peak Hour Factor	0.86
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	0	2	0		1	0	1		0	0	0
Configuration			T	TR		LT	T			L		R				
Volume (veh/h)			150	40		30	340			10		80				
Percent Heavy Vehicles (%)						4				0		2				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized										No						
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.5		6.9				
Critical Headway (sec)						4.18				6.80		6.94				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.24				3.50		3.32				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						35				12		93				
Capacity, c (veh/h)						1331				513		922				
v/c Ratio						0.03				0.02		0.10				
95% Queue Length, Q_{95} (veh)						0.1				0.1		0.3				
Control Delay (s/veh)						7.8				12.2		9.3				
Level of Service (LOS)						A				B		A				
Approach Delay (s/veh)						0.7				9.7						
Approach LOS										A						

HCS7 Two-Way Stop-Control Report

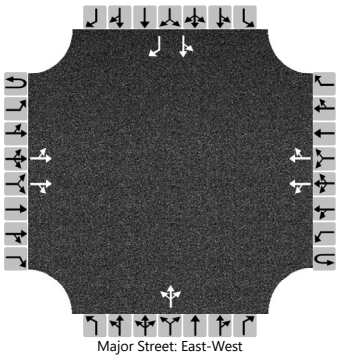
General Information

Analyst	SR
Agency/Co.	HDR
Date Performed	11/25/2024
Analysis Year	2024
Time Analyzed	AM
Intersection Orientation	East-West
Project Description	Madison Ohio 40

Site Information

Intersection	US 40 @ US 42 SB Ramp
Jurisdiction	Madison
East/West Street	US 40
North/South Street	US 42
Peak Hour Factor	0.93
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	0	2	0		0	1	0		0	1	1
Configuration		LT		TR		LT		TR			LTR			LT		R
Volume (veh/h)		10	260	10		10	100	10		10	10	10		10	10	50
Percent Heavy Vehicles (%)		0				0				0	0	0		0	0	0
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized														No		
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.5	6.5	6.9		7.5	6.5	6.9
Critical Headway (sec)		4.10				4.10				7.50	6.50	6.90		7.50	6.50	6.90
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.20				3.50	4.00	3.30		3.50	4.00	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		11				11					32			22		54
Capacity, c (veh/h)		1482				1283					588			549		1001
v/c Ratio		0.01				0.01					0.05			0.04		0.05
95% Queue Length, Q_{95} (veh)		0.0				0.0					0.2			0.1		0.2
Control Delay (s/veh)		7.4				7.8					11.5			11.8		8.8
Level of Service (LOS)		A				A					B			B		A
Approach Delay (s/veh)	0.3				0.7				11.5				9.7			
Approach LOS									B				A			

HCS7 Two-Way Stop-Control Report

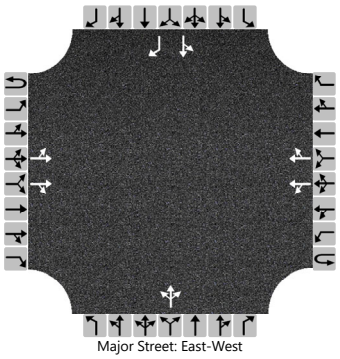
General Information

Analyst	SR
Agency/Co.	HDR
Date Performed	11/25/2024
Analysis Year	2024
Time Analyzed	PM
Intersection Orientation	East-West
Project Description	Madison Ohio 40

Site Information

Intersection	US 40 @ US 42 SB Ramp
Jurisdiction	Madison
East/West Street	US 40
North/South Street	US 42
Peak Hour Factor	0.86
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	0	2	0		0	1	0		0	1	1
Configuration		LT		TR		LT		TR			LTR			LT		R
Volume (veh/h)		10	170	10		10	260	80		10	10	10		20	10	60
Percent Heavy Vehicles (%)		0				0				0	0	20		18	0	2
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized														No		
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.5	6.5	6.9		7.5	6.5	6.9
Critical Headway (sec)		4.10				4.10				7.50	6.50	7.30		7.86	6.50	6.94
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.20				3.50	4.00	3.50		3.68	4.00	3.32

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		12				12					35			35		70
Capacity, c (veh/h)		1174				1374					510			400		810
v/c Ratio		0.01				0.01					0.07			0.09		0.09
95% Queue Length, Q_{95} (veh)		0.0				0.0					0.2			0.3		0.3
Control Delay (s/veh)		8.1				7.6					12.6			14.9		9.9
Level of Service (LOS)		A				A					B			B		A
Approach Delay (s/veh)	0.5				0.2				12.6				11.5			
Approach LOS									B				B			

HCS7 Two-Way Stop-Control Report

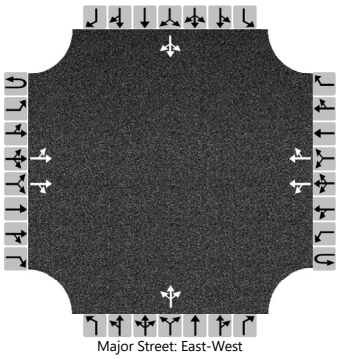
General Information

Analyst	SR
Agency/Co.	HDR
Date Performed	11/25/2024
Analysis Year	2024
Time Analyzed	AM
Intersection Orientation	East-West
Project Description	Madison Ohio 40

Site Information

Intersection	US 40 @ Middle Street
Jurisdiction	Madison
East/West Street	US 40
North/South Street	Middle Street
Peak Hour Factor	0.91
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	0	2	0		0	1	0		0	1	0
Configuration		LT		TR		LT		TR			LTR				LTR	
Volume (veh/h)		30	260	10		10	140	10		10	10	10		10	10	40
Percent Heavy Vehicles (%)		0				0				0	0	0		0	0	0
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.5	6.5	6.9		7.5	6.5	6.9
Critical Headway (sec)		4.10				4.10				7.50	6.50	6.90		7.50	6.50	6.90
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.20				3.50	4.00	3.30		3.50	4.00	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		33				11					33				66	
Capacity, c (veh/h)		1426				1276					526				714	
v/c Ratio		0.02				0.01					0.06				0.09	
95% Queue Length, Q_{95} (veh)		0.1				0.0					0.2				0.3	
Control Delay (s/veh)		7.6				7.8					12.3				10.6	
Level of Service (LOS)		A				A					B				B	
Approach Delay (s/veh)	0.8				0.5				12.3				10.6			
Approach LOS									B				B			

HCS7 Two-Way Stop-Control Report

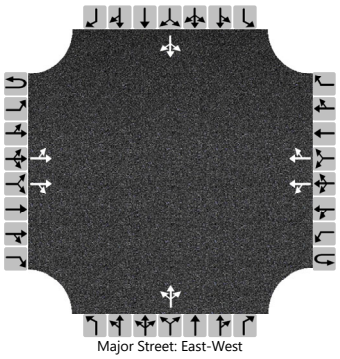
General Information

Analyst	SR
Agency/Co.	HDR
Date Performed	11/25/2024
Analysis Year	2024
Time Analyzed	PM
Intersection Orientation	East-West
Project Description	Madison Ohio 40

Site Information

Intersection	US 40 @ Middle Street
Jurisdiction	Madison
East/West Street	US 40
North/South Street	Middle Street
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	0	2	0		0	1	0		0	1	0
Configuration		LT		TR		LT		TR			LTR				LTR	
Volume (veh/h)		70	210	10		10	290	10		10	10	10		10	10	40
Percent Heavy Vehicles (%)		0				0				0	0	0		0	0	0
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.5	6.5	6.9		7.5	6.5	6.9
Critical Headway (sec)		4.10				4.10				7.50	6.50	6.90		7.50	6.50	6.90
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.20				3.50	4.00	3.30		3.50	4.00	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		78				11					33				67	
Capacity, c (veh/h)		1237				1334					418				553	
v/c Ratio		0.06				0.01					0.08				0.12	
95% Queue Length, Q_{95} (veh)		0.2				0.0					0.3				0.4	
Control Delay (s/veh)		8.1				7.7					14.4				12.4	
Level of Service (LOS)		A				A					B				B	
Approach Delay (s/veh)	2.1				0.3				14.4				12.4			
Approach LOS									B				B			

HCS7 Two-Way Stop-Control Report

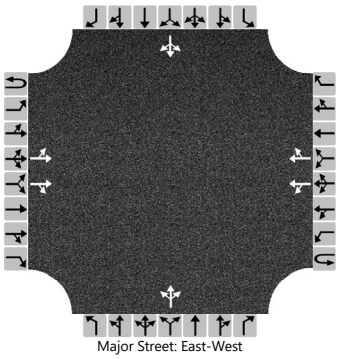
General Information

Analyst	SR
Agency/Co.	HDR
Date Performed	11/25/2024
Analysis Year	2024
Time Analyzed	AM
Intersection Orientation	East-West
Project Description	Madison Ohio 40

Site Information

Intersection	US 40 @ West Street
Jurisdiction	Madison
East/West Street	US 40
North/South Street	West Street
Peak Hour Factor	0.91
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	0	2	0		0	1	0		0	1	0
Configuration		LT		TR		LT		TR			LTR				LTR	
Volume (veh/h)		10	270	20		40	140	10		20	10	20		10	10	10
Percent Heavy Vehicles (%)		0				0				6	0	0		0	0	0
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.5	6.5	6.9		7.5	6.5	6.9
Critical Headway (sec)		4.10				4.10				7.62	6.50	6.90		7.50	6.50	6.90
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.20				3.56	4.00	3.30		3.50	4.00	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		11				44					55				33	
Capacity, c (veh/h)		1426				1253					521				535	
v/c Ratio		0.01				0.04					0.11				0.06	
95% Queue Length, Q_{95} (veh)		0.0				0.1					0.4				0.2	
Control Delay (s/veh)		7.5				8.0					12.7				12.2	
Level of Service (LOS)		A				A					B				B	
Approach Delay (s/veh)	0.3				1.8				12.7				12.2			
Approach LOS									B				B			

HCS7 Two-Way Stop-Control Report

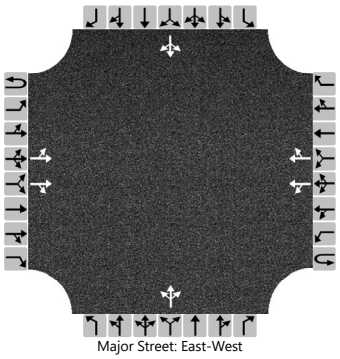
General Information

Analyst	SR
Agency/Co.	HDR
Date Performed	11/25/2024
Analysis Year	2024
Time Analyzed	PM
Intersection Orientation	East-West
Project Description	Madison Ohio 40

Site Information

Intersection	US 40 @ West Street
Jurisdiction	Madison
East/West Street	US 40
North/South Street	West Street
Peak Hour Factor	0.83
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	0	2	0		0	1	0		0	1	0
Configuration		LT		TR		LT		TR			LTR				LTR	
Volume (veh/h)		10	190	20		70	260	10		90	10	80		10	10	10
Percent Heavy Vehicles (%)		0				0				1	0	2		0	0	0
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.5	6.5	6.9		7.5	6.5	6.9
Critical Headway (sec)		4.10				4.10				7.52	6.50	6.94		7.50	6.50	6.90
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.20				3.51	4.00	3.32		3.50	4.00	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		12				84					217				36	
Capacity, c (veh/h)		1246				1324					473				385	
v/c Ratio		0.01				0.06					0.46				0.09	
95% Queue Length, Q_{95} (veh)		0.0				0.2					2.4				0.3	
Control Delay (s/veh)		7.9				7.9					18.9				15.3	
Level of Service (LOS)		A				A					C				C	
Approach Delay (s/veh)	0.4				1.8				18.9				15.3			
Approach LOS									C				C			

HCS7 Two-Way Stop-Control Report

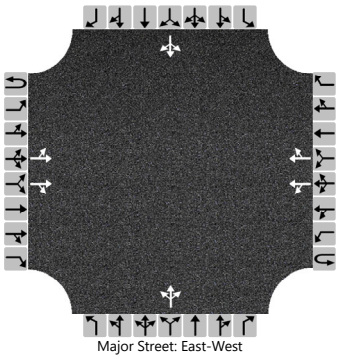
General Information

Analyst	SR
Agency/Co.	HDR
Date Performed	11/25/2024
Analysis Year	2024
Time Analyzed	AM
Intersection Orientation	East-West
Project Description	Madison Ohio 40

Site Information

Intersection	US 40 @ Gay Street/Arbuckle Road
Jurisdiction	Madison
East/West Street	US 40
North/South Street	Gay Street/Arbuckle Road
Peak Hour Factor	0.88
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	0	2	0		0	1	0		0	1	0
Configuration		LT		TR		LT		TR			LTR				LTR	
Volume (veh/h)		10	280	10		10	160	10		10	10	10		10	10	10
Percent Heavy Vehicles (%)		0				0				0	0	0		0	0	0
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.5	6.5	6.9		7.5	6.5	6.9
Critical Headway (sec)		4.10				4.10				7.50	6.50	6.90		7.50	6.50	6.90
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.20				3.50	4.00	3.30		3.50	4.00	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		11				11					34				34	
Capacity, c (veh/h)		1392				1241					530				563	
v/c Ratio		0.01				0.01					0.06				0.06	
95% Queue Length, Q_{95} (veh)		0.0				0.0					0.2				0.2	
Control Delay (s/veh)		7.6				7.9					12.3				11.8	
Level of Service (LOS)		A				A					B				B	
Approach Delay (s/veh)	0.3				0.5				12.3				11.8			
Approach LOS									B				B			

HCS7 Two-Way Stop-Control Report

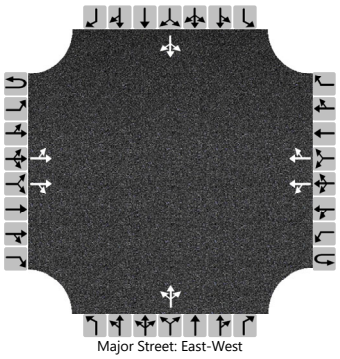
General Information

Analyst	SR
Agency/Co.	HDR
Date Performed	11/25/2024
Analysis Year	2024
Time Analyzed	PM
Intersection Orientation	East-West
Project Description	Madison Ohio 40

Site Information

Intersection	US 40 @ Gay Street/Arbuckle Road
Jurisdiction	Madison
East/West Street	US 40
North/South Street	Gay Street/Arbuckle Road
Peak Hour Factor	0.75
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	0	2	0		0	1	0		0	1	0
Configuration		LT		TR		LT		TR			LTR				LTR	
Volume (veh/h)		10	210	10		10	330	10		10	10	10		10	10	10
Percent Heavy Vehicles (%)		0				0				0	0	0		14	0	0
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.5	6.5	6.9		7.5	6.5	6.9
Critical Headway (sec)		4.10				4.10				7.50	6.50	6.90		7.78	6.50	6.90
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.20				3.50	4.00	3.30		3.64	4.00	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		13				13					40				40	
Capacity, c (veh/h)		1118				1280					433				391	
v/c Ratio		0.01				0.01					0.09				0.10	
95% Queue Length, Q_{95} (veh)		0.0				0.0					0.3				0.3	
Control Delay (s/veh)		8.3				7.8					14.2				15.3	
Level of Service (LOS)		A				A					B				C	
Approach Delay (s/veh)	0.4				0.3				14.2				15.3			
Approach LOS									B				C			

HCS7 Two-Way Stop-Control Report

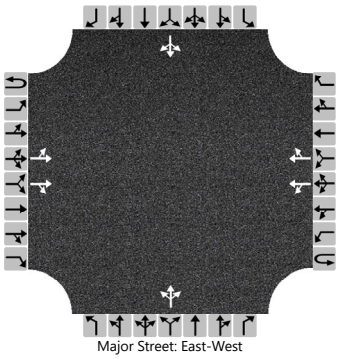
General Information

Analyst	SR
Agency/Co.	HDR
Date Performed	11/25/2024
Analysis Year	2024
Time Analyzed	AM
Intersection Orientation	East-West
Project Description	Madison Ohio 40

Site Information

Intersection	US 40 @ Betty Wilson Road
Jurisdiction	Madison
East/West Street	US 40
North/South Street	Betty Wilson Road
Peak Hour Factor	0.93
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	0	2	0		0	1	0		0	1	0
Configuration		LT		TR		LT		TR			LTR				LTR	
Volume (veh/h)		10	280	20		10	150	10		10	10	10		10	10	10
Percent Heavy Vehicles (%)		0				0				0	0	0		0	0	0
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.5	6.5	6.9		7.5	6.5	6.9
Critical Headway (sec)		4.10				4.10				7.50	6.50	6.90		7.50	6.50	6.90
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.20				3.50	4.00	3.30		3.50	4.00	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		11				11					32				32	
Capacity, c (veh/h)		1417				1249					550				587	
v/c Ratio		0.01				0.01					0.06				0.05	
95% Queue Length, Q_{95} (veh)		0.0				0.0					0.2				0.2	
Control Delay (s/veh)		7.6				7.9					11.9				11.5	
Level of Service (LOS)		A				A					B				B	
Approach Delay (s/veh)	0.3				0.5				11.9				11.5			
Approach LOS									B				B			

HCS7 Two-Way Stop-Control Report

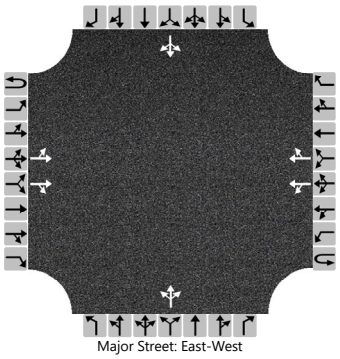
General Information

Analyst	SR
Agency/Co.	HDR
Date Performed	11/25/2024
Analysis Year	2024
Time Analyzed	PM
Intersection Orientation	East-West
Project Description	Madison Ohio 40

Site Information

Intersection	US 40 @ Betty Wilson Road
Jurisdiction	Madison
East/West Street	US 40
North/South Street	Betty Wilson Road
Peak Hour Factor	0.89
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	0	2	0		0	1	0		0	1	0
Configuration		LT		TR		LT		TR			LTR				LTR	
Volume (veh/h)		10	210	30		10	320	10		30	10	10		10	10	10
Percent Heavy Vehicles (%)		0				0				5	0	0		0	0	0
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

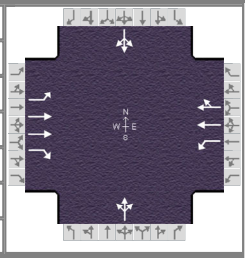
Base Critical Headway (sec)		4.1				4.1				7.5	6.5	6.9		7.5	6.5	6.9
Critical Headway (sec)		4.10				4.10				7.60	6.50	6.90		7.50	6.50	6.90
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.20				3.55	4.00	3.30		3.50	4.00	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		11				11					56				34	
Capacity, c (veh/h)		1199				1306					468				472	
v/c Ratio		0.01				0.01					0.12				0.07	
95% Queue Length, Q_{95} (veh)		0.0				0.0					0.4				0.2	
Control Delay (s/veh)		8.0				7.8					13.7				13.2	
Level of Service (LOS)		A				A					B				B	
Approach Delay (s/veh)	0.4				0.3				13.7				13.2			
Approach LOS									B				B			

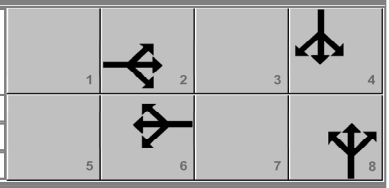
HCS7 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	HDR			Duration, h	0.250
Analyst	SR	Analysis Date	Nov 26, 2024	Area Type	Other
Jurisdiction	Madison	Time Period	AM	PHF	0.88
Urban Street	US 40	Analysis Year	2024	Analysis Period	1> 7:00
Intersection	US 40 @ Eml Street/Ma…	File Name	MO 40 Intersection 14 (Marysville-London) AM D…		
Project Description	Madison Ohio 40				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	20	240	170	60	110	10	80	60	60	10	60	30

Signal Information												
Cycle, s	23.4	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	Yes	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
				Green	6.0	5.3	0.0	0.0	0.0	0.0		
				Yellow	4.0	4.0	0.0	0.0	0.0	0.0		
				Red	2.0	2.0	0.0	0.0	0.0	0.0		



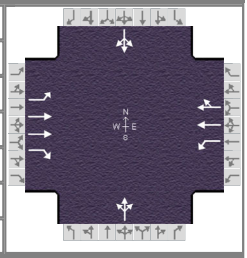
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	20	240	170	60	110	10	80	60	60	10	60	30
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	0	1	3	0	2			0			5	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0	12.0	12.0	12.0			12.0			12.0	
Turn Bay Length, ft	0	0	0	0	0			0			0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	60	60	60	60	60	60	60	60	60	60	60	60

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		30.0		30.0		30.0		30.0
Yellow Change Interval (*Y*), s		4.0		4.0		4.0		4.0
Red Clearance Interval (R_c), s		2.0		2.0		2.0		2.0
Minimum Green (G_{min}), s		6		6		6		6
Start-Up Lost Time (*l*t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s		2.0		2.0		2.0		2.0
Recall Mode		Min		Min		Off		Off
Dual Entry		Yes		Yes		Yes		Yes
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS7 Signalized Intersection Results Summary

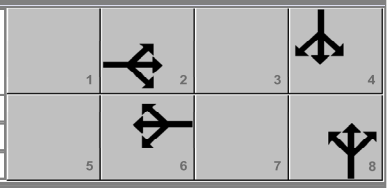
General Information				Intersection Information	
Agency	HDR			Duration, h	0.250
Analyst	SR	Analysis Date	Nov 26, 2024	Area Type	Other
Jurisdiction	Madison	Time Period	AM	PHF	0.88
Urban Street	US 40	Analysis Year	2024	Analysis Period	1> 7:00
Intersection	US 40 @ Eml Street/Ma…	File Name	MO 40 Intersection 14 (Marysville-London) AM D…		
Project Description	Madison Ohio 40				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	20	240	170	60	110	10	80	60	60	10	60	30

Signal Information			
Cycle, s	23.4	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	6.0	5.3	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	2.0	2.0	0.0	0.0	0.0	0.0	



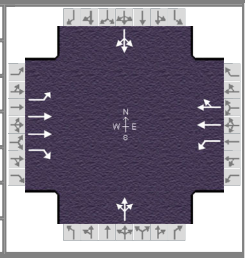
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		5.0		6.0		8.0		8.0
Phase Duration, s		12.0		12.0		11.3		11.3
Change Period, ($Y+R_c$), s		6.0		6.0		6.0		6.0
Max Allow Headway (*MAH*), s		3.0		3.0		3.0		3.0
Queue Clearance Time (g_s), s		4.7		4.8		5.1		3.4
Green Extension Time (g_e), s		1.3		1.3		0.6		0.6
Phase Call Probability		1.00		1.00		0.89		0.89
Max Out Probability		0.00		0.00		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	23	273	193	68	68	68		227			114	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1273	1653	1448	1124	1723	1672		1511			1575	
Queue Service Time (g_s), s	0.3	1.6	2.7	1.2	0.7	0.7		1.8			0.0	
Cycle Queue Clearance Time (g_c), s	1.1	1.6	2.7	2.8	0.7	0.7		3.1			1.4	
Green Ratio (*g/C*)	0.26	0.26	0.26	0.26	0.26	0.26		0.23			0.23	
Capacity (*c*), veh/h	597	852	373	523	444	431		561			530	
Volume-to-Capacity Ratio (*X*)	0.038	0.320	0.517	0.130	0.154	0.158		0.405			0.214	
Back of Queue (*Q*), ft/ln (95 th percentile)	0.9	4.2	7.9	3.6	2.2	2.1		10.3			4.9	
Back of Queue (*Q*), veh/ln (95 th percentile)	0.0	0.2	0.3	0.1	0.1	0.1		0.4			0.2	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00		0.00			0.00	
Uniform Delay (d_1), s/veh	7.1	7.0	7.4	8.1	6.7	6.7		8.1			7.5	
Incremental Delay (d_2), s/veh	0.0	0.1	0.4	0.0	0.1	0.1		0.2			0.1	
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0		0.0			0.0	
Control Delay (*d*), s/veh	7.1	7.1	7.8	8.2	6.8	6.8		8.3			7.6	
Level of Service (LOS)	A	A	A	A	A	A		A			A	
Approach Delay, s/veh / LOS	7.4	A		7.2	A		8.3	A		7.6	A	
Intersection Delay, s/veh / LOS	7.6						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.65	B	1.65	B	2.23	B	2.39	B
Bicycle LOS Score / LOS	0.89	A	0.66	A	0.86	A	0.68	A

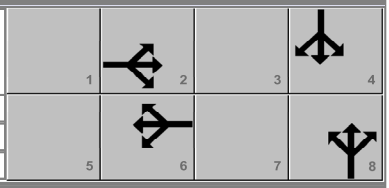
HCS7 Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	HDR			Duration, h	0.250
Analyst	SR	Analysis Date	Nov 26, 2024	Area Type	Other
Jurisdiction	Madison	Time Period	AM	PHF	0.88
Urban Street	US 40	Analysis Year	2024	Analysis Period	1> 7:00
Intersection	US 40 @ Eml Street/Ma…	File Name	MO 40 Intersection 14 (Marysville-London) AM D…		
Project Description	Madison Ohio 40				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	20	240	170	60	110	10	80	60	60	10	60	30

Signal Information												
Cycle, s	23.4	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	Yes	Simult. Gap E/W	On	Green	6.0	5.3	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0		
				Red	2.0	2.0	0.0	0.0	0.0	0.0		



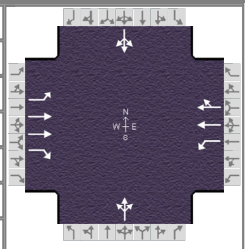
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	0.992	0.977	1.000	0.984	1.000	1.000	1.000	1.000	1.000	0.961	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	0.952	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.727	0.000		0.642	0.000		0.902	0.863		0.981	0.937	
Right-Turn Adjustment Factor (f_{RT})		0.000	0.847		0.971	0.971		0.000	0.863		0.000	0.937
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Movement Saturation Flow Rate (s), veh/h	1273	3306	1448	1124	3115	280	604	453	453	158	945	473
Proportion of Vehicles Arriving on Green (P)	0.26	0.26	0.26	0.26	0.26	0.26	0.23	0.23	0.23	0.23	0.23	0.23
Incremental Delay Factor (k)	0.04	0.04	0.04	0.04	0.04	0.04		0.04			0.04	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		6.0		6.0		6.0		6.0
Green Ratio (g/C)		0.26		0.26		0.23		0.23
Permitted Saturation Flow Rate (s_p), veh/h/ln		1273		1124		1313		1273
Shared Saturation Flow Rate (s_{sh}), veh/h/ln						1544		1621
Permitted Effective Green Time (g_p), s		6.0		6.0		5.4		5.4
Permitted Service Time (g_u), s		5.3		4.5		4.0		2.2
Permitted Queue Service Time (g_{ps}), s		0.3		1.2		1.8		0.0
Time to First Blockage (g_f), s		0.0		0.0		0.9		2.5
Queue Service Time Before Blockage (g_{fs}), s						0.9		0.8
Protected Right Saturation Flow (s_R), veh/h/ln		0						
Protected Right Effective Green Time (g_R), s		0.0						

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	0.972	0.000	0.972	0.000	1.557	0.000	1.710	0.000
Pedestrian F_s / F_{delay}	0.000	0.075	0.000	0.075	0.000	0.078	0.000	0.078
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	516.60	6.43	516.60	6.43	457.24	6.96	457.24	6.96
Bicycle F_w / F_v	-3.64	0.40	-3.64	0.17	-3.64	0.38	-3.64	0.19

HCS7 Signalized Intersection Results Graphical Summary

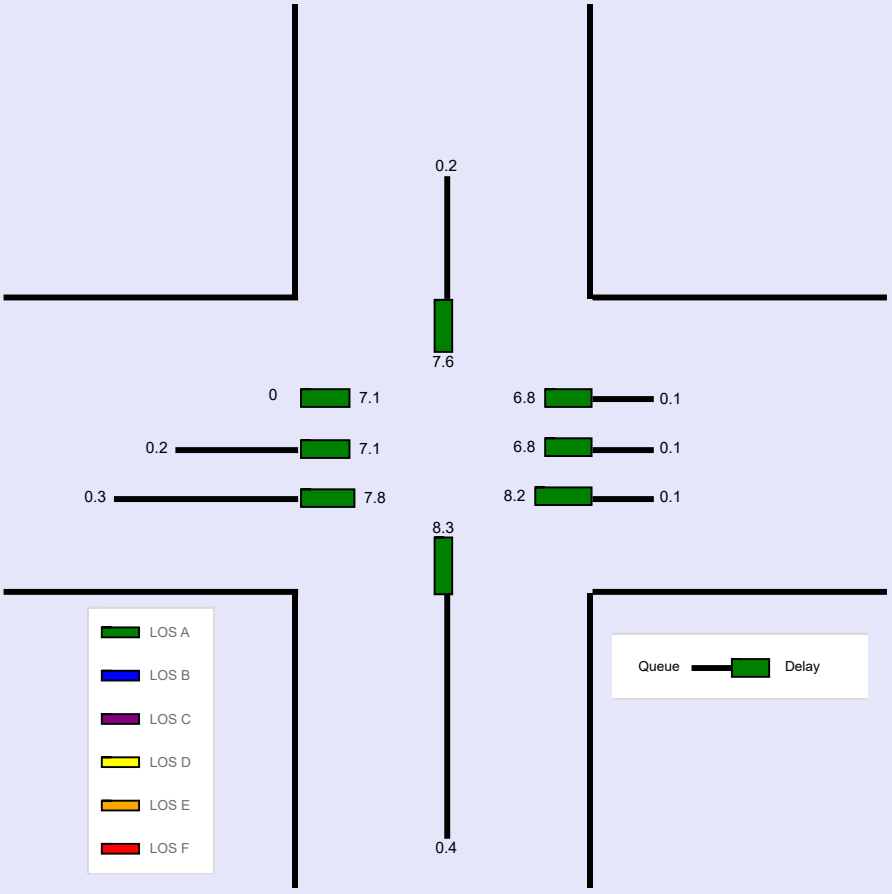
General Information				Intersection Information	
Agency	HDR			Duration, h	0.250
Analyst	SR	Analysis Date	Nov 26, 2024	Area Type	Other
Jurisdiction	Madison	Time Period	AM	PHF	0.88
Urban Street	US 40	Analysis Year	2024	Analysis Period	1> 7:00
Intersection	US 40 @ Eml Street/Ma…	File Name	MO 40 Intersection 14 (Marysville-London) AM D…		
Project Description	Madison Ohio 40				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	20	240	170	60	110	10	80	60	60	10	60	30

Signal Information					EB		WB				NB				SB			
Cycle, s	23.4	Reference Phase	2															
Offset, s	0	Reference Point	End	Green	6.0	5.3	0.0	0.0	0.0	0.0								
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0								
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	2.0	0.0	0.0	0.0	0.0								

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	0.9	4.2	7.9	3.6	2.2	2.1		10.3			4.9	
Back of Queue (*Q*), veh/ln (95 th percentile)	0.0	0.2	0.3	0.1	0.1	0.1		0.4			0.2	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00		0.00			0.00	
Control Delay (*d*), s/veh	7.1	7.1	7.8	8.2	6.8	6.8		8.3			7.6	
Level of Service (LOS)	A	A	A	A	A	A		A			A	
Approach Delay, s/veh / LOS	7.4	A		7.2	A		8.3	A		7.6	A	
Intersection Delay, s/veh / LOS	7.6			A								



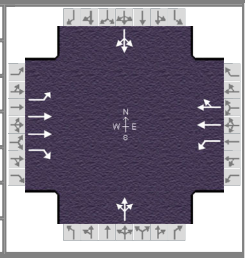
--- Messages ---

No errors or warnings exist.

--- Comments ---

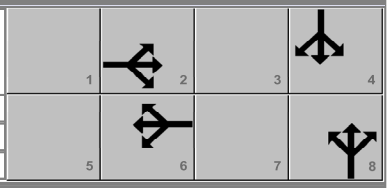
HCS7 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	HDR			Duration, h	0.250
Analyst	SR	Analysis Date	Nov 26, 2024	Area Type	Other
Jurisdiction	Madison	Time Period	PM	PHF	0.92
Urban Street	US 40	Analysis Year	2024	Analysis Period	1> 7:00
Intersection	US 40 @ Eml Street/Ma…	File Name	MO 40 Intersection 14 (Marysville-London) PM D…		
Project Description	Madison Ohio 40				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	40	190	70	40	300	10	190	70	40	10	60	30

Signal Information												
Cycle, s	26.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	Yes	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
				Green	6.3	7.7	0.0	0.0	0.0	0.0		
				Yellow	4.0	4.0	0.0	0.0	0.0	0.0		
				Red	2.0	2.0	0.0	0.0	0.0	0.0		



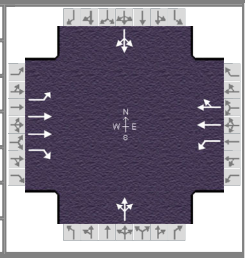
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	40	190	70	40	300	10	190	70	40	10	60	30
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	3	3	6	4	1			0			3	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0	12.0	12.0	12.0			12.0			12.0	
Turn Bay Length, ft	0	0	0	0	0			0			0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	60	60	60	60	60	60	60	60	60	60	60	60

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		30.0		30.0		30.0		30.0
Yellow Change Interval (*Y*), s		4.0		4.0		4.0		4.0
Red Clearance Interval (R_c), s		2.0		2.0		2.0		2.0
Minimum Green (G_{min}), s		6		6		6		6
Start-Up Lost Time (*l1*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s		2.0		2.0		2.0		2.0
Recall Mode		Min		Min		Off		Off
Dual Entry		Yes		Yes		Yes		Yes
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS7 Signalized Intersection Results Summary

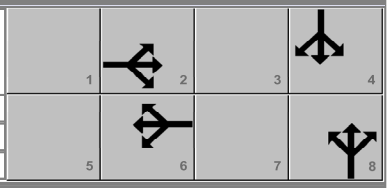
General Information				Intersection Information	
Agency	HDR			Duration, h	0.250
Analyst	SR	Analysis Date	Nov 26, 2024	Area Type	Other
Jurisdiction	Madison	Time Period	PM	PHF	0.92
Urban Street	US 40	Analysis Year	2024	Analysis Period	1> 7:00
Intersection	US 40 @ Eml Street/Ma…	File Name	MO 40 Intersection 14 (Marysville-London) PM D…		
Project Description	Madison Ohio 40				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	40	190	70	40	300	10	190	70	40	10	60	30

Signal Information			
Cycle, s	26.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	6.3	7.7	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	2.0	2.0	0.0	0.0	0.0	0.0	



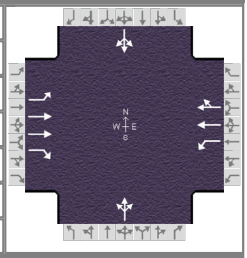
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		5.0		6.0		8.0		8.0
Phase Duration, s		12.3		12.3		13.7		13.7
Change Period, ($Y+R_c$), s		6.0		6.0		6.0		6.0
Max Allow Headway (*MAH*), s		2.9		2.9		3.0		3.0
Queue Clearance Time (g_s), s		5.1		4.2		7.3		3.3
Green Extension Time (g_e), s		1.2		1.2		0.7		0.7
Phase Call Probability		1.00		1.00		0.96		0.96
Max Out Probability		0.00		0.00		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	43	207	76	43	169	168		326			109	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1035	1627	1414	1157	1736	1716		1444			1608	
Queue Service Time (g_s), s	1.0	1.3	1.1	0.8	2.1	2.1		4.0			0.0	
Cycle Queue Clearance Time (g_c), s	3.1	1.3	1.1	2.2	2.1	2.1		5.3			1.3	
Green Ratio (*g/C*)	0.24	0.24	0.24	0.24	0.24	0.24		0.29			0.29	
Capacity (*c*), veh/h	443	792	344	498	423	418		652			626	
Volume-to-Capacity Ratio (*X*)	0.098	0.261	0.221	0.087	0.400	0.402		0.500			0.174	
Back of Queue (*Q*), ft/ln (95 th percentile)	4	6.5	5.1	3.5	11.4	11.3		17.7			5	
Back of Queue (*Q*), veh/ln (95 th percentile)	0.2	0.3	0.2	0.1	0.5	0.5		0.7			0.2	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00		0.00			0.00	
Uniform Delay (d_1), s/veh	9.6	7.9	7.9	8.8	8.2	8.2		8.3			6.9	
Incremental Delay (d_2), s/veh	0.0	0.1	0.1	0.0	0.2	0.2		0.2			0.0	
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0		0.0			0.0	
Control Delay (*d*), s/veh	9.6	8.0	8.0	8.9	8.5	8.5		8.5			7.0	
Level of Service (LOS)	A	A	A	A	A	A		A			A	
Approach Delay, s/veh / LOS	8.2	A		8.5	A		8.5	A		7.0	A	
Intersection Delay, s/veh / LOS	8.3						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.65	B	1.65	B	2.23	B	2.39	B
Bicycle LOS Score / LOS	0.76	A	0.80	A	1.03	A	0.67	A

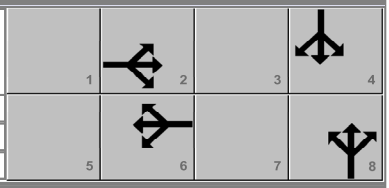
HCS7 Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	HDR			Duration, h	0.250
Analyst	SR	Analysis Date	Nov 26, 2024	Area Type	Other
Jurisdiction	Madison	Time Period	PM	PHF	0.92
Urban Street	US 40	Analysis Year	2024	Analysis Period	1> 7:00
Intersection	US 40 @ Eml Street/Ma…	File Name	MO 40 Intersection 14 (Marysville-London) PM D…		
Project Description	Madison Ohio 40				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	40	190	70	40	300	10	190	70	40	10	60	30

Signal Information												
Cycle, s	26.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	Yes	Simult. Gap E/W	On	Green	6.3	7.7	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0		
				Red	2.0	2.0	0.0	0.0	0.0	0.0		



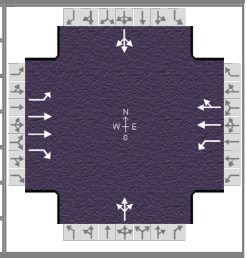
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	0.977	0.977	0.953	0.969	0.992	1.000	1.000	1.000	1.000	1.000	0.977	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	0.952	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.591	0.000		0.661	0.000		0.840	0.825		0.986	0.941	
Right-Turn Adjustment Factor (f_{RT})		0.000	0.847		0.988	0.988		0.000	0.825		0.000	0.941
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Movement Saturation Flow Rate (s), veh/h	1035	3254	1414	1157	3342	111	914	337	193	161	965	482
Proportion of Vehicles Arriving on Green (P)	0.24	0.24	0.24	0.24	0.24	0.24	0.29	0.29	0.29	0.29	0.29	0.29
Incremental Delay Factor (k)	0.04	0.04	0.04	0.04	0.04	0.04		0.04			0.04	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		6.0		6.0		6.0		6.0
Green Ratio (g/C)		0.24		0.24		0.29		0.29
Permitted Saturation Flow Rate (s_p), veh/h/ln		1035		1157		1318		1292
Shared Saturation Flow Rate (s_{sh}), veh/h/ln						1449		1651
Permitted Effective Green Time (g_p), s		6.3		6.3		7.7		7.7
Permitted Service Time (g_u), s		4.2		5.0		6.4		2.4
Permitted Queue Service Time (g_{ps}), s		1.0		0.8		4.0		0.0
Time to First Blockage (g_f), s		0.0		0.0		0.5		4.4
Queue Service Time Before Blockage (g_{fs}), s						0.5		0.8
Protected Right Saturation Flow (s_R), veh/h/ln		0						
Protected Right Effective Green Time (g_R), s		0.0						

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	0.972	0.000	0.972	0.000	1.557	0.000	1.710	0.000
Pedestrian F_s / F_{delay}	0.000	0.080	0.000	0.080	0.000	0.075	0.000	0.075
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	487.32	7.44	487.32	7.44	589.56	6.47	589.56	6.47
Bicycle F_w / F_v	-3.64	0.27	-3.64	0.31	-3.64	0.54	-3.64	0.18

HCS7 Signalized Intersection Results Graphical Summary

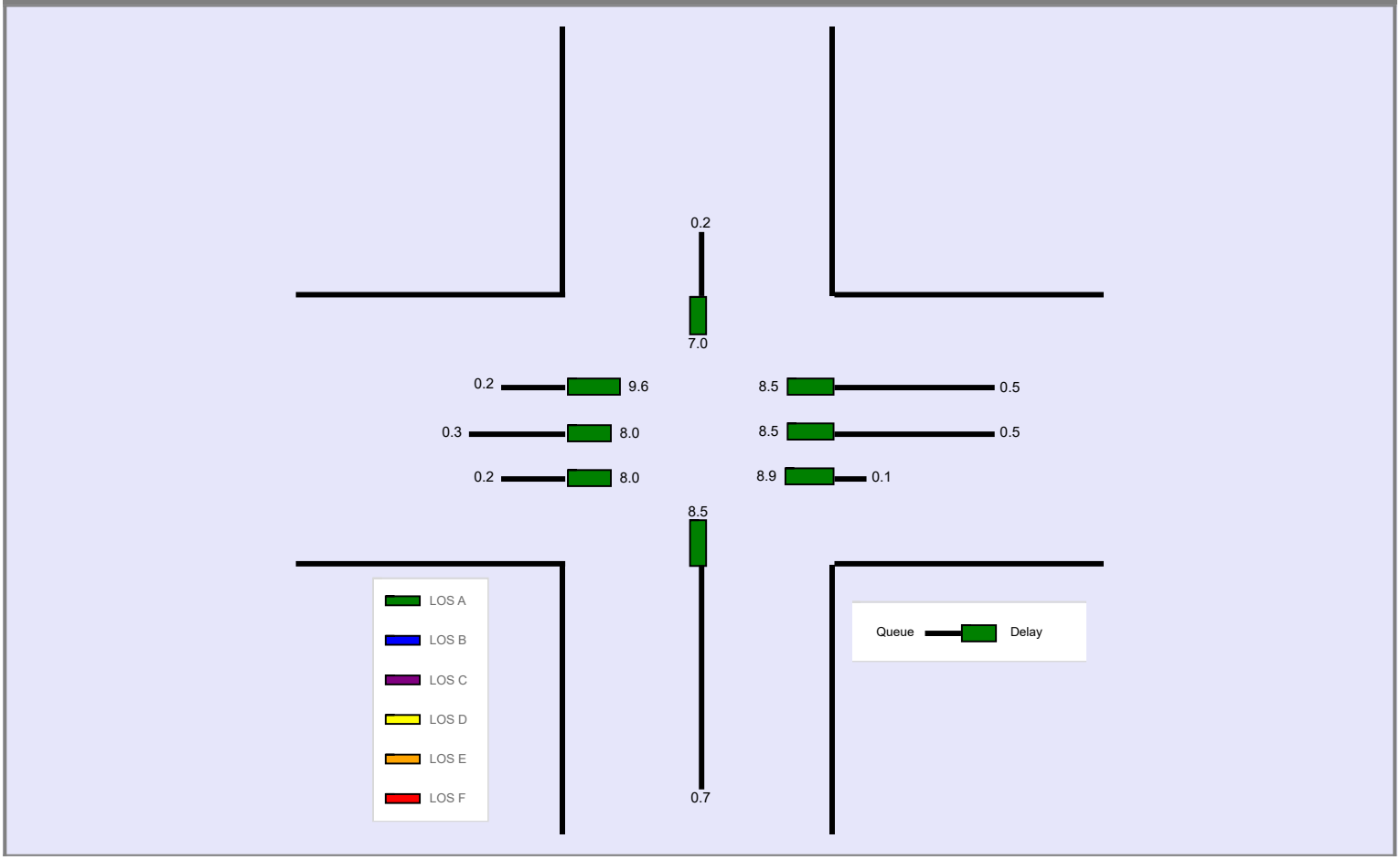
General Information				Intersection Information	
Agency	HDR			Duration, h	0.250
Analyst	SR	Analysis Date	Nov 26, 2024	Area Type	Other
Jurisdiction	Madison	Time Period	PM	PHF	0.92
Urban Street	US 40	Analysis Year	2024	Analysis Period	1> 7:00
Intersection	US 40 @ Eml Street/Ma…	File Name	MO 40 Intersection 14 (Marysville-London) PM D…		
Project Description	Madison Ohio 40				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	40	190	70	40	300	10	190	70	40	10	60	30

Signal Information					EB		WB				NB				SB			
Cycle, s	26.0	Reference Phase	2															
Offset, s	0	Reference Point	End	Green	6.3	7.7	0.0	0.0	0.0	0.0								
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0								
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	2.0	0.0	0.0	0.0	0.0								

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	4	6.5	5.1	3.5	11.4	11.3		17.7			5	
Back of Queue (*Q*), veh/ln (95 th percentile)	0.2	0.3	0.2	0.1	0.5	0.5		0.7			0.2	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00		0.00			0.00	
Control Delay (*d*), s/veh	9.6	8.0	8.0	8.9	8.5	8.5		8.5			7.0	
Level of Service (LOS)	A	A	A	A	A	A		A			A	
Approach Delay, s/veh / LOS	8.2	A		8.5	A		8.5	A		7.0	A	
Intersection Delay, s/veh / LOS	8.3						A					



--- Messages ---

No errors or warnings exist.

--- Comments ---

HCS7 Two-Way Stop-Control Report

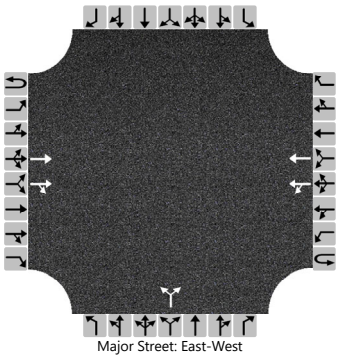
General Information

Analyst	SR
Agency/Co.	HDR
Date Performed	11/25/2024
Analysis Year	2024
Time Analyzed	AM
Intersection Orientation	East-West
Project Description	Madison Ohio 40

Site Information

Intersection	US 40 @ Madison County Airport
Jurisdiction	Madison
East/West Street	US 40
North/South Street	Madison County Airport
Peak Hour Factor	0.83
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	0	2	0		0	1	0		0	0	0
Configuration			T	TR		LT	T				LR					
Volume (veh/h)			430	10		10	210			10		10				
Percent Heavy Vehicles (%)						0				0		0				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized																
Median Type | Storage						Undivided										

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.5		6.9				
Critical Headway (sec)						4.10				6.80		6.90				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.20				3.50		3.30				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						12					24					
Capacity, c (veh/h)						1047					508					
v/c Ratio						0.01					0.05					
95% Queue Length, Q_{95} (veh)						0.0					0.1					
Control Delay (s/veh)						8.5					12.4					
Level of Service (LOS)						A					B					
Approach Delay (s/veh)						0.4				12.4						
Approach LOS										B						

HCS7 Two-Way Stop-Control Report

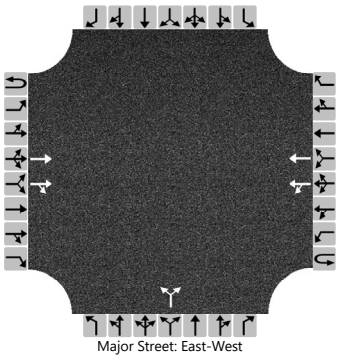
General Information

Analyst	SR
Agency/Co.	HDR
Date Performed	11/25/2024
Analysis Year	2024
Time Analyzed	PM
Intersection Orientation	East-West
Project Description	Madison Ohio 40

Site Information

Intersection	US 40 @ Madison County Airport
Jurisdiction	Madison
East/West Street	US 40
North/South Street	Madison County Airport
Peak Hour Factor	0.84
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	0	2	0		0	1	0		0	0	0
Configuration			T	TR		LT	T				LR					
Volume (veh/h)			280	10		10	520			10		10				
Percent Heavy Vehicles (%)						0				0		0				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized																
Median Type | Storage						Undivided										

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.5		6.9				
Critical Headway (sec)						4.10				6.80		6.90				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.20				3.50		3.30				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						12					24					
Capacity, c (veh/h)						1225					532					
v/c Ratio						0.01					0.04					
95% Queue Length, Q_{95} (veh)						0.0					0.1					
Control Delay (s/veh)						8.0					12.1					
Level of Service (LOS)						A					B					
Approach Delay (s/veh)						0.2				12.1						
Approach LOS										B						

HCS7 Two-Way Stop-Control Report

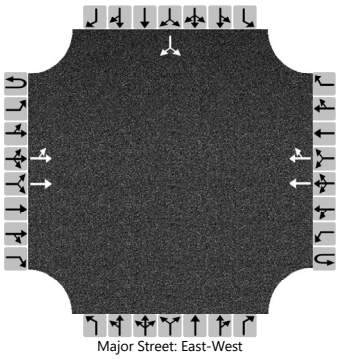
General Information

Analyst	SR
Agency/Co.	HDR
Date Performed	11/25/2024
Analysis Year	2024
Time Analyzed	AM
Intersection Orientation	East-West
Project Description	Madison Ohio 40

Site Information

Intersection	US 40 @ Gwynne Road
Jurisdiction	Madison
East/West Street	US 40
North/South Street	Gwynne Road
Peak Hour Factor	0.84
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	0	2	0		0	0	0		0	1	0
Configuration		LT	T				T	TR							LR	
Volume (veh/h)		10	300				180	30						110		10
Percent Heavy Vehicles (%)		0												3		0
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized																
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.5		6.9
Critical Headway (sec)		4.10												6.86		6.90
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.20												3.53		3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		12													143	
Capacity, c (veh/h)		1327													560	
v/c Ratio		0.01													0.26	
95% Queue Length, Q_{95} (veh)		0.0													1.0	
Control Delay (s/veh)		7.7													13.6	
Level of Service (LOS)		A													B	
Approach Delay (s/veh)		0.3												13.6		
Approach LOS														B		

HCS7 Two-Way Stop-Control Report

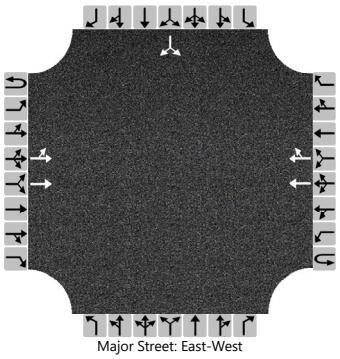
General Information

Analyst	SR
Agency/Co.	HDR
Date Performed	11/25/2024
Analysis Year	2024
Time Analyzed	PM
Intersection Orientation	East-West
Project Description	Madison Ohio 40

Site Information

Intersection	US 40 @ Gwynne Road
Jurisdiction	Madison
East/West Street	US 40
North/South Street	Gwynne Road
Peak Hour Factor	0.87
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	0	2	0		0	0	0		0	1	0
Configuration		LT	T				T	TR							LR	
Volume (veh/h)		10	230				390	110						40		10
Percent Heavy Vehicles (%)		0												3		0
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized																
Median Type | Storage																

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.5		6.9
Critical Headway (sec)		4.10												6.86		6.90
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.20												3.53		3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		11													57	
Capacity, c (veh/h)		1008													424	
v/c Ratio		0.01													0.14	
95% Queue Length, Q_{95} (veh)		0.0													0.5	
Control Delay (s/veh)		8.6													14.8	
Level of Service (LOS)		A													B	
Approach Delay (s/veh)		0.4												14.8		
Approach LOS														B		

HCS7 Two-Way Stop-Control Report

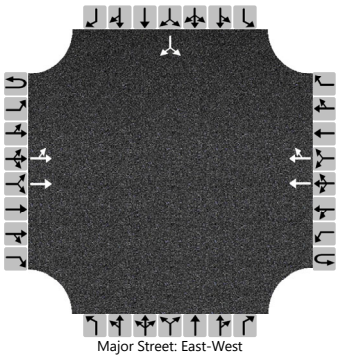
General Information

Analyst	SR
Agency/Co.	HDR
Date Performed	11/25/2024
Analysis Year	2024
Time Analyzed	AM
Intersection Orientation	East-West
Project Description	Madison Ohio 40

Site Information

Intersection	US 40 @ Old US 40
Jurisdiction	Madison
East/West Street	US 40
North/South Street	Old US 40
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	0	2	0		0	0	0		0	1	0
Configuration		LT	T				T	TR							LR	
Volume (veh/h)		10	300				180	10						10		10
Percent Heavy Vehicles (%)		0												20		0
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized																
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.5		6.9
Critical Headway (sec)		4.10												7.20		6.90
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.20												3.70		3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		11													22	
Capacity, c (veh/h)		1377													685	
v/c Ratio		0.01													0.03	
95% Queue Length, Q_{95} (veh)		0.0													0.1	
Control Delay (s/veh)		7.6													10.4	
Level of Service (LOS)		A													B	
Approach Delay (s/veh)		0.3												10.4		
Approach LOS														B		

HCS7 Two-Way Stop-Control Report

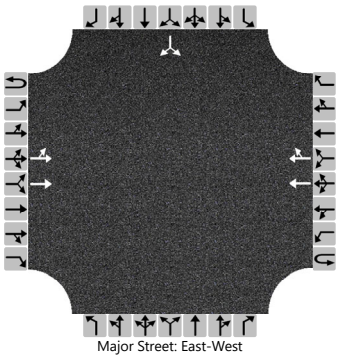
General Information

Analyst	SR
Agency/Co.	HDR
Date Performed	11/25/2024
Analysis Year	2024
Time Analyzed	PM
Intersection Orientation	East-West
Project Description	Madison Ohio 40

Site Information

Intersection	US 40 @ Old US 40
Jurisdiction	Madison
East/West Street	US 40
North/South Street	Old US 40
Peak Hour Factor	0.84
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	0	2	0		0	0	0		0	1	0
Configuration		LT	T				T	TR							LR	
Volume (veh/h)		10	230				390	10						10		10
Percent Heavy Vehicles (%)		0												0		0
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized																
Median Type | Storage																

Critical and Follow-up Headways

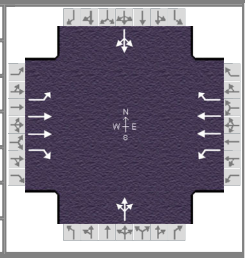
Base Critical Headway (sec)		4.1												7.5		6.9
Critical Headway (sec)		4.10												6.80		6.90
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.20												3.50		3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		12													24	
Capacity, c (veh/h)		1097													537	
v/c Ratio		0.01													0.04	
95% Queue Length, Q_{95} (veh)		0.0													0.1	
Control Delay (s/veh)		8.3													12.0	
Level of Service (LOS)		A													B	
Approach Delay (s/veh)		0.4												12.0		
Approach LOS														B		

HCS7 Signalized Intersection Input Data

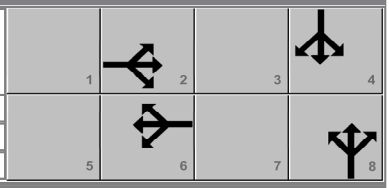
General Information				Intersection Information	
Agency	HDR			Duration, h	0.250
Analyst	SR	Analysis Date	11/25/2024	Area Type	Other
Jurisdiction	Madison	Time Period	AM	PHF	0.89
Urban Street	Madison Ohio 40	Analysis Year	2024	Analysis Period	1> 7:00
Intersection	US 40 @ OH 56 Urbana…	File Name	MO 40 Intersection 13 (Urbana-London) AM DHV…		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	50	200	130	60	60	60	90	120	20	100	390	10

Signal Information			
Cycle, s	31.8	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	6.7	13.1	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	2.0	2.0	0.0	0.0	0.0	0.0	



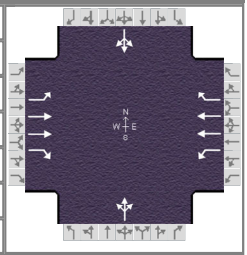
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	50	200	130	60	60	60	90	120	20	100	390	10
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	3	1	3	0	2	2		3			1	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0	12.0	12.0	12.0	12.0		12.0			12.0	
Turn Bay Length, ft	0	0	0	0	0	0		0			0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	60	60	60	60	60	60	60	60	60	60	60	60

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		30.0		30.0		30.0		30.0
Yellow Change Interval (*Y*), s		4.0		4.0		4.0		4.0
Red Clearance Interval (R_c), s		2.0		2.0		2.0		2.0
Minimum Green (G_{min}), s		6		6		6		6
Start-Up Lost Time (*l1*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s		2.0		2.0		2.0		2.0
Recall Mode		Min		Min		Off		Off
Dual Entry		Yes		Yes		Yes		Yes
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS7 Signalized Intersection Results Summary

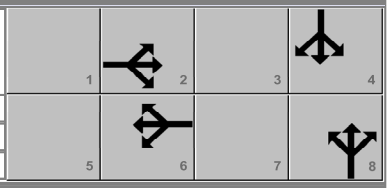
General Information				Intersection Information	
Agency	HDR			Duration, h	0.250
Analyst	SR	Analysis Date	11/25/2024	Area Type	Other
Jurisdiction	Madison	Time Period	AM	PHF	0.89
Urban Street	Madison Ohio 40	Analysis Year	2024	Analysis Period	1> 7:00
Intersection	US 40 @ OH 56 Urbana…	File Name	MO 40 Intersection 13 (Urbana-London) AM DHV…		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	50	200	130	60	60	60	90	120	20	100	390	10

Signal Information			
Cycle, s	31.8	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	6.7	13.1	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	2.0	2.0	0.0	0.0	0.0	0.0	



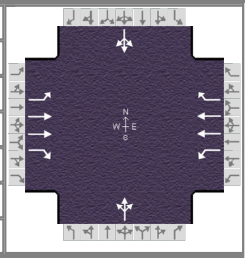
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		5.0		5.0		8.0		8.0
Phase Duration, s		12.7		12.7		19.1		19.1
Change Period, ($Y+R_c$), s		6.0		6.0		6.0		6.0
Max Allow Headway (*MAH*), s		3.0		3.0		3.0		3.0
Queue Clearance Time (g_s), s		4.8		5.5		5.5		11.7
Green Extension Time (g_e), s		1.2		1.2		1.5		1.5
Phase Call Probability		1.00		1.00		1.00		1.00
Max Out Probability		0.00		0.00		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	56	225	146	67	67	67		258			562	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1323	1653	1448	1174	1640	1460		1375			1637	
Queue Service Time (g_s), s	1.1	1.8	2.8	1.6	0.5	1.2		0.0			6.1	
Cycle Queue Clearance Time (g_c), s	1.7	1.8	2.8	3.5	0.5	1.2		3.5			9.7	
Green Ratio (*g/C*)	0.21	0.21	0.21	0.21	0.21	0.21		0.41			0.41	
Capacity (*c*), veh/h	481	695	305	404	690	307		725			811	
Volume-to-Capacity Ratio (*X*)	0.117	0.323	0.480	0.167	0.098	0.220		0.357			0.693	
Back of Queue (*Q*), ft/ln (95 th percentile)	8	15.4	22.3	10.8	4.4	9.3		14.3			39.5	
Back of Queue (*Q*), veh/ln (95 th percentile)	0.3	0.6	0.9	0.4	0.2	0.4		0.6			1.6	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00		0.00			0.00	
Uniform Delay (d_1), s/veh	10.8	10.6	11.0	12.1	10.1	10.4		6.5			8.3	
Incremental Delay (d_2), s/veh	0.0	0.1	0.4	0.1	0.0	0.1		0.1			0.4	
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0		0.0			0.0	
Control Delay (*d*), s/veh	10.9	10.7	11.5	12.2	10.1	10.5		6.6			8.7	
Level of Service (LOS)	B	B	B	B	B	B		A			A	
Approach Delay, s/veh / LOS	11.0	B		11.0	B		6.6	A		8.7	A	
Intersection Delay, s/veh / LOS	9.3						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.66	B	1.66	B	2.38	B	2.38	B
Bicycle LOS Score / LOS	0.84	A	0.65	A	0.91	A	1.41	A

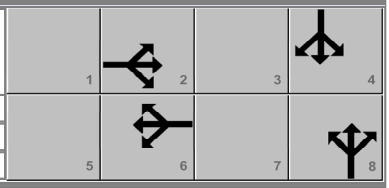
HCS7 Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	HDR			Duration, h	0.250
Analyst	SR	Analysis Date	11/25/2024	Area Type	Other
Jurisdiction	Madison	Time Period	AM	PHF	0.89
Urban Street	Madison Ohio 40	Analysis Year	2024	Analysis Period	1> 7:00
Intersection	US 40 @ OH 56 Urbana…	File Name	MO 40 Intersection 13 (Urbana-London) AM DHV…		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	50	200	130	60	60	60	90	120	20	100	390	10

Signal Information												
Cycle, s	31.8	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	Yes	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
				Green	6.7	13.1	0.0	0.0	0.0	0.0		
				Yellow	4.0	4.0	0.0	0.0	0.0	0.0		
				Red	2.0	2.0	0.0	0.0	0.0	0.0		



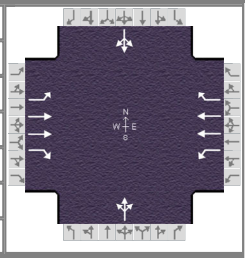
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	0.977	0.992	0.977	1.000	0.984	0.984	0.992	0.977	1.000	1.000	0.992	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	0.952	1.000	1.000	0.952	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.756	0.000		0.671	0.000		0.811	0.805		0.946	0.943	
Right-Turn Adjustment Factor (f_{RT})		0.000	0.847		0.000	0.847		0.000	0.805		0.000	0.943
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Movement Saturation Flow Rate (s), veh/h	1323	3306	1448	1174	3280	1460	538	718	120	327	1277	33
Proportion of Vehicles Arriving on Green (P)	0.21	0.21	0.21	0.21	0.21	0.21	0.41	0.41	0.41	0.41	0.41	0.41
Incremental Delay Factor (k)	0.04	0.04	0.04	0.04	0.04	0.04		0.04			0.04	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		6.0		6.0		6.0		6.0
Green Ratio (g/C)		0.21		0.21		0.41		0.41
Permitted Saturation Flow Rate (s_p), veh/h/ln		1323		1174		956		1249
Shared Saturation Flow Rate (s_{sh}), veh/h/ln						1290		1607
Permitted Effective Green Time (g_p), s		6.7		6.7		13.1		13.1
Permitted Service Time (g_u), s		6.1		4.8		3.5		9.6
Permitted Queue Service Time (g_{ps}), s		1.1		1.6		0.0		6.1
Time to First Blockage (g_f), s		0.0		0.0		3.0		3.6
Queue Service Time Before Blockage (g_{fs}), s						2.9		3.6
Protected Right Saturation Flow (s_R), veh/h/ln		0		0				
Protected Right Effective Green Time (g_R), s		0.0		0.0				

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	0.972	0.000	0.972	0.000	1.710	0.000	1.710	0.000
Pedestrian F_s / F_{delay}	0.000	0.092	0.000	0.092	0.000	0.068	0.000	0.068
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	420.85	9.92	420.85	9.92	825.07	5.49	825.07	5.49
Bicycle F_w / F_v	-3.64	0.35	-3.64	0.17	-3.64	0.43	-3.64	0.93

HCS7 Signalized Intersection Results Graphical Summary

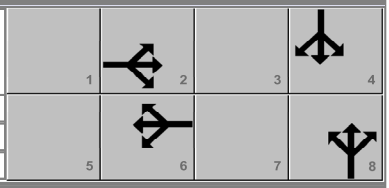
General Information				Intersection Information	
Agency	HDR			Duration, h	0.250
Analyst	SR	Analysis Date	11/25/2024	Area Type	Other
Jurisdiction	Madison	Time Period	AM	PHF	0.89
Urban Street	Madison Ohio 40	Analysis Year	2024	Analysis Period	1> 7:00
Intersection	US 40 @ OH 56 Urbana…	File Name	MO 40 Intersection 13 (Urbana-London) AM DHV…		
Project Description					



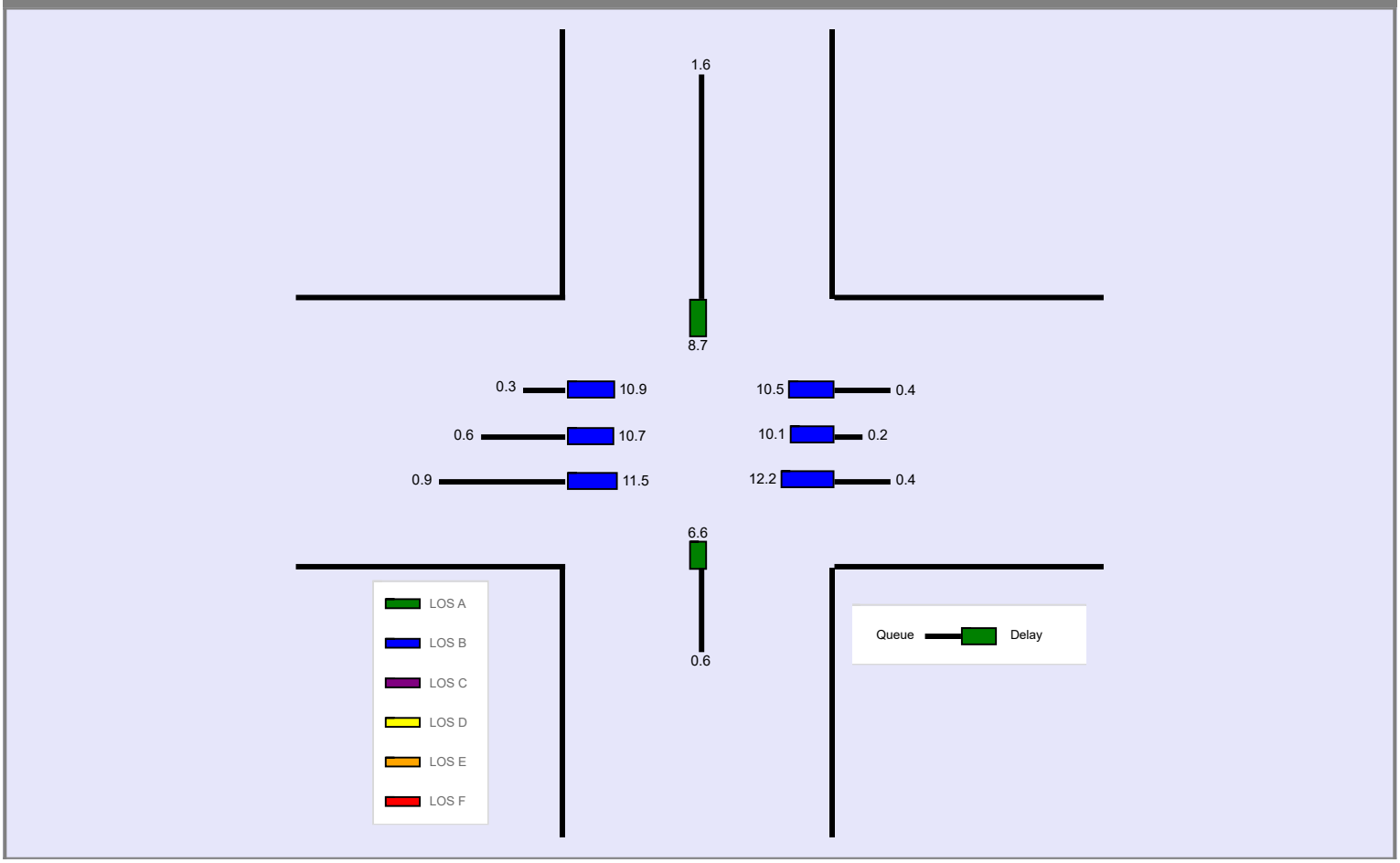
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	50	200	130	60	60	60	90	120	20	100	390	10

Signal Information			
Cycle, s	31.8	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	6.7	13.1	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	2.0	2.0	0.0	0.0	0.0	0.0	



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	8	15.4	22.3	10.8	4.4	9.3		14.3			39.5	
Back of Queue (*Q*), veh/ln (95 th percentile)	0.3	0.6	0.9	0.4	0.2	0.4		0.6			1.6	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00		0.00			0.00	
Control Delay (*d*), s/veh	10.9	10.7	11.5	12.2	10.1	10.5		6.6			8.7	
Level of Service (LOS)	B	B	B	B	B	B		A			A	
Approach Delay, s/veh / LOS	11.0		B	11.0		B	6.6		A	8.7		A
Intersection Delay, s/veh / LOS	9.3						A					



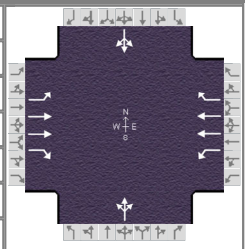
--- Messages ---

No errors or warnings exist.

--- Comments ---

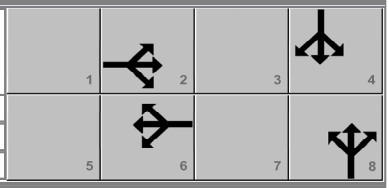
HCS7 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	HDR			Duration, h	0.250
Analyst	SR	Analysis Date	11/25/2024	Area Type	Other
Jurisdiction	Madison	Time Period	PM	PHF	0.92
Urban Street	Madison Ohio 40	Analysis Year	2024	Analysis Period	1> 7:00
Intersection	US 40 @ OH 56 Urbana…	File Name	MO 40 Intersection 13 (Urbana-London) PM DHV…		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	30	130	60	30	250	110	160	440	60	50	160	30

Signal Information												
Cycle, s	40.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	Yes	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
				Green	7.3	22.6	0.0	0.0	0.0	0.0		
				Yellow	4.0	4.0	0.0	0.0	0.0	0.0		
				Red	2.0	0.0	0.0	0.0	0.0	0.0		



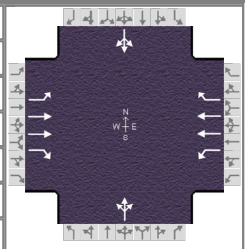
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	30	130	60	30	250	110	160	440	60	50	160	30
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	6	2	0	9	1	0		4			5	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0	12.0	12.0	12.0	12.0		12.0			12.0	
Turn Bay Length, ft	0	0	0	0	0	0		0			0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	60	60	60	60	60	60	60	60	60	60	60	60

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		30.0		30.0		30.0		30.0
Yellow Change Interval (*Y*), s		4.0		4.0		4.0		4.0
Red Clearance Interval (R_c), s		2.0		2.0		2.0		0.0
Minimum Green (G_{min}), s		6		6		6		6
Start-Up Lost Time (*l*t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s		2.0		2.0		2.0		2.0
Recall Mode		Min		Off		Off		Off
Dual Entry		Yes		Yes		Yes		Yes
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS7 Signalized Intersection Results Summary

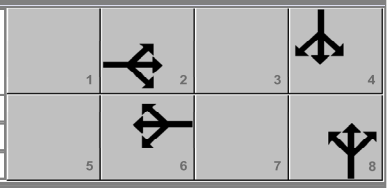
General Information				Intersection Information	
Agency	HDR			Duration, h	0.250
Analyst	SR	Analysis Date	11/25/2024	Area Type	Other
Jurisdiction	Madison	Time Period	PM	PHF	0.92
Urban Street	Madison Ohio 40	Analysis Year	2024	Analysis Period	1> 7:00
Intersection	US 40 @ OH 56 Urbana…	File Name	MO 40 Intersection 13 (Urbana-London) PM DHV…		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	30	130	60	30	250	110	160	440	60	50	160	30

Signal Information			
Cycle, s	40.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	7.3	22.6	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	2.0	0.0	0.0	0.0	0.0	0.0	



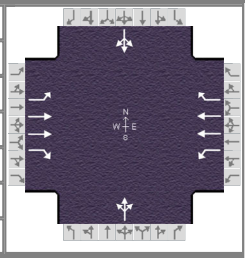
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		5.0		5.0		8.0		8.0
Phase Duration, s		13.3		13.3		26.6		26.6
Change Period, ($Y+R_c$), s		6.0		6.0		6.0		6.0
Max Allow Headway (*MAH*), s		3.0		3.0		3.0		3.0
Queue Clearance Time (g_s), s		6.1		4.9		18.9		5.6
Green Extension Time (g_e), s		1.3		1.3		1.7		2.0
Phase Call Probability		1.00		1.00		1.00		1.00
Max Out Probability		0.00		0.00		0.06		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	33	141	65	33	272	120		717			261	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1072	1640	1483	1178	1653	1483		1531			1448	
Queue Service Time (g_s), s	1.1	1.5	1.5	1.0	2.9	2.9		13.3			0.0	
Cycle Queue Clearance Time (g_c), s	4.1	1.5	1.5	2.5	2.9	2.9		16.9			3.6	
Green Ratio (*g/C*)	0.18	0.18	0.18	0.18	0.18	0.18		0.52			0.52	
Capacity (*c*), veh/h	298	603	273	353	608	273		901			855	
Volume-to-Capacity Ratio (*X*)	0.109	0.234	0.239	0.092	0.447	0.438		0.796			0.305	
Back of Queue (*Q*), ft/ln (90 th percentile)	9.2	16.5	15.4	8.7	33.1	29.7		85.6			17.1	
Back of Queue (*Q*), veh/ln (90 th percentile)	0.3	0.7	0.6	0.3	1.3	1.2		3.3			0.7	
Queue Storage Ratio (*RQ*) (90 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00		0.00			0.00	
Uniform Delay (d_1), s/veh	16.3	13.9	13.9	15.0	14.5	14.5		8.6			5.6	
Incremental Delay (d_2), s/veh	0.1	0.1	0.2	0.0	0.2	0.4		1.6			0.1	
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0		0.0			0.0	
Control Delay (*d*), s/veh	16.4	14.0	14.1	15.0	14.7	14.9		10.3			5.6	
Level of Service (LOS)	B	B	B	B	B	B		B			A	
Approach Delay, s/veh / LOS	14.3	B		14.8	B		10.3	B		5.6	A	
Intersection Delay, s/veh / LOS	11.3						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.68	B	1.68	B	2.37	B	2.36	B
Bicycle LOS Score / LOS	0.68	A	0.84	A	1.67	B	0.92	A

HCS7 Signalized Intersection Intermediate Values

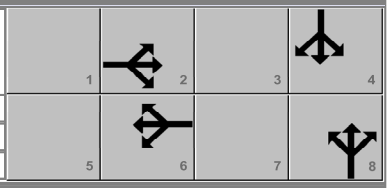
General Information				Intersection Information	
Agency	HDR			Duration, h	0.250
Analyst	SR	Analysis Date	11/25/2024	Area Type	Other
Jurisdiction	Madison	Time Period	PM	PHF	0.92
Urban Street	Madison Ohio 40	Analysis Year	2024	Analysis Period	1> 7:00
Intersection	US 40 @ OH 56 Urbana…	File Name	MO 40 Intersection 13 (Urbana-London) PM DHV…		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	30	130	60	30	250	110	160	440	60	50	160	30

Signal Information			
Cycle, s	40.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	7.3	22.6	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	2.0	0.0	0.0	0.0	0.0	0.0	



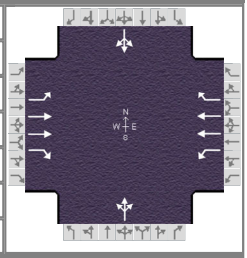
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	0.953	0.984	1.000	0.930	0.992	1.000	0.992	0.969	1.000	1.000	0.961	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	0.952	1.000	1.000	0.952	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.613	0.000		0.673	0.000		0.916	0.903		0.871	0.861	
Right-Turn Adjustment Factor (f_{RT})		0.000	0.847		0.000	0.847		0.000	0.903		0.000	0.861
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Movement Saturation Flow Rate (s), veh/h	1072	3280	1483	1178	3306	1483	371	1020	139	302	965	181
Proportion of Vehicles Arriving on Green (P)	0.18	0.18	0.18	0.18	0.18	0.18	0.52	0.52	0.52	0.52	0.52	0.52
Incremental Delay Factor (k)	0.04	0.04	0.04	0.04	0.04	0.04		0.11			0.04	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		6.0		6.0		6.0		6.0
Green Ratio (g/C)		0.18		0.18		0.52		0.52
Permitted Saturation Flow Rate (s_p), veh/h/ln		1072		1178		1194		876
Shared Saturation Flow Rate (s_{sh}), veh/h/ln						1523		1341
Permitted Effective Green Time (g_p), s		7.4		7.4		20.6		20.6
Permitted Service Time (g_u), s		4.4		5.9		16.9		3.7
Permitted Queue Service Time (g_{ps}), s		1.1		1.0		13.3		0.0
Time to First Blockage (g_f), s		0.0		0.0		3.6		6.9
Queue Service Time Before Blockage (g_{fs}), s						3.6		2.9
Protected Right Saturation Flow (s_R), veh/h/ln		0		0				
Protected Right Effective Green Time (g_R), s		0.0		0.0				

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	0.972	0.000	0.972	0.000	1.710	0.000	1.710	0.000
Pedestrian F_s / F_{delay}	0.000	0.104	0.000	0.104	0.000	0.062	0.000	0.053
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	367.36	13.32	367.36	13.32	1032.36	4.68	1132.40	3.76
Bicycle F_w / F_v	-3.64	0.20	-3.64	0.35	-3.64	1.18	-3.64	0.43

HCS7 Signalized Intersection Results Graphical Summary

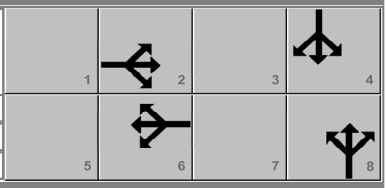
General Information				Intersection Information	
Agency	HDR			Duration, h	0.250
Analyst	SR	Analysis Date	11/25/2024	Area Type	Other
Jurisdiction	Madison	Time Period	PM	PHF	0.92
Urban Street	Madison Ohio 40	Analysis Year	2024	Analysis Period	1> 7:00
Intersection	US 40 @ OH 56 Urbana…	File Name	MO 40 Intersection 13 (Urbana-London) PM DHV…		
Project Description					



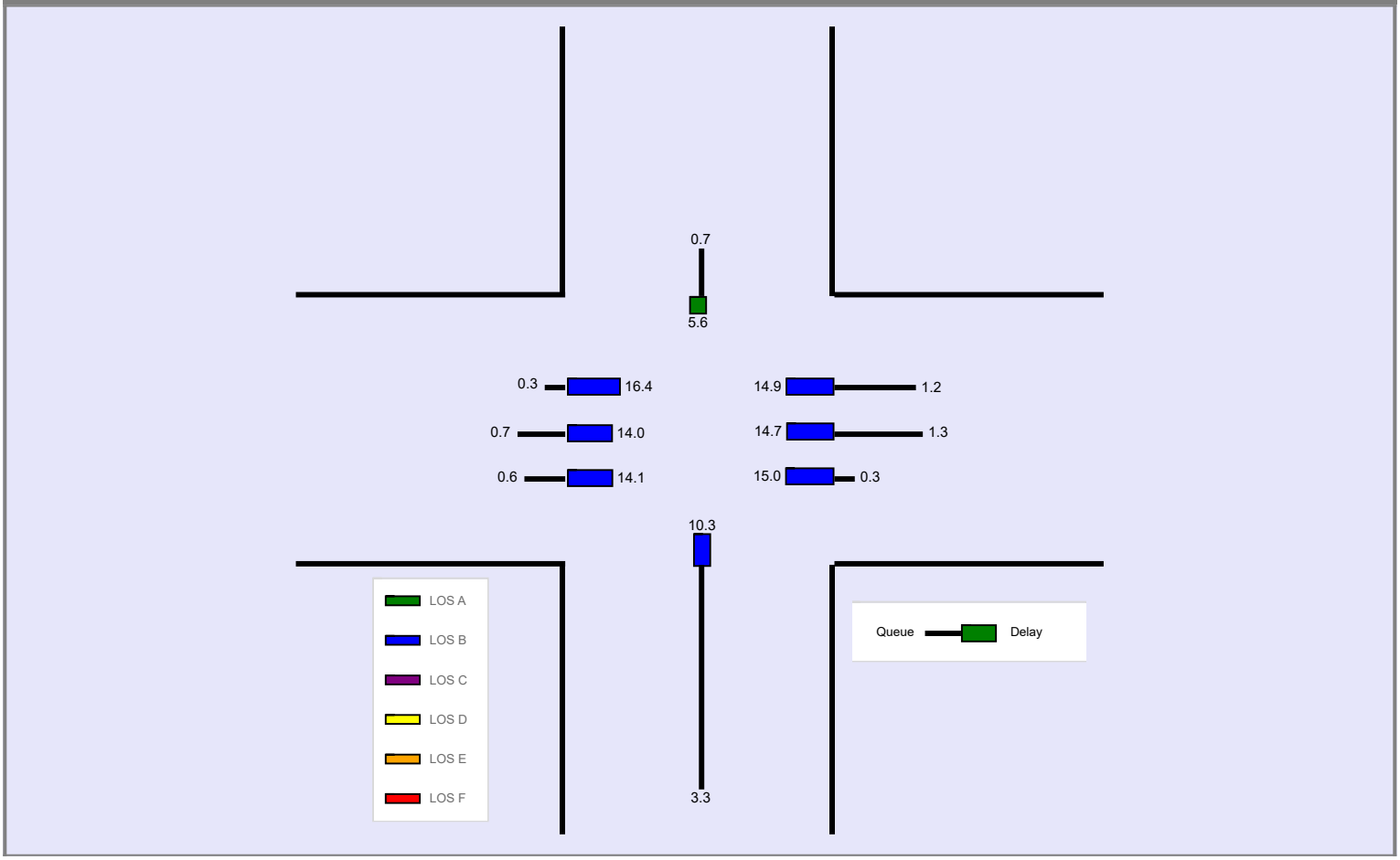
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	30	130	60	30	250	110	160	440	60	50	160	30

Signal Information			
Cycle, s	40.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	7.3	22.6	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	2.0	0.0	0.0	0.0	0.0	0.0	



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (90 th percentile)	9.2	16.5	15.4	8.7	33.1	29.7		85.6			17.1	
Back of Queue (*Q*), veh/ln (90 th percentile)	0.3	0.7	0.6	0.3	1.3	1.2		3.3			0.7	
Queue Storage Ratio (*RQ*) (90 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00		0.00			0.00	
Control Delay (*d*), s/veh	16.4	14.0	14.1	15.0	14.7	14.9		10.3			5.6	
Level of Service (LOS)	B	B	B	B	B	B		B			A	
Approach Delay, s/veh / LOS	14.3		B	14.8		B	10.3		B	5.6		A
Intersection Delay, s/veh / LOS	11.3						B					



--- Messages ---

No errors or warnings exist.

--- Comments ---

HCS7 Two-Way Stop-Control Report

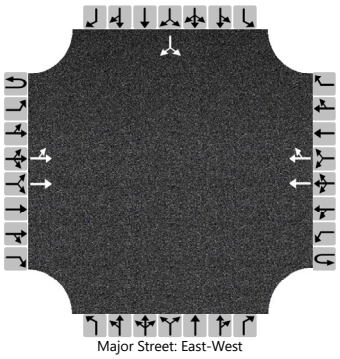
General Information

Analyst	SR
Agency/Co.	HDR
Date Performed	11/25/2024
Analysis Year	2024
Time Analyzed	AM
Intersection Orientation	East-West
Project Description	Madison Ohio 40

Site Information

Intersection	US 40 @ Old US 40
Jurisdiction	Madison
East/West Street	US 40
North/South Street	Old US 40
Peak Hour Factor	0.88
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	0	2	0		0	0	0		0	1	0
Configuration		LT	T				T	TR							LR	
Volume (veh/h)		10	360				160	10						10		10
Percent Heavy Vehicles (%)		0												100		0
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized																
Median Type | Storage																
	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.5		6.9
Critical Headway (sec)		4.10												8.80		6.90
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.20												4.50		3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		11													23	
Capacity, c (veh/h)		1392													530	
v/c Ratio		0.01													0.04	
95% Queue Length, Q_{95} (veh)		0.0													0.1	
Control Delay (s/veh)		7.6													12.1	
Level of Service (LOS)		A													B	
Approach Delay (s/veh)		0.2												12.1		
Approach LOS														B		

HCS7 Two-Way Stop-Control Report

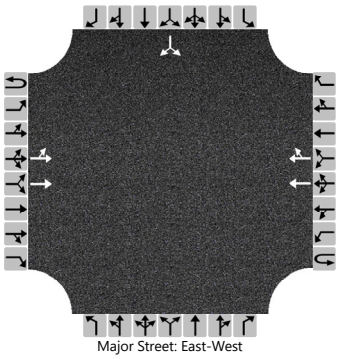
General Information

Analyst	SR
Agency/Co.	HDR
Date Performed	11/25/2024
Analysis Year	2024
Time Analyzed	PM
Intersection Orientation	East-West
Project Description	Madison Ohio 40

Site Information

Intersection	US 40 @ Old US 40
Jurisdiction	Madison
East/West Street	US 40
North/South Street	Old US 40
Peak Hour Factor	0.85
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	0	2	0		0	0	0		0	1	0
Configuration		LT	T				T	TR							LR	
Volume (veh/h)		10	200				440	10						10		10
Percent Heavy Vehicles (%)		0												0		0
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized																
Median Type | Storage																
	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.5		6.9
Critical Headway (sec)		4.10												6.80		6.90
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.20												3.50		3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		12													24	
Capacity, c (veh/h)		1048													513	
v/c Ratio		0.01													0.05	
95% Queue Length, Q_{95} (veh)		0.0													0.1	
Control Delay (s/veh)		8.5													12.4	
Level of Service (LOS)		A													B	
Approach Delay (s/veh)		0.5												12.4		
Approach LOS														B		

HCS7 Two-Way Stop-Control Report

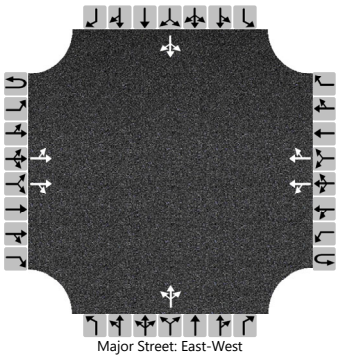
General Information

Analyst	SR
Agency/Co.	HDR
Date Performed	11/25/2024
Analysis Year	2024
Time Analyzed	AM
Intersection Orientation	East-West
Project Description	Madison Ohio 40

Site Information

Intersection	US 40 @ Roberts Mill Road
Jurisdiction	Madison
East/West Street	US 40
North/South Street	Roberts Mill Road
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	0	2	0		0	1	0		0	1	0
Configuration		LT		TR		LT		TR			LTR				LTR	
Volume (veh/h)		10	330	10		10	140	10		10	10	20		10	10	10
Percent Heavy Vehicles (%)		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.5	6.5	6.9		7.5	6.5	6.9
Critical Headway (sec)		4.16				4.16				7.56	6.56	6.96		7.56	6.56	6.96
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.23				2.23				3.53	4.03	3.33		3.53	4.03	3.33

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		11				11					43				33	
Capacity, c (veh/h)		1406				1178					564				557	
v/c Ratio		0.01				0.01					0.08				0.06	
95% Queue Length, Q_{95} (veh)		0.0				0.0					0.2				0.2	
Control Delay (s/veh)		7.6				8.1					11.9				11.9	
Level of Service (LOS)		A				A					B				B	
Approach Delay (s/veh)	0.2				0.5				11.9				11.9			
Approach LOS									B				B			

HCS7 Two-Way Stop-Control Report

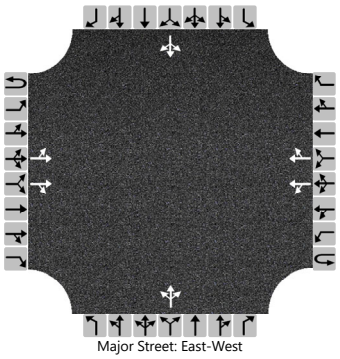
General Information

Analyst	SR
Agency/Co.	HDR
Date Performed	11/25/2024
Analysis Year	2024
Time Analyzed	PM
Intersection Orientation	East-West
Project Description	Madison Ohio 40

Site Information

Intersection	US 40 @ Roberts Mill Road
Jurisdiction	Madison
East/West Street	US 40
North/South Street	Roberts Mill Road
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	0	2	0		0	1	0		0	1	0
Configuration		LT		TR		LT		TR			LTR				LTR	
Volume (veh/h)		10	190	10		20	420	10		10	10	10		10	10	10
Percent Heavy Vehicles (%)		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.5	6.5	6.9		7.5	6.5	6.9
Critical Headway (sec)		4.16				4.16				7.56	6.56	6.96		7.56	6.56	6.96
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.23				2.23				3.53	4.03	3.33		3.53	4.03	3.33

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		11				22					33				33	
Capacity, c (veh/h)		1083				1342					458				410	
v/c Ratio		0.01				0.02					0.07				0.08	
95% Queue Length, Q_{95} (veh)		0.0				0.0					0.2				0.3	
Control Delay (s/veh)		8.4				7.7					13.5				14.5	
Level of Service (LOS)		A				A					B				B	
Approach Delay (s/veh)	0.4				0.4				13.5				14.5			
Approach LOS									B				B			

HCS7 Two-Way Stop-Control Report

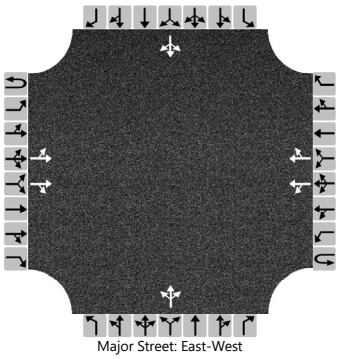
General Information

Analyst	SR
Agency/Co.	HDR
Date Performed	11/25/2024
Analysis Year	2024
Time Analyzed	AM
Intersection Orientation	East-West
Project Description	Madison Ohio 40

Site Information

Intersection	US 40 @ Potee Road/Markley Road
Jurisdiction	Madison
East/West Street	US 40
North/South Street	Potee Road/Markley Road
Peak Hour Factor	0.87
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	0	2	0		0	1	0		0	1	0
Configuration		LT		TR		LT		TR			LTR				LTR	
Volume (veh/h)		10	310	10		10	140	10		10	10	30		10	10	10
Percent Heavy Vehicles (%)		0				0				0	0	0		0	0	0
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.5	6.5	6.9		7.5	6.5	6.9
Critical Headway (sec)		4.10				4.10				7.50	6.50	6.90		7.50	6.50	6.90
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.20				3.50	4.00	3.30		3.50	4.00	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		11				11					57				34	
Capacity, c (veh/h)		1417				1202					606				554	
v/c Ratio		0.01				0.01					0.09				0.06	
95% Queue Length, Q_{95} (veh)		0.0				0.0					0.3				0.2	
Control Delay (s/veh)		7.6				8.0					11.6				11.9	
Level of Service (LOS)		A				A					B				B	
Approach Delay (s/veh)	0.3				0.5				11.6				11.9			
Approach LOS									B				B			

HCS7 Two-Way Stop-Control Report

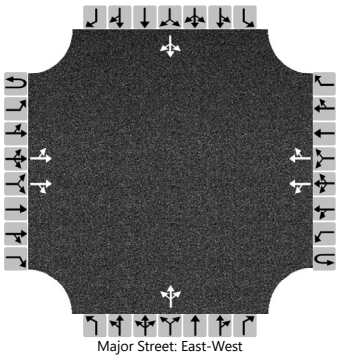
General Information

Analyst	SR
Agency/Co.	HDR
Date Performed	11/25/2024
Analysis Year	2024
Time Analyzed	PM
Intersection Orientation	East-West
Project Description	Madison Ohio 40

Site Information

Intersection	US 40 @ Potee Road/Markley Road
Jurisdiction	Madison
East/West Street	US 40
North/South Street	Potee Road/Markley Road
Peak Hour Factor	0.87
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	0	2	0		0	1	0		0	1	0
Configuration		LT		TR		LT		TR			LTR				LTR	
Volume (veh/h)		10	180	10		20	400	20		10	10	10		10	10	10
Percent Heavy Vehicles (%)		0				0				0	0	0		0	100	0
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.5	6.5	6.9		7.5	6.5	6.9
Critical Headway (sec)		4.10				4.10				7.50	6.50	6.90		7.50	8.50	6.90
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.20				3.50	4.00	3.30		3.50	5.00	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		11				23					34				34	
Capacity, c (veh/h)		1090				1363					453				312	
v/c Ratio		0.01				0.02					0.08				0.11	
95% Queue Length, Q_{95} (veh)		0.0				0.1					0.2				0.4	
Control Delay (s/veh)		8.3				7.7					13.6				18.0	
Level of Service (LOS)		A				A					B				C	
Approach Delay (s/veh)	0.5				0.4				13.6				18.0			
Approach LOS									B				C			

Appendix D - 2
Highway Capacity Analysis
Future Conditions

HCS7 Two-Way Stop-Control Report

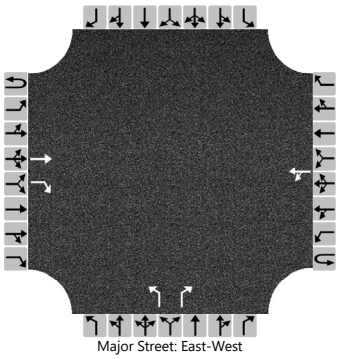
General Information

Analyst	SR
Agency/Co.	HDR
Date Performed	11/25/2024
Analysis Year	2050
Time Analyzed	AM w/ warranted turn ln
Intersection Orientation	East-West
Project Description	Madison Ohio 40

Site Information

Intersection	US 40 @ US 42 NB Ramp
Jurisdiction	Madison
East/West Street	US 40
North/South Street	US 42
Peak Hour Factor	0.95
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	0	1	0		1	0	1		0	0	0
Configuration			T	R		LT				L		R				
Volume (veh/h)			340	80		30	130			20		110				
Percent Heavy Vehicles (%)						11				0		5				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized			No							No						
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.21				6.40		6.25				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.30				3.50		3.34				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						32				21		116				
Capacity, c (veh/h)						1072				478		680				
v/c Ratio						0.03				0.04		0.17				
95% Queue Length, Q_{95} (veh)						0.1				0.1		0.6				
Control Delay (s/veh)						8.5				12.9		11.4				
Level of Service (LOS)						A				B		B				
Approach Delay (s/veh)						1.8				11.6						
Approach LOS										B						

HCS7 Two-Way Stop-Control Report

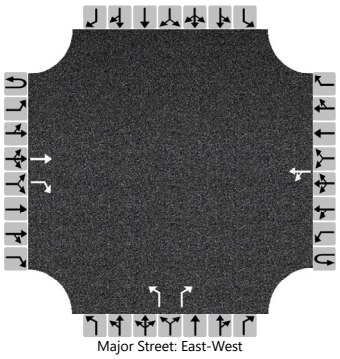
General Information

Analyst	SR
Agency/Co.	HDR
Date Performed	11/25/2024
Analysis Year	2050
Time Analyzed	PM-w/ warranted turn lane
Intersection Orientation	East-West
Project Description	Madison Ohio 40

Site Information

Intersection	US 40 @ US 42 NB Ramp
Jurisdiction	Madison
East/West Street	US 40
North/South Street	US 42
Peak Hour Factor	0.86
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	0	1	0		1	0	1		0	0	0
Configuration			T	R		LT				L		R				
Volume (veh/h)			280	60		40	400			20		110				
Percent Heavy Vehicles (%)						4				0		2				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized			No							No						
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.14				6.40		6.22				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.24				3.50		3.32				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						47				23		128				
Capacity, c (veh/h)						1152				301		716				
v/c Ratio						0.04				0.08		0.18				
95% Queue Length, Q_{95} (veh)						0.1				0.2		0.6				
Control Delay (s/veh)						8.3				18.0		11.1				
Level of Service (LOS)						A				C		B				
Approach Delay (s/veh)						1.2				12.2						
Approach LOS										B						

HCS7 Two-Way Stop-Control Report

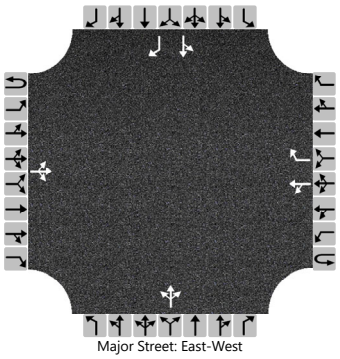
General Information

Analyst	SR
Agency/Co.	HDR
Date Performed	11/25/2024
Analysis Year	2050
Time Analyzed	AM-w/ warranted turn lane
Intersection Orientation	East-West
Project Description	Madison Ohio 40

Site Information

Intersection	US 40 @ US 42 SB Ramp
Jurisdiction	Madison
East/West Street	US 40
North/South Street	US 42
Peak Hour Factor	0.93
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	1		0	1	0		0	1	1
Configuration			LTR			LT		R			LTR			LT		R
Volume (veh/h)		10	390	20		20	110	20		20	10	10		20	10	70
Percent Heavy Vehicles (%)		0				0				0	0	0		0	0	0
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized						No								No		
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.10				4.10				7.10	6.50	6.20		7.10	6.50	6.20
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.20				3.50	4.00	3.30		3.50	4.00	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		11				22					43			32		75
Capacity, c (veh/h)		1456				1130					391			382		939
v/c Ratio		0.01				0.02					0.11			0.08		0.08
95% Queue Length, Q_{95} (veh)		0.0				0.1					0.4			0.3		0.3
Control Delay (s/veh)		7.5				8.2					15.3			15.3		9.2
Level of Service (LOS)		A				A					C			C		A
Approach Delay (s/veh)	0.3				1.2				15.3				11.0			
Approach LOS									C				B			

HCS7 Two-Way Stop-Control Report

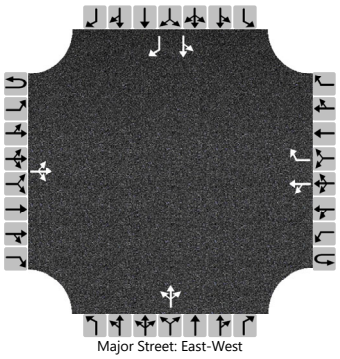
General Information

Analyst	SR
Agency/Co.	HDR
Date Performed	11/25/2024
Analysis Year	2050
Time Analyzed	PM-w/warranted turn lane
Intersection Orientation	East-West
Project Description	Madison Ohio 40

Site Information

Intersection	US 40 @ US 42 SB Ramp
Jurisdiction	Madison
East/West Street	US 40
North/South Street	US 42
Peak Hour Factor	0.86
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	1		0	1	0		0	1	1
Configuration			LTR			LT		R			LTR			LT		R
Volume (veh/h)		20	290	20		20	290	110		20	20	20		30	20	80
Percent Heavy Vehicles (%)		0				0				0	0	20		18	0	2
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized						No								No		
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.10				4.10				7.10	6.50	6.40		7.28	6.50	6.22
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.20				3.50	4.00	3.48		3.66	4.00	3.32

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		23				23					70			58		93
Capacity, c (veh/h)		1107				1209					295			268		705
v/c Ratio		0.02				0.02					0.24			0.22		0.13
95% Queue Length, Q_{95} (veh)		0.1				0.1					0.9			0.8		0.5
Control Delay (s/veh)		8.3				8.0					21.0			22.2		10.9
Level of Service (LOS)		A				A					C			C		B
Approach Delay (s/veh)		0.7				0.5				21.0				15.2		
Approach LOS										C				C		

HCS7 Two-Way Stop-Control Report

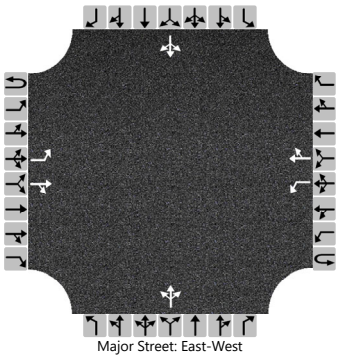
General Information

Analyst	SR
Agency/Co.	HDR
Date Performed	11/25/2024
Analysis Year	2050
Time Analyzed	AM
Intersection Orientation	East-West
Project Description	Madison Ohio 40

Site Information

Intersection	US 40 @ Middle Street
Jurisdiction	Madison
East/West Street	US 40
North/South Street	Middle Street
Peak Hour Factor	0.91
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	1	1	0		0	1	0		0	1	0
Configuration		L		TR		L		TR			LTR				LTR	
Volume (veh/h)		40	390	10		10	210	20		20	10	10		20	10	60
Percent Heavy Vehicles (%)		0				0				0	0	0		0	0	0
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.10				4.10				7.10	6.50	6.20		7.10	6.50	6.20
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.20				3.50	4.00	3.30		3.50	4.00	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		44				11					44				99	
Capacity, c (veh/h)		1324				1131					315				507	
v/c Ratio		0.03				0.01					0.14				0.20	
95% Queue Length, Q_{95} (veh)		0.1				0.0					0.5				0.7	
Control Delay (s/veh)		7.8				8.2					18.3				13.8	
Level of Service (LOS)		A				A					C				B	
Approach Delay (s/veh)	0.7				0.3				18.3				13.8			
Approach LOS									C				B			

HCS7 Two-Way Stop-Control Report

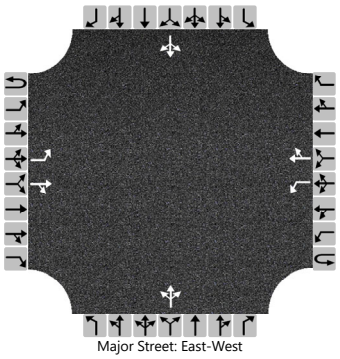
General Information

Analyst	SR
Agency/Co.	HDR
Date Performed	11/25/2024
Analysis Year	2050
Time Analyzed	PM
Intersection Orientation	East-West
Project Description	Madison Ohio 40

Site Information

Intersection	US 40 @ Middle Street
Jurisdiction	Madison
East/West Street	US 40
North/South Street	Middle Street
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	1	1	0		0	1	0		0	1	0
Configuration		L		TR		L		TR			LTR				LTR	
Volume (veh/h)		100	300	10		10	380	20		10	20	10		20	10	60
Percent Heavy Vehicles (%)		0				0				0	0	0		0	0	0
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.10				4.10				7.10	6.50	6.20		7.10	6.50	6.20
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.20				3.50	4.00	3.30		3.50	4.00	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		111				11					44				100	
Capacity, c (veh/h)		1126				1226					234				352	
v/c Ratio		0.10				0.01					0.19				0.28	
95% Queue Length, Q_{95} (veh)		0.3				0.0					0.7				1.2	
Control Delay (s/veh)		8.5				8.0					23.9				19.3	
Level of Service (LOS)		A				A					C				C	
Approach Delay (s/veh)	2.1				0.2				23.9				19.3			
Approach LOS									C				C			

HCS7 Two-Way Stop-Control Report

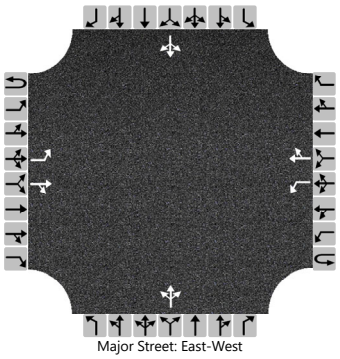
General Information

Analyst	SR
Agency/Co.	HDR
Date Performed	11/25/2024
Analysis Year	2050
Time Analyzed	AM
Intersection Orientation	East-West
Project Description	Madison Ohio 40

Site Information

Intersection	US 40 @ West Street
Jurisdiction	Madison
East/West Street	US 40
North/South Street	West Street
Peak Hour Factor	0.91
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	1	1	0		0	1	0		0	1	0
Configuration		L		TR		L		TR			LTR				LTR	
Volume (veh/h)		10	380	30		60	220	10		30	20	30		20	10	10
Percent Heavy Vehicles (%)		0				0				6	0	0		0	0	0
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage																
	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.10				4.10				7.16	6.50	6.20		7.10	6.50	6.20
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.20				3.55	4.00	3.30		3.50	4.00	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		11				66					88				44	
Capacity, c (veh/h)		1324				1121					337				299	
v/c Ratio		0.01				0.06					0.26				0.15	
95% Queue Length, Q_{95} (veh)		0.0				0.2					1.0				0.5	
Control Delay (s/veh)		7.7				8.4					19.4				19.1	
Level of Service (LOS)		A				A					C				C	
Approach Delay (s/veh)	0.2				1.7				19.4				19.1			
Approach LOS									C				C			

HCS7 Two-Way Stop-Control Report

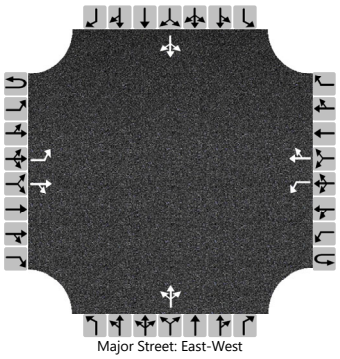
General Information

Analyst	SR
Agency/Co.	HDR
Date Performed	11/25/2024
Analysis Year	2050
Time Analyzed	PM
Intersection Orientation	East-West
Project Description	Madison Ohio 40

Site Information

Intersection	US 40 @ West Street
Jurisdiction	Madison
East/West Street	US 40
North/South Street	West Street
Peak Hour Factor	0.83
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	1	1	0		0	1	0		0	1	0
Configuration		L		TR		L		TR			LTR				LTR	
Volume (veh/h)		10	270	30		100	330	20		120	20	110		20	10	10
Percent Heavy Vehicles (%)		0				0				1	0	2		0	0	0
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.10				4.10				7.11	6.50	6.22		7.10	6.50	6.20
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.20				3.51	4.00	3.32		3.50	4.00	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		12				120					301				48	
Capacity, c (veh/h)		1148				1208					275				185	
v/c Ratio		0.01				0.10					1.10				0.26	
95% Queue Length, Q_{95} (veh)		0.0				0.3					12.4				1.0	
Control Delay (s/veh)		8.2				8.3					122.6				31.3	
Level of Service (LOS)		A				A					F				D	
Approach Delay (s/veh)	0.3				1.8				122.6				31.3			
Approach LOS									F				D			

HCS7 Two-Way Stop-Control Report

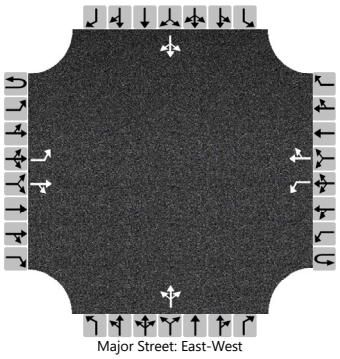
General Information

Analyst	SR
Agency/Co.	HDR
Date Performed	11/25/2024
Analysis Year	2050
Time Analyzed	AM
Intersection Orientation	East-West
Project Description	Madison Ohio 40

Site Information

Intersection	US 40 @ Gay Street/Arbuckle Road
Jurisdiction	Madison
East/West Street	US 40
North/South Street	Gay Street/Arbuckle Road
Peak Hour Factor	0.88
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	1	1	0		0	1	0		0	1	0
Configuration		L		TR		L		TR			LTR				LTR	
Volume (veh/h)		10	380	10		10	240	10		10	10	20		20	20	10
Percent Heavy Vehicles (%)		0				0				0	0	0		0	0	0
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.10				4.10				7.10	6.50	6.20		7.10	6.50	6.20
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.20				3.50	4.00	3.30		3.50	4.00	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		11				11					45				57	
Capacity, c (veh/h)		1290				1128					413				351	
v/c Ratio		0.01				0.01					0.11				0.16	
95% Queue Length, Q_{95} (veh)		0.0				0.0					0.4				0.6	
Control Delay (s/veh)		7.8				8.2					14.8				17.2	
Level of Service (LOS)		A				A					B				C	
Approach Delay (s/veh)	0.2				0.3				14.8				17.2			
Approach LOS									B				C			

HCS7 Two-Way Stop-Control Report

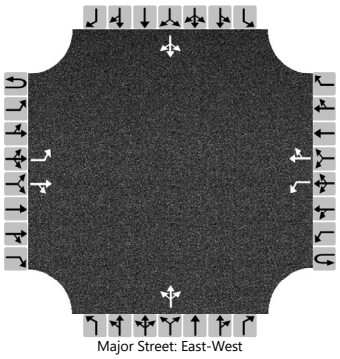
General Information

Analyst	SR
Agency/Co.	HDR
Date Performed	11/25/2024
Analysis Year	2050
Time Analyzed	PM
Intersection Orientation	East-West
Project Description	Madison Ohio 40

Site Information

Intersection	US 40 @ Gay Street/Arbuckle Road
Jurisdiction	Madison
East/West Street	US 40
North/South Street	Gay Street/Arbuckle Road
Peak Hour Factor	0.75
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	1	1	0		0	1	0		0	1	0
Configuration		L		TR		L		TR			LTR				LTR	
Volume (veh/h)		20	270	20		20	440	10		20	10	20		20	10	10
Percent Heavy Vehicles (%)		0				0				0	0	0		14	0	0
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.10				4.10				7.10	6.50	6.20		7.24	6.50	6.20
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.20				3.50	4.00	3.30		3.63	4.00	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		27				27					67				53	
Capacity, c (veh/h)		987				1183					260				207	
v/c Ratio		0.03				0.02					0.26				0.26	
95% Queue Length, Q_{95} (veh)		0.1				0.1					1.0				1.0	
Control Delay (s/veh)		8.7				8.1					23.5				28.3	
Level of Service (LOS)		A				A					C				D	
Approach Delay (s/veh)	0.6				0.3				23.5				28.3			
Approach LOS									C				D			

HCS7 Two-Way Stop-Control Report

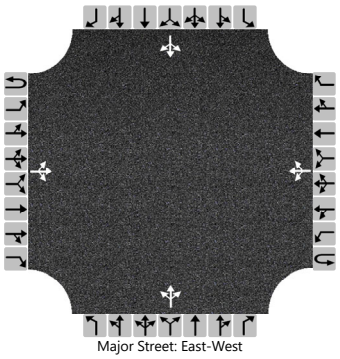
General Information

Analyst	SR
Agency/Co.	HDR
Date Performed	11/25/2024
Analysis Year	2050
Time Analyzed	AM - No Improvements
Intersection Orientation	East-West
Project Description	Madison Ohio 40

Site Information

Intersection	US 40 @ Gay Street/Arbuckle Road
Jurisdiction	Madison
East/West Street	US 40
North/South Street	Gay Street/Arbuckle Road
Peak Hour Factor	0.88
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		10	380	10		10	240	10		10	10	20		20	20	10
Percent Heavy Vehicles (%)		0				0				0	0	0		0	0	0
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.10				4.10				7.10	6.50	6.20		7.10	6.50	6.20
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.20				3.50	4.00	3.30		3.50	4.00	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		11				11					45				57	
Capacity, c (veh/h)		1290				1128					411				350	
v/c Ratio		0.01				0.01					0.11				0.16	
95% Queue Length, Q_{95} (veh)		0.0				0.0					0.4				0.6	
Control Delay (s/veh)		7.8				8.2					14.8				17.3	
Level of Service (LOS)		A				A					B				C	
Approach Delay (s/veh)	0.3				0.4				14.8				17.3			
Approach LOS									B				C			

HCS7 Two-Way Stop-Control Report

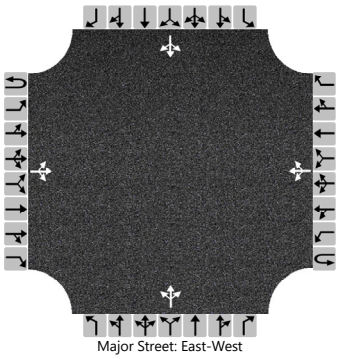
General Information

Analyst	SR
Agency/Co.	HDR
Date Performed	11/25/2024
Analysis Year	2050
Time Analyzed	PM - No improvements
Intersection Orientation	East-West
Project Description	Madison Ohio 40

Site Information

Intersection	US 40 @ Gay Street/Arbuckle Road
Jurisdiction	Madison
East/West Street	US 40
North/South Street	Gay Street/Arbuckle Road
Peak Hour Factor	0.75
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		20	270	20		20	440	10		20	10	20		20	10	10
Percent Heavy Vehicles (%)		0				0				0	0	0		14	0	0
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.10				4.10				7.10	6.50	6.20		7.24	6.50	6.20
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.20				3.50	4.00	3.30		3.63	4.00	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		27				27					67				53	
Capacity, c (veh/h)		987				1183					256				204	
v/c Ratio		0.03				0.02					0.26				0.26	
95% Queue Length, Q_{95} (veh)		0.1				0.1					1.0				1.0	
Control Delay (s/veh)		8.7				8.1					23.9				28.8	
Level of Service (LOS)		A				A					C				D	
Approach Delay (s/veh)	0.8				0.6				23.9				28.8			
Approach LOS									C				D			

HCS7 Two-Way Stop-Control Report

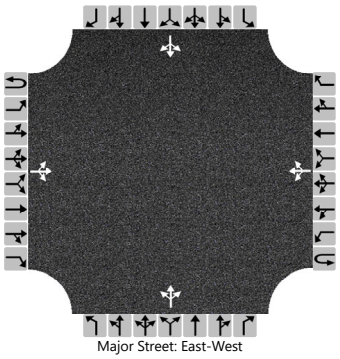
General Information

Analyst	SR
Agency/Co.	HDR
Date Performed	11/25/2024
Analysis Year	2050
Time Analyzed	AM
Intersection Orientation	East-West
Project Description	Madison Ohio 40

Site Information

Intersection	US 40 @ Betty Wilson Road
Jurisdiction	Madison
East/West Street	US 40
North/South Street	Betty Wilson Road
Peak Hour Factor	0.93
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		20	370	30		10	230	10		20	20	20		10	10	10
Percent Heavy Vehicles (%)		0				0				0	0	0		0	0	0
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.10				4.10				7.10	6.50	6.20		7.10	6.50	6.20
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.20				3.50	4.00	3.30		3.50	4.00	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		22				11					65				32	
Capacity, c (veh/h)		1318				1140					389				391	
v/c Ratio		0.02				0.01					0.17				0.08	
95% Queue Length, Q_{95} (veh)		0.0				0.0					0.6				0.3	
Control Delay (s/veh)		7.8				8.2					16.1				15.0	
Level of Service (LOS)		A				A					C				C	
Approach Delay (s/veh)		0.5				0.4				16.1				15.0		
Approach LOS										C				C		

HCS7 Two-Way Stop-Control Report

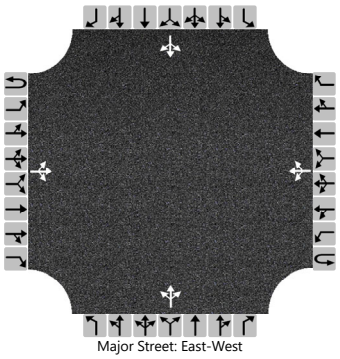
General Information

Analyst	SR
Agency/Co.	HDR
Date Performed	11/25/2024
Analysis Year	2050
Time Analyzed	PM
Intersection Orientation	East-West
Project Description	Madison Ohio 40

Site Information

Intersection	US 40 @ Betty Wilson Road
Jurisdiction	Madison
East/West Street	US 40
North/South Street	Betty Wilson Road
Peak Hour Factor	0.89
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		10	280	40		20	430	10		40	10	20		10	10	10
Percent Heavy Vehicles (%)		0				0				5	0	0		0	0	0
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.10				4.10				7.15	6.50	6.20		7.10	6.50	6.20
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.20				3.55	4.00	3.30		3.50	4.00	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		11				22					79				34	
Capacity, c (veh/h)		1080				1210					297				307	
v/c Ratio		0.01				0.02					0.27				0.11	
95% Queue Length, Q_{95} (veh)		0.0				0.1					1.0				0.4	
Control Delay (s/veh)		8.4				8.0					21.5				18.2	
Level of Service (LOS)		A				A					C				C	
Approach Delay (s/veh)	0.4				0.5				21.5				18.2			
Approach LOS									C				C			

HCS7 Roundabouts Report

General Information

Analyst	SR
Agency or Co.	HDR
Date Performed	1/15/2025
Analysis Year	2050
Time Analyzed	AM
Project Description	Madison Ohio 40

Site Information

Intersection	US 40 @ Marysville-London
E/W Street Name	US 40
N/S Street Name	Marysville-London
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.88
Jurisdiction	Madison County

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment			LTR				LTR				LTR				LTR	
Volume (V), veh/h	0	30	320	230	0	80	150	20	0	110	130	80	0	20	130	50
Percent Heavy Vehicles, %	0	0	1	3	0	0	2	0	0	0	0	0	0	0	5	0
Flow Rate (v_{PCE}), pc/h	0	34	367	269	0	91	174	23	0	125	148	91	0	23	155	57
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing, p/h	0				0				0				0			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)		4.9763			4.9763			4.9763			4.9763	
Follow-Up Headway (s)		2.6087			2.6087			2.6087			2.6087	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		670			288			364			235	
Entry Volume, veh/h		659			285			364			228	
Circulating Flow (v_c), pc/h	269			307			424			390		
Exiting Flow (v_{ex}), pc/h	481			356			205			515		
Capacity (c_{pce}), pc/h		1049			1009			895			927	
Capacity (c), veh/h		1031			997			895			898	
v/c Ratio (x)		0.64			0.29			0.41			0.25	

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		12.6			6.5			8.8			6.6	
Lane LOS		B			A			A			A	
95% Queue, veh		4.8			1.2			2.0			1.0	
Approach Delay, s/veh	12.6			6.5			8.8			6.6		
Approach LOS	B			A			A			A		
Intersection Delay, s/veh | LOS	9.7						A					

HCS7 Roundabouts Report

General Information

Analyst	SR
Agency or Co.	HDR
Date Performed	1/15/2025
Analysis Year	2050
Time Analyzed	PM
Project Description	Madison Ohio 40

Site Information

Intersection	US 40 @ Marysville-London
E/W Street Name	US 40
N/S Street Name	Marysville-London
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.92
Jurisdiction	Madison County

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment			LTR				LTR				LTR				LTR	
Volume (V), veh/h	0	60	250	100	0	80	150	20	0	250	160	60	0	20	180	30
Percent Heavy Vehicles, %	0	3	3	6	0	4	1	0	0	0	0	0	0	0	3	0
Flow Rate (v_{PCE}), pc/h	0	67	280	115	0	90	165	22	0	272	174	65	0	22	202	33
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing, p/h	0				0				0				0			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)		4.9763			4.9763			4.9763			4.9763	
Follow-Up Headway (s)		2.6087			2.6087			2.6087			2.6087	

Flow Computations, Capacity and v/c Ratios

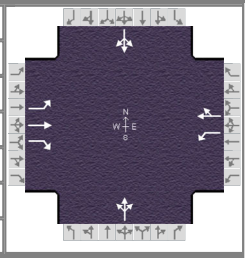
Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		462			277			511			257	
Entry Volume, veh/h		445			272			511			251	
Circulating Flow (v_c), pc/h	314			513			369			527		
Exiting Flow (v_{ex}), pc/h	367			470			263			407		
Capacity (c_{pce}), pc/h		1002			818			947			806	
Capacity (c), veh/h		966			803			947			788	
v/c Ratio (x)		0.46			0.34			0.54			0.32	

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		9.2			8.5			10.9			8.3	
Lane LOS		A			A			B			A	
95% Queue, veh		2.5			1.5			3.3			1.4	
Approach Delay, s/veh	9.2			8.5			10.9			8.3		
Approach LOS	A			A			B			A		
Intersection Delay, s/veh | LOS	9.5						A					

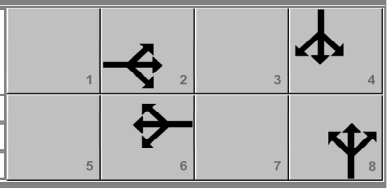
HCS7 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	HDR			Duration, h	0.250
Analyst	SR	Analysis Date	Nov 26, 2024	Area Type	Other
Jurisdiction	Madison	Time Period	AM	PHF	0.88
Urban Street	US 40	Analysis Year	2050	Analysis Period	1> 7:00
Intersection	US 40 @ Eml Street/Ma…	File Name	MO 40 Intersection 14 (Marysville-London) AM 20…		
Project Description	Build No Improvements				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	30	320	230	80	150	20	110	130	80	20	130	50

Signal Information												
Cycle, s	35.1	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	Yes	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
				Green	12.4	10.6	0.0	0.0	0.0	0.0		
				Yellow	4.0	4.0	0.0	0.0	0.0	0.0		
				Red	2.0	2.0	0.0	0.0	0.0	0.0		



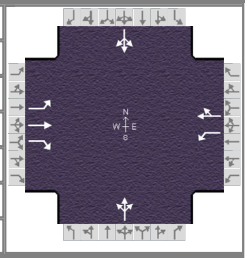
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	30	320	230	80	150	20	110	130	80	20	130	50
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	0	1	3	0	2			0			5	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0	12.0	12.0	12.0			12.0			12.0	
Turn Bay Length, ft	0	0	0	0	0			0			0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	60	60	60	60	60	60	60	60	60	60	60	60

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		30.0		30.0		30.0		30.0
Yellow Change Interval (*Y*), s		4.0		4.0		4.0		4.0
Red Clearance Interval (R_c), s		2.0		2.0		2.0		2.0
Minimum Green (G_{min}), s		6		6		6		6
Start-Up Lost Time (*l*t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s		2.0		2.0		2.0		2.0
Recall Mode		Min		Min		Off		Off
Dual Entry		Yes		Yes		Yes		Yes
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS7 Signalized Intersection Results Summary

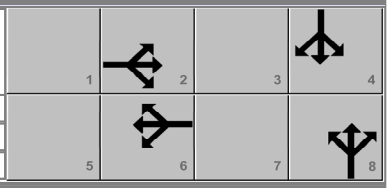
General Information				Intersection Information	
Agency	HDR			Duration, h	0.250
Analyst	SR	Analysis Date	Nov 26, 2024	Area Type	Other
Jurisdiction	Madison	Time Period	AM	PHF	0.88
Urban Street	US 40	Analysis Year	2050	Analysis Period	1> 7:00
Intersection	US 40 @ Eml Street/Ma…	File Name	MO 40 Intersection 14 (Marysville-London) AM 20…		
Project Description	Build No Improvements				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	30	320	230	80	150	20	110	130	80	20	130	50

Signal Information			
Cycle, s	35.1	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	12.4	10.6	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	2.0	2.0	0.0	0.0	0.0	0.0	



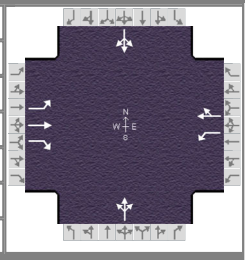
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		5.0		6.0		8.0		8.0
Phase Duration, s		18.4		18.4		16.6		16.6
Change Period, ($Y+R_c$), s		6.0		6.0		6.0		6.0
Max Allow Headway (*MAH*), s		3.0		3.0		3.0		3.0
Queue Clearance Time (g_s), s		8.0		10.8		9.6		6.0
Green Extension Time (g_e), s		1.7		1.7		1.0		1.0
Phase Call Probability		1.00		1.00		1.00		1.00
Max Out Probability		0.00		0.00		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	34	364	261	91	193			364			227	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1209	1736	1448	1034	1687			1506			1586	
Queue Service Time (g_s), s	0.7	6.0	5.0	2.8	2.9			3.6			0.0	
Cycle Queue Clearance Time (g_c), s	3.7	6.0	5.0	8.8	2.9			7.6			4.0	
Green Ratio (*g/C*)	0.35	0.35	0.35	0.35	0.35			0.30			0.30	
Capacity (*c*), veh/h	533	616	514	395	598			595			594	
Volume-to-Capacity Ratio (*X*)	0.064	0.590	0.509	0.230	0.323			0.611			0.382	
Back of Queue (*Q*), ft/ln (95 th percentile)	4.6	45.2	32	17.2	21.2			56.5			32.8	
Back of Queue (*Q*), veh/ln (95 th percentile)	0.2	1.8	1.3	0.7	0.8			2.3			1.3	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00	0.00	0.00	0.00			0.00			0.00	
Uniform Delay (d_1), s/veh	9.6	9.2	8.9	12.8	8.3			11.1			9.9	
Incremental Delay (d_2), s/veh	0.0	0.3	0.3	0.1	0.1			0.4			0.2	
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0			0.0			0.0	
Control Delay (*d*), s/veh	9.6	9.6	9.2	12.9	8.4			11.5			10.1	
Level of Service (LOS)	A	A	A	B	A			B			B	
Approach Delay, s/veh / LOS	9.4	A		9.8	A		11.5	B		10.1	B	
Intersection Delay, s/veh / LOS	10.1						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.65	B	1.65	B	1.88	B	2.07	B
Bicycle LOS Score / LOS	1.58	B	0.96	A	1.09	A	0.86	A

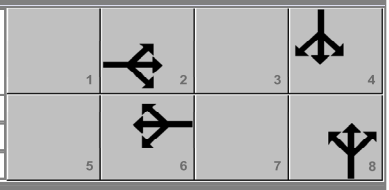
HCS7 Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	HDR			Duration, h	0.250
Analyst	SR	Analysis Date	Nov 26, 2024	Area Type	Other
Jurisdiction	Madison	Time Period	AM	PHF	0.88
Urban Street	US 40	Analysis Year	2050	Analysis Period	1> 7:00
Intersection	US 40 @ Eml Street/Ma…	File Name	MO 40 Intersection 14 (Marysville-London) AM 20…		
Project Description	Build No Improvements				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	30	320	230	80	150	20	110	130	80	20	130	50

Signal Information												
Cycle, s	35.1	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	Yes	Simult. Gap E/W	On	Green	12.4	10.6	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0		
				Red	2.0	2.0	0.0	0.0	0.0	0.0		



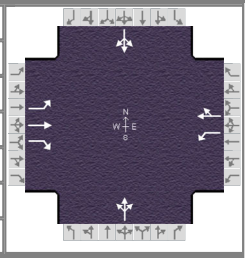
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	0.992	0.977	1.000	0.984	1.000	1.000	1.000	1.000	1.000	0.961	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.691	0.000		0.591	0.000		0.889	0.860		0.977	0.943	
Right-Turn Adjustment Factor (f_{RT})		0.000	0.847		0.979	0.979		0.000	0.860		0.000	0.943
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Movement Saturation Flow Rate (s), veh/h	1209	1736	1448	1034	1489	198	518	612	376	159	1031	397
Proportion of Vehicles Arriving on Green (P)	0.35	0.35	0.35	0.35	0.35	0.35	0.30	0.30	0.30	0.30	0.30	0.30
Incremental Delay Factor (k)	0.04	0.04	0.04	0.04	0.04			0.04			0.04	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		6.0		6.0		6.0		6.0
Green Ratio (g/C)		0.35		0.35		0.30		0.30
Permitted Saturation Flow Rate (s_p), veh/h/ln		1209		1034		1196		1160
Shared Saturation Flow Rate (s_{sh}), veh/h/ln						1510		1600
Permitted Effective Green Time (g_p), s		12.5		12.5		10.7		10.7
Permitted Service Time (g_u), s		9.5		6.4		6.7		3.0
Permitted Queue Service Time (g_{ps}), s		0.7		2.8		3.6		0.0
Time to First Blockage (g_f), s		0.0		0.0		2.0		5.6
Queue Service Time Before Blockage (g_{fs}), s						2.0		2.6
Protected Right Saturation Flow (s_R), veh/h/ln		0						
Protected Right Effective Green Time (g_R), s		0.0						

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	0.972	0.000	0.972	0.000	1.198	0.000	1.389	0.000
Pedestrian F_s / F_{delay}	0.000	0.080	0.000	0.080	0.000	0.086	0.000	0.086
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	709.07	7.31	709.07	7.31	606.97	8.51	606.97	8.51
Bicycle F_w / F_v	-3.64	1.09	-3.64	0.47	-3.64	0.60	-3.64	0.38

HCS7 Signalized Intersection Results Graphical Summary

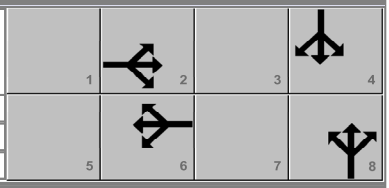
General Information				Intersection Information	
Agency	HDR			Duration, h	0.250
Analyst	SR	Analysis Date	Nov 26, 2024	Area Type	Other
Jurisdiction	Madison	Time Period	AM	PHF	0.88
Urban Street	US 40	Analysis Year	2050	Analysis Period	1> 7:00
Intersection	US 40 @ Eml Street/Ma…	File Name	MO 40 Intersection 14 (Marysville-London) AM 20…		
Project Description	Build No Improvements				



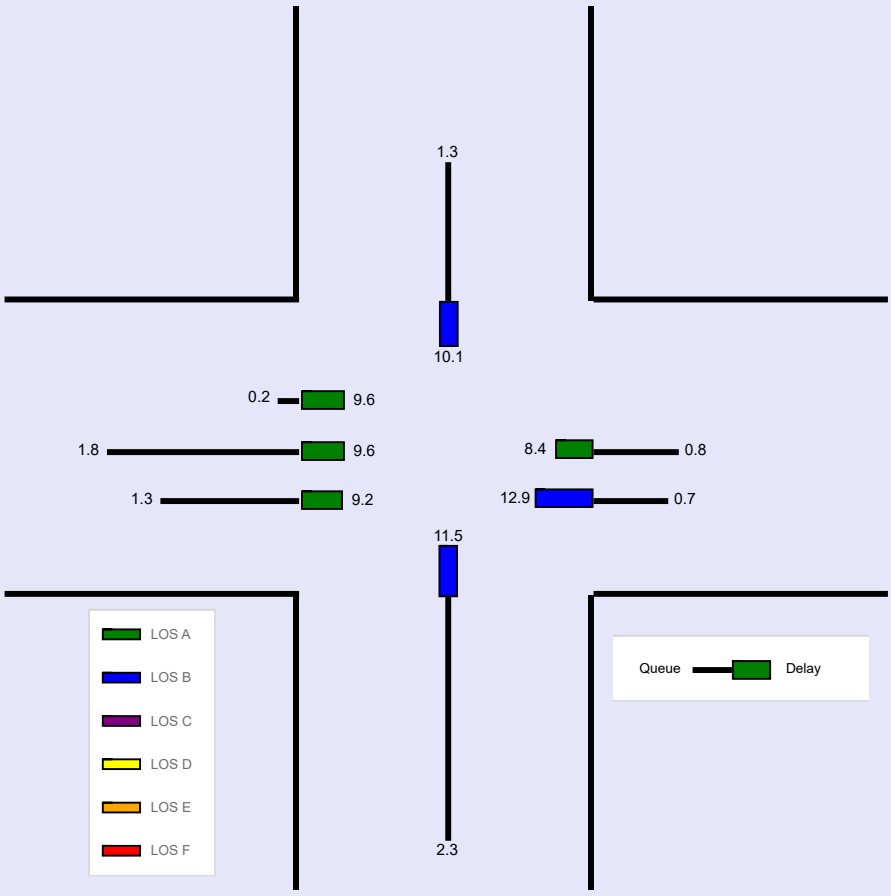
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	30	320	230	80	150	20	110	130	80	20	130	50

Signal Information			
Cycle, s	35.1	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	12.4	10.6	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	2.0	2.0	0.0	0.0	0.0	0.0	



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	4.6	45.2	32	17.2	21.2			56.5			32.8	
Back of Queue (*Q*), veh/ln (95 th percentile)	0.2	1.8	1.3	0.7	0.8			2.3			1.3	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00	0.00	0.00	0.00			0.00			0.00	
Control Delay (*d*), s/veh	9.6	9.6	9.2	12.9	8.4			11.5			10.1	
Level of Service (LOS)	A	A	A	B	A			B			B	
Approach Delay, s/veh / LOS	9.4	A		9.8	A		11.5	B		10.1	B	
Intersection Delay, s/veh / LOS	10.1						B					



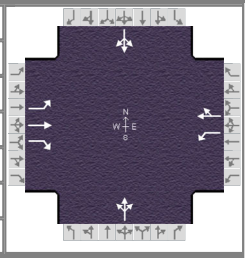
--- Messages ---

No errors or warnings exist.

--- Comments ---

HCS7 Signalized Intersection Input Data

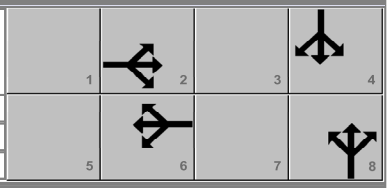
General Information				Intersection Information	
Agency	HDR			Duration, h	0.250
Analyst	SR	Analysis Date	Nov 26, 2024	Area Type	Other
Jurisdiction	Madison	Time Period	PM	PHF	0.92
Urban Street	US 40	Analysis Year	2050	Analysis Period	1> 7:00
Intersection	US 40 @ Eml Street/Ma…	File Name	MO 40 Intersection 14 (Marysville-London) PM 20…		
Project Description	Build No improvements				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	60	250	100	60	390	20	250	160	60	20	180	30

Signal Information			
Cycle, s	52.4	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	18.8	21.6	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	2.0	2.0	0.0	0.0	0.0	0.0	



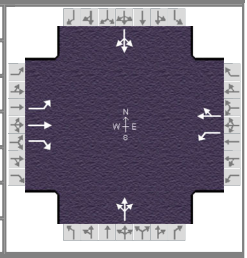
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	60	250	100	60	390	20	250	160	60	20	180	30
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	3	3	6	4	1			0			3	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0	12.0	12.0	12.0			12.0			12.0	
Turn Bay Length, ft	0	0	0	0	0			0			0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	60	60	60	60	60	60	60	60	60	60	60	60

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		30.0		30.0		40.0		40.0
Yellow Change Interval (*Y*), s		4.0		4.0		4.0		4.0
Red Clearance Interval (R_c), s		2.0		2.0		2.0		2.0
Minimum Green (G_{min}), s		6		6		6		6
Start-Up Lost Time (*l*t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s		2.0		2.0		2.0		2.0
Recall Mode		Min		Min		Off		Off
Dual Entry		Yes		Yes		Yes		Yes
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS7 Signalized Intersection Results Summary

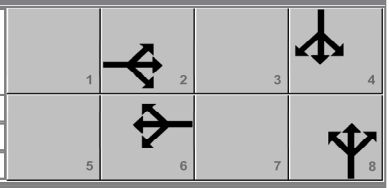
General Information				Intersection Information	
Agency	HDR			Duration, h	0.250
Analyst	SR	Analysis Date	Nov 26, 2024	Area Type	Other
Jurisdiction	Madison	Time Period	PM	PHF	0.92
Urban Street	US 40	Analysis Year	2050	Analysis Period	1> 7:00
Intersection	US 40 @ Eml Street/Ma…	File Name	MO 40 Intersection 14 (Marysville-London) PM 20…		
Project Description	Build No improvements				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	60	250	100	60	390	20	250	160	60	20	180	30

Signal Information			
Cycle, s	52.4	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	18.8	21.6	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	2.0	2.0	0.0	0.0	0.0	0.0	



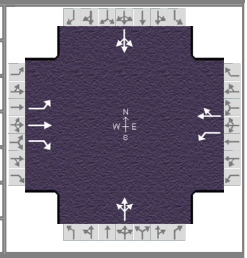
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		5.0		6.0		8.0		8.0
Phase Duration, s		24.8		24.8		27.6		27.6
Change Period, ($Y+R_c$), s		6.0		6.0		6.0		6.0
Max Allow Headway (*MAH*), s		3.0		3.0		3.1		3.1
Queue Clearance Time (g_s), s		17.2		13.8		20.1		7.4
Green Extension Time (g_e), s		1.6		1.6		1.5		1.5
Phase Call Probability		1.00		1.00		1.00		1.00
Max Out Probability		0.02		0.01		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	65	272	109	65	446			511			250	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	937	1709	1414	1090	1721			1379			1649	
Queue Service Time (g_s), s	3.4	6.4	2.8	2.5	11.8			12.8			0.0	
Cycle Queue Clearance Time (g_c), s	15.2	6.4	2.8	8.9	11.8			18.1			5.4	
Green Ratio (*g/C*)	0.36	0.36	0.36	0.36	0.36			0.41			0.41	
Capacity (*c*), veh/h	263	613	507	397	617			674			755	
Volume-to-Capacity Ratio (*X*)	0.248	0.443	0.214	0.164	0.722			0.758			0.331	
Back of Queue (*Q*), ft/ln (95 th percentile)	27.7	77.3	28.9	22.4	144			162.1			59.5	
Back of Queue (*Q*), veh/ln (95 th percentile)	1.1	3.0	1.1	0.9	5.7			6.5			2.3	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00	0.00	0.00	0.00			0.00			0.00	
Uniform Delay (d_1), s/veh	21.1	12.8	11.7	16.2	14.6			14.2			10.6	
Incremental Delay (d_2), s/veh	0.2	0.2	0.1	0.1	0.6			0.7			0.1	
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0			0.0			0.0	
Control Delay (*d*), s/veh	21.3	13.0	11.8	16.3	15.2			14.9			10.7	
Level of Service (LOS)	C	B	B	B	B			B			B	
Approach Delay, s/veh / LOS	13.9	B		15.3	B		14.9	B		10.7	B	
Intersection Delay, s/veh / LOS	14.2						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.67	B	1.67	B	1.89	B	2.08	B
Bicycle LOS Score / LOS	1.22	A	1.33	A	1.33	A	0.90	A

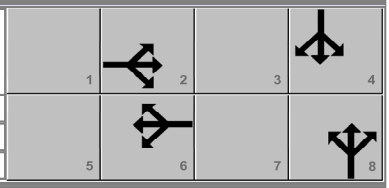
HCS7 Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	HDR			Duration, h	0.250
Analyst	SR	Analysis Date	Nov 26, 2024	Area Type	Other
Jurisdiction	Madison	Time Period	PM	PHF	0.92
Urban Street	US 40	Analysis Year	2050	Analysis Period	1> 7:00
Intersection	US 40 @ Eml Street/Ma…	File Name	MO 40 Intersection 14 (Marysville-London) PM 20…		
Project Description	Build No improvements				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	60	250	100	60	390	20	250	160	60	20	180	30

Signal Information												
Cycle, s	52.4	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	Yes	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
				Green	18.8	21.6	0.0	0.0	0.0	0.0		
				Yellow	4.0	4.0	0.0	0.0	0.0	0.0		
				Red	2.0	2.0	0.0	0.0	0.0	0.0		



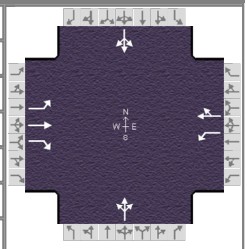
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	0.977	0.977	0.953	0.969	0.992	1.000	1.000	1.000	1.000	1.000	0.977	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.535	0.000		0.623	0.000		0.799	0.788		0.982	0.965	
Right-Turn Adjustment Factor (f_{RT})		0.000	0.847		0.991	0.991		0.000	0.788		0.000	0.965
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Movement Saturation Flow Rate (s), veh/h	937	1709	1414	1090	1637	84	733	469	176	143	1291	215
Proportion of Vehicles Arriving on Green (P)	0.36	0.36	0.36	0.36	0.36	0.36	0.41	0.41	0.41	0.41	0.41	0.41
Incremental Delay Factor (k)	0.04	0.04	0.04	0.04	0.04			0.04			0.04	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		6.0		6.0		6.0		6.0
Green Ratio (g/C)		0.36		0.36		0.41		0.41
Permitted Saturation Flow Rate (s_p), veh/h/ln		937		1090		1171		1159
Shared Saturation Flow Rate (s_{sh}), veh/h/ln						1385		1636
Permitted Effective Green Time (g_p), s		18.8		18.8		21.7		21.7
Permitted Service Time (g_u), s		7.1		12.5		16.4		3.6
Permitted Queue Service Time (g_{ps}), s		3.4		2.5		12.8		0.0
Time to First Blockage (g_f), s		0.0		0.0		0.8		12.3
Queue Service Time Before Blockage (g_{fs}), s						0.8		4.4
Protected Right Saturation Flow (s_R), veh/h/ln		0						
Protected Right Effective Green Time (g_R), s		0.0						

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	0.972	0.000	0.972	0.000	1.198	0.000	1.389	0.000
Pedestrian F_s / F_{delay}	0.000	0.095	0.000	0.095	0.000	0.088	0.000	0.088
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	716.94	10.78	716.94	10.78	824.98	9.04	824.98	9.04
Bicycle F_w / F_v	-3.64	0.74	-3.64	0.84	-3.64	0.84	-3.64	0.41

HCS7 Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	HDR			Duration, h	0.250
Analyst	SR	Analysis Date	Nov 26, 2024	Area Type	Other
Jurisdiction	Madison	Time Period	PM	PHF	0.92
Urban Street	US 40	Analysis Year	2050	Analysis Period	1> 7:00
Intersection	US 40 @ Eml Street/Ma…	File Name	MO 40 Intersection 14 (Marysville-London) PM 20…		
Project Description	Build No improvements				

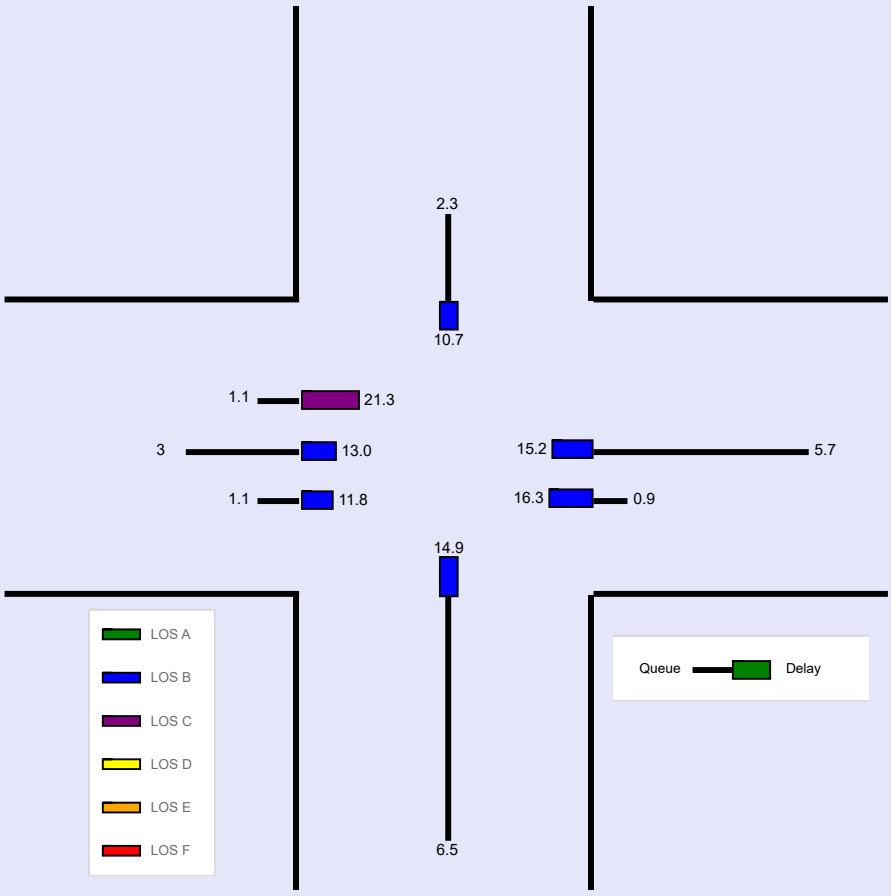


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	60	250	100	60	390	20	250	160	60	20	180	30

Signal Information			
Cycle, s	52.4	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

								1	2	3	4	
Green	18.8	21.6	0.0	0.0	0.0	0.0						
Yellow	4.0	4.0	0.0	0.0	0.0	0.0						
Red	2.0	2.0	0.0	0.0	0.0	0.0	5	6	7	8		

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	27.7	77.3	28.9	22.4	144			162.1			59.5	
Back of Queue (*Q*), veh/ln (95 th percentile)	1.1	3.0	1.1	0.9	5.7			6.5			2.3	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00	0.00	0.00	0.00			0.00			0.00	
Control Delay (*d*), s/veh	21.3	13.0	11.8	16.3	15.2			14.9			10.7	
Level of Service (LOS)	C	B	B	B	B			B			B	
Approach Delay, s/veh / LOS	13.9	B		15.3	B		14.9	B		10.7	B	
Intersection Delay, s/veh / LOS	14.2						B					



--- Messages ---

No errors or warnings exist.

--- Comments ---

HCS7 Two-Way Stop-Control Report

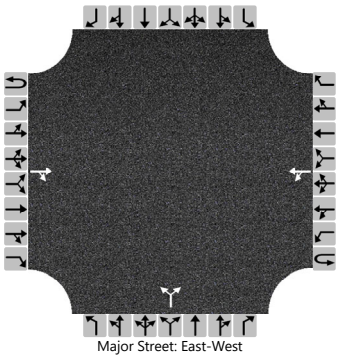
General Information

Analyst	SR
Agency/Co.	HDR
Date Performed	11/25/2024
Analysis Year	2050
Time Analyzed	AM
Intersection Orientation	East-West
Project Description	Madison Ohio 40

Site Information

Intersection	US 40 @ Madison County Airport
Jurisdiction	Madison
East/West Street	US 40
North/South Street	Madison County Airport
Peak Hour Factor	0.83
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume (veh/h)			560	10		10	300			10		10				
Percent Heavy Vehicles (%)						0				0		0				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized																
Median Type | Storage				Undivided												

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.10				6.40		6.20				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.20				3.50		3.30				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						12					24					
Capacity, c (veh/h)						917					318					
v/c Ratio						0.01					0.08					
95% Queue Length, Q_{95} (veh)						0.0					0.2					
Control Delay (s/veh)						9.0					17.3					
Level of Service (LOS)						A					C					
Approach Delay (s/veh)					0.4				17.3							
Approach LOS									C							

HCS7 Two-Way Stop-Control Report

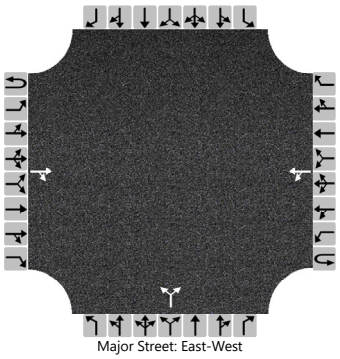
General Information

Analyst	SR
Agency/Co.	HDR
Date Performed	11/25/2024
Analysis Year	2050
Time Analyzed	PM
Intersection Orientation	East-West
Project Description	Madison Ohio 40

Site Information

Intersection	US 40 @ Madison County Airport
Jurisdiction	Madison
East/West Street	US 40
North/South Street	Madison County Airport
Peak Hour Factor	0.84
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume (veh/h)			390	10		20	650			20		20				
Percent Heavy Vehicles (%)						0				0		0				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized																
Median Type | Storage						Undivided										

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.10				6.40		6.20				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.20				3.50		3.30				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						24					48					
Capacity, c (veh/h)						1097					270					
v/c Ratio						0.02					0.18					
95% Queue Length, Q_{95} (veh)						0.1					0.6					
Control Delay (s/veh)						8.4					21.1					
Level of Service (LOS)						A					C					
Approach Delay (s/veh)						0.6				21.1						
Approach LOS										C						

HCS7 Two-Way Stop-Control Report

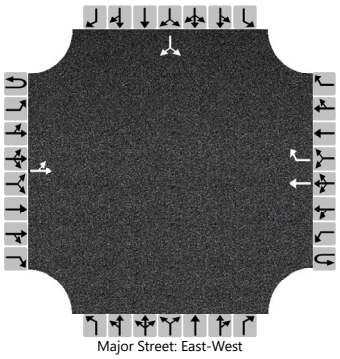
General Information

Analyst	SR
Agency/Co.	HDR
Date Performed	11/25/2024
Analysis Year	2050
Time Analyzed	AM
Intersection Orientation	East-West
Project Description	Madison Ohio 40

Site Information

Intersection	US 40 @ Gwynne Road
Jurisdiction	Madison
East/West Street	US 40
North/South Street	Gwynne Road
Peak Hour Factor	0.84
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	1		0	0	0		0	1	0
Configuration		LT					T	R							LR	
Volume (veh/h)		10	420				270	40						150		20
Percent Heavy Vehicles (%)		0												3		0
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized							No									
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.10												6.43		6.20
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.20												3.53		3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		12													202	
Capacity, c (veh/h)		1201													350	
v/c Ratio		0.01													0.58	
95% Queue Length, Q_{95} (veh)		0.0													3.5	
Control Delay (s/veh)		8.0													28.5	
Level of Service (LOS)		A													D	
Approach Delay (s/veh)		0.3												28.5		
Approach LOS														D		

HCS7 Two-Way Stop-Control Report

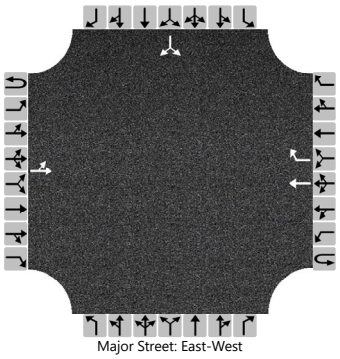
General Information

Analyst	SR
Agency/Co.	HDR
Date Performed	11/25/2024
Analysis Year	2050
Time Analyzed	PM
Intersection Orientation	East-West
Project Description	Madison Ohio 40

Site Information

Intersection	US 40 @ Gwynne Road
Jurisdiction	Madison
East/West Street	US 40
North/South Street	Gwynne Road
Peak Hour Factor	0.87
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	1		0	0	0		0	1	0
Configuration		LT					T	R							LR	
Volume (veh/h)		20	340				520	150						60		30
Percent Heavy Vehicles (%)		0												3		0
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized							No									
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.10												6.43		6.20
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.20												3.53		3.30

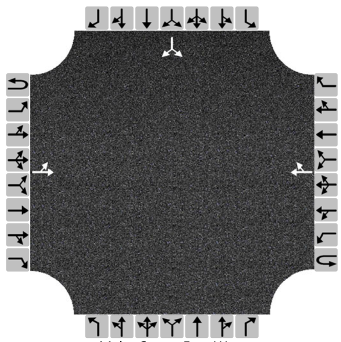
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		23													103	
Capacity, c (veh/h)		853													298	
v/c Ratio		0.03													0.35	
95% Queue Length, Q_{95} (veh)		0.1													1.5	
Control Delay (s/veh)		9.3													23.4	
Level of Service (LOS)		A													C	
Approach Delay (s/veh)		0.8												23.4		
Approach LOS														C		

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	SR	Intersection	US 40 @ Old US 40
Agency/Co.	HDR	Jurisdiction	Madison
Date Performed	11/25/2024	East/West Street	US 40
Analysis Year	2050	North/South Street	Old US 40
Time Analyzed	AM	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Madison Ohio 40		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration		LT						TR							LR	
Volume (veh/h)		10	410				270	20						20		10
Percent Heavy Vehicles (%)		0												20		0
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.10												6.60		6.20
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.20												3.68		3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		11													33	
Capacity, c (veh/h)		1256													414	
v/c Ratio		0.01													0.08	
95% Queue Length, Q_{95} (veh)		0.0													0.3	
Control Delay (s/veh)		7.9													14.4	
Level of Service (LOS)		A													B	
Approach Delay (s/veh)	0.3												14.4			
Approach LOS													B			

HCS7 Two-Way Stop-Control Report

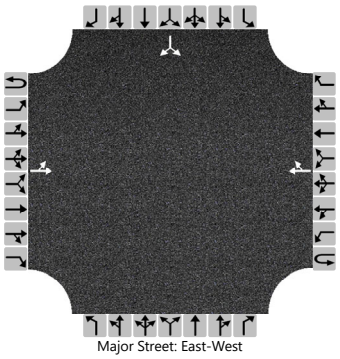
General Information

Analyst	SR
Agency/Co.	HDR
Date Performed	11/25/2024
Analysis Year	2050
Time Analyzed	PM
Intersection Orientation	East-West
Project Description	Madison Ohio 40

Site Information

Intersection	US 40 @ Old US 40
Jurisdiction	Madison
East/West Street	US 40
North/South Street	Old US 40
Peak Hour Factor	0.84
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration		LT						TR							LR	
Volume (veh/h)		10	340				530	20						20		20
Percent Heavy Vehicles (%)		0												0		0
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized																
Median Type | Storage					Undivided											

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.10												6.40		6.20
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.20												3.50		3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		12													48	
Capacity, c (veh/h)		942													321	
v/c Ratio		0.01													0.15	
95% Queue Length, Q_{95} (veh)		0.0													0.5	
Control Delay (s/veh)		8.9													18.1	
Level of Service (LOS)		A													C	
Approach Delay (s/veh)		0.4												18.1		
Approach LOS														C		

HCS7 Roundabouts Report

General Information

Analyst	SR
Agency or Co.	HDR
Date Performed	1/15/2025
Analysis Year	2050
Time Analyzed	AM
Project Description	Madison Ohio 40

Site Information

Intersection	US 40 @ OH 56 Urbana-Lon...
E/W Street Name	US 40
N/S Street Name	OH 56 Urbana-London
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.89
Jurisdiction	Madison County

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment			LT				LT				LTR				LTR	
Volume (V), veh/h	0	70	260	170	0	80	120	80	0	120	160	30	0	130	510	20
Percent Heavy Vehicles, %	0	3	1	3	0	0	2	2	0	1	3	0	0	0	1	0
Flow Rate (v_{PCE}), pc/h	0	81	295	197	0	90	138	92	0	136	185	34	0	146	579	22
Right-Turn Bypass	Yielding				Yielding				None				None			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing, p/h	0				0				0				0			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)		4.9763	4.9763		4.9763	4.9763		4.9763			4.9763	
Follow-Up Headway (s)		2.6087	2.6087		2.6087	2.6087		2.6087			2.6087	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		376	197		228	92		355			747	
Entry Volume, veh/h		371	191		225	90		348			741	
Circulating Flow (v_c), pc/h	815			402			522			364		
Exiting Flow (v_{ex}), pc/h	475			296			266			669		
Capacity (c_{pce}), pc/h		601	697		916	1052		810			952	
Capacity (c), veh/h		593	677		905	1031		795			945	
v/c Ratio (x)		0.63	0.28		0.25	0.09		0.44			0.78	

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		18.8	8.8		6.5	4.3		10.2			20.1	
Lane LOS		C	A		A	A		B			C	
95% Queue, veh		4.3	1.2		1.0	0.3		2.2			8.3	
Approach Delay, s/veh	15.4			5.9			10.2			20.1		
Approach LOS	C			A			B			C		
Intersection Delay, s/veh | LOS	14.7						B					

HCS7 Roundabouts Report

General Information

Analyst	SR
Agency or Co.	HDR
Date Performed	1/15/2025
Analysis Year	2050
Time Analyzed	PM
Project Description	Madison Ohio 40

Site Information

Intersection	US 40 @ OH 56 Urbana-Lon...
E/W Street Name	US 40
N/S Street Name	OH 56 Urbana-London
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.92
Jurisdiction	Madison County

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment			LT				LT				LTR				LTR	
Volume (V), veh/h	0	40	200	80	0	40	360	150	0	210	570	80	0	70	210	40
Percent Heavy Vehicles, %	0	6	2	0	0	9	1	0	0	1	4	0	0	0	5	0
Flow Rate (v_{PCE}), pc/h	0	46	222	87	0	47	395	163	0	231	644	87	0	76	240	43
Right-Turn Bypass	Yielding				Yielding				None				None			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing, p/h	0				0				0				0			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)		4.9763	4.9763		4.9763	4.9763		4.9763			4.9763	
Follow-Up Headway (s)		2.6087	2.6087		2.6087	2.6087		2.6087			2.6087	

Flow Computations, Capacity and v/c Ratios

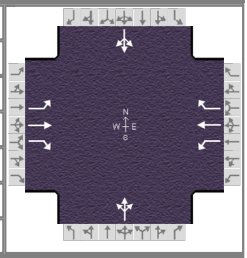
Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		268	87		442	163		962			359	
Entry Volume, veh/h		261	87		434	163		935			348	
Circulating Flow (v_c), pc/h	363			921			344			673		
Exiting Flow (v_{ex}), pc/h	385			669			690			287		
Capacity (c_{pce}), pc/h		953	1030		539	683		972			695	
Capacity (c), veh/h		928	1030		530	683		944			673	
v/c Ratio (x)		0.28	0.08		0.82	0.24		0.99			0.52	

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		6.8	4.2		34.7	8.1		47.8			13.5	
Lane LOS		A	A		D	A		E			B	
95% Queue, veh		1.2	0.3		8.1	0.9		18.1			3.0	
Approach Delay, s/veh	6.2			27.5			47.8			13.5		
Approach LOS	A			D			E			B		
Intersection Delay, s/veh | LOS	30.5						D					

HCS7 Signalized Intersection Input Data

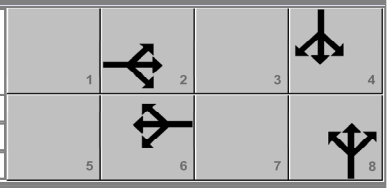
General Information				Intersection Information	
Agency	HDR			Duration, h	0.250
Analyst	SR	Analysis Date	11/25/2024	Area Type	Other
Jurisdiction	Madison	Time Period	AM	PHF	0.89
Urban Street	Madison Ohio 40	Analysis Year	2050	Analysis Period	1> 7:00
Intersection	US 40 @ OH 56 Urbana…	File Name	MO 40 Intersection 13 (Urbana-London) AM 2050…		
Project Description	Build No improvements				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	70	260	170	80	120	80	120	160	30	130	510	20

Signal Information			
Cycle, s	55.8	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	15.8	28.0	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	2.0	2.0	0.0	0.0	0.0	0.0	



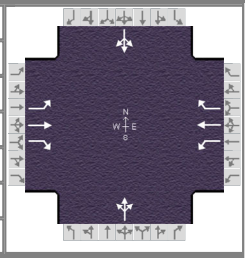
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	70	260	170	80	120	80	120	160	30	130	510	20
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	3	1	3	0	2	2		3			1	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0	12.0	12.0	12.0	12.0		12.0			12.0	
Turn Bay Length, ft	0	0	0	0	0	0		0			0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	60	60	60	60	60	60	60	60	60	60	60	60

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		30.0		30.0		30.0		30.0
Yellow Change Interval (*Y*), s		4.0		4.0		4.0		4.0
Red Clearance Interval (R_c), s		2.0		2.0		2.0		2.0
Minimum Green (G_{min}), s		6		6		6		6
Start-Up Lost Time (*l*t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s		2.0		2.0		2.0		2.0
Recall Mode		Min		Min		Off		Off
Dual Entry		Yes		Yes		Yes		Yes
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS7 Signalized Intersection Results Summary

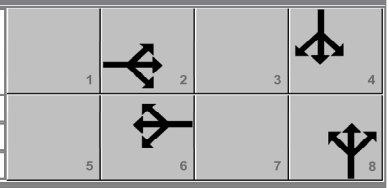
General Information				Intersection Information	
Agency	HDR			Duration, h	0.250
Analyst	SR	Analysis Date	11/25/2024	Area Type	Other
Jurisdiction	Madison	Time Period	AM	PHF	0.89
Urban Street	Madison Ohio 40	Analysis Year	2050	Analysis Period	1> 7:00
Intersection	US 40 @ OH 56 Urbana…	File Name	MO 40 Intersection 13 (Urbana-London) AM 2050…		
Project Description	Build No improvements				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	70	260	170	80	120	80	120	160	30	130	510	20

Signal Information			
Cycle, s	55.8	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	15.8	28.0	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	2.0	2.0	0.0	0.0	0.0	0.0	



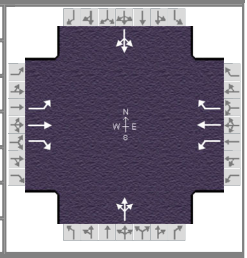
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		5.0		5.0		8.0		8.0
Phase Duration, s		21.8		21.8		34.0		34.0
Change Period, ($Y+R_c$), s		6.0		6.0		6.0		6.0
Max Allow Headway (*MAH*), s		3.0		3.0		3.1		3.1
Queue Clearance Time (g_s), s		10.1		14.3		16.5		27.0
Green Extension Time (g_e), s		1.5		1.5		2.2		1.0
Phase Call Probability		1.00		1.00		1.00		1.00
Max Out Probability		0.00		0.01		0.05		1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	79	292	191	90	135	90		348			742	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1245	1736	1448	1104	1723	1460		962			1566	
Queue Service Time (g_s), s	2.9	8.1	6.1	4.3	3.4	2.6		0.0			10.5	
Cycle Queue Clearance Time (g_c), s	6.3	8.1	6.1	12.3	3.4	2.6		14.5			25.0	
Green Ratio (*g/C*)	0.28	0.28	0.28	0.28	0.28	0.28		0.50			0.50	
Capacity (*c*), veh/h	406	491	410	282	488	413		572			863	
Volume-to-Capacity Ratio (*X*)	0.194	0.595	0.466	0.319	0.277	0.218		0.608			0.859	
Back of Queue (*Q*), ft/ln (95 th percentile)	30.6	112	71	41	46.6	30.5		78.1			273.1	
Back of Queue (*Q*), veh/ln (95 th percentile)	1.2	4.4	2.8	1.6	1.8	1.2		3.0			10.8	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00		0.00			0.00	
Uniform Delay (d_1), s/veh	18.0	17.2	16.5	22.5	15.6	15.3		9.8			13.1	
Incremental Delay (d_2), s/veh	0.1	0.4	0.3	0.2	0.1	0.1		1.0			7.3	
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0		0.0			0.0	
Control Delay (*d*), s/veh	18.1	17.7	16.8	22.8	15.7	15.4		10.7			20.4	
Level of Service (LOS)	B	B	B	C	B	B		B			C	
Approach Delay, s/veh / LOS	17.4	B		17.6	B		10.7	B		20.4	C	
Intersection Delay, s/veh / LOS	17.4						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.68	B	1.68	B	2.07	B	2.07	B
Bicycle LOS Score / LOS	1.41	A	1.01	A	1.06	A	1.71	B

HCS7 Signalized Intersection Intermediate Values

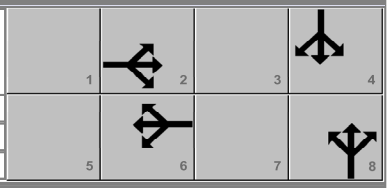
General Information				Intersection Information	
Agency	HDR			Duration, h	0.250
Analyst	SR	Analysis Date	11/25/2024	Area Type	Other
Jurisdiction	Madison	Time Period	AM	PHF	0.89
Urban Street	Madison Ohio 40	Analysis Year	2050	Analysis Period	1> 7:00
Intersection	US 40 @ OH 56 Urbana…	File Name	MO 40 Intersection 13 (Urbana-London) AM 2050…		
Project Description	Build No improvements				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	70	260	170	80	120	80	120	160	30	130	510	20

Signal Information			
Cycle, s	55.8	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	15.8	28.0	0.0	0.0	0.0	0.0						
Yellow	4.0	4.0	0.0	0.0	0.0	0.0						
Red	2.0	2.0	0.0	0.0	0.0	0.0						



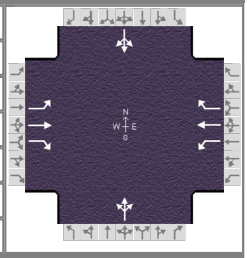
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	0.977	0.992	0.977	1.000	0.984	0.984	0.992	0.977	1.000	1.000	0.992	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.711	0.000		0.631	0.000		0.566	0.563		0.905	0.902	
Right-Turn Adjustment Factor (f_{RT})		0.000	0.847		0.000	0.847		0.000	0.563		0.000	0.902
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Movement Saturation Flow Rate (s), veh/h	1245	1736	1448	1104	1723	1460	372	497	93	308	1210	47
Proportion of Vehicles Arriving on Green (P)	0.28	0.28	0.28	0.28	0.28	0.28	0.50	0.50	0.50	0.50	0.50	0.50
Incremental Delay Factor (k)	0.04	0.04	0.04	0.04	0.04	0.04		0.10			0.32	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		6.0		6.0		6.0		6.0
Green Ratio (g/C)		0.28		0.28		0.50		0.50
Permitted Saturation Flow Rate (s_p), veh/h/ln		1245		1104		835		1186
Shared Saturation Flow Rate (s_{sh}), veh/h/ln						829		1472
Permitted Effective Green Time (g_p), s		15.8		15.8		28.0		28.0
Permitted Service Time (g_u), s		12.4		7.7		2.9		13.4
Permitted Queue Service Time (g_{ps}), s		2.9		4.3		0.0		10.5
Time to First Blockage (g_f), s		0.0		0.0		3.2		4.6
Queue Service Time Before Blockage (g_{fs}), s						3.2		4.6
Protected Right Saturation Flow (s_R), veh/h/ln		0		0				
Protected Right Effective Green Time (g_R), s		0.0		0.0				

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	0.972	0.000	0.972	0.000	1.389	0.000	1.389	0.000
Pedestrian F_s / F_{delay}	0.000	0.107	0.000	0.107	0.000	0.078	0.000	0.078
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	565.90	14.34	565.90	14.34	1003.86	6.92	1003.86	6.92
Bicycle F_w / F_v	-3.64	0.93	-3.64	0.52	-3.64	0.57	-3.64	1.22

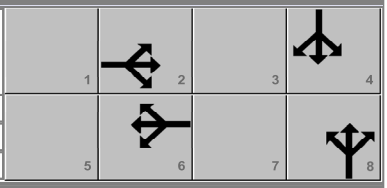
HCS7 Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	HDR			Duration, h	0.250
Analyst	SR	Analysis Date	11/25/2024	Area Type	Other
Jurisdiction	Madison	Time Period	AM	PHF	0.89
Urban Street	Madison Ohio 40	Analysis Year	2050	Analysis Period	1> 7:00
Intersection	US 40 @ OH 56 Urbana…	File Name	MO 40 Intersection 13 (Urbana-London) AM 2050…		
Project Description	Build No improvements				

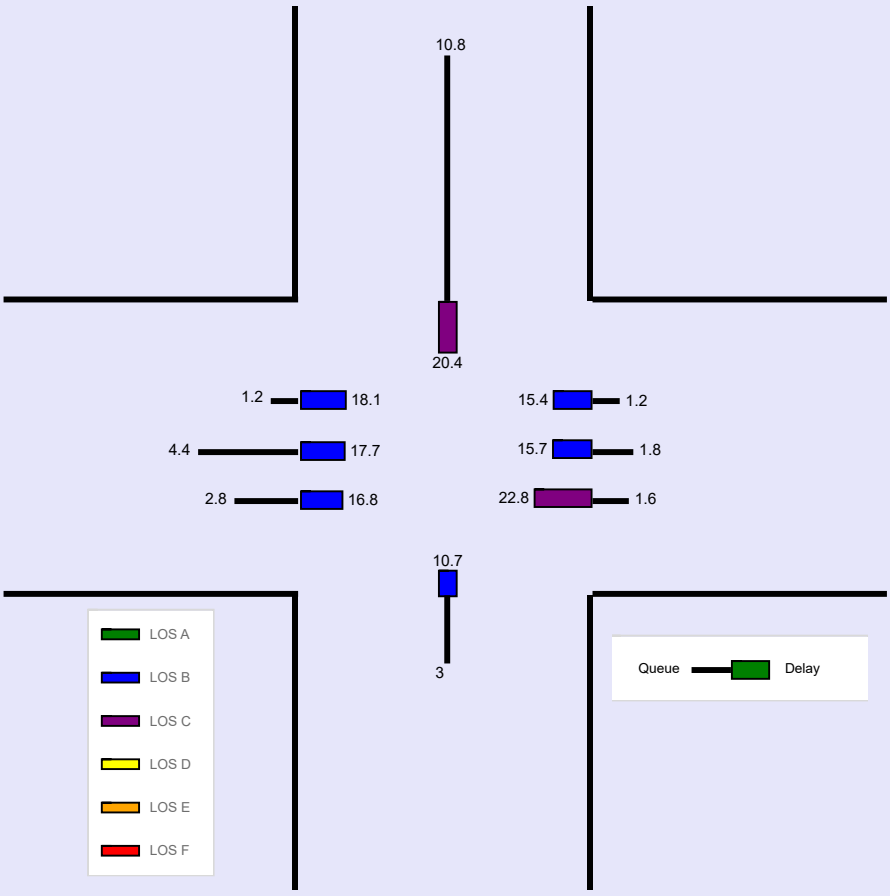


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	70	260	170	80	120	80	120	160	30	130	510	20

Signal Information												
Cycle, s	55.8	Reference Phase	2									
Offset, s	0	Reference Point	End	Green	15.8	28.0	0.0	0.0	0.0	0.0		
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	2.0	0.0	0.0	0.0	0.0		



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	30.6	112	71	41	46.6	30.5		78.1			273.1	
Back of Queue (*Q*), veh/ln (95 th percentile)	1.2	4.4	2.8	1.6	1.8	1.2		3.0			10.8	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00		0.00			0.00	
Control Delay (*d*), s/veh	18.1	17.7	16.8	22.8	15.7	15.4		10.7			20.4	
Level of Service (LOS)	B	B	B	C	B	B		B			C	
Approach Delay, s/veh / LOS	17.4		B	17.6		B	10.7		B	20.4		C
Intersection Delay, s/veh / LOS	17.4						B					



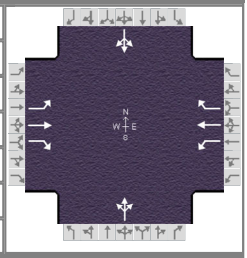
--- Messages ---

No errors or warnings exist.

--- Comments ---

HCS7 Signalized Intersection Input Data

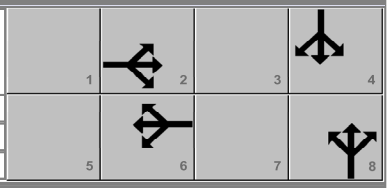
General Information				Intersection Information	
Agency	HDR			Duration, h	0.250
Analyst	SR	Analysis Date	11/25/2024	Area Type	Other
Jurisdiction	Madison	Time Period	PM	PHF	0.92
Urban Street	Madison Ohio 40	Analysis Year	2050	Analysis Period	1> 7:00
Intersection	US 40 @ OH 56 Urbana…	File Name	MO 40 Intersection 13 (Urbana-London) PM 2050…		
Project Description	Build No improvements				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	40	200	80	40	360	150	210	570	80	70	210	40

Signal Information			
Cycle, s	60.3	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	18.3	32.0	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	2.0	0.0	0.0	0.0	0.0	0.0	



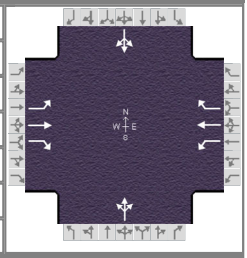
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	40	200	80	40	360	150	210	570	80	70	210	40
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	6	2	0	9	1	0		4			5	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0	12.0	12.0	12.0	12.0		12.0			12.0	
Turn Bay Length, ft	0	0	0	0	0	0		0			0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	60	60	60	60	60	60	60	60	60	60	60	60

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		30.0		30.0		30.0		30.0
Yellow Change Interval (*Y*), s		4.0		4.0		4.0		4.0
Red Clearance Interval (R_c), s		2.0		2.0		2.0		0.0
Minimum Green (G_{min}), s		6		6		6		6
Start-Up Lost Time (*l*t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s		2.0		2.0		2.0		2.0
Recall Mode		Min		Off		Off		Off
Dual Entry		Yes		Yes		Yes		Yes
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS7 Signalized Intersection Results Summary

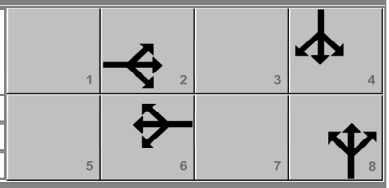
General Information				Intersection Information	
Agency	HDR			Duration, h	0.250
Analyst	SR	Analysis Date	11/25/2024	Area Type	Other
Jurisdiction	Madison	Time Period	PM	PHF	0.92
Urban Street	Madison Ohio 40	Analysis Year	2050	Analysis Period	1> 7:00
Intersection	US 40 @ OH 56 Urbana…	File Name	MO 40 Intersection 13 (Urbana-London) PM 2050…		
Project Description	Build No improvements				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	40	200	80	40	360	150	210	570	80	70	210	40

Signal Information			
Cycle, s	60.3	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	18.3	32.0	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	2.0	0.0	0.0	0.0	0.0	0.0	



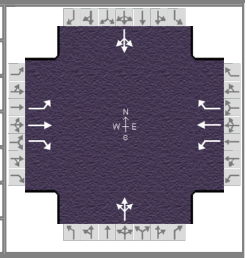
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		5.0		5.0		8.0		8.0
Phase Duration, s		24.3		24.3		36.0		36.0
Change Period, ($Y+R_c$), s		6.0		6.0		6.0		6.0
Max Allow Headway (*MAH*), s		3.0		3.0		3.1		3.1
Queue Clearance Time (g_s), s		16.8		14.2		32.0		11.0
Green Extension Time (g_e), s		1.5		1.6		0.0		3.0
Phase Call Probability		1.00		1.00		1.00		1.00
Max Out Probability		0.02		0.01		1.00		0.02

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	43	217	87	43	391	163		935			348	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	961	1723	1483	1099	1736	1483		1477			1227	
Queue Service Time (g_s), s	2.6	6.1	2.6	2.0	12.2	5.2		21.0			0.0	
Cycle Queue Clearance Time (g_c), s	14.8	6.1	2.6	8.0	12.2	5.2		30.0			9.0	
Green Ratio (*g/C*)	0.30	0.30	0.30	0.30	0.30	0.30		0.50			0.50	
Capacity (*c*), veh/h	218	524	452	344	529	452		808			682	
Volume-to-Capacity Ratio (*X*)	0.200	0.414	0.193	0.126	0.740	0.361		1.157			0.510	
Back of Queue (*Q*), ft/ln (90 th percentile)	23.7	85.5	31.2	20.1	160.4	62.2		943.1			88.8	
Back of Queue (*Q*), veh/ln (90 th percentile)	0.9	3.4	1.2	0.8	6.4	2.5		36.6			3.4	
Queue Storage Ratio (*RQ*) (90 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00		0.00			0.00	
Uniform Delay (d_1), s/veh	25.5	16.7	15.5	19.9	18.9	16.4		16.5			9.7	
Incremental Delay (d_2), s/veh	0.2	0.2	0.1	0.1	0.8	0.2		84.5			0.3	
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0		0.0			0.0	
Control Delay (*d*), s/veh	25.6	16.9	15.6	20.0	19.6	16.6		101.0			10.0	
Level of Service (LOS)	C	B	B	B	B	B		F			A	
Approach Delay, s/veh / LOS	17.7	B		18.8	B		101.0	F		10.0	A	
Intersection Delay, s/veh / LOS	51.7						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.68	B	1.68	B	2.07	B	2.06	B
Bicycle LOS Score / LOS	1.06	A	1.47	A	2.03	B	1.06	A

HCS7 Signalized Intersection Intermediate Values

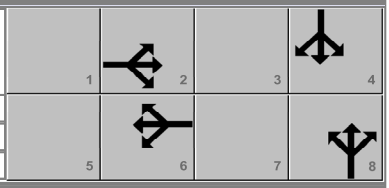
General Information				Intersection Information	
Agency	HDR			Duration, h	0.250
Analyst	SR	Analysis Date	11/25/2024	Area Type	Other
Jurisdiction	Madison	Time Period	PM	PHF	0.92
Urban Street	Madison Ohio 40	Analysis Year	2050	Analysis Period	1> 7:00
Intersection	US 40 @ OH 56 Urbana…	File Name	MO 40 Intersection 13 (Urbana-London) PM 2050…		
Project Description	Build No improvements				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	40	200	80	40	360	150	210	570	80	70	210	40

Signal Information			
Cycle, s	60.3	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	18.3	32.0	0.0	0.0	0.0	0.0						
Yellow	4.0	4.0	0.0	0.0	0.0	0.0						
Red	2.0	0.0	0.0	0.0	0.0	0.0						



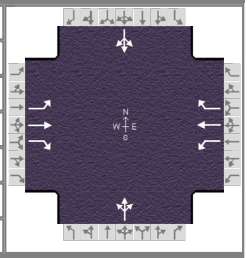
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	0.953	0.984	1.000	0.930	0.992	1.000	0.992	0.969	1.000	1.000	0.961	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.549	0.000		0.628	0.000		0.881	0.871		0.735	0.730	
Right-Turn Adjustment Factor (f_{RT})		0.000	0.847		0.000	0.847		0.000	0.871		0.000	0.730
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Movement Saturation Flow Rate (s), veh/h	961	1723	1483	1099	1736	1483	361	979	137	268	805	153
Proportion of Vehicles Arriving on Green (P)	0.30	0.30	0.30	0.30	0.30	0.30	0.50	0.50	0.50	0.50	0.50	0.50
Incremental Delay Factor (k)	0.04	0.04	0.04	0.04	0.04	0.04		0.50			0.05	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		6.0		6.0		6.0		6.0
Green Ratio (g/C)		0.30		0.30		0.50		0.50
Permitted Saturation Flow Rate (s_p), veh/h/ln		961		1099		1125		753
Shared Saturation Flow Rate (s_{sh}), veh/h/ln						1437		1101
Permitted Effective Green Time (g_p), s		18.4		18.4		30.0		30.0
Permitted Service Time (g_u), s		6.2		12.3		21.0		0.0
Permitted Queue Service Time (g_{ps}), s		2.6		2.0		21.0		0.0
Time to First Blockage (g_f), s		0.0		0.0		2.1		7.0
Queue Service Time Before Blockage (g_{fs}), s						2.1		6.5
Protected Right Saturation Flow (s_R), veh/h/ln		0		0				
Protected Right Effective Green Time (g_R), s		0.0		0.0				

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	0.972	0.000	0.972	0.000	1.389	0.000	1.389	0.000
Pedestrian F_s / F_{delay}	0.000	0.108	0.000	0.108	0.000	0.081	0.000	0.076
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	607.84	14.62	607.84	14.62	994.40	7.63	1060.69	6.65
Bicycle F_w / F_v	-3.64	0.57	-3.64	0.99	-3.64	1.54	-3.64	0.57

HCS7 Signalized Intersection Results Graphical Summary

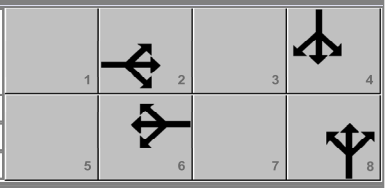
General Information				Intersection Information	
Agency	HDR			Duration, h	0.250
Analyst	SR	Analysis Date	11/25/2024	Area Type	Other
Jurisdiction	Madison	Time Period	PM	PHF	0.92
Urban Street	Madison Ohio 40	Analysis Year	2050	Analysis Period	1> 7:00
Intersection	US 40 @ OH 56 Urbana…	File Name	MO 40 Intersection 13 (Urbana-London) PM 2050…		
Project Description	Build No improvements				



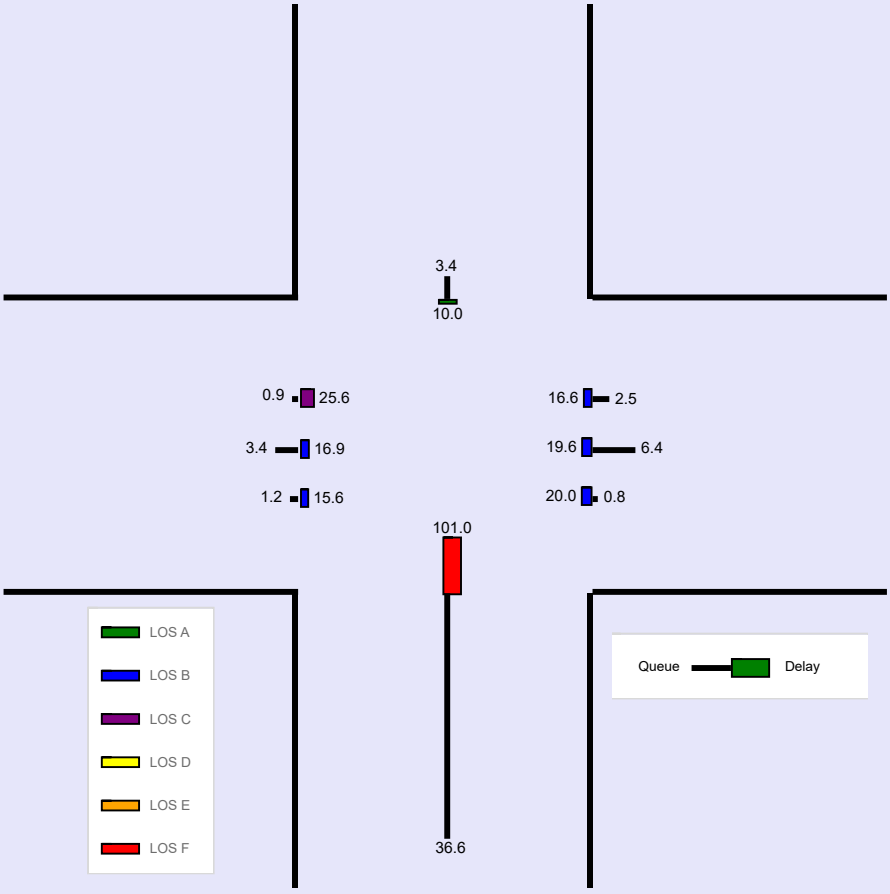
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	40	200	80	40	360	150	210	570	80	70	210	40

Signal Information			
Cycle, s	60.3	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	18.3	32.0	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	2.0	0.0	0.0	0.0	0.0	0.0	



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (90 th percentile)	23.7	85.5	31.2	20.1	160.4	62.2		943.1			88.8	
Back of Queue (*Q*), veh/ln (90 th percentile)	0.9	3.4	1.2	0.8	6.4	2.5		36.6			3.4	
Queue Storage Ratio (*RQ*) (90 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00		0.00			0.00	
Control Delay (*d*), s/veh	25.6	16.9	15.6	20.0	19.6	16.6		101.0			10.0	
Level of Service (LOS)	C	B	B	B	B	B		F			A	
Approach Delay, s/veh / LOS	17.7		B	18.8		B	101.0		F	10.0		A
Intersection Delay, s/veh / LOS	51.7						D					



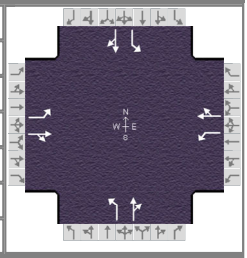
--- Messages ---

WARNING: If demand exceeds capacity, a multiple-period analysis should be conducted.

--- Comments ---

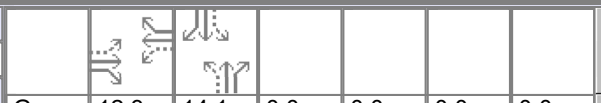
HCS7 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	HDR			Duration, h	0.250
Analyst	SR	Analysis Date	11/25/2024	Area Type	Other
Jurisdiction	Madison	Time Period	AM	PHF	0.89
Urban Street	Madison Ohio 40	Analysis Year	2024	Analysis Period	1> 7:00
Intersection	US 40 @ OH 56 Urbana…	File Name	MO 40 Intersection 13 (Urbana-London) AM 2050…		
Project Description	Improved Signal Option				

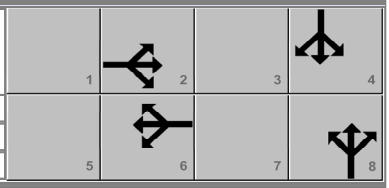


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	70	260	170	80	120	80	120	160	30	130	510	20

Signal Information			
Cycle, s	34.4	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	12.3	14.1	0.0	0.0	0.0	0.0						
Yellow	4.0	4.0	0.0	0.0	0.0	0.0						
Red	0.0	0.0	0.0	0.0	0.0	0.0						



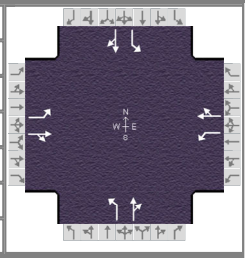
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	70	260	170	80	120	80	120	160	30	130	510	20
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	3	1		0	2		1	3		0	1	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0		12.0	12.0		12.0	12.0		12.0	12.0	
Turn Bay Length, ft	0	0		0	0		0	0		0	0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	60	60	60	60	60	60	60	60	60	60	60	60

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		20.0		6.0		6.0		23.0
Yellow Change Interval (*Y*), s		4.0		4.0		4.0		4.0
Red Clearance Interval (R_c), s		0.0		0.0		0.0		0.0
Minimum Green (G_{min}), s		6		6		6		6
Start-Up Lost Time (*l*t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s		2.0		2.0		2.0		2.0
Recall Mode		Min		Min		Off		Off
Dual Entry		Yes		Yes		Yes		Yes
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS7 Signalized Intersection Results Summary

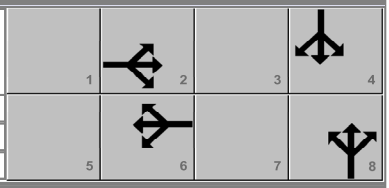
General Information				Intersection Information	
Agency	HDR			Duration, h	0.250
Analyst	SR	Analysis Date	11/25/2024	Area Type	Other
Jurisdiction	Madison	Time Period	AM	PHF	0.89
Urban Street	Madison Ohio 40	Analysis Year	2024	Analysis Period	1> 7:00
Intersection	US 40 @ OH 56 Urbana…	File Name	MO 40 Intersection 13 (Urbana-London) AM 2050…		
Project Description	Improved Signal Option				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	70	260	170	80	120	80	120	160	30	130	510	20

Signal Information			
Cycle, s	34.4	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	12.3	14.1	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	0.0	0.0	0.0	0.0	0.0	0.0	



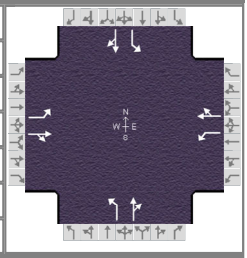
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		6.0		6.0		6.0		6.0
Phase Duration, s		16.3		16.3		18.1		18.1
Change Period, (*Y+R c*), s		4.0		4.0		4.0		4.0
Max Allow Headway (*MAH*), s		3.1		3.1		3.1		3.1
Queue Clearance Time (*g s*), s		11.4		14.3		16.1		12.7
Green Extension Time (*g e*), s		0.9		0.0		0.0		1.3
Phase Call Probability		1.00		1.00		1.00		1.00
Max Out Probability		0.12		1.00		1.00		0.11

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	79	483		90	225		135	213		146	596	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1147	1621		927	1607		829	1662		1186	1725	
Queue Service Time (*g s*), s	1.9	9.4		2.9	3.6		3.4	3.0		3.3	10.7	
Cycle Queue Clearance Time (*g c*), s	5.5	9.4		12.3	3.6		14.1	3.0		6.2	10.7	
Green Ratio (*g/C*)	0.36	0.36		0.36	0.36		0.41	0.41		0.41	0.41	
Capacity (*c*), veh/h	501	581		288	576		290	680		593	706	
Volume-to-Capacity Ratio (*X*)	0.157	0.832		0.312	0.390		0.465	0.314		0.246	0.843	
Back of Queue (*Q*), ft/ln (95 th percentile)	11.5	71.2		20.9	24		33.5	16.7		17.2	71.8	
Back of Queue (*Q*), veh/ln (95 th percentile)	0.4	2.8		0.8	0.9		1.3	0.7		0.7	2.9	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	
Uniform Delay (*d 1*), s/veh	10.3	10.1		15.9	8.2		16.2	6.9		9.0	9.2	
Incremental Delay (*d 2*), s/veh	0.1	1.6		0.2	0.2		0.4	0.1		0.1	1.5	
Initial Queue Delay (*d 3*), s/veh	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Control Delay (*d*), s/veh	10.3	11.7		16.1	8.4		16.6	7.0		9.1	10.7	
Level of Service (LOS)	B	B		B	A		B	A		A	B	
Approach Delay, s/veh / LOS	11.5	B		10.6	B		10.7	B		10.4	B	
Intersection Delay, s/veh / LOS	10.8						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.88	B	1.88	B	1.87	B	1.87	B
Bicycle LOS Score / LOS	1.41	A	1.01	A	1.06	A	1.71	B

HCS7 Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	HDR			Duration, h	0.250
Analyst	SR	Analysis Date	11/25/2024	Area Type	Other
Jurisdiction	Madison	Time Period	AM	PHF	0.89
Urban Street	Madison Ohio 40	Analysis Year	2024	Analysis Period	1> 7:00
Intersection	US 40 @ OH 56 Urbana…	File Name	MO 40 Intersection 13 (Urbana-London) AM 2050…		
Project Description	Improved Signal Option				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	70	260	170	80	120	80	120	160	30	130	510	20

Signal Information			
Cycle, s	34.4	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

								1	2	3	4	
Green	12.3	14.1	0.0	0.0	0.0	0.0						
Yellow	4.0	4.0	0.0	0.0	0.0	0.0						
Red	0.0	0.0	0.0	0.0	0.0	0.0	5	6	7	8		

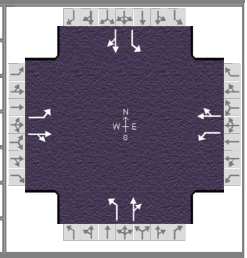
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	0.977	0.992	0.977	1.000	0.984	0.984	0.992	0.977	1.000	1.000	0.992	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.655	0.000		0.529	0.000		0.474	0.000		0.678	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.934	0.934		0.933	0.933		0.972	0.972		0.993	0.993
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Movement Saturation Flow Rate (s), veh/h	1147	980	641	927	964	643	829	1399	262	1186	1660	65
Proportion of Vehicles Arriving on Green (P)	0.36	0.36	0.36	0.36	0.36	0.36	0.41	0.41	0.41	0.41	0.41	0.41
Incremental Delay Factor (k)	0.04	0.05		0.04	0.04		0.04	0.04		0.04	0.06	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		4.0		4.0		4.0		4.0
Green Ratio (g/C)		0.36		0.36		0.41		0.41
Permitted Saturation Flow Rate (s_p), veh/h/ln		1147		927		829		1186
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s		12.3		12.3		14.1		14.1
Permitted Service Time (g_u), s		8.8		2.9		3.4		11.1
Permitted Queue Service Time (g_{ps}), s		1.9		2.9		3.4		3.3
Time to First Blockage (g_f), s		0.0		0.0		0.0		0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln								
Protected Right Effective Green Time (g_R), s								

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.198	0.000	1.198	0.000	1.198	0.000	1.198	0.000
Pedestrian F_s / F_{delay}	0.000	0.079	0.000	0.079	0.000	0.072	0.000	0.072
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	716.10	7.09	716.07	7.09	818.55	6.00	818.58	6.00
Bicycle F_w / F_v	-3.64	0.93	-3.64	0.52	-3.64	0.57	-3.64	1.22

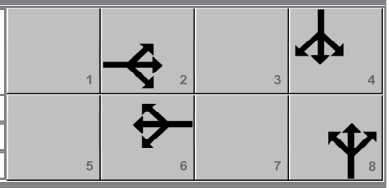
HCS7 Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	HDR			Duration, h	0.250
Analyst	SR	Analysis Date	11/25/2024	Area Type	Other
Jurisdiction	Madison	Time Period	AM	PHF	0.89
Urban Street	Madison Ohio 40	Analysis Year	2024	Analysis Period	1> 7:00
Intersection	US 40 @ OH 56 Urbana…	File Name	MO 40 Intersection 13 (Urbana-London) AM 2050…		
Project Description	Improved Signal Option				

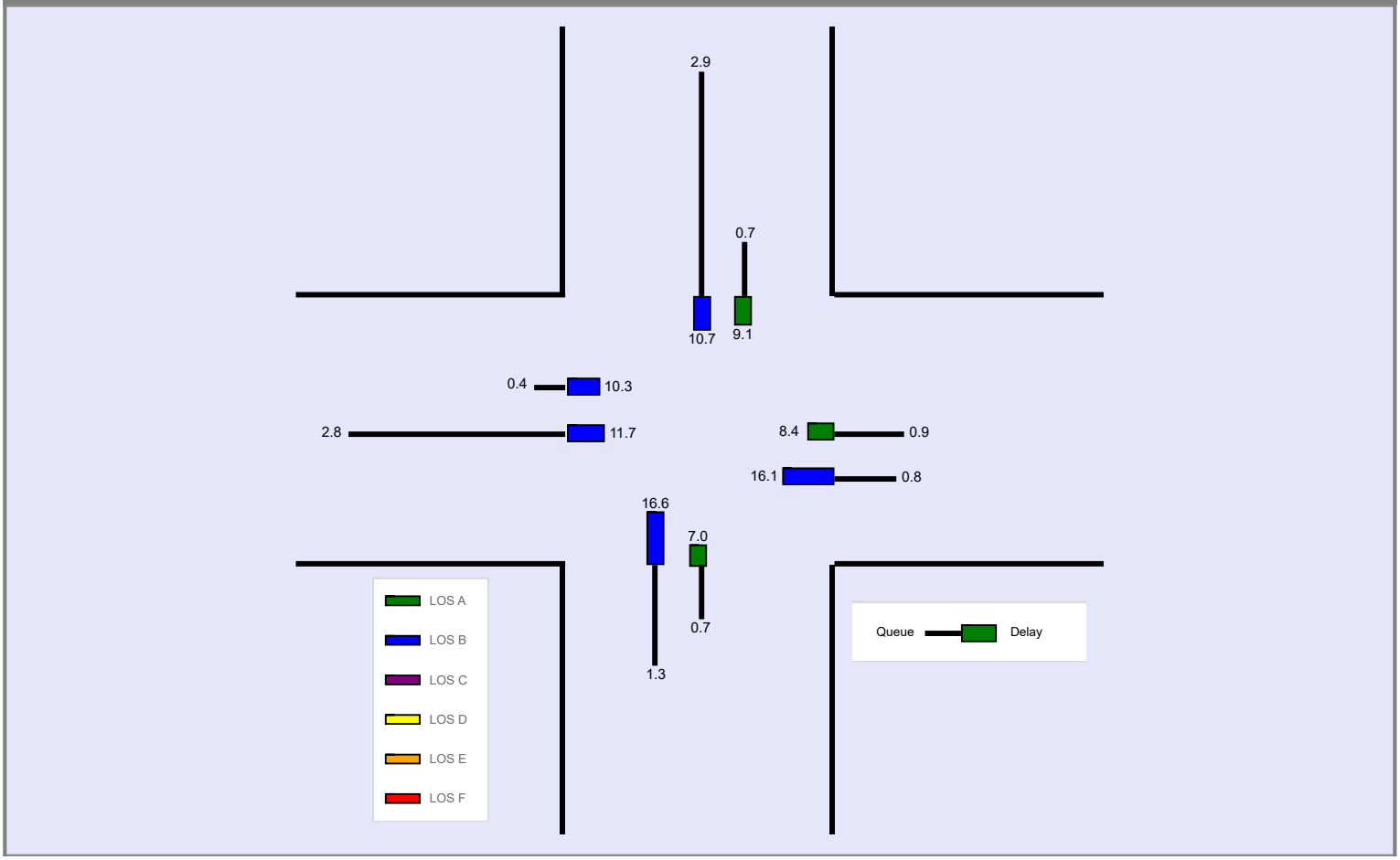


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	70	260	170	80	120	80	120	160	30	130	510	20

Signal Information												
Cycle, s	34.4	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	Yes	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
				Green	12.3	14.1	0.0	0.0	0.0	0.0		
				Yellow	4.0	4.0	0.0	0.0	0.0	0.0		
				Red	0.0	0.0	0.0	0.0	0.0	0.0		



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	11.5	71.2		20.9	24		33.5	16.7		17.2	71.8	
Back of Queue (*Q*), veh/ln (95 th percentile)	0.4	2.8		0.8	0.9		1.3	0.7		0.7	2.9	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	
Control Delay (*d*), s/veh	10.3	11.7		16.1	8.4		16.6	7.0		9.1	10.7	
Level of Service (LOS)	B	B		B	A		B	A		A	B	
Approach Delay, s/veh / LOS	11.5	B		10.6	B		10.7	B		10.4	B	
Intersection Delay, s/veh / LOS	10.8						B					



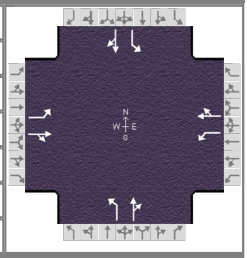
--- Messages ---

No errors or warnings exist.

--- Comments ---

HCS7 Signalized Intersection Input Data

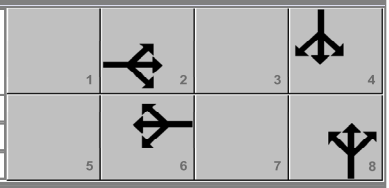
General Information				Intersection Information	
Agency	HDR			Duration, h	0.250
Analyst	SR	Analysis Date	11/25/2024	Area Type	Other
Jurisdiction	Madison	Time Period	PM	PHF	0.92
Urban Street	Madison Ohio 40	Analysis Year	2024	Analysis Period	1> 7:00
Intersection	US 40 @ OH 56 Urbana…	File Name	MO 40 Intersection 13 (Urbana-London) PM 2050…		
Project Description	Improved Signal Option				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	40	200	80	40	360	150	210	570	80	40	210	70

Signal Information			
Cycle, s	62.1	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	23.2	29.0	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	1.0	1.0	0.0	0.0	0.0	0.0	



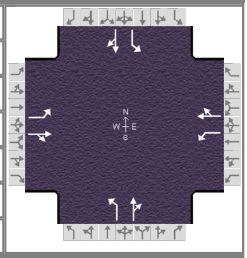
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	40	200	80	40	360	150	210	570	80	40	210	70
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	6	2		9	1		1	4		0	5	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0		12.0	12.0		12.0	12.0		12.0	12.0	
Turn Bay Length, ft	0	0		0	0		0	0		0	0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	60	60	60	60	60	60	60	60	60	60	60	60

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		6.0		41.0		53.0		6.0
Yellow Change Interval (*Y*), s		4.0		4.0		4.0		4.0
Red Clearance Interval (R_c), s		1.0		1.0		1.0		1.0
Minimum Green (G_{min}), s		6		6		6		6
Start-Up Lost Time (*l*t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s		2.0		2.0		2.0		2.0
Recall Mode		Off		Off		Off		Off
Dual Entry		Yes		Yes		Yes		Yes
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS7 Signalized Intersection Results Summary

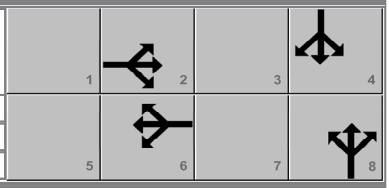
General Information				Intersection Information	
Agency	HDR			Duration, h	0.250
Analyst	SR	Analysis Date	11/25/2024	Area Type	Other
Jurisdiction	Madison	Time Period	PM	PHF	0.92
Urban Street	Madison Ohio 40	Analysis Year	2024	Analysis Period	1> 7:00
Intersection	US 40 @ OH 56 Urbana…	File Name	MO 40 Intersection 13 (Urbana-London) PM 2050…		
Project Description	Improved Signal Option				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	40	200	80	40	360	150	210	570	80	40	210	70

Signal Information			
Cycle, s	62.1	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	23.2	29.0	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	1.0	1.0	0.0	0.0	0.0	0.0	



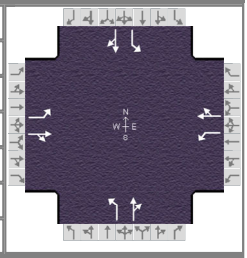
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		6.0		6.0		6.0		6.0
Phase Duration, s		28.2		28.2		34.0		34.0
Change Period, ($Y+R_c$), s		5.0		5.0		5.0		5.0
Max Allow Headway (*MAH*), s		3.0		3.0		3.1		3.1
Queue Clearance Time (g_s), s		25.2		21.8		26.7		30.4
Green Extension Time (g_e), s		0.0		1.1		2.0		0.0
Phase Call Probability		1.00		1.00		1.00		1.00
Max Out Probability		1.00		0.00		0.00		1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	43	304		43	554		228	707		43	304	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	827	1638		1015	1649		1083	1659		753	1609	
Queue Service Time (g_s), s	3.3	8.9		2.1	19.8		10.9	24.7		3.6	7.8	
Cycle Queue Clearance Time (g_c), s	23.2	8.9		11.0	19.8		18.5	24.7		28.4	7.8	
Green Ratio (*g/C*)	0.37	0.37		0.37	0.37		0.47	0.47		0.47	0.47	
Capacity (*c*), veh/h	160	612		351	616		490	774		167	751	
Volume-to-Capacity Ratio (*X*)	0.271	0.498		0.124	0.900		0.466	0.913		0.260	0.405	
Back of Queue (*Q*), ft/ln (90 th percentile)	27	115.1		20.1	229.7		95.1	255.9		25.4	89.5	
Back of Queue (*Q*), veh/ln (90 th percentile)	1.0	4.5		0.8	9.1		3.8	9.9		1.0	3.4	
Queue Storage Ratio (*RQ*) (90 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	
Uniform Delay (d_1), s/veh	29.5	15.1		19.2	18.5		17.0	15.5		28.7	11.0	
Incremental Delay (d_2), s/veh	0.3	0.2		0.1	2.6		0.3	2.0		0.3	0.1	
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Control Delay (*d*), s/veh	29.8	15.3		19.3	21.1		17.2	17.4		29.0	11.1	
Level of Service (LOS)	C	B		B	C		B	B		C	B	
Approach Delay, s/veh / LOS	17.1	B		20.9	C		17.4	B		13.3	B	
Intersection Delay, s/veh / LOS	17.7						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.90	B	1.90	B	1.88	B	1.88	B
Bicycle LOS Score / LOS	1.06	A	1.47	A	2.03	B	1.06	A

HCS7 Signalized Intersection Intermediate Values

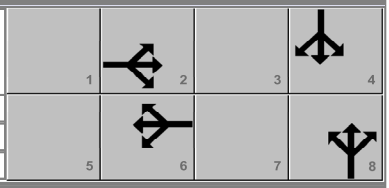
General Information				Intersection Information	
Agency	HDR			Duration, h	0.250
Analyst	SR	Analysis Date	11/25/2024	Area Type	Other
Jurisdiction	Madison	Time Period	PM	PHF	0.92
Urban Street	Madison Ohio 40	Analysis Year	2024	Analysis Period	1> 7:00
Intersection	US 40 @ OH 56 Urbana…	File Name	MO 40 Intersection 13 (Urbana-London) PM 2050…		
Project Description	Improved Signal Option				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	40	200	80	40	360	150	210	570	80	40	210	70

Signal Information			
Cycle, s	62.1	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	23.2	29.0	0.0	0.0	0.0	0.0						
Yellow	4.0	4.0	0.0	0.0	0.0	0.0						
Red	1.0	1.0	0.0	0.0	0.0	0.0						



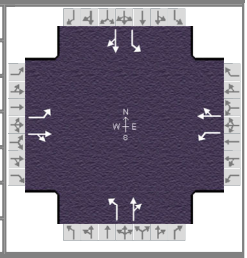
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	0.953	0.984	1.000	0.930	0.992	1.000	0.992	0.969	1.000	1.000	0.961	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.473	0.000		0.580	0.000		0.619	0.000		0.430	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.951	0.951		0.950	0.950		0.978	0.978		0.957	0.957
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Movement Saturation Flow Rate (s), veh/h	827	1170	468	1015	1164	485	1083	1455	204	753	1207	402
Proportion of Vehicles Arriving on Green (P)	0.37	0.37	0.37	0.37	0.37	0.37	0.47	0.47	0.47	0.47	0.47	0.47
Incremental Delay Factor (k)	0.04	0.04		0.04	0.05		0.04	0.04		0.04	0.04	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		5.0		5.0		5.0		5.0
Green Ratio (g/C)		0.37		0.37		0.47		0.47
Permitted Saturation Flow Rate (s_p), veh/h/ln		827		1015		1083		753
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s		23.3		23.3		29.2		29.2
Permitted Service Time (g_u), s		3.4		14.5		21.6		4.3
Permitted Queue Service Time (g_{ps}), s		3.3		2.1		10.9		3.6
Time to First Blockage (g_f), s		0.0		0.0		0.0		0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln								
Protected Right Effective Green Time (g_R), s								

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.198	0.000	1.198	0.000	1.198	0.000	1.198	0.000
Pedestrian F_s / F_{delay}	0.000	0.100	0.000	0.100	0.000	0.087	0.000	0.087
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	745.64	12.22	745.68	12.21	932.31	8.85	932.27	8.85
Bicycle F_w / F_v	-3.64	0.57	-3.64	0.99	-3.64	1.54	-3.64	0.57

HCS7 Signalized Intersection Results Graphical Summary

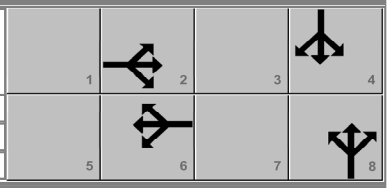
General Information				Intersection Information	
Agency	HDR			Duration, h	0.250
Analyst	SR	Analysis Date	11/25/2024	Area Type	Other
Jurisdiction	Madison	Time Period	PM	PHF	0.92
Urban Street	Madison Ohio 40	Analysis Year	2024	Analysis Period	1> 7:00
Intersection	US 40 @ OH 56 Urbana…	File Name	MO 40 Intersection 13 (Urbana-London) PM 2050…		
Project Description	Improved Signal Option				



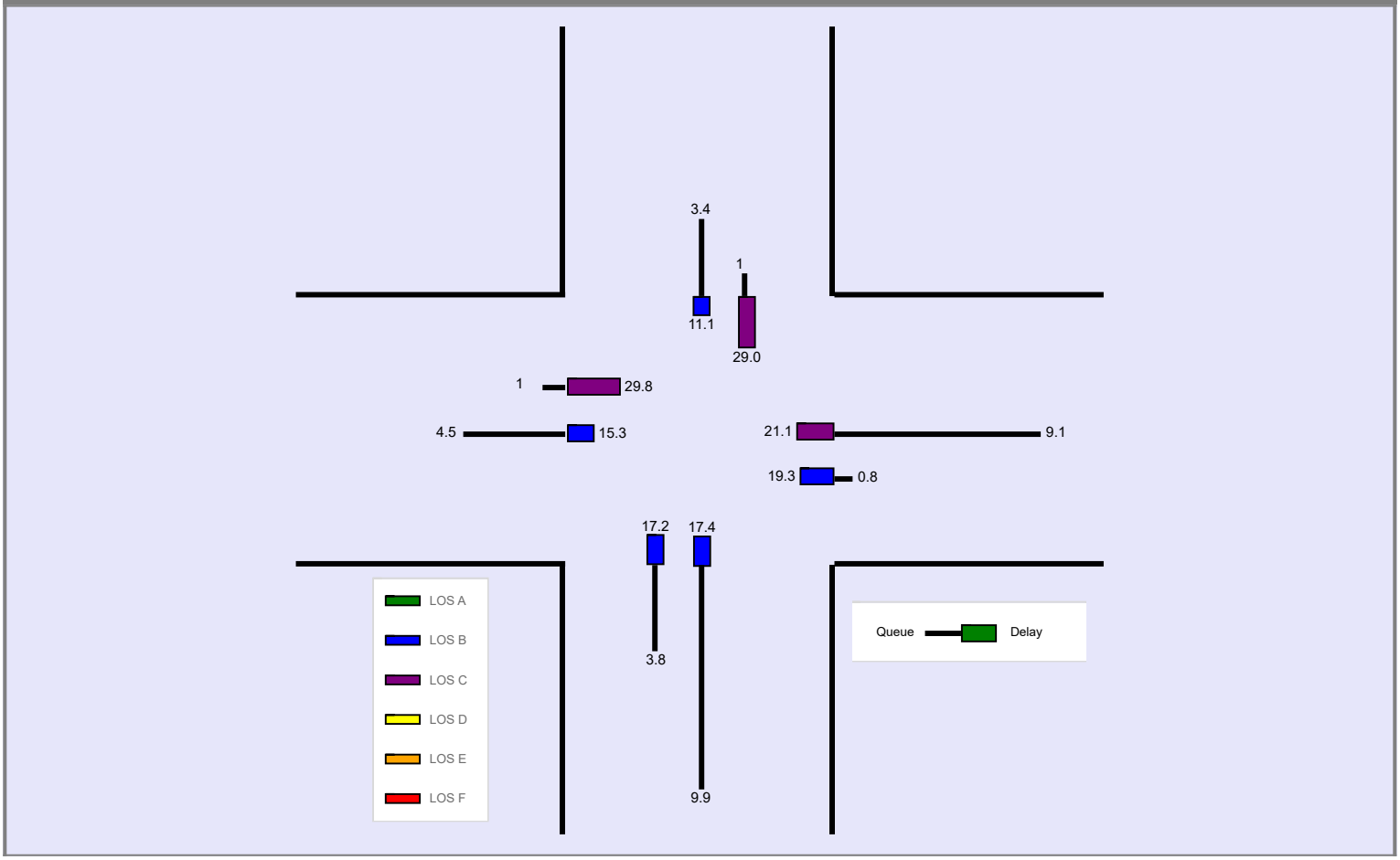
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	40	200	80	40	360	150	210	570	80	40	210	70

Signal Information			
Cycle, s	62.1	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	23.2	29.0	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	1.0	1.0	0.0	0.0	0.0	0.0	



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (90 th percentile)	27	115.1		20.1	229.7		95.1	255.9		25.4	89.5	
Back of Queue (*Q*), veh/ln (90 th percentile)	1.0	4.5		0.8	9.1		3.8	9.9		1.0	3.4	
Queue Storage Ratio (*RQ*) (90 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	
Control Delay (*d*), s/veh	29.8	15.3		19.3	21.1		17.2	17.4		29.0	11.1	
Level of Service (LOS)	C	B		B	C		B	B		C	B	
Approach Delay, s/veh / LOS	17.1	B		20.9	C		17.4	B		13.3	B	
Intersection Delay, s/veh / LOS	17.7						B					



--- Messages ---

No errors or warnings exist.

--- Comments ---

HCS7 Two-Way Stop-Control Report

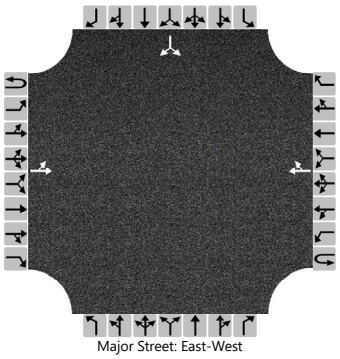
General Information

Analyst	SR
Agency/Co.	HDR
Date Performed	11/25/2024
Analysis Year	2050
Time Analyzed	AM
Intersection Orientation	East-West
Project Description	Madison Ohio 40

Site Information

Intersection	US 40 @ Old US 40
Jurisdiction	Madison
East/West Street	US 40
North/South Street	Old US 40
Peak Hour Factor	0.88
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration		LT						TR							LR	
Volume (veh/h)		20	480				250	10						20		10
Percent Heavy Vehicles (%)		0												100		0
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized																
Median Type | Storage																

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.10												7.40		6.20
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.20												4.40		3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		23													34	
Capacity, c (veh/h)		1278													280	
v/c Ratio		0.02													0.12	
95% Queue Length, Q_{95} (veh)		0.1													0.4	
Control Delay (s/veh)		7.9													19.6	
Level of Service (LOS)		A													C	
Approach Delay (s/veh)		0.5												19.6		
Approach LOS														C		

HCS7 Two-Way Stop-Control Report

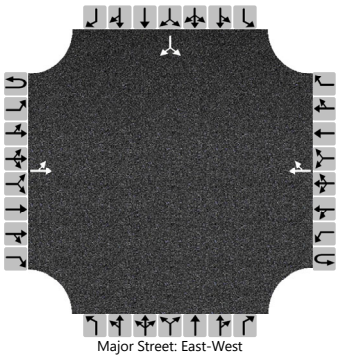
General Information

Analyst	SR
Agency/Co.	HDR
Date Performed	11/25/2024
Analysis Year	2050
Time Analyzed	PM
Intersection Orientation	East-West
Project Description	Madison Ohio 40

Site Information

Intersection	US 40 @ Old US 40
Jurisdiction	Madison
East/West Street	US 40
North/South Street	Old US 40
Peak Hour Factor	0.85
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration		LT						TR							LR	
Volume (veh/h)		20	300				600	10						20		10
Percent Heavy Vehicles (%)		0												0		0
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.10												6.40		6.20
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.20												3.50		3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		24													35	
Capacity, c (veh/h)		893													269	
v/c Ratio		0.03													0.13	
95% Queue Length, Q_{95} (veh)		0.1													0.4	
Control Delay (s/veh)		9.1													20.4	
Level of Service (LOS)		A													C	
Approach Delay (s/veh)	0.9												20.4			
Approach LOS													C			

HCS7 Two-Way Stop-Control Report

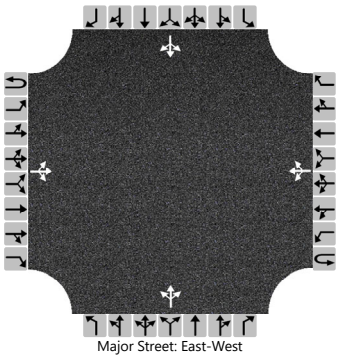
General Information

Analyst	SR
Agency/Co.	HDR
Date Performed	11/25/2024
Analysis Year	2050
Time Analyzed	AM
Intersection Orientation	East-West
Project Description	Madison Ohio 40

Site Information

Intersection	US 40 @ Roberts Mill Road
Jurisdiction	Madison
East/West Street	US 40
North/South Street	Roberts Mill Road
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		10	450	20		20	240	10		20	10	20		20	10	10
Percent Heavy Vehicles (%)		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.13				4.13				7.13	6.53	6.23		7.13	6.53	6.23
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.23				2.23				3.53	4.03	3.33		3.53	4.03	3.33

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		11				22					54				43	
Capacity, c (veh/h)		1286				1049					344				317	
v/c Ratio		0.01				0.02					0.16				0.14	
95% Queue Length, Q_{95} (veh)		0.0				0.1					0.6				0.5	
Control Delay (s/veh)		7.8				8.5					17.4				18.2	
Level of Service (LOS)		A				A					C				C	
Approach Delay (s/veh)	0.3				0.8				17.4				18.2			
Approach LOS									C				C			

HCS7 Two-Way Stop-Control Report

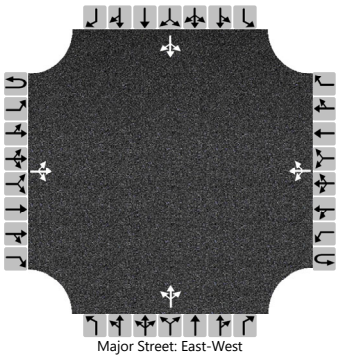
General Information

Analyst	SR
Agency/Co.	HDR
Date Performed	11/25/2024
Analysis Year	2050
Time Analyzed	PM
Intersection Orientation	East-West
Project Description	Madison Ohio 40

Site Information

Intersection	US 40 @ Roberts Mill Road
Jurisdiction	Madison
East/West Street	US 40
North/South Street	Roberts Mill Road
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		10	290	20		30	580	10		20	10	20		10	10	20
Percent Heavy Vehicles (%)		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.13				4.13				7.13	6.53	6.23		7.13	6.53	6.23
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.23				2.23				3.53	4.03	3.33		3.53	4.03	3.33

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		11				33					54				43	
Capacity, c (veh/h)		938				1217					264				275	
v/c Ratio		0.01				0.03					0.21				0.16	
95% Queue Length, Q_{95} (veh)		0.0				0.1					0.8				0.6	
Control Delay (s/veh)		8.9				8.0					22.1				20.6	
Level of Service (LOS)		A				A					C				C	
Approach Delay (s/veh)		0.4				0.7				22.1				20.6		
Approach LOS										C				C		

HCS7 Two-Way Stop-Control Report

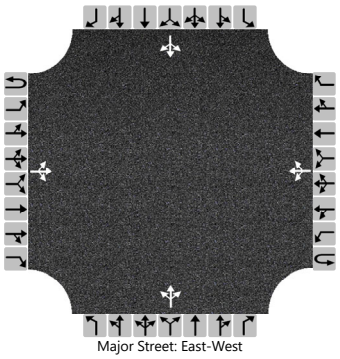
General Information

Analyst	SR
Agency/Co.	HDR
Date Performed	11/25/2024
Analysis Year	2050
Time Analyzed	AM
Intersection Orientation	East-West
Project Description	Madison Ohio 40

Site Information

Intersection	US 40 @ Potee Road/Markley Road
Jurisdiction	Madison
East/West Street	US 40
North/South Street	Potee Road/Markley Road
Peak Hour Factor	0.87
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		20	400	10		20	230	10		10	10	40		20	10	10
Percent Heavy Vehicles (%)		0				0				0	0	0		0	0	0
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.10				4.10				7.10	6.50	6.20		7.10	6.50	6.20
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.20				3.50	4.00	3.30		3.50	4.00	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		23				23					69				46	
Capacity, c (veh/h)		1299				1101					433				308	
v/c Ratio		0.02				0.02					0.16				0.15	
95% Queue Length, Q_{95} (veh)		0.1				0.1					0.6				0.5	
Control Delay (s/veh)		7.8				8.3					14.9				18.7	
Level of Service (LOS)		A				A					B				C	
Approach Delay (s/veh)	0.5				0.8				14.9				18.7			
Approach LOS									B				C			

HCS7 Two-Way Stop-Control Report

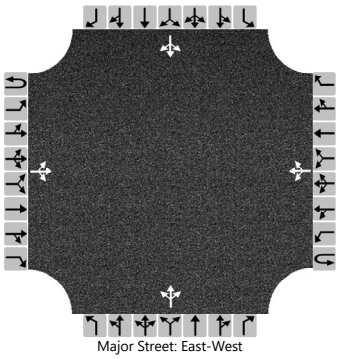
General Information

Analyst	SR
Agency/Co.	HDR
Date Performed	11/25/2024
Analysis Year	2050
Time Analyzed	PM
Intersection Orientation	East-West
Project Description	Madison Ohio 40

Site Information

Intersection	US 40 @ Potee Road/Markley Road
Jurisdiction	Madison
East/West Street	US 40
North/South Street	Potee Road/Markley Road
Peak Hour Factor	0.87
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		10	270	10		30	540	30		10	20	20		10	20	20
Percent Heavy Vehicles (%)		0				0				0	0	0		0	100	0
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage			Undivided													

Critical and Follow-up Headways

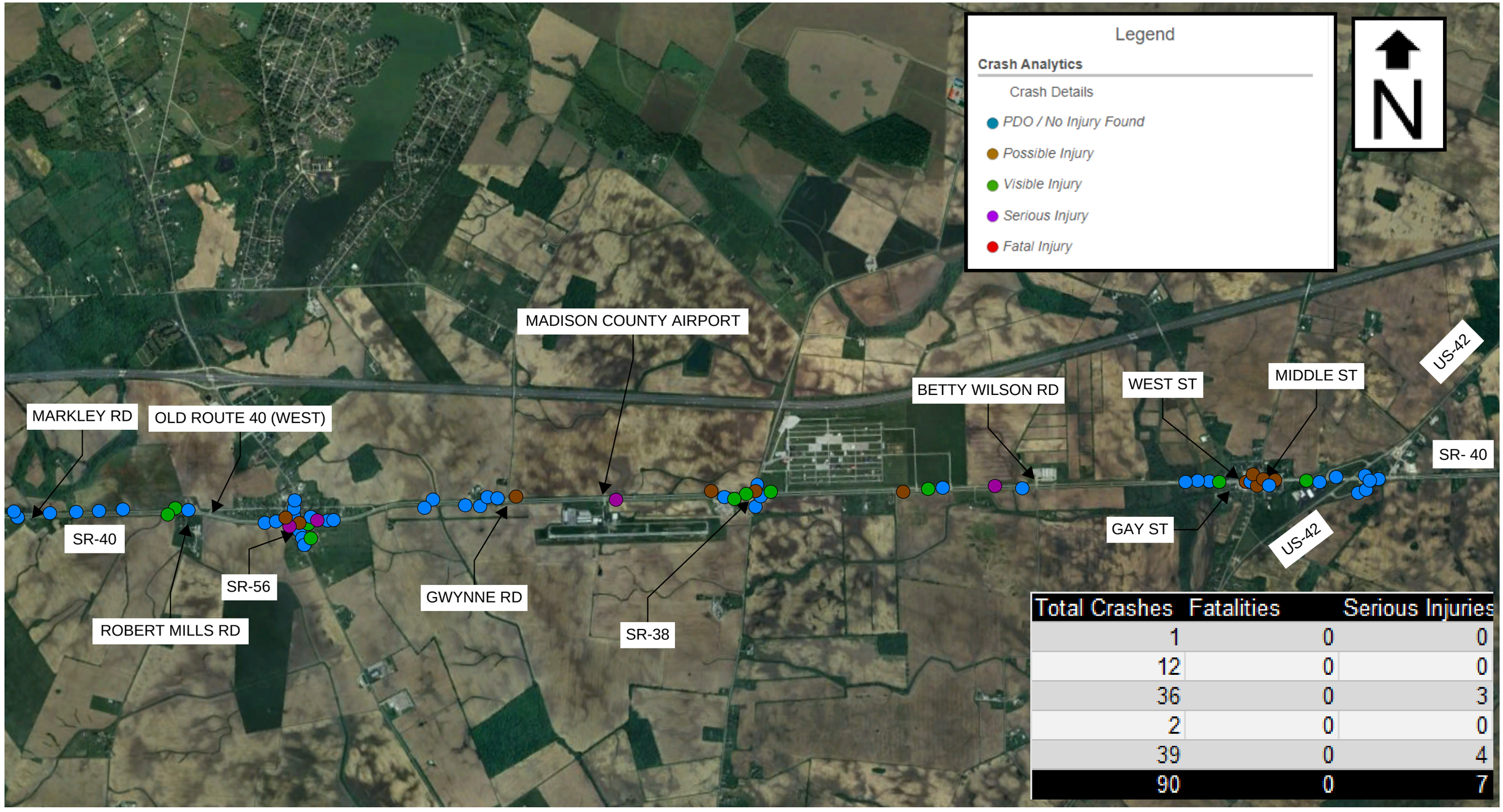
Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.10				4.10				7.10	6.50	6.20		7.10	7.50	6.20
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.20				3.50	4.00	3.30		3.50	4.90	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		11				34					57				57	
Capacity, c (veh/h)		942				1249					272				210	
v/c Ratio		0.01				0.03					0.21				0.27	
95% Queue Length, Q_{95} (veh)		0.0				0.1					0.8				1.1	
Control Delay (s/veh)		8.9				8.0					21.8				28.4	
Level of Service (LOS)		A				A					C				D	
Approach Delay (s/veh)	0.4				0.7				21.8				28.4			
Approach LOS									C				D			

Appendix E
Crash Data

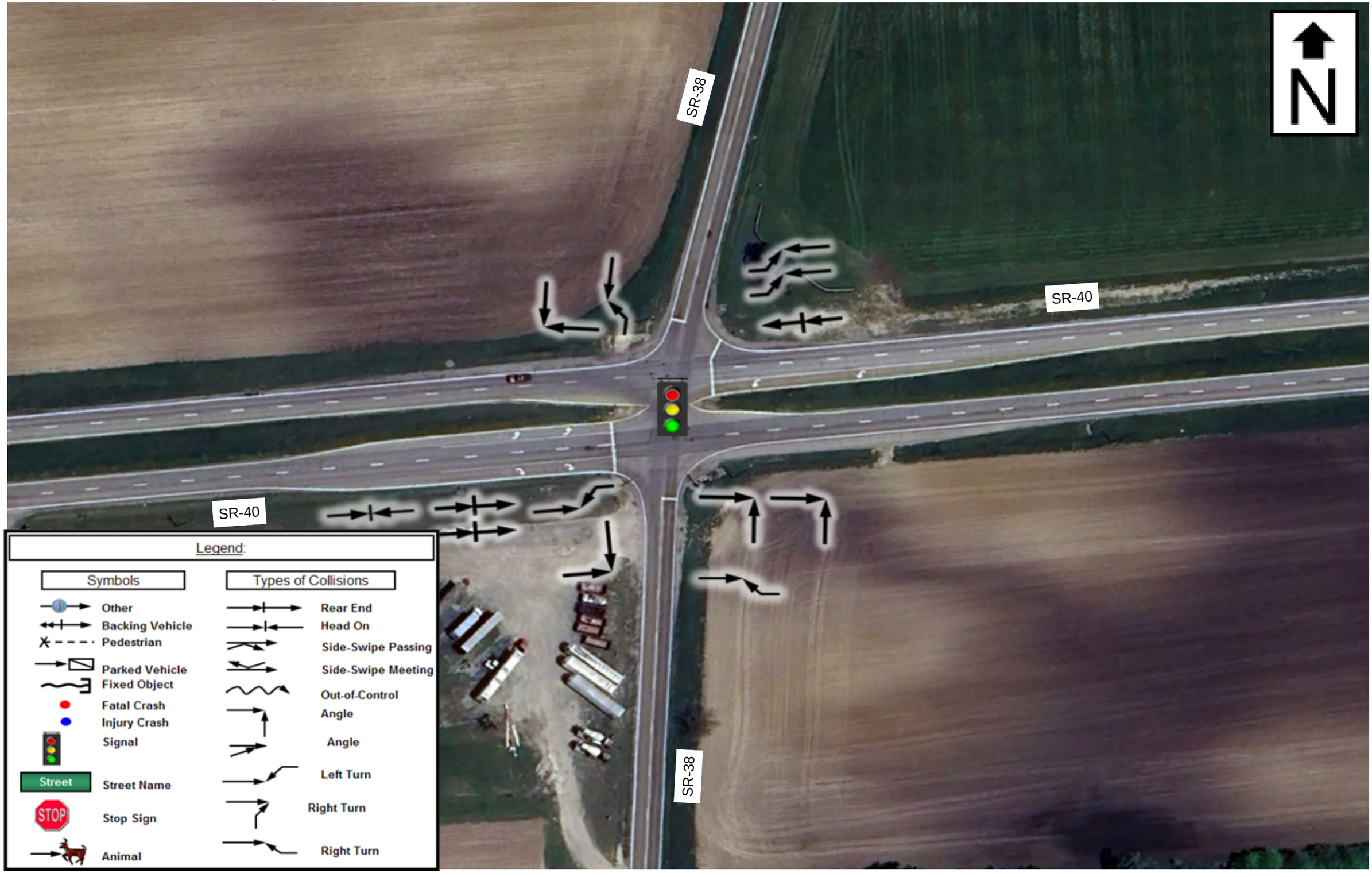
MAD-40 Crash Analysis Overview - Total (2020-2024)



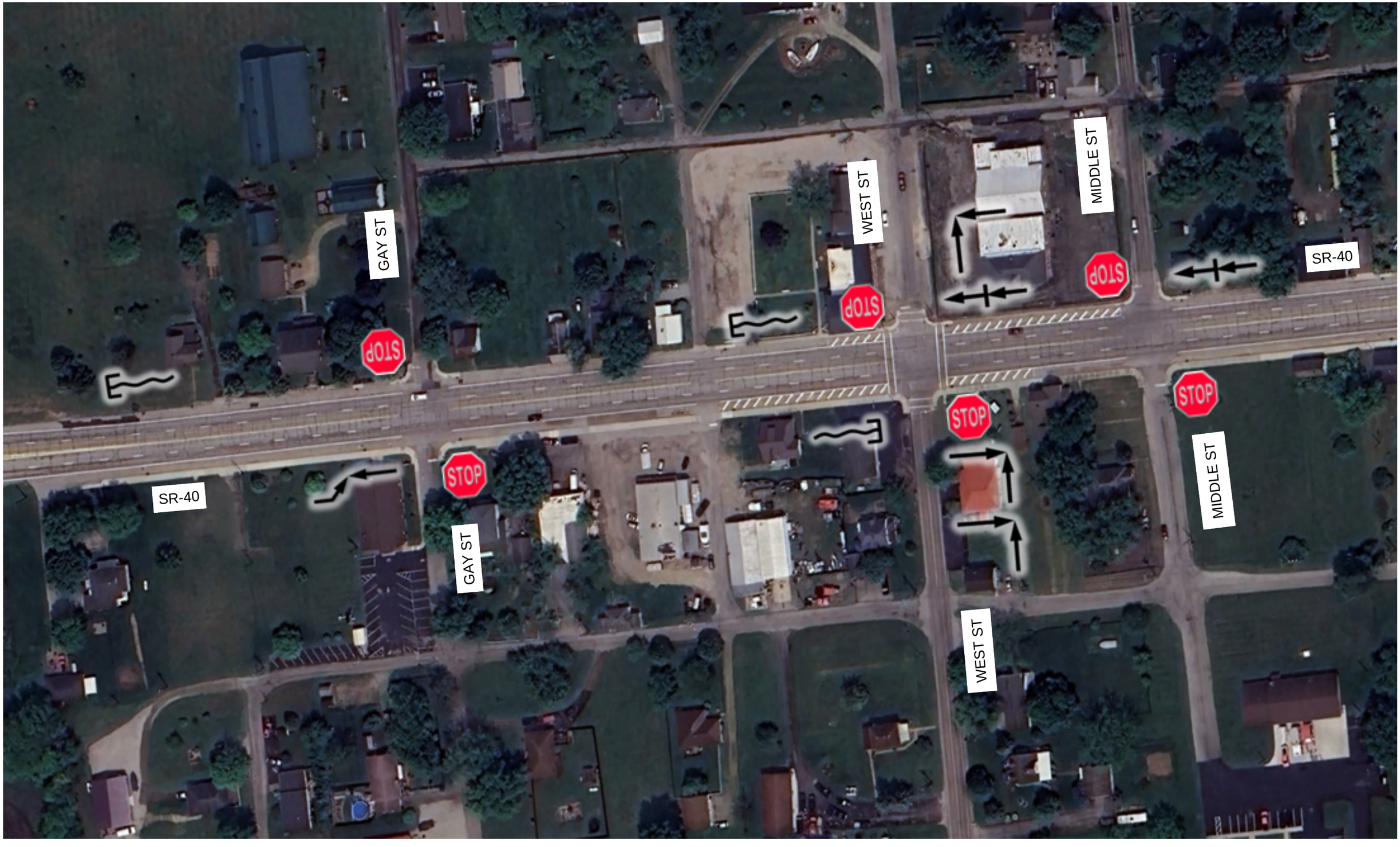
Total Crashes	Fatalities	Serious Injuries
1	0	0
12	0	0
36	0	3
2	0	0
39	0	4
90	0	7

SR-56 Crash Diagram

SR-38 Crash Diagram



Gay St to Middle St Crash Diagram

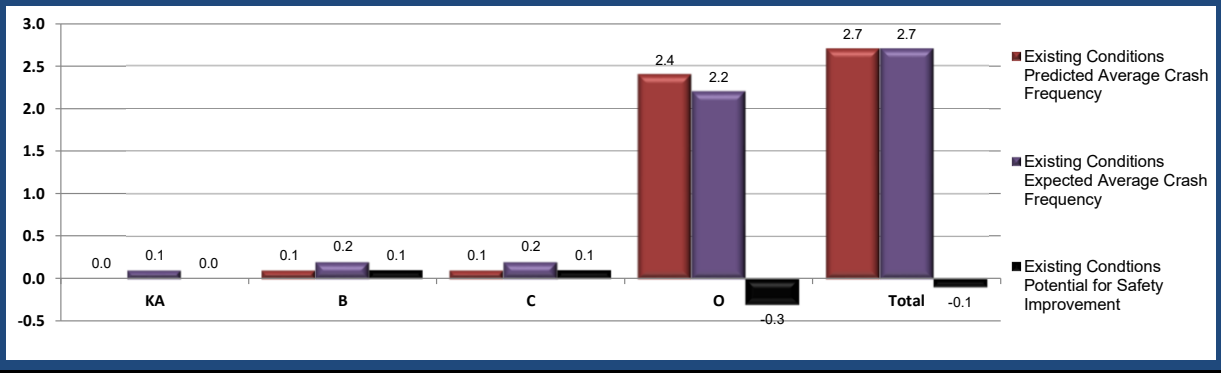


Project Safety Performance Report

General Information

Project Name	US-40 & SR-38	Contact Email	
Project Description	US-40 & SR-38	Contact Phone	
Reference Number		Date Performed	2/4/2025
Analyst	SWM	Analysis Year	2024
Agency/Company	HDR		

Summary of Anticipated Safety Performance of the Project (average crashes/year)



Project Summary Results (Without Animal Crashes)

	KA	B	C	O	Total
$N_{predicted}$ - Existing Conditions	0.0381	0.1080	0.1222	2.4446	2.7129
$N_{expected}$ - Existing Conditions	0.0710	0.2004	0.2264	2.1534	2.6512
$N_{potential\ for\ improvement}$ - Existing Conditions	**0.0329**	**0.0924**	**0.1042**	-0.2912	-0.0617

Existing Conditions Project Element Predicted Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
US-40 & SR-38	US-40 & SR-38	0.0381	0.108	0.1222	2.4446	2.7129

Existing Conditions Project Element Expected Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
US-40 & SR-38	US-40 & SR-38	0.071	0.2004	0.2264	2.1534	2.6512

Existing Conditions Project Element Potential for Safety Improvement Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
US-40 & SR-38	US-40 & SR-38	**0.0329**	**0.0924**	**0.1042**	-0.2912	-0.0617

Summary by Crash Type

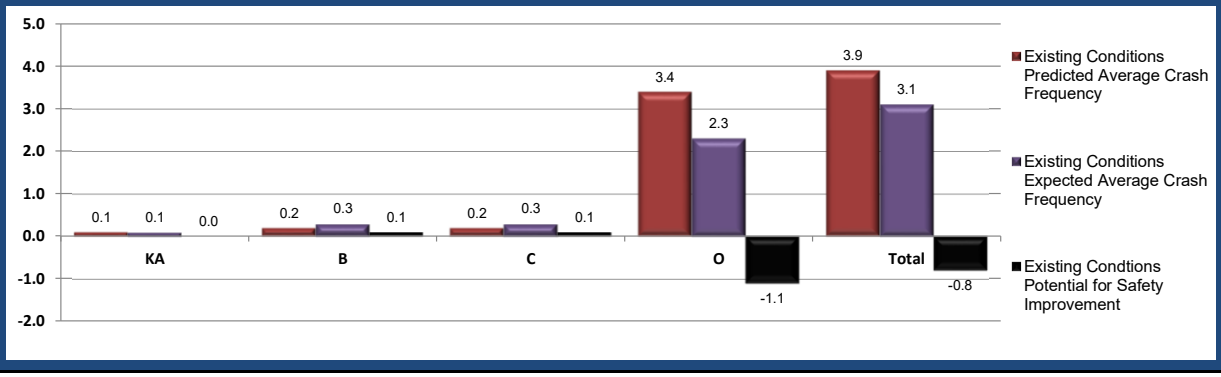
Crash Type	Existing			Proposed
	Predicted Crash Frequency	Expected Crash Frequency	PSI	Expected Crash Frequency
Unknown	0.0047	0.0043	-0.0004	
Head On	0.0411	0.0452	**0.0041**	
Rear End	0.9336	0.9045	-0.0291	
Backing	0.3175	0.2826	-0.0349	
Sideswipe - Meeting	0.0032	0.0028	-0.0004	
Sideswipe - Passing	0.2585	0.2383	-0.0202	
Angle	0.4738	0.5030	**0.0292**	
Parked Vehicle	0.1063	0.0966	-0.0097	
Pedestrian	0.0150	0.0249	**0.0099**	
Animal	0.0000	0.0000	0.0000	
Train	0.0015	0.0013	-0.0002	
Pedalcycles	0.0037	0.0037	0.0000	
Other Non-Vehicle	0.0000	0.0000	0.0000	
Fixed Object	0.2013	0.1895	-0.0118	
Other Object	0.0127	0.0112	-0.0015	
Overturning	0.0052	0.0066	**0.0014**	
Other Non-Collision	0.0231	0.0228	-0.0003	
Left Turn	0.2049	0.2163	**0.0114**	
Right Turn	0.1068	0.0976	-0.0092	

Project Safety Performance Report

General Information

Project Name	US-40 & SR-38	Contact Email	
Project Description	US-40 & SR-38	Contact Phone	
Reference Number		Date Performed	3/26/2025
Analyst	SWM	Analysis Year	2050
Agency/Company	HDR		

Summary of Anticipated Safety Performance of the Project (average crashes/year)



Project Summary Results (Without Animal Crashes)

	KA	B	C	O	Total
$N_{predicted}$ - Existing Conditions	0.0661	0.1868	0.2111	3.3989	3.8629
$N_{expected}$ - Existing Conditions	0.1092	0.3079	0.3478	2.3011	3.0660
$N_{potential\ for\ improvement}$ - Existing Conditions	0.0431	0.1211	0.1367	-1.0978	-0.7969

Existing Conditions Project Element Predicted Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
US-40 & SR-38	US-40 & SR-38	0.0661	0.1868	0.2111	3.3989	3.8629

Existing Conditions Project Element Expected Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
US-40 & SR-38	US-40 & SR-38	0.1092	0.3079	0.3478	2.3011	3.066

Existing Conditions Project Element Potential for Safety Improvement Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
US-40 & SR-38	US-40 & SR-38	0.0431	0.1211	0.1367	-1.0978	-0.7969

Summary by Crash Type

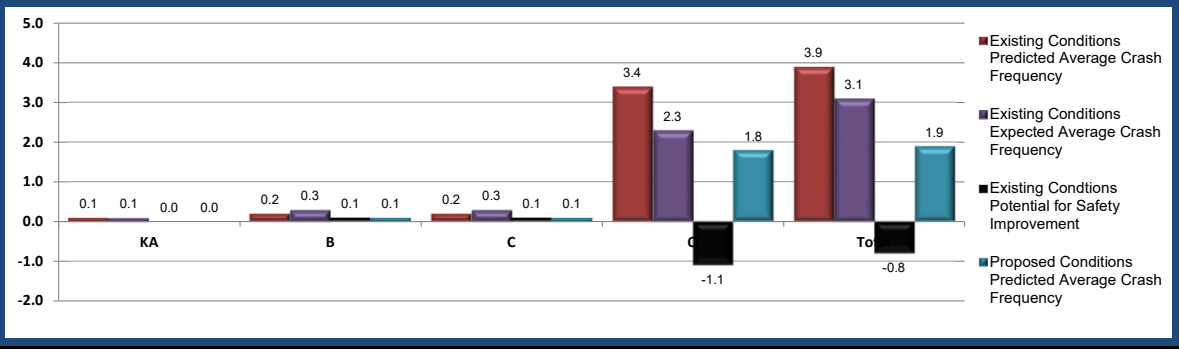
Crash Type	Existing			Proposed
	Predicted Crash Frequency	Expected Crash Frequency	PSI	Expected Crash Frequency
Unknown	0.0070	0.0047	-0.0023	
Head On	0.0603	0.0565	-0.0038	
Rear End	1.3265	1.0395	-0.2870	
Backing	0.4425	0.3048	-0.1377	
Sideswipe - Meeting	0.0044	0.0030	-0.0014	
Sideswipe - Passing	0.3631	0.2641	-0.0990	
Angle	0.6883	0.6135	-0.0748	
Parked Vehicle	0.1488	0.1059	-0.0429	
Pedestrian	0.0249	0.0369	0.0120	
Animal	0.0000	0.0000	0.0000	
Train	0.0020	0.0014	-0.0006	
Pedalcycles	0.0053	0.0045	-0.0008	
Other Non-Vehicle	0.0000	0.0000	0.0000	
Fixed Object	0.2841	0.2132	-0.0709	
Other Object	0.0177	0.0120	-0.0057	
Overturning	0.0080	0.0090	0.0010	
Other Non-Collision	0.0331	0.0267	-0.0064	
Left Turn	0.2972	0.2629	-0.0343	
Right Turn	0.1497	0.1074	-0.0423	

Project Safety Performance Report

General Information

Project Name	US-40 & SR-38	Contact Email	
Project Description	US-40 & SR-38	Contact Phone	
Reference Number		Date Performed	3/26/2025
Analyst	SWM	Analysis Year	2050
Agency/Company	HDR		

Summary of Anticipated Safety Performance of the Project (average crashes/year)



Project Summary Results (Without Animal Crashes)

	KA	B	C	O	Total
$N_{predicted}$ - Existing Conditions	0.0661	0.1868	0.2111	3.3989	3.8629
$N_{expected}$ - Existing Conditions	0.1092	0.3079	0.3478	2.3011	3.0660
$N_{potential\ for\ improvement}$ - Existing Conditions	**0.0431**	**0.1211**	**0.1367**	-1.0978	-0.7969
$N_{expected}$ - Proposed Conditions	0.0091	0.0768	0.0953	1.7578	1.9390

Existing Conditions Project Element Predicted Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
US-40 & SR-38	US-40 & SR-38	0.0661	0.1868	0.2111	3.3989	3.8629

Existing Conditions Project Element Expected Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
US-40 & SR-38	US-40 & SR-38	0.1092	0.3079	0.3478	2.3011	3.066

Existing Conditions Project Element Potential for Safety Improvement Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
US-40 & SR-38	US-40 & SR-38	**0.0431**	**0.1211**	**0.1367**	-1.0978	-0.7969

Proposed Conditions Project Element Predicted Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
US-40 & SR-38	US-40 & SR-38	0.0091	0.0768	0.0953	1.7578	1.939

Summary by Crash Type

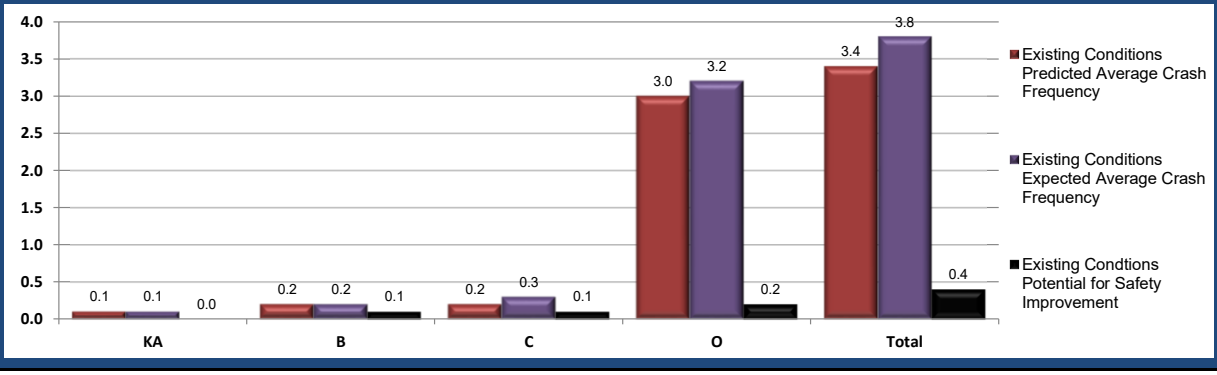
Crash Type	Existing			Proposed
	Predicted Crash Frequency	Expected Crash Frequency	PSI	Predicted Crash Frequency
Unknown	0.0070	0.0047	-0.0023	0.0549
Head On	0.0603	0.0565	-0.0038	0.0018
Rear End	1.3265	1.0395	-0.2870	0.2981
Backing	0.4425	0.3048	-0.1377	0.0178
Sideswipe - Meeting	0.0044	0.0030	-0.0014	0.0000
Sideswipe - Passing	0.3631	0.2641	-0.0990	0.6066
Angle	0.6883	0.6135	-0.0748	0.5466
Parked Vehicle	0.1488	0.1059	-0.0429	0.0000
Pedestrian	0.0249	0.0369	**0.0120**	0.0018
Animal	0.0000	0.0000	0.0000	0.0196
Train	0.0020	0.0014	-0.0006	0.0000
Pedalcycles	0.0053	0.0045	-0.0008	0.0018
Other Non-Vehicle	0.0000	0.0000	0.0000	0.0000
Fixed Object	0.2841	0.2132	-0.0709	0.1960
Other Object	0.0177	0.0120	-0.0057	0.0000
Overturning	0.0080	0.0090	**0.0010**	0.0018
Other Non-Collision	0.0331	0.0267	-0.0064	0.0373
Left Turn	0.2972	0.2629	-0.0343	0.0428
Right Turn	0.1497	0.1074	-0.0423	0.1317

Project Safety Performance Report

General Information

Project Name	US-40 & SR-56	Contact Email	
Project Description	US-40 & SR-56	Contact Phone	
Reference Number		Date Performed	3/26/2025
Analyst	SWM	Analysis Year	2024
Agency/Company	HDR		

Summary of Anticipated Safety Performance of the Project (average crashes/year)



Project Summary Results (Without Animal Crashes)

	KA	B	C	O	Total
$N_{predicted}$ - Existing Conditions	0.0540	0.1527	0.1725	3.0122	3.3914
$N_{expected}$ - Existing Conditions	0.0808	0.2278	0.2574	3.1907	3.7567
$N_{potential\ for\ improvement}$ - Existing Conditions	0.0268	0.0751	0.0849	0.1785	0.3653

Existing Conditions Project Element Predicted Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
US-40 & SR-56	US-40 & SR-56	0.054	0.1527	0.1725	3.0122	3.3914

Existing Conditions Project Element Expected Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
US-40 & SR-56	US-40 & SR-56	0.0808	0.2278	0.2574	3.1907	3.7567

Existing Conditions Project Element Potential for Safety Improvement Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
US-40 & SR-56	US-40 & SR-56	0.0268	0.0751	0.0849	0.1785	0.3653

Summary by Crash Type

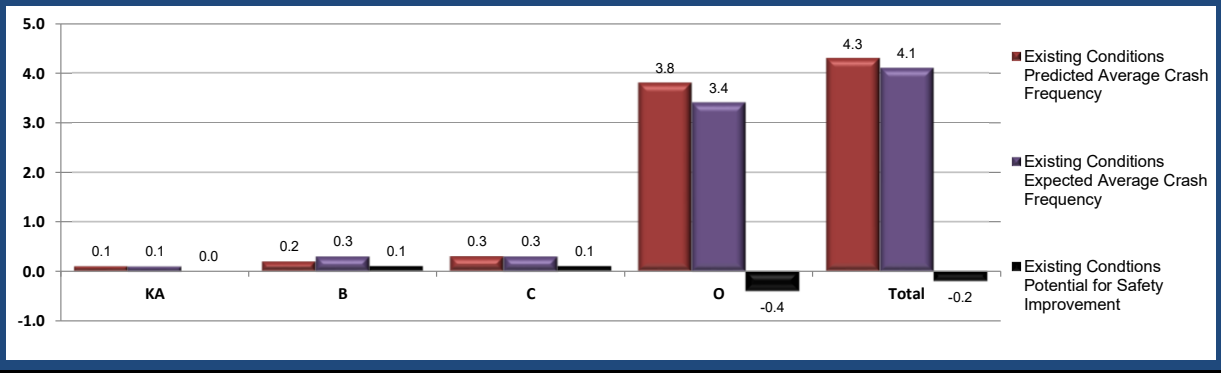
Crash Type	Existing			Proposed
	Predicted Crash Frequency	Expected Crash Frequency	PSI	Expected Crash Frequency
Unknown	0.0062	0.0065	0.0003	
Head On	0.0524	0.0612	0.0088	
Rear End	1.1656	1.2862	0.1206	
Backing	0.3918	0.4169	0.0251	
Sideswipe - Meeting	0.0039	0.0041	0.0002	
Sideswipe - Passing	0.3204	0.3461	0.0257	
Angle	0.5996	0.6888	0.0892	
Parked Vehicle	0.1314	0.1412	0.0098	
Pedestrian	0.0206	0.0291	0.0085	
Animal	0.0000	0.0000	0.0000	
Train	0.0018	0.0019	0.0001	
Pedalcycles	0.0046	0.0052	0.0006	
Other Non-Vehicle	0.0000	0.0000	0.0000	
Fixed Object	0.2504	0.2729	0.0225	
Other Object	0.0157	0.0166	0.0009	
Overturning	0.0069	0.0085	0.0016	
Other Non-Collision	0.0289	0.0323	0.0034	
Left Turn	0.2590	0.2969	0.0379	
Right Turn	0.1322	0.1423	0.0101	

Project Safety Performance Report

General Information

Project Name	US-40 & SR-56	Contact Email	
Project Description	US-40 & SR-56	Contact Phone	
Reference Number		Date Performed	3/26/2025
Analyst	SWM	Analysis Year	2050
Agency/Company	HDR		

Summary of Anticipated Safety Performance of the Project (average crashes/year)



Project Summary Results (Without Animal Crashes)

	KA	B	C	O	Total
$N_{predicted}$ - Existing Conditions	0.0787	0.2223	0.2512	3.7685	4.3207
$N_{expected}$ - Existing Conditions	0.1064	0.3004	0.3392	3.3640	4.1100
$N_{potential\ for\ improvement}$ - Existing Conditions	0.0277	0.0781	0.0880	-0.4045	-0.2107

Existing Conditions Project Element Predicted Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
US-40 & SR-56	US-40 & SR-56	0.0787	0.2223	0.2512	3.7685	4.3207

Existing Conditions Project Element Expected Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
US-40 & SR-56	US-40 & SR-56	0.1064	0.3004	0.3392	3.364	4.11

Existing Conditions Project Element Potential for Safety Improvement Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
US-40 & SR-56	US-40 & SR-56	0.0277	0.0781	0.088	-0.4045	-0.2107

Summary by Crash Type

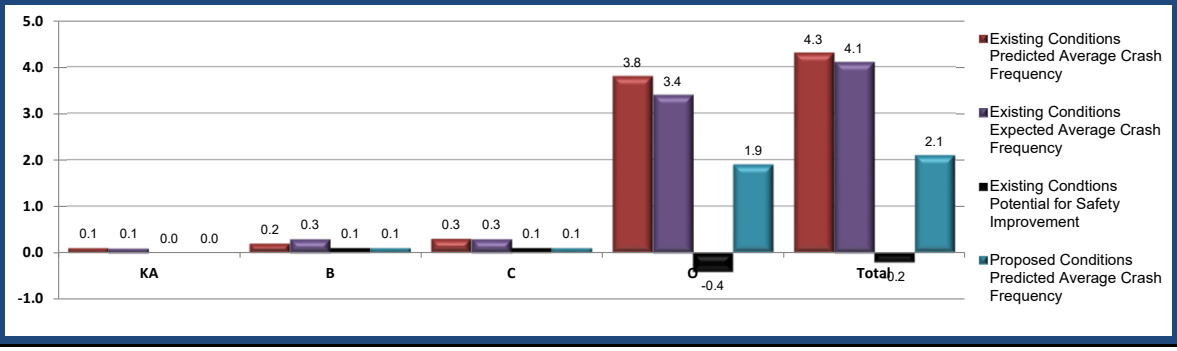
Crash Type	Existing			Proposed
	Predicted Crash Frequency	Expected Crash Frequency	PSI	Expected Crash Frequency
Unknown	0.0075	0.0068	-0.0007	
Head On	0.0683	0.0695	0.0012	
Rear End	1.4825	1.4029	-0.0796	
Backing	0.4911	0.4412	-0.0499	
Sideswipe - Meeting	0.0049	0.0044	-0.0005	
Sideswipe - Passing	0.4042	0.3710	-0.0332	
Angle	0.7755	0.7751	-0.0004	
Parked Vehicle	0.1653	0.1506	-0.0147	
Pedestrian	0.0294	0.0375	0.0081	
Animal	0.0000	0.0000	0.0000	
Train	0.0023	0.0020	-0.0003	
Pedalcycles	0.0059	0.0058	-0.0001	
Other Non-Vehicle	0.0000	0.0000	0.0000	
Fixed Object	0.3167	0.2945	-0.0222	
Other Object	0.0196	0.0175	-0.0021	
Overturning	0.0093	0.0102	0.0009	
Other Non-Collision	0.0369	0.0354	-0.0015	
Left Turn	0.3348	0.3335	-0.0013	
Right Turn	0.1665	0.1521	-0.0144	

Project Safety Performance Report

General Information

Project Name	US-40 & SR-56	Contact Email	
Project Description	US-40 & SR-56	Contact Phone	
Reference Number		Date Performed	4/17/2025
Analyst	SWM	Analysis Year	2050
Agency/Company	HDR		

Summary of Anticipated Safety Performance of the Project (average crashes/year)



Project Summary Results (Without Animal Crashes)

	KA	B	C	O	Total
$N_{predicted}$ - Existing Conditions	0.0787	0.2223	0.2512	3.7685	4.3207
$N_{expected}$ - Existing Conditions	0.1064	0.3004	0.3392	3.3640	4.1100
$N_{potential\ for\ improvement}$ - Existing Conditions	**0.0277**	**0.0781**	**0.0880**	-0.4045	-0.2107
$N_{expected}$ - Proposed Conditions	0.0075	0.0631	0.0783	1.9124	2.0613

Existing Conditions Project Element Predicted Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
US-40 & SR-56	US-40 & SR-56	0.0787	0.2223	0.2512	3.7685	4.3207

Existing Conditions Project Element Expected Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
US-40 & SR-56	US-40 & SR-56	0.1064	0.3004	0.3392	3.364	4.11

Existing Conditions Project Element Potential for Safety Improvement Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
US-40 & SR-56	US-40 & SR-56	**0.0277**	**0.0781**	**0.088**	-0.4045	-0.2107

Proposed Conditions Project Element Predicted Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
US-40 & SR-56	US-40 & SR-56	0.0075	0.0631	0.0783	1.9124	2.0613

Summary by Crash Type

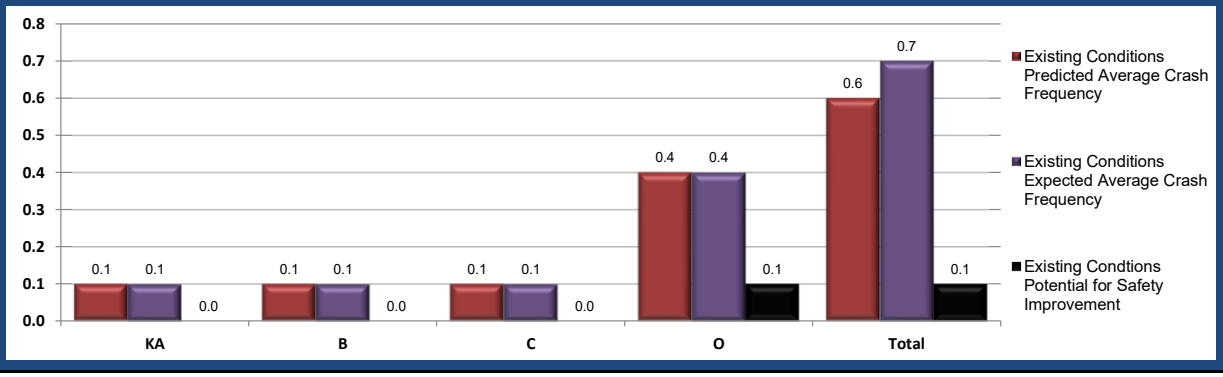
Crash Type	Existing			Proposed
	Predicted Crash Frequency	Expected Crash Frequency	PSI	Predicted Crash Frequency
Unknown	0.0075	0.0068	-0.0007	0.0596
Head On	0.0683	0.0695	**0.0012**	0.0015
Rear End	1.4825	1.4029	-0.0796	0.3111
Backing	0.4911	0.4412	-0.0499	0.0193
Sideswipe - Meeting	0.0049	0.0044	-0.0005	0.0000
Sideswipe - Passing	0.4042	0.3710	-0.0332	0.6497
Angle	0.7755	0.7751	-0.0004	0.5815
Parked Vehicle	0.1653	0.1506	-0.0147	0.0000
Pedestrian	0.0294	0.0375	**0.0081**	0.0015
Animal	0.0000	0.0000	0.0000	0.0208
Train	0.0023	0.0020	-0.0003	0.0000
Pedalcycles	0.0059	0.0058	-0.0001	0.0015
Other Non-Vehicle	0.0000	0.0000	0.0000	0.0000
Fixed Object	0.3167	0.2945	-0.0222	0.2082
Other Object	0.0196	0.0175	-0.0021	0.0000
Overturning	0.0093	0.0102	**0.0009**	0.0015
Other Non-Collision	0.0369	0.0354	-0.0015	0.0401
Left Turn	0.3348	0.3335	-0.0013	0.0446
Right Turn	0.1665	0.1521	-0.0144	0.1412

Project Safety Performance Report

General Information

Project Name	US-40 & West Street	Contact Email	
Project Description	US-40 & West Street	Contact Phone	
Reference Number		Date Performed	3/26/2025
Analyst	SWM	Analysis Year	2024
Agency/Company	HDR		

Summary of Anticipated Safety Performance of the Project (average crashes/year)



Project Summary Results (Without Animal Crashes)

	KA	B	C	O	Total
$N_{predicted}$ - Existing Conditions	0.0520	0.1069	0.0633	0.3573	0.5795
$N_{expected}$ - Existing Conditions	0.0680	0.1399	0.0827	0.4336	0.7242
$N_{potential\ for\ improvement}$ - Existing Conditions	0.0160	0.0330	0.0194	0.0763	0.1447

Existing Conditions Project Element Predicted Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
US-40 & West Street	US-40 & West Street	0.052	0.1069	0.0633	0.3573	0.5795

Existing Conditions Project Element Expected Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
US-40 & West Street	US-40 & West Street	0.068	0.1399	0.0827	0.4336	0.7242

Existing Conditions Project Element Potential for Safety Improvement Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
US-40 & West Street	US-40 & West Street	0.016	0.033	0.0194	0.0763	0.1447

Summary by Crash Type

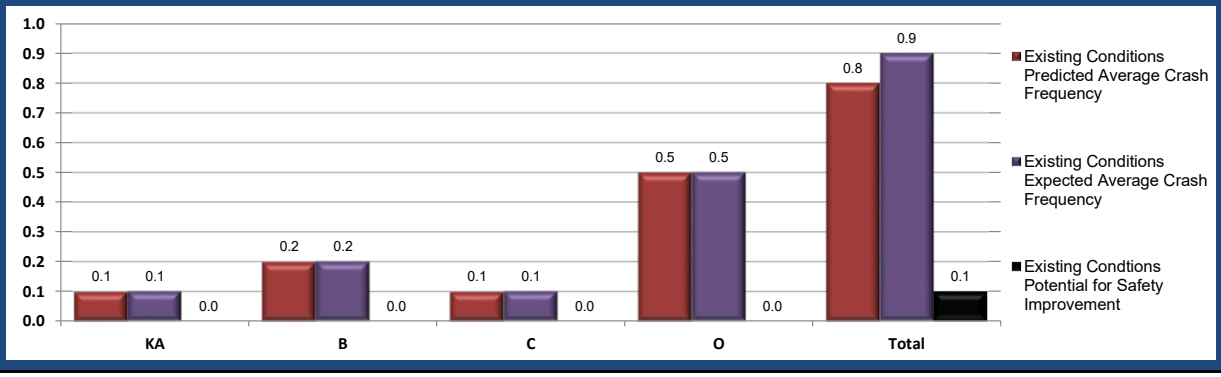
Crash Type	Existing			Proposed
	Predicted Crash Frequency	Expected Crash Frequency	PSI	Expected Crash Frequency
Unknown	0.0003	0.0003	0.0000	
Head On	0.0057	0.0071	0.0014	
Rear End	0.0892	0.1110	0.0218	
Backing	0.0262	0.0319	0.0057	
Sideswipe - Meeting	0.0005	0.0006	0.0001	
Sideswipe - Passing	0.0551	0.0684	0.0133	
Angle	0.2154	0.2727	0.0573	
Parked Vehicle	0.0171	0.0211	0.0040	
Pedestrian	0.0026	0.0033	0.0007	
Animal	0.0000	0.0000	0.0000	
Train	0.0000	0.0000	0.0000	
Pedalcycles	0.0005	0.0006	0.0001	
Other Non-Vehicle	0.0000	0.0000	0.0000	
Fixed Object	0.0940	0.1158	0.0218	
Other Object	0.0027	0.0034	0.0007	
Overturning	0.0054	0.0069	0.0015	
Other Non-Collision	0.0105	0.0130	0.0025	
Left Turn	0.0367	0.0463	0.0096	
Right Turn	0.0176	0.0218	0.0042	

Project Safety Performance Report

General Information

Project Name	US-40 & West Street	Contact Email	
Project Description	US-40 & West Street	Contact Phone	
Reference Number		Date Performed	3/26/2025
Analyst	SWM	Analysis Year	2050
Agency/Company	HDR		

Summary of Anticipated Safety Performance of the Project (average crashes/year)



Project Summary Results (Without Animal Crashes)

	KA	B	C	O	Total
$N_{predicted}$ - Existing Conditions	0.0742	0.1526	0.0903	0.4991	0.8162
$N_{expected}$ - Existing Conditions	0.0936	0.1923	0.1137	0.5463	0.9459
$N_{potential\ for\ improvement}$ - Existing Conditions	0.0194	0.0397	0.0234	0.0472	0.1297

Existing Conditions Project Element Predicted Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
US-40 & West Street	US-40 & West Street	0.0742	0.1526	0.0903	0.4991	0.8162

Existing Conditions Project Element Expected Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
US-40 & West Street	US-40 & West Street	0.0936	0.1923	0.1137	0.5463	0.9459

Existing Conditions Project Element Potential for Safety Improvement Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
US-40 & West Street	US-40 & West Street	0.0194	0.0397	0.0234	0.0472	0.1297

Summary by Crash Type

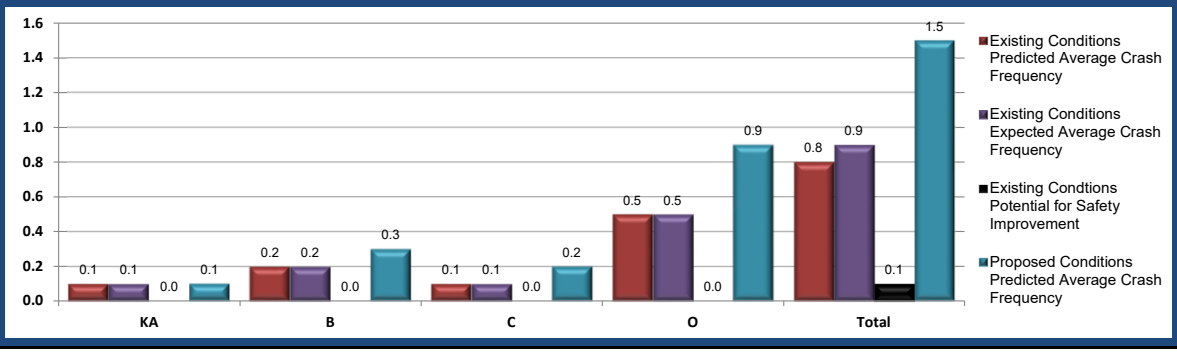
Crash Type	Existing			Proposed
	Predicted Crash Frequency	Expected Crash Frequency	PSI	Expected Crash Frequency
Unknown	0.0004	0.0004	0.0000	
Head On	0.0079	0.0092	0.0013	
Rear End	0.1255	0.1443	0.0188	
Backing	0.0366	0.0404	0.0038	
Sideswipe - Meeting	0.0007	0.0008	0.0001	
Sideswipe - Passing	0.0775	0.0887	0.0112	
Angle	0.3045	0.3617	0.0572	
Parked Vehicle	0.0240	0.0271	0.0031	
Pedestrian	0.0036	0.0046	0.0010	
Animal	0.0000	0.0000	0.0000	
Train	0.0000	0.0000	0.0000	
Pedalcycles	0.0007	0.0008	0.0001	
Other Non-Vehicle	0.0000	0.0000	0.0000	
Fixed Object	0.1319	0.1487	0.0168	
Other Object	0.0038	0.0043	0.0005	
Overturning	0.0078	0.0093	0.0015	
Other Non-Collision	0.0147	0.0165	0.0018	
Left Turn	0.0519	0.0611	0.0092	
Right Turn	0.0247	0.0280	0.0033	

Project Safety Performance Report

General Information

Project Name	US-40 & West Street	Contact Email	
Project Description	US-40 & West Street	Contact Phone	
Reference Number		Date Performed	3/26/2025
Analyst	SWM	Analysis Year	2050
Agency/Company	HDR		

Summary of Anticipated Safety Performance of the Project (average crashes/year)



Project Summary Results (Without Animal Crashes)

	KA	B	C	O	Total
$N_{predicted}$ - Existing Conditions	0.0742	0.1526	0.0903	0.4991	0.8162
$N_{expected}$ - Existing Conditions	0.0936	0.1923	0.1137	0.5463	0.9459
$N_{potential\ for\ improvement}$ - Existing Conditions	**0.0194**	**0.0397**	**0.0234**	**0.0472**	**0.1297**
$N_{expected}$ - Proposed Conditions	0.1083	0.2624	0.1746	0.9390	1.4843

Existing Conditions Project Element Predicted Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
US-40 & West Street	US-40 & West Street	0.0742	0.1526	0.0903	0.4991	0.8162

Existing Conditions Project Element Expected Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
US-40 & West Street	US-40 & West Street	0.0936	0.1923	0.1137	0.5463	0.9459

Existing Conditions Project Element Potential for Safety Improvement Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
US-40 & West Street	US-40 & West Street	**0.0194**	**0.0397**	**0.0234**	**0.0472**	**0.1297**

Proposed Conditions Project Element Predicted Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
US-40 & West Street	US-40 & West Street	0.1083	0.2624	0.1746	0.939	1.4843

Summary by Crash Type

Crash Type	Existing			Proposed
	Predicted Crash Frequency	Expected Crash Frequency	PSI	Predicted Crash Frequency
Unknown	0.0004	0.0004	0.0000	0.0060
Head On	0.0079	0.0092	**0.0013**	0.0128
Rear End	0.1255	0.1443	**0.0188**	0.3173
Backing	0.0366	0.0404	**0.0038**	0.0597
Sideswipe - Meeting	0.0007	0.0008	**0.0001**	0.0431
Sideswipe - Passing	0.0775	0.0887	**0.0112**	0.0671
Angle	0.3045	0.3617	**0.0572**	0.5663
Parked Vehicle	0.0240	0.0271	**0.0031**	0.0528
Pedestrian	0.0036	0.0046	**0.0010**	0.0073
Animal	0.0000	0.0000	0.0000	0.0000
Train	0.0000	0.0000	0.0000	0.0003
Pedalcycles	0.0007	0.0008	**0.0001**	0.0054
Other Non-Vehicle	0.0000	0.0000	0.0000	0.0001
Fixed Object	0.1319	0.1487	**0.0168**	0.2489
Other Object	0.0038	0.0043	**0.0005**	0.0087
Overturning	0.0078	0.0093	**0.0015**	0.0149
Other Non-Collision	0.0147	0.0165	**0.0018**	0.0197
Left Turn	0.0519	0.0611	**0.0092**	0.0539
Right Turn	0.0247	0.0280	**0.0033**	0.0000