BROADWAY (STATE ROUTE 57)

28TH STREET/ELYRIA AVE TO 9TH STREET/BROADWAY

LORAIN, OHIO

PID 122461

TARGET SPEED EVALUATION

MARCH 6, 2025

PREPARED FOR:

OHIO DEPARTMENT OF TRANSPORTATION
DISTRICT 3
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INTRODUCTION

Travel speeds are a fundamental measure in indicating injury risk for all road users, especially for vulnerable users such as pedestrians and bicyclists. Studies show that higher travel speeds result in greater impact at the time of a crash, which leads to more severe injuries and fatalities. The Safe System Approach (SSA) is a recognized best practice for reducing and ultimately eliminating fatalities and serious injury crashes. The SSA includes five elements as shown in **Figure1.** Six (6) principles of the Safe System Approach including the following:

1. Death/Serious Injury is unacceptable
2. Humans make mistakes
3. Humans are vulnerable
4. Responsibility is shared
5. Safety is proactive
6. Redundancy is crucial

FIGURE 1: FHWA SAFETY SYSTEM

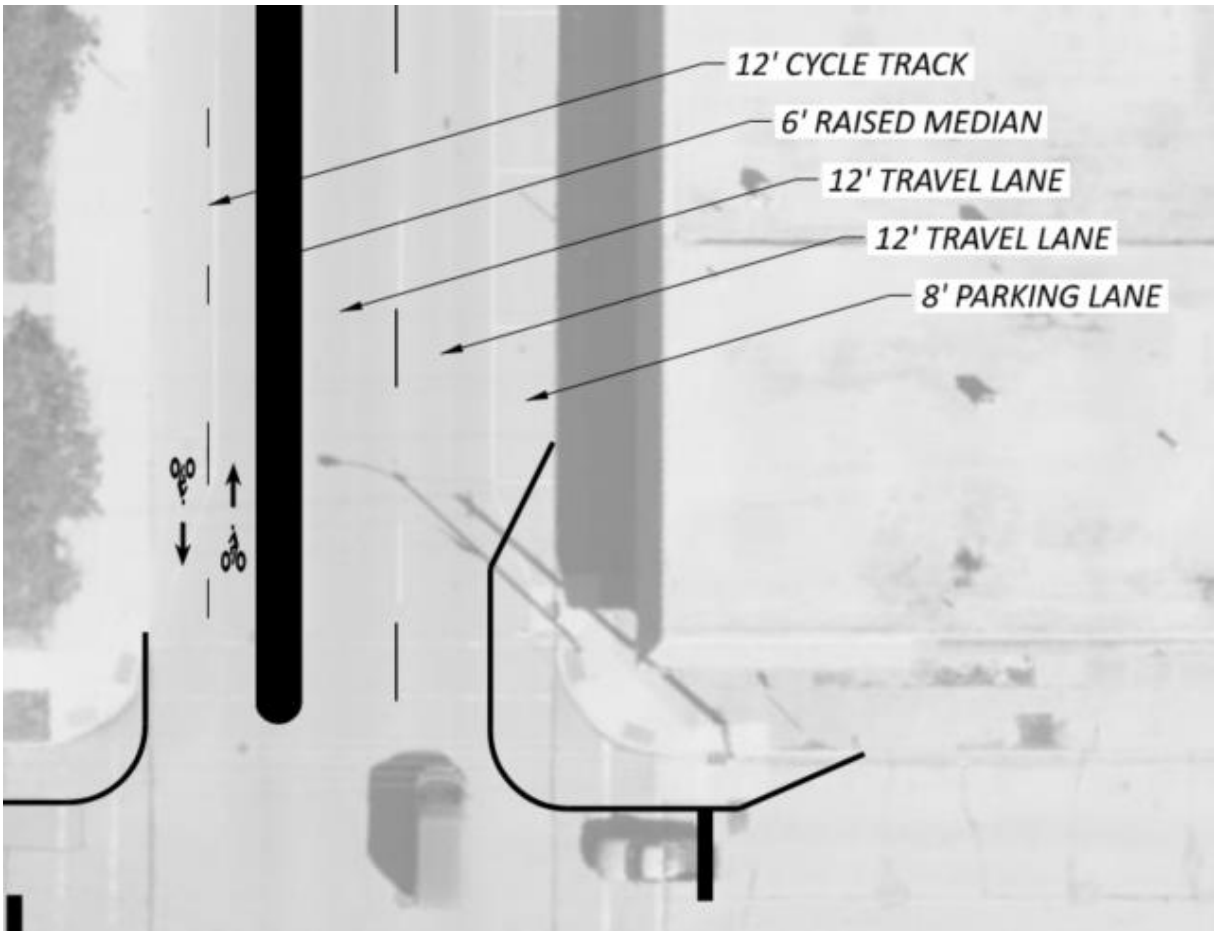
The purpose of this report is to evaluate and make recommendations for a 1.54-mile segment of Broadway in Lorain, Ohio that addresses two elements of the SSA: safe speeds and safe roads.

An active transportation plan (ATP) was completed by the City in 2018 and updated in 2024. The 2024 updated ATP was adopted by the city 07/15/24, county health board, and schools. The study identified the Broadway corridor as a high priority corridor (Figure 20) for bicycle infrastructure. A separated bike lane was identified as a priority project for the community. In addition to the separated bike lane, one lane of parking and the existing Lorain County Transit network were to be maintained along the corridor. A typical section developed as part of the ATP update is shown in **Figure 2**. The ATP held three stakeholder meetings, two events at the local library, and one at a school.

Appendix A contains an excerpt of the updated ATP plan (2024), conceptual typical sections showing a separated bike lane on the west side of Broadway, and a budgetary cost estimate ($3.48 million). The cycle track concept was advanced as the preferred alternative understanding that the location of the cycle track may change as options are further evaluated as part of this study.

The Lake Erie Connect study, a Transportation for Livable Communities Initiative (TLCI) initiative to improve access to Lake Erie is sponsored by NOACA and is supportive of the separated bike lane concept on Broadway.

FIGURE 2: EARLY CONCEPT (BROADWAY AT 18TH STREET)



TARGET SPEED

Drivers select travel speeds based on their perceptions of the road. In the absence of a speed limit, most drivers will travel at the speed they perceive to be safe and reasonable based on the surrounding conditions. Drivers decide how fast to drive based on both the design of the road and on external cues such as speed limit signs and speeds of other drivers. Some drivers will choose to drive 5-15 MPH faster than the posted limit which is why posting higher speed limits does not increase compliance with the law. In many cases, travel speeds exceed posted speed limits because the conditions of the roadway design support speeds that are higher than the regulatory limit. Our desire is for drivers to travel at an intended speed that is enforced by design and regulation of the roadway.

Historically, designers have selected a roadway's **design speed** using factors of functional classification and terrain and then selecting geometric design parameters based on that design speed. When operating speeds of a roadway are found to be inconsistent with the design speed in which the roadway features were developed, the result is known as speed discord. Speed discord has been defined as a roadway design that produces operating speeds that are higher than the posted speed limit. Using the design speed model often results in roadways with speed

discord where the desired state and the actual state do not align, and the result is poor safety performance manifested by high severity and fatal crashes.

FHWA uses the term "self-enforcing roadway" to describe a roadway that is planned and designed to encourage drivers to select operating speeds consistent with the posted speed limit. The objective of a self-enforcing road is to produce speed compliance by using geometric elements that change driver behavior. In short, the goal is to achieve alignment of the desired operating speed and actual operating speed.

The self-enforcing roadway model replaces design speed with a **target speed.** The target speed is the desired operating speed at which drivers will select for a roadway. In urban settings, the target speed is the highest speed at which vehicle should operate on a roadway that is consistent with the level of multimodal activity to provide mobility for motor vehicles and a safe environment for pedestrians, bicyclists and public transit users. The target speed is intended to correlate with the posted regulatory speed limit and becomes the primary control used in determining geometric design values for roadway features. Properly designed self-enforcing roadways that incorporate target speed can be effective in producing speed compliance and may contribute to less severe crash outcomes. Selection of a target speed considers factors such as context of the surrounding land uses, travel modes used on the roadway, pedestrian and bicycle requirements, transit needs, design vehicle, and vehicular levels of service. Their metrics are much broader than those typically considered when selecting design speed of a roadway.

Another important note in the discussion of design versus target speed is the use of 85th percentile speeds. The 85th percentile speed represents the speed at which 85 percent of vehicles are traveling at or below under free-flow conditions. This value has been used as the industry standard by which posted speed limits are established. However, reliance on a percentile-based system for setting speed limits focuses on current driver behavior rather than on a defined target in setting speed limits. In the target speed model, the 85th and 50th percentile speeds would be used as a tool to quantify, in a pre or post condition, if the target speed is being met and not used as the primary determiner of the posted speed limit. Recently, the Ohio DOT has implemented FHWA's USLIMITS2 (which considers crash history, presence of on-street parking and extent of pedestrian and bicycle activity) to aid in selection of speed limits.

STUDY AREA

Broadway is oriented north/south and is Urban Principal Arterial in Lorain, Ohio as shown in **Figure 3**. The total length of the study area is approximately 1.54 miles extending from the 28th Street (SR57)/ Elyria Avenue intersection to the Broadway (SR 57)/ 9th Street intersection. The study area connects the industrial land uses (Republic/ US Steel facility) to the east and downtown Lorain/ Black River Landing to the north. Land uses along the corridor are a mix of residential and commercial business.

FIGURE 3: PROJECT LOCATION MAP

EXISTING CONDITIONS

Broadway is an urban corridor characterized by commercial and industrial land uses. Vehicular travel lanes vary from 4 to 5 lanes, varying by the presence of a center left turn lane. The downtown, urban, mixed-use environment encourages a variety of travel modes which are supported by sidewalks on both sides of Broadway as well as transit bus service. Existing conditions diagrams are included in **Appendix B.** Noteworthy elements of the existing characteristics of Broadway (SR 57) are summarized below:

1. **Study Limits**: 1.54 miles from the 28th Street (SR57)/ Elyria Avenue intersection to the Broadway (SR 57)/ 9th Street intersection
2. **AADT**: Average Annual Daily Traffic (AADT) volumes range from 10,847 vehicles per day (near 25th Street) to 5,521 vehicles per day (near 10th Street)
3. **Functional Classification**: Urban Primary Arterial
4. **Priority System**: Federal Aid Primary
5. **Posted speed limit**:
    - 25 MPH – Broadway
    - 35 MPH – 28th Street
6. **Right of way**: 78 feet
7. **Drainage**: closed system with barrier curb
8. **Typical Sections:** The existing roadway within the study limits are comprised of the following sections:
    - 4-lane section from 28th/Elyria Avenue (**Figure 4**) to Broadway/22nd Street (**Figure 5**). The pavement width of 28th Street is approximately 47 feet. The pavement width on Broadway from 28th Street to Elyria Ave is about 53 feet.
    - 5-lane section on Broadway from 22nd Street to 20th Street (**Figure 6**).
    - 3-lane (2 NB, 1 SB lanes) section on Broadway from 20th Street to Elyria Avenue (north) with on-street parking on both sides (**Figure 7**).
    - 4-lane section on Broadway from Elyria Avenue (north) to 10th Street (**Figure 8**). The pavement width from Elyria Avenue to 9th Street is 50 feet.
    - 3-lane (1 NB, 1 SB, 1 center lane) section on Broadway north of 10th St with on-street parking on both sides (**Figure 9**).
9. **Sidewalk**: Existing sidewalk plus a tree lawn width of up to 15 feet exist on Broadway throughout the study corridor.
10. **On-street parking**: on-street parking available north of 20th Street
11. **Bus transit**: Lorain transit Route 2 serves the Broadway and 28th Street corridors. The bus route schedule is included in **Appendix B**.

FIGURE 4: EXISTING TYPICAL SECTION (28TH STREET)

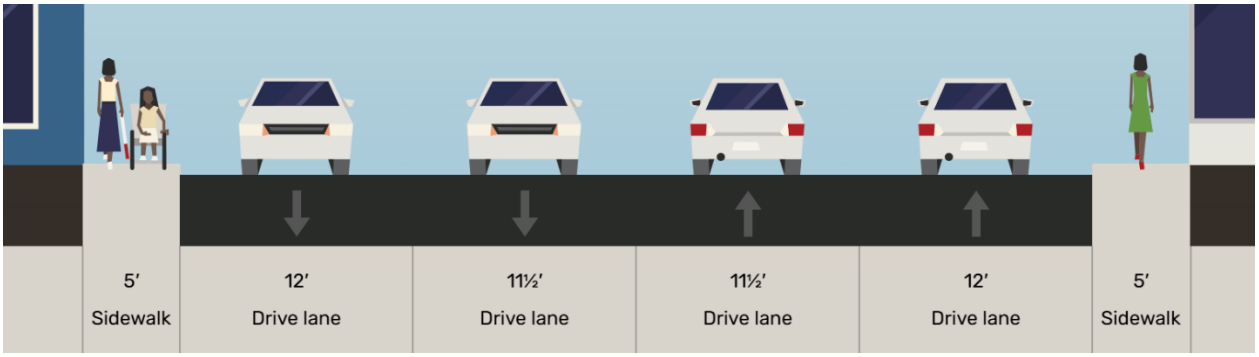


FIGURE 5: EXISTING TYPICAL SECTION (28TH ST TO 22ND ST)

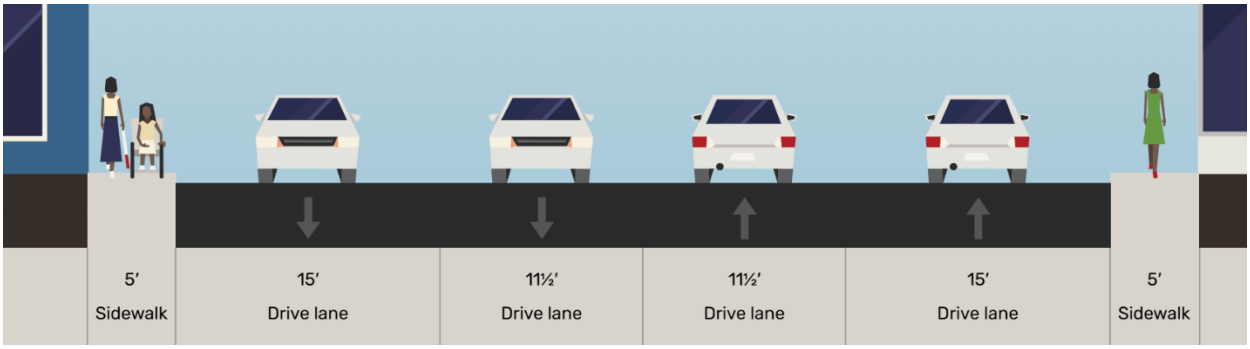


FIGURE 6: EXISTING TYPICAL SECTION (22ND ST TO 20TH ST)

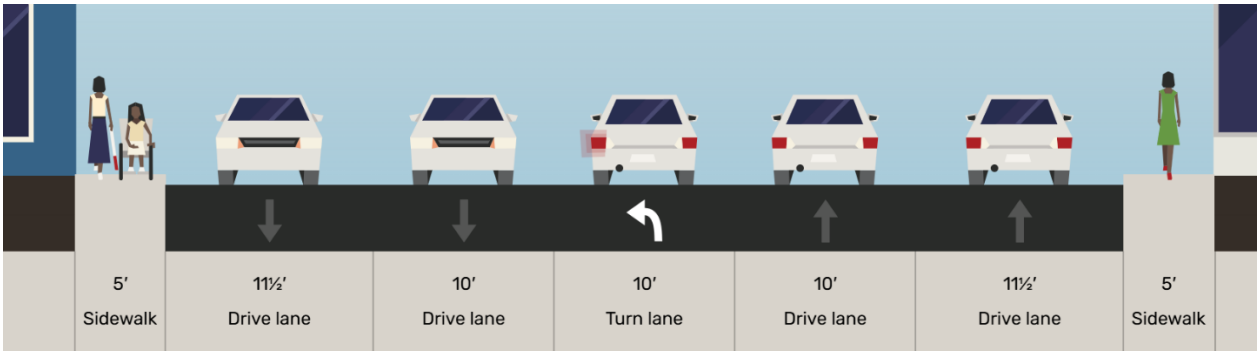


FIGURE 7: EXISTING TYPICAL SECTION (20TH ST TO ELYRIA AVE)

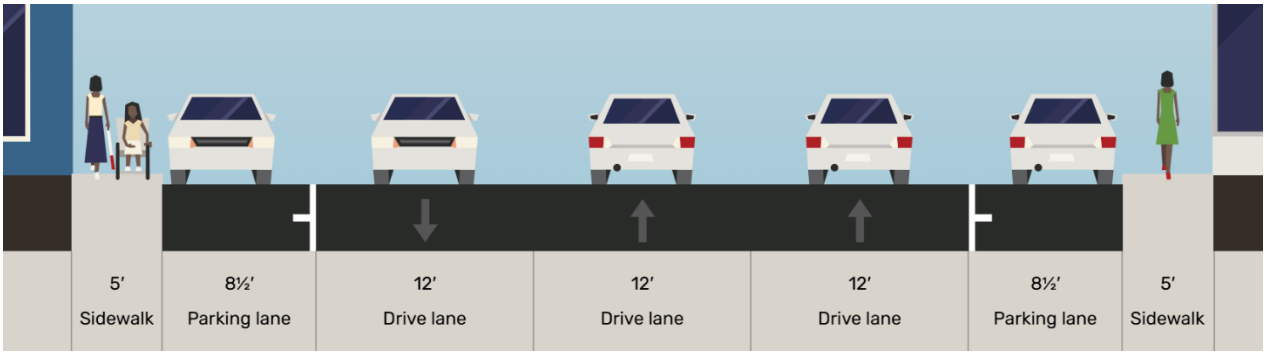


FIGURE 8: EXISTING TYPICAL SECTION (ELYRIA AVE TO 10TH ST)

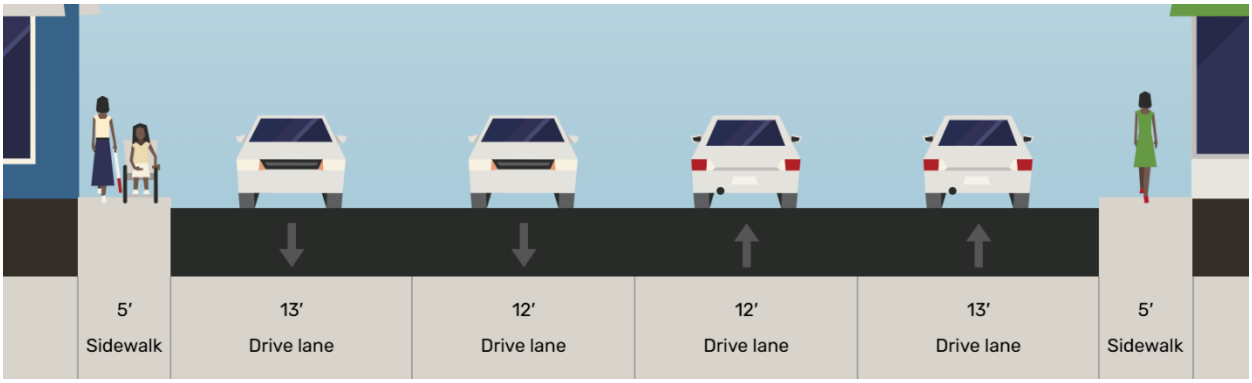
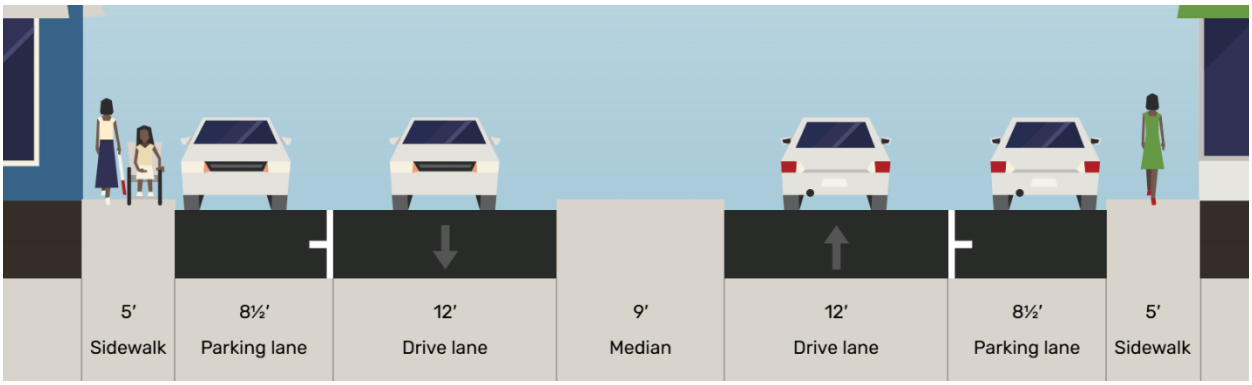


FIGURE 9: EXISTING TYPICAL SECTION (10TH ST TO 9TH ST)



12. **Signalized intersections:** There are four signalized intersections in the study limits:
    - 28th/ Elyria Avenue
    - Broadway/ 28th St
    - Broadway/ 21st St
    - Broadway/ Elyria Ave
13. **Non-signalized intersections:** There are sixteen non-signalized intersections in the study limits:
    - Apple Ave
    - 27th St
    - 26th St
    - 25th St
    - 23rd St
    - 22nd St
    - 20th St
    - 19th St
    - 18th St
    - 17th St
    - 16th St
    - 15th St
    - 14th St
    - 13th St
    - 10th St
    - 9th St

TRAFFIC DATA

Turning movement counts (TMC) were collected at the four signalized intersections and at 9th Street in the study area using Miovision video technology. The uncounted intersections were determined to have minor impacts to the corridor operations. Counts were collected on Wednesday July 24, 2024 from 6:00 AM to 7:00 PM. The AM peak hour was identified from 8:45-9:45 AM. The PM peak hour was identified from 3:45-4:45 PM. Traffic count reports are included in **Appendix C**.

Existing volumes were forecasted to year 2045 to estimate design hourly volumes (DHV) following the guidance under Ohio Traffic Forecasting Manual Volume 2 Section 2.7. *Peak-to-DHV Factors* and annual growth rates were applied to the 2024 TMC to project 2045 design year volumes.

1. A *Peak-to-DHV Factor* of 1.13 was applied to traffic volumes on Broadway and all the intersecting side streets.
2. An annual growth rate of 0.10% is applied to SR-57, which is the average of calculated growth rates along the corridor per ODOT Traffic Forecast Management System (TFMS) that ranges from 0% to 0.4%.
3. Annual growth rates of 0% and 0.2% were applied to 21st St and Elyria Ave (south) respectively per TFMS.
4. Growth rates were not provided for the other intersecting streets, hence the 0.10% growth rate for SR-57 was assumed for these streets.

ODOT *Peak-to-DHV Factor*, TFMS output, and the design year traffic forecasts are included in **Appendix D.**

OPERATING SPEEDS

The posted speed limit on Broadway is 25 MPH. The posted speed limit transitions to 35 MPH on 28th Street. Speed data before and after the countermeasures are implemented is a good measure of their effectiveness. ODOT proposed to leverage average speed data using output from INRIX data in addition to spot speed data from more traditional methods (i.e., radar, cameras, or mechanical methods). See **Appendix E** for historical spot speed data including data

INRIX collects probe data using mobile phones, connected vehicles, trucks, delivery vans, and other fleet vehicles equipped with GPS telematics devices. The speed of those vehicles is calculated based on the time and distance traveled. While this may closely approximate roadways with little to no intersection traffic control (e.g., freeways, highways, etc.), in small towns and urban areas where intersections are frequent and may be stopped or signal-controlled, travel times factor in time spent stopped and slowing for these devices. Therefore, the ability to correlate spot speed data with the methodology used by INRIX that calculates travel time over distance may be challenging as the frequency of controlled intersection increases.

Several case studies were evaluated to correlate INRIX data with historical spot speed data. Based on the case studies, the following summarizes observations, limitations, and preliminary recommendations for the use of INRIX data for measuring speeds before and after proven safety countermeasures are implemented to reach a target speed:

1. When comparing 85th percentile speeds determined using INRIX versus spot speeds collected, INRIX data reports an 85th percentile as much as 10 mph lower than existing spot speed studies. While the datasets for case studies are typically not statistically significant, the discrepancy appears to be smaller when fewer signal and stop-controlled intersections are present along the corridor, consistent with our understanding of the limitations of using the travel time over distance methodology to estimate speed.
2. In all case studies, a change in the 50th and 85th percentile speed was observed, and it is therefore likely that INRIX data can confirm that speeds have been reduced, but the actual reduction will likely be higher.

Data was downloaded from INRIX for the following five XD segments on the SR57 corridor. Note the segments are directionally specific, so the ID numbers listed below represent 2-way traffic and are shown for future comparison of data (i.e. the same segments must be used for any future comparisons).

- Caroline Ave to Broadway (1310471491, 1310471479)
- 28th St to 21st St / Henderson Dr (1310495506, 1310495471)
- 21st St / Henderson Dr to 17th St (1310549080, 1310549114)
- 17th St to Elyria Ave (441093655, 441093656)
- Elyria Ave to W 10th St (1310531759, 1310531772)

The five XD segments used for this corridor are subsegments located within the limits of the study area. An alternate dataset of segments referred to as TMC segments was not used for analysis since the segments are longer and often include areas that are outside of the study area.

The case studies show that evening hours better approximate free flow conditions, but hours beyond midnight are more likely to be filtered out based on a low confidence score (i.e., less than 70). Therefore, the hours between 7:00 pm to midnight were chosen for the speed evaluation. Two criteria were used to select dates for use when comparing speed data:

- Dates were chosen for a 9-day period starting on a Tuesday and ending on a Thursday, excluding Fridays through Mondays to align with ODOT District 3's standard workflow.
- When recent speed data from ODOT is available, dates are selected to align with the date that the spot speed data was collected to allow the INRIX data to be compared to spot speed data. The most recent speed data collected for SR-57 in the study area include two stations, Location ID#s 11247 (at W 25th St) and 13948 (near the railroad underpass between 9th and 10th St), with the data collected at those locations on 10/19/2023 and

10/18/2023, respectively. The dates chosen for the INRIX data are 10/17/2023 to 10/26/2023 to match with the recent ODOT speed data.

The data is also filtered for low confidence scores less than 70. If there are less than 500 data points, the date range is expanded to include more data before it is analyzed to find the following statistics:

- 85th percentile
- 50th percentile
- maximum speed
- minimum speed
- 10 MPH pace

The speed statistics based on the INRIX data, in addition to spot speed data from 10/18/23 and 10/19/23 are summarized in **Table 1**. The historical spot speed data on 10/19/23 was collected using a hose counter located 160 ft south of the 23rd Street intersection on Broadway. The historical spot speed data on 10/18/23 was collected using a hose counter located 600 ft northwest of the 13th Street intersection on Broadway.

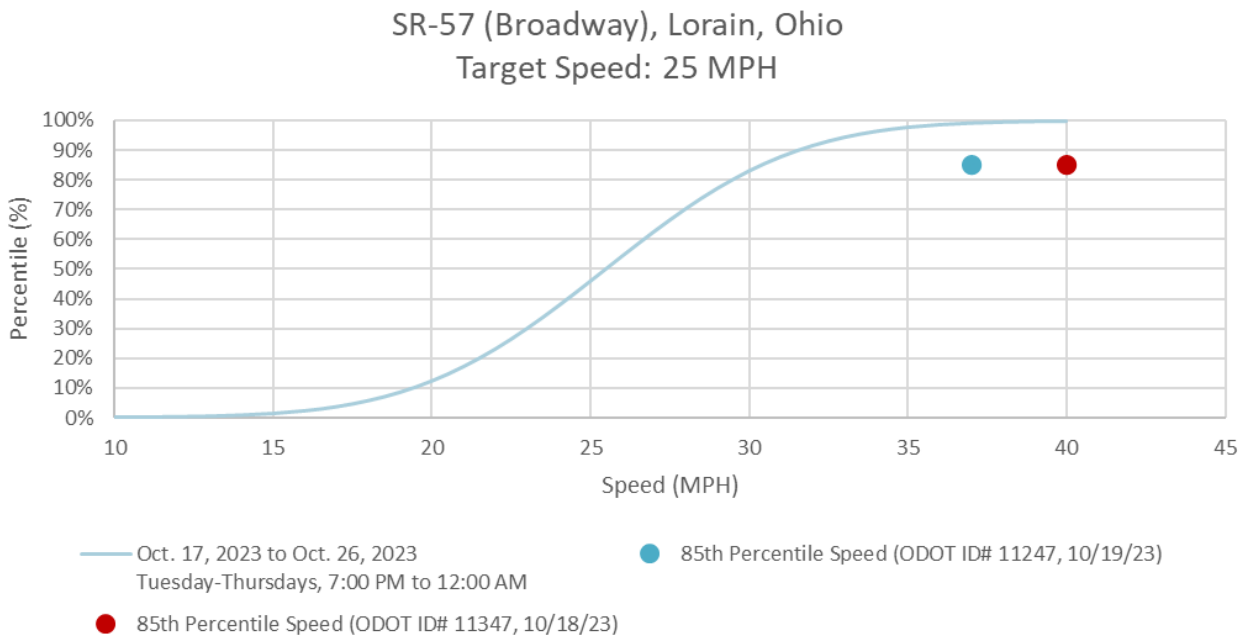
TABLE 1: SPEED DATA

	85th Percentile Speed (MPH)	50th Percentile Speed (MPH)	Max Speed (MPH)	10 MPH Pace
INRIX Data (10/17/23 - 10/26/23)	30	27	34	22 to 32 MPH
Historical Spot Speed Data (10/19/2023, ODOT, 25th Street)	37	30 - 35	> 85	25 to 35 MPH
Historical Spot Speed Data (10/18/2023, ODOT, 10th Street)	40	30 - 35	> 85	30 to 40 MPH

The cumulative distribution of speeds from the subsegments listed above is shown in **Figure 10** based on the INRIX dataset. The blue dot represents the spot speed data from 10/19/23 whereas the red dot represents spot speed data from 10/18/23.

The raw data downloaded from INRIX, as well as any available recent ODOT speed data is included in **Appendix E**. This data will be used to compare to speed data after countermeasures are installed to evaluate their effectiveness.

FIGURE 10: SPEED PROFILE



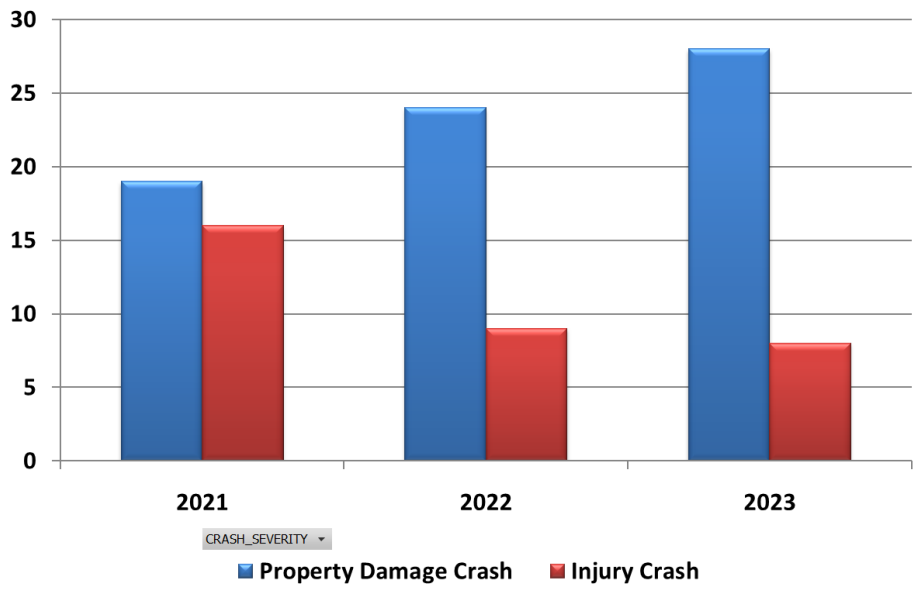
CRASH HISTORY

Crash data was obtained using the Transportation Information Mapping System (TIMS). A total of 183 crashes occurred on Broadway over a 3-year period (2021-2023) from the 28th Street (SR57)/ Elyria Avenue intersection to the Broadway (SR 57)/ 9th Street intersection. The following crash types and conditions are over-represented at the study intersection compared to statewide averages (shown in parenthesis). Statewide averages are for roadway types being an urban multilane undivided.

- 104 total crashes
- 33 Injury crashes = 31.7% (28.1%)
- 25 sideswipe-passing crashes = 24.0% (13.2%)
- 4 head on crashes = 3.9% (1.6%)
- 2 bicycle crashes = 1.9% (0.9%)

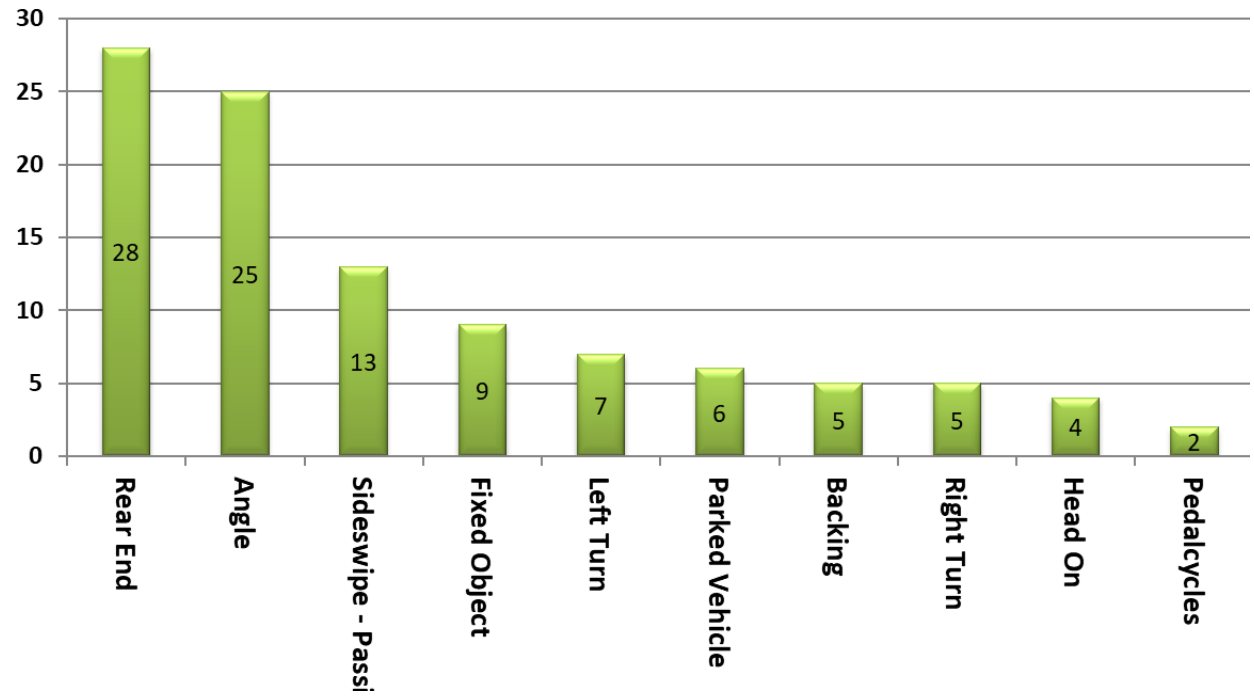
Noteworthy statistics are described below with CAM Tool output in **Appendix F.** Crashes per year have remained consistent with 35 crashes in 2021, 33 crashes in 2022, and 36 crashes in 2023 as shown in **Figure 11**.

FIGURE 11: FREQUENCY OF CRASHES BY YEAR AND SEVERITY



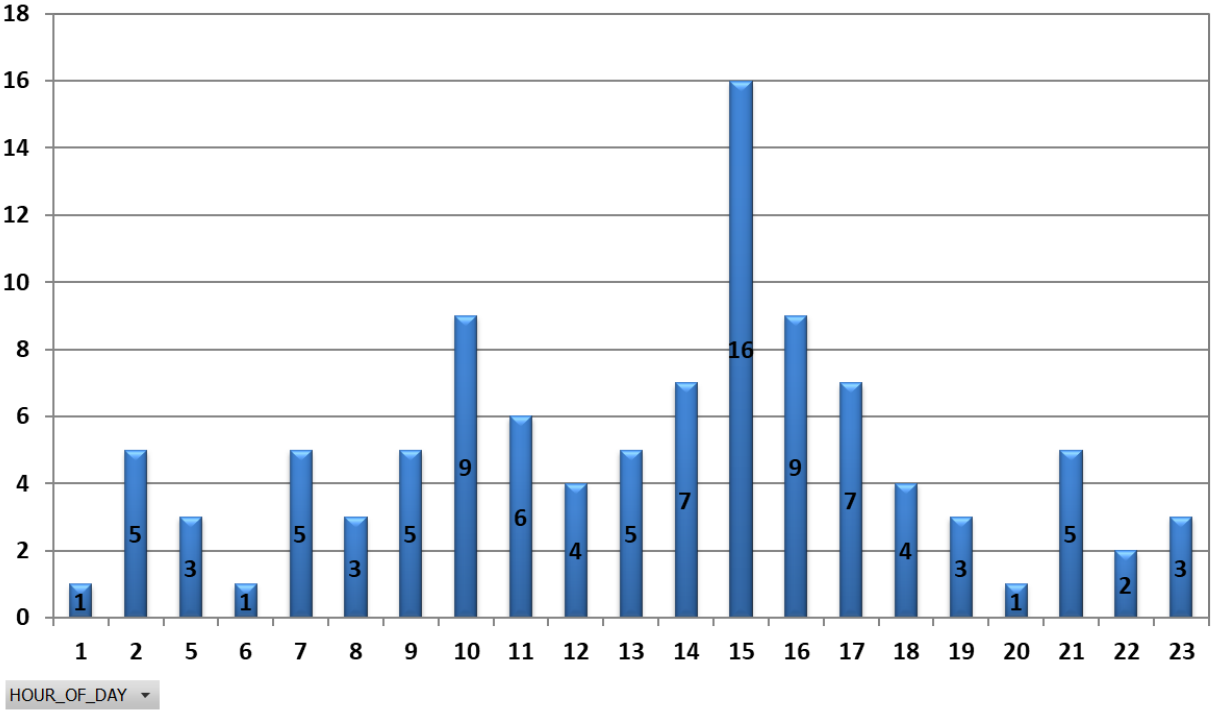
Rear end crashes are the highest frequency crash type on the corridor as shown in **Figure 12**. Angle, sideswipe passing, fixed object, and left turn crashes round out the top five crash types. There were two bicycle crashes resulting in 60% and 75% injuries, respectively.

FIGURE 12: FREQUENCY OF CRASHES BY TYPE OF CRASH



The majority of crashes (53%) occurred over a 6-hour period: 10AM and 1-6PM (**Figure 13**).

FIGURE 13: FREQUENCY OF CRASHES BY HOUR



The highest concentration of crashes occurred near the signalized intersection of 21st Street/ Henderson Drive/ SR 611 (34 crashes). The two bicycle crashes occurred at the 9th Street and 18th intersections – the cyclist was traveling on the crosswalk (west leg) traveling parallel to Broadway.

Note that one property damage only (PDO) crash involved a semi-truck on 09/28/22. The truck driver was not at fault in the hit-run crash.

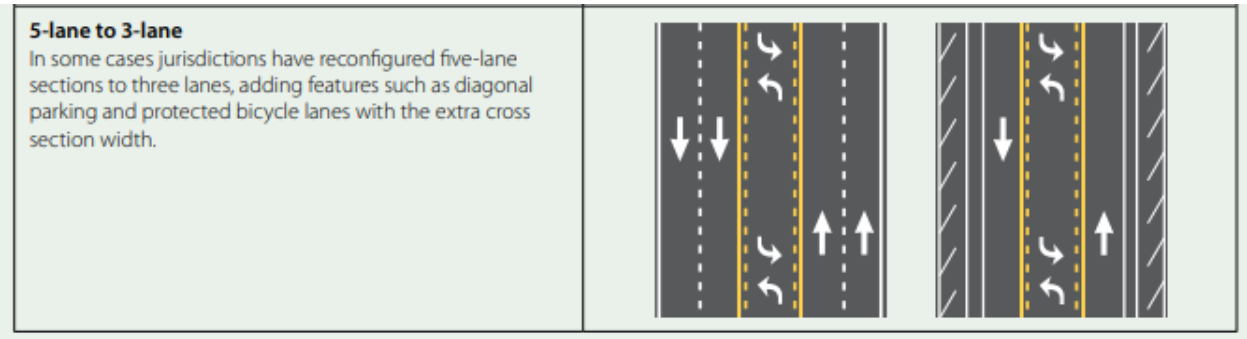
ROAD DIET OVERVIEW

The FHWA Road Diet Informational Guide defines a road diet as removing travel lanes from a roadway and utilizing the space for other uses and travel modes. Road diets are often conversions of 4-lane undivided streets to 3 lane streets with a center two-way left-turn lane. Other roadway reconfigurations can also provide safety benefits such as a 5-lane to 3-lane reconfiguration, shown in **Figure 14,** where one through travel lane in each direction is eliminated and the extra cross section width is used for bike and parking lanes.

Road diets that reduce the number of travel lanes offer the following safety advantages:

1. Potential to reduce operating speeds and speed differentials. One through lane in each direction may encourage slower and more uniform vehicle operating speeds since passing lower speed vehicles is not possible. (may reduce speed related crashes and sideswipe passing crashes)

FIGURE 14: 5-LANE TO 3-LANE REDUCTION



2. Reduce the number of vehicle lanes that pedestrians cross (may reduce pedestrian crashes)
3. Provide dedicated space for bicycles (may reduce bicycle crashes)
4. Provide dedicated space for parked vehicles (may reduce parked vehicle and sideswipe passing crashes). Space for dedicated on-street parking is especially important on streets that use the same lane for parking and through capacity depending on the time of day.
5. Mitigate or reduce "multiple threat" (crossing of multiple lanes) pedestrian crashes. This condition occurs when a motorist stops in one lane to allow a pedestrian to cross the street but an oncoming vehicle traveling in the same direction in an adjacent lane does not stop and strikes the pedestrian.

The Federal Highway Administration (FHWA) has determined through various studies that the acceptable range of daily traffic for a three (3) lane road diet is 15,000 to 24,000 vehicles per day (VPD). The average daily traffic volume on Broadway is approximately 11,500 vpd (2023 count near 25th Street) and 10,847 vpd (2024 count north of Columbia Avenue) and 5,521 vpd near 10th Street based on data from the ODOT MS2 Transportation Data Management System.

CAPACITY ANALYSIS

An important component of a road diet countermeasure is to compare the existing operating conditions of the corridor to those expected with the proposed condition. Operating conditions are measured in terms of Levels of Service (LOS), vehicle delay, vehicle queue length, and QSR (Queue-to-Storage ratio). QSR compares the 95th percentile queue to the available lane length for the movement. A QSR greater than 1 indicates that the queue would spill back to the adjacent lane (typical for turn lane), or to upstream intersection (typical for through movements). Comparing these metrics between the No Build and Build conditions helps to identify operational deficiencies that may occur due to the road diet and develop countermeasures that minimize these deficiencies.

Guidelines in the ODOT Analysis and Traffic Simulation (OATS) Manual were followed for the capacity analysis. The developed AM and PM peak 2045 DHVs, along with Heavy vehicle

percentages and Peak Hour Factor (PHF) calculated from the TMCs were used in the analysis. Minimum green times and associated clearance intervals per OATS Section 5.7 were included in the analysis for all alternatives. Intersection LOS D or better, and movement LOS E or better is acceptable per OATS Section 5.9.

Capacity analyses focused on the five intersections within the SR-57 study limits that have been identified as being critical to corridor operations. These intersections were included in a traffic operations model created using Synchro traffic simulation software. Signalized intersections were analyzed as part of a coordinated signal system with optimized cycle length, splits, and offsets. The SR-57 and 9th St intersection is a Two-Way-Stop-Controlled (TWSC) intersection. The alternatives were modeled as follows:

- **No Build**. This scenario models the existing SR-57 with 2 NB and 2 SB (1 SB between 20th St and Elyria Ave) through travel lanes, with or without turn lanes depending on location. Existing signal phasing was applied at all intersections.

- **Build.** This scenario models the Build road-diet condition of SR-57 with 1 NB and 1 SB through travel lane, with or without turn lanes depending on location. The exception is that 2 WB lanes are retained on 28th Street east of Broadway.

  A revised lane configuration is proposed at the Broadway/ 28th Street intersection and at the 28th Street/ Elyria Ave (south) intersection, which also resulted in new signal phasing at these locations. Turning movements are permitted with the revised lane configuration, hence turning volumes were estimated for these movements based on the proportion of turning volumes from the opposite approach. For example, the NB-left volume at the Broadway/ 28th Street intersection was developed by dividing the SB-right volume with the SB-through volume, and then multiplying this proportion with the NB-through volume.

Capacity analysis results are summarized in **Table 2A** and **Table 2B**. Synchro output reports are contained in **Appendix G1 (No Build)** and in **Appendix G2 (Build).**

All of the intersections shown in **Table 2A-B** were found to operate at similar LOS from each other, hence no one intersection was determined to be critical to the operations of the study corridor with the following exceptions at the Broadway/ 28th Street intersection:

- The lane configuration is revised to accommodate WB-62 truck movements. The future lane configuration has a single receiving lane which makes truck turns more challenging. The proposed lane configuration avoids/minimizes the need for increasing the radii especially in the NE quadrant.

TABLE 2A: CAPACITY ANALYSIS SUMMARY (2045)

Intersection/ Approach	2045 AM								2045 PM							
	No Build				Build				No Build				Build			
	LOS (Delay, in sec)	v/c	QSR	95th%ile Queue (ft/ln)	LOS (Delay, in sec)	v/c	QSR	95th%ile Queue (ft/ln)	LOS (Delay, in sec)	v/c	QSR	95th%ile Queue (ft/ln)	LOS (Delay, in sec)	v/c	QSR	95th%ile Queue (ft/ln)
SR-57 & Elyria Ave (South)	**C (24.0)**	-	-	-	**C (22.2)**	-	-	-	**C (25.5)**	-	-	-	**C (25.1)**	-	-	-
EB-Left	N/A				A (8.7)	0.10	0.29	43	N/A				B (17.3)	0.26	0.54	81
EB-Thru	B (10.8)	0.10	0.14	57	N/A				B (16.7)	0.24	0.31	128	N/A			
EB-Thru/Right	N/A				A (8.7)	0.19	0.27	111	N/A				B (17.0)	0.43	0.62	259
EB Approach	B (10.8)	-	-	-	A (8.7)	-	-	-	B (16.7)	-	-	-	B (17.1)	-	-	-
WB-Left	N/A				B (11.1)	0.04	0.25	25	N/A				B (16.0)	0.11	0.40	40
WB-Thru	B (10.3)	0.14	0.22	72	N/A				B (18.5)	0.35	0.56	185	N/A			
WB-Thru/Right	N/A				B (10.3)	0.14	0.21	72	N/A				B (16.0)	0.32	0.50	171
WB Approach	B (10.3)	-	-	-	B (10.3)	-	-	-	B (18.5)	-	-	-	B (16.0)	-	-	-
NB-Left	N/A				C (23.3)	0.07	0.12	24	N/A				B (18.7)	0.10	0.15	29
NB-Thru	C (23.3)	0.07	0.11	24	N/A				B (16.4)	0.09	0.12	26	N/A			
NB-Thru/Right	N/A				D (50.0)	0.63	0.80	159	N/A				D (45.6)	0.75	1.32	264
NB-Right	D (50.0)	0.63	0.76	159	N/A				D (46.5)	0.76	1.27	266	N/A			
NB Approach	D (47.0)	-	-	-	D (47.0)	-	-	-	D (43.8)	-	-	-	D (43.2)	-	-	-
SB-Left	C (26.1)	0.24	0.55	60	C (26.1)	0.24	0.60	60	C (21.4)	0.40	0.71	78	C (26.9)	0.49	0.86	86
SB-Thru/Right	D (36.1)	0.40	0.68	150	D (36.1)	0.40	0.68	150	C (30.3)	0.48	0.97	213	C (34.2)	0.54	1.03	226
SB Approach	C (33.0)	-	-	-	C (33.0)	-	-	-	C (27.5)	-	-	-	C (31.9)	-	-	-
SR-57 & 28th St	**B (15.6)**	-	-	-	**B (14.8)**	-	-	-	**B (19.2)**	-	-	-	**C (20.4)**	-	-	-
EB-Left	D (45.6)	0.09	0.18	25	N/A				D (46.1)	0.16	0.26	36	N/A			
EB-Thru/Right	D (37.2)	0.39	0.12	82					D (44.0)	0.56	0.24	166				
EB-LTR	N/A				C (32.0)	0.32	0.13	92	N/A				C (33.9)	0.46	0.23	159
EB Approach	D (38.1)	-	-	-	C (32.0)	-	-	-	D (44.2)	-	-	-	C (33.9)	-	-	-
WB-Left	C (24.4)	0.22	0.11	35	N/A				B (13.5)	0.34	0.04	12	N/A			
WB-Thru	C (25.6)	0.14	0.12	38					C (20.6)	0.36	0.50	156				
WB-Left/Thru	N/A				C (31.0)	0.38	0.15	116	N/A				D (40.2)	0.81	0.09	67
WB-Right	B (19.2)	0.29	0.48	53	C (20.9)	0.32	0.15	118	B (15.9)	0.30	1.63	179	A (9.7)	0.30	0.03	22
WB Approach	C (21.7)	-	-	-	C (25.3)	-	-	-	B (17.0)	-	-	-	C (27.5)	-	-	-
NB-Left	N/A				B (11.3)	0.02	0.06	12	N/A				B (16.1)	0.04	0.11	23
NB-Thru/Right	B (15.1)	0.19	0.55	110	B (13.4)	0.33	0.87	182	C (21.4)	0.33	0.88	175	C (22.0)	0.55	1.71	359
NB Approach	B (15.1)	-	-	-	B (13.3)	-	-	-	C (21.4)	-	-	-	C (21.8)	-	-	-
SB-Left	A (6.3)	0.16	0.19	51	A (4.3)	0.16	0.12	28	B (12.3)	0.31	0.31	83	A (8.5)	0.34	0.33	80
SB-Thru/Right	A (5.2)	0.11	0.18	49	A (4.1)	0.19	0.21	55	A (9.4)	0.20	0.31	84	A (8.7)	0.35	0.75	196
SB Approach	A (5.5)	-	-	-	A (4.1)	-	-	-	B (10.2)	-	-	-	A (8.7)	-	-	-

TABLE 2B: CAPACITY ANALYSIS SUMMARY (2045)

Intersection/ Approach	2045 AM								2045 PM							
	No Build				Build				No Build				Build			
	LOS (Delay, in sec)	v/c	QSR	95th%ile Queue (ft/ln)	LOS (Delay, in sec)	v/c	QSR	95th%ile Queue (ft/ln)	LOS (Delay, in sec)	v/c	QSR	95th%ile Queue (ft/ln)	LOS (Delay, in sec)	v/c	QSR	95th%ile Queue (ft/ln)
SR-57 & 21st	**B (18.9)**	-	-	-	**C (20.7)**	-	-	-	**C (20.9)**	-	-	-	**C (25.0)**	-	-	-
EB-Left	D (36.4)	0.06	0.18	20	D (36.4)	0.06	0.18	20	C (34.6)	0.12	0.28	31	D (37.0)	0.13	0.30	33
EB-Thru/Right	D (45.3)	0.60	0.20	134	D (45.3)	0.60	0.20	134	D (48.3)	0.70	0.28	182	D (54.3)	0.75	0.30	195
EB Approach	D (44.7)	-	-	-	D (44.7)	-	-	-	D (47.1)	-	-	-	D (52.7)	-	-	-
WB-Left	C (28.7)	0.31	0.28	70	C (29.2)	0.31	0.28	71	C (27.5)	0.47	0.43	108	D (42.0)	0.66	0.52	130
WB-Thru/Right	C (27.4)	0.33	0.26	108	C (27.8)	0.33	0.26	110	C (26.8)	0.45	0.44	186	C (33.7)	0.54	0.54	225
WB Approach	C (27.9)	-	-	-	C (28.3)	-	-	-	C (27.0)	-	-	-	D (36.7)	-	-	-
NB-Left	A (8.2)	0.14	0.20	39	A (9.9)	0.15	0.21	51	B (10.3)	0.28	0.36	71	A (9.5)	0.29	0.29	69
NB-Thru/Right	A (5.0)	0.14	0.11	33	A (8.7)	0.27	0.36	108	A (4.7)	0.23	0.16	46	B (11.0)	0.41	0.85	256
NB Approach	A (5.8)	-	-	-	A (9.0)	-	-	-	A (6.2)	-	-	-	B (10.6)	-	-	-
SB-Left	B (17.7)	0.04	0.17	25	B (17.0)	0.04	0.13	25	C (23.7)	0.12	0.32	48	B (15.2)	0.09	0.19	37
SB-Thru/Right	B (13.8)	0.14	0.31	74	B (16.4)	0.26	0.67	161	C (20.7)	0.24	0.50	120	B (17.1)	0.38	0.85	204
SB Approach	B (14.1)	-	-	-	B (16.5)	-	-	-	C (21.1)	-	-	-	B (16.8)	-	-	-
SR-57 & Elyria Ave (North)	**A (9.0)**	-	-	-	**B (10.3)**	-	-	-	**B (10.4)**	-	-	-	**A (9.9)**	-	-	-
NB-Thru/Right	B (11.1)	0.11	0.37	26	B (13.2)	0.18	1.39	97	B (14.7)	0.17	0.64	45	B (10.1)	0.29	1.09	76
NB Approach	B (11.1)	-	-	-	B (13.2)	-	-	-	B (14.7)	-	-	-	B (10.1)	-	-	-
SB-Left	C (25.2)	0.20	0.51	92	C (28.4)	0.22	0.52	98	C (24.8)	0.27	0.71	128	C (28.2)	0.30	0.72	137
SB-Thru	A (2.8)	0.10	0.17	30	A (2.8)	0.10	0.16	30	A (3.1)	0.17	0.27	49	A (3.1)	0.17	0.26	49
SB Approach	B (12.5)	-	-	-	B (13.9)	-	-	-	B (12.0)	-	-	-	B (13.4)	-	-	-
NWB-Thru	A (0.1)	0.08	0.00	0	A (0.3)	0.14	0.00	0	A (0.1)	0.10	0.00	0	A (0.5)	0.18	0.00	0
NWB Approach	A (0.1)	-	-	-	A (0.3)	-	-	-	A (0.1)	-	-	-	A (0.5)	-	-	-
SR-57 & 9th St (TWSC)	**A (1.9)**	-	-	-	**A (1.9)**	-	-	-	**A (2.3)**	-	-	-	**A (2.3)**	-	-	-
EB-LTR	B (11.4)	0.07	0.02	0.2	B (11.4)	0.07	0.02	0.2 VEH	C (15.2)	0.16	0.06	0.6 VEH	C (15.2)	0.16	0.06	0.6 VEH
EB Approach	B (11.4)	-	-	-	B (11.4)	-	-	-	C (15.2)	-	-	-	C (15.2)	-	-	-
WB-LTR	B (12.0)	0.06	0.02	0.2	B (12.0)	0.06	0.02	0.2 VEH	C (15.5)	0.09	0.03	0.3 VEH	C (15.5)	0.09	0.03	0.3 VEH
WB Approach	B (12.0)	-	-	-	B (12.0)	-	-	-	C (15.5)	-	-	-	C (15.5)	-	-	-
NB-Left	A (7.7)	0.01	0.00	0	A (7.7)	0.01	0.00	0 VEH	A (8.1)	0.03	0.01	0.1 VEH	A (8.1)	0.03	0.01	0.1 VEH
NB Approach	A (7.7)*	-	-	-	A (7.7)*	-	-	-	A (8.1)*	-	-	-	A (8.1)*	-	-	-
SB-Left	A (7.7)	0.01	0.00	0	A (7.7)	0.01	0.00	0 VEH	A (7.9)	0.01	0.00	0 VEH	A (7.9)	0.01	0.00	0 VEH
SB Approach	A (7.7)*	-	-	-	A (7.7)*	-	-	-	A (7.9)*	-	-	-	A (7.9)*	-	-	-

- The SB-right movement at this intersection is also prohibited in the **Build** condition due to low volumes (20 vehicles in PM peak) and to reduce the size of the intersection. Note that the **Build** model still includes the SB-right movement at this intersection to achieve higher (conservative) LOS and delays.
- A NB-left movement is also added to this intersection.

Lane configuration was also revised at 28th Street/ and Elyria Ave (south) intersection to accommodate EB/WB-left turn movements. The other intersections are expected to operate with acceptable LOS and delays in the **Build** condition hence no change to existing signal operation or lane-use is proposed.

Tables 2A-B show that some of the queues get longer in the **Build** condition. Despite this and considering that the majority of the intersections are closely spaced within 300 feet of each other, most of the movements have QSR values less than 1 (i.e., does not spillback). Only 5 movements across the intersections result in QSR values greater than 1. An increase in queue length is generally expected given the lane-removing nature of a road diet. Overall, the intersections in the **Build** condition are expected to operate with acceptable LOS and delays.

DESIGN CRITERIA

The Multimodal Design Guide (MDG) prepared and published by the Ohio Department of Transportation (July 19, 2024) is the applicable manual for implementing pedestrian and bicycle facilities within ODOT right-of-way or when outside ODOT right of way but when utilizing state and federal funding. Design guidance from the MDG was used to aid in selection of vehicle lane widths and design elements for a separated bike lane.

A supplemental design resource is NCHRP Report 880: Design Guide for Low Speed Multimodal Roadways (2018) which provides a best practice for low to intermediate speed (45 MPH or lower) roadways with a mix of users. The report establishes a balance between operational efficiency, comfort, safety, and convenience for various modes.

Per Section 104 of the ODOT L&D Manual, the design speed should be at least the legal speed for facilities with a legal speed of 35 MPH or less, which is the condition for Broadway. The design speed for Broadway is thus 25 MPH.

LANE WIDTH

Section 300 of the ODOT Location & Design Manual Volume 1 provides cross section design criteria. Figure 301-4 is shown below as **Table 3** provides lane width requirements for urban roadways. Broadway has a posted speed of 25 MPH and is designated as a Federal Aid Primary route. The minimum lane width for low-speed arterial streets is 11 feet. However, footnote B states that one 12-foot lane in each direction is required on Federal Aid Primary roadways. This lane width requirement applies to Broadway.

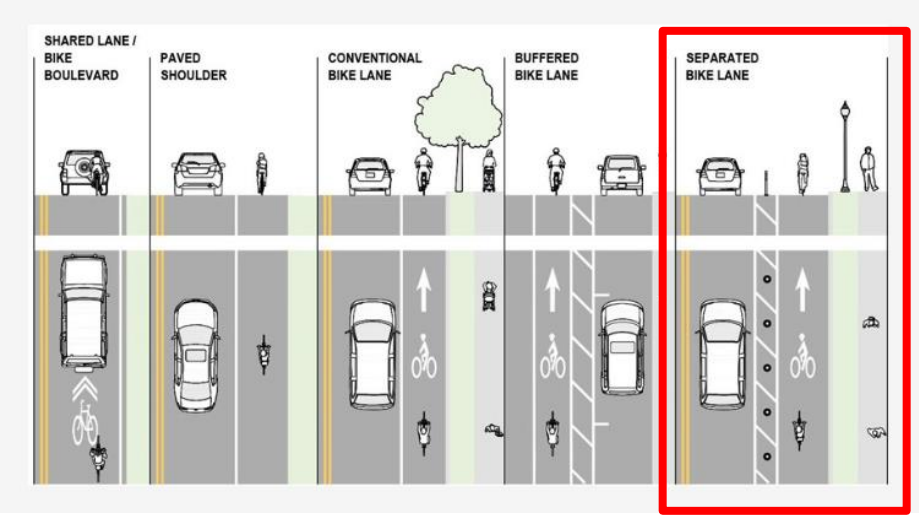
TABLE 3: URBAN LANE/ SHOULDER WIDTHS (L&D MANUAL FIGURE 301-4)

Functional Classifcation	Locale	Minimum Lane Width (ft.)	Minimum Curbed Shoulder Width (ft.) (F)	
			w/o Parking	w/ Parking (E)
Interstate, Other Freeways, and Expressways (J)	All	12	10 Rt. Paved (H) 4 Med. Paved (D)	
Arterial	50 mph or more	12	8 Each Side Paved (G)	
	Less than 50 mph	11 (B)(K)	1-2 Paved (N)	7-10 Paved
Collector Streets (I)	Commercial/ Industrial (L)	11 (K)(M)	1-2 Paved (N)	8-11 Paved
	Residential	10	1-2 Paved (N)	7-8 Paved
Local Streets (I)	Commercial/ Industrial (L)	11 (K)(M)	1-2 Paved (N)	8 Paved
	Residential	10 (C)	1-2 Paved (N)	7 Paved

SEPARATED BIKE LANES

Section 6.3 of the ODOT Multimodal Design Guide provides guidance for on-road bicycle facilities. **Figure 15** presents on-road bikeway types progressing from left to right by degree of separation from vehicular traffic. Shared lanes have the least separation from vehicular traffic and separated bike lanes have the most separation from vehicular traffic. The distinct separation from motor vehicles appeals to a wider range of cyclist types and the design of separated bike lanes prevents motor vehicles from driving, stopping or parking in the bike lane.

FIGURE 15: ON ROAD BIKEWAY TYPES (MDG FIGURE 6-10)



Separated bicycle lanes are exclusive bikeways that are physically separated from motor vehicle traffic, both horizontally and vertically. Separated bike lanes may be located at an elevation the same or different than the roadway or sidewalk and may be installed in one-way or two-way configurations. Separated bike lanes are comprised of three distinct zones:

- Bike Lane Zone: The space in which the bicyclists operate. Located between the street buffer and the sidewalk buffer.
- Street Buffer Zone: The space that physically separates the bike lane from the motor vehicle lane or on-street parking lane.
- Sidewalk Buffer Zone: The space that physically separates the bike lane from the sidewalk zone.

Design consideration: One-Way or Two-Way Operation

Separated bike lanes necessitate the decision to place a one-way separated bike lane on each side of the street or to place a two-way separated bike lane on one side of the street or both sides of the street. If a two-way separated bike lane is chosen, an additional decision of which side of the street to place the bike lane is needed. The primary objectives for determining the appropriate bike lane configuration are:

- Provide clear and intuitive transition to the bicycle network
- Minimize conflict between all users (bicyclist, pedestrians, and motorist)
- Provide convenient access to destinations

One-way separated bikes lane where bicyclists travel in the direction of motorized travel are typically the easiest option to integrate into the existing operation of a roadway. Two-way separated bike lanes introduce a counter flow movement for bicyclists and present challenges at intersections and driveway and when key destinations are on the opposite side of the street. Motorists needing to cross the separated path (at intersections or driveways) often will not anticipate bicyclists approaching from both directions. **Figure 16** summarizes separated bike-lane configurations for two-way roadways.

FIGURE 16: SEPERATED BIKE LANE CONFIGURATIONS ON 2-WAY STREETS (MDG TABLE 6-7)

	One-way SBL Pair	Two-way SBL	Median Two-way SBL
Corridor-level Planning Considerations			
Access to Destinations	Full access to both sides of street	Limited access to other side of street	Limited access to both sides of street
Network Connectivity	Accommodates two-way bicycle travel		
Crash Risk	Lower because pedestrians and turning drivers may not expect counterflow bicycle traffic	Higher because pedestrians and turning drivers may not expect counterflow bicycle traffic	Higher because pedestrians and turning drivers may not expect counterflow bicycle traffic, but median location may improve visibility and create opportunities to separate conflicts
Intersection Operations	May use existing signals phases; separate bicycle phase may be required depending on vehicle volumes	Typically requires additional signal equipment; separate bicycle phase may be required depending on vehicle volumes	

Design Consideration: Width

Width requirements for separated bike lanes based on anticipated bicycle volume are presented in **Figure 17** for one-way and two-way configurations. Widths are measured from the applicable edges of the bike lane (striping, face of curb, edge of gutter pan).

FIGURE 17: MINIMUM SEPARATED BIKE LANE WIDTHS (MDG TABLE 6-4 AND TABLE 6-5)

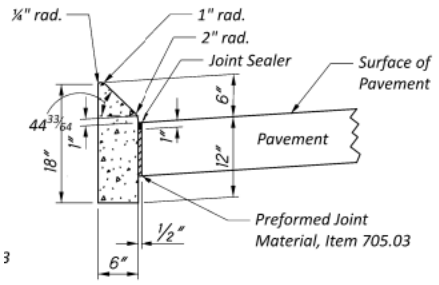
Peak Hour Directional Bicyclist Volume	One-Way Separated Bike Lane Width (ft)		
	Between Vertical Curbs	Adjacent to One Vertical Curb	Between Sloped Curb or at Sidewalk Level
<150	6.5 - 8.5	6 - 8	5.5 - 7.5
150-750	8.5 - 10	8 - 9.5	7.5 - 9
>750	≥10	≥9.5	≥9
Constrained Condition*	4.5	4	3.5

Peak Hour Directional Bicyclist Volume	Minimum Two-Way Bike Lane Width (ft)		
	Between Vertical Curbs	Adjacent to One Vertical Curb	Between Sloped Curb or at Sidewalk Level
<150	10 - 12	9.5 - 11.5	9 - 11
150-350	12 - 16	11.5 - 15.5	11 - 15
>350	≥16	≥15.5	≥15
Constrained Condition*	8.5	8	7.5

Design consideration: Curbing

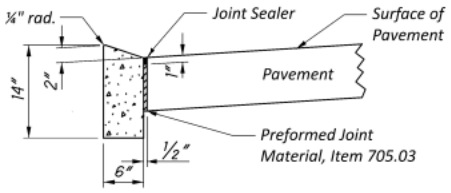
Some curb types can increase the risk of bicycle crashes if struck by a wheel or pedal. The face of curb angle (vertical, sloping or mountable) and curb height influence the functional width of the bike lane, crash risk to bicyclists, the ability to exit the bike lane to access adjacent properties, pedestrian detectability and the risk of encroachment into the bikeway by motorists. The following curb types should be used with separated bicycle lanes:

- Curb Type 10-A: sloping curbs are preferred along any separated bike lane to reduce pedal strike hazards and ease access to the sidewalk.



TYPE 10-A

- Curb Type 10-B: mountable curbs are traversable by bicyclists and reduce pedal strike hazards. This is the preferred curb type for separated bike lanes on an intermediate level.
- Any curb type (including vertical curb) with a height of 3” or less will allow a bicyclst to ride closer to the curb without fear of a pedal strike.



TYPE 10-B

- For roadway reconstruction projects, integral gutters should not be provided along a separated bike lane.

New curbs may incorporate the design concepts above if located adjacent to the cycle track. Otherwise replacement of exising curb to meet this criteria is not proposed as part of the current project. The width of the proposed cycle track provides a buffer to the face of existing curbs.

Design consideration: Street Buffer

Street buffer (the space between the bike lane from the motor vehicle zone) width is a central element in separated bike lane design. The minimum width of a street buffer is 6 feet, regardless of the type of buffer selected.

TYPICAL SECTION ALTERNATIVES

CMT worked closely with the City of Lorain and ODOT to develop a typical section for a lane reduction treatment on Broadway. A meeting was held on August 22, 2024, to present initial alternatives and to solicit input from Lorain and ODOT on priorities for the corridor. As a result of that meeting and subsequent email communications, typical sections presented and outlined below were developed as acceptable for the Broadway corridor.

Due to differing conditions and needs on the various segments of Broadway, different typical sections were developed. Consistent features of the typical sections include: one through travel lane in each direction and a 2-way bike lane separated from the vehicle travel lanes. Variations in the sections include the following:

- On-street parking retained between 20th and Elyria
- Wider through lanes between 13th and 10th due to the curb and gutter plate in this section
- Variations in the presence of a center left turn lane or center median island
- Variations of the width of the median island separating the two-way bike lane

PROPOSED ALTERNATIVE: LANE REDUCTION WITH SEPARATED BIKE

The proposed alternative for Broadway is a 5-lane to 3-lane reduction with a separated two-way bike lane on the east side of the street. This alternative is comprised of five new typical sections as shown in **Figure 18** to **Figure 22.** The section north of 10th St remains as existing (**Figure 7**). Typical sections for this alternative are all within existing pavement width and feature the following:

- One northbound lane and one southbound lane separated by either a center turn lane, raised median, or centerline.
- Two-way separated bike lane along Broadway (north-south portion of SR-57) from 28th St to 10th St separated from the vehicular travel lane by a raised buffer. Access to driveways and side streets are retained.
- Two WB lanes are retained on 28th Street between Broadway and Elyria Avenue
- Accommodates WB-62 movements along the SR-57 truck route (e.g., SB Broadway St to EB 28th St).

FIGURE 18: 28TH STREET - EAST OF BROADWAY TO ELYRIA

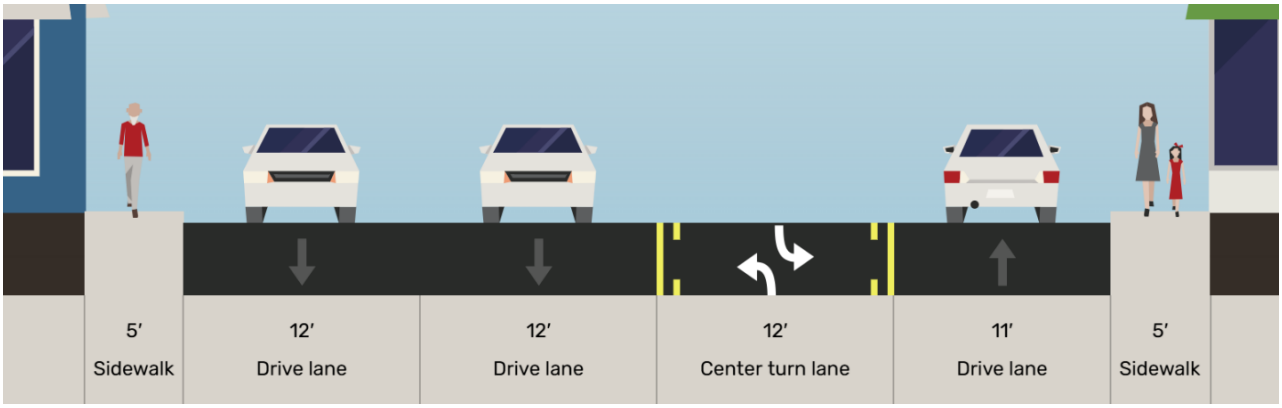


FIGURE 19: BROADWAY - 28TH STREET TO 20TH STREET

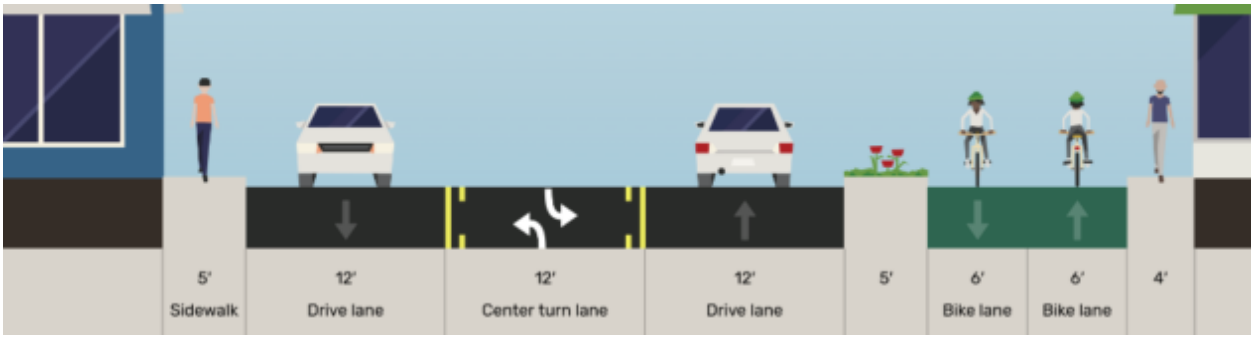


FIGURE 20: BROADWAY- 20TH STREET TO ELYRIA AVENUE

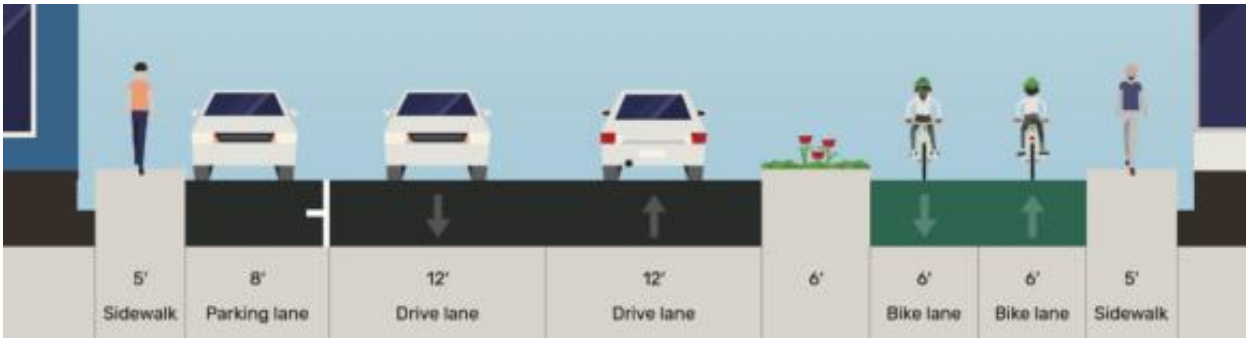
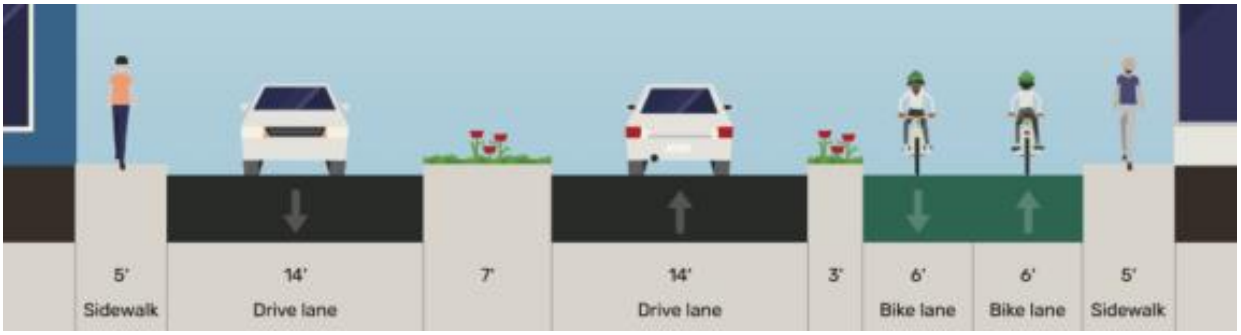


FIGURE 21: BROADWAY - ELYRIA AVENUE TO 13TH STREET

FIGURE 22: BROADWAY - 13TH STREET TO 10TH STREET



The pavement width measures 54 ft which includes a 2-ft gutter plate on both sides on **Figure 22**. The 14-ft travel lanes shown in the typical section includes the 2-ft gutter plan which results in an effective lane width of 11 ft (1 ft offset to raised median plus 2 ft gutter plate). The gutter plate cannot be included as part of the 12-ft lane requirement for FAP routes. A design exception will be required and likely approved for the section between 13th St and 9th St for approval of the 11-ft effective lane width. **Note that the typical section north of 13th Street may change as part of the preliminary engineering phase to better accommodate pedestrians.**

Table 4 compares ODOT design criteria with design parameters of the preferred alternative.

TABLE 4: DESIGN CRITERIA SUMMARY

	Element	ODOT L&D Manual Volume 1 (For Urban Roadways) ODOT Multimodal Design Guide	Broadway Existing	Broadway Preferred Alternative 3-Lane Section with Seperated Bike Lane
Roadway	Vehicle Lane Width [A]	11' minimum 10' constrained, speeds < 35mph	Varies 10' - 15'	Min. 12' travel lane from 28th Street to 13th Street 11' effective lane north of 13th width **will require design exception**
	Shoulder Width [A]	w/out parking: 1-2 feet with parking: 7-10 feet	Width varies	Width varies, up to 2'
Separated Bike Lane	Operations [B]	one-way or two-way operation	n/a	Two-way operation (west side)
	Bike Lane Width [C]	Peak hour bicycle volume < 150: 10-12 feet between vertical curbs 9.5-11.5 feet adjacent to one vertical curb 9-11 feet between sloped curb	n/a	12' (between vertical or sloped curb)
	Sidewalk Buffer [B]	Width varies	Width varies between 0 feet and 6 feet	Width varies between 0 feet and 6 feet. Wider sidewalk is present in locations where buffer is 0 feet
	Street Buffer [B]	6' preferred width 2' constrained (3' with on street parking)	n/a	3' min 6' (20th St to Elyria)

[A] ODOT L&D Vol. 1 Figure 301-4

[B] MDG Section 6.3.7

[C] MDG Table 6-5 Min. Two-Way Seperated Bike Lane Widths

CONCEPTUAL PLANS

The conceptual plans for the proposed alternative are shown in **Figure 23A -E**. The following is a list of concept plan features:

1. Design criteria based on 25 MPH or 35 MPH depending on location.
2. Design accommodates WB-62 design vehicle
3. A Toronto barrier (**Figure 24A**) is proposed by the City to serve as a buffer between the cycle track and the travel lanes in lieu of a raised buffer with a floating bus stop (**Figure 24B**). The Toronto barrier design allows for pedestrian access to the existing sidewalk including the following benefits: achieve ADA compliance; moveable with a fork lift if bus stop location changes; additional drainage not required; and aesthetics (paintable).

FIGURE 24A: TORONTO BARRIER

FIGURE 24B: ELEVATED BUS STOP EXAMPLE

FIGURE 23A: BROADWAY CONCEPT PLAN

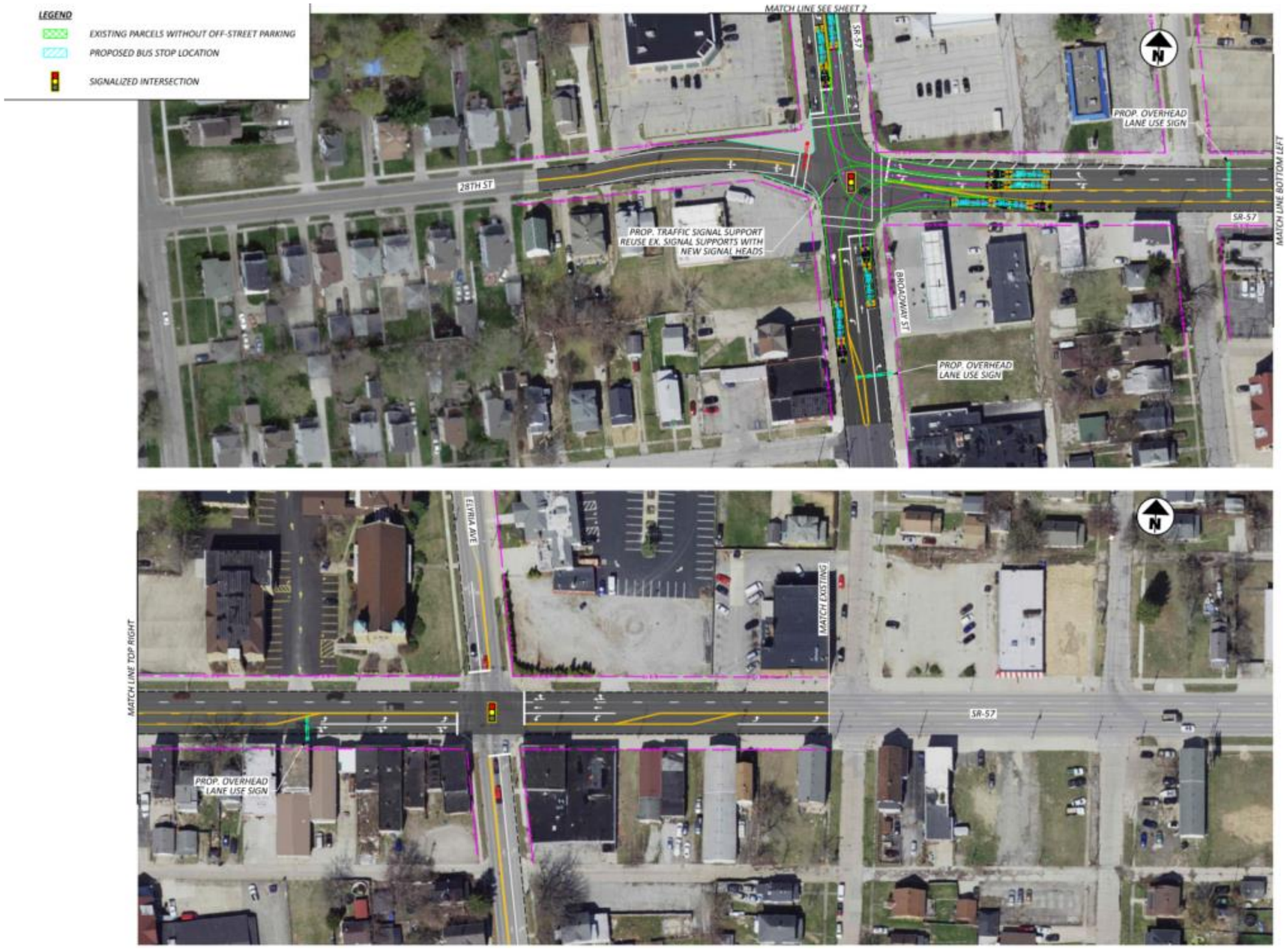


FIGURE 23B: BROADWAY CONCEPT PLAN

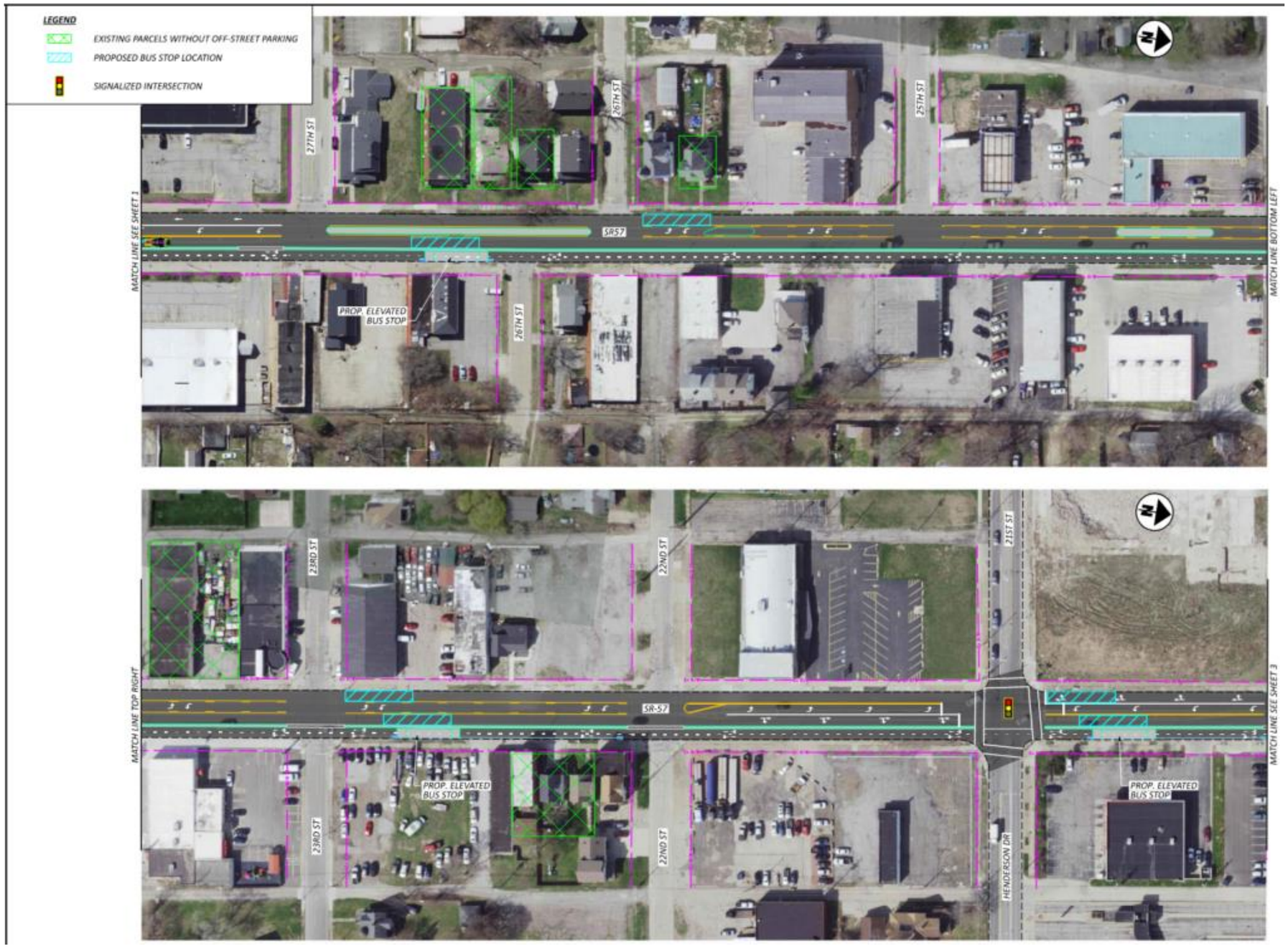
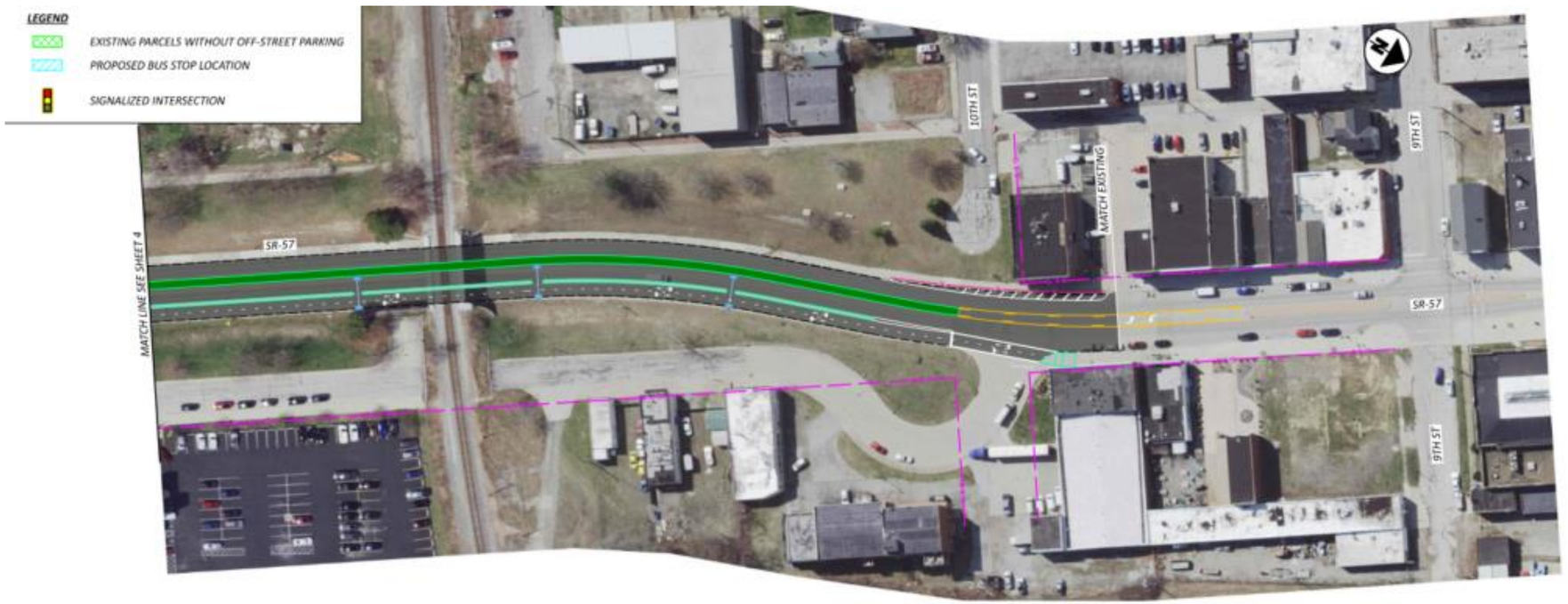


FIGURE 23C: BROADWAY CONCEPT PLAN

FIGURE 23D: BROADWAY CONCEPT PLAN

FIGURE 23E: BROADWAY CONCEPT PLAN



6. Partial signal revisions at the Broadway and 28th St intersection. The lane configuration at this intersection is revised and EB/WB 28th St movements realigned resulting in a smaller intersection footprint resulting in greater efficiency and the signal phasing modified to reduce delays with the reduced number of through lanes on the Broadway approaches. The NW signal support likely needs to be replaced with new support.
7. Improvements include the upgrade of existing curb ramps to meet ADA guidance. The cost estimate assumes 52 curb replacements (80%) varying between a partial reconstruct (truncated dome replacement only) or full reconstruct for ADA compliance.
8. Overhead lane-use signs are recommended to notify motorists of the lane transitions that occur on 28th Street and on Broadway east and south, respectively of the Broadway/ 28th Street intersection. The WB inside lane of 28th Street would be dropped to be a dedicated WB left-turn lane, hence an overhead lane use sign east of Apple Avenue is recommended. A similar rationale is applicable to Broadway south of 28th Street.
9. An overhead lane use sign is recommended to inform motorists that the lane adjacent to the shared EB-thru/right on 28th Street at Elyria Ave (south) is a left-turn lane. Eastbound 28th Street transitions to the existing four-lane section east of the Elyria Ave/28th Street intersection.
10. An overhead lane use sign is recommended to notify motorists of the SB lane configuration at the Broadway and Elyria Ave (north) due to the skewed intersection.
11. Provide curb extensions on applicable sides of Broadway and side streets between 10th St and Elyria Ave (north).

The concept plan shows an outline of a 130-foot diameter roundabout at the Broadway/Elyria intersection which is considered a long-term alternative.

SEPARATED BIKE LANE ON THE WEST SIDE OF BROADWAY

City of Lorain representatives expressed a desire to evaluate two options for the positioning of the separated two-way bike lane – one scenario for the bike lane on the east side of the street and another scenario for the bike lane on the west side of the street.

The preferred alternative presented above positions the bike lane on the east side of Broadway. Changing the position of the bike lane to the west side of the street results in typical sections and widths that are nearly identical except for the location of the bike lane. The section of 28th Street east of Broadway remains the same regardless of the positioning of the bike lane (no bike lane). Both options feature the same travel lane reduction and meet the project goal of reducing motor vehicle speeds.

Both alternatives reduce pedestrian-vehicle conflict locations and pedestrian crossing distances by reducing the number of vehicle travels. Conceptual plans for an option to position the bike lane on the west side of Broadway are included in **Appendix H.**

COST ESTIMATES

The existing paint lines are to be removed with high pressure water or grinding versus resurfacing because most of the pavement in the project limits is 6 years old. The use of a microsurface course (ODOT Item 421) is not included in the cost estimate for the Broadway corridor.

Construction costs were estimated based on the concept plan shown in **Figure 23A-E**. **Table 5** shows an excerpt of the detailed cost estimate for Broadway which is included in **Appendix I**. The funding from the ODOT Target Speed pilot program is capped at $2 million. An additional $1,491,489 has been secured by the City from the NOACA Carbon Reduction funds for FY2026.

TABLE 5: COST ESTIMATE SUMMARY

SUBTOTAL ESTIMATED CONSTRUCTION COST		$	1,880,000
SUBTOTAL ESTIMATED RIGHT OF WAY COST		$	20,000
		$	1,900,000
CONSTRUCTION CONTINGENCY	25%	$	475,000
ENGINEERING, DESIGN & CONSTRUCTION ADMINISTRATION	30%	$	570,000
		$	2,945,000
INFLATION CONTINGENCY (2025 CONSTRUCTION)	13.0%	$	380,000
TOTAL ESTIMATED PROJECT COST		$	3,330,000

FHWA SAFE SYSTEM FRAMEWORK

The Federal Highway Administration (FHWA) has developed the Safe System Project-Based Alignment Framework (Project-Based Framework) to evaluate roadway locations and potential improvements using a Safe System Approach (SSA). This framework provides a tool that enables practitioners to compare existing street layouts and proposed alternatives. It employs a scoring matrix that focuses on three key aspects: exposure, likelihood, and severity, for both vulnerable road users and motor vehicle occupants.

The tool allows users to input information about existing roadways and proposed improvements, such as roadway width, geometry, vehicle volumes, speeds, and the number of vulnerable road users. It also considers risk factors like lighting conditions and sight distances. It calculates scores for exposure, likelihood, and severity for vulnerable road users and motor vehicles, combining them into a total score. Lower scores indicate better alignment with the Safe System Approach and lower crash risk, while higher scores suggest greater risk.

The tool can evaluate either roadway segments or intersections but not both simultaneously. For corridors with a proposed segment and intersection, those alternatives must be evaluated separately. Since the Broadway (State Route 57) corridor is focused on segment improvements,

namely a lane reduction and separated bike lane, the tool was used for evaluating roadway segments.

To evaluate the proposed improvements for Broadway, the FHWA Project-Based Framework tool was completed for the existing and proposed conditions for the entire length of the study area. Since the roadway cross-sections vary throughout the study area, the corridor was broken up into four segments:

- Segment 1: Caroline Ave to Broadway
- Segment 2: 28th St to 20th St
- Segment 3: 20th St to Elyria Ave
- Segment 4: Elyria Ave to 10th St

Existing and proposed roadway widths and geometric features were obtained from the conceptual drawings included in this report. Vehicle volume and speed were obtained from publicly available data supplied by the Ohio Department of Transportation's (ODOT) Traffic Information Mapping System (TIMS) website. The volume of vulnerable road users present was calculated based on 13-hour pedestrian counts collected at the following intersections:

- Elyria Ave and E 28th St
- Broadway and 28th St
- Broadway and W 21st / Henderson Dr
- Broadway and Elyria Ave
- Broadway and 9th St

Pedestrian counts were taken from the cross-streets to estimate the number of people traveling along the corridor, then extrapolated to 24-hour pedestrian counts using a 1.15 partial count factor. Volume and speed inputs are summarized in **Table 6.**

TABLE 6: ATTRIBUTES USED IN THE FHWA SAFE SYSTEMS FRAMEWORK TOOL

Attribute	Segment 1: Caroline to Broadway	Segment 2: 28th to 20th	Segment 3: 20th to Elyria	Segment 4: Elyria to 10th
2023 Traffic Volume (AADT)	11,439	10,847	5,521	5,521
Vulnerable Rd Users (users per day)	99	52	69	84
85th percentile speed (mph)	44	37	40	40

According to a National Association of City Transportation Officials (NACTO) report, a 5-to-3-lane road diet (i.e. re-striping lanes) can lower speeds by 4-7 mph (https://nacto.org/wp-content/uploads/2017/11/An-Evaluation-of-Road-Diet-Projects-on-Five-Lane-and-Larger-Roadways.pdf). Features like raised crossings and center medians can lower speeds by up to 11 mph (https://highways.dot.gov/media/15226). For use in this FHWA tool, a 7 MPH speed reduction was assumed to account for the speed reduction potential of the proposed lane reduction and center median treatments proposed on Broadway.

Results of the FHWA framework tool for the Broadway study area are summarized in **Table 7.** With the existing 5-lane condition, an average score of 4,547 was calculated. With the proposed lane reduction and separated bike lane, the total average score for the corridor was calculated at 2,205. The nearly 50-percent reduction in total score suggests that improvements proposed on Broadway bring the corridor into closer alignment with the objectives of the Safe Systems Approach for motorists and vulnerable users of the street.

Spreadsheets are included in **Appendix J.**

TABLE 7: FHWA SAFE SYSTEMS FRAMEWORK TOOL SCORING SUMMARY

Broadway Street Corridor Segment	Existing Condition (5 lane section)			Proposed Condition (5 lane to 3 lane reduction with bike lanes)		
	Vulnerable Users	Motor Vehicles	Total	Vulnerable Users	Motor Vehicles	Total
Caroline to Broadway	2,880	1,944	4,824	2,880	1,944	4,824
28th to 20th	2,880	1,458	4,338	840	126	966
20th to Elyria	2,160	864	3,024	540	60	600
Elyria to 10th	3,840	2,160	6,000	1,890	540	2,430
Corridor Average	**2,940**	**1,607**	**4,547**	**1,538**	**668**	**2,205**

CONCLUSIONS AND RECOMMENDATIONS

A 3-lane, typical section (lane reduction) is recommended for Broadway Street to meet the goal of achieving operating speeds that are consistent with the posted speed limit of 25 MPH. The improvements have the added benefit of providing a separated, two-way bicycle lane on the corridor on the east side of Broadway. Part D crash modification factors capture the safety benefits of a lane reduction. The following 3-star CMFs are associated with a 10% reduction in speed if used to calculate a benefit/cost ratio: CMF of 0.68 for fatal crashes, CMF of 0.85 for injury crashes.

The preliminary engineering phase of the project will confirm various design elements including the location of raised medians, the use of a Toronto barrier instead of a raised buffer between the travel lane and two-way cycle track with a floating bus stop, curb extensions, the extent of signal improvements at 28th/ Broadway intersection, and curb ramp upgrades.

BROADWAY (SR57)
TARGET SPEED STUDY

APPENDIX A: PROJECT DOCUMENTATION

CMT

LORAIN ACTIVE TRANSPORTATION PLAN

June 2024 Update

Lorain County Public Health
For the Health of Us All

CONTENTS

Information contained in this document is for planning purposes and should not be used for final design of any project. All results, recommendations, concept drawings, cost opinions, and commentary contained herein are based on limited data and information and on existing conditions that are subject to change. Further analysis and engineering design are necessary prior to implementing any of the recommendations contained herein.

INTRODUCTION

This introduction describes the planning process, defines active transportation, highlights accomplishments since the 2018 Plan was adopted, and provides an overview of proposed projects.

WHAT IS ACTIVE TRANSPORTATION AND WHY IS IT IMPORTANT?

"Active Transportation" is an umbrella term for all the ways people can get around without using a motorized vehicle – walking, biking, using mobility assistance devices (such as wheelchairs and scooters), skating or skateboarding, and more. In short, active transportation is human-powered travel. Active Transportation represents fundamental transportation modes for many Ohioans to access transit, work, school, retail stores or any number of destinations in urban, suburban, and rural settings. Active transportation can provide many community benefits beyond personal mobility, such as improved public health, economic development, greater quality of life, and enhanced environmental quality.

Active transportation planning involves community engagement specific to the needs of people who walk and bicycle and outlines the vision, goals, and strategies needed to support safe, convenient, and accessible active transportation options. This plan helps meet the needs of people who rely on active transportation by planning for and directing investments in infrastructure and programs that support active transportation options.

ACCOMPLISHMENTS SINCE 2018

Since the plan adoption in 2018, the City of Lorain has undertaken several projects to improve its walking and biking infrastructure and has implemented several projects and programs included in their 2018 Active Transportation Plan (ATP). In 2021, 2022, and 2023 the city employed the Safe Routes to School program to improve sidewalks, curb ramps, and safe crosswalks near schools and already has projects

programmed for 2024, 2025, and 2026. Similarly, the Transportation for Livable Communities Initiative (TLCI) has assisted the city in completing road diets with traditional bicycle lanes or shared lane/bike boulevards on West 21st Street, West 17th Street, and East 31st Street with plans for an expansion of bicycle accommodations on US-6 west of the Black River. Additionally, the City of Lorain utilized Congestion Mitigation and Air Quality (CMAQ) funds to create the Washington Avenue Bikeway, which features the first advisory bike lanes in the State of Ohio and a 10-foot shared use path connecting bike infrastructure between Oberlin Avenue and Washington Avenue. Also, since 2017, the City of Lorain has leveraged $4,323,951 from grants and other outside sources to implement walking and biking improvements.

WHAT'S NEW IN THIS UPDATE?

This 2024 update evaluates the status of the remaining recommendations and updates the priorities based on changes in the built environment and community, such as new residents, businesses, and leadership. In addition, active transportation is a quickly evolving field and the 2024 update reflects today's best practices. Ten new partners joined Lorain Connected to help guide the update to the plan.

PROJECT TIMELINE

In summer 2023, the city received funding to update the 2018 Active Transportation Plan (ATP). The ATP 2024 Update was created under the leadership of Lorain Connected, a diverse group of community organizations, advocates, and civic leaders. This group ensured that the ATP continued to represent Lorain's many interest groups and stakeholders. The process to update the ATP began with an assessment of existing conditions and a review of the 2018 ATP and other relevant plans and studies. Public input and a technical analysis provided a foundation for proposed projects and prioritization of those recommendations. The final section within this plan includes guidance for implementation (see Figure 2 for a project timeline).

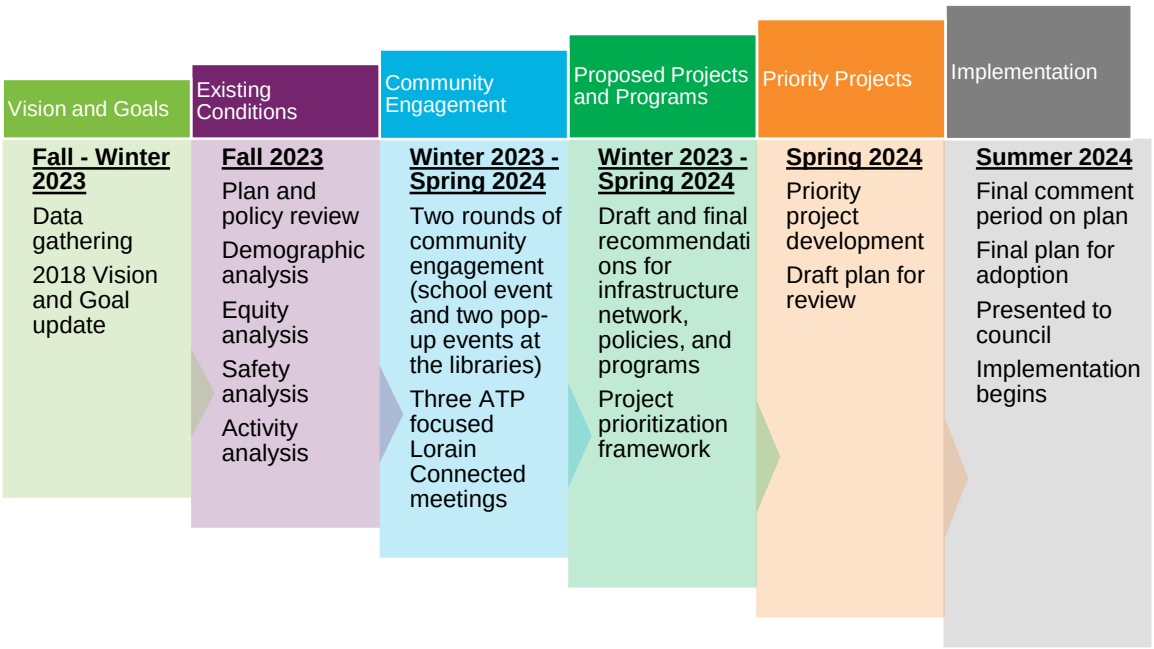


Figure 2. Project Timeline

VISION AND GOALS

The 2018 ATP vision and goal statements were updated to capture recent changes in the community and emerging priorities. The 2018 vision statement was: *City of Lorain's Active Transportation Plan will create and expand safe, accessible and effective options - walking, biking and busing - throughout the City that are equitable and reliable for residents and visitors of all ages and abilities for a healthy Lorain*.

The 2018 goal statement was: *The goal is to create a framework for a comprehensive, community-driven, transportation network for all users, of all ages. Active transportation is any method of travel that does not rely entirely on a car*. The updated vision statement, shown below, is supported by five goals which measure success and guide implementation.

VISION

The City of Lorain's Active Transportation Plan will create and expand safe and accessible options – walking, biking, rolling and connections to transit – throughout the City that are equitable and reliable for residents of all ages and abilities for a healthy Lorain.

GOALS

- **Connectivity**: Increase connections between places for nonmotorized means of travel.
- **Safety**: Improve the safety and efficiency of the transportation system.
- **Accessibility**: Enhance mobility for all users.
- **Health**: Support a healthy lifestyle for all residents.
- **Growth/Quality**: Enhance and promote quality of place assets to attract people and industry to the City.

EXISTING PLANS, POLICIES, AND SUPPORTIVE PROGRAMS

This plan builds on prior plans and initiatives developed by entities within Lorain. It looks to these plans for existing conditions data, issue identification, and recommendation support.

Table 2. Existing Plans and Policies

Document Name	Lead Agency	Year Completed	Key Takeaways
City of Lorain Comprehensive Plan	City of Lorain	2019	This plan includes technical research, public engagement, and a review of best practices to develop informed strategies and recommendations regarding multimodal connectivity within the city, improved access to public transportation, bus connections, and water transport.
City of Lorain Active Transportation Plan	City of Lorain	2018	This plan is a guide for planning, designing, constructing, and maintaining a safe, comfortable, and efficient roadway network for users of all ages and abilities including pedestrians, bicyclists, transit riders, motorists, and commercial and emergency vehicles. The City of Lorain and Lorain Connected have collaborated on the implementation of the 2018 plan. This current planning process will update the 2018 plan.
Lorain County Lakefront Connectivity Plan	Lorain County	2017	This NOACA-funded plan studied US-6 in Lorain County for multimodal connections. In Lorain, the plan recommends a road diet with bike lanes and/or a shared use path on US-6/Erie Avenue. The plan also envisioned the future redevelopment of Lorain's Riverfront with an event venue and public space on site.
Lorain County Transit Redevelopment Plan	Lorain County	2018	This plan identifies and develops recommendations and strategies for strengthening transportation projects that provide more travel options through complete streets and context sensitive solutions, increasing user safety and supporting positive public health impacts. It explores other transportation-based efforts to support economic development through place-based transportation and land-use recommendations.
City of Lorain Vision Zero Initiative	City of Lorain	2021	Lorain's Vision Zero initiative is using policy, engagement, education, and engineering to significantly reduce the number of serious and fatal crashes within the City of Lorain. Strategies like road diet reconfigurations with bike lanes, pedestrian improvements, reducing the speeds of motorists, adding green paint to bike lanes, adding multi-use trails, and pedestrian ramps are examples of recommendations. Collaborative education activities were also recommended, such as walk or bike to school days and police community outreach programs.
MOVE Lorain County Coordinated Transportation Plan UPDATE (2022)	Lorain County Mobility Management	2022	This plan seeks to increase awareness and access to transportation options for Lorain County residents. The plan describes the community's needs for a coordinated transportation system and recommends carpooling, ridesharing, and transportation pilot projects.

Document Name	Lead Agency	Year Completed	Key Takeaways
Lorain County Comprehensive Safety Action Plan	Lorain County Public Health	In Progress	Lorain County is currently working on completing a Comprehensive Safety Action Plan. The plan encompasses all Lorain County and the City of Vermillion. The plan will provide infrastructure recommendations as well as program and policy recommendations in order to work towards the goal of eliminating fatal and serious injury crashes for all road users.
NOACA 2022 Community Safety Report City of Lorain	NOACA	2022	The 2022 Community Safety Report used a systemic safety management approach to estimate crash predictions. Based on this approach, within the City of Lorain, there were 474.97 average annual expected crashes. Based on the average annual expected crashes, NOACA ranked arterials and intersections from highest to lowest. The top five arterials included: US 6 from Vermillion ECL to W of US-6/SR-611, SR-58 (N Leavitt Rd) from Cooper-Foster Road to SR-611, Baumhart Road from Lorain SCL to W Erie Avenue (US-6), SR-11 from Henderson Drive to Colorado Avenue, and SR-611 from Elyria Avenue to Colorado Avenue. The top five intersection included: SR-58 (N Leavitt Road) and Cooper-Foster Park Road, SR-611 and Colorado Avenue, Broadway and Cooper-Foster Park Road, SR-58 (N Leavitt Road) and SR-611, and Broadway and SR-57 (E 28th Street).
NOACA SAVE: NOACA's Plan for Transportation Safety	NOACA	2019	The SAVE plan intends to save lives by identifying the high-crash locations and implementing safety treatments at those sites. This plan was developed with the vision that traffic deaths and injuries can be prevented with appropriate planning, policies, and programs, with the long-term goal of reducing the number of fatalities and serious injuries by 50 percent by the year 2040.
NOACA eNEO2050: An Equitable Plan for Northeast Ohio	NOACA	2021	NOACA's current long range transportation emphasizes active transportation in several ways. First, the need for new bicycle connections regionally is identified as a need, and future funding can be allocated to support this policy goal. Secondly, the Plan calls for widespread pedestrian improvements to intersections and midblock crosswalks, and plans for large investments into pedestrian safety improvement each decade between 2020 and 2050.
NOACA Regional Strategic Transit Plan	NOACA	2021	The purpose of this study is to provide a strategic action plan that supports the development of a cohesive and coordinated vision for public transit investment in the NOACA region. The study was divided into two phases. Phase I reviewed the existing conditions of the five-county region, including an analysis of demographics, transit service and travel patterns, stakeholder outreach with public and private partners, and a review of governance structures of peer regions. Phase II focused on using the outcome of the analyses to develop a set of short- and long-term action strategies. Strategies categorized as short-term were those with implementation periods within 5 years. The study team also developed a set of aspirational strategies which represented high-potential and high-investment-risk actions.

Document Name	Lead Agency	Year Completed	Key Takeaways
Lorain City Schools Policy Manual	Lorain City Schools	2017	The transportation policies in this manual are aimed at providing a safe, efficient, and economical method of getting students to and from school. The School Board provides transportation for resident elementary students in grades kindergarten through eight who live more than 2 miles from school, and for all students with physical or mental disabilities that make walking impossible or unsafe. The manual also highlights transportation needs and funding for students and the school bus safety program.
NOACA Lorain County Bicycle Map	NOACA	2018	NOACA's regional bike maps are printed and delivered to bike shops, libraries, and schools across northeast Ohio. In Lorain County, the bike maps include a Level of Traffic Stress map that was created using public meetings in Lorain County. The maps can be used to select low-stress neighborhood routes, informing future bike boulevard development, and more.

Table 3. Existing Supportive Programs

Program Name	Program lead (organization)	Target Audience	Key Takeaways
Walk/Bike to School Days	Lorain City Schools	Community	Walk/Bike to School Days help schoolchildren form healthy habits by incorporating physical activity into their routine. Active Transportation Plan partners have completed 8 walk to school days in the City of Lorain.
Second Saturdays (previously First Fridays)	Main Street Lorain	Community	This program encourages the community to come downtown and explore the surrounding neighborhood on foot.
Go Lorain Bike Share Program	City of Lorain Public Libraries	Community	This program allows library card owners to check out adult bikes, helmets, and locks at no cost to users at the South Branch Library. A bike repair station is also provided.
Girls in Gear/ Co-ed Bike Camp	El Centro	Community	The goal of the Girls in Gear program is to introduce riders to the joy of safe biking while creating a supportive environment. This program empowers girls and helps them build confidence in their riding abilities. This program focuses on topics of bicycle safety, bicycle maintenance, and nutritional education.
Indoor Walking Club	Lorain County Public Health	Community	This free program encourages all ages to exercise by walking indoors at different buildings around Lorain in the winter months.
Lorain Historical Society Walking Tour	Lorain Historical Society	Community and Tourists	This free walking audio tour is provided by the Lorain Historical Society and has 24 locations and corresponding historical audio.
Cycling Club Group Rides	City of Lorain County Bicycle Club	Community	The Lorain County Bicycle Club is a coed group of road cycling enthusiasts. Community Rides are second Saturdays to tie into Main Street Lorain. The rides typically finish at a local shop or restaurant. In the future, there will be third Thursday rides from 6-7 pm.

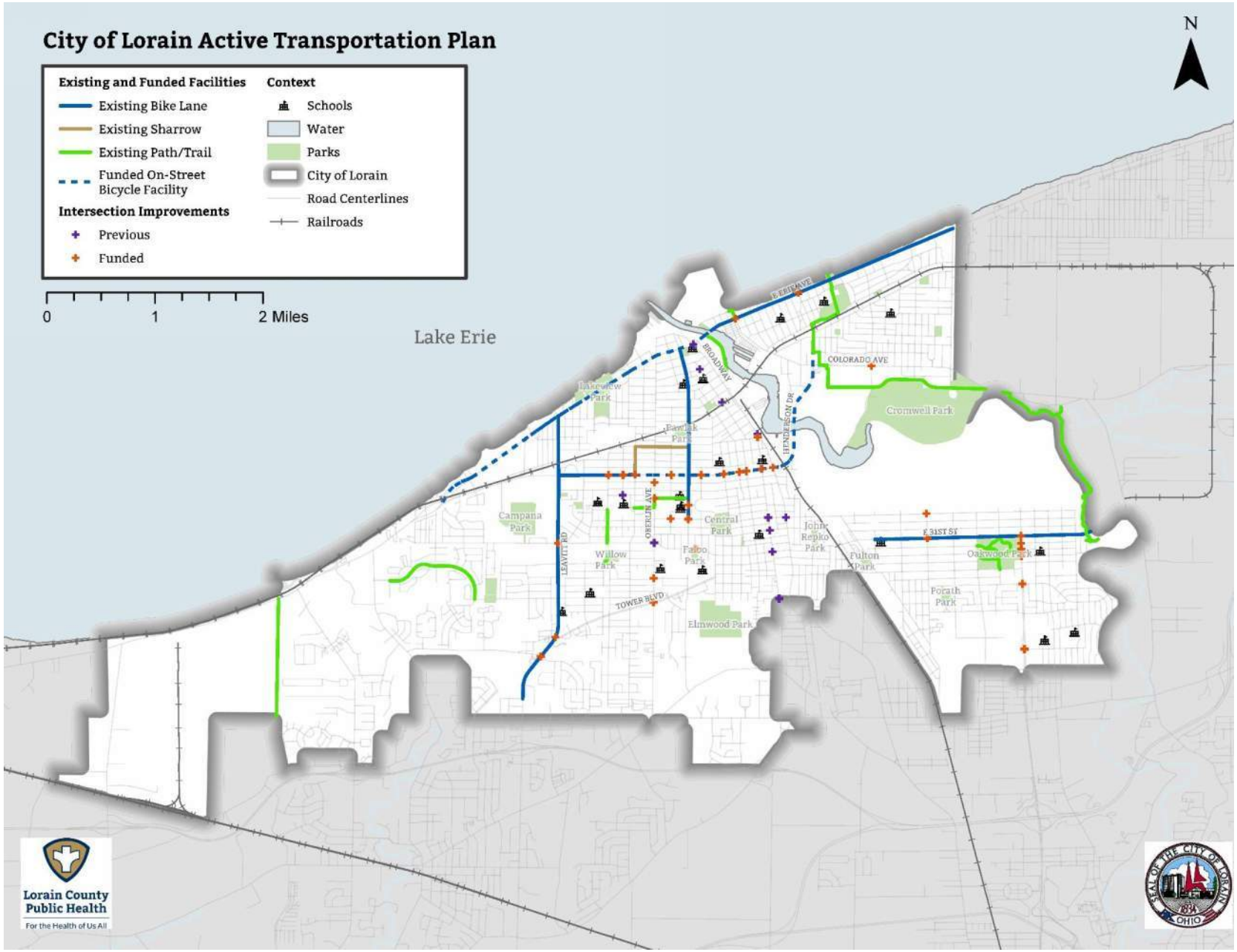


Figure 9: Existing and Funded Facilities

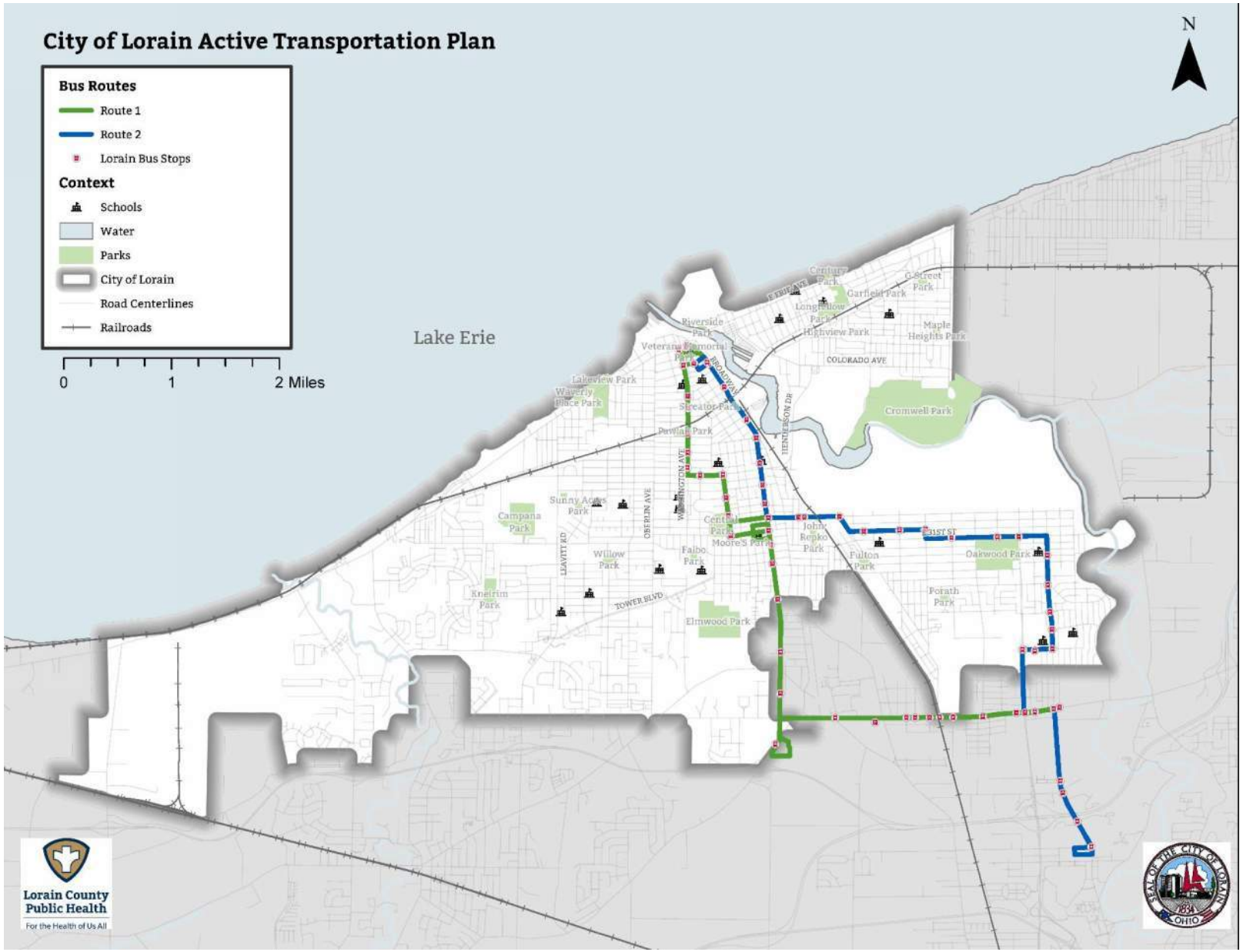


Figure 10: Transit Service

Figure 11: Proposed Recommendations Map

Figure 12: Proposed Bike and Trail Network Map

Table 5: Proposed Bike and Trail Network Recommendations

Project ID	Type	Road Name	Start	End	Description	Prioritization Ranking
1	Neighborhood Bikeway	Root Road	Erie Avenue	Colorado Avenue	Low volume/speed street; Mark routes; and enhance minor intersections to prioritize bikes; bike box/crossbike markings and consider bike priority signal at major intersections where applicable.	Medium
2	Neighborhood Bikeway	Euclid Avenue	Erie Avenue	River Industrial Park Drive	Low volume/speed street; Mark routes; and enhance minor intersections to prioritize bikes; bike box/crossbike markings and consider bike priority signal at major intersections where applicable.	Medium
3	Neighborhood Bikeway	Missouri Avenue Riverbend Drive	Erie Avenue Colorado Avenue	Colorado Avenue River Industrial Park Drive	Low volume/speed street; Mark routes; and enhance minor intersections to prioritize bikes; bike box/crossbike markings and consider bike priority signal at major intersections where applicable.	Medium
4	Neighborhood Bikeway	Kansas Avenue	Erie Avenue	Colorado Avenue	Low volume/speed street; Mark routes; and enhance minor intersections to prioritize bikes; bike box/crossbike markings and consider bike priority signal at major intersections where applicable.	Medium
5	Neighborhood Bikeway	Garfield Boulevard	Michigan Avenue	Root Road	Low volume/speed street; Mark routes; and enhance minor intersections to prioritize bikes; bike box/crossbike markings and consider bike priority signal at major intersections where applicable.	Low
6	Neighborhood Bikeway	E Street	Colorado Avenue	Louisiana Avenue	Low volume/speed street; Mark routes; and enhance minor intersections to prioritize bikes; bike box/crossbike markings and consider bike priority signal at major intersections where applicable.	Low
7	Neighborhood Bikeway	Crehore Street	Kansas Avenue	Root Road	Low volume/speed street; Mark routes; and enhance minor intersections to prioritize bikes; bike box/crossbike markings and consider bike priority signal at major intersections where applicable.	Medium
8	On Street Bike Facility	Colorado Avenue	Erie Avenue	Lehigh Avenue	Separated bike facility	High
9	On Street Bike Facility	Elyria Avenue	Broadway	36th Street	Separated bike facility	High
10	On Street Bike Facility	Broadway	Erie Avenue	39th Street	2-Way Cycle Track (Separated bike facility)	Low

PRIORITY PROJECTS

The infrastructure recommendations in this Plan are conceptual routes, meant to show the potential of a comprehensive active transportation system in Lorain. The recommendations are planning level in scope and are not necessarily constrained by existing challenges. In other words, funding, land use, property rights, terrain, and other project specific factors may make certain recommendations more or less practical than others. Project prioritization uses measurable data to determine which projects are feasible and align with stakeholders' priorities.

Project prioritization uses measurable data to determine which projects are feasible and align with the community's priorities. Implementation will require working with a larger number of partners to coordinate and build public support for priority projects. Whenever possible, recommendations in this plan should be incorporated into other street design projects. Every year, the City of Lorain should re-evaluate the priority list to track which projects have been implemented and adjust as needed.

PRIORITIZATION METHODOLOGY

As is true for most cities, the City of Lorain has limited funds for building bicycle and pedestrian infrastructure. The prioritization in this plan is a data-driven process that uses the Existing Condition analyses to score and rank projects based on conditions in their relative locations. It is important to note that while public feedback and right-of-way constraints are not variables listed in the overall prioritization, all proposed recommendations will take right-of-way constraints into consideration during development. For public support, all projects were vetted against the public before being finalized.

The outline of variables and how weights were used for the facility prioritization (sidewalks and bikeways) are shown in Table 11. The results of the prioritization are noted in Table 5 and Table 6 and displayed in Figure 20 and Figure 21.

Table 11. Prioritization Method (Bicycle Network and Sidewalk Network)

Category	Weight	Variable	Description
Safety	**40**	**High Risk Network**	Projects receive 3 points if identified as high risk in the high-risk network.
		Level of Traffic Stress	Projects receive more points the higher the level of traffic stress on the street: » LTS 4 = 3 pts » LTS 3 = 2 pts » LTS 2 = 1 pt » LTS 1 = 0 pt
Connections	**25**	**Connections to Existing Bicycle Infrastructure**	Projects receive 1 point if it would connect to other bicycle infrastructure, within 200 feet. This includes projects outside of the City's boundary.
		Non-motorized Activity (Streetlight)	Projects receive higher points if in areas with higher bike and walk activity today: » Highest = 1 pt » High = 0.5 pt » Moderate = 0.25 pt » Low = 0 pt
Equity	**35**	**Needs Analysis**	Projects receive higher points if in areas with higher AT Need according to ODOT's Walk.Bike.Ohio analysis. Higher need areas have higher populations in categories like: minority groups, youth, older adults, poverty, no high school diploma, limited English proficiency, and no access to a motor vehicle.
		Demand Analysis	Projects receive higher points if in areas with higher AT Demand according to ODOT's Walk.Bike.Ohio analysis. Higher demand areas have greater employment density, population density, walk/bike commute mode, park density, presence of colleges/university, retail employment density, and residents in poverty.
		Equity Index	Projects receive points based on their a composite equity score. Higher disparity areas have greater racial minorities, youth, older adults, individuals with disabilities, poverty levels, no-vehicle households, female population, no internet access, no high school diploma, and limited English proficiency. » Higher Disparity = 4 pts » Medium-High = 3 pts » Medium - Low = 2 pts » Lower Disparity = 1 pt » No Disparity = 0pt
		Students with Disabilities	Projects receive one point in areas where more than the state's average of 15% of students have a disability.

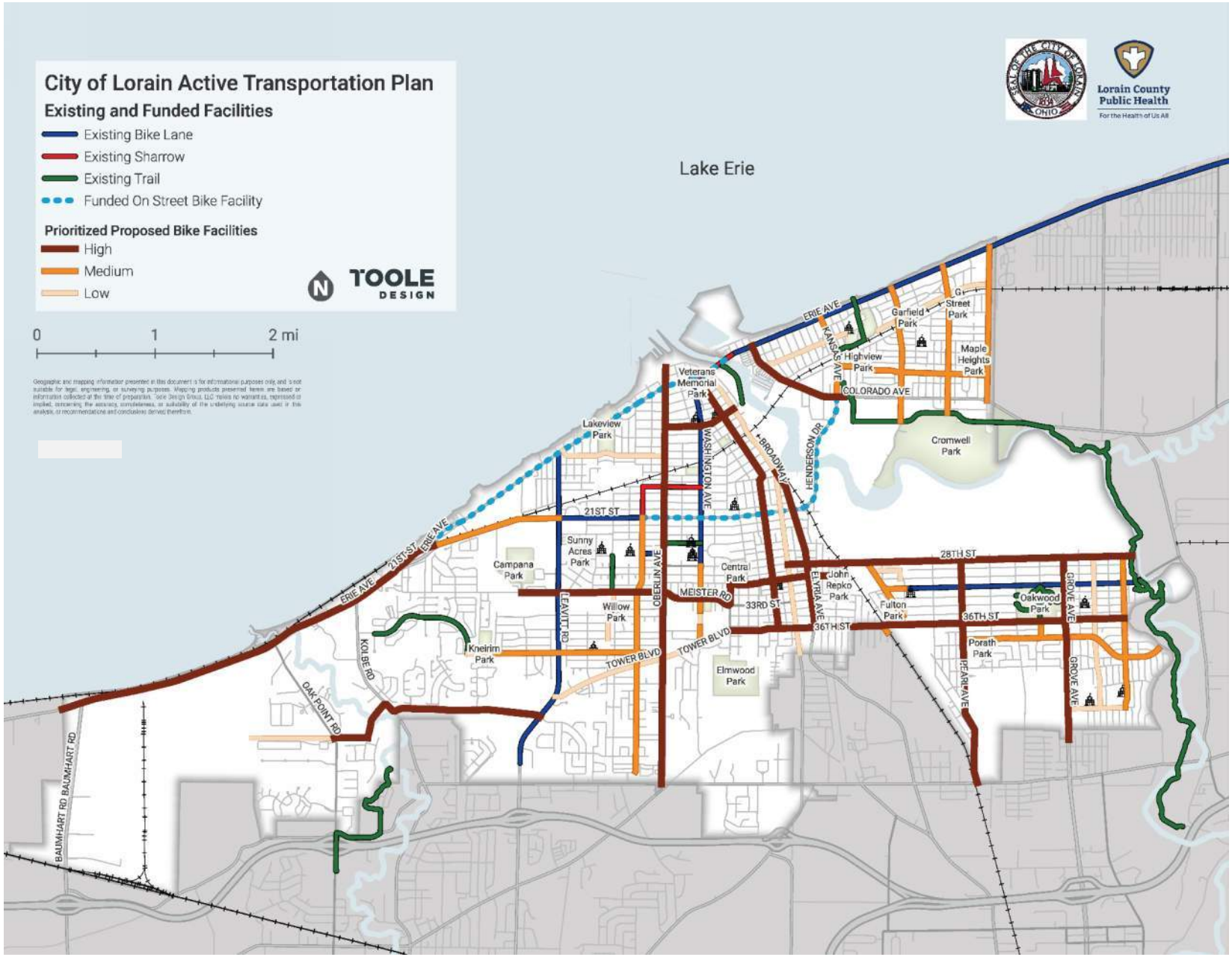


Figure 20: Bicycle Network Prioritization

PRIORITIZED INFRASTRUCTURE PROJECT LIST

Implementing this plan will take time and significant effort. Figure 20 and Figure 21 identify short-, medium-, and long-term infrastructure plan priorities. These priorities are also specified in Table 5 and Table 6. Implementation will require working with a larger number of partners, as well as building public support for priority projects. Whenever possible, recommendations in this plan should be incorporated into other street design projects. Every year Lorain should re-evaluate the priority list to track which projects have been implemented and to adjust as needed.

BROADWAY CYCLE TRACK

Broadway is a four-lane street that carries approximately 5,800 cars per day through the heart of Lorain, connecting the south Lorain neighborhood to downtown Lorain and the northern Lorain neighborhoods which houses the Lorain Harbor, fishing pier, and boat launch (ODOT TIMS, Accessed November 2022). Adding a cycle track to Broadway to connect these major destinations and residents has been determined to be a priority project for the community. Additionally, the cycle track would connect to existing and funded bike lanes such as the funded bike lanes on West Erie Avenue and West 21st Street and the proposed facilities on West 28th Street. Barriers that should be considered include the railroad underpass between West 9th Street and West 13th Street, as well as the intersection of Broadway and Elyria Avenue. One lane of parking will be maintained along the corridor as will the existing Lorain County Transit network. As a step toward implementation, it was determined to create a planning level cost estimate for the cycle track (see Appendix E).

APPENDICES

CONTENTS


BROADWAY CYCLE TRACK
EXAMPLE LAYOUT
TYPICAL
20TH ST - 26TH ST
12' CYCLE TRACK
3' RAISED MEDIAN
12' TRAVEL LANE
11' TWO-WAY LEFT TURN LANE
12' TRAVEL LANE
TYPICAL
26TH ST - 28TH ST
12' CYCLE TRACK
3' RAISED MEDIAN
14' TRAVEL LANE
7' CURBED MEDIAN (PLANTED)
14' TRAVEL LANE
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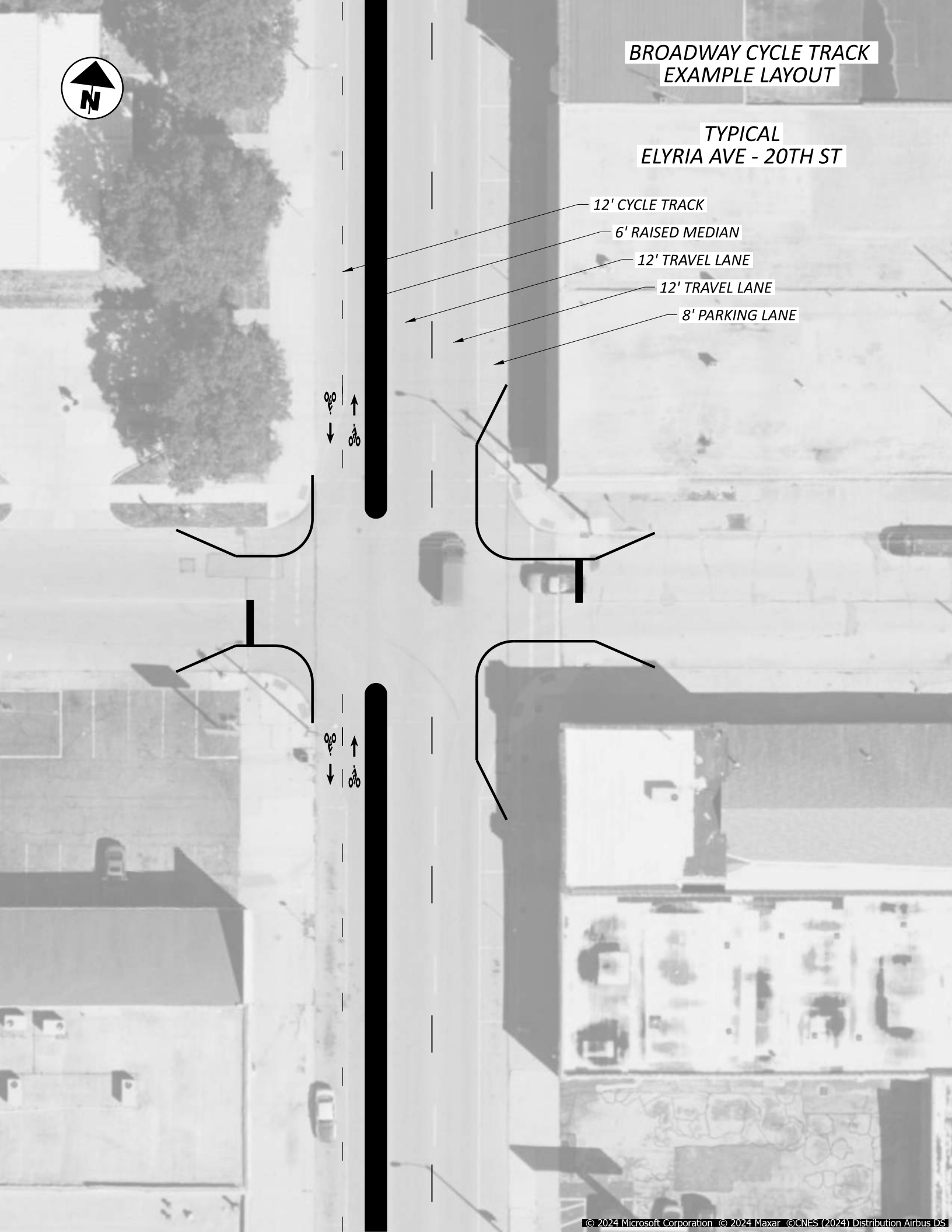
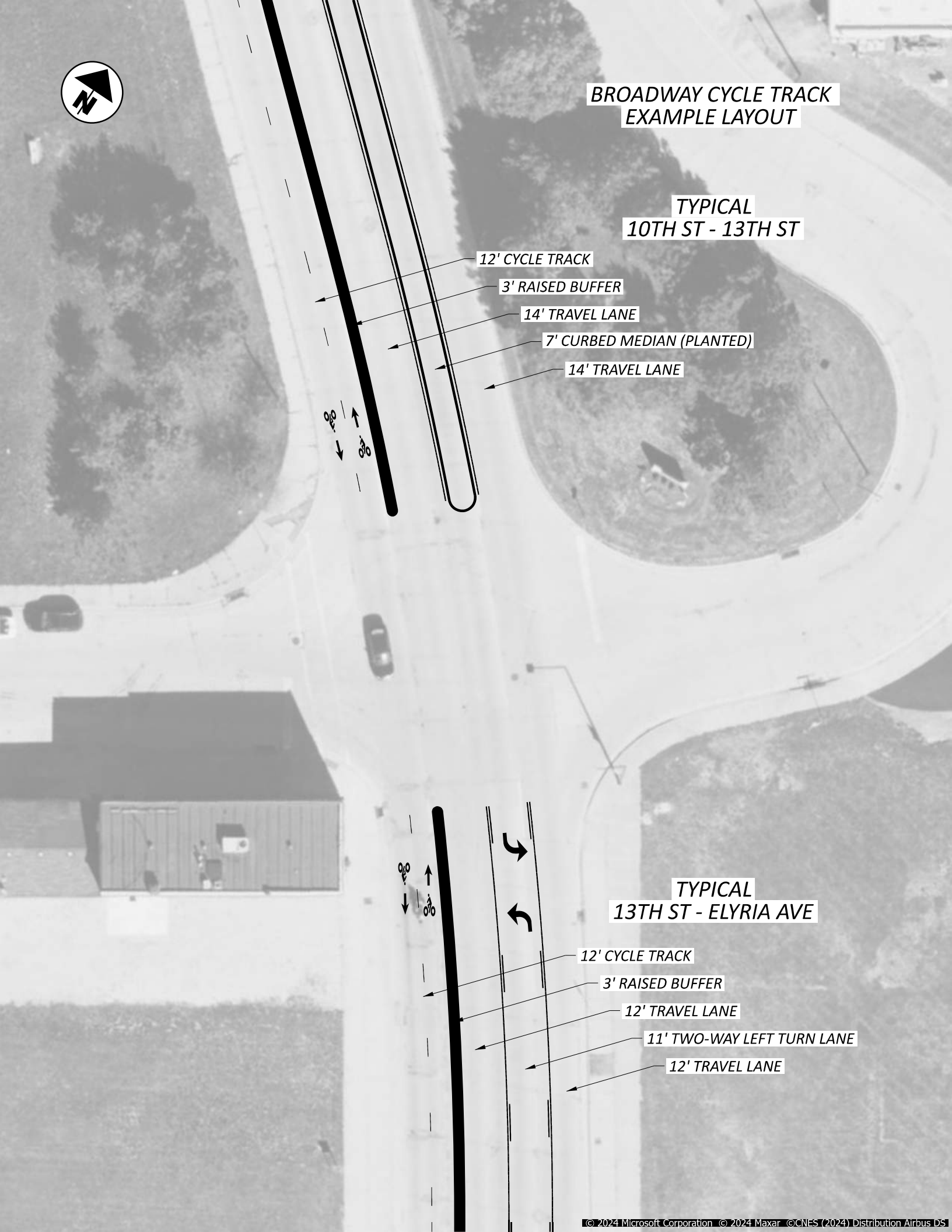

BROADWAY CYCLE TRACK
EXAMPLE LAYOUT
TYPICAL
ELYRIA AVE - 20TH ST
12' CYCLE TRACK
6' RAISED MEDIAN
12' TRAVEL LANE
12' TRAVEL LANE
8' PARKING LANE
N
© 2024 Microsoft Corporation © 2024 Maxar ©CNES (2024) Distribution Airbus DS


BROADWAY CYCLE TRACK
EXAMPLE LAYOUT
TYPICAL
10TH ST - 13TH ST
12' CYCLE TRACK
3' RAISED BUFFER
14' TRAVEL LANE
7' CURBED MEDIAN (PLANTED)
14' TRAVEL LANE
TYPICAL
13TH ST - ELYRIA AVE
12' CYCLE TRACK
3' RAISED BUFFER
12' TRAVEL LANE
11' TWO-WAY LEFT TURN LANE
12' TRAVEL LANE
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Lorain ATP - Opinion of Probable Costs Broadway Avenue Cycle Track and Traffic Calming			
Description		Total Cost	
Roadway Pavement Markings		$	147,000.00
Green Conflict Markings (Cycle Track)		$	71,000.00
Raised Bike Buffer		$	491,000.00
Vehicular Medians		$	405,000.00
Parking Bumpouts		$	253,000.00
Driveway Closures		$	55,000.00
Cycle Track Tie-In at 9th / Ramps		$	60,000.00
Intersections		$	145,000.00
Bicycle Safe Grates		$	37,500.00
Railroad Underpass Lighting		$	23,500.00
Landscaping		$	100,000.00
Construction Costs		$	1,788,000.00
Maintenance of Traffic	LS	$	150,000.00
Mobilization	LS	$	100,000.00
Signing	LS	$	20,000.00
Public Utilities	LS	$	50,000.00
Construction Subtotal		$	2,108,000.00
Contingency	30%	$	632,400.00
Survey	3%	$	63,300.00
Design	10%	$	274,100.00
Total Construction Costs (2024)		$	3,077,800.00
Total Construction Costs (2026)*		$	3,457,300.00

* Inflation costs calculated using the ODOT CY 2024-2028 Business Plan Inflation Calculator

Opinions of probable cost were developed by identifying major pay items and establishing rough quantities to determine a rough order of magnitude cost. Additional pay items have been assigned approximate lump sum prices. Planning-level cost opinions include a 30% contingency to cover items that are undefined or are typically unknown early in the planning phase of a project. Unit costs are based on 2024 dollars and were assigned based on historical cost data from ODOT bid tabulations. Cost opinions do not include easement and right-of-way acquisition; permitting, inspection, or construction management; engineering, geotechnical investigation, environmental documentation, special site remediation, escalation, or the cost for ongoing maintenance. The overall cost opinions are intended to be general and used only for planning purposes. Toole Design Group, LLC makes no guarantees or warranties regarding the cost estimate herein. Construction costs will vary based on the ultimate project scope, actual site conditions and constraints, schedule, and economic conditions at the time of construction.

BROADWAY (SR57)
TARGET SPEED STUDY

APPENDIX B: EXISTING CONDITIONS

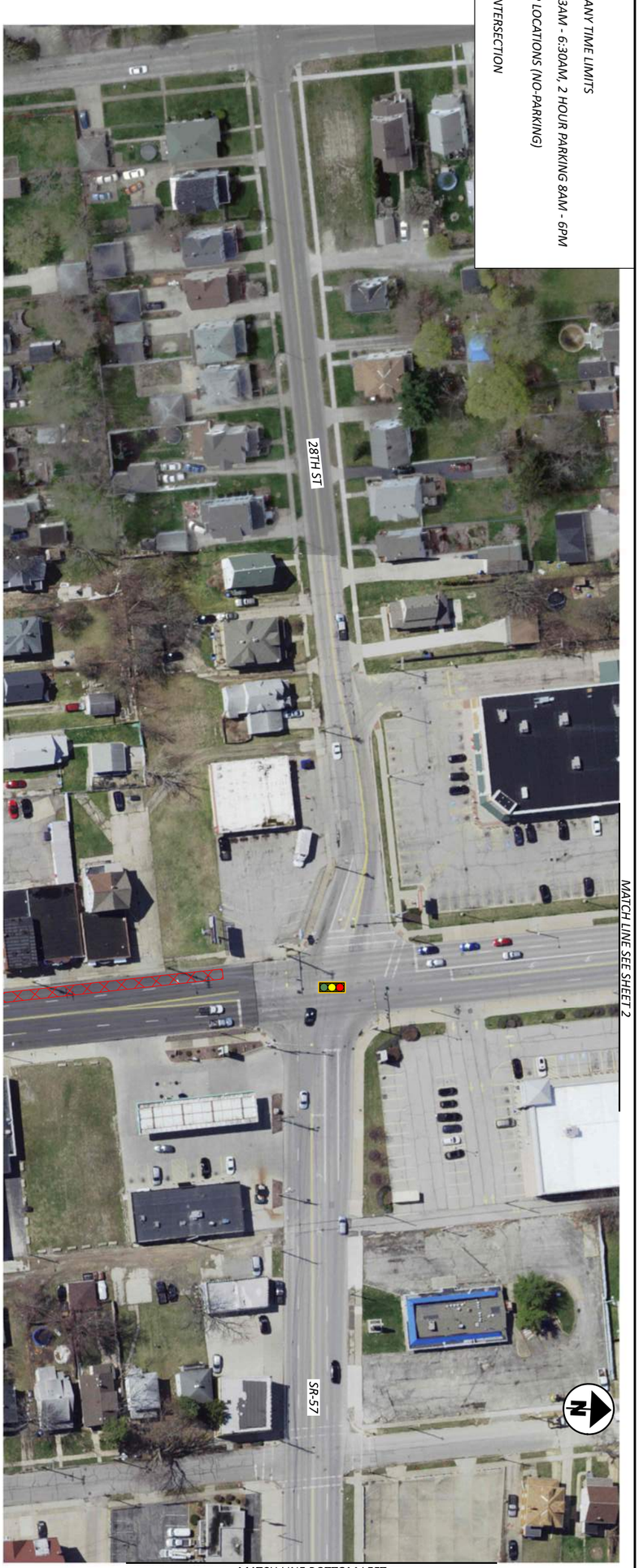
CMT

SR-57 BROADWAY RD TARGET SPEED

MODEL: 121822_UP701 PAPERSIZE: 17x11 (in.) DATE: 8/20/2024 TIME: 11:07:02 AM USER: ghansel
L:\ODOT\24007093-00_VARSafetyDsn20246\01_ConceptDev\121822\400-Engineering\Utilities\Sheets\121822_UP701.dgn

LEGEND

- NO-PARKING ANY TIME LIMITS
- NO-PARKING 3AM - 6:30AM, 2 HOUR PARKING 8AM - 6PM
- LCT BUS STOP LOCATIONS (NO-PARKING)
- SIGNALIZED INTERSECTION



SHEET	TOTAL	PROJECT ID	REVIEWER	DESIGNER	DESIGN AGENCY
1	5	121822	SAK 08/20/24	GSH	CMT CRAWFORD, MURPHY & TILLY, INC. 8101 N. HIGH STREET SUITE 150 COLUMBUS, OHIO 43235 PH (614)406-1200 www.cmtengr.com

EXISTING CONDITIONS
SR-57

HORIZONTAL SCALE IN FEET
0 50
25 100

SR-57 BROADWAY RD TARGET SPEED

MODEL: 121822_UP703 PAPERSIZE: 17x11 (in.) DATE: 8/20/2024 TIME: 11:07:07 AM USER: ghansel
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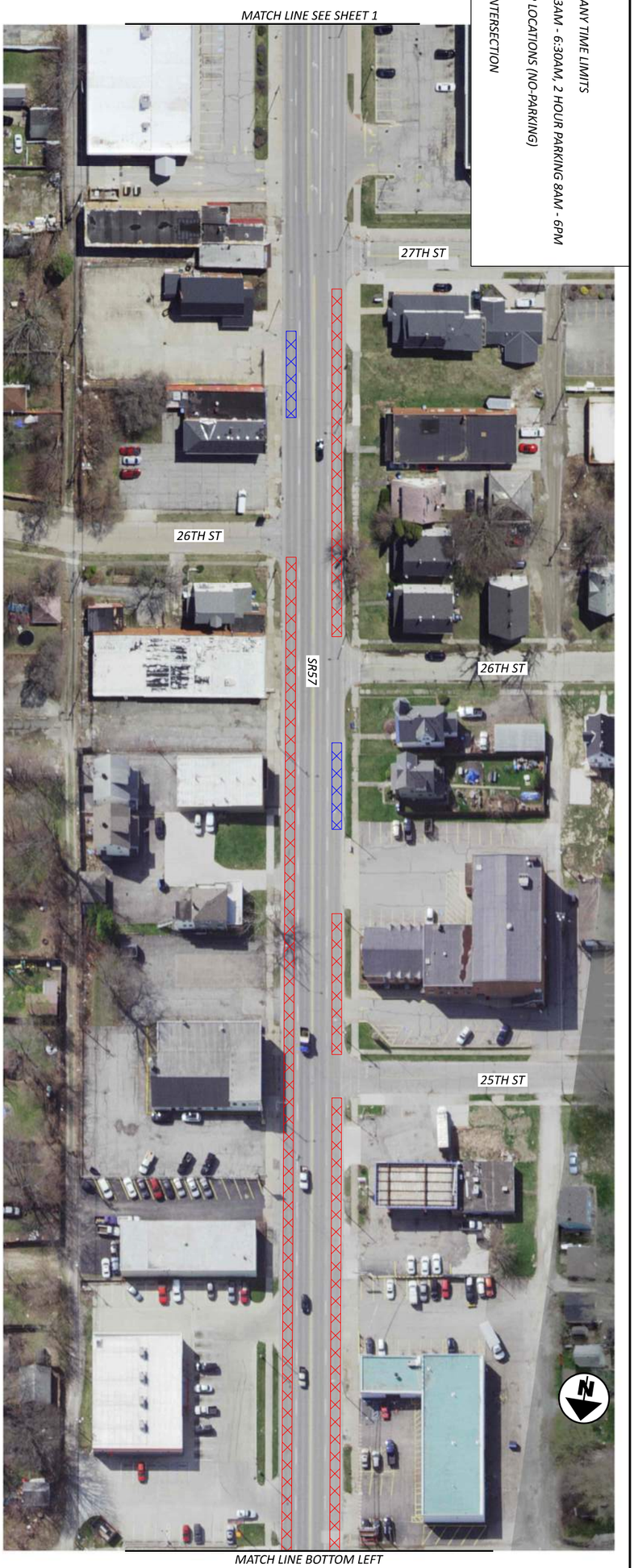
LEGEND

- NO-PARKING ANY TIME LIMITS
- NO-PARKING 3AM - 6:30AM, 2 HOUR PARKING 8AM - 6PM
- LCT BUS STOP LOCATIONS (NO-PARKING)
- SIGNALIZED INTERSECTION



SHEET	TOTAL	PROJECT ID	REVIEWER	DESIGNER	DESIGN AGENCY
2	5	121822	SAK 08/20/24	GSH	CRAWFORD, MURPHY & TILLY, INC. 8101 N. HIGH STREET SUITE 150 COLUMBUS, OHIO 43235 PH (614)406-1200 www.cmtengr.com

EXISTING CONDITIONS
SR-57

HORIZONTAL SCALE IN FEET
0 50
25 100

SR-57 BROADWAY RD TARGET SPEED

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SHEET	TOTAL	PROJECT ID	REVIEWER	DESIGNER	DESIGN AGENCY
3	5	121822	SAK 08/20/24	GSH	CMT CRAWFORD, MURPHY & TILLY, INC. 8101 N. HIGH STREET SUITE 150 COLUMBUS, OHIO 43235 PH (614)468-1200 www.cmtengr.com

EXISTING CONDITIONS
SR-57

HORIZONTAL SCALE IN FEET
0 50
25 100

SR-57 BROADWAY RD TARGET SPEED

MODEL: 121822_UP707 PAPERSIZE: 17x11 (in.) DATE: 8/20/2024 TIME: 11:07:10 AM USER: ghansel
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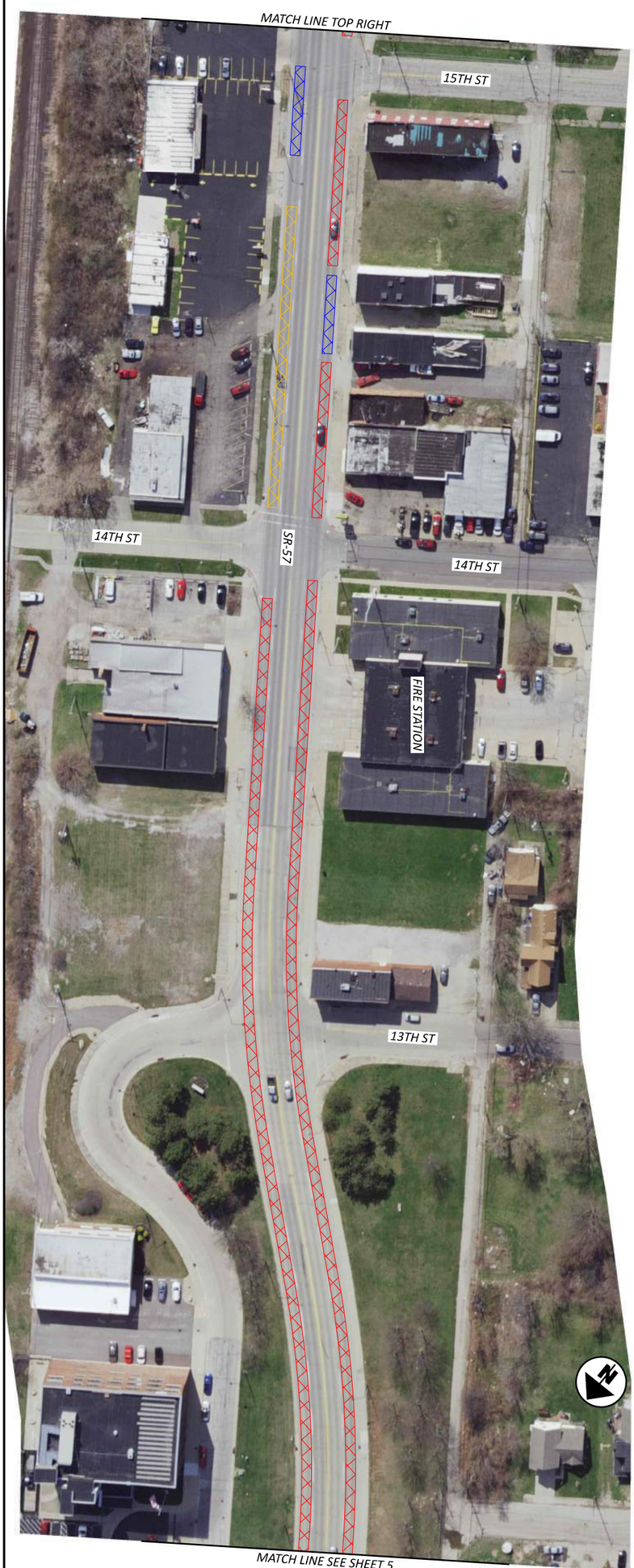

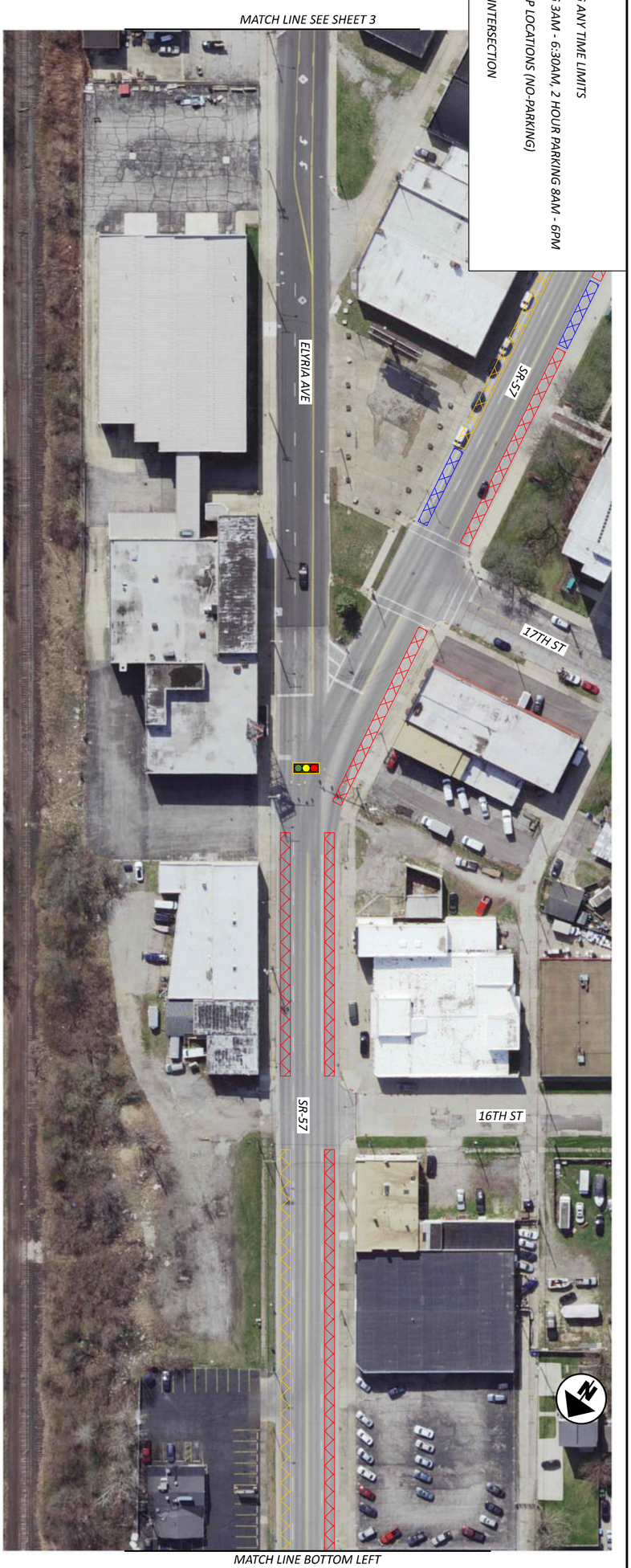

LEGEND

- NO-PARKING ANY TIME LIMITS
- NO-PARKING 3AM - 6:30AM, 2 HOUR PARKING 8AM - 6PM
- LCT BUS STOP LOCATIONS (NO-PARKING)
- SIGNALIZED INTERSECTION

SHEET 4 / TOTAL 5	PROJECT ID 121822	REVIEWER SAK 08/20/24	DESIGNER GSH	CRAWFORD, MURPHY & TILLY, INC. 8101 N. HIGH STREET SUITE 150 COLUMBUS, OHIO 43235 PH (614)406-1200 www.cmtengr.com	DESIGN AGENCY

EXISTING CONDITIONS
SR-57

HORIZONTAL SCALE IN FEET
0 50
25 100

LEGEND

- NO-PARKING ANY TIME LIMITS
- NO-PARKING 3AM - 6:30AM, 2 HOUR PARKING 8AM - 6PM
- LCT BUS STOP LOCATIONS (NO-PARKING)
- SIGNALIZED INTERSECTION

HORIZONTAL SCALE IN FEET
0 25 50 100

EXISTING CONDITIONS SR-57

DESIGN AGENCY
CMT
CRAWFORD, MURPHY & TILLY, INC.
8101 N. HIGH STREET
SUITE 370
COLUMBUS, OHIO 43235
(614) 431-8900 (O)
(614) 431-8901 (F)
www.cmtinc.com

DESIGNER: GSH
REVIEWER: SAK 08/20/24
PROJECT ID: 121822
SHEET: 5 TOTAL: 5

SR-57 BROADWAY RD TARGET SPEED

MODEL: 121822_UP708 PAPERSIZE: 17x11 (in.) DATE: 8/20/2024 TIME: 11:07:12 AM USER: ghansel
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Fares and Transferring
Exact change is required. Drivers DO NOT carry cash.
(Fares are based on a one-way trip)

Adults	$2.00
Senior Citizens (65 plus), Persons with Disabilities, Medicare Card Holder and Children Ages 3 thru 12	$1.00
Students (with student ID)	$1.00
Children 2 and Under	Free
Transfers (Limited 1 per trip)	Free

All Day Passes
All Day passes are available on the bus, as the driver for a pass.

Adults	$4.50
Senior Citizens (65 plus), Persons with Disabilities, Medicare Card Holder and Children Ages 3 thru 12	$2.25
Students (with student ID)	$2.25

Fixed Route 10-Ride/Weekly Pass
Riders may be required to show identification (i.e., Medicare Card or Fare Deal Card) to show proof of eligibility in order to participate in the discounted fare program. Senior Citizens may have to show a Fare Deal Card or ID with age on it.

Adults	$18.00
Senior Citizens (65 plus), Persons with Disabilities, Medicare Card Holder and Children Ages 3 thru 12	$9.00
Students (with student ID)	$9.00

Monthly Pass
(Passes are good from the 1st of the month thru the last day of the month)

Adults	$72.00
Senior Citizens (65 plus), Persons with Disabilities, Medicare Card Holder and Children Ages 3 thru 12	$36.00
Students (with student ID)	$36.00

Lost & Found
(440) 365-0224 or 1-800-406-7541, items found on the bus or on LCT property will be kept for 30 days, after which they will be discarded or donated to a local charity.

Holidays (Service is NOT provided on the following holidays)

- New Year's Eve
- New Year's Day
- Martin Luther King Day
- President's Day
- Memorial Day
- 4th of July
- Labor Day
- Columbus Day
- Thanksgiving Day
- Day after Thanksgiving
- Christmas Eve
- Christmas Day

Customer Service
440-329-5525
Monday - Friday
8:00 a.m. - 4:30 p.m.
(After hours please call the Scheduling Dept.)

Scheduling Dept.
440-365-0224 or 1-800-406-7541

Hearing Disabled may access these numbers through
Ohio Relay Service
1-800-750-0750

www.loraincounty.us/transit

Transit@LorainCounty.us

Notifying the Public of Rights Under Title VI
Lorain County Transit (LCT)

- LCT operates its programs and services without regard to race, color and national origin in accordance with Title VI of the Civil Rights Act. Any person who believes she/he has been aggrieved by any unlawful discriminatory practice under the Title VI may file a complaint with LCT.
- For more information on LCT's civil rights program, and the procedures to file a complaint, contact (440) 329-5525 or visit our administrative office at 226 Middle Avenue, Elyria, OH 44035. For more information, visit www.loraincounty.us/transit
- A complainant may file a complaint directly with the Federal Transit Administration by filing a complaint with the Office of Civil Rights, Attention: Title VI Program Coordinator, East Building, 5th Floor-TCR, 1200 New Jersey Ave., SE, Washington, DC 20590
- If information is needed in another language, contact (440) 329-5525.
  Si se necesita información en otro idioma, contacto 440-329-5525.

Funded in cooperation with the Lorain County Commissioners, other Local Entities, Ohio Department of Transportation and the Federal Transit Administration.

Lorain County Transit's mission is to promote efficient and effective public transportation which encourages economic development and increases opportunities to enhance independence and the quality of life in Lorain County.

Lorain County Transit
226 Middle Ave., 4th Floor
Elyria, OH 44035

Fare Changes
Effective December 1, 2017

LORAIN COUNTY TRANSIT

ROUTE 2

Lorain / Elyria
via Broadway

Serves:
Meridian Plaza, Broadway Ave., Kennedy Plaza, Lorain County Health & Dentistry, Haven Center, International Plaza, Lorain High School

Serves Upon Request Only:
Lorain County Health & Dentistry, Sacred Heart

Connect with us on Facebook at:

Lorain County Transit

Updated 12/17

ROUTE 2

LORAIN / ELYRIA via Broadway

NORTHBOUND

Transfer Point	Palm & Homewood	Fulton & 28th	Meridian Plaza
5:30 AM	5:40 AM	5:51 AM	6:00 AM
7:30 AM	7:40 AM	7:51 AM	8:00 AM
9:30 AM	9:40 AM	9:51 AM	10:00 AM
11:30 AM	11:40 AM	11:51 AM	12:00 PM
1:30 PM	1:40 PM	1:51 PM	2:00 PM
3:30 PM	3:40 PM	3:51 PM	4:00 PM

SOUTHBOUND

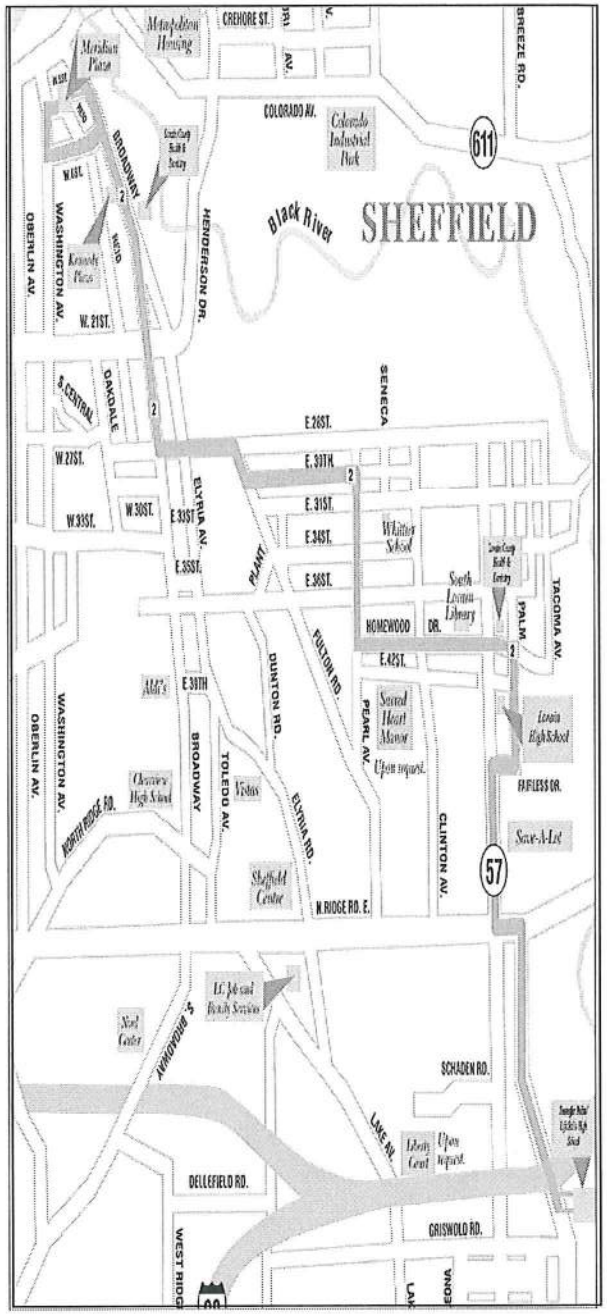
Meridian Plaza	E. 30th	Palm & Fairless	Transfer Point
6:00 AM	6:12 AM	6:17 AM	6:26 AM
8:00 AM	8:12 AM	8:17 AM	8:26 AM
10:00 AM	10:12 AM	10:17 AM	10:26 AM
12:00 PM	12:12 PM	12:17 PM	12:26 PM
2:00 PM	2:12 PM	2:17 PM	2:26 PM
4:00 PM	4:12 PM	4:17 PM	4:26 PM

All times indicate Monday thru Friday service. Scheduled times are subject to traffic and weather conditions.

Route 2 passengers can continue on to the Route 52 without using a transfer ticket.

Bus Stop Locations:

Meridian Plaza
6th & Reid
Broadway & 6th
Broadway between 9th & 10th
Broadway & 12th
Broadway between 14th & 15th
Broadway & 17th
Broadway & 20th
Broadway & 23rd
Broadway & 26th
E. 28th & Broadway
E. 28th & Denver
E. 28th & Toledo
E. 28th & Fulton
E. 30th & Fulton
E. 30th (Haven Center)
E. 30th & Globe
E. 31st & Pearl
E. 33rd & Pearl
E. 34th & Pearl
Homewood & Pearl
Homewood & Clinton
Homewood (at the Library)
Homewood & Grove
Homewood (at Health & Dentistry)
Palm & 42nd
Palm & Homewood
Palm & Globe
Palm & Fairless
Palm (by bank)
Fairless (Burger King)
N. Ridge & Dute
N. Ridge & W. River (across from Maple Inn)
W. River (High Point in the Park)
W. River (Fox's Lair)
Transfer Point (LifeSkills Center)



Updated 12/17
Map Updated 1/16

BROADWAY (SR57)
TARGET SPEED STUDY

APPENDIX C: TRAFFIC DATA

CMT

Broadway Ave. & 9th St. - TMC

Wed Jul 24, 2024
Full Length (6 AM-7 PM)
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road)
All Movements
ID: 1209621, Location: 41.463214, -82.172965

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

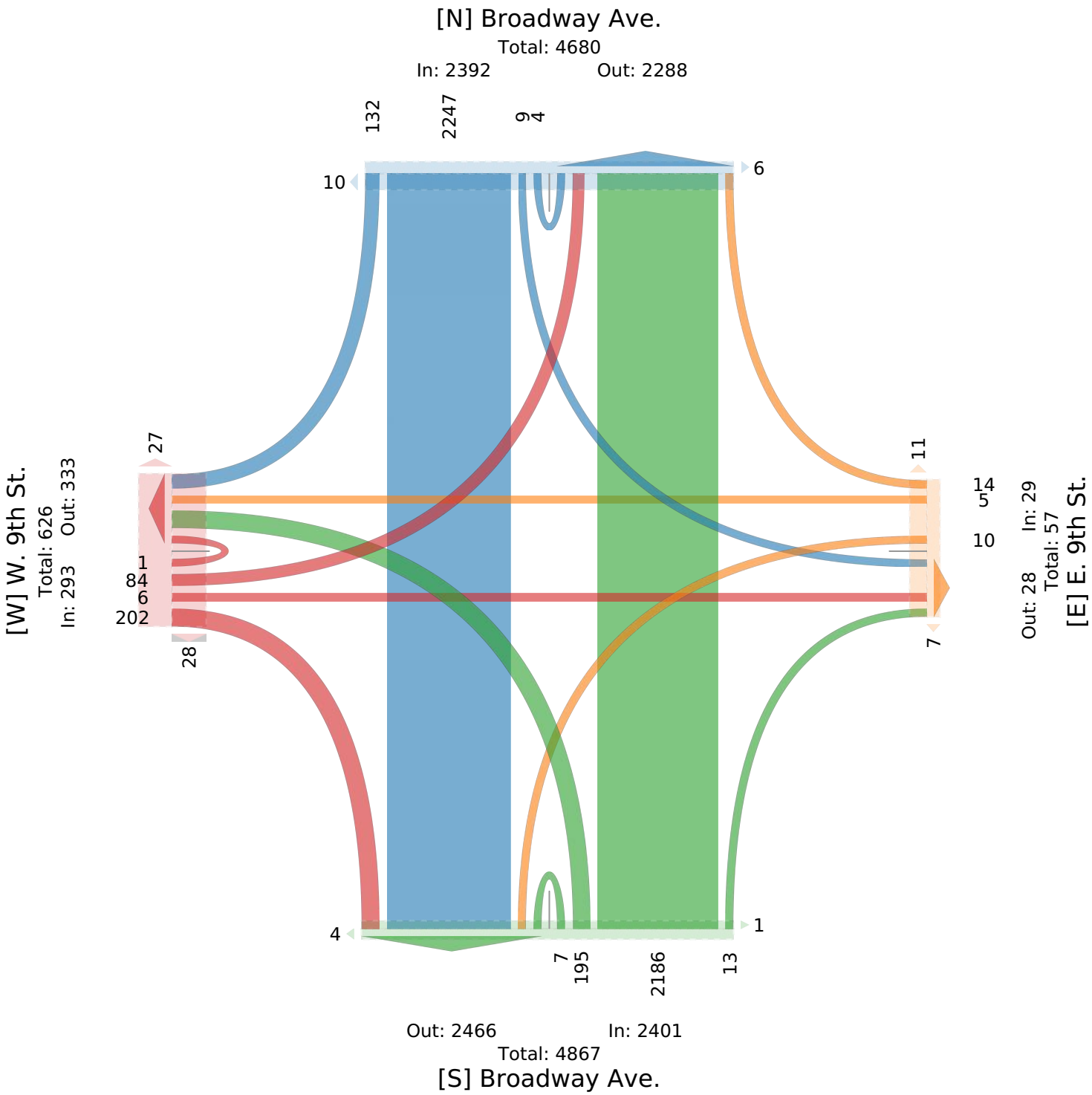
Leg	Broadway Ave.						E. 9th St.						Broadway Ave.						W. 9th St.						
Direction	Southbound						Westbound						Northbound						Eastbound						
Time	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	Int
2024-07-24 6:00AM	2	20	0	0	**22**	0	0	1	0	0	**1**	0	0	6	0	0	**6**	0	3	1	0	0	**4**	1	**33**
6:15AM	1	5	0	0	**6**	0	0	0	0	0	**0**	0	1	12	0	0	**13**	0	0	0	0	0	**0**	0	**19**
6:30AM	0	19	0	0	**19**	0	0	0	0	0	**0**	0	0	8	0	0	**8**	0	1	0	3	0	**4**	0	**31**
6:45AM	1	17	0	0	**18**	0	0	0	1	0	**1**	0	1	16	2	0	**19**	0	3	0	1	0	**4**	0	**42**
Hourly Total	4	61	0	0	**65**	0	0	1	1	0	**2**	0	2	42	2	0	**46**	0	7	1	4	0	**12**	1	**125**
7:00AM	2	12	0	0	**14**	0	0	0	0	0	**0**	0	0	9	1	0	**10**	0	1	0	1	0	**2**	0	**26**
7:15AM	2	14	0	0	**16**	0	1	0	0	0	**1**	0	0	14	3	0	**17**	0	1	0	0	0	**1**	0	**35**
7:30AM	2	32	0	0	**34**	0	0	0	0	0	**0**	0	0	18	0	0	**18**	0	2	0	2	0	**4**	1	**56**
7:45AM	1	24	0	0	**25**	2	0	0	0	0	**0**	0	1	38	4	0	**43**	0	2	0	1	0	**3**	0	**71**
Hourly Total	7	82	0	0	**89**	2	1	0	0	0	**1**	0	1	79	8	0	**88**	0	6	0	4	0	**10**	1	**188**
8:00AM	1	33	0	0	**34**	0	1	0	0	0	**1**	0	1	36	1	0	**38**	1	3	0	0	0	**3**	0	**76**
8:15AM	1	28	0	0	**29**	0	0	0	0	0	**0**	1	0	51	1	1	**53**	0	3	0	0	0	**3**	0	**85**
8:30AM	2	28	0	0	**30**	0	0	0	0	0	**0**	0	1	25	2	1	**29**	0	6	0	5	0	**11**	2	**70**
8:45AM	0	28	0	0	**28**	1	0	0	0	0	**0**	2	1	50	1	0	**52**	0	3	0	2	0	**5**	0	**85**
Hourly Total	4	117	0	0	**121**	1	1	0	0	0	**1**	3	3	162	5	2	**172**	1	15	0	7	0	**22**	2	**316**
9:00AM	0	46	0	0	**46**	0	0	0	2	0	**2**	0	0	34	0	1	**35**	0	4	0	2	0	**6**	0	**89**
9:15AM	1	40	0	0	**41**	1	0	0	1	0	**1**	1	1	46	4	0	**51**	0	6	0	1	0	**7**	0	**100**
9:30AM	2	50	0	0	**52**	0	0	0	0	0	**0**	1	0	38	2	0	**40**	0	3	0	0	0	**3**	1	**95**
9:45AM	2	31	0	0	**33**	0	0	0	0	0	**0**	0	0	33	1	0	**34**	0	2	0	0	0	**2**	1	**69**
Hourly Total	5	167	0	0	**172**	1	0	0	3	0	**3**	2	1	151	7	1	**160**	0	15	0	3	0	**18**	2	**353**
10:00AM	2	36	0	0	**38**	0	0	0	0	0	**0**	3	0	36	3	0	**39**	0	2	0	2	0	**4**	2	**81**
10:15AM	0	42	0	0	**42**	0	0	0	1	0	**1**	1	0	44	2	0	**46**	0	4	0	1	0	**5**	0	**94**
10:30AM	1	43	0	0	**44**	0	0	0	1	0	**1**	0	0	50	5	0	**55**	0	1	0	1	0	**2**	1	**102**
10:45AM	0	42	0	0	**42**	0	0	0	0	0	**0**	1	0	49	4	0	**53**	0	3	0	0	0	**3**	0	**98**
Hourly Total	3	163	0	0	**166**	0	0	0	2	0	**2**	5	0	179	14	0	**193**	0	10	0	4	0	**14**	3	**375**
11:00AM	4	42	0	0	**46**	0	0	0	0	0	**0**	0	0	41	0	0	**41**	0	0	2	1	0	**3**	2	**90**
11:15AM	4	44	0	0	**48**	0	0	0	0	0	**0**	0	1	45	0	0	**46**	0	3	0	0	0	**3**	0	**97**
11:30AM	2	43	0	0	**45**	0	0	1	2	0	**3**	0	0	47	7	0	**54**	0	9	0	1	0	**10**	0	**112**
11:45AM	2	43	0	0	**45**	0	0	0	0	0	**0**	0	1	54	2	0	**57**	0	4	0	1	0	**5**	1	**107**
Hourly Total	12	172	0	0	**184**	0	0	1	2	0	**3**	0	2	187	9	0	**198**	0	16	2	3	0	**21**	3	**406**
12:00PM	1	59	0	1	**61**	0	1	0	0	0	**1**	0	0	60	5	0	**65**	0	4	0	5	0	**9**	1	**136**
12:15PM	5	54	1	0	**60**	0	0	0	0	0	**0**	0	0	46	2	0	**48**	0	2	0	1	0	**3**	2	**111**
12:30PM	5	67	1	0	**73**	0	1	0	0	0	**1**	0	0	43	5	0	**48**	0	8	1	1	0	**10**	1	**132**
12:45PM	3	61	0	0	**64**	0	0	0	0	0	**0**	0	0	60	5	0	**65**	1	6	0	3	0	**9**	0	**138**
Hourly Total	14	241	2	1	**258**	0	2	0	0	0	**2**	0	0	209	17	0	**226**	1	20	1	10	0	**31**	4	**517**
1:00PM	4	70	0	1	**75**	0	0	0	0	0	**0**	2	0	57	4	0	**61**	1	6	0	2	0	**8**	3	**144**
1:15PM	4	69	0	0	**73**	2	0	0	0	0	**0**	0	1	38	4	0	**43**	1	6	0	1	0	**7**	5	**123**
1:30PM	4	55	1	0	**60**	0	2	0	0	0	**2**	0	0	58	8	1	**67**	0	4	1	4	1	**10**	0	**139**
1:45PM	3	54	1	0	**58**	5	2	0	0	0	**2**	0	0	56	5	0	**61**	0	6	0	4	0	**10**	0	**131**
Hourly Total	15	248	2	1	**266**	7	4	0	0	0	**4**	2	1	209	21	1	**232**	2	22	1	11	1	**35**	8	**537**
2:00PM	3	77	1	0	**81**	2	1	1	0	0	**2**	1	1	50	5	0	**56**	0	4	0	1	0	**5**	0	**144**
2:15PM	2	49	1	1	**53**	0	1	0	1	0	**2**	0	1	44	4	0	**49**	0	7	0	0	0	**7**	5	**111**
2:30PM	5	54	0	1	**60**	1	0	0	1	0	**1**	2	0	44	12	0	**56**	0	2	0	2	0	**4**	7	**121**
2:45PM	7	51	0	0	**58**	0	0	0	0	0	**0**	0	0	51	11	0	**62**	0	4	0	3	0	**7**	1	**127**
Hourly Total	17	231	2	2	**252**	3	2	1	2	0	**5**	3	2	189	32	0	**223**	0	17	0	6	0	**23**	13	**503**
3:00PM	3	60	0	0	**63**	0	1	2	0	0	**3**	1	0	51	7	0	**58**	0	5	0	3	0	**8**	1	**132**
3:15PM	4	43	0	0	**47**	0	0	0	0	0	**0**	0	0	46	8	1	**55**	0	6	0	2	0	**8**	4	**110**
3:30PM	3	44	0	0	**47**	0	0	0	0	0	**0**	0	0	53	3	0	**56**	0	4	0	4	0	**8**	0	**111**
3:45PM	4	36	0	0	**40**	0	0	0	0	0	**0**	0	0	67	4	0	**71**	0	2	0	2	0	**4**	0	**115**
Hourly Total	14	183	0	0	**197**	0	1	2	0	0	**3**	1	0	217	22	1	**240**	0	17	0	11	0	**28**	5	**468**
4:00PM	3	77	0	0	**80**	0	0	0	0	0	**0**	0	0	60	4	0	**64**	0	11	0	2	0	**13**	3	**157**
4:15PM	1	66	0	0	**67**	0	0	0	0	0	**0**	1	0	50	9	0	**59**	0	5	0	6	0	**11**	1	**137**
4:30PM	4	76	0	0	**80**	0	0	0	0	0	**0**	1	0	53	4	0	**57**	0	4	0	3	0	**7**	2	**144**
4:45PM	5	40	0	0	**45**	0	0	0	0	0	**0**	0	0	53	4	0	**57**	0	6	0	2	0	**8**	0	**110**
Hourly Total	13	259	0	0	**272**	0	0	0	0	0	**0**	2	0	216	21	0	**237**	0	26	0	13	0	**39**	6	**548**
5:00PM	2	43	0	0	**45**	0	0	0	0	0	**0**	0	0	46	4	0	**50**	0	9	1	1	0	**11**	2	**106**

Leg	Broadway Ave.						E. 9th St.						Broadway Ave.						W. 9th St.						
Direction	Southbound						Westbound						Northbound						Eastbound						
Time	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	**Int**
5:15PM	2	35	0	0	**37**	0	1	0	0	0	**1**	0	1	50	7	0	**58**	0	3	0	2	0	**5**	0	**101**
5:30PM	2	44	2	0	**48**	0	2	0	0	0	**2**	0	0	47	7	2	**56**	0	7	0	0	0	**7**	0	**113**
5:45PM	4	35	1	0	**40**	2	0	0	0	0	**0**	0	0	39	2	0	**41**	0	1	0	1	0	**2**	1	**83**
Hourly Total	10	157	3	0	**170**	2	3	0	0	0	**3**	0	1	182	20	2	**205**	0	20	1	4	0	**25**	3	**403**
6:00PM	6	49	0	0	**55**	0	0	0	0	0	**0**	0	0	40	4	0	**44**	0	3	0	2	0	**5**	1	**104**
6:15PM	5	36	0	0	**41**	0	0	0	0	0	**0**	0	0	35	5	0	**40**	0	4	0	0	0	**4**	0	**85**
6:30PM	3	44	0	0	**47**	0	0	0	0	0	**0**	0	0	39	3	0	**42**	1	1	0	2	0	**3**	2	**92**
6:45PM	0	37	0	0	**37**	0	0	0	0	0	**0**	0	0	50	5	0	**55**	0	3	0	0	0	**3**	1	**95**
Hourly Total	14	166	0	0	**180**	0	0	0	0	0	**0**	0	0	164	17	0	**181**	1	11	0	4	0	**15**	4	**376**
Total	132	2247	9	4	**2392**	16	14	5	10	0	**29**	18	13	2186	195	7	**2401**	5	202	6	84	1	**293**	55	**5115**
% Approach	5.5%	93.9%	0.4%	0.2%	**-**	-	48.3%	17.2%	34.5%	0%	**-**	-	0.5%	91.0%	8.1%	0.3%	**-**	-	68.9%	2.0%	28.7%	0.3%	**-**	-	-
% Total	2.6%	43.9%	0.2%	0.1%	**46.8%**	-	0.3%	0.1%	0.2%	0%	**0.6%**	-	0.3%	42.7%	3.8%	0.1%	**46.9%**	-	3.9%	0.1%	1.6%	0%	**5.7%**	-	-
Lights	125	2179	9	4	**2317**	-	11	5	6	0	**22**	-	7	2132	193	7	**2339**	-	198	5	82	1	**286**	-	4964
% Lights	94.7%	97.0%	100%	100%	**96.9%**	-	78.6%	100%	60.0%	0%	**75.9%**	-	53.8%	97.5%	99.0%	100%	**97.4%**	-	98.0%	83.3%	97.6%	100%	**97.6%**	-	97.0%
Single-Unit Trucks	3	30	0	0	**33**	-	0	0	0	0	**0**	-	2	27	2	0	**31**	-	2	0	1	0	**3**	-	67
% Single-Unit Trucks	2.3%	1.3%	0%	0%	**1.4%**	-	0%	0%	0%	0%	**0%**	-	15.4%	1.2%	1.0%	0%	**1.3%**	-	1.0%	0%	1.2%	0%	**1.0%**	-	1.3%
Articulated Trucks	2	27	0	0	**29**	-	1	0	4	0	**5**	-	3	13	0	0	**16**	-	0	0	0	0	**0**	-	50
% Articulated Trucks	1.5%	1.2%	0%	0%	**1.2%**	-	7.1%	0%	40.0%	0%	**17.2%**	-	23.1%	0.6%	0%	0%	**0.7%**	-	0%	0%	0%	0%	**0%**	-	1.0%
Buses	0	11	0	0	**11**	-	0	0	0	0	**0**	-	0	12	0	0	**12**	-	2	0	0	0	**2**	-	25
% Buses	0%	0.5%	0%	0%	**0.5%**	-	0%	0%	0%	0%	**0%**	-	0%	0.5%	0%	0%	**0.5%**	-	1.0%	0%	0%	0%	**0.7%**	-	0.5%
Bicycles on Road	2	0	0	0	**2**	-	2	0	0	0	**2**	-	1	2	0	0	**3**	-	0	1	1	0	**2**	-	9
% Bicycles on Road	1.5%	0%	0%	0%	**0.1%**	-	14.3%	0%	0%	0%	**6.9%**	-	7.7%	0.1%	0%	0%	**0.1%**	-	0%	16.7%	1.2%	0%	**0.7%**	-	0.2%
Pedestrians	-	-	-	-	-	16	-	-	-	-	-	18	-	-	-	-	-	5	-	-	-	-	-	55	
% Pedestrians	-	-	-	-	-	100%	-	-	-	-	-	100%	-	-	-	-	-	100%	-	-	-	-	-	100%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Broadway Ave. & 9th St. - TMC
Wed Jul 24, 2024
Full Length (6 AM-7 PM)
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road)
All Movements
ID: 1209621, Location: 41.463214, -82.172965

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



Broadway Ave. & 9th St. - TMC

Wed Jul 24, 2024
AM Peak (10 AM - 11 AM)
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road)
All Movements
ID: 1209621, Location: 41.463214, -82.172965

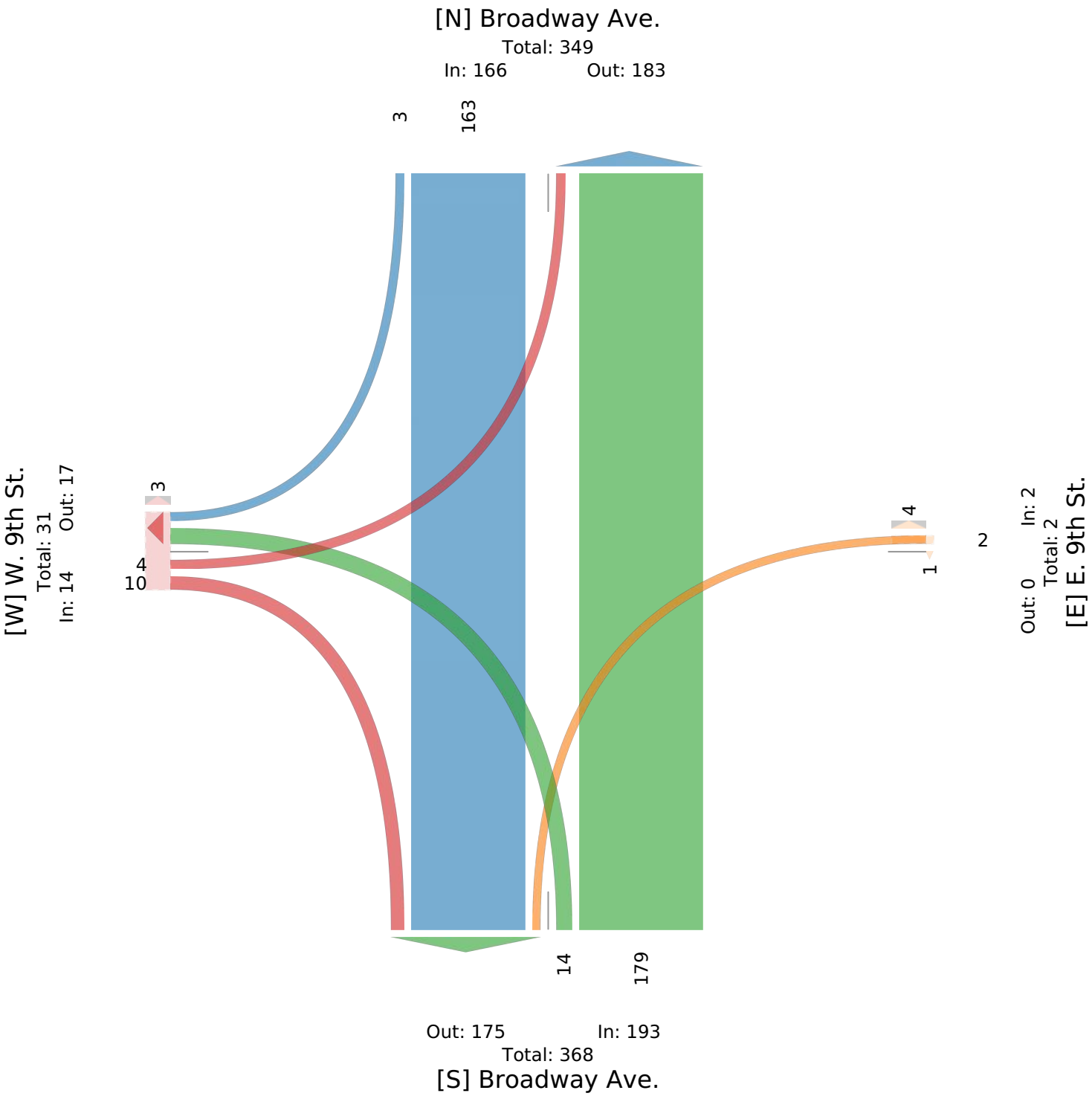
Provided by: Loukas Engineering
232 19th St. NW,
Canton, OH, 44709, US

Leg / Direction	Broadway Ave. Southbound						E. 9th St. Westbound						Broadway Ave. Northbound						W. 9th St. Eastbound						
Time	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	**Int**
2024-07-24 10:00AM	2	36	0	0	**38**	0	0	0	0	0	**0**	3	0	36	3	0	**39**	0	2	0	2	0	**4**	2	**81**
10:15AM	0	42	0	0	**42**	0	0	0	1	0	**1**	1	0	44	2	0	**46**	0	4	0	1	0	**5**	0	**94**
10:30AM	1	43	0	0	**44**	0	0	0	1	0	**1**	0	0	50	5	0	**55**	0	1	0	1	0	**2**	1	**102**
10:45AM	0	42	0	0	**42**	0	0	0	0	0	**0**	1	0	49	4	0	**53**	0	3	0	0	0	**3**	0	**98**
Total	3	163	0	0	**166**	0	0	0	2	0	**2**	5	0	179	14	0	**193**	0	10	0	4	0	**14**	3	**375**
% Approach	1.8%	98.2%	0%	0%	**-**	-	0%	0%	100%	0%	**-**	-	0%	92.7%	7.3%	0%	**-**	-	71.4%	0%	28.6%	0%	**-**	-	-
% Total	0.8%	43.5%	0%	0%	**44.3%**	-	0%	0%	0.5%	0%	**0.5%**	-	0%	47.7%	3.7%	0%	**51.5%**	-	2.7%	0%	1.1%	0%	**3.7%**	-	-
PHF	0.375	0.948	-	-	**0.943**	-	-	-	0.500	-	**0.500**	-	-	0.890	0.700	-	**0.873**	-	0.625	-	0.375	-	**0.813**	-	0.914
Lights	3	156	0	0	**159**	-	0	0	1	0	**1**	-	0	166	14	0	**180**	-	9	0	3	0	**12**	-	352
% Lights	100%	95.7%	0%	0%	**95.8%**	-	0%	0%	50.0%	0%	**50.0%**	-	0%	92.7%	100%	0%	**93.3%**	-	90.0%	0%	75.0%	0%	**85.7%**	-	93.9%
Single-Unit Trucks	0	3	0	0	**3**	-	0	0	0	0	**0**	-	0	6	0	0	**6**	-	1	0	0	0	**1**	-	10
% Single-Unit Trucks	0%	1.8%	0%	0%	**1.8%**	-	0%	0%	0%	0%	**0%**	-	0%	3.4%	0%	0%	**3.1%**	-	10.0%	0%	0%	0%	**7.1%**	-	2.7%
Articulated Trucks	0	3	0	0	**3**	-	0	0	1	0	**1**	-	0	3	0	0	**3**	-	0	0	0	0	**0**	-	7
% Articulated Trucks	0%	1.8%	0%	0%	**1.8%**	-	0%	0%	50.0%	0%	**50.0%**	-	0%	1.7%	0%	0%	**1.6%**	-	0%	0%	0%	0%	**0%**	-	1.9%
Buses	0	1	0	0	**1**	-	0	0	0	0	**0**	-	0	3	0	0	**3**	-	0	0	0	0	**0**	-	4
% Buses	0%	0.6%	0%	0%	**0.6%**	-	0%	0%	0%	0%	**0%**	-	0%	1.7%	0%	0%	**1.6%**	-	0%	0%	0%	0%	**0%**	-	1.1%
Bicycles on Road	0	0	0	0	**0**	-	0	0	0	0	**0**	-	0	1	0	0	**1**	-	0	0	1	0	**1**	-	2
% Bicycles on Road	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%	0.6%	0%	0%	**0.5%**	-	0%	0%	25.0%	0%	**7.1%**	-	0.5%
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	5	-	-	-	-	-	0	-	-	-	-	-	3	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	100%	-	-	-	-	-	-	-	-	-	-	-	100%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Broadway Ave. & 9th St. - TMC
Wed Jul 24, 2024
AM Peak (10 AM - 11 AM)
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road)
All Movements
ID: 1209621, Location: 41.463214, -82.172965

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



Broadway Ave. & 9th St. - TMC

Wed Jul 24, 2024
Midday Peak (12:45 PM - 1:45 PM)
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road)
All Movements
ID: 1209621, Location: 41.463214, -82.172965

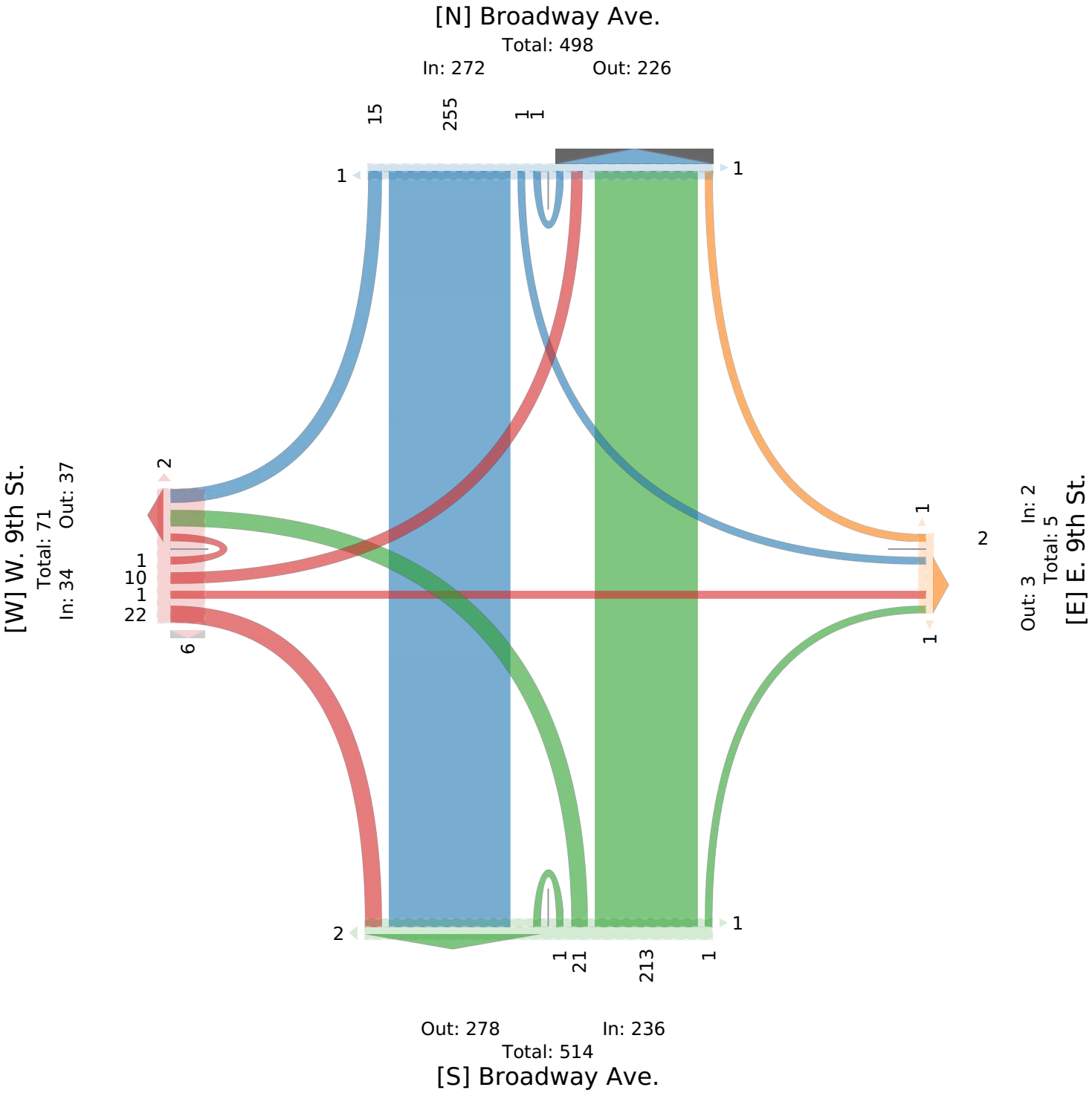
Provided by: Loukas Engineering
232 19th St. NW,
Canton, OH, 44709, US

Leg	Broadway Ave.						E. 9th St.						Broadway Ave.						W. 9th St.						
Direction	Southbound						Westbound						Northbound						Eastbound						
Time	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	**Int**
2024-07-24 12:45PM	3	61	0	0	**64**	0	0	0	0	0	**0**	0	0	60	5	0	**65**	1	6	0	3	0	**9**	0	**138**
1:00PM	4	70	0	1	**75**	0	0	0	0	0	**0**	2	0	57	4	0	**61**	1	6	0	2	0	**8**	3	**144**
1:15PM	4	69	0	0	**73**	2	0	0	0	0	**0**	0	1	38	4	0	**43**	1	6	0	1	0	**7**	5	**123**
1:30PM	4	55	1	0	**60**	0	2	0	0	0	**2**	0	0	58	8	1	**67**	0	4	1	4	1	**10**	0	**139**
Total	15	255	1	1	**272**	2	2	0	0	0	**2**	2	1	213	21	1	**236**	3	22	1	10	1	**34**	8	**544**
% Approach	5.5%	93.8%	0.4%	0.4%	**-**	-	100%	0%	0%	0%	**-**	-	0.4%	90.3%	8.9%	0.4%	**-**	-	64.7%	2.9%	29.4%	2.9%	**-**	-	-
% Total	2.8%	46.9%	0.2%	0.2%	**50.0%**	-	0.4%	0%	0%	0%	**0.4%**	-	0.2%	39.2%	3.9%	0.2%	**43.4%**	-	4.0%	0.2%	1.8%	0.2%	**6.3%**	-	-
PHF	0.938	0.911	0.250	0.250	**0.907**	-	0.250	-	-	-	**0.250**	-	0.250	0.888	0.656	0.250	**0.881**	-	0.917	-	0.625	0.250	**0.917**	-	0.941
Lights	13	245	1	1	**260**	-	1	0	0	0	**1**	-	1	210	20	1	**232**	-	22	0	10	1	**33**	-	526
% Lights	86.7%	96.1%	100%	100%	**95.6%**	-	50.0%	0%	0%	0%	**50.0%**	-	100%	98.6%	95.2%	100%	**98.3%**	-	100%	0%	100%	100%	**97.1%**	-	96.7%
Single-Unit Trucks	1	5	0	0	**6**	-	0	0	0	0	**0**	-	0	1	1	0	**2**	-	0	0	0	0	**0**	-	8
% Single-Unit Trucks	6.7%	2.0%	0%	0%	**2.2%**	-	0%	0%	0%	0%	**0%**	-	0%	0.5%	4.8%	0%	**0.8%**	-	0%	0%	0%	0%	**0%**	-	1.5%
Articulated Trucks	1	4	0	0	**5**	-	0	0	0	0	**0**	-	0	1	0	0	**1**	-	0	0	0	0	**0**	-	6
% Articulated Trucks	6.7%	1.6%	0%	0%	**1.8%**	-	0%	0%	0%	0%	**0%**	-	0%	0.5%	0%	0%	**0.4%**	-	0%	0%	0%	0%	**0%**	-	1.1%
Buses	0	1	0	0	**1**	-	0	0	0	0	**0**	-	0	1	0	0	**1**	-	0	0	0	0	**0**	-	2
% Buses	0%	0.4%	0%	0%	**0.4%**	-	0%	0%	0%	0%	**0%**	-	0%	0.5%	0%	0%	**0.4%**	-	0%	0%	0%	0%	**0%**	-	0.4%
Bicycles on Road	0	0	0	0	**0**	-	1	0	0	0	**1**	-	0	0	0	0	**0**	-	0	1	0	0	**1**	-	2
% Bicycles on Road	0%	0%	0%	0%	**0%**	-	50.0%	0%	0%	0%	**50.0%**	-	0%	0%	0%	0%	**0%**	-	0%	100%	0%	0%	**2.9%**	-	0.4%
Pedestrians	-	-	-	-	-	2	-	-	-	-	-	2	-	-	-	-	-	3	-	-	-	-	-	8	
% Pedestrians	-	-	-	-	-	100%	-	-	-	-	-	100%	-	-	-	-	-	100%	-	-	-	-	-	100%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Broadway Ave. & 9th St. - TMC
Wed Jul 24, 2024
Midday Peak (12:45 PM - 1:45 PM)
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road)
All Movements
ID: 1209621, Location: 41.463214, -82.172965

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



Broadway Ave. & 9th St. - TMC

Wed Jul 24, 2024
PM Peak (3:45 PM - 4:45 PM) - Overall Peak Hour
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road)
All Movements
ID: 1209621, Location: 41.463214, -82.172965

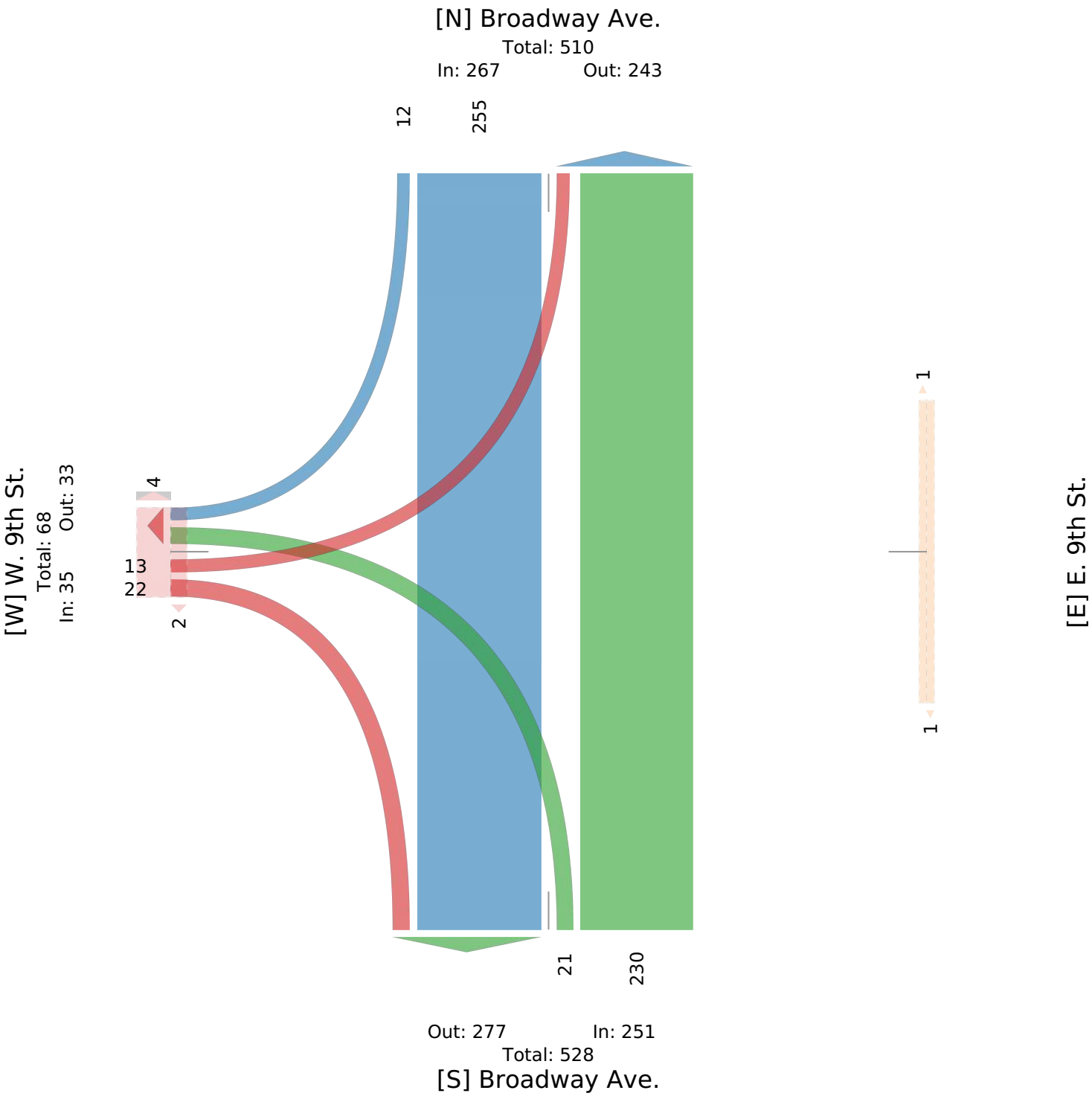
Provided by: Loukas Engineering
232 19th St. NW,
Canton, OH, 44709, US

Leg / Direction	Broadway Ave. Southbound						E. 9th St. Westbound						Broadway Ave. Northbound						W. 9th St. Eastbound						
Time	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	**Int**
2024-07-24 3:45PM	4	36	0	0	**40**	0	0	0	0	0	**0**	0	0	67	4	0	**71**	0	2	0	2	0	**4**	0	**115**
4:00PM	3	77	0	0	**80**	0	0	0	0	0	**0**	0	0	60	4	0	**64**	0	11	0	2	0	**13**	3	**157**
4:15PM	1	66	0	0	**67**	0	0	0	0	0	**0**	1	0	50	9	0	**59**	0	5	0	6	0	**11**	1	**137**
4:30PM	4	76	0	0	**80**	0	0	0	0	0	**0**	1	0	53	4	0	**57**	0	4	0	3	0	**7**	2	**144**
Total	12	255	0	0	**267**	0	0	0	0	0	**0**	2	0	230	21	0	**251**	0	22	0	13	0	**35**	6	**553**
% Approach	4.5%	95.5%	0%	0%	**-**	-	0%	0%	0%	0%	**-**	-	0%	91.6%	8.4%	0%	**-**	-	62.9%	0%	37.1%	0%	**-**	-	**-**
% Total	2.2%	46.1%	0%	0%	**48.3%**	-	0%	0%	0%	0%	**0%**	-	0%	41.6%	3.8%	0%	**45.4%**	-	4.0%	0%	2.4%	0%	**6.3%**	-	**-**
PHF	0.750	0.828	-	-	**0.834**	-	-	-	-	-	**-**	-	-	0.858	0.583	-	**0.884**	-	0.500	-	0.542	-	**0.673**	-	0.881
Lights	12	252	0	0	**264**	-	0	0	0	0	**0**	-	0	227	21	0	**248**	-	21	0	13	0	**34**	-	546
% Lights	100%	98.8%	0%	0%	**98.9%**	-	0%	0%	0%	0%	**-**	-	0%	98.7%	100%	0%	**98.8%**	-	95.5%	0%	100%	0%	**97.1%**	-	98.7%
Single-Unit Trucks	0	1	0	0	**1**	-	0	0	0	0	**0**	-	0	1	0	0	**1**	-	0	0	0	0	**0**	-	2
% Single-Unit Trucks	0%	0.4%	0%	0%	**0.4%**	-	0%	0%	0%	0%	**-**	-	0%	0.4%	0%	0%	**0.4%**	-	0%	0%	0%	0%	**0%**	-	0.4%
Articulated Trucks	0	0	0	0	**0**	-	0	0	0	0	**0**	-	0	1	0	0	**1**	-	0	0	0	0	**0**	-	1
% Articulated Trucks	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**-**	-	0%	0.4%	0%	0%	**0.4%**	-	0%	0%	0%	0%	**0%**	-	0.2%
Buses	0	2	0	0	**2**	-	0	0	0	0	**0**	-	0	1	0	0	**1**	-	1	0	0	0	**1**	-	4
% Buses	0%	0.8%	0%	0%	**0.7%**	-	0%	0%	0%	0%	**-**	-	0%	0.4%	0%	0%	**0.4%**	-	4.5%	0%	0%	0%	**2.9%**	-	0.7%
Bicycles on Road	0	0	0	0	**0**	-	0	0	0	0	**0**	-	0	0	0	0	**0**	-	0	0	0	0	**0**	-	0
% Bicycles on Road	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**-**	-	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	6	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	100%	-	-	-	-	-	-	-	-	-	-	-	100%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Broadway Ave. & 9th St. - TMC
Wed Jul 24, 2024
PM Peak (3:45 PM - 4:45 PM) - Overall Peak Hour
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road)
All Movements
ID: 1209621, Location: 41.463214, -82.172965

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



Broadway Ave. & Elyria Ave. - TMC

Wed Jul 24, 2024
Full Length (6 AM-7 PM)
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road)
All Movements
ID: 1209625, Location: 41.456289, -82.166867

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

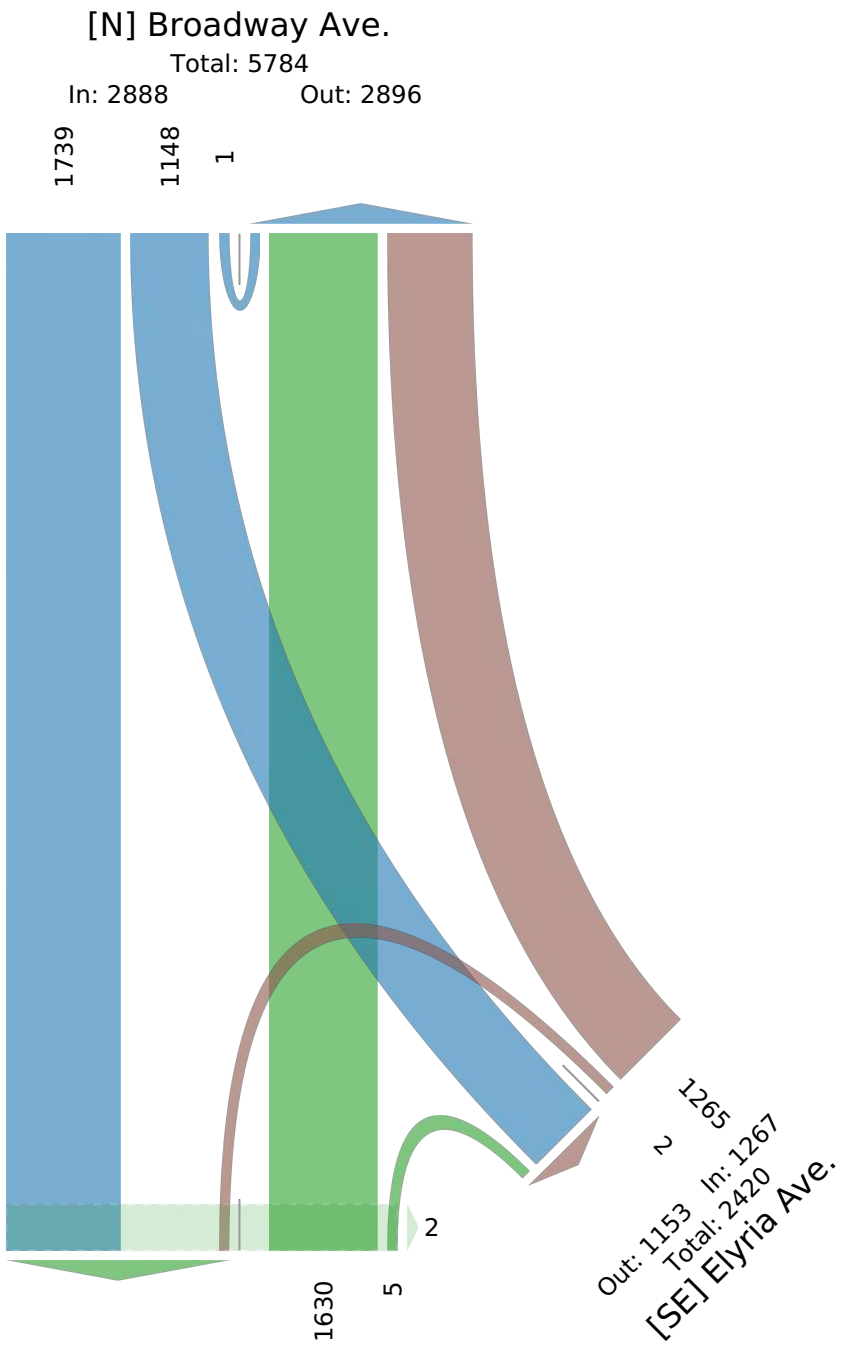
Leg	Broadway Ave.					Elyria Ave.					Broadway Ave.					
Direction	Southbound					Northwestbound					Northbound					
Time	T	BL	U	**App**	Ped*	BR	HL	U	**App**	Ped*	HR	T	U	**App**	Ped*	**Int**
2024-07-24 6:00AM	17	13	0	**30**	0	6	0	0	**6**	0	0	3	0	**3**	0	**39**
6:15AM	8	7	0	**15**	0	6	0	0	**6**	0	0	9	0	**9**	0	**30**
6:30AM	18	7	0	**25**	0	4	0	0	**4**	0	0	12	0	**12**	0	**41**
6:45AM	14	9	0	**23**	0	10	0	0	**10**	0	0	11	0	**11**	0	**44**
Hourly Total	57	36	0	**93**	0	26	0	0	**26**	0	0	35	0	**35**	0	**154**
7:00AM	10	9	0	**19**	0	9	0	0	**9**	0	0	10	0	**10**	0	**38**
7:15AM	11	12	0	**23**	0	10	0	0	**10**	0	0	16	0	**16**	0	**49**
7:30AM	24	15	0	**39**	0	11	0	0	**11**	0	0	15	0	**15**	0	**65**
7:45AM	14	11	0	**25**	0	33	0	0	**33**	0	0	25	0	**25**	0	**83**
Hourly Total	59	47	0	**106**	0	63	0	0	**63**	0	0	66	0	**66**	0	**235**
8:00AM	22	12	0	**34**	0	27	0	0	**27**	0	0	25	0	**25**	0	**86**
8:15AM	22	11	0	**33**	0	40	0	0	**40**	0	0	32	0	**32**	0	**105**
8:30AM	27	11	0	**38**	0	14	0	0	**14**	0	0	21	0	**21**	0	**73**
8:45AM	17	18	0	**35**	0	31	0	0	**31**	0	0	27	0	**27**	0	**93**
Hourly Total	88	52	0	**140**	0	112	0	0	**112**	0	0	105	0	**105**	0	**357**
9:00AM	23	26	0	**49**	0	15	0	0	**15**	0	0	23	0	**23**	0	**87**
9:15AM	29	20	0	**49**	0	25	0	0	**25**	0	1	27	0	**28**	0	**102**
9:30AM	38	22	0	**60**	0	25	0	0	**25**	0	0	25	0	**25**	0	**110**
9:45AM	26	13	0	**39**	0	19	0	0	**19**	0	0	24	0	**24**	0	**82**
Hourly Total	116	81	0	**197**	0	84	0	0	**84**	0	1	99	0	**100**	0	**381**
10:00AM	24	14	0	**38**	0	27	0	0	**27**	0	0	30	0	**30**	0	**95**
10:15AM	27	17	0	**44**	0	27	0	0	**27**	0	0	27	0	**27**	0	**98**
10:30AM	36	21	0	**57**	0	35	0	0	**35**	0	0	45	0	**45**	0	**137**
10:45AM	33	19	0	**52**	0	18	0	0	**18**	0	0	43	0	**43**	0	**113**
Hourly Total	120	71	0	**191**	0	107	0	0	**107**	0	0	145	0	**145**	0	**443**
11:00AM	33	16	0	**49**	0	31	0	0	**31**	0	1	23	0	**24**	0	**104**
11:15AM	35	24	0	**59**	0	15	0	0	**15**	0	0	30	0	**30**	0	**104**
11:30AM	36	25	0	**61**	0	24	0	0	**24**	0	0	29	0	**29**	0	**114**
11:45AM	30	24	0	**54**	0	31	1	0	**32**	0	0	40	0	**40**	0	**126**
Hourly Total	134	89	0	**223**	0	101	1	0	**102**	0	1	122	0	**123**	0	**448**
12:00PM	47	25	0	**72**	0	27	0	0	**27**	0	0	32	0	**32**	0	**131**
12:15PM	37	26	0	**63**	0	28	0	0	**28**	0	0	42	0	**42**	0	**133**
12:30PM	38	37	0	**75**	0	28	0	0	**28**	0	0	36	0	**36**	0	**139**
12:45PM	34	26	0	**60**	0	25	0	0	**25**	0	0	48	0	**48**	0	**133**
Hourly Total	156	114	0	**270**	0	108	0	0	**108**	0	0	158	0	**158**	0	**536**
1:00PM	61	38	0	**99**	0	24	0	0	**24**	0	0	40	0	**40**	0	**163**
1:15PM	43	25	0	**68**	0	16	0	0	**16**	0	0	35	0	**35**	0	**119**
1:30PM	39	25	0	**64**	0	42	0	0	**42**	0	0	36	0	**36**	0	**142**
1:45PM	45	24	0	**69**	0	28	0	0	**28**	0	0	39	0	**39**	0	**136**
Hourly Total	188	112	0	**300**	0	110	0	0	**110**	0	0	150	0	**150**	0	**560**
2:00PM	54	32	0	**86**	0	33	0	0	**33**	0	1	36	0	**37**	0	**156**
2:15PM	47	31	0	**78**	0	27	0	0	**27**	0	0	43	0	**43**	0	**148**
2:30PM	47	27	0	**74**	0	23	0	0	**23**	0	0	31	0	**31**	0	**128**
2:45PM	28	27	0	**55**	0	26	0	0	**26**	0	0	43	0	**43**	0	**124**
Hourly Total	176	117	0	**293**	0	109	0	0	**109**	0	1	153	0	**154**	0	**556**
3:00PM	50	23	0	**73**	0	27	0	0	**27**	0	0	34	0	**34**	0	**134**
3:15PM	49	23	0	**72**	0	33	0	0	**33**	0	0	41	0	**41**	0	**146**
3:30PM	40	32	0	**72**	0	30	0	0	**30**	0	0	40	0	**40**	0	**142**
3:45PM	26	24	0	**50**	0	42	0	0	**42**	0	0	53	0	**53**	0	**145**
Hourly Total	165	102	0	**267**	0	132	0	0	**132**	0	0	168	0	**168**	0	**567**
4:00PM	56	38	0	**94**	0	21	0	0	**21**	0	1	47	0	**48**	0	**163**
4:15PM	55	32	0	**87**	0	30	1	0	**31**	0	0	37	0	**37**	0	**155**
4:30PM	58	44	0	**102**	0	32	0	0	**32**	0	0	29	0	**29**	0	**163**

Leg	Broadway Ave.					Elyria Ave.					Broadway Ave.					
Direction	Southbound					Northwestbound					Northbound					
Time	T	BL	U	**App**	Ped*	BR	HL	U	**App**	Ped*	HR	T	U	**App**	Ped*	**Int**
4:45PM	35	25	0	**60**	0	31	0	0	**31**	0	0	37	0	**37**	0	**128**
Hourly Total	204	139	0	**343**	0	114	1	0	**115**	0	1	150	0	**151**	0	**609**
5:00PM	52	36	0	**88**	0	28	0	0	**28**	0	0	31	0	**31**	0	**147**
5:15PM	40	24	1	**65**	0	31	0	0	**31**	0	0	42	0	**42**	2	**138**
5:30PM	32	31	0	**63**	0	34	0	0	**34**	0	0	35	0	**35**	0	**132**
5:45PM	37	14	0	**51**	0	12	0	0	**12**	0	0	34	0	**34**	0	**97**
Hourly Total	161	105	1	**267**	0	105	0	0	**105**	0	0	142	0	**142**	2	**514**
6:00PM	32	29	0	**61**	0	24	0	0	**24**	0	1	27	0	**28**	0	**113**
6:15PM	26	16	0	**42**	0	28	0	0	**28**	0	0	39	0	**39**	0	**109**
6:30PM	31	20	0	**51**	0	21	0	0	**21**	0	0	28	0	**28**	0	**100**
6:45PM	26	18	0	**44**	0	21	0	0	**21**	0	0	43	0	**43**	0	**108**
Hourly Total	115	83	0	**198**	0	94	0	0	**94**	0	1	137	0	**138**	0	**430**
Total	1739	1148	1	**2888**	0	1265	2	0	**1267**	0	5	1630	0	**1635**	2	**5790**
% Approach	60.2%	39.8%	0%	**-**	-	99.8%	0.2%	0%	**-**	-	0.3%	99.7%	0%	**-**	-	-
% Total	30.0%	19.8%	0%	**49.9%**	-	21.8%	0%	0%	**21.9%**	-	0.1%	28.2%	0%	**28.2%**	-	-
Lights	1669	1123	1	**2793**	-	1237	1	0	**1238**	-	5	1587	0	**1592**	-	5623
% Lights	96.0%	97.8%	100%	**96.7%**	-	97.8%	50.0%	0%	**97.7%**	-	100%	97.4%	0%	**97.4%**	-	97.1%
Single-Unit Trucks	34	18	0	**52**	-	21	1	0	**22**	-	0	25	0	**25**	-	99
% Single-Unit Trucks	2.0%	1.6%	0%	**1.8%**	-	1.7%	50.0%	0%	**1.7%**	-	0%	1.5%	0%	**1.5%**	-	1.7%
Articulated Trucks	24	4	0	**28**	-	2	0	0	**2**	-	0	10	0	**10**	-	40
% Articulated Trucks	1.4%	0.3%	0%	**1.0%**	-	0.2%	0%	0%	**0.2%**	-	0%	0.6%	0%	**0.6%**	-	0.7%
Buses	11	3	0	**14**	-	3	0	0	**3**	-	0	8	0	**8**	-	25
% Buses	0.6%	0.3%	0%	**0.5%**	-	0.2%	0%	0%	**0.2%**	-	0%	0.5%	0%	**0.5%**	-	0.4%
Bicycles on Road	1	0	0	**1**	-	2	0	0	**2**	-	0	0	0	**0**	-	3
% Bicycles on Road	0.1%	0%	0%	**0%**	-	0.2%	0%	0%	**0.2%**	-	0%	0%	0%	**0%**	-	0.1%
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	2	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100%	-

*Pedestrians and Bicycles on Crosswalk. BL: Bear left, BR: Bear right, HL: Hard left, HR: Hard right, T: Thru, U: U-Turn

Broadway Ave. & Elyria Ave. - TMC
Wed Jul 24, 2024
Full Length (6 AM-7 PM)
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road)
All Movements
ID: 1209625, Location: 41.456289, -82.166867

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



Broadway Ave. & Elyria Ave. - TMC

Wed Jul 24, 2024
AM Peak (10 AM - 11 AM)
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road)
All Movements
ID: 1209625, Location: 41.456289, -82.166867

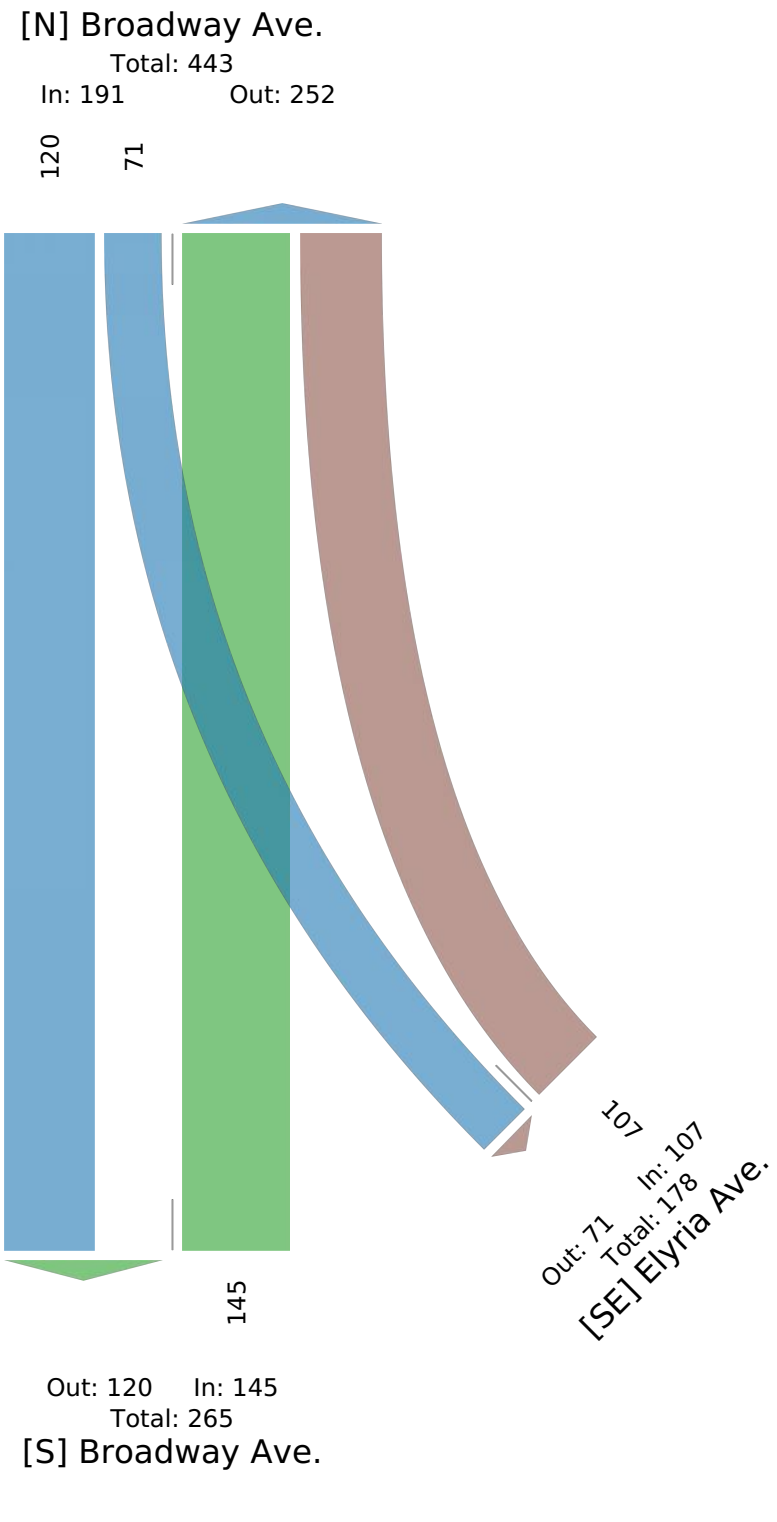
Provided by: Loukas Engineering
232 19th St. NW,
Canton, OH, 44709, US

Leg Direction	Broadway Ave. Southbound					Elyria Ave. Northwestbound					Broadway Ave. Northbound					
Time	T	BL	U	**App**	Ped*	BR	HL	U	**App**	Ped*	HR	T	U	**App**	Ped*	**Int**
2024-07-24 10:00AM	24	14	0	**38**	0	27	0	0	**27**	0	0	30	0	**30**	0	**95**
10:15AM	27	17	0	**44**	0	27	0	0	**27**	0	0	27	0	**27**	0	**98**
10:30AM	36	21	0	**57**	0	35	0	0	**35**	0	0	45	0	**45**	0	**137**
10:45AM	33	19	0	**52**	0	18	0	0	**18**	0	0	43	0	**43**	0	**113**
Total	120	71	0	**191**	0	107	0	0	**107**	0	0	145	0	**145**	0	**443**
% Approach	62.8%	37.2%	0%	**-**	-	100%	0%	0%	**-**	-	0%	100%	0%	**-**	-	-
% Total	27.1%	16.0%	0%	**43.1%**	-	24.2%	0%	0%	**24.2%**	-	0%	32.7%	0%	**32.7%**	-	-
PHF	0.826	0.845	-	**0.833**	-	0.764	-	-	**0.764**	-	-	0.806	-	**0.806**	-	0.807
Lights	110	71	0	**181**	-	102	0	0	**102**	-	0	140	0	**140**	-	423
% Lights	91.7%	100%	0%	**94.8%**	-	95.3%	0%	0%	**95.3%**	-	0%	96.6%	0%	**96.6%**	-	95.5%
Single-Unit Trucks	5	0	0	**5**	-	3	0	0	**3**	-	0	1	0	**1**	-	9
% Single-Unit Trucks	4.2%	0%	0%	**2.6%**	-	2.8%	0%	0%	**2.8%**	-	0%	0.7%	0%	**0.7%**	-	2.0%
Articulated Trucks	3	0	0	**3**	-	0	0	0	**0**	-	0	3	0	**3**	-	6
% Articulated Trucks	2.5%	0%	0%	**1.6%**	-	0%	0%	0%	**0%**	-	0%	2.1%	0%	**2.1%**	-	1.4%
Buses	1	0	0	**1**	-	2	0	0	**2**	-	0	1	0	**1**	-	4
% Buses	0.8%	0%	0%	**0.5%**	-	1.9%	0%	0%	**1.9%**	-	0%	0.7%	0%	**0.7%**	-	0.9%
Bicycles on Road	1	0	0	**1**	-	0	0	0	**0**	-	0	0	0	**0**	-	1
% Bicycles on Road	0.8%	0%	0%	**0.5%**	-	0%	0%	0%	**0%**	-	0%	0%	0%	**0%**	-	0.2%
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. BL: Bear left, BR: Bear right, HL: Hard left, HR: Hard right, T: Thru, U: U-Turn

Broadway Ave. & Elyria Ave. - TMC
Wed Jul 24, 2024
AM Peak (10 AM - 11 AM)
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road)
All Movements
ID: 1209625, Location: 41.456289, -82.166867

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



Broadway Ave. & Elyria Ave. - TMC

Wed Jul 24, 2024
Midday Peak (12:15 PM - 1:15 PM)
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road)
All Movements
ID: 1209625, Location: 41.456289, -82.166867

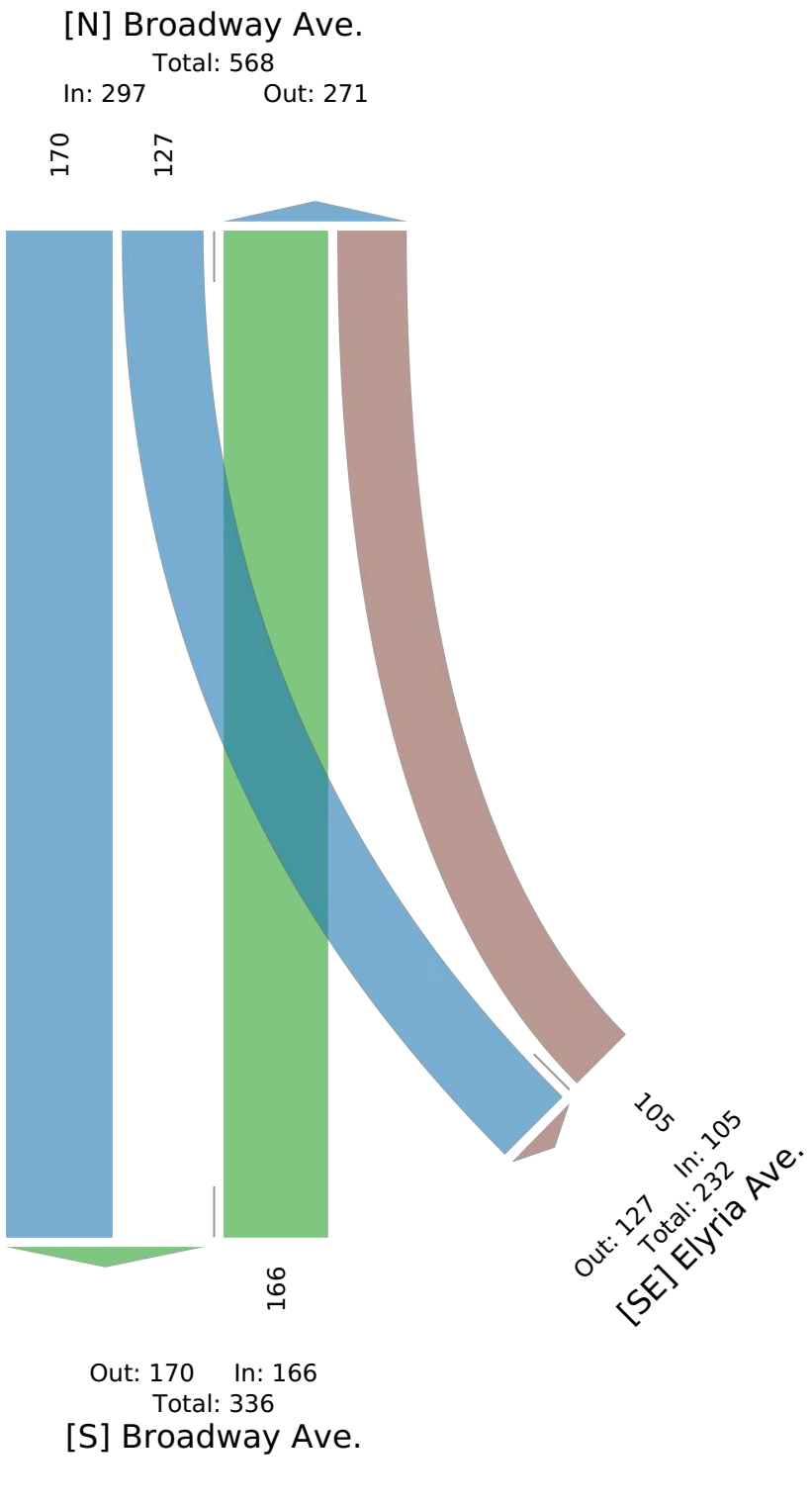
Provided by: Loukas Engineering
232 19th St. NW,
Canton, OH, 44709, US

Leg Direction	Broadway Ave. Southbound					Elyria Ave. Northwestbound					Broadway Ave. Northbound					
Time	T	BL	U	**App**	Ped*	BR	HL	U	**App**	Ped*	HR	T	U	**App**	Ped*	**Int**
2024-07-24 12:15PM	37	26	0	**63**	0	28	0	0	**28**	0	0	42	0	**42**	0	**133**
12:30PM	38	37	0	**75**	0	28	0	0	**28**	0	0	36	0	**36**	0	**139**
12:45PM	34	26	0	**60**	0	25	0	0	**25**	0	0	48	0	**48**	0	**133**
1:00PM	61	38	0	**99**	0	24	0	0	**24**	0	0	40	0	**40**	0	**163**
Total	170	127	0	**297**	0	105	0	0	**105**	0	0	166	0	**166**	0	**568**
% Approach	57.2%	42.8%	0%	**-**	-	100%	0%	0%	**-**	-	0%	100%	0%	**-**	-	-
% Total	29.9%	22.4%	0%	**52.3%**	-	18.5%	0%	0%	**18.5%**	-	0%	29.2%	0%	**29.2%**	-	-
PHF	0.697	0.836	-	**0.750**	-	0.938	-	-	**0.938**	-	-	0.865	-	**0.865**	-	0.871
Lights	164	123	0	**287**	-	102	0	0	**102**	-	0	161	0	**161**	-	550
% Lights	96.5%	96.9%	0%	**96.6%**	-	97.1%	0%	0%	**97.1%**	-	0%	97.0%	0%	**97.0%**	-	96.8%
Single-Unit Trucks	4	1	0	**5**	-	2	0	0	**2**	-	0	2	0	**2**	-	9
% Single-Unit Trucks	2.4%	0.8%	0%	**1.7%**	-	1.9%	0%	0%	**1.9%**	-	0%	1.2%	0%	**1.2%**	-	1.6%
Articulated Trucks	1	3	0	**4**	-	0	0	0	**0**	-	0	2	0	**2**	-	6
% Articulated Trucks	0.6%	2.4%	0%	**1.3%**	-	0%	0%	0%	**0%**	-	0%	1.2%	0%	**1.2%**	-	1.1%
Buses	1	0	0	**1**	-	1	0	0	**1**	-	0	1	0	**1**	-	3
% Buses	0.6%	0%	0%	**0.3%**	-	1.0%	0%	0%	**1.0%**	-	0%	0.6%	0%	**0.6%**	-	0.5%
Bicycles on Road	0	0	0	**0**	-	0	0	0	**0**	-	0	0	0	**0**	-	0
% Bicycles on Road	0%	0%	0%	**0%**	-	0%	0%	0%	**0%**	-	0%	0%	0%	**0%**	-	0%
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. BL: Bear left, BR: Bear right, HL: Hard left, HR: Hard right, T: Thru, U: U-Turn

Broadway Ave. & Elyria Ave. - TMC
Wed Jul 24, 2024
Midday Peak (12:15 PM - 1:15 PM)
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road)
All Movements
ID: 1209625, Location: 41.456289, -82.166867

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



Broadway Ave. & Elyria Ave. - TMC

Wed Jul 24, 2024
PM Peak (3:45 PM - 4:45 PM) - Overall Peak Hour
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road)
All Movements
ID: 1209625, Location: 41.456289, -82.166867

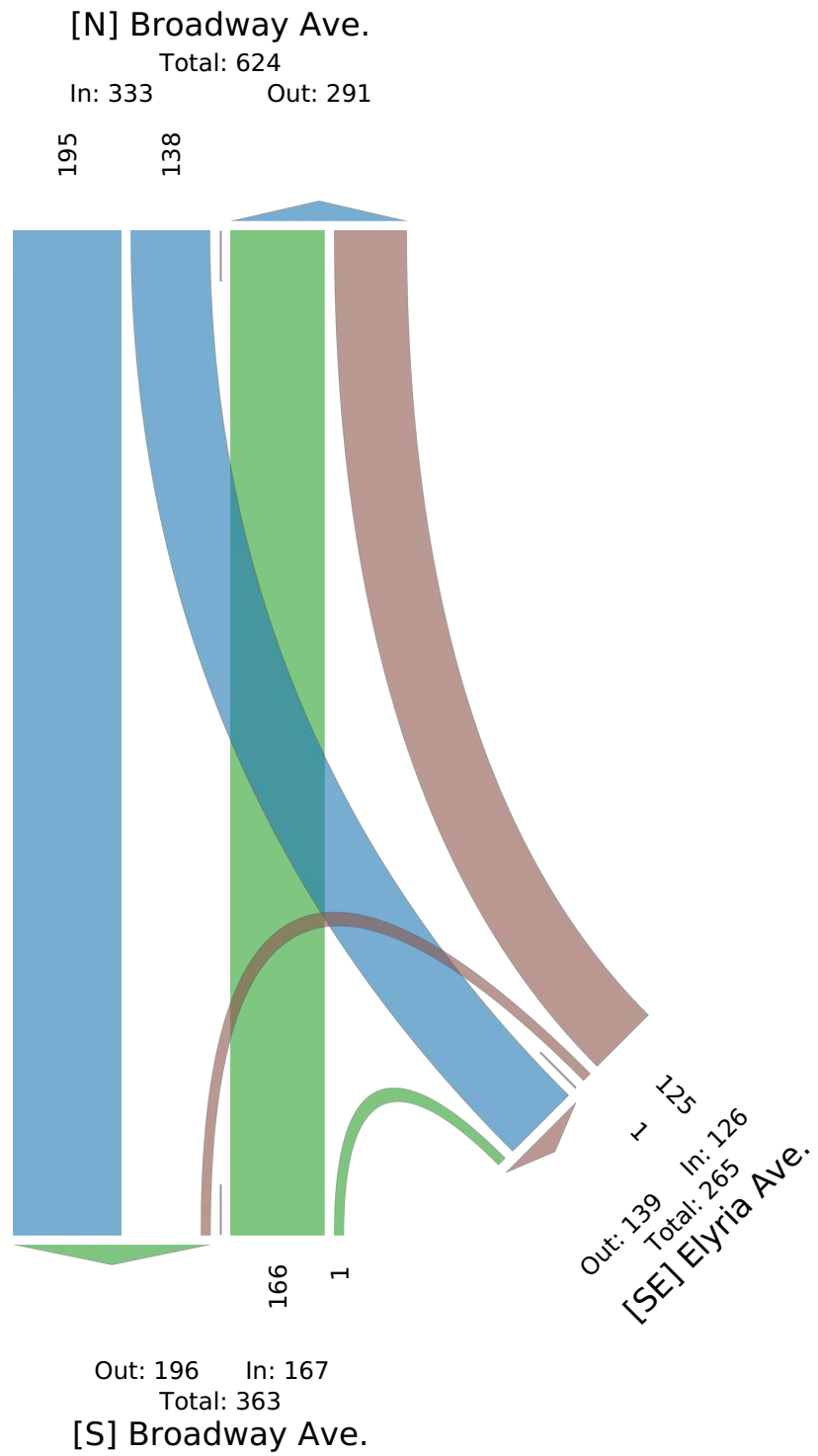
Provided by: Loukas Engineering
232 19th St. NW,
Canton, OH, 44709, US

Leg Direction	Broadway Ave. Southbound					Elyria Ave. Northwestbound					Broadway Ave. Northbound					
Time	T	BL	U	**App**	Ped*	BR	HL	U	**App**	Ped*	HR	T	U	**App**	Ped*	**Int**
2024-07-24 3:45PM	26	24	0	**50**	0	42	0	0	**42**	0	0	53	0	**53**	0	**145**
4:00PM	56	38	0	**94**	0	21	0	0	**21**	0	1	47	0	**48**	0	**163**
4:15PM	55	32	0	**87**	0	30	1	0	**31**	0	0	37	0	**37**	0	**155**
4:30PM	58	44	0	**102**	0	32	0	0	**32**	0	0	29	0	**29**	0	**163**
Total	195	138	0	**333**	0	125	1	0	**126**	0	1	166	0	**167**	0	**626**
% Approach	58.6%	41.4%	0%	**-**	-	99.2%	0.8%	0%	**-**	-	0.6%	99.4%	0%	**-**	-	-
% Total	31.2%	22.0%	0%	**53.2%**	-	20.0%	0.2%	0%	**20.1%**	-	0.2%	26.5%	0%	**26.7%**	-	-
PHF	0.841	0.784	-	**0.816**	-	0.738	0.250	-	**0.744**	-	0.250	0.783	-	**0.788**	-	0.959
Lights	191	136	0	**327**	-	124	0	0	**124**	-	1	162	0	**163**	-	614
% Lights	97.9%	98.6%	0%	**98.2%**	-	99.2%	0%	0%	**98.4%**	-	100%	97.6%	0%	**97.6%**	-	98.1%
Single-Unit Trucks	2	0	0	**2**	-	0	1	0	**1**	-	0	2	0	**2**	-	5
% Single-Unit Trucks	1.0%	0%	0%	**0.6%**	-	0%	100%	0%	**0.8%**	-	0%	1.2%	0%	**1.2%**	-	0.8%
Articulated Trucks	0	0	0	**0**	-	0	0	0	**0**	-	0	1	0	**1**	-	1
% Articulated Trucks	0%	0%	0%	**0%**	-	0%	0%	0%	**0%**	-	0%	0.6%	0%	**0.6%**	-	0.2%
Buses	2	2	0	**4**	-	0	0	0	**0**	-	0	1	0	**1**	-	5
% Buses	1.0%	1.4%	0%	**1.2%**	-	0%	0%	0%	**0%**	-	0%	0.6%	0%	**0.6%**	-	0.8%
Bicycles on Road	0	0	0	**0**	-	1	0	0	**1**	-	0	0	0	**0**	-	1
% Bicycles on Road	0%	0%	0%	**0%**	-	0.8%	0%	0%	**0.8%**	-	0%	0%	0%	**0%**	-	0.2%
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. BL: Bear left, BR: Bear right, HL: Hard left, HR: Hard right, T: Thru, U: U-Turn

Broadway Ave. & Elyria Ave. - TMC
Wed Jul 24, 2024
PM Peak (3:45 PM - 4:45 PM) - Overall Peak Hour
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road)
All Movements
ID: 1209625, Location: 41.456289, -82.166867

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



Broadway Ave. & 21st St./Henderson Dr. - TMC

Wed Jul 24, 2024
Full Length (6 AM-7 PM)
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road)
All Movements
ID: 1209624, Location: 41.451574, -82.166089

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

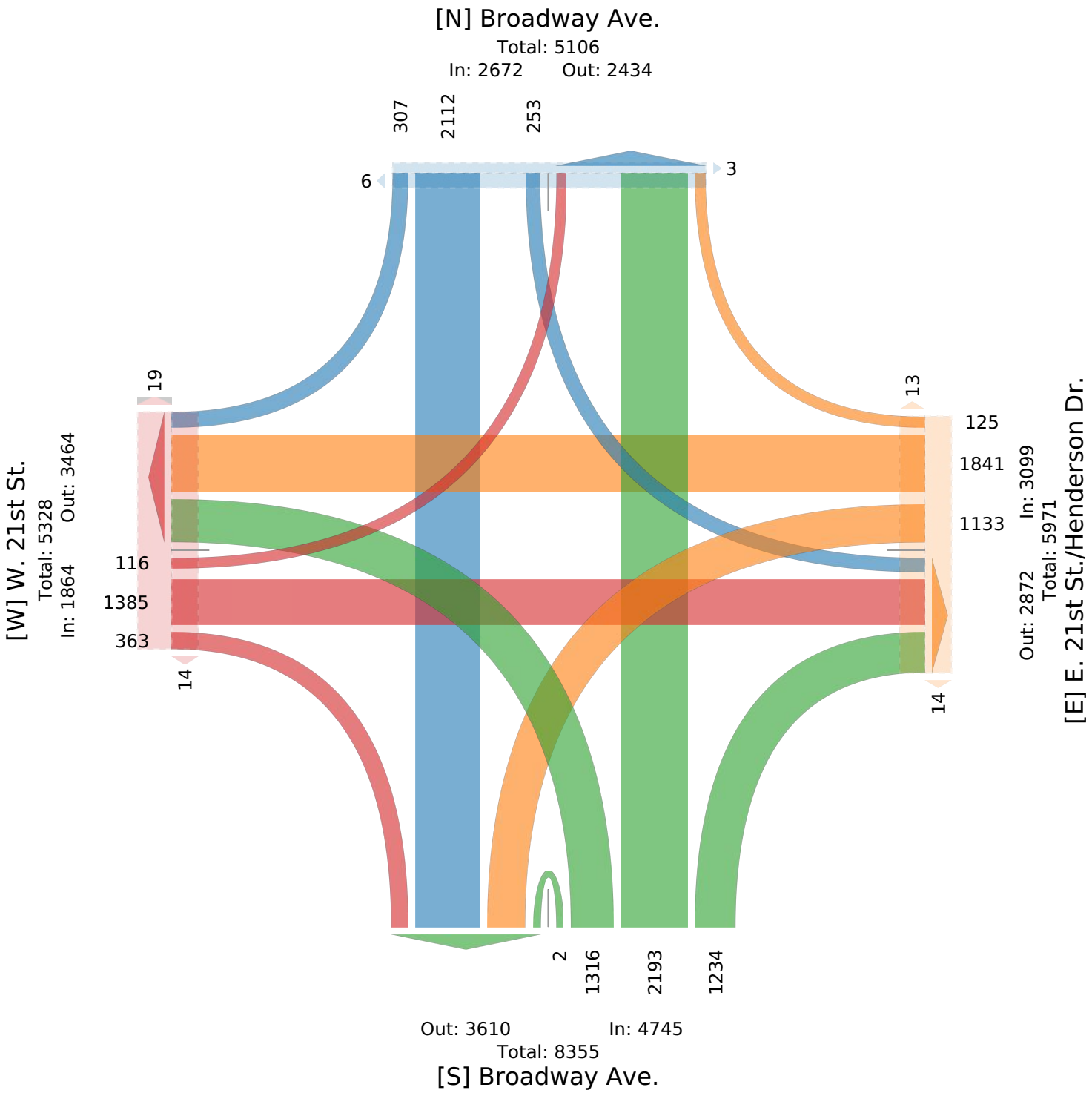
Leg	Broadway Ave.						E. 21st St./Henderson Dr.						Broadway Ave.						W. 21st St.						
Direction	Southbound						Westbound						Northbound						Eastbound						
Time	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	Int
2024-07-24 6:00AM	3	15	0	0	**18**	0	0	4	9	0	**13**	0	16	7	8	0	**31**	0	5	22	0	0	**27**	1	**89**
6:15AM	0	13	1	0	**14**	0	1	12	14	0	**27**	0	8	11	13	0	**32**	0	5	11	0	0	**16**	0	**89**
6:30AM	1	16	2	0	**19**	0	0	20	15	0	**35**	0	18	20	15	0	**53**	0	5	32	0	0	**37**	0	**144**
6:45AM	0	17	0	0	**17**	0	2	21	18	0	**41**	0	19	17	19	0	**55**	0	6	30	2	0	**38**	1	**151**
Hourly Total	4	61	3	0	**68**	0	3	57	56	0	**116**	0	61	55	55	0	**171**	0	21	95	2	0	**118**	2	**473**
7:00AM	2	16	2	0	**20**	1	1	17	12	0	**30**	1	20	16	10	0	**46**	0	4	22	1	0	**27**	1	**123**
7:15AM	3	12	1	0	**16**	2	0	20	17	0	**37**	1	14	26	19	0	**59**	0	7	29	0	0	**36**	1	**148**
7:30AM	0	23	0	0	**23**	0	1	23	19	0	**43**	0	20	24	16	0	**60**	0	5	33	1	0	**39**	0	**165**
7:45AM	1	21	1	0	**23**	0	1	22	19	0	**42**	1	26	28	25	0	**79**	0	8	26	3	0	**37**	0	**181**
Hourly Total	6	72	4	0	**82**	3	3	82	67	0	**152**	3	80	94	70	0	**244**	0	24	110	5	0	**139**	2	**617**
8:00AM	0	27	1	0	**28**	0	3	23	19	0	**45**	0	25	39	13	0	**77**	0	5	25	0	0	**30**	0	**180**
8:15AM	2	27	7	0	**36**	0	0	37	21	0	**58**	0	24	39	11	0	**74**	0	6	31	5	0	**42**	0	**210**
8:30AM	3	32	3	0	**38**	0	4	17	24	0	**45**	0	12	32	20	0	**64**	0	9	20	2	0	**31**	1	**178**
8:45AM	10	32	4	0	**46**	0	4	21	14	0	**39**	2	24	31	27	0	**82**	0	6	26	1	0	**33**	1	**200**
Hourly Total	15	118	15	0	**148**	0	11	98	78	0	**187**	2	85	141	71	0	**297**	0	26	102	8	0	**136**	2	**768**
9:00AM	3	31	4	0	**38**	0	3	24	22	0	**49**	0	21	39	12	0	**72**	0	10	16	2	0	**28**	0	**187**
9:15AM	8	40	3	0	**51**	0	1	31	11	0	**43**	0	14	36	22	0	**72**	0	6	14	1	0	**21**	1	**187**
9:30AM	6	45	4	0	**55**	0	1	23	20	0	**44**	0	24	33	14	0	**71**	0	9	24	0	0	**33**	2	**203**
9:45AM	5	36	4	0	**45**	0	3	27	15	0	**45**	0	12	38	24	0	**74**	0	5	22	2	0	**29**	0	**193**
Hourly Total	22	152	15	0	**189**	0	8	105	68	0	**181**	0	71	146	72	0	**289**	0	30	76	5	0	**111**	3	**770**
10:00AM	4	35	5	0	**44**	0	1	30	21	0	**52**	0	19	38	20	0	**77**	0	6	19	4	0	**29**	0	**202**
10:15AM	6	30	1	0	**37**	0	2	26	22	0	**50**	0	14	44	25	1	**84**	0	5	22	1	0	**28**	0	**199**
10:30AM	3	40	7	0	**50**	1	1	24	19	0	**44**	2	20	47	24	0	**91**	0	7	26	0	0	**33**	4	**218**
10:45AM	9	36	1	0	**46**	0	2	26	23	0	**51**	0	25	58	29	1	**113**	0	5	14	8	0	**27**	2	**237**
Hourly Total	22	141	14	0	**177**	1	6	106	85	0	**197**	2	78	187	98	2	**365**	0	23	81	13	0	**117**	6	**856**
11:00AM	5	45	3	0	**53**	0	2	28	15	0	**45**	0	21	32	12	0	**65**	0	6	17	6	0	**29**	1	**192**
11:15AM	5	47	6	0	**58**	1	3	24	18	0	**45**	0	25	50	20	0	**95**	0	5	20	1	0	**26**	1	**224**
11:30AM	6	38	7	0	**51**	0	2	25	26	0	**53**	0	18	43	20	0	**81**	0	5	23	3	0	**31**	0	**216**
11:45AM	5	46	5	0	**56**	0	7	32	25	0	**64**	0	21	44	22	0	**87**	0	11	24	2	0	**37**	0	**244**
Hourly Total	21	176	21	0	**218**	1	14	109	84	0	**207**	0	85	169	74	0	**328**	0	27	84	12	0	**123**	2	**876**
12:00PM	10	56	6	0	**72**	1	8	30	22	0	**60**	0	14	51	25	0	**90**	0	9	33	0	0	**42**	1	**264**
12:15PM	9	47	9	0	**65**	2	3	31	11	0	**45**	2	20	60	19	0	**99**	0	4	24	1	0	**29**	1	**238**
12:30PM	4	64	11	0	**79**	0	1	42	22	0	**65**	0	26	36	23	0	**85**	0	8	24	3	0	**35**	0	**264**
12:45PM	4	41	7	0	**52**	0	3	36	26	0	**65**	0	22	52	37	0	**111**	0	9	20	7	0	**36**	0	**264**
Hourly Total	27	208	33	0	**268**	3	15	139	81	0	**235**	2	82	199	104	0	**385**	0	30	101	11	0	**142**	2	**1030**
1:00PM	10	65	7	0	**82**	0	2	43	13	0	**58**	0	29	55	30	0	**114**	0	4	25	3	0	**32**	0	**286**
1:15PM	10	46	8	0	**64**	0	7	31	18	0	**56**	1	29	49	24	0	**102**	0	5	21	4	0	**30**	0	**252**
1:30PM	10	41	4	0	**55**	0	2	35	23	0	**60**	4	26	44	27	0	**97**	0	8	25	6	0	**39**	1	**251**
1:45PM	7	62	6	0	**75**	0	3	47	22	0	**72**	0	25	51	23	0	**99**	0	4	31	5	0	**40**	0	**286**
Hourly Total	37	214	25	0	**276**	0	14	156	76	0	**246**	5	109	199	104	0	**412**	0	21	102	18	0	**141**	1	**1075**
2:00PM	15	53	7	0	**75**	0	0	45	26	0	**71**	1	22	44	23	0	**89**	0	5	38	1	0	**44**	0	**279**
2:15PM	7	53	4	0	**64**	0	3	49	26	0	**78**	3	31	49	26	0	**106**	0	4	35	2	0	**41**	0	**289**
2:30PM	8	50	2	0	**60**	0	8	49	24	0	**81**	1	27	35	37	0	**99**	0	3	28	4	0	**35**	0	**275**
2:45PM	13	38	7	0	**58**	0	2	56	29	0	**87**	0	32	57	35	0	**124**	0	7	33	6	0	**46**	1	**315**
Hourly Total	43	194	20	0	**257**	0	13	199	105	0	**317**	5	112	185	121	0	**418**	0	19	134	13	0	**166**	1	**1158**
3:00PM	8	68	9	0	**85**	0	2	64	26	0	**92**	3	40	46	29	0	**115**	0	7	30	2	0	**39**	2	**331**
3:15PM	6	59	9	0	**74**	0	4	58	42	0	**104**	0	31	63	51	0	**145**	0	10	26	3	0	**39**	1	**362**
3:30PM	14	47	2	0	**63**	0	1	51	30	0	**82**	0	35	57	33	0	**125**	0	8	30	4	0	**42**	0	**312**
3:45PM	1	39	5	0	**45**	1	2	48	25	0	**75**	1	47	68	28	0	**143**	0	12	33	2	0	**47**	0	**310**
Hourly Total	29	213	25	0	**267**	1	9	221	123	0	**353**	4	153	234	141	0	**528**	0	37	119	11	0	**167**	3	**1315**
4:00PM	9	60	13	0	**82**	0	3	50	35	0	**88**	0	24	59	29	0	**112**	0	7	39	4	0	**50**	0	**332**
4:15PM	12	54	4	0	**70**	0	3	55	29	0	**87**	0	31	50	36	0	**117**	0	13	34	0	0	**47**	1	**321**
4:30PM	6	74	11	0	**91**	0	8	61	37	0	**106**	0	34	42	32	0	**108**	0	11	25	4	0	**40**	0	**345**
4:45PM	13	44	4	0	**61**	0	3	51	42	0	**96**	0	30	47	33	0	**110**	0	6	37	1	0	**44**	0	**311**

Leg	Broadway Ave.						E. 21st St./Henderson Dr.						Broadway Ave.						W. 21st St.						
Direction	Southbound						Westbound						Northbound						Eastbound						
Time	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	**Int**
Hourly Total	40	232	32	0	**304**	0	17	217	143	0	**377**	0	119	198	130	0	**447**	0	37	135	9	0	**181**	1	**1309**
5:00PM	8	57	9	0	**74**	0	3	57	24	0	**84**	3	28	57	36	0	**121**	0	7	31	2	0	**40**	0	**319**
5:15PM	4	43	9	0	**56**	0	2	45	24	0	**71**	0	27	56	47	0	**130**	0	7	40	1	0	**48**	0	**305**
5:30PM	6	45	5	0	**56**	0	1	48	24	0	**73**	1	30	54	37	0	**121**	0	7	32	3	0	**42**	1	**292**
5:45PM	7	42	6	0	**55**	0	5	52	18	0	**75**	0	30	36	33	0	**99**	0	7	34	1	0	**42**	0	**271**
Hourly Total	25	187	29	0	**241**	0	11	202	90	0	**303**	4	115	203	153	0	**471**	0	28	137	7	0	**172**	1	**1187**
6:00PM	6	42	5	0	**53**	0	0	43	28	0	**71**	0	21	38	30	0	**89**	0	11	25	0	0	**36**	1	**249**
6:15PM	1	34	3	0	**38**	0	0	38	18	0	**56**	0	22	54	41	0	**117**	0	9	37	0	0	**46**	0	**257**
6:30PM	6	32	5	0	**43**	0	0	36	11	0	**47**	0	20	34	27	0	**81**	0	6	21	0	0	**27**	3	**198**
6:45PM	3	36	4	0	**43**	0	1	33	20	0	**54**	0	21	57	25	0	**103**	0	14	26	2	0	**42**	3	**242**
Hourly Total	16	144	17	0	**177**	0	1	150	77	0	**228**	0	84	183	123	0	**390**	0	40	109	2	0	**151**	7	**946**
Total	307	2112	253	0	**2672**	9	125	1841	1133	0	**3099**	27	1234	2193	1316	2	**4745**	0	363	1385	116	0	**1864**	33	**12380**
% Approach	11.5%	79.0%	9.5%	0%	**-**	-	4.0%	59.4%	36.6%	0%	**-**	-	26.0%	46.2%	27.7%	0%	**-**	-	19.5%	74.3%	6.2%	0%	**-**	-	-
% Total	2.5%	17.1%	2.0%	0%	**21.6%**	-	1.0%	14.9%	9.2%	0%	**25.0%**	-	10.0%	17.7%	10.6%	0%	**38.3%**	-	2.9%	11.2%	0.9%	0%	**15.1%**	-	-
Lights	291	2024	240	0	**2555**	-	121	1748	1049	0	**2918**	-	1136	2124	1240	2	**4502**	-	339	1332	109	0	**1780**	-	11755
% Lights	94.8%	95.8%	94.9%	0%	**95.6%**	-	96.8%	94.9%	92.6%	0%	**94.2%**	-	92.1%	96.9%	94.2%	100%	**94.9%**	-	93.4%	96.2%	94.0%	0%	**95.5%**	-	95.0%
Single-Unit Trucks	10	40	8	0	**58**	-	3	66	73	0	**142**	-	68	31	61	0	**160**	-	19	47	3	0	**69**	-	429
% Single-Unit Trucks	3.3%	1.9%	3.2%	0%	**2.2%**	-	2.4%	3.6%	6.4%	0%	**4.6%**	-	5.5%	1.4%	4.6%	0%	**3.4%**	-	5.2%	3.4%	2.6%	0%	**3.7%**	-	3.5%
Articulated Trucks	6	23	3	0	**32**	-	1	18	9	0	**28**	-	23	15	11	0	**49**	-	3	1	2	0	**6**	-	115
% Articulated Trucks	2.0%	1.1%	1.2%	0%	**1.2%**	-	0.8%	1.0%	0.8%	0%	**0.9%**	-	1.9%	0.7%	0.8%	0%	**1.0%**	-	0.8%	0.1%	1.7%	0%	**0.3%**	-	0.9%
Buses	0	17	1	0	**18**	-	0	8	2	0	**10**	-	5	12	3	0	**20**	-	1	2	1	0	**4**	-	52
% Buses	0%	0.8%	0.4%	0%	**0.7%**	-	0%	0.4%	0.2%	0%	**0.3%**	-	0.4%	0.5%	0.2%	0%	**0.4%**	-	0.3%	0.1%	0.9%	0%	**0.2%**	-	0.4%
Bicycles on Road	0	8	1	0	**9**	-	0	1	0	0	**1**	-	2	11	1	0	**14**	-	1	3	1	0	**5**	-	29
% Bicycles on Road	0%	0.4%	0.4%	0%	**0.3%**	-	0%	0.1%	0%	0%	**0%**	-	0.2%	0.5%	0.1%	0%	**0.3%**	-	0.3%	0.2%	0.9%	0%	**0.3%**	-	0.2%
Pedestrians	-	-	-	-	-	9	-	-	-	-	-	27	-	-	-	-	-	0	-	-	-	-	-	33	
% Pedestrians	-	-	-	-	-	100%	-	-	-	-	-	100%	-	-	-	-	-	-	-	-	-	-	-	100%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Broadway Ave. & 21st St./Henderson Dr. - TMC
Wed Jul 24, 2024
Full Length (6 AM-7 PM)
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road)
All Movements
ID: 1209624, Location: 41.451574, -82.166089

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



Broadway Ave. & 21st St./Henderson Dr. - TMC

Wed Jul 24, 2024
AM Peak (10 AM - 11 AM)
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road)
All Movements
ID: 1209624, Location: 41.451574, -82.166089

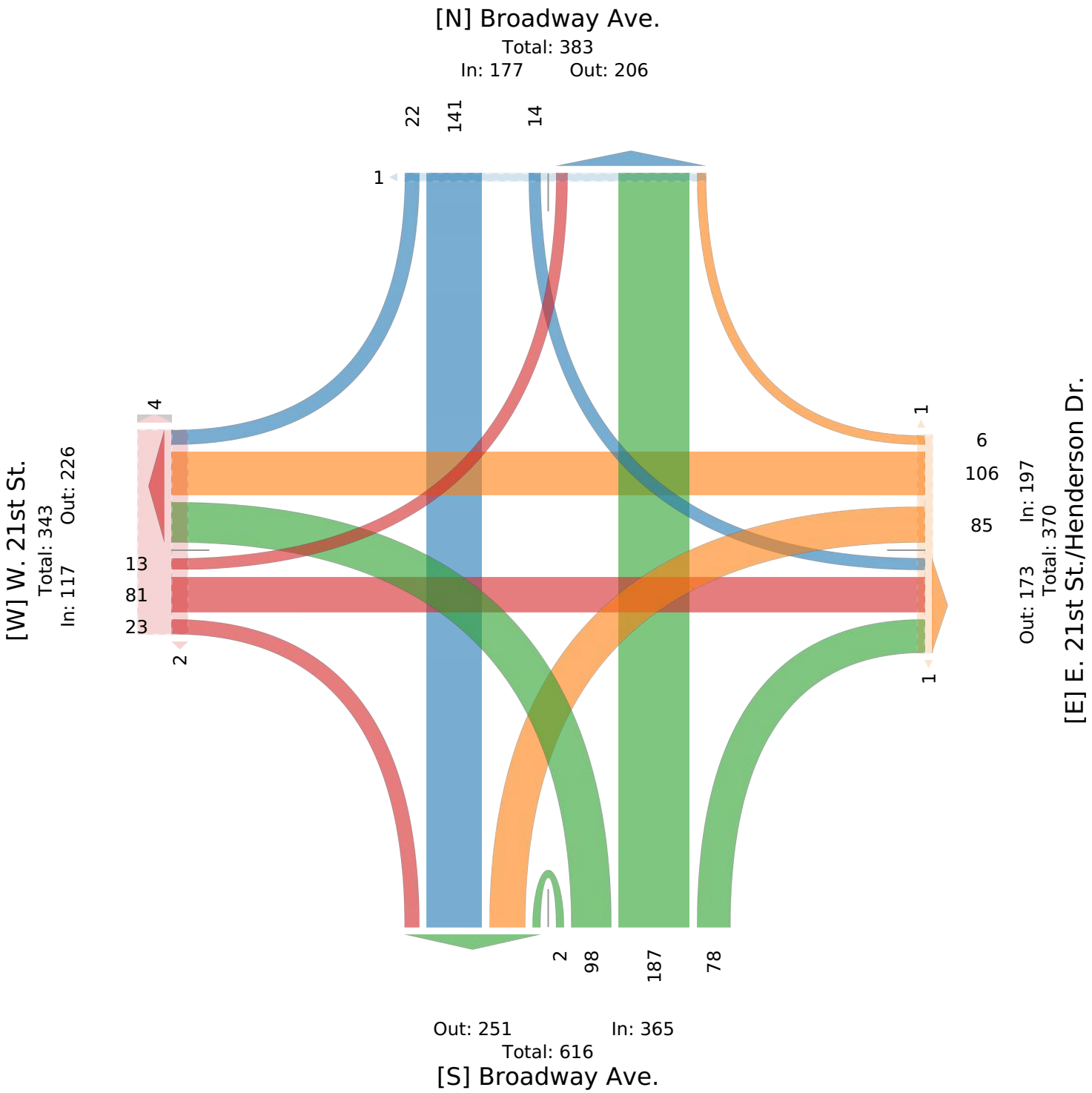
Provided by: Loukas Engineering
232 19th St. NW,
Canton, OH, 44709, US

Leg	Broadway Ave.						E. 21st St./Henderson Dr.						Broadway Ave.						W. 21st St.						
Direction	Southbound						Westbound						Northbound						Eastbound						
Time	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	Int
2024-07-24 10:00AM	4	35	5	0	**44**	0	1	30	21	0	**52**	0	19	38	20	0	**77**	0	6	19	4	0	**29**	0	**202**
10:15AM	6	30	1	0	**37**	0	2	26	22	0	**50**	0	14	44	25	1	**84**	0	5	22	1	0	**28**	0	**199**
10:30AM	3	40	7	0	**50**	1	1	24	19	0	**44**	2	20	47	24	0	**91**	0	7	26	0	0	**33**	4	**218**
10:45AM	9	36	1	0	**46**	0	2	26	23	0	**51**	0	25	58	29	1	**113**	0	5	14	8	0	**27**	2	**237**
Total	22	141	14	0	**177**	1	6	106	85	0	**197**	2	78	187	98	2	**365**	0	23	81	13	0	**117**	6	**856**
% Approach	12.4%	79.7%	7.9%	0%	**-**	-	3.0%	53.8%	43.1%	0%	**-**	-	21.4%	51.2%	26.8%	0.5%	**-**	-	19.7%	69.2%	11.1%	0%	**-**	-	**-**
% Total	2.6%	16.5%	1.6%	0%	**20.7%**	-	0.7%	12.4%	9.9%	0%	**23.0%**	-	9.1%	21.8%	11.4%	0.2%	**42.6%**	-	2.7%	9.5%	1.5%	0%	**13.7%**	-	**-**
PHF	0.611	0.881	0.500	-	**0.885**	-	0.750	0.883	0.924	-	**0.947**	-	0.780	0.802	0.845	0.500	**0.805**	-	0.821	0.779	0.406	-	**0.886**	-	0.902
Lights	19	132	13	0	**164**	-	6	100	80	0	**186**	-	70	181	82	2	**335**	-	20	77	12	0	**109**	-	794
% Lights	86.4%	93.6%	92.9%	0%	**92.7%**	-	100%	94.3%	94.1%	0%	**94.4%**	-	89.7%	96.8%	83.7%	100%	**91.8%**	-	87.0%	95.1%	92.3%	0%	**93.2%**	-	92.8%
Single-Unit Trucks	2	4	1	0	**7**	-	0	6	4	0	**10**	-	6	2	13	0	**21**	-	2	4	0	0	**6**	-	44
% Single-Unit Trucks	9.1%	2.8%	7.1%	0%	**4.0%**	-	0%	5.7%	4.7%	0%	**5.1%**	-	7.7%	1.1%	13.3%	0%	**5.8%**	-	8.7%	4.9%	0%	0%	**5.1%**	-	5.1%
Articulated Trucks	1	3	0	0	**4**	-	0	0	1	0	**1**	-	1	2	3	0	**6**	-	1	0	1	0	**2**	-	13
% Articulated Trucks	4.5%	2.1%	0%	0%	**2.3%**	-	0%	0%	1.2%	0%	**0.5%**	-	1.3%	1.1%	3.1%	0%	**1.6%**	-	4.3%	0%	7.7%	0%	**1.7%**	-	1.5%
Buses	0	2	0	0	**2**	-	0	0	0	0	**0**	-	1	1	0	0	**2**	-	0	0	0	0	**0**	-	4
% Buses	0%	1.4%	0%	0%	**1.1%**	-	0%	0%	0%	0%	**0%**	-	1.3%	0.5%	0%	0%	**0.5%**	-	0%	0%	0%	0%	**0%**	-	0.5%
Bicycles on Road	0	0	0	0	**0**	-	0	0	0	0	**0**	-	0	1	0	0	**1**	-	0	0	0	0	**0**	-	1
% Bicycles on Road	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%	0.5%	0%	0%	**0.3%**	-	0%	0%	0%	0%	**0%**	-	0.1%
Pedestrians	-	-	-	-	-	1	-	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	6	
% Pedestrians	-	-	-	-	-	100%	-	-	-	-	-	100%	-	-	-	-	-	-	-	-	-	-	-	100%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Broadway Ave. & 21st St./Henderson Dr. - TMC
Wed Jul 24, 2024
AM Peak (10 AM - 11 AM)
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road)
All Movements
ID: 1209624, Location: 41.451574, -82.166089

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



Broadway Ave. & 21st St./Henderson Dr. - TMC

Wed Jul 24, 2024
Midday Peak (1 PM - 2 PM)
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road)
All Movements
ID: 1209624, Location: 41.451574, -82.166089

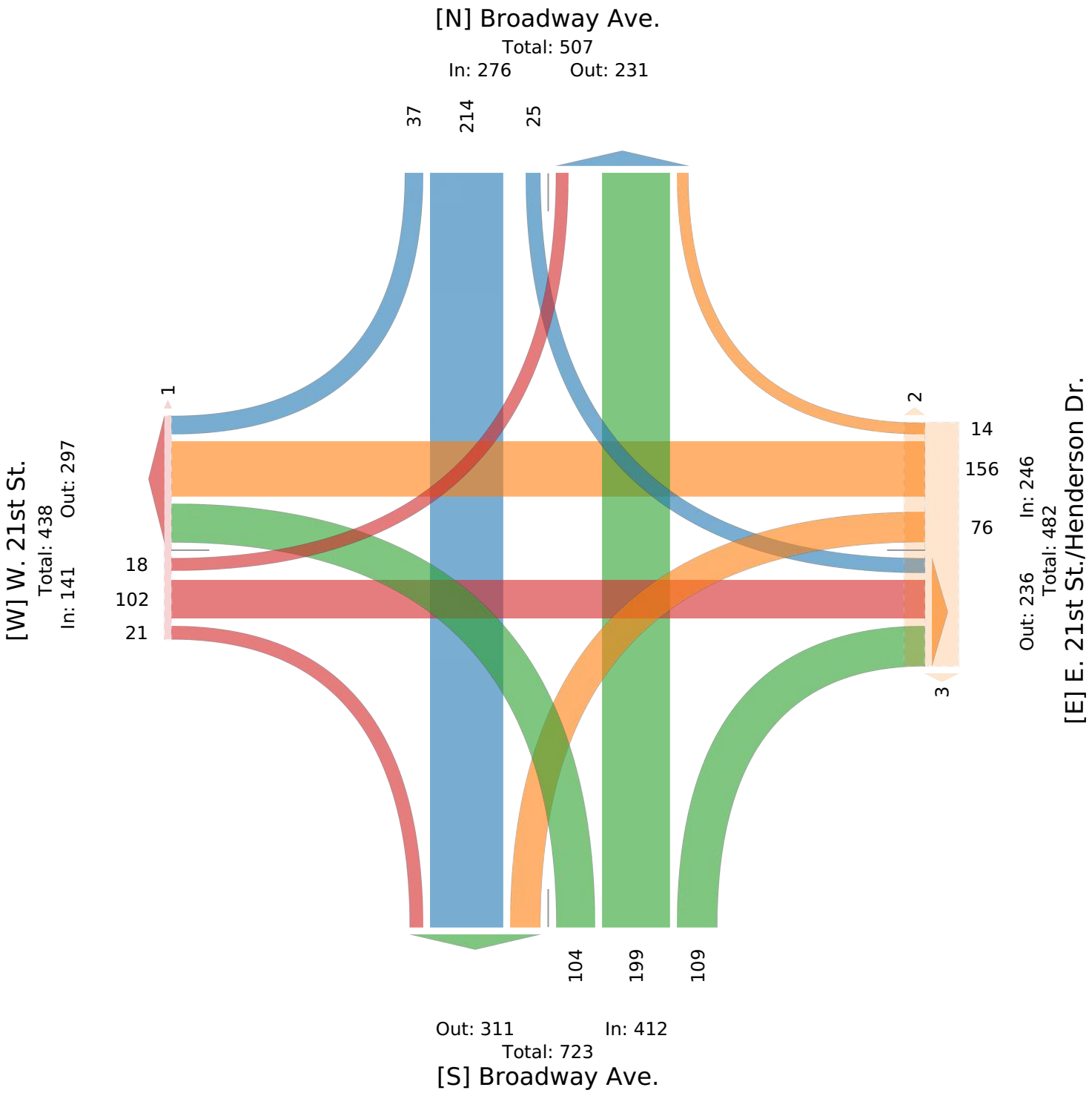
Provided by: Loukas Engineering
232 19th St. NW,
Canton, OH, 44709, US

Leg	Broadway Ave.						E. 21st St./Henderson Dr.						Broadway Ave.						W. 21st St.						
Direction	Southbound						Westbound						Northbound						Eastbound						
Time	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	**Int**
2024-07-24 1:00PM	10	65	7	0	**82**	0	2	43	13	0	**58**	0	29	55	30	0	**114**	0	4	25	3	0	**32**	0	**286**
1:15PM	10	46	8	0	**64**	0	7	31	18	0	**56**	1	29	49	24	0	**102**	0	5	21	4	0	**30**	0	**252**
1:30PM	10	41	4	0	**55**	0	2	35	23	0	**60**	4	26	44	27	0	**97**	0	8	25	6	0	**39**	1	**251**
1:45PM	7	62	6	0	**75**	0	3	47	22	0	**72**	0	25	51	23	0	**99**	0	4	31	5	0	**40**	0	**286**
Total	37	214	25	0	**276**	0	14	156	76	0	**246**	5	109	199	104	0	**412**	0	21	102	18	0	**141**	1	**1075**
% Approach	13.4%	77.5%	9.1%	0%	**-**	-	5.7%	63.4%	30.9%	0%	**-**	-	26.5%	48.3%	25.2%	0%	**-**	-	14.9%	72.3%	12.8%	0%	**-**	-	**-**
% Total	3.4%	19.9%	2.3%	0%	**25.7%**	-	1.3%	14.5%	7.1%	0%	**22.9%**	-	10.1%	18.5%	9.7%	0%	**38.3%**	-	2.0%	9.5%	1.7%	0%	**13.1%**	-	**-**
PHF	0.925	0.823	0.781	-	**0.841**	-	0.500	0.830	0.826	-	**0.854**	-	0.940	0.905	0.867	-	**0.904**	-	0.656	0.823	0.750	-	**0.881**	-	0.940
Lights	36	206	23	0	**265**	-	13	144	68	0	**225**	-	99	193	103	0	**395**	-	21	94	17	0	**132**	-	1017
% Lights	97.3%	96.3%	92.0%	0%	**96.0%**	-	92.9%	92.3%	89.5%	0%	**91.5%**	-	90.8%	97.0%	99.0%	0%	**95.9%**	-	100%	92.2%	94.4%	0%	**93.6%**	-	94.6%
Single-Unit Trucks	1	6	2	0	**9**	-	1	11	7	0	**19**	-	9	4	1	0	**14**	-	0	8	1	0	**9**	-	51
% Single-Unit Trucks	2.7%	2.8%	8.0%	0%	**3.3%**	-	7.1%	7.1%	9.2%	0%	**7.7%**	-	8.3%	2.0%	1.0%	0%	**3.4%**	-	0%	7.8%	5.6%	0%	**6.4%**	-	4.7%
Articulated Trucks	0	1	0	0	**1**	-	0	1	1	0	**2**	-	0	1	0	0	**1**	-	0	0	0	0	**0**	-	4
% Articulated Trucks	0%	0.5%	0%	0%	**0.4%**	-	0%	0.6%	1.3%	0%	**0.8%**	-	0%	0.5%	0%	0%	**0.2%**	-	0%	0%	0%	0%	**0%**	-	0.4%
Buses	0	1	0	0	**1**	-	0	0	0	0	**0**	-	1	1	0	0	**2**	-	0	0	0	0	**0**	-	3
% Buses	0%	0.5%	0%	0%	**0.4%**	-	0%	0%	0%	0%	**0%**	-	0.9%	0.5%	0%	0%	**0.5%**	-	0%	0%	0%	0%	**0%**	-	0.3%
Bicycles on Road	0	0	0	0	**0**	-	0	0	0	0	**0**	-	0	0	0	0	**0**	-	0	0	0	0	**0**	-	0
% Bicycles on Road	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	5	-	-	-	-	-	0	-	-	-	-	-	1	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	100%	-	-	-	-	-	-	-	-	-	-	-	100%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Broadway Ave. & 21st St./Henderson Dr. - TMC
Wed Jul 24, 2024
Midday Peak (1 PM - 2 PM)
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road)
All Movements
ID: 1209624, Location: 41.451574, -82.166089

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



Broadway Ave. & 21st St./Henderson Dr. - TMC

Wed Jul 24, 2024
PM Peak (2:45 PM - 3:45 PM) - Overall Peak Hour
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road)
All Movements
ID: 1209624, Location: 41.451574, -82.166089

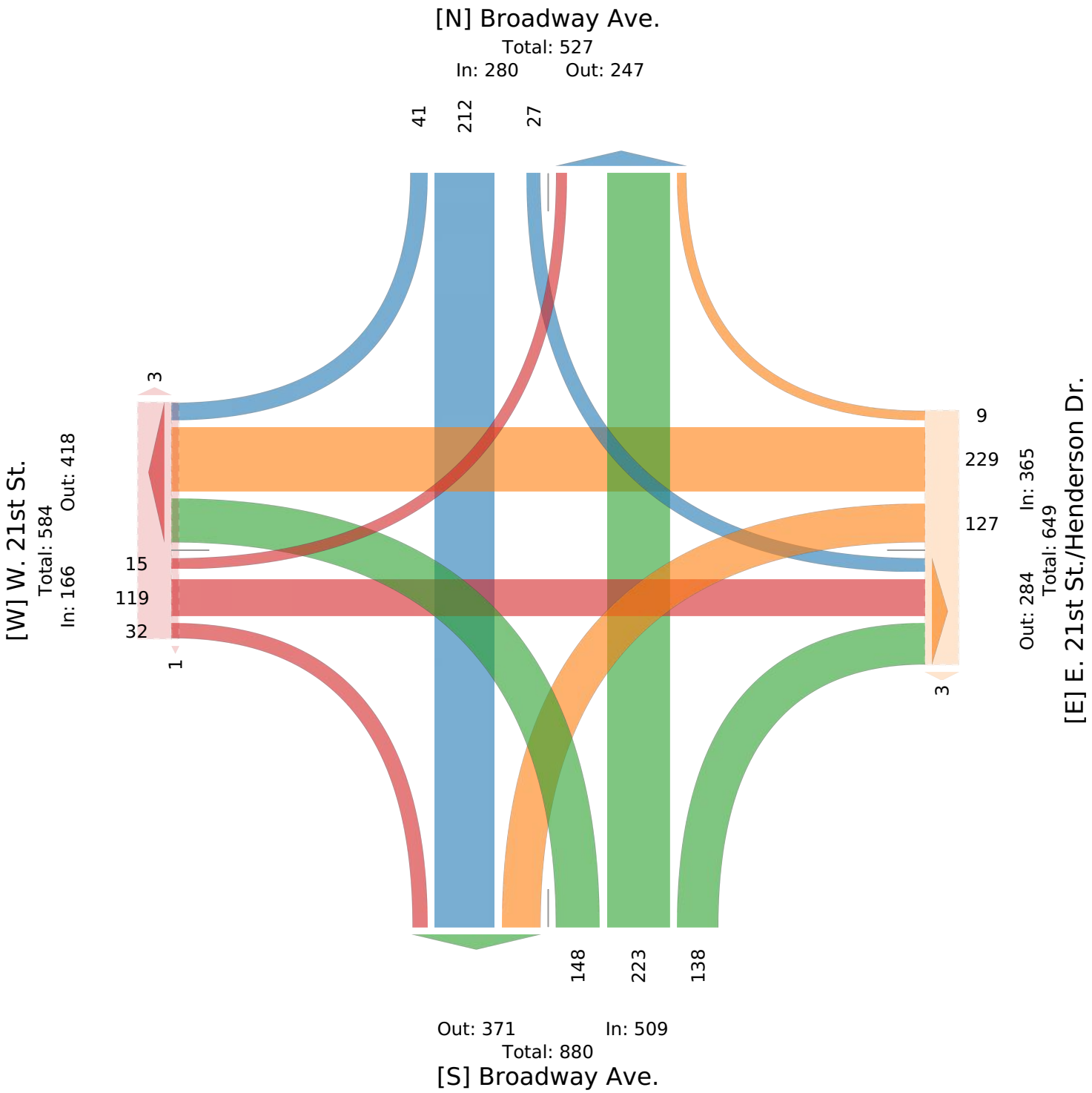
Provided by: Loukas Engineering
232 19th St. NW,
Canton, OH, 44709, US

Leg Direction	Broadway Ave. Southbound						E. 21st St./Henderson Dr. Westbound						Broadway Ave. Northbound						W. 21st St. Eastbound						
Time	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	**Int**
2024-07-24 2:45PM	13	38	7	0	**58**	0	2	56	29	0	**87**	0	32	57	35	0	**124**	0	7	33	6	0	**46**	1	**315**
3:00PM	8	68	9	0	**85**	0	2	64	26	0	**92**	3	40	46	29	0	**115**	0	7	30	2	0	**39**	2	**331**
3:15PM	6	59	9	0	**74**	0	4	58	42	0	**104**	0	31	63	51	0	**145**	0	10	26	3	0	**39**	1	**362**
3:30PM	14	47	2	0	**63**	0	1	51	30	0	**82**	0	35	57	33	0	**125**	0	8	30	4	0	**42**	0	**312**
Total	41	212	27	0	**280**	0	9	229	127	0	**365**	3	138	223	148	0	**509**	0	32	119	15	0	**166**	4	**1320**
% Approach	14.6%	75.7%	9.6%	0%	**-**	-	2.5%	62.7%	34.8%	0%	**-**	-	27.1%	43.8%	29.1%	0%	**-**	-	19.3%	71.7%	9.0%	0%	**-**	-	-
% Total	3.1%	16.1%	2.0%	0%	**21.2%**	-	0.7%	17.3%	9.6%	0%	**27.7%**	-	10.5%	16.9%	11.2%	0%	**38.6%**	-	2.4%	9.0%	1.1%	0%	**12.6%**	-	-
PHF	0.732	0.776	0.750	-	**0.821**	-	0.563	0.895	0.756	-	**0.877**	-	0.863	0.895	0.725	-	**0.882**	-	0.800	0.902	0.625	-	**0.902**	-	0.913
Lights	40	208	25	0	**273**	-	9	215	114	0	**338**	-	134	215	140	0	**489**	-	31	117	14	0	**162**	-	1262
% Lights	97.6%	98.1%	92.6%	0%	**97.5%**	-	100%	93.9%	89.8%	0%	**92.6%**	-	97.1%	96.4%	94.6%	0%	**96.1%**	-	96.9%	98.3%	93.3%	0%	**97.6%**	-	95.6%
Single-Unit Trucks	1	2	0	0	**3**	-	0	9	11	0	**20**	-	3	5	7	0	**15**	-	1	2	0	0	**3**	-	41
% Single-Unit Trucks	2.4%	0.9%	0%	0%	**1.1%**	-	0%	3.9%	8.7%	0%	**5.5%**	-	2.2%	2.2%	4.7%	0%	**2.9%**	-	3.1%	1.7%	0%	0%	**1.8%**	-	3.1%
Articulated Trucks	0	0	1	0	**1**	-	0	4	2	0	**6**	-	1	1	0	0	**2**	-	0	0	1	0	**1**	-	10
% Articulated Trucks	0%	0%	3.7%	0%	**0.4%**	-	0%	1.7%	1.6%	0%	**1.6%**	-	0.7%	0.4%	0%	0%	**0.4%**	-	0%	0%	6.7%	0%	**0.6%**	-	0.8%
Buses	0	1	1	0	**2**	-	0	1	0	0	**1**	-	0	1	1	0	**2**	-	0	0	0	0	**0**	-	5
% Buses	0%	0.5%	3.7%	0%	**0.7%**	-	0%	0.4%	0%	0%	**0.3%**	-	0%	0.4%	0.7%	0%	**0.4%**	-	0%	0%	0%	0%	**0%**	-	0.4%
Bicycles on Road	0	1	0	0	**1**	-	0	0	0	0	**0**	-	0	1	0	0	**1**	-	0	0	0	0	**0**	-	2
% Bicycles on Road	0%	0.5%	0%	0%	**0.4%**	-	0%	0%	0%	0%	**0%**	-	0%	0.4%	0%	0%	**0.2%**	-	0%	0%	0%	0%	**0%**	-	0.2%
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	3	-	-	-	-	-	0	-	-	-	-	-	4	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	100%	-	-	-	-	-	-	-	-	-	-	-	100%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Broadway Ave. & 21st St./Henderson Dr. - TMC
Wed Jul 24, 2024
PM Peak (2:45 PM - 3:45 PM) - Overall Peak Hour
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road)
All Movements
ID: 1209624, Location: 41.451574, -82.166089

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



Broadway Ave. & E. 28th St. - TMC

Wed Jul 24, 2024
Full Length (6 AM-7 PM)
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road)
All Movements
ID: 1209623, Location: 41.44509, -82.164981

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

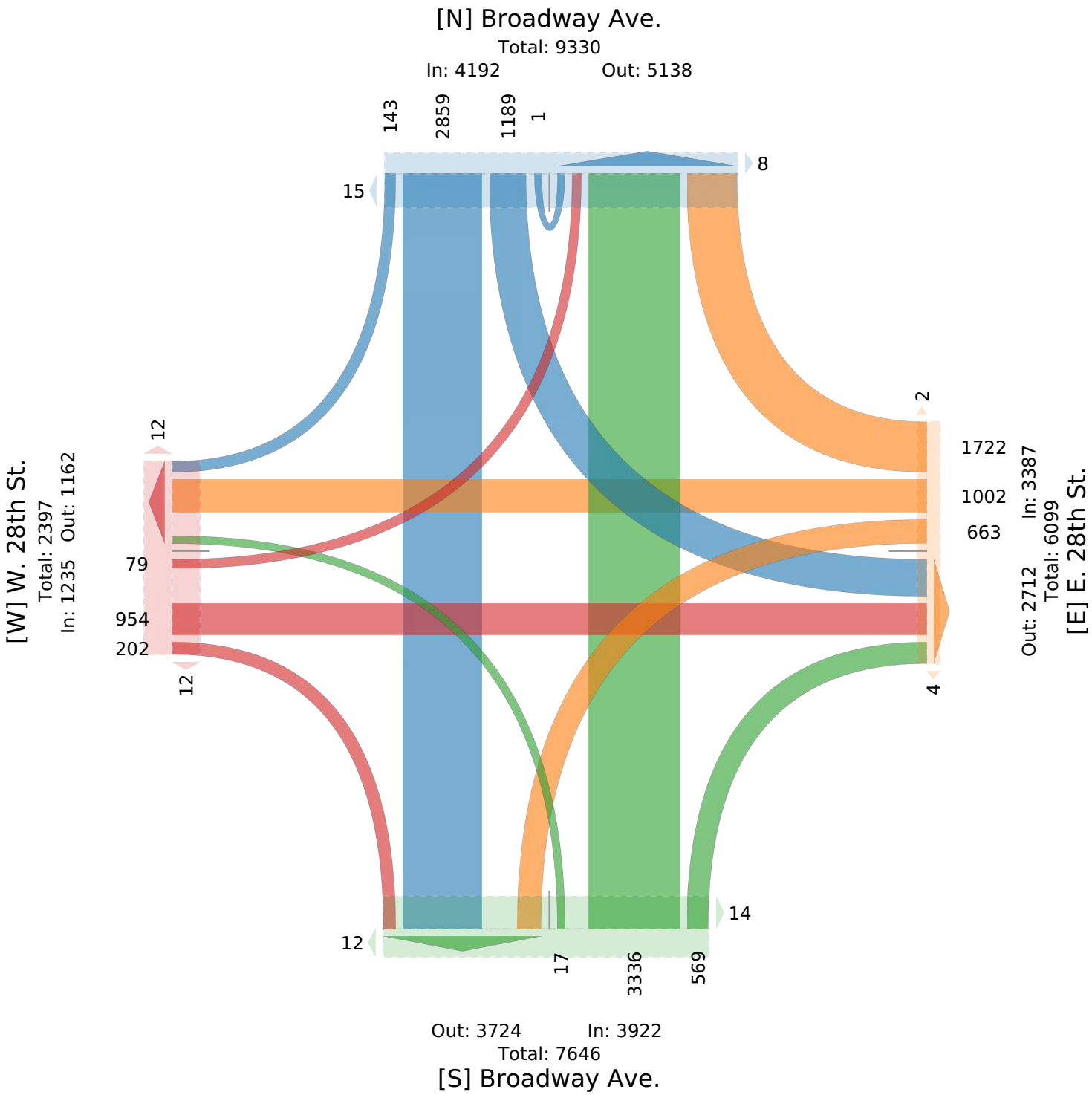
Leg	Broadway Ave.						E. 28th St.						Broadway Ave.						W. 28th St.						
Direction	Southbound						Westbound						Northbound						Eastbound						
Time	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	Int
2024-07-24 6:00AM	1	26	10	0	**37**	0	13	2	2	0	**17**	0	6	17	1	0	**24**	0	3	4	1	0	**8**	0	**86**
6:15AM	1	26	13	0	**40**	0	15	5	2	0	**22**	0	7	11	2	0	**20**	0	4	6	1	0	**11**	2	**93**
6:30AM	0	36	10	0	**46**	0	20	5	6	0	**31**	0	5	36	0	0	**41**	2	8	9	0	0	**17**	1	**135**
6:45AM	0	35	8	0	**43**	0	18	7	2	0	**27**	0	5	34	0	0	**39**	1	3	10	0	0	**13**	1	**122**
Hourly Total	2	123	41	0	**166**	0	66	19	12	0	**97**	0	23	98	3	0	**124**	3	18	29	2	0	**49**	4	**436**
7:00AM	0	36	9	0	**45**	0	15	7	3	0	**25**	0	4	31	0	0	**35**	1	5	13	1	0	**19**	0	**124**
7:15AM	0	37	13	0	**50**	0	24	10	3	0	**37**	0	7	41	0	0	**48**	0	3	15	0	0	**18**	1	**153**
7:30AM	3	43	10	0	**56**	0	20	7	7	0	**34**	0	13	40	0	0	**53**	0	6	14	3	0	**23**	0	**166**
7:45AM	1	45	12	0	**58**	0	26	12	11	0	**49**	0	9	57	0	0	**66**	0	2	15	0	0	**17**	0	**190**
Hourly Total	4	161	44	0	**209**	0	85	36	24	0	**145**	0	33	169	0	0	**202**	1	16	57	4	0	**77**	1	**633**
8:00AM	0	36	21	0	**57**	0	19	8	6	0	**33**	0	10	60	0	0	**70**	1	3	15	1	0	**19**	1	**179**
8:15AM	0	57	12	0	**69**	0	23	13	9	0	**45**	0	5	57	0	0	**62**	0	1	11	0	0	**12**	0	**188**
8:30AM	2	50	19	0	**71**	0	21	9	12	0	**42**	0	10	60	0	0	**70**	0	2	20	0	0	**22**	0	**205**
8:45AM	1	43	23	0	**67**	0	26	6	7	0	**39**	0	11	53	0	0	**64**	2	2	12	1	0	**15**	0	**185**
Hourly Total	3	186	75	0	**264**	0	89	36	34	0	**159**	0	36	230	0	0	**266**	3	8	58	2	0	**68**	1	**757**
9:00AM	0	37	21	0	**58**	1	27	12	11	0	**50**	2	9	51	1	0	**61**	0	3	8	2	0	**13**	0	**182**
9:15AM	0	50	22	0	**72**	1	32	15	17	0	**64**	0	8	50	0	0	**58**	4	6	11	0	0	**17**	1	**211**
9:30AM	4	56	20	1	**81**	1	24	10	3	0	**37**	0	9	65	0	0	**74**	0	2	18	1	0	**21**	0	**213**
9:45AM	1	40	22	0	**63**	0	24	15	10	0	**49**	0	12	48	0	0	**60**	0	3	14	2	0	**19**	0	**191**
Hourly Total	5	183	85	1	**274**	3	107	52	41	0	**200**	2	38	214	1	0	**253**	4	14	51	5	0	**70**	1	**797**
10:00AM	2	44	15	0	**61**	0	34	11	11	0	**56**	0	15	53	1	0	**69**	1	0	13	0	0	**13**	0	**199**
10:15AM	1	57	18	0	**76**	0	42	11	5	0	**58**	0	6	51	0	0	**57**	1	3	11	3	0	**17**	1	**208**
10:30AM	2	58	18	0	**78**	0	35	14	9	0	**58**	0	11	69	1	0	**81**	0	3	13	2	0	**18**	1	**235**
10:45AM	2	51	17	0	**70**	1	44	15	8	0	**67**	0	7	73	0	0	**80**	0	7	14	1	0	**22**	0	**239**
Hourly Total	7	210	68	0	**285**	1	155	51	33	0	**239**	0	39	246	2	0	**287**	2	13	51	6	0	**70**	2	**881**
11:00AM	0	51	22	0	**73**	0	23	14	14	0	**51**	0	8	50	0	0	**58**	0	3	10	2	0	**15**	0	**197**
11:15AM	0	49	25	0	**74**	0	33	11	13	0	**57**	0	9	66	0	0	**75**	0	2	14	1	0	**17**	0	**223**
11:30AM	7	58	18	0	**83**	1	30	13	4	0	**47**	0	9	55	0	0	**64**	0	4	17	2	0	**23**	0	**217**
11:45AM	3	56	36	0	**95**	0	23	24	22	0	**69**	0	7	59	0	0	**66**	0	6	17	1	0	**24**	0	**254**
Hourly Total	10	214	101	0	**325**	1	109	62	53	0	**224**	0	33	230	0	0	**263**	0	15	58	6	0	**79**	0	**891**
12:00PM	5	77	29	0	**111**	0	42	20	13	0	**75**	0	10	63	0	0	**73**	0	2	15	0	0	**17**	0	**276**
12:15PM	4	44	25	0	**73**	0	39	15	15	0	**69**	0	16	73	0	0	**89**	0	1	16	0	0	**17**	0	**248**
12:30PM	5	63	40	0	**108**	1	27	23	14	0	**64**	0	22	64	1	0	**87**	0	8	11	1	0	**20**	0	**279**
12:45PM	3	68	26	0	**97**	2	48	19	6	0	**73**	0	15	76	2	0	**93**	0	4	18	0	0	**22**	0	**285**
Hourly Total	17	252	120	0	**389**	3	156	77	48	0	**281**	0	63	276	3	0	**342**	0	15	60	1	0	**76**	0	**1088**
1:00PM	8	61	26	0	**95**	1	38	12	18	0	**68**	0	14	69	1	0	**84**	0	2	14	1	0	**17**	0	**264**
1:15PM	0	60	19	0	**79**	0	34	24	22	0	**80**	0	13	71	1	0	**85**	0	9	17	0	0	**26**	0	**270**
1:30PM	6	55	25	0	**86**	3	37	24	12	0	**73**	2	15	65	0	0	**80**	0	3	25	1	0	**29**	0	**268**
1:45PM	5	63	32	0	**100**	0	33	23	15	0	**71**	0	10	71	0	0	**81**	0	3	17	3	0	**23**	3	**275**
Hourly Total	19	239	102	0	**360**	4	142	83	67	0	**292**	2	52	276	2	0	**330**	0	17	73	5	0	**95**	3	**1077**
2:00PM	3	65	34	0	**102**	1	35	23	18	0	**76**	0	11	66	0	0	**77**	0	3	23	4	0	**30**	0	**285**
2:15PM	1	62	28	0	**91**	0	40	24	18	0	**82**	0	15	84	0	0	**99**	0	3	25	2	0	**30**	0	**302**
2:30PM	6	68	31	0	**105**	0	45	20	17	0	**82**	0	11	65	0	0	**76**	3	2	22	4	0	**28**	2	**291**
2:45PM	4	56	21	0	**81**	0	41	25	14	0	**80**	1	12	91	0	0	**103**	0	4	22	2	0	**28**	0	**292**
Hourly Total	14	251	114	0	**379**	1	161	92	67	0	**320**	1	49	306	0	0	**355**	3	12	92	12	0	**116**	2	**1170**
3:00PM	4	72	32	0	**108**	0	35	23	23	0	**81**	0	14	92	0	0	**106**	0	4	26	1	0	**31**	0	**326**
3:15PM	3	88	31	0	**122**	0	62	26	14	0	**102**	0	10	86	0	0	**96**	1	2	24	3	0	**29**	0	**349**
3:30PM	3	62	30	0	**95**	0	51	24	18	0	**93**	0	14	96	0	0	**110**	0	6	22	2	0	**30**	0	**328**
3:45PM	5	72	26	0	**103**	0	31	27	13	0	**71**	0	11	113	1	0	**125**	0	4	31	3	0	**38**	0	**337**
Hourly Total	15	294	119	0	**428**	0	179	100	68	0	**347**	0	49	387	1	0	**437**	1	16	103	9	0	**128**	0	**1340**
4:00PM	3	72	30	0	**105**	1	41	29	18	0	**88**	0	14	82	1	0	**97**	1	3	27	3	0	**33**	0	**323**
4:15PM	4	76	34	0	**114**	1	39	28	27	0	**94**	0	8	90	0	0	**98**	0	5	32	5	0	**42**	4	**348**
4:30PM	5	93	35	0	**133**	0	42	38	27	0	**107**	0	12	62	0	0	**74**	1	5	39	0	0	**44**	0	**358**
4:45PM	6	71	23	0	**100**	1	44	39	19	0	**102**	0	16	80	1	0	**97**	0	4	18	2	0	**24**	0	**323**

Leg	Broadway Ave.						E. 28th St.						Broadway Ave.						W. 28th St.						
Direction	Southbound						Westbound						Northbound						Eastbound						
Time	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	**Int**
Hourly Total	18	312	122	0	**452**	3	166	134	91	0	**391**	0	50	314	2	0	**366**	2	17	116	10	0	**143**	4	**1352**
5:00PM	3	71	33	0	**107**	1	56	31	17	0	**104**	0	15	75	1	0	**91**	2	9	22	1	0	**32**	4	**334**
5:15PM	4	62	18	0	**84**	0	42	38	24	0	**104**	0	14	88	1	0	**103**	3	3	29	4	0	**36**	2	**327**
5:30PM	5	47	23	0	**75**	0	41	42	16	0	**99**	0	10	85	1	0	**96**	2	8	33	1	0	**42**	0	**312**
5:45PM	2	50	29	0	**81**	0	32	29	18	0	**79**	0	17	71	0	0	**88**	0	5	24	4	0	**33**	0	**281**
Hourly Total	14	230	103	0	**347**	1	171	140	75	0	**386**	0	56	319	3	0	**378**	7	25	108	10	0	**143**	6	**1254**
6:00PM	6	60	32	0	**98**	0	31	31	14	0	**76**	0	11	66	0	0	**77**	0	1	27	1	0	**29**	0	**280**
6:15PM	5	49	24	0	**78**	1	29	32	15	0	**76**	0	10	87	0	0	**97**	0	5	23	1	0	**29**	0	**280**
6:30PM	3	48	21	0	**72**	2	37	37	15	0	**89**	1	12	46	0	0	**58**	0	8	26	2	0	**36**	0	**255**
6:45PM	1	47	18	0	**66**	3	39	20	6	0	**65**	0	15	72	0	0	**87**	0	2	22	3	0	**27**	0	**245**
Hourly Total	15	204	95	0	**314**	6	136	120	50	0	**306**	1	48	271	0	0	**319**	0	16	98	7	0	**121**	0	**1060**
Total	143	2859	1189	1	**4192**	23	1722	1002	663	0	**3387**	6	569	3336	17	0	**3922**	26	202	954	79	0	**1235**	24	**12736**
% Approach	3.4%	68.2%	28.4%	0%	**-**	-	50.8%	29.6%	19.6%	0%	**-**	-	14.5%	85.1%	0.4%	0%	**-**	-	16.4%	77.2%	6.4%	0%	**-**	-	-
% Total	1.1%	22.4%	9.3%	0%	**32.9%**	-	13.5%	7.9%	5.2%	0%	**26.6%**	-	4.5%	26.2%	0.1%	0%	**30.8%**	-	1.6%	7.5%	0.6%	0%	**9.7%**	-	-
Lights	141	2721	1116	1	**3979**	-	1623	984	647	0	**3254**	-	549	3190	16	0	**3755**	-	195	940	75	0	**1210**	-	12198
% Lights	98.6%	95.2%	93.9%	100%	**94.9%**	-	94.3%	98.2%	97.6%	0%	**96.1%**	-	96.5%	95.6%	94.1%	0%	**95.7%**	-	96.5%	98.5%	94.9%	0%	**98.0%**	-	95.8%
Single-Unit Trucks	1	111	40	0	**152**	-	58	16	8	0	**82**	-	16	116	0	0	**132**	-	2	11	4	0	**17**	-	383
% Single-Unit Trucks	0.7%	3.9%	3.4%	0%	**3.6%**	-	3.4%	1.6%	1.2%	0%	**2.4%**	-	2.8%	3.5%	0%	0%	**3.4%**	-	1.0%	1.2%	5.1%	0%	**1.4%**	-	3.0%
Articulated Trucks	0	14	17	0	**31**	-	29	2	5	0	**36**	-	2	18	0	0	**20**	-	0	1	0	0	**1**	-	88
% Articulated Trucks	0%	0.5%	1.4%	0%	**0.7%**	-	1.7%	0.2%	0.8%	0%	**1.1%**	-	0.4%	0.5%	0%	0%	**0.5%**	-	0%	0.1%	0%	0%	**0.1%**	-	0.7%
Buses	0	13	15	0	**28**	-	10	0	3	0	**13**	-	2	11	1	0	**14**	-	5	2	0	0	**7**	-	62
% Buses	0%	0.5%	1.3%	0%	**0.7%**	-	0.6%	0%	0.5%	0%	**0.4%**	-	0.4%	0.3%	5.9%	0%	**0.4%**	-	2.5%	0.2%	0%	0%	**0.6%**	-	0.5%
Bicycles on Road	1	0	1	0	**2**	-	2	0	0	0	**2**	-	0	1	0	0	**1**	-	0	0	0	0	**0**	-	5
% Bicycles on Road	0.7%	0%	0.1%	0%	**0%**	-	0.1%	0%	0%	0%	**0.1%**	-	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%
Pedestrians	-	-	-	-	-	23	-	-	-	-	-	6	-	-	-	-	-	26	-	-	-	-	-	24	
% Pedestrians	-	-	-	-	-	100%	-	-	-	-	-	100%	-	-	-	-	-	100%	-	-	-	-	-	100%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Broadway Ave. & E. 28th St. - TMC
Wed Jul 24, 2024
Full Length (6 AM-7 PM)
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road)
All Movements
ID: 1209623, Location: 41.44509, -82.164981

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



Broadway Ave. & E. 28th St. - TMC

Wed Jul 24, 2024
AM Peak (10 AM - 11 AM)
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road)
All Movements
ID: 1209623, Location: 41.44509, -82.164981

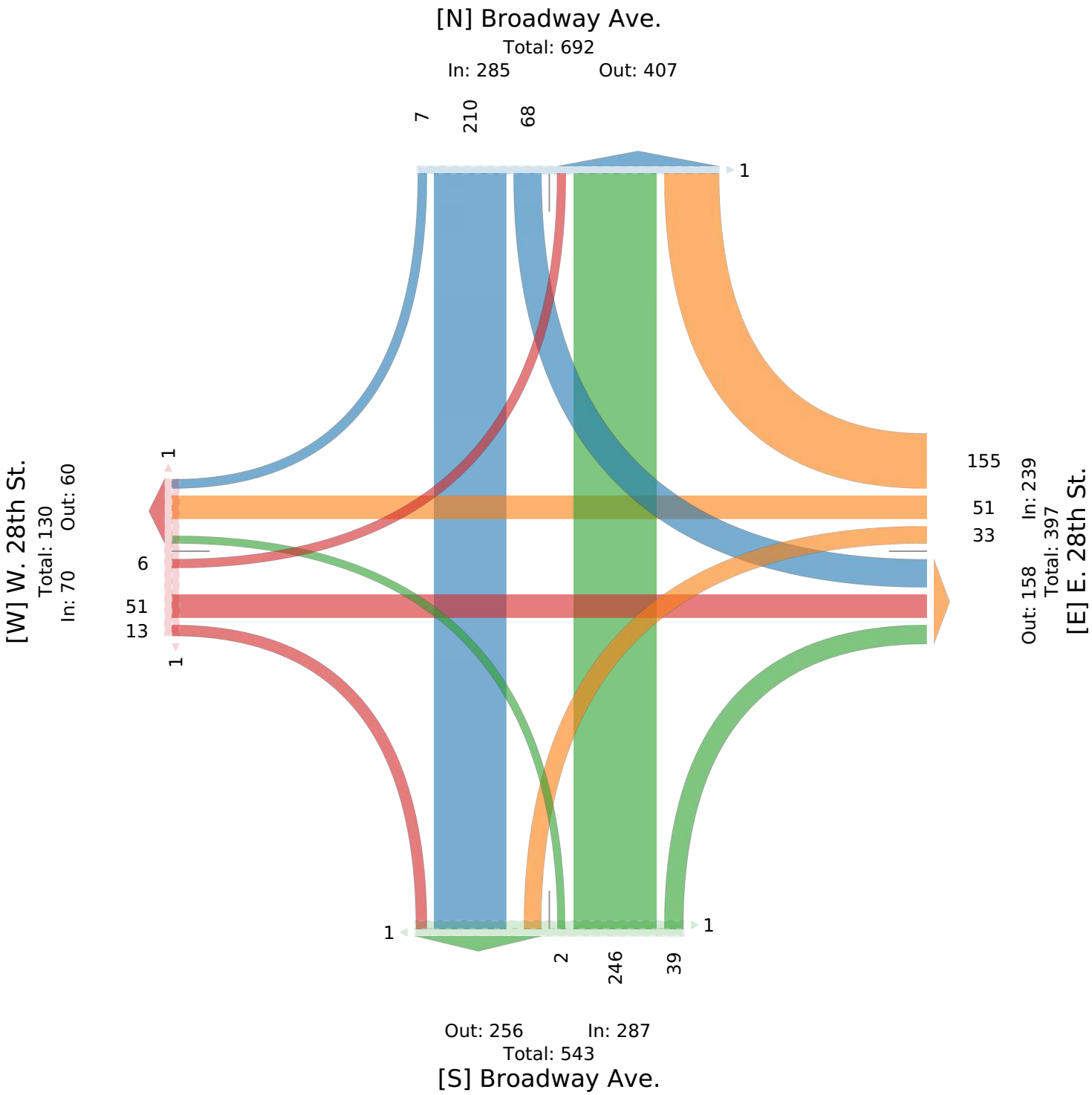
Provided by: Loukas Engineering
232 19th St. NW,
Canton, OH, 44709, US

Leg	Broadway Ave.						E. 28th St.						Broadway Ave.						W. 28th St.						
Direction	Southbound						Westbound						Northbound						Eastbound						
Time	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	**Int**
2024-07-24 10:00AM	2	44	15	0	**61**	0	34	11	11	0	**56**	0	15	53	1	0	**69**	1	0	13	0	0	**13**	0	**199**
10:15AM	1	57	18	0	**76**	0	42	11	5	0	**58**	0	6	51	0	0	**57**	1	3	11	3	0	**17**	1	**208**
10:30AM	2	58	18	0	**78**	0	35	14	9	0	**58**	0	11	69	1	0	**81**	0	3	13	2	0	**18**	1	**235**
10:45AM	2	51	17	0	**70**	1	44	15	8	0	**67**	0	7	73	0	0	**80**	0	7	14	1	0	**22**	0	**239**
Total	7	210	68	0	**285**	1	155	51	33	0	**239**	0	39	246	2	0	**287**	2	13	51	6	0	**70**	2	**881**
% Approach	2.5%	73.7%	23.9%	0%	**-**	-	64.9%	21.3%	13.8%	0%	**-**	-	13.6%	85.7%	0.7%	0%	**-**	-	18.6%	72.9%	8.6%	0%	**-**	-	-
% Total	0.8%	23.8%	7.7%	0%	**32.3%**	-	17.6%	5.8%	3.7%	0%	**27.1%**	-	4.4%	27.9%	0.2%	0%	**32.6%**	-	1.5%	5.8%	0.7%	0%	**7.9%**	-	-
PHF	0.875	0.905	0.931	-	**0.910**	-	0.881	0.850	0.750	-	**0.892**	-	0.650	0.839	0.500	-	**0.883**	-	0.464	0.911	0.500	-	**0.795**	-	0.919
Lights	6	198	61	0	**265**	-	145	50	33	0	**228**	-	38	226	1	0	**265**	-	13	50	6	0	**69**	-	827
% Lights	85.7%	94.3%	89.7%	0%	**93.0%**	-	93.5%	98.0%	100%	0%	**95.4%**	-	97.4%	91.9%	50.0%	0%	**92.3%**	-	100%	98.0%	100%	0%	**98.6%**	-	93.9%
Single-Unit Trucks	1	9	2	0	**12**	-	6	1	0	0	**7**	-	1	16	0	0	**17**	-	0	1	0	0	**1**	-	37
% Single-Unit Trucks	14.3%	4.3%	2.9%	0%	**4.2%**	-	3.9%	2.0%	0%	0%	**2.9%**	-	2.6%	6.5%	0%	0%	**5.9%**	-	0%	2.0%	0%	0%	**1.4%**	-	4.2%
Articulated Trucks	0	2	3	0	**5**	-	3	0	0	0	**3**	-	0	2	0	0	**2**	-	0	0	0	0	**0**	-	10
% Articulated Trucks	0%	1.0%	4.4%	0%	**1.8%**	-	1.9%	0%	0%	0%	**1.3%**	-	0%	0.8%	0%	0%	**0.7%**	-	0%	0%	0%	0%	**0%**	-	1.1%
Buses	0	1	1	0	**2**	-	1	0	0	0	**1**	-	0	1	1	0	**2**	-	0	0	0	0	**0**	-	5
% Buses	0%	0.5%	1.5%	0%	**0.7%**	-	0.6%	0%	0%	0%	**0.4%**	-	0%	0.4%	50.0%	0%	**0.7%**	-	0%	0%	0%	0%	**0%**	-	0.6%
Bicycles on Road	0	0	1	0	**1**	-	0	0	0	0	**0**	-	0	1	0	0	**1**	-	0	0	0	0	**0**	-	2
% Bicycles on Road	0%	0%	1.5%	0%	**0.4%**	-	0%	0%	0%	0%	**0%**	-	0%	0.4%	0%	0%	**0.3%**	-	0%	0%	0%	0%	**0%**	-	0.2%
Pedestrians	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	2	
% Pedestrians	-	-	-	-	-	100%	-	-	-	-	-	-	-	-	-	-	-	100%	-	-	-	-	-	100%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Broadway Ave. & E. 28th St. - TMC
Wed Jul 24, 2024
AM Peak (10 AM - 11 AM)
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road)
All Movements
ID: 1209623, Location: 41.44509, -82.164981

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



Broadway Ave. & E. 28th St. - TMC

Wed Jul 24, 2024
Midday Peak (12:30 PM - 1:30 PM)
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road)
All Movements
ID: 1209623, Location: 41.44509, -82.164981

LOUKAS engineering
TRAFFIC DATA & CONSULTING

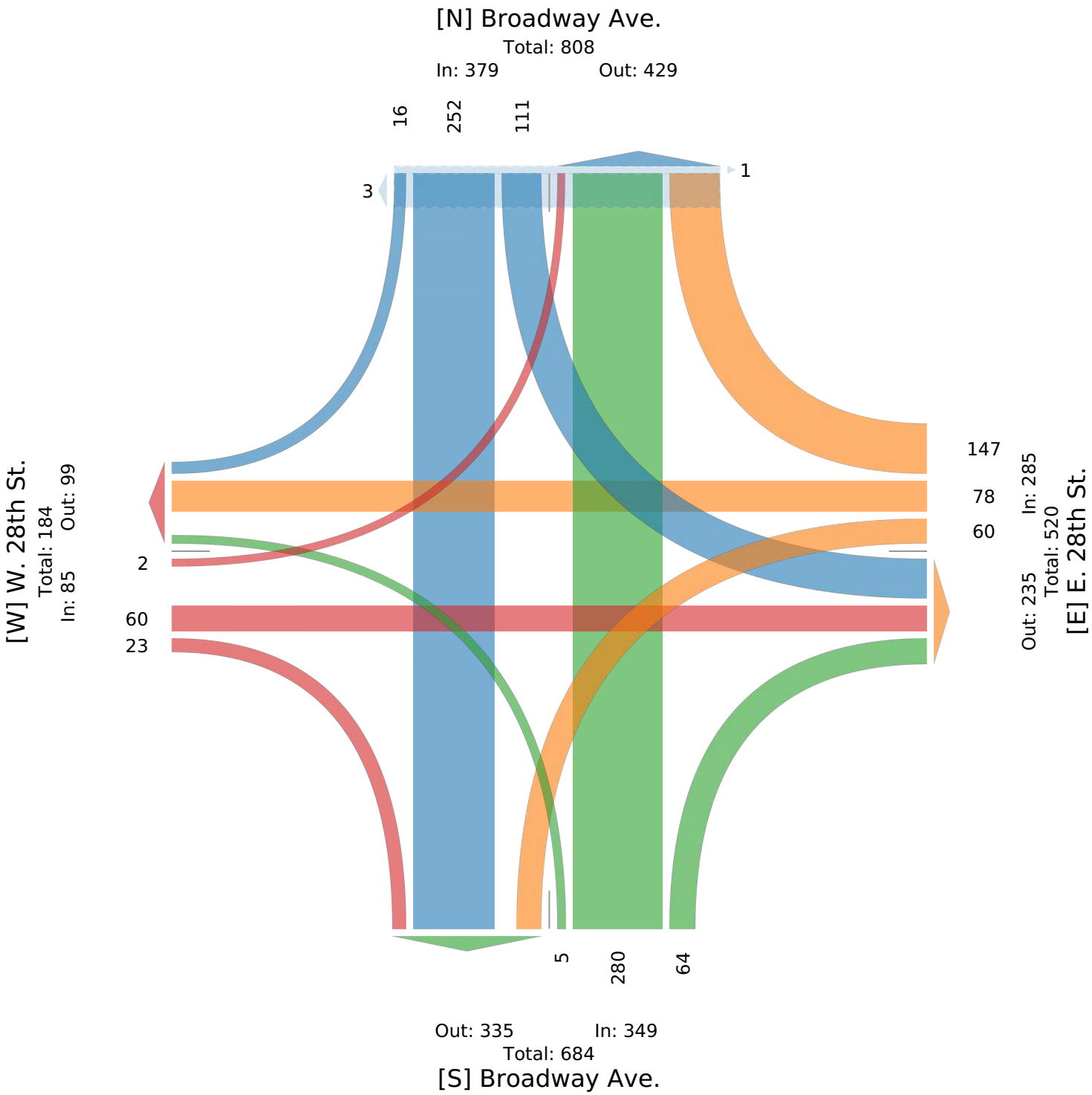
Provided by: Loukas Engineering
232 19th St. NW,
Canton, OH, 44709, US

Leg	Broadway Ave. Southbound						E. 28th St. Westbound						Broadway Ave. Northbound						W. 28th St. Eastbound						
Direction																									
Time	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	**Int**
2024-07-24 12:30PM	5	63	40	0	**108**	1	27	23	14	0	**64**	0	22	64	1	0	**87**	0	8	11	1	0	**20**	0	**279**
12:45PM	3	68	26	0	**97**	2	48	19	6	0	**73**	0	15	76	2	0	**93**	0	4	18	0	0	**22**	0	**285**
1:00PM	8	61	26	0	**95**	1	38	12	18	0	**68**	0	14	69	1	0	**84**	0	2	14	1	0	**17**	0	**264**
1:15PM	0	60	19	0	**79**	0	34	24	22	0	**80**	0	13	71	1	0	**85**	0	9	17	0	0	**26**	0	**270**
Total	16	252	111	0	**379**	4	147	78	60	0	**285**	0	64	280	5	0	**349**	0	23	60	2	0	**85**	0	**1098**
% Approach	4.2%	66.5%	29.3%	0%	**-**	-	51.6%	27.4%	21.1%	0%	**-**	-	18.3%	80.2%	1.4%	0%	**-**	-	27.1%	70.6%	2.4%	0%	**-**	-	-
% Total	1.5%	23.0%	10.1%	0%	**34.5%**	-	13.4%	7.1%	5.5%	0%	**26.0%**	-	5.8%	25.5%	0.5%	0%	**31.8%**	-	2.1%	5.5%	0.2%	0%	**7.7%**	-	-
PHF	0.500	0.926	0.694	-	**0.877**	-	0.766	0.813	0.682	-	**0.891**	-	0.727	0.921	0.625	-	**0.938**	-	0.639	0.833	0.500	-	**0.817**	-	0.963
Lights	16	237	104	0	**357**	-	137	78	60	0	**275**	-	61	265	5	0	**331**	-	22	59	2	0	**83**	-	1046
% Lights	100%	94.0%	93.7%	0%	**94.2%**	-	93.2%	100%	100%	0%	**96.5%**	-	95.3%	94.6%	100%	0%	**94.8%**	-	95.7%	98.3%	100%	0%	**97.6%**	-	95.3%
Single-Unit Trucks	0	13	4	0	**17**	-	5	0	0	0	**5**	-	3	13	0	0	**16**	-	0	1	0	0	**1**	-	39
% Single-Unit Trucks	0%	5.2%	3.6%	0%	**4.5%**	-	3.4%	0%	0%	0%	**1.8%**	-	4.7%	4.6%	0%	0%	**4.6%**	-	0%	1.7%	0%	0%	**1.2%**	-	3.6%
Articulated Trucks	0	1	2	0	**3**	-	5	0	0	0	**5**	-	0	1	0	0	**1**	-	0	0	0	0	**0**	-	9
% Articulated Trucks	0%	0.4%	1.8%	0%	**0.8%**	-	3.4%	0%	0%	0%	**1.8%**	-	0%	0.4%	0%	0%	**0.3%**	-	0%	0%	0%	0%	**0%**	-	0.8%
Buses	0	1	1	0	**2**	-	0	0	0	0	**0**	-	0	1	0	0	**1**	-	1	0	0	0	**1**	-	4
% Buses	0%	0.4%	0.9%	0%	**0.5%**	-	0%	0%	0%	0%	**0%**	-	0%	0.4%	0%	0%	**0.3%**	-	4.3%	0%	0%	0%	**1.2%**	-	0.4%
Bicycles on Road	0	0	0	0	**0**	-	0	0	0	0	**0**	-	0	0	0	0	**0**	-	0	0	0	0	**0**	-	0
% Bicycles on Road	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%
Pedestrians	-	-	-	-	-	4	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	100%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Broadway Ave. & E. 28th St. - TMC
Wed Jul 24, 2024
Midday Peak (12:30 PM - 1:30 PM)
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road)
All Movements
ID: 1209623, Location: 41.44509, -82.164981

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



Broadway Ave. & E. 28th St. - TMC

Wed Jul 24, 2024
PM Peak (3:45 PM - 4:45 PM) - Overall Peak Hour
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road)
All Movements
ID: 1209623, Location: 41.44509, -82.164981

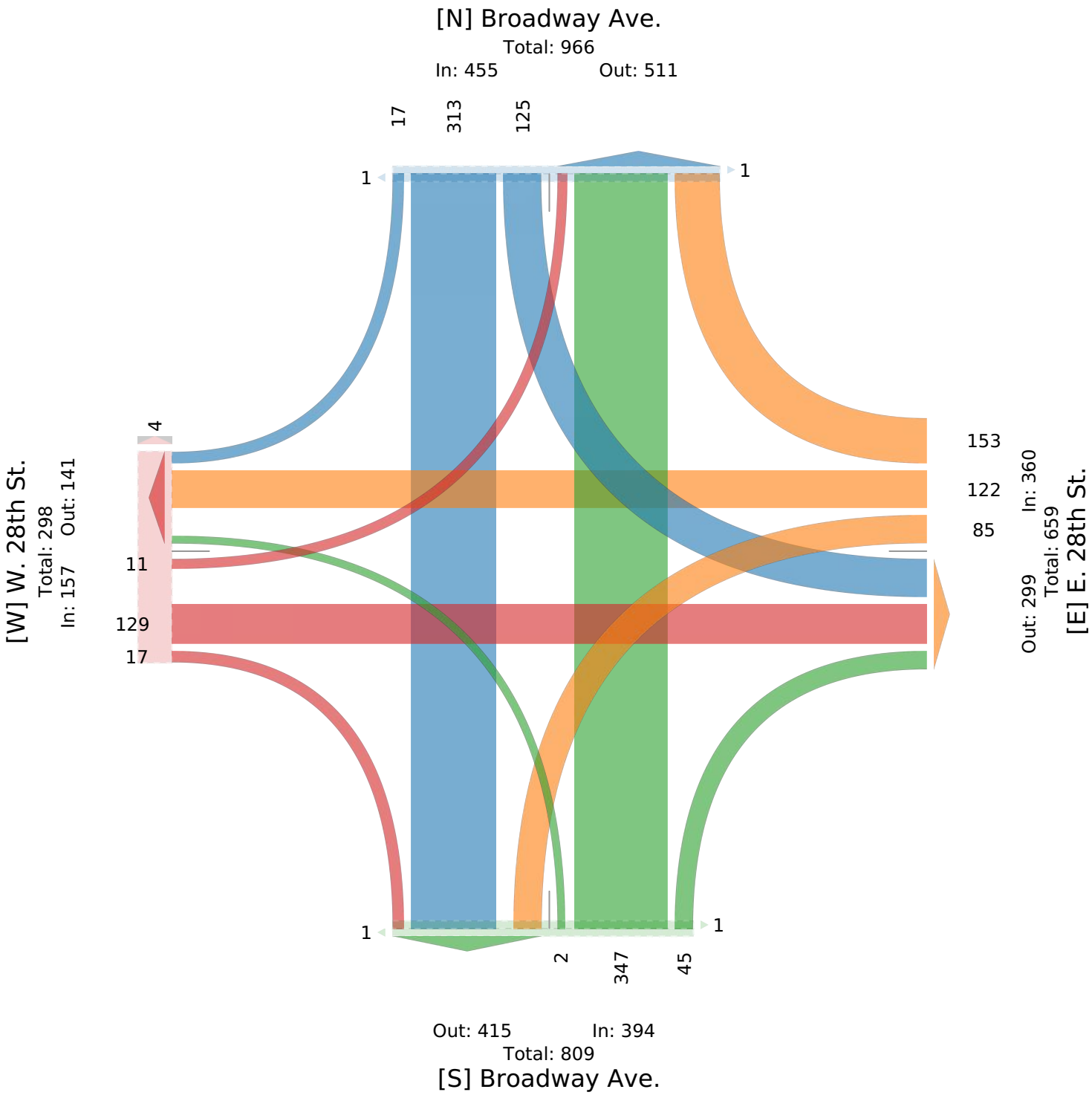
Provided by: Loukas Engineering
232 19th St. NW,
Canton, OH, 44709, US

Leg	Broadway Ave.						E. 28th St.						Broadway Ave.						W. 28th St.						
Direction	Southbound						Westbound						Northbound						Eastbound						
Time	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	Int
2024-07-24 3:45PM	5	72	26	0	**103**	0	31	27	13	0	**71**	0	11	113	1	0	**125**	0	4	31	3	0	**38**	0	**337**
4:00PM	3	72	30	0	**105**	1	41	29	18	0	**88**	0	14	82	1	0	**97**	1	3	27	3	0	**33**	0	**323**
4:15PM	4	76	34	0	**114**	1	39	28	27	0	**94**	0	8	90	0	0	**98**	0	5	32	5	0	**42**	4	**348**
4:30PM	5	93	35	0	**133**	0	42	38	27	0	**107**	0	12	62	0	0	**74**	1	5	39	0	0	**44**	0	**358**
Total	17	313	125	0	**455**	2	153	122	85	0	**360**	0	45	347	2	0	**394**	2	17	129	11	0	**157**	4	**1366**
% Approach	3.7%	68.8%	27.5%	0%	**-**	-	42.5%	33.9%	23.6%	0%	**-**	-	11.4%	88.1%	0.5%	0%	**-**	-	10.8%	82.2%	7.0%	0%	**-**	-	-
% Total	1.2%	22.9%	9.2%	0%	**33.3%**	-	11.2%	8.9%	6.2%	0%	**26.4%**	-	3.3%	25.4%	0.1%	0%	**28.8%**	-	1.2%	9.4%	0.8%	0%	**11.5%**	-	-
PHF	0.850	0.841	0.893	-	**0.855**	-	0.911	0.803	0.787	-	**0.841**	-	0.804	0.768	0.500	-	**0.788**	-	0.850	0.827	0.550	-	**0.892**	-	0.954
Lights	17	308	121	0	**446**	-	151	121	84	0	**356**	-	45	341	2	0	**388**	-	17	129	9	0	**155**	-	1345
% Lights	100%	98.4%	96.8%	0%	**98.0%**	-	98.7%	99.2%	98.8%	0%	**98.9%**	-	100%	98.3%	100%	0%	**98.5%**	-	100%	100%	81.8%	0%	**98.7%**	-	98.5%
Single-Unit Trucks	0	3	2	0	**5**	-	1	1	0	0	**2**	-	0	4	0	0	**4**	-	0	0	2	0	**2**	-	13
% Single-Unit Trucks	0%	1.0%	1.6%	0%	**1.1%**	-	0.7%	0.8%	0%	0%	**0.6%**	-	0%	1.2%	0%	0%	**1.0%**	-	0%	0%	18.2%	0%	**1.3%**	-	1.0%
Articulated Trucks	0	1	1	0	**2**	-	0	0	0	0	**0**	-	0	1	0	0	**1**	-	0	0	0	0	**0**	-	3
% Articulated Trucks	0%	0.3%	0.8%	0%	**0.4%**	-	0%	0%	0%	0%	**0%**	-	0%	0.3%	0%	0%	**0.3%**	-	0%	0%	0%	0%	**0%**	-	0.2%
Buses	0	1	1	0	**2**	-	1	0	1	0	**2**	-	0	1	0	0	**1**	-	0	0	0	0	**0**	-	5
% Buses	0%	0.3%	0.8%	0%	**0.4%**	-	0.7%	0%	1.2%	0%	**0.6%**	-	0%	0.3%	0%	0%	**0.3%**	-	0%	0%	0%	0%	**0%**	-	0.4%
Bicycles on Road	0	0	0	0	**0**	-	0	0	0	0	**0**	-	0	0	0	0	**0**	-	0	0	0	0	**0**	-	0
% Bicycles on Road	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%
Pedestrians	-	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	4	
% Pedestrians	-	-	-	-	-	100%	-	-	-	-	-	-	-	-	-	-	-	100%	-	-	-	-	-	100%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Broadway Ave. & E. 28th St. - TMC
Wed Jul 24, 2024
PM Peak (3:45 PM - 4:45 PM) - Overall Peak Hour
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road)
All Movements
ID: 1209623, Location: 41.44509, -82.164981

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



Elyria Ave. & E. 28th St. - TMC

Wed Jul 24, 2024
Full Length (6 AM-7 PM)
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road)
All Movements
ID: 1209622, Location: 41.445113, -82.161839

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

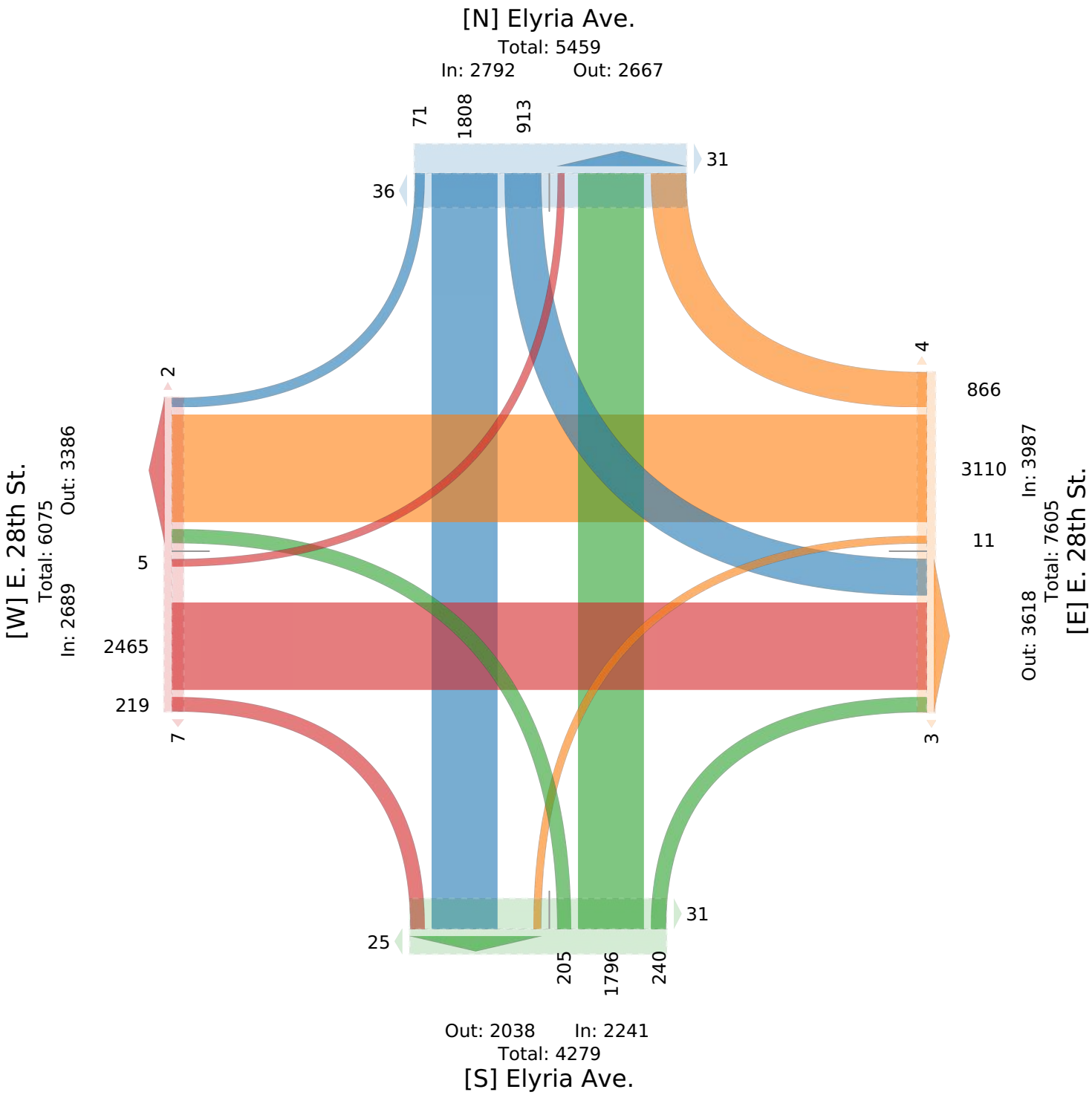
Leg	Elyria Ave.						E. 28th St.						Elyria Ave.						E. 28th St.						
Direction	Southbound						Westbound						Northbound						Eastbound						
Time	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	Int
2024-07-24 6:00AM	0	21	9	0	**30**	0	3	17	0	0	**20**	0	1	10	0	0	**11**	0	2	16	0	0	**18**	0	**79**
6:15AM	4	18	5	0	**27**	0	8	21	0	0	**29**	0	2	11	1	0	**14**	1	2	28	0	0	**30**	0	**100**
6:30AM	1	24	7	0	**32**	1	6	32	0	0	**38**	0	3	14	1	0	**18**	0	3	23	0	0	**26**	0	**114**
6:45AM	1	29	12	0	**42**	2	7	26	0	0	**33**	0	3	15	1	0	**19**	0	5	20	0	0	**25**	0	**119**
Hourly Total	6	92	33	0	**131**	3	24	96	0	0	**120**	0	9	50	3	0	**62**	1	12	87	0	0	**99**	0	**412**
7:00AM	0	20	8	0	**28**	2	5	19	0	0	**24**	0	1	19	1	0	**21**	3	3	21	0	0	**24**	1	**97**
7:15AM	0	31	9	0	**40**	2	7	33	0	0	**40**	0	2	23	0	0	**25**	0	1	29	0	0	**30**	0	**135**
7:30AM	0	35	12	0	**47**	5	15	29	0	0	**44**	0	2	22	0	0	**24**	1	3	35	0	0	**38**	0	**153**
7:45AM	1	38	10	0	**49**	1	24	44	0	0	**68**	0	2	38	3	0	**43**	0	4	37	0	0	**41**	0	**201**
Hourly Total	1	124	39	0	**164**	10	51	125	0	0	**176**	0	7	102	4	0	**113**	4	11	122	0	0	**133**	1	**586**
8:00AM	0	24	7	0	**31**	4	10	37	0	0	**47**	0	6	26	1	0	**33**	3	4	38	0	0	**42**	0	**153**
8:15AM	0	20	10	0	**30**	1	11	34	0	0	**45**	0	2	30	3	0	**35**	0	2	24	0	0	**26**	0	**136**
8:30AM	1	22	14	0	**37**	2	9	39	0	0	**48**	1	4	19	1	0	**24**	0	7	39	1	0	**47**	0	**156**
8:45AM	1	34	21	0	**56**	3	17	36	0	0	**53**	0	2	34	1	0	**37**	1	5	34	0	0	**39**	0	**185**
Hourly Total	2	100	52	0	**154**	10	47	146	0	0	**193**	1	14	109	6	0	**129**	4	18	135	1	0	**154**	0	**630**
9:00AM	1	32	14	0	**47**	2	11	43	1	0	**55**	1	5	27	1	0	**33**	0	6	33	0	0	**39**	0	**174**
9:15AM	1	26	13	0	**40**	2	13	59	0	0	**72**	0	6	23	5	0	**34**	2	2	35	0	0	**37**	0	**183**
9:30AM	0	36	9	0	**45**	0	14	30	0	0	**44**	0	11	22	3	0	**36**	1	3	42	1	0	**46**	0	**171**
9:45AM	2	30	8	0	**40**	1	18	49	0	0	**67**	1	3	28	4	0	**35**	0	3	49	0	0	**52**	0	**194**
Hourly Total	4	124	44	0	**172**	5	56	181	1	0	**238**	2	25	100	13	0	**138**	3	14	159	1	0	**174**	0	**722**
10:00AM	0	34	14	0	**48**	2	14	49	0	0	**63**	0	6	35	1	0	**42**	0	2	39	0	0	**41**	0	**194**
10:15AM	1	30	22	0	**53**	4	22	50	0	0	**72**	0	3	24	4	0	**31**	5	6	32	0	0	**38**	4	**194**
10:30AM	0	31	12	0	**43**	2	15	52	1	0	**68**	0	0	36	1	0	**37**	1	2	40	0	0	**42**	0	**190**
10:45AM	0	33	11	0	**44**	0	11	64	0	0	**75**	0	0	26	3	0	**29**	1	5	35	0	0	**40**	0	**188**
Hourly Total	1	128	59	0	**188**	8	62	215	1	0	**278**	0	9	121	9	0	**139**	7	15	146	0	0	**161**	4	**766**
11:00AM	1	21	9	0	**31**	2	14	47	0	0	**61**	1	7	35	2	0	**44**	1	3	35	0	0	**38**	0	**174**
11:15AM	0	28	21	0	**49**	2	15	53	0	0	**68**	0	3	22	3	0	**28**	0	2	46	0	0	**48**	1	**193**
11:30AM	0	36	19	0	**55**	1	19	47	0	0	**66**	0	5	29	4	0	**38**	1	5	37	0	0	**42**	0	**201**
11:45AM	3	28	19	0	**50**	0	19	52	0	0	**71**	0	4	38	7	0	**49**	0	8	46	1	0	**55**	0	**225**
Hourly Total	4	113	68	0	**185**	5	67	199	0	0	**266**	1	19	124	16	0	**159**	2	18	164	1	0	**183**	1	**793**
12:00PM	2	25	20	0	**47**	0	17	68	0	0	**85**	0	7	35	8	0	**50**	3	5	43	0	0	**48**	0	**230**
12:15PM	0	35	16	0	**51**	2	15	68	0	0	**83**	0	6	35	2	0	**43**	1	3	52	0	0	**55**	0	**232**
12:30PM	5	34	11	0	**50**	3	15	54	0	0	**69**	0	3	30	4	0	**37**	1	4	63	0	0	**67**	0	**223**
12:45PM	0	41	27	0	**68**	2	12	63	0	0	**75**	0	7	38	8	0	**53**	0	8	60	0	0	**68**	2	**264**
Hourly Total	7	135	74	0	**216**	7	59	253	0	0	**312**	0	23	138	22	0	**183**	5	20	218	0	0	**238**	2	**949**
1:00PM	2	44	21	0	**67**	0	20	61	0	0	**81**	0	5	33	5	0	**43**	0	6	45	0	0	**51**	1	**242**
1:15PM	1	42	24	0	**67**	2	14	70	0	0	**84**	0	6	31	7	0	**44**	1	5	50	0	0	**55**	0	**250**
1:30PM	0	44	16	0	**60**	0	22	74	2	0	**98**	0	3	41	7	0	**51**	2	4	58	0	0	**62**	0	**271**
1:45PM	1	24	23	0	**48**	0	21	54	0	0	**75**	0	9	44	7	0	**60**	0	5	57	0	0	**62**	0	**245**
Hourly Total	4	154	84	0	**242**	2	77	259	2	0	**338**	0	23	149	26	0	**198**	3	20	210	0	0	**230**	1	**1008**
2:00PM	4	42	35	0	**81**	0	23	69	0	0	**92**	0	4	37	5	0	**46**	0	8	62	0	0	**70**	0	**289**
2:15PM	3	37	33	0	**73**	1	20	66	2	0	**88**	0	3	39	11	0	**53**	2	3	62	1	0	**66**	0	**280**
2:30PM	0	35	25	0	**60**	2	13	79	0	0	**92**	1	6	37	4	0	**47**	2	6	56	0	0	**62**	0	**261**
2:45PM	1	46	14	0	**61**	1	18	73	0	0	**91**	0	3	33	7	0	**43**	0	9	50	0	0	**59**	0	**254**
Hourly Total	8	160	107	0	**275**	4	74	287	2	0	**363**	1	16	146	27	0	**189**	4	26	230	1	0	**257**	0	**1084**
3:00PM	1	59	22	0	**82**	0	30	84	0	0	**114**	0	5	40	3	0	**48**	1	4	64	0	0	**68**	0	**312**
3:15PM	1	38	16	0	**55**	1	26	87	0	0	**113**	0	6	48	6	0	**60**	3	2	64	0	0	**66**	0	**294**
3:30PM	2	30	24	0	**56**	0	20	86	0	0	**106**	0	6	42	4	0	**52**	3	7	55	0	0	**62**	0	**276**
3:45PM	2	54	21	0	**77**	0	22	64	2	0	**88**	0	6	62	2	0	**70**	0	6	64	0	0	**70**	0	**305**
Hourly Total	6	181	83	0	**270**	1	98	321	2	0	**421**	0	23	192	15	0	**230**	7	19	247	0	0	**266**	0	**1187**
4:00PM	1	59	26	0	**86**	1	17	96	0	0	**113**	0	7	44	4	0	**55**	0	5	68	0	0	**73**	0	**327**
4:15PM	1	43	26	0	**70**	1	27	95	0	0	**122**	0	2	63	4	0	**69**	0	2	68	0	0	**70**	0	**331**
4:30PM	3	58	31	0	**92**	0	28	90	0	0	**118**	0	6	58	9	0	**73**	3	6	81	0	0	**87**	0	**370**

Leg	Elyria Ave.						E. 28th St.						Elyria Ave.						E. 28th St.						
Direction	Southbound						Westbound						Northbound						Eastbound						
Time	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	**Int**
4:45PM	3	39	30	0	**72**	2	23	104	0	0	**127**	0	9	56	8	0	**73**	5	3	58	0	0	**61**	0	**333**
Hourly Total	8	199	113	0	**320**	4	95	385	0	0	**480**	0	24	221	25	0	**270**	8	16	275	0	0	**291**	0	**1361**
5:00PM	3	48	15	0	**66**	2	21	98	2	0	**121**	0	6	49	4	0	**59**	0	4	69	0	0	**73**	0	**319**
5:15PM	6	46	25	0	**77**	1	18	79	0	0	**97**	1	11	56	6	0	**73**	1	6	57	0	0	**63**	0	**310**
5:30PM	1	34	19	0	**54**	1	24	99	0	0	**123**	1	3	50	8	0	**61**	2	4	56	0	0	**60**	0	**298**
5:45PM	0	35	16	0	**51**	3	14	67	1	0	**82**	0	6	44	7	0	**57**	2	3	69	1	0	**73**	0	**263**
Hourly Total	10	163	75	0	**248**	7	77	343	3	0	**423**	2	26	199	25	0	**250**	5	17	251	1	0	**269**	0	**1190**
6:00PM	1	43	26	0	**70**	1	19	83	0	0	**102**	0	7	41	2	0	**50**	0	4	65	0	0	**69**	0	**291**
6:15PM	1	34	20	0	**55**	0	22	76	0	0	**98**	0	5	31	5	0	**41**	1	1	54	0	0	**55**	0	**249**
6:30PM	3	24	16	0	**43**	0	14	80	0	0	**94**	0	6	40	4	0	**50**	1	5	43	0	0	**48**	0	**235**
6:45PM	5	34	20	0	**59**	0	24	61	0	0	**85**	0	4	33	3	0	**40**	1	3	59	0	0	**62**	0	**246**
Hourly Total	10	135	82	0	**227**	1	79	300	0	0	**379**	0	22	145	14	0	**181**	3	13	221	0	0	**234**	0	**1021**
Total	71	1808	913	0	**2792**	67	866	3110	11	0	**3987**	7	240	1796	205	0	**2241**	56	219	2465	5	0	**2689**	9	**11709**
% Approach	2.5%	64.8%	32.7%	0%	**-**	-	21.7%	78.0%	0.3%	0%	**-**	-	10.7%	80.1%	9.1%	0%	**-**	-	8.1%	91.7%	0.2%	0%	**-**	-	**-**
% Total	0.6%	15.4%	7.8%	0%	**23.8%**	-	7.4%	26.6%	0.1%	0%	**34.1%**	-	2.0%	15.3%	1.8%	0%	**19.1%**	-	1.9%	21.1%	0%	0%	**23.0%**	-	**-**
Lights	70	1771	892	0	**2733**	-	842	2991	11	0	**3844**	-	237	1769	201	0	**2207**	-	214	2357	5	0	**2576**	-	11360
% Lights	98.6%	98.0%	97.7%	0%	**97.9%**	-	97.2%	96.2%	100%	0%	**96.4%**	-	98.8%	98.5%	98.0%	0%	**98.5%**	-	97.7%	95.6%	100%	0%	**95.8%**	-	97.0%
Single-Unit Trucks	0	30	13	0	**43**	-	18	75	0	0	**93**	-	3	23	4	0	**30**	-	3	66	0	0	**69**	-	235
% Single-Unit Trucks	0%	1.7%	1.4%	0%	**1.5%**	-	2.1%	2.4%	0%	0%	**2.3%**	-	1.3%	1.3%	2.0%	0%	**1.3%**	-	1.4%	2.7%	0%	0%	**2.6%**	-	2.0%
Articulated Trucks	0	2	2	0	**4**	-	2	28	0	0	**30**	-	0	1	0	0	**1**	-	0	23	0	0	**23**	-	58
% Articulated Trucks	0%	0.1%	0.2%	0%	**0.1%**	-	0.2%	0.9%	0%	0%	**0.8%**	-	0%	0.1%	0%	0%	**0%**	-	0%	0.9%	0%	0%	**0.9%**	-	0.5%
Buses	0	5	4	0	**9**	-	4	14	0	0	**18**	-	0	3	0	0	**3**	-	1	18	0	0	**19**	-	49
% Buses	0%	0.3%	0.4%	0%	**0.3%**	-	0.5%	0.5%	0%	0%	**0.5%**	-	0%	0.2%	0%	0%	**0.1%**	-	0.5%	0.7%	0%	0%	**0.7%**	-	0.4%
Bicycles on Road	1	0	2	0	**3**	-	0	2	0	0	**2**	-	0	0	0	0	**0**	-	1	1	0	0	**2**	-	7
% Bicycles on Road	1.4%	0%	0.2%	0%	**0.1%**	-	0%	0.1%	0%	0%	**0.1%**	-	0%	0%	0%	0%	**0%**	-	0.5%	0%	0%	0%	**0.1%**	-	0.1%
Pedestrians	-	-	-	-	-	67	-	-	-	-	-	7	-	-	-	-	-	56	-	-	-	-	-	9	
% Pedestrians	-	-	-	-	-	100%	-	-	-	-	-	100%	-	-	-	-	-	100%	-	-	-	-	-	100%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Elyria Ave. & E. 28th St. - TMC
Wed Jul 24, 2024
Full Length (6 AM-7 PM)
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road)
All Movements
ID: 1209622, Location: 41.445113, -82.161839

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



Elyria Ave. & E. 28th St. - TMC

Wed Jul 24, 2024
AM Peak (9:45 AM - 10:45 AM)
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road)
All Movements
ID: 1209622, Location: 41.445113, -82.161839

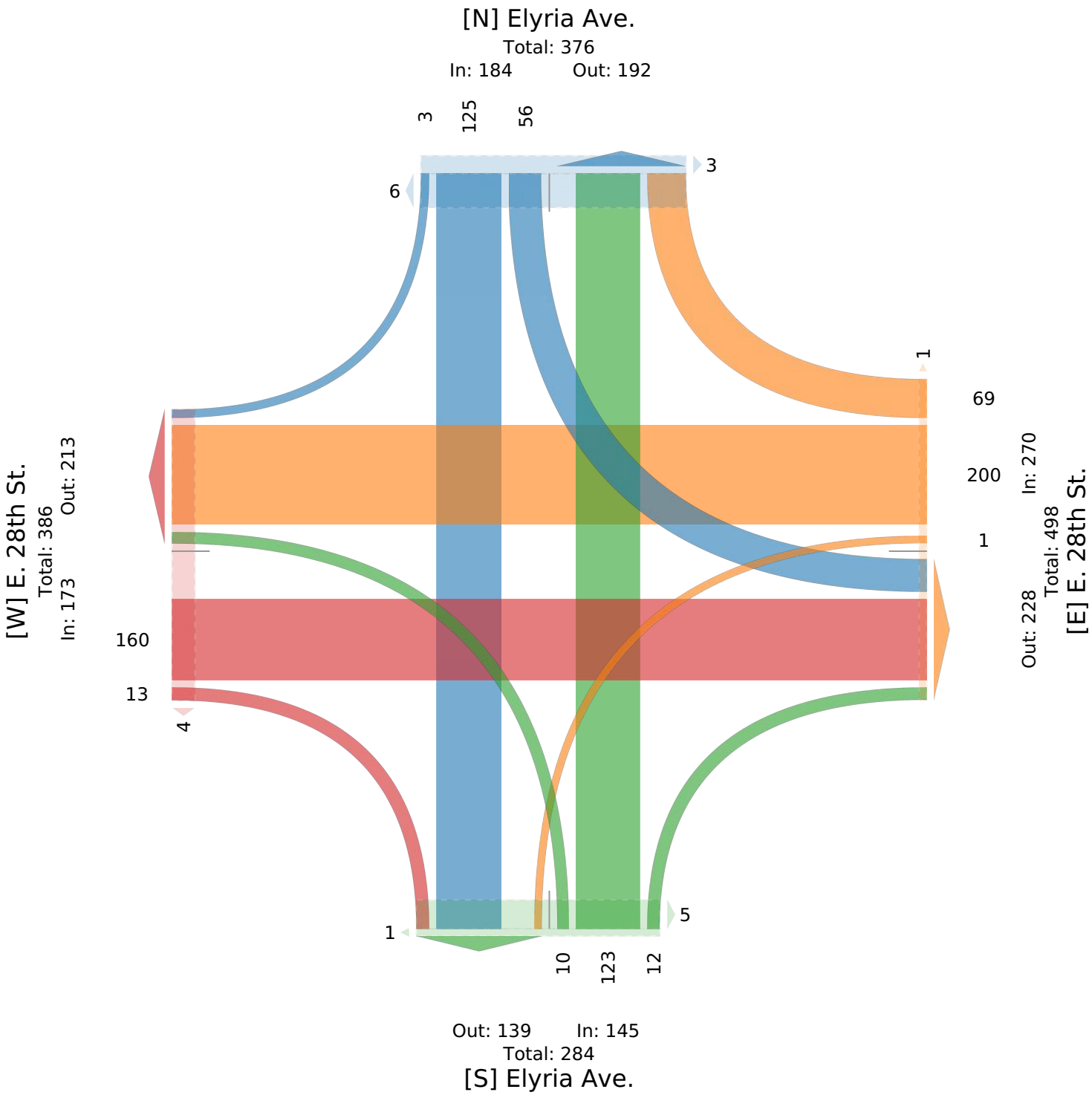
Provided by: Loukas Engineering
232 19th St. NW,
Canton, OH, 44709, US

Leg Direction	Elyria Ave. Southbound						E. 28th St. Westbound						Elyria Ave. Northbound						E. 28th St. Eastbound						
Time	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	**Int**
2024-07-24 9:45AM	2	30	8	0	**40**	1	18	49	0	0	**67**	1	3	28	4	0	**35**	0	3	49	0	0	**52**	0	**194**
10:00AM	0	34	14	0	**48**	2	14	49	0	0	**63**	0	6	35	1	0	**42**	0	2	39	0	0	**41**	0	**194**
10:15AM	1	30	22	0	**53**	4	22	50	0	0	**72**	0	3	24	4	0	**31**	5	6	32	0	0	**38**	4	**194**
10:30AM	0	31	12	0	**43**	2	15	52	1	0	**68**	0	0	36	1	0	**37**	1	2	40	0	0	**42**	0	**190**
Total	3	125	56	0	**184**	9	69	200	1	0	**270**	1	12	123	10	0	**145**	6	13	160	0	0	**173**	4	**772**
% Approach	1.6%	67.9%	30.4%	0%	**-**	-	25.6%	74.1%	0.4%	0%	**-**	-	8.3%	84.8%	6.9%	0%	**-**	-	7.5%	92.5%	0%	0%	**-**	-	-
% Total	0.4%	16.2%	7.3%	0%	**23.8%**	-	8.9%	25.9%	0.1%	0%	**35.0%**	-	1.6%	15.9%	1.3%	0%	**18.8%**	-	1.7%	20.7%	0%	0%	**22.4%**	-	-
PHF	0.375	0.919	0.636	-	**0.868**	-	0.784	0.962	0.250	-	**0.938**	-	0.500	0.854	0.625	-	**0.863**	-	0.542	0.811	-	-	**0.827**	-	0.994
Lights	3	122	53	0	**178**	-	65	188	1	0	**254**	-	12	120	10	0	**142**	-	13	148	0	0	**161**	-	735
% Lights	100%	97.6%	94.6%	0%	**96.7%**	-	94.2%	94.0%	100%	0%	**94.1%**	-	100%	97.6%	100%	0%	**97.9%**	-	100%	92.5%	0%	0%	**93.1%**	-	95.2%
Single-Unit Trucks	0	2	3	0	**5**	-	2	6	0	0	**8**	-	0	3	0	0	**3**	-	0	7	0	0	**7**	-	23
% Single-Unit Trucks	0%	1.6%	5.4%	0%	**2.7%**	-	2.9%	3.0%	0%	0%	**3.0%**	-	0%	2.4%	0%	0%	**2.1%**	-	0%	4.4%	0%	0%	**4.0%**	-	3.0%
Articulated Trucks	0	0	0	0	**0**	-	0	3	0	0	**3**	-	0	0	0	0	**0**	-	0	2	0	0	**2**	-	5
% Articulated Trucks	0%	0%	0%	0%	**0%**	-	0%	1.5%	0%	0%	**1.1%**	-	0%	0%	0%	0%	**0%**	-	0%	1.3%	0%	0%	**1.2%**	-	0.6%
Buses	0	1	0	0	**1**	-	2	3	0	0	**5**	-	0	0	0	0	**0**	-	0	2	0	0	**2**	-	8
% Buses	0%	0.8%	0%	0%	**0.5%**	-	2.9%	1.5%	0%	0%	**1.9%**	-	0%	0%	0%	0%	**0%**	-	0%	1.3%	0%	0%	**1.2%**	-	1.0%
Bicycles on Road	0	0	0	0	**0**	-	0	0	0	0	**0**	-	0	0	0	0	**0**	-	0	1	0	0	**1**	-	1
% Bicycles on Road	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%	0.6%	0%	0%	**0.6%**	-	0.1%
Pedestrians	-	-	-	-	-	9	-	-	-	-	-	1	-	-	-	-	-	6	-	-	-	-	-	4	
% Pedestrians	-	-	-	-	-	100%	-	-	-	-	-	100%	-	-	-	-	-	100%	-	-	-	-	-	100%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Elyria Ave. & E. 28th St. - TMC
Wed Jul 24, 2024
AM Peak (9:45 AM - 10:45 AM)
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road)
All Movements
ID: 1209622, Location: 41.445113, -82.161839

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



Elyria Ave. & E. 28th St. - TMC

Wed Jul 24, 2024
Midday Peak (12:45 PM - 1:45 PM)
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road)
All Movements
ID: 1209622, Location: 41.445113, -82.161839

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

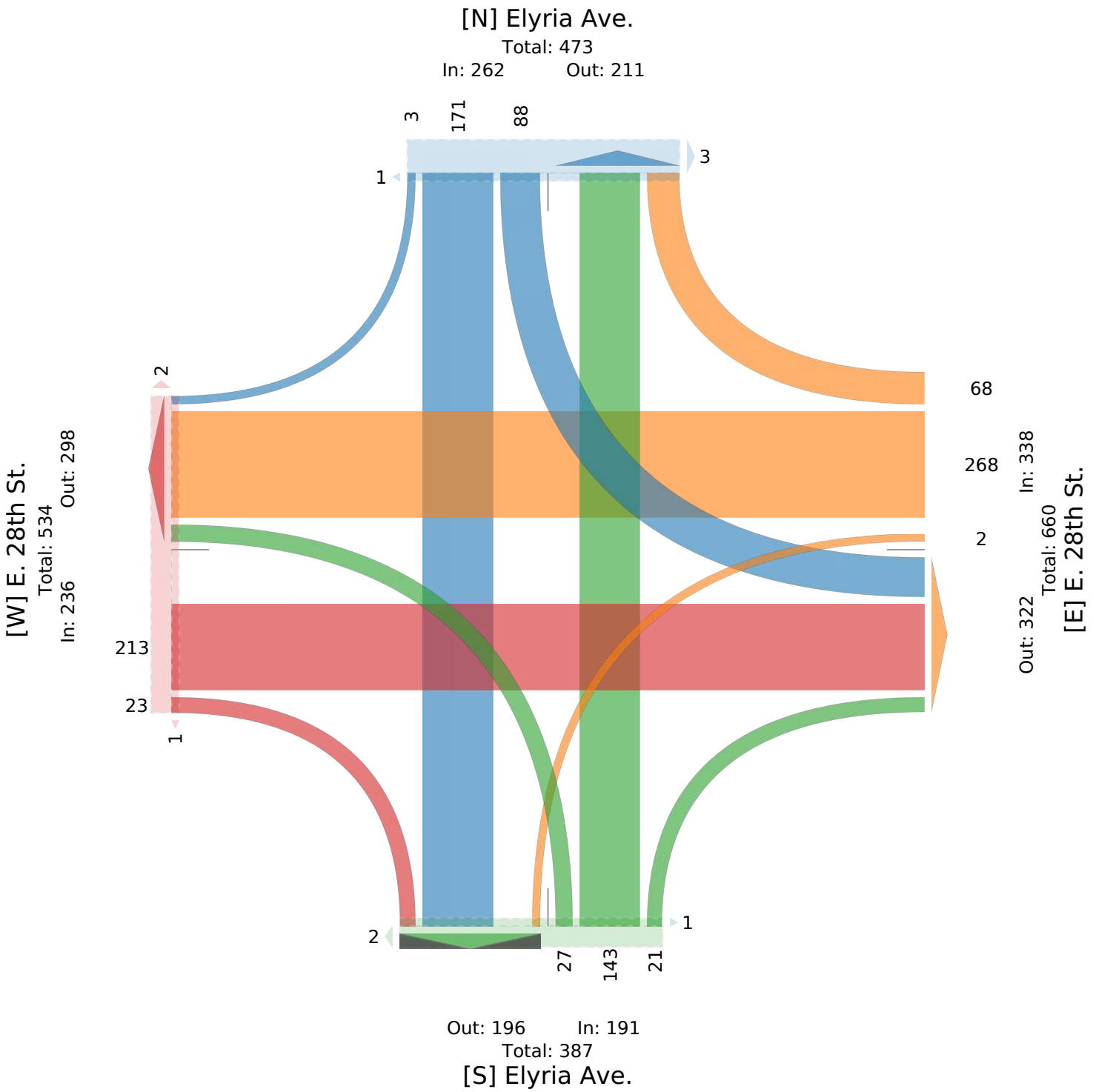
Leg Direction	Elyria Ave. Southbound						E. 28th St. Westbound						Elyria Ave. Northbound						E. 28th St. Eastbound						
Time	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	**Int**
2024-07-24 12:45PM	0	41	27	0	**68**	2	12	63	0	0	**75**	0	7	38	8	0	**53**	0	8	60	0	0	**68**	2	**264**
1:00PM	2	44	21	0	**67**	0	20	61	0	0	**81**	0	5	33	5	0	**43**	0	6	45	0	0	**51**	1	**242**
1:15PM	1	42	24	0	**67**	2	14	70	0	0	**84**	0	6	31	7	0	**44**	1	5	50	0	0	**55**	0	**250**
1:30PM	0	44	16	0	**60**	0	22	74	2	0	**98**	0	3	41	7	0	**51**	2	4	58	0	0	**62**	0	**271**
Total	3	171	88	0	**262**	4	68	268	2	0	**338**	0	21	143	27	0	**191**	3	23	213	0	0	**236**	3	**1027**
% Approach	1.1%	65.3%	33.6%	0%	**-**	-	20.1%	79.3%	0.6%	0%	**-**	-	11.0%	74.9%	14.1%	0%	**-**	-	9.7%	90.3%	0%	0%	**-**	-	-
% Total	0.3%	16.7%	8.6%	0%	**25.5%**	-	6.6%	26.1%	0.2%	0%	**32.9%**	-	2.0%	13.9%	2.6%	0%	**18.6%**	-	2.2%	20.7%	0%	0%	**23.0%**	-	-
PHF	0.250	0.972	0.815	-	**0.960**	-	0.773	0.905	0.250	-	**0.862**	-	0.750	0.872	0.844	-	**0.901**	-	0.688	0.888	-	-	**0.864**	-	0.946
Lights	2	165	83	0	**250**	-	67	260	2	0	**329**	-	21	139	27	0	**187**	-	21	203	0	0	**224**	-	990
% Lights	66.7%	96.5%	94.3%	0%	**95.4%**	-	98.5%	97.0%	100%	0%	**97.3%**	-	100%	97.2%	100%	0%	**97.9%**	-	91.3%	95.3%	0%	0%	**94.9%**	-	96.4%
Single-Unit Trucks	0	5	3	0	**8**	-	1	6	0	0	**7**	-	0	2	0	0	**2**	-	1	6	0	0	**7**	-	24
% Single-Unit Trucks	0%	2.9%	3.4%	0%	**3.1%**	-	1.5%	2.2%	0%	0%	**2.1%**	-	0%	1.4%	0%	0%	**1.0%**	-	4.3%	2.8%	0%	0%	**3.0%**	-	2.3%
Articulated Trucks	0	0	0	0	**0**	-	0	2	0	0	**2**	-	0	0	0	0	**0**	-	0	3	0	0	**3**	-	5
% Articulated Trucks	0%	0%	0%	0%	**0%**	-	0%	0.7%	0%	0%	**0.6%**	-	0%	0%	0%	0%	**0%**	-	0%	1.4%	0%	0%	**1.3%**	-	0.5%
Buses	0	1	2	0	**3**	-	0	0	0	0	**0**	-	0	2	0	0	**2**	-	0	1	0	0	**1**	-	6
% Buses	0%	0.6%	2.3%	0%	**1.1%**	-	0%	0%	0%	0%	**0%**	-	0%	1.4%	0%	0%	**1.0%**	-	0%	0.5%	0%	0%	**0.4%**	-	0.6%
Bicycles on Road	1	0	0	0	**1**	-	0	0	0	0	**0**	-	0	0	0	0	**0**	-	1	0	0	0	**1**	-	2
% Bicycles on Road	33.3%	0%	0%	0%	**0.4%**	-	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	4.3%	0%	0%	0%	**0.4%**	-	0.2%
Pedestrians	-	-	-	-	-	4	-	-	-	-	-	0	-	-	-	-	-	3	-	-	-	-	-	3	
% Pedestrians	-	-	-	-	-	100%	-	-	-	-	-	-	-	-	-	-	-	100%	-	-	-	-	-	100%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Elyria Ave. & E. 28th St. - TMC
Wed Jul 24, 2024
Midday Peak (12:45 PM - 1:45 PM)
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road)
All Movements
ID: 1209622, Location: 41.445113, -82.161839

LOUKAS engineering
TRAFFIC DATA & CONSULTING

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



Elyria Ave. & E. 28th St. - TMC

Wed Jul 24, 2024
PM Peak (4 PM - 5 PM) - Overall Peak Hour
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road)
All Movements
ID: 1209622, Location: 41.445113, -82.161839

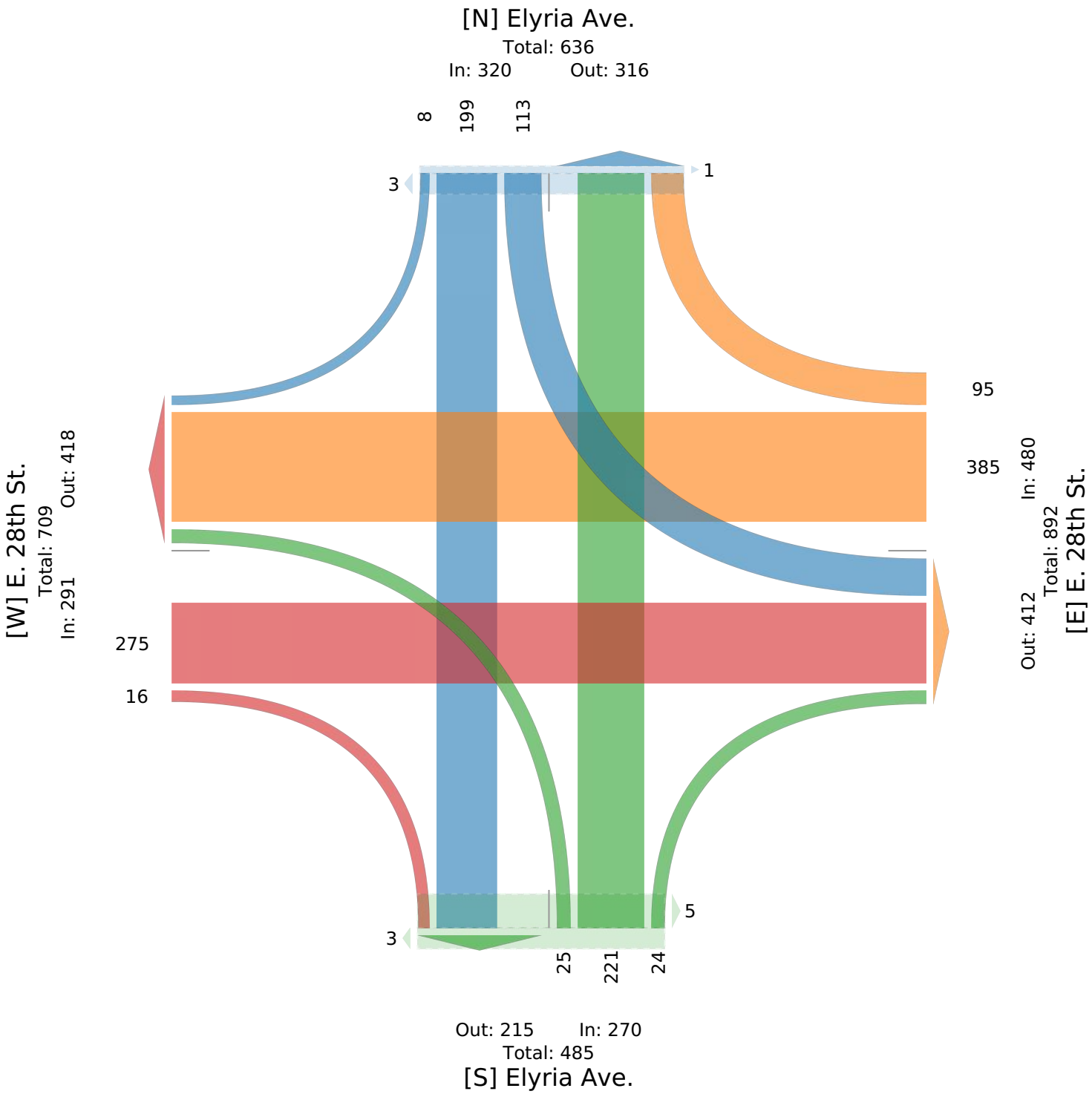
Provided by: Loukas Engineering
232 19th St. NW,
Canton, OH, 44709, US

Leg Direction	Elyria Ave. Southbound						E. 28th St. Westbound						Elyria Ave. Northbound						E. 28th St. Eastbound						
Time	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	**Int**
2024-07-24 4:00PM	1	59	26	0	**86**	1	17	96	0	0	**113**	0	7	44	4	0	**55**	0	5	68	0	0	**73**	0	**327**
4:15PM	1	43	26	0	**70**	1	27	95	0	0	**122**	0	2	63	4	0	**69**	0	2	68	0	0	**70**	0	**331**
4:30PM	3	58	31	0	**92**	0	28	90	0	0	**118**	0	6	58	9	0	**73**	3	6	81	0	0	**87**	0	**370**
4:45PM	3	39	30	0	**72**	2	23	104	0	0	**127**	0	9	56	8	0	**73**	5	3	58	0	0	**61**	0	**333**
Total	8	199	113	0	**320**	4	95	385	0	0	**480**	0	24	221	25	0	**270**	8	16	275	0	0	**291**	0	**1361**
% Approach	2.5%	62.2%	35.3%	0%	**-**	-	19.8%	80.2%	0%	0%	**-**	-	8.9%	81.9%	9.3%	0%	**-**	-	5.5%	94.5%	0%	0%	**-**	-	-
% Total	0.6%	14.6%	8.3%	0%	**23.5%**	-	7.0%	28.3%	0%	0%	**35.3%**	-	1.8%	16.2%	1.8%	0%	**19.8%**	-	1.2%	20.2%	0%	0%	**21.4%**	-	-
PHF	0.667	0.843	0.911	-	**0.870**	-	0.848	0.925	-	-	**0.945**	-	0.667	0.877	0.694	-	**0.925**	-	0.667	0.849	-	-	**0.836**	-	0.920
Lights	8	197	110	0	**315**	-	94	381	0	0	**475**	-	24	218	25	0	**267**	-	16	270	0	0	**286**	-	1343
% Lights	100%	99.0%	97.3%	0%	**98.4%**	-	98.9%	99.0%	0%	0%	**99.0%**	-	100%	98.6%	100%	0%	**98.9%**	-	100%	98.2%	0%	0%	**98.3%**	-	98.7%
Single-Unit Trucks	0	1	2	0	**3**	-	1	1	0	0	**2**	-	0	3	0	0	**3**	-	0	3	0	0	**3**	-	11
% Single-Unit Trucks	0%	0.5%	1.8%	0%	**0.9%**	-	1.1%	0.3%	0%	0%	**0.4%**	-	0%	1.4%	0%	0%	**1.1%**	-	0%	1.1%	0%	0%	**1.0%**	-	0.8%
Articulated Trucks	0	0	0	0	**0**	-	0	0	0	0	**0**	-	0	0	0	0	**0**	-	0	1	0	0	**1**	-	1
% Articulated Trucks	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%	0.4%	0%	0%	**0.3%**	-	0.1%
Buses	0	1	1	0	**2**	-	0	3	0	0	**3**	-	0	0	0	0	**0**	-	0	1	0	0	**1**	-	6
% Buses	0%	0.5%	0.9%	0%	**0.6%**	-	0%	0.8%	0%	0%	**0.6%**	-	0%	0%	0%	0%	**0%**	-	0%	0.4%	0%	0%	**0.3%**	-	0.4%
Bicycles on Road	0	0	0	0	**0**	-	0	0	0	0	**0**	-	0	0	0	0	**0**	-	0	0	0	0	**0**	-	0
% Bicycles on Road	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%
Pedestrians	-	-	-	-	-	4	-	-	-	-	-	0	-	-	-	-	-	8	-	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	100%	-	-	-	-	-	-	-	-	-	-	-	100%	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Elyria Ave. & E. 28th St. - TMC
Wed Jul 24, 2024
PM Peak (4 PM - 5 PM) - Overall Peak Hour
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road)
All Movements
ID: 1209622, Location: 41.445113, -82.161839

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



BROADWAY (SR57)
TARGET SPEED STUDY

APPENDIX D: DESIGN YEAR VOLUMES

CMT

ADJUSTMENT FACTORS

TFMS Growth Rates		Growth Factors
Location	%/yr	21-yr
SR-57 (N/S)	0.1%	1.02
SR-57 (E/W)	0.1%	1.02
Elyria (S. of SR57)	0.2%	1.04
Elyria (N. of SR57)*	0.1%	1.02
9th*	0.1%	1.02
21st	0.0%	1.00
28th*	0.1%	1.02

**No TFMS rate due to local street, assume equals SR-57 rate (0.1%/year)*

ODOT Pk-to-DHV Factor	
Location	Factor
SR-57 (N/S)	1.13
SR-57 (E/W)	1.13
Elyria (N. of 21st)	1.13
Elyria (S. of 21st)	1.13
9th*	1.13
21st	1.13
28th*	1.13

**No ODOT factor, 1.13 is assumed to match SR-57.*

Notes:

1. No balancing is performed between intersections due to driveways and intersections in between.

2. Developed 2045 DHVs are rounded up to the nearest 10 vehicles. 10 vehicles are assigned to movements with 0 vehicle.

2024 Counts
AM Peak (8:45-9:45)

		2%		0	RT		0.92						
	RT	TH	LT	0	TH	0%							
	3	164	0	3	LT		9th						
		LT	5	7	168	2							
	0%	TH	0	LT	TH	RT							
		RT	16		1%								
		4%					0.89						
		TH	LT	96	RT	2%							
		107	86	0	LT		Elyria						
				102	1								
				TH	RT								
			SR57		1%								
		8%		9	RT		0.96						
	RT	TH	LT	99	TH	9%							
21st	27	148	15	67	LT								
		LT	4	75	139	83							
	7%	TH	80	LT	TH	RT							
		RT	31		7%								
											Elyria		
		8%		109	RT			0%		55	RT		
	RT	TH	LT	43	TH	7%		RT	TH	LT	168	TH	6%
28th	5	186	86	38	LT		SR57	3	128	57	0	LT	
		LT	4	0	219	37			LT	0	10	106	24
	8%	TH	49	LT	TH	RT		7%	TH	144	LT	TH	RT
		RT	13		7%				RT	16		3%	
						0.93							0.96

2024 Counts
PM Peak (3:45-4:45)

		1%		0	RT		0.88						
	RT	TH	LT	0	TH	0%							
	12	255	0	0	LT		9th						
		LT	13	21	230	0							
	3%	TH	0	LT	TH	RT							
		RT	22		1%								
		2%					0.96						
		TH	LT	125	RT	2%							
		195	138	0	LT		Elyria						
				166	1								
				TH	RT								
			SR57		2%								
		1%		16	RT		0.95						
	RT	TH	LT	214	TH	2%							
21st	28	227	33	126	LT								
		LT	10	125	219	136							
	4%	TH	131	LT	TH	RT							
		RT	43		2%								
											Elyria		
		2%		153	RT			2%		94	RT		
	RT	TH	LT	122	TH	1%		RT	TH	LT	345	TH	2%
28th	17	313	125	85	LT		SR57	7	214	104	0	LT	
		LT	11	0	347	45			LT	0	19	227	21
	2%	TH	129	LT	TH	RT		2%	TH	281	LT	TH	RT
		RT	17		2%				RT	19		1%	
						0.95							0.90

X% Truck-%
YY PHF
Thru Only

2045 DHV
AM Peak (8:45-9:45)

		2%		10	RT		0.92						
	RT	TH	LT	10	TH	0%							
	10	190	10	10	LT		9th						
		LT	10	10	200	10							
	0%	TH	10	LT	TH	RT							
		RT	20		1%								
		4%					0.89						
		TH	LT	120	RT	2%							
		130	100	0	LT		Elyria						
				120	10								
				TH	RT								
			SR57		1%								
		8%		20	RT		0.96						
	RT	TH	LT	120	TH	9%							
21st	40	180	20	80	LT								
		LT	10	90	170	100							
	7%	TH	100	LT	TH	RT							
		RT	40		7%								
											Elyria		
		8%		130	RT				0%		70	RT	
	RT	TH	LT	50	TH	7%		RT	TH	LT	200	TH	6%
28th	10	220	100	50	LT		SR57	10	150	70	0	LT	
		LT	10	0	260	50			LT	0	20	130	30
	8%	TH	60	LT	TH	RT		7%	TH	170	LT	TH	RT
		RT	20		7%				RT	20		3%	
						0.93							0.96

X% Truck-%
YY PHF
Thru Only

2045 DHV
PM Peak (3:45-4:45)

		1%		10	RT		0.88						
	RT	TH	LT	10	TH	0%							
	20	300	10	10	LT		9th						
		LT	20	30	270	10							
	3%	TH	10	LT	TH	RT							
		RT	30		1%								
		2%					0.96						
		TH	LT	150	RT	2%							
		230	160	0	LT		Elyria						
				200	10								
				TH	RT								
			SR57		2%								
		1%		20	RT		0.95						
	RT	TH	LT	250	TH	2%							
21st	40	270	40	150	LT								
		LT	20	150	260	160							
	4%	TH	150	LT	TH	RT							
		RT	50		2%								
											Elyria		
		2%		180	RT				2%		110	RT	
	RT	TH	LT	150	TH	1%		RT	TH	LT	400	TH	2%
28th	20	370	150	100	LT		SR57	10	250	120	0	LT	
		LT	20	0	410	60			LT	0	30	270	30
	2%	TH	150	LT	TH	RT		2%	TH	330	LT	TH	RT
		RT	20		2%				RT	30		1%	
					0.95								0.90

PEAK HOUR to DESIGN HOUR FACTORS

FUNCTIONAL CLASSIFICATION = 03, 04, 05u

(Urban Principal Arterial, Urban Minor Arterial, & Urban Minor Collector)

Day / Month	Monthly Average by Day-of-Week							
	WEEKDAY MON-THUR	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
January	1.25	1.81	1.27	1.25	1.25	1.23	1.18	1.61
February	1.23	1.78	1.26	1.23	1.23	1.19	1.17	1.58
March	1.18	1.63	1.20	1.18	1.17	1.17	1.12	1.47
April	1.13	1.57	1.15	1.14	1.12	1.11	1.08	1.42
May	1.10	1.47	1.12	1.10	1.10	1.07	1.06	1.35
June	1.14	1.51	1.16	1.14	1.14	1.11	1.10	1.40
July	1.14	1.54	1.16	1.14	1.13	1.14	1.11	1.45
August	1.12	1.49	1.14	1.14	1.12	1.10	1.06	1.41
September	1.12	1.53	1.15	1.13	1.13	1.09	1.05	1.42
October	1.12	1.54	1.15	1.12	1.11	1.10	1.05	1.42
November	1.16	1.63	1.17	1.15	1.15	1.15	1.08	1.52
December	1.16	1.61	1.18	1.16	1.16	1.13	1.10	1.50

peak hour volume * factor = design hour volume

source: year 2018,2019,2021 Automatic Traffic Recorders (ATR) Data

ATR Stations:

2018: 15 Stations
2019: 21 Stations
2021: 22 Stations

Ohio Department of Transportation
Modeling & Forecasting Section
Nov 2022

NOTE: These are NOT seasonal adjustment factors!!!

Note: Insufficient data exists to produce factors for functional classes 06 and 07 Urban.

TFMS - Segment Forecast Report

Username	Email	Script Import Date	Script Version	Model Version
Ghansel	ghansel@cmtengr.com	4/14/2020 5:30:19 PM	2020.001	2024.1900

Forecast Summary

Project ID	Project Name	Opening Year	Design Year
	LOR-SR57	2024	2045

Project Description

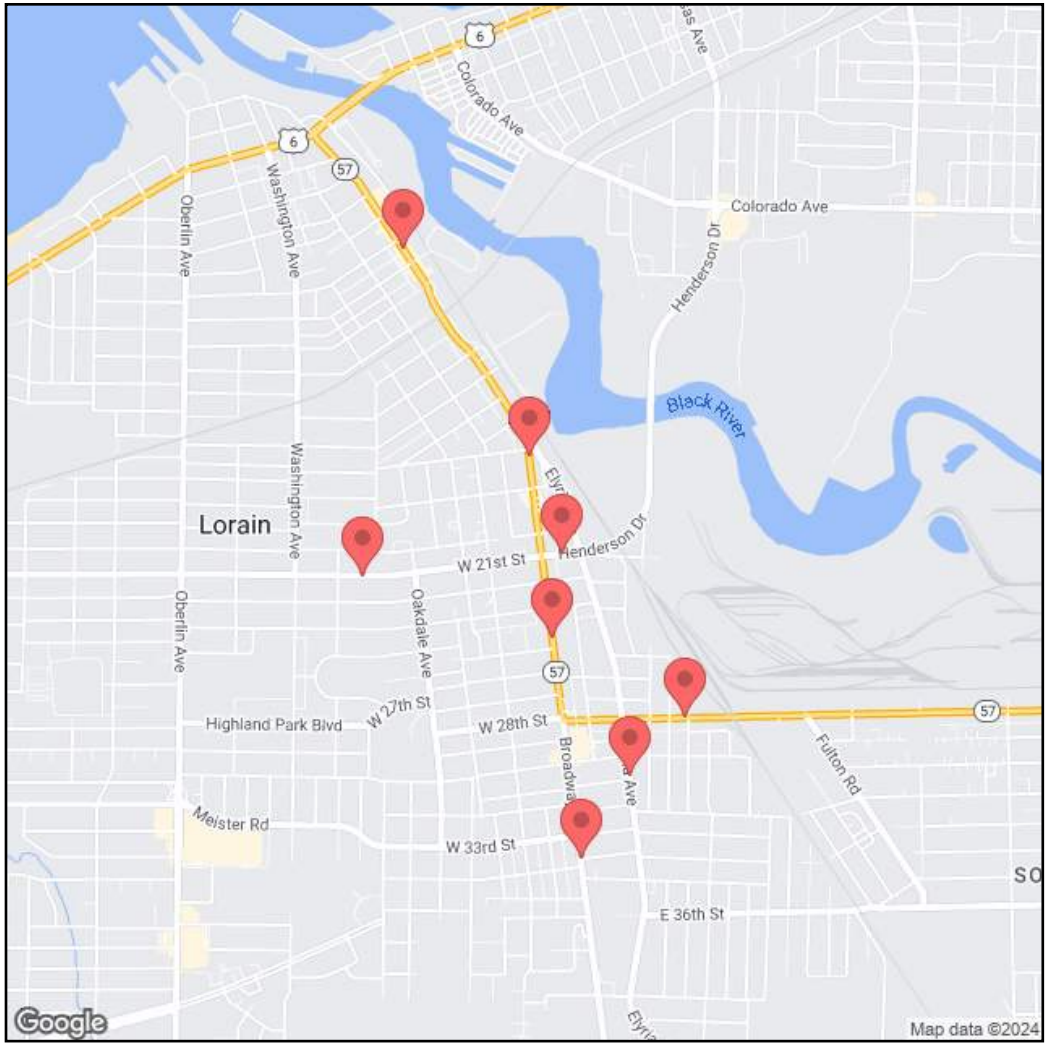
*Users of this data need to be aware that there are limitations to the forecasts generated by this product that make it suitable only for roadway design projects which are low risk.

Segment Information

Segment ID	LRS ID	BMP	EMP	Length	Latitude	Longitude
1886452	CLORCR00095**C	2.411	2.721	0.310	-82.1614478249772	41.4428559046228
1886469	CLORCR00202**C	1.104	1.865	0.761	-82.1640386667677	41.4395896440154
1937532	SLORSR00057**C	24.877	25.551	0.674	-82.1584716326528	41.4451368265045
1937535	SLORSR00057**C	25.551	26.005	0.454	-82.1655167250663	41.4483144715458
1937537	SLORSR00057**C	26.005	26.558	0.553	-82.1667685385218	41.4555429574768
1937538	SLORSR00057**C	26.558	27.356	0.798	-82.1734744320848	41.463784639933
1937951	SLORSR00611**C	2.093	3.088	0.995	-82.1755761258864	41.450789021536
1937952	SLORSR00611**C	3.088	3.193	0.105	-82.1650714440959	41.4516708127728

Forecast Information

Segment ID	2024 AADT	2045 AADT	DHV-30	K%	D%	T24%	TD%
1886452	8,400	8,700	1,100	13.1	51.9	1	1
1886469	10,500	10,500	1,200	11.7	50.6	3	1
1937532	11,500	11,500	1,400	12.0	53.5	5	4
1937535	11,000	11,500	1,400	12.1	51.1	3	2
1937537	5,500	5,500	700	12.8	53.7	2	3
1937538	5,500	5,500	700	12.8	53.7	2	3
1937951	7,900	8,700	1,100	12.1	52.9	3	1
1937952	8,900	8,900	1,000	11.2	54.9	4	4



Definitions:

- AADT – Annual Average Daily Traffic
- DHV30 – Design Hour Volume for 30th highest hour of the year
- DHV30 – K * AADT
- K % – Design Hour Factor
- D % – Peak Direction Factor
- T24 % – Percent Daily Trucks
- TD % – Percent Design Hour Trucks

Forecast Segment ID	Route	BMP	EMP
1886452	CLORCR00095**C	2.411	2.721

Forecast

Year	K%	T24 % (Existing)	PA AADT	PA Method	PA Growth Rate %	PA Calculated Rate %
2050	13.1	1	8,700	Model	0.200	0.200
AADT	**D%**	**TD % (Existing)**	**BC AADT**	**BC Method**	**BC Growth Rate %**	**BC Calculated Rate %**
8,770	51.9	1	70	Model	-0.100	0.000

Warning: The growth rate was negative and was capped.

K/D factors from TCDS were used.

Regression

Method Number	PA AADT	BC AADT	AADT
2	7,791	-142	7,649

95% Confidence Min/Max

PA Min	PA Max	BC Min	BC Max	Year
6311	10814	-580	159	2050

Method Number	PA Growth %	BC Growth %	PA Drop Count	BC Drop Count	PA AADT	BC AADT	PA Adjustment	PA Adjustment
1	-0.10	-11.44	0	0	8,211	-119	8,129	-142
2	-0.25	-11.44	2	3	7,873	-131	7,791	-142
3	0.07	-14.98	0	0	8,624	-191	8,501	-207
4	0.20	-12.09	3	3	8,893	-144	8,803	-154
5	-0.65	-28.92	0	0	6,887	-466	6,883	-463
6	-999999.00	-999999.00	0	0				

Adjustment Info

ID	Adjustment Methods Name	Model vs Count AADT	Adjusted AADT	Model vs Count BC	Adjusted BC	PA Growth Rate %	BC Growth Rate %
1	DIF	414	8,745	-53	66	0.15	-0.11
2	RAT	1.05	8,762	0.56	67	0.15	-0.05
3	MRAT	1.04	8,762	0.99	67	0.15	-0.05
4	RAF		8,753		67	0.15	-0.05

Adjust Method AADT	Adjust Method BC	Selected PA Growth Rate %	Selected BC Growth Rate %
Average	Ratio	0.200	-0.100

Method 1 - 4 Volume

PA Min Volume	PA Max Volume	BC Min Volume	BC Max Volume	Total Min Volume	Total Max Volume
8679	8695	66	67	8745	8762

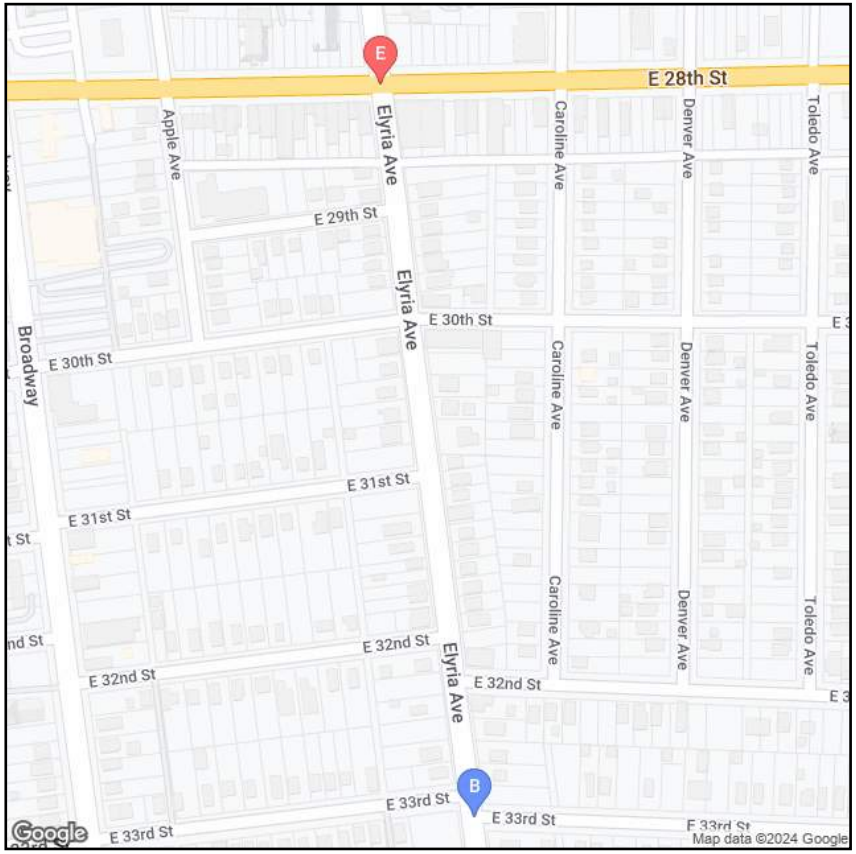
Process Flag: Adjusted model to counts with process per ODOT 255 spreadsheet

Comment: No Comment

Historical Count

Year	All	Cars	Trucks
2011	8,777	8,607	170
2014	8,386	8,238	147
2017	8,857	8,671	186
2020	8,636	8,519	117
* 2023	8,414	8,346	68

* Pivot Point



Segment ID	LRS ID	BMP	EMP	Length	Yr 2024 AADT	Yr 2045 AADT	DHV30	K %	D %	T24 %	TD %
1886452	CLORCR00095**C	2.411	2.721	0.310	8,400	8,700	1100	13.1	51.9	1	1

Forecast Segment ID	Route	BMP	EMP
1886469	CLORCR00202**C	1.104	1.865

Forecast

Year	K%	T24 % (Existing)	PA AADT	PA Method	PA Growth Rate %	PA Calculated Rate %
2050	◆ 11.7	3	10,000	Average	● 0.000	0.000
AADT	**D%**	**TD % (Existing)**	**BC AADT**	**BC Method**	**BC Growth Rate %**	**BC Calculated Rate %**
10,270	◆ 50.6	1	270	Average	● -1.800	0.000

● Warning: The growth rate was negative and was capped.

◆ K/D factors from TCDS were used.

Regression

Method Number	PA AADT	BC AADT	AADT
1	8,131	18	8,149

95% Confidence Min/Max

PA Min	PA Max	BC Min	BC Max	Year
-10438	26181	-1708	1696	2050

Method Number	PA Growth %	BC Growth %	PA Drop Count	BC Drop Count	PA AADT	BC AADT	PA Adjustment	PA Adjustment
1	-0.70	-3.46	0	0	7,612	-30	8,131	18
2	-999999.00	-999999.00	0	0				
3	-999999.00	-999999.00	0	0				
4	-999999.00	-999999.00	0	0				
5	-999999.00	-999999.00	0	0				
6	-999999.00	-999999.00	0	0				

Adjustment Info

ID	Adjustment Methods Name	Model vs Count AADT	Adjusted AADT	Model vs Count BC	Adjusted BC	PA Growth Rate %	BC Growth Rate %
1	DIF	3,231	11,879	169	264	0.58	-0.08
2	RAT	1.46	12,600	2.67	253	0.86	-0.23
3	MRAT	1.22	12,468	0.94	253	0.81	-0.23
4	RAF		12,173		258	0.70	-0.16

Adjust Method AADT	Adjust Method BC	Selected PA Growth Rate %	Selected BC Growth Rate %
Average	Difference	0.700	-0.100

Method 1 - 4 Volume

PA Min Volume	PA Max Volume	BC Min Volume	BC Max Volume	Total Min Volume	Total Max Volume
11615	12347	253	264	11868	12611

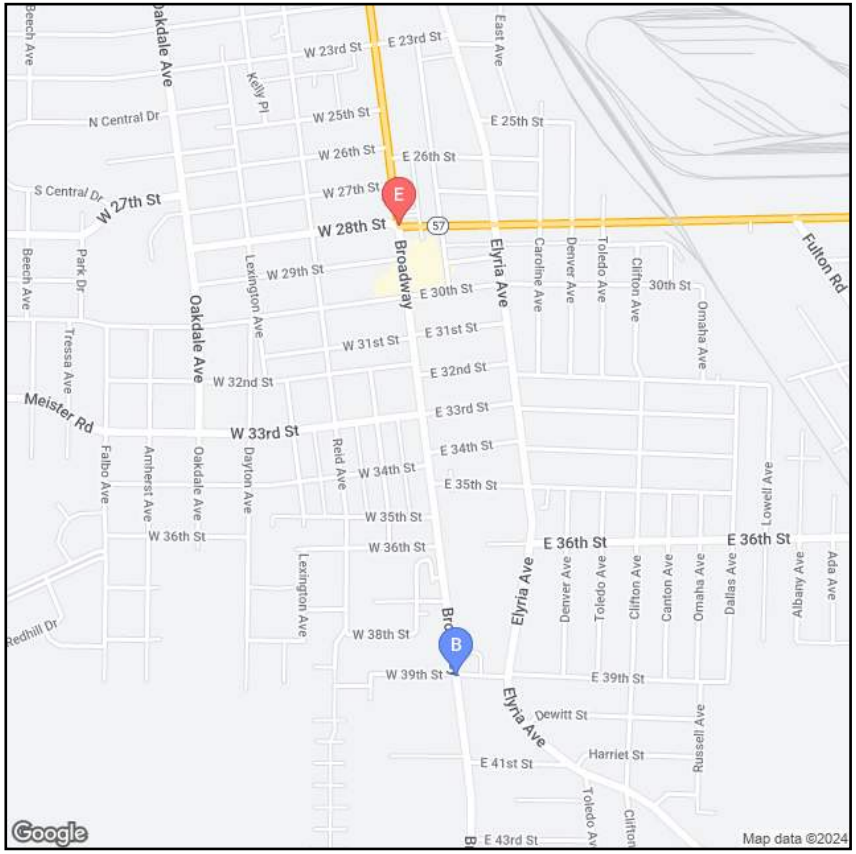
Process Flag: Adjusted model to counts with process per ODOT 255 spreadsheet

Comment: No Comment

Historical Count

Year	All	Cars	Trucks
2017	10,779	10,453	326
2020	8,837	8,684	153
* 2023	10,301	10,031	270

* Pivot Point



Segment ID	LRS ID	BMP	EMP	Length	Yr 2024 AADT	Yr 2045 AADT	DHV30	K %	D %	T24 %	TD %
1886469	CLORCR00202**C	1.104	1.865	0.761	10,500	10,500	1200	11.7	50.6	3	1

Forecast Segment ID	Route	BMP	EMP
1937532	SLORSR00057**C	24.877	25.551

Forecast

Year	K%	T24 % (Existing)	PA AADT	PA Method	PA Growth Rate %	PA Calculated Rate %
2050	◆ 12.0	5	11,000	Average	0.100	0.100
AADT	**D%**	**TD % (Existing)**	**BC AADT**	**BC Method**	**BC Growth Rate %**	**BC Calculated Rate %**
11,630	◆ 53.5	4	630	Average	0.600	0.600

◆ K/D factors from TCDS were used.

Regression

Method Number	PA AADT	BC AADT	AADT
2	8,240	703	8,943

95% Confidence Min/Max

PA Min	PA Max	BC Min	BC Max	Year
3233	17662	-136	2556	2050

Method Number	PA Growth %	BC Growth %	PA Drop Count	BC Drop Count	PA AADT	BC AADT	PA Adjustment	PA Adjustment
1	-0.70	1.14	0	0	8,426	638	8,830	703
2	-0.90	1.14	2	3	7,836	679	8,240	703
3	-0.04	3.33	0	0	10,592	992	10,780	1,022
4	0.13	2.19	4	3	11,337	845	11,296	856
5	-0.12	8.24	0	0	10,345	1,758	10,550	1,735
6	-999999.00	-999999.00	0	0				

Adjustment Info

ID	Adjustment Methods Name	Model vs Count AADT	Adjusted AADT	Model vs Count BC	Adjusted BC	PA Growth Rate %	BC Growth Rate %
1	DIF	5,370	13,838	473	556	0.81	0.12
2	RAT	1.88	15,960	8.28	687	1.49	1.03
3	MRAT	1.40	15,359	1.28	659	1.29	0.83
4	RAF		14,598		607	1.05	0.48

Adjust Method AADT	Adjust Method BC	Selected PA Growth Rate %	Selected BC Growth Rate %
Average	Difference	1.100	0.100

Method 1 - 4 Volume

PA Min Volume	PA Max Volume	BC Min Volume	BC Max Volume	Total Min Volume	Total Max Volume
13282	15273	556	687	13838	15960

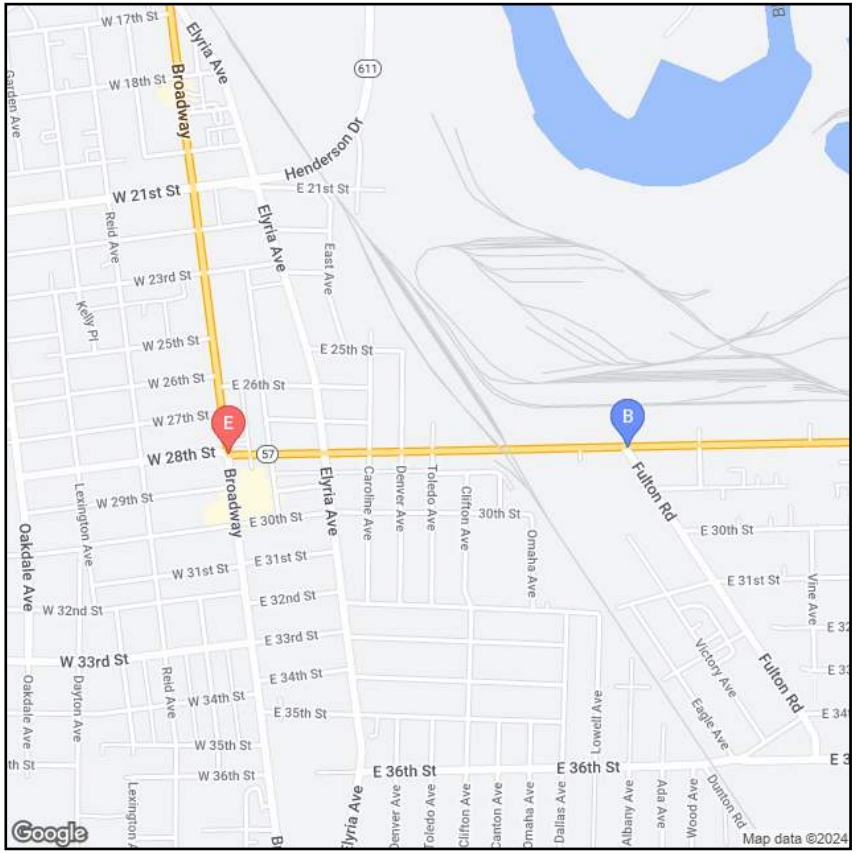
Process Flag: Adjusted model to counts with process per ODOT 255 spreadsheet

Comment: No Comment

Historical Count

Year	All	Cars	Trucks
2011	12,320	11,850	470
2014	11,154	10,728	426
2017	11,251	10,979	272
2020	10,800	10,326	474
* 2023	11,439	10,901	538

* Pivot Point



Segment ID	LRS ID	BMP	EMP	Length	Yr 2024 AADT	Yr 2045 AADT	DHV30	K %	D %	T24 %	TD %
1937532	SLORSR00057**C	24.877	25.551	0.674	11,500	11,500	1400	12.0	53.5	5	4

Forecast Segment ID	Route	BMP	EMP
1937535	SLORSR00057**C	25.551	26.005

Forecast

Year	K%	T24 % (Existing)	PA AADT	PA Method	PA Growth Rate %	PA Calculated Rate %
2050	◆ 12.1	3	11,000	Model	0.400	0.400
AADT	**D%**	**TD % (Existing)**	**BC AADT**	**BC Method**	**BC Growth Rate %**	**BC Calculated Rate %**
11,370	◆ 51.1	2	370	Average	● -5.700	0.000

● Warning: The growth rate was negative and was capped.

◆ K/D factors from TCDS were used.

Regression

Method Number	PA AADT	BC AADT	AADT
1	5,010	-761	4,249

95% Confidence Min/Max

PA Min	PA Max	BC Min	BC Max	Year
-3874	19994	-2122	621	2050

Method Number	PA Growth %	BC Growth %	PA Drop Count	BC Drop Count	PA AADT	BC AADT	PA Adjustment	PA Adjustment
1	-1.93	-11.43	0	0	4,170	-837	5,010	-761
2	-3.63	-11.43	5	3	-870	-799	202	-761
3	-0.97	-10.96	0	0	7,203	-786	7,740	-715
4	-0.69	-12.90	4	3	8,358	-956	8,540	-906
5	0.47	-0.96	0	0	11,574	272	11,810	270
6	-999999.00	-999999.00	0	0				

Adjustment Info

ID	Adjustment Methods Name	Model vs Count AADT	Adjusted AADT	Model vs Count BC	Adjusted BC	PA Growth Rate %	BC Growth Rate %
1	DIF	9,667	11,830	360	363	0.35	-0.02
2	RAT	9.19	19,880	76.04	228	3.24	-1.39
3	MRAT	1.83	16,222	0.62	228	1.95	-1.39
4	RAF		14,026		296	1.15	-0.70

Adjust Method AADT	Adjust Method BC	Selected PA Growth Rate %	Selected BC Growth Rate %
Difference	Difference	0.400	0.000

Method 1 - 4 Volume

PA Min Volume	PA Max Volume	BC Min Volume	BC Max Volume	Total Min Volume	Total Max Volume
11467	19652	228	363	11695	20015

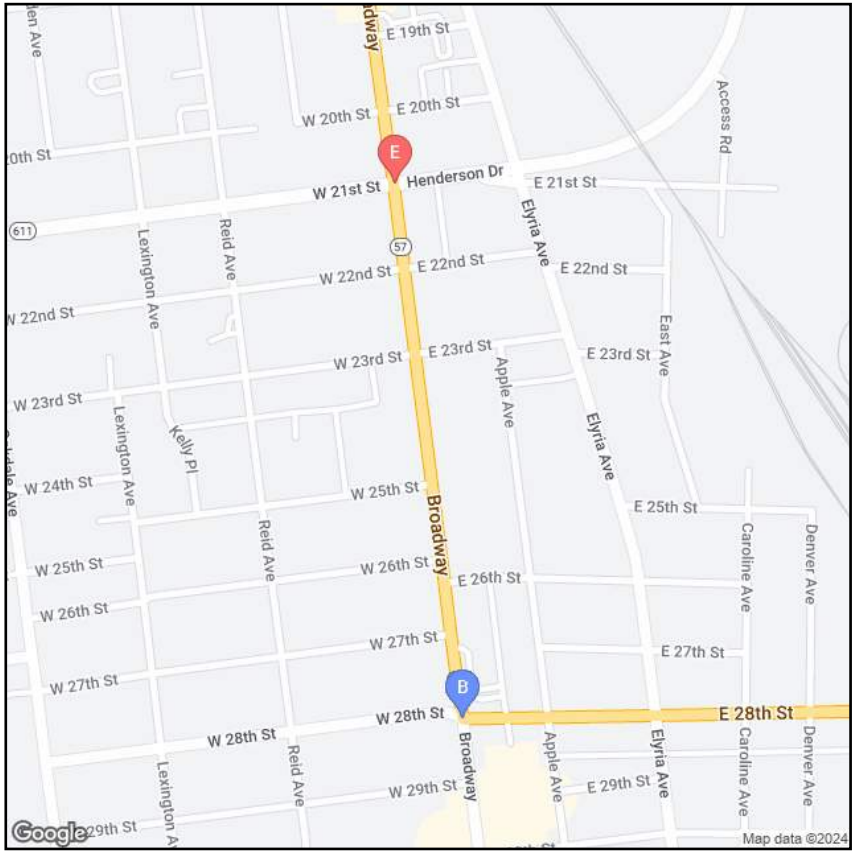
Process Flag: Adjusted model to counts with process per ODOT 255 spreadsheet

Comment: No Comment

Historical Count

Year	All	Cars	Trucks
2011	13,480	12,680	800
2014	12,075	11,311	764
2017	10,573	10,187	386
2020	10,010	9,628	382
* 2023	10,847	10,482	365

* Pivot Point



Segment ID	LRS ID	BMP	EMP	Length	Yr 2024 AADT	Yr 2045 AADT	DHV30	K %	D %	T24 %	TD %
1937535	SLORSR00057**C	25.551	26.005	0.454	11,000	11,500	1400	12.1	51.1	3	2

Forecast Segment ID	Route	BMP	EMP
1937537	SLORSR00057**C	26.005	26.558

Forecast

Year	K%	T24 % (Existing)	PA AADT	PA Method	PA Growth Rate %	PA Calculated Rate %
2050	12.8	2	5,400	Average	-0.900	0.000
AADT	**D%**	**TD % (Existing)**	**BC AADT**	**BC Method**	**BC Growth Rate %**	**BC Calculated Rate %**
5,520	53.7	3	120	Model	0.000	0.000

Warning: The growth rate was negative and was capped.

K/D factors from TCDS were used.

Regression

Method Number	PA AADT	BC AADT	AADT
1	2,427	-448	1,979

95% Confidence Min/Max

PA Min	PA Max	BC Min	BC Max	Year
-7875	13579	-1364	209	2050

Method Number	PA Growth %	BC Growth %	PA Drop Count	BC Drop Count	PA AADT	BC AADT	PA Adjustment	PA Adjustment
1	-2.04	-18.13	0	0	2,251	-488	2,427	-448
2	-1.81	-14.81	3	2	2,465	-378	2,767	-345
3	-2.72	-22.35	0	0	1,119	-638	1,441	-579
4	-1.92	-34.33	3	6	2,279	-992	2,601	-951
5	-3.60	-14.36	0	0	-311	-362	154	-331
6	-4.27	-12.27	4	5	-1,188	-269	-833	-266

Adjustment Info

ID	Adjustment Methods Name	Model vs Count AADT	Adjusted AADT	Model vs Count BC	Adjusted BC	PA Growth Rate %	BC Growth Rate %
1	DIF	5,242	5,940	114	116	0.29	0.03
2	RAT	19.75	13,788	104.55	209	5.60	3.03
3	MRAT	2.50	9,082	1.82	167	2.40	1.67
4	RAF		7,511		142	1.34	0.87

Adjust Method AADT	Adjust Method BC	Selected PA Growth Rate %	Selected BC Growth Rate %
Difference	Difference	0.300	0.000

Method 1 - 4 Volume

PA Min Volume	PA Max Volume	BC Min Volume	BC Max Volume	Total Min Volume	Total Max Volume
5824	13579	116	209	5940	13788

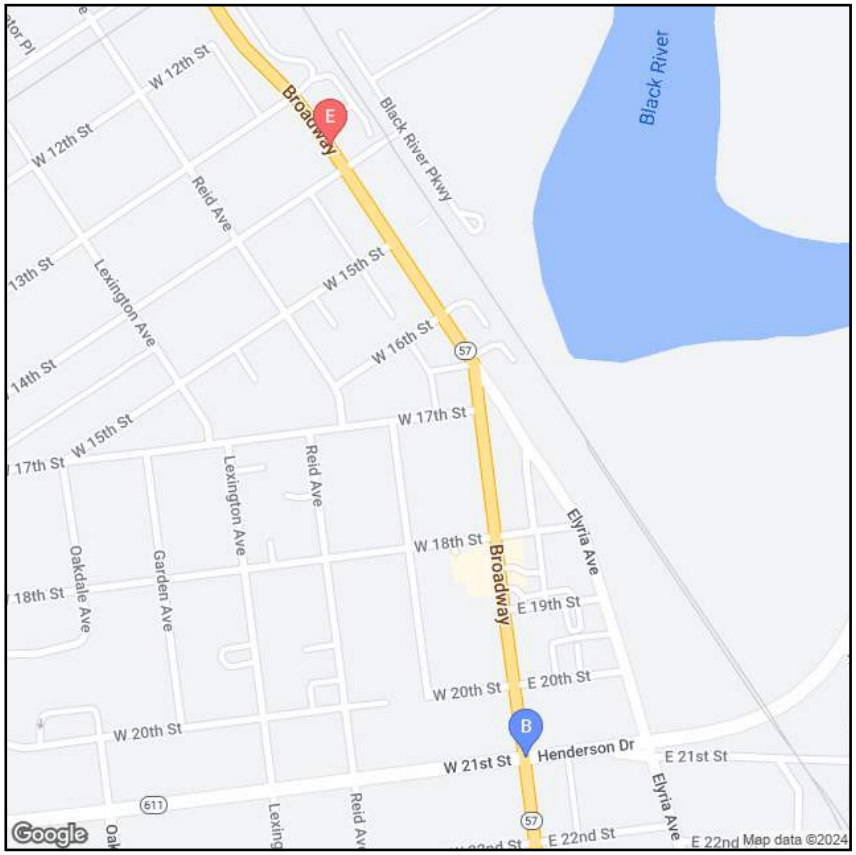
Process Flag: Adjusted model to counts with process per ODOT 255 spreadsheet

Comment: No Comment

Historical Count

Year	All	Cars	Trucks
2008	6,860	6,520	340
2011	6,980	6,560	420
2014	7,554	7,308	245
2017	5,530	5,341	189
2020	5,294	5,211	83
* 2023	5,521	5,406	115

* Pivot Point



Segment ID	LRS ID	BMP	EMP	Length	Yr 2024 AADT	Yr 2045 AADT	DHV30	K %	D %	T24 %	TD %
1937537	SLORSR00057**C	26.005	26.558	0.553	5,500	5,500	700	12.8	53.7	2	3

Forecast Segment ID	Route	BMP	EMP
1937538	SLORSR00057**C	26.558	27.356

Forecast

Year	K%	T24 % (Existing)	PA AADT	PA Method	PA Growth Rate %	PA Calculated Rate %
2050	12.8	2	5,400	Average	-0.700	0.000
AADT	**D%**	**TD % (Existing)**	**BC AADT**	**BC Method**	**BC Growth Rate %**	**BC Calculated Rate %**
5,520	53.7	3	120	Model	-0.100	0.000

Warning: The growth rate was negative and was capped.

K/D factors from TCDS were used.

Regression

Method Number	PA AADT	BC AADT	AADT
1	2,427	-448	1,979

95% Confidence Min/Max

PA Min	PA Max	BC Min	BC Max	Year
-7875	7718	-1364	113	2050

Method Number	PA Growth %	BC Growth %	PA Drop Count	BC Drop Count	PA AADT	BC AADT	PA Adjustment	PA Adjustment
1	-2.04	-18.13	0	0	2,251	-488	2,427	-448
2	-1.81	-14.81	3	2	2,465	-378	2,767	-345
3	-2.72	-22.35	0	0	1,119	-638	1,441	-579
4	-1.92	-34.33	3	6	2,279	-992	2,601	-951
5	-3.60	-14.36	0	0	-311	-362	154	-331
6	-4.27	-12.27	4	5	-1,188	-269	-833	-266

Adjustment Info

ID	Adjustment Methods Name	Model vs Count AADT	Adjusted AADT	Model vs Count BC	Adjusted BC	PA Growth Rate %	BC Growth Rate %
1	DIF	3,091	6,520	84	113	0.69	-0.06
2	RAT	2.27	7,791	3.73	108	1.56	-0.23
3	MRAT	1.41	7,421	0.94	108	1.31	-0.23
4	RAF		6,970		111	1.00	-0.13

Adjust Method AADT	Adjust Method BC	Selected PA Growth Rate %	Selected BC Growth Rate %
Difference	Difference	0.700	-0.100

Method 1 - 4 Volume

PA Min Volume	PA Max Volume	BC Min Volume	BC Max Volume	Total Min Volume	Total Max Volume
6407	7683	108	113	6515	7796

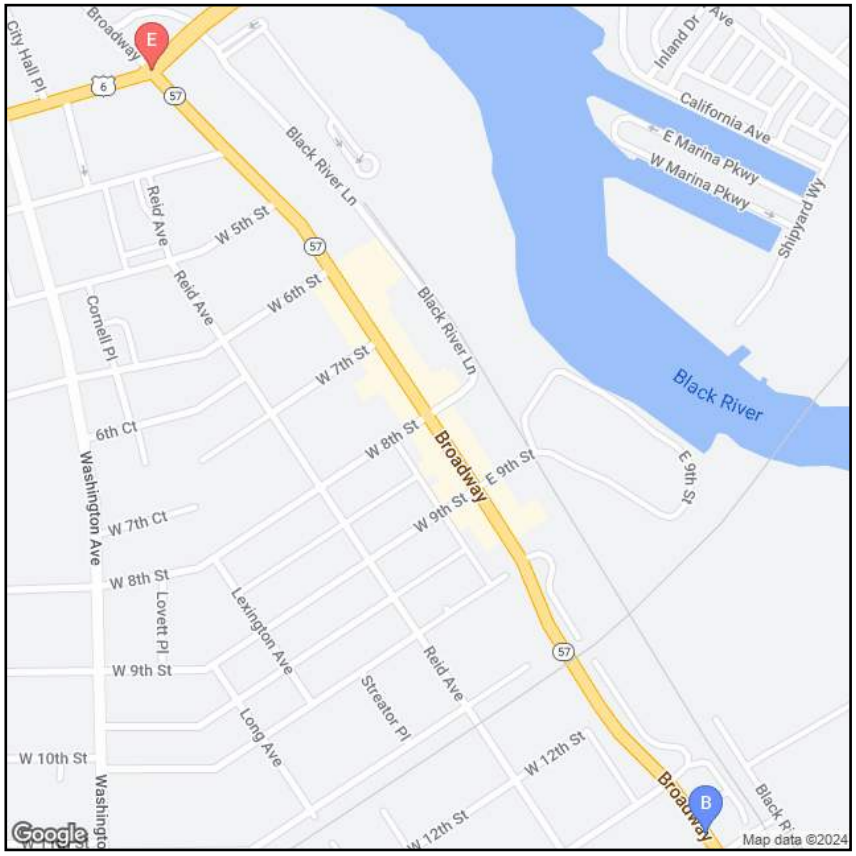
Process Flag: Adjusted model to counts with process per ODOT 255 spreadsheet

Comment: No Comment

Historical Count

Year	All	Cars	Trucks
2008	6,860	6,520	340
2011	6,980	6,560	420
2014	7,554	7,308	245
2017	5,530	5,341	189
2020	5,294	5,211	83
* 2023	5,521	5,406	115

* Pivot Point



Segment ID	LRS ID	BMP	EMP	Length	Yr 2024 AADT	Yr 2045 AADT	DHV30	K %	D %	T24 %	TD %
1937538	SLORSR00057**C	26.558	27.356	0.798	5,500	5,500	700	12.8	53.7	2	3

Forecast Segment ID	Route	BMP	EMP
1937951	SLORSR00611**C	2.093	3.088

Forecast

Year	K%	T24 % (Existing)	PA AADT	PA Method	PA Growth Rate %	PA Calculated Rate %
2050	◆ 12.1	3	8,700	Model	0.500	0.500
AADT	**D%**	**TD % (Existing)**	**BC AADT**	**BC Method**	**BC Growth Rate %**	**BC Calculated Rate %**
8,920	◆ 52.9	1	220	Model	● -1.500	0.000

● Warning: The growth rate was negative and was capped.

◆ K/D factors from TCDS were used.

Regression

Method Number	PA AADT	BC AADT	AADT
2	6,798	-464	6,334

95% Confidence Min/Max

PA Min	PA Max	BC Min	BC Max	Year
-2910	15844	-2009	221	2050

Method Number	PA Growth %	BC Growth %	PA Drop Count	BC Drop Count	PA AADT	BC AADT	PA Adjustment	PA Adjustment
1	-0.24	-13.95	0	0	7,693	-667	7,165	-614
2	-0.42	-11.44	4	5	6,987	-444	6,798	-464
3	-0.24	-15.00	0	0	7,694	-739	7,166	-677
4	-0.24	-12.13	4	5	7,403	-491	7,167	-505
5	-0.68	-17.93	0	0	6,680	-935	6,254	-853
6	-0.02	-15.07	4	5	7,897	-687	7,623	-681

Adjustment Info

ID	Adjustment Methods Name	Model vs Count AADT	Adjusted AADT	Model vs Count BC	Adjusted BC	PA Growth Rate %	BC Growth Rate %
1	DIF	-5,951	9,061	-212	47	0.65	-2.92
2	RAT	0.57	8,559	0.51	133	0.36	-1.48
3	MRAT	1.08	8,598	0.60	133	0.38	-1.48
4	RAF		8,830		90	0.52	-2.20

Adjust Method AADT	Adjust Method BC	Selected PA Growth Rate %	Selected BC Growth Rate %
Average	Ratio	0.500	-1.500

Method 1 - 4 Volume

PA Min Volume	PA Max Volume	BC Min Volume	BC Max Volume	Total Min Volume	Total Max Volume
8426	9014	47	133	8473	9147

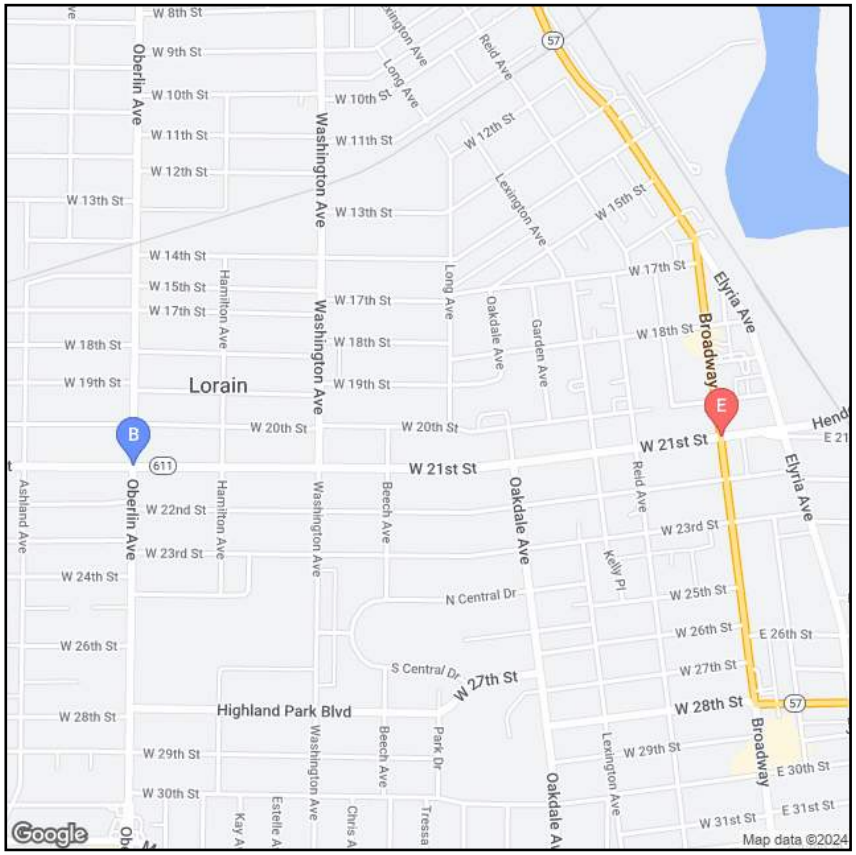
Process Flag: Adjusted model to counts with process per ODOT 255 spreadsheet

Comment: No Comment

Historical Count

Year	All	Cars	Trucks
2008	9,090	8,480	610
2011	8,740	8,220	520
2014	8,353	7,824	529
2017	9,877	9,477	400
2020	8,488	8,362	126
* 2023	7,893	7,671	222

* Pivot Point



Segment ID	LRS ID	BMP	EMP	Length	Yr 2024 AADT	Yr 2045 AADT	DHV30	K %	D %	T24 %	TD %
1937951	SLORSR00611**C	2.093	3.088	0.995	7,900	8,700	1100	12.1	52.9	3	1

Forecast Segment ID	Route	BMP	EMP
1937952	SLORSR00611**C	3.088	3.193

Forecast

Year	K%	T24 % (Existing)	PA AADT	PA Method	PA Growth Rate %	PA Calculated Rate %
2050	◆ 11.2	4	8,600	Average	● -0.100	0.000
AADT	**D%**	**TD % (Existing)**	**BC AADT**	**BC Method**	**BC Growth Rate %**	**BC Calculated Rate %**
8,960	◆ 54.9	4	360	Average	● -7.500	0.000

● Warning: The growth rate was negative and was capped.

◆ K/D factors from TCDS were used.

Regression

Method Number	PA AADT	BC AADT	AADT
2	7,661	-963	6,698

95% Confidence Min/Max

PA Min	PA Max	BC Min	BC Max	Year
1385	11148	-2170	1781	2050

Method Number	PA Growth %	BC Growth %	PA Drop Count	BC Drop Count	PA AADT	BC AADT	PA Adjustment	PA Adjustment
1	-0.49	-8.11	0	0	7,996	-580	7,429	-433
2	-0.39	-13.50	3	6	8,142	-1,139	7,661	-963
3	-1.18	-8.11	0	0	6,173	-580	5,841	-433
4	-0.93	-16.49	3	6	6,745	-1,462	6,413	-1,257
5	-1.96	-5.88	0	0	4,161	-337	4,031	-214
6	-2.13	-4.20	5	5	3,598	-98	3,641	-49

Adjustment Info

ID	Adjustment Methods Name	Model vs Count AADT	Adjusted AADT	Model vs Count BC	Adjusted BC	PA Growth Rate %	BC Growth Rate %
1	DIF	-6,786	9,079	-81	187	0.14	-1.80
2	RAT	0.57	9,013	0.82	219	0.10	-1.48
3	MRAT	1.01	9,014	0.60	219	0.10	-1.48
4	RAF		9,046		203	0.12	-1.64

Adjust Method AADT	Adjust Method BC	Selected PA Growth Rate %	Selected BC Growth Rate %
Average	Ratio	0.100	-1.500

Method 1 - 4 Volume

PA Min Volume	PA Max Volume	BC Min Volume	BC Max Volume	Total Min Volume	Total Max Volume
8794	8892	187	219	8981	9111

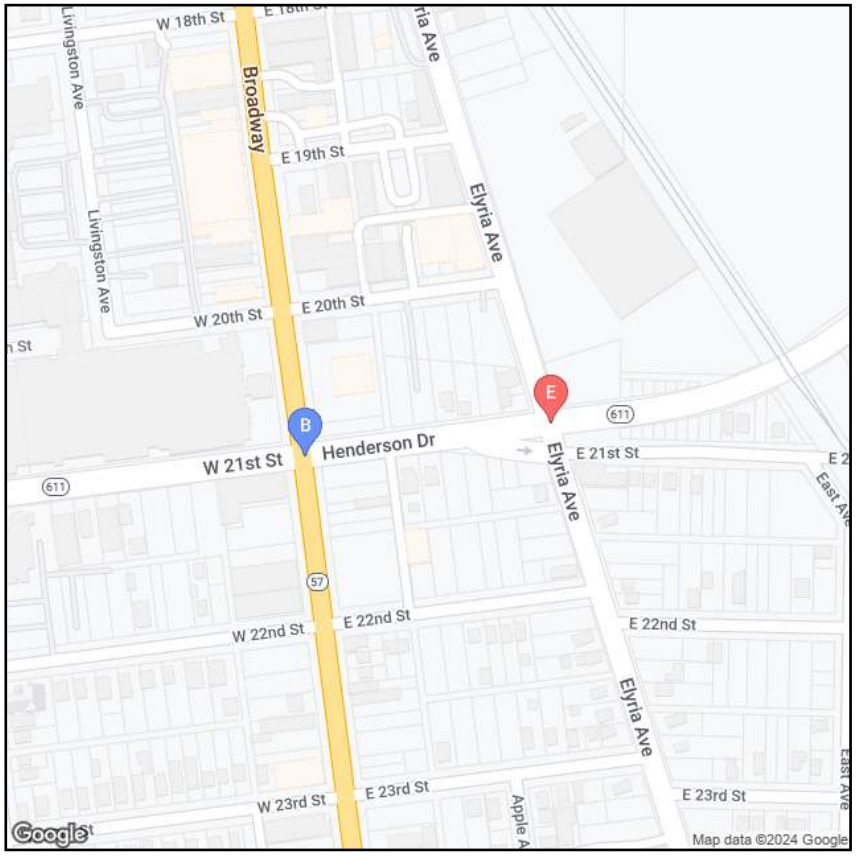
Process Flag: Adjusted model to counts with process per ODOT 255 spreadsheet

Comment: No Comment

Historical Count

Year	All	Cars	Trucks
2008	9,830	9,170	660
2011	10,320	9,700	620
2014	10,797	10,245	551
2017	9,743	9,484	259
2020	9,676	9,499	177
* 2023	8,926	8,562	364

* Pivot Point



Segment ID	LRS ID	BMP	EMP	Length	Yr 2024 AADT	Yr 2045 AADT	DHV30	K %	D %	T24 %	TD %
1937952	SLORSR00611**C	3.088	3.193	0.105	8,900	8,900	1000	11.2	54.9	4	4

BROADWAY (SR57)
TARGET SPEED STUDY

APPENDIX E: SPEED DATA

CMT

Location ID	11247	Located On	BROADWAY AVE	Community	LORAIN
Counted By	TCDS_Combined		SR57 BROADWAY N OF 25TH ST, IN LORAIN	County	LORAIN
Start Date	8/24/2020			Module	odot
Start Time	10:00:00 AM	Direction	2-WAY	Agency	ODOT
Source	TCDS_BIN_IMPORT_COMBINE	QC Status	Accepted	Owner ID	traffic.group

Speed Range (mph)

Start Time	0-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65	65-70	70-75	75-80	80-85	85-147	Total
8:30 PM	1	6	38	59	15	3	0	0	0	0	0	0	0	0	0	122
8:45 PM	1	9	37	56	20	1	1	0	0	0	0	0	0	0	0	125
9:00 PM	2	9	35	45	19	9	0	0	0	0	0	0	0	0	0	119
9:15 PM	0	3	22	38	6	0	0	3	0	0	0	0	0	0	0	72
9:30 PM	2	3	21	38	20	3	0	0	0	1	1	0	0	0	0	89
9:45 PM	0	4	28	38	5	1	0	0	0	0	0	0	0	0	0	76
10:00 PM	0	3	19	36	14	2	0	0	0	0	0	0	0	0	0	74
10:15 PM	0	6	11	28	14	9	0	1	0	1	0	0	0	0	0	70
10:30 PM	1	3	20	20	14	1	1	0	0	0	0	0	0	0	0	60
10:45 PM	2	6	10	26	5	2	2	0	0	0	0	0	0	0	0	53
11:00 PM	2	3	13	21	8	4	0	0	0	1	0	0	0	0	0	52
11:15 PM	0	2	9	17	5	1	0	0	0	0	0	0	0	0	0	34
11:30 PM	0	3	11	11	4	0	0	0	0	0	0	0	0	0	0	29
11:45 PM	1	2	10	13	9	2	0	0	0	0	0	1	0	0	1	39
TOTAL	147	358	2127	4900	2608	728	106	31	6	5	2	2	0	0	5	11025

TOOLE DESIGN

20 EAST BROAD STREET
SUITE 400
COLUMBUS, OH 43215

614.407.9122
TOOLEDESIGN.COM

BIG DATA FOR SPEED STUDIES

December 17, 2024

To: Scott Knebel
Organization: Crawford, Murphy, and Tilly (CMT)
From: Mariel Colman
Project: ODOT STW Safety Design Task Order - Target Speed Concept Development

Re: Usefulness of INRIX data for Before & After Speed Comparison Summary

---

Project Background

The goal of this project is to implement proven safety countermeasures to achieve the target speed for the corridor. To evaluate the effectiveness of the countermeasure(s) selected, before and after speed data is typically collected. ODOT has requested that instead of standard spot speed studies, INRIX data be used to gather existing speed data for later comparison to post-implementation speeds.

INRIX collects probe data using "*mobile phones, connected vehicles, trucks, delivery vans, and other fleet vehicles equipped with GPS telematics devices. The acquired raw data is then aggregated and anonymized. The data provider monitors the movement of the probes as they travel across a stretch of roadway called a segment. The amount of time it takes for the probes to travel across a segment can be used to derive near real-time traffic speeds and travel times and can be archived for look-back analysis and performance reporting*."

In other words, speeds are inferred using travel time over a distance. While this may closely approximate roadways with little to no intersection traffic control (e.g., freeways, highways, etc.), in small towns and urban areas where intersections are frequent and may be stopped or signal-controlled, travel times factor in time spent stopped and slowing for these devices. Therefore, as the frequency and likelihood of controlled intersections go up, the use of travel time over distance to approximate speed diminishes.

In addition, during a road diet or safety improvement project, traffic control devices are often changed or retimed, which may reduce travel times. Therefore, it is possible that midblock speeds may be reduced, but because the overall travel time has decreased, this method of estimating speeds may result in a calculated speed equal to or greater than the calculated speed before changes to the roadway.

Understanding these limitations, our team has looked for other road diets that have been implemented in the last ten years with intersections similar to the study locations to understand:

- How closely the 50th and 85th percentile speeds match available spot speed studies either available via ODOT TIMS or via the community's own speed study analysis
- If a change in speeds can be detected, and if available, how much does the change in speeds from INRIX data match the spot speed observations

- If there is a preferred time window to improve the estimation of free flow speeds (e.g. overnight) and/or if segments are available that are not within the functional intersection areas and therefore may more closely estimate free flow speeds

Case Studies

US 6, Lorain, Ohio

Between 2023 and 2024, the City of Lorain implemented a road diet along US 6 from the Charles Berry Bridge over the Black River to the State Route 611 underpass on the city's West Side.

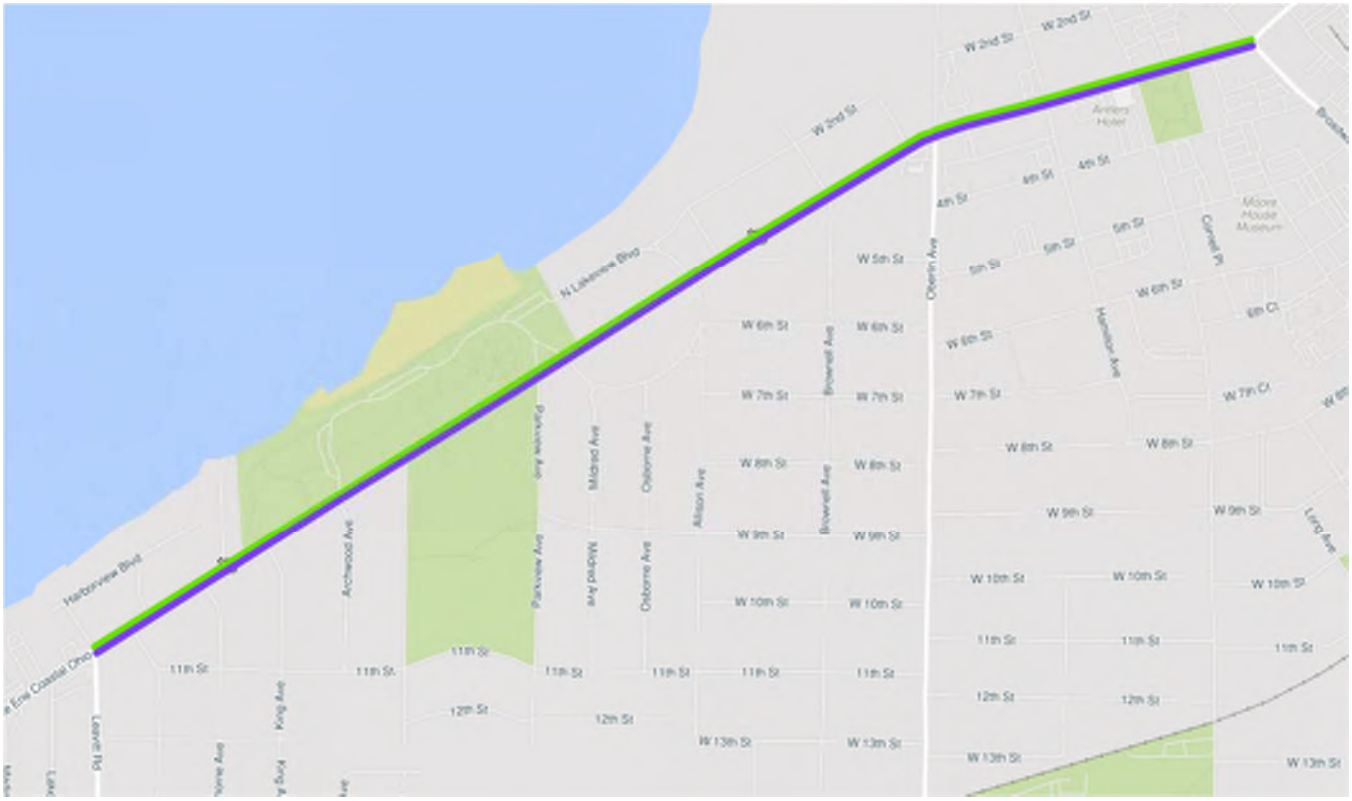


Figure 1 US 6 INRIX Segment Limits

Source / Year	Location	50th Pctl Speed (MPH)	85th Pctl Speed (MPH)
ODOT TIMS / 9-2020 / 24HRS	SW of Wallace Lane	40-45	48
ODOT TIMS / 9-2020 / 24HRS	W of SR58 Leavitt	35-40	38
ODOT TIMS / 9-2020 / 24HRS	W of Hamilton Ave	35-40	40
ODOT TIMS / 8-2023 / 24HRS	SW of Wallace Lane	40-45	47
ODOT TIMS / 10-2023 / 24HRS	W of SR58 Leavitt	35-40	40
ODOT TIMS / 9-2023 / 24HRS	W of Hamilton Ave	35-40	40
INRIX / 9-2020 / 24 HRS	Corridor	29	34

INRIX / 9-2022 / 24 HRS	Corridor	30	34
INRIX / 9-2022 / 7-12 PM	Corridor	30	34
INRIX / 9-2022 / 9 AM – 3 PM	Corridor	29	33
INRIX / 9-2024 / 24 HRS	Corridor	27	30
INRIX / 9-2024 / 7-12 PM	Corridor	28	31
INRIX / 9-2024 / 9 AM – 3 PM	Corridor	26	29

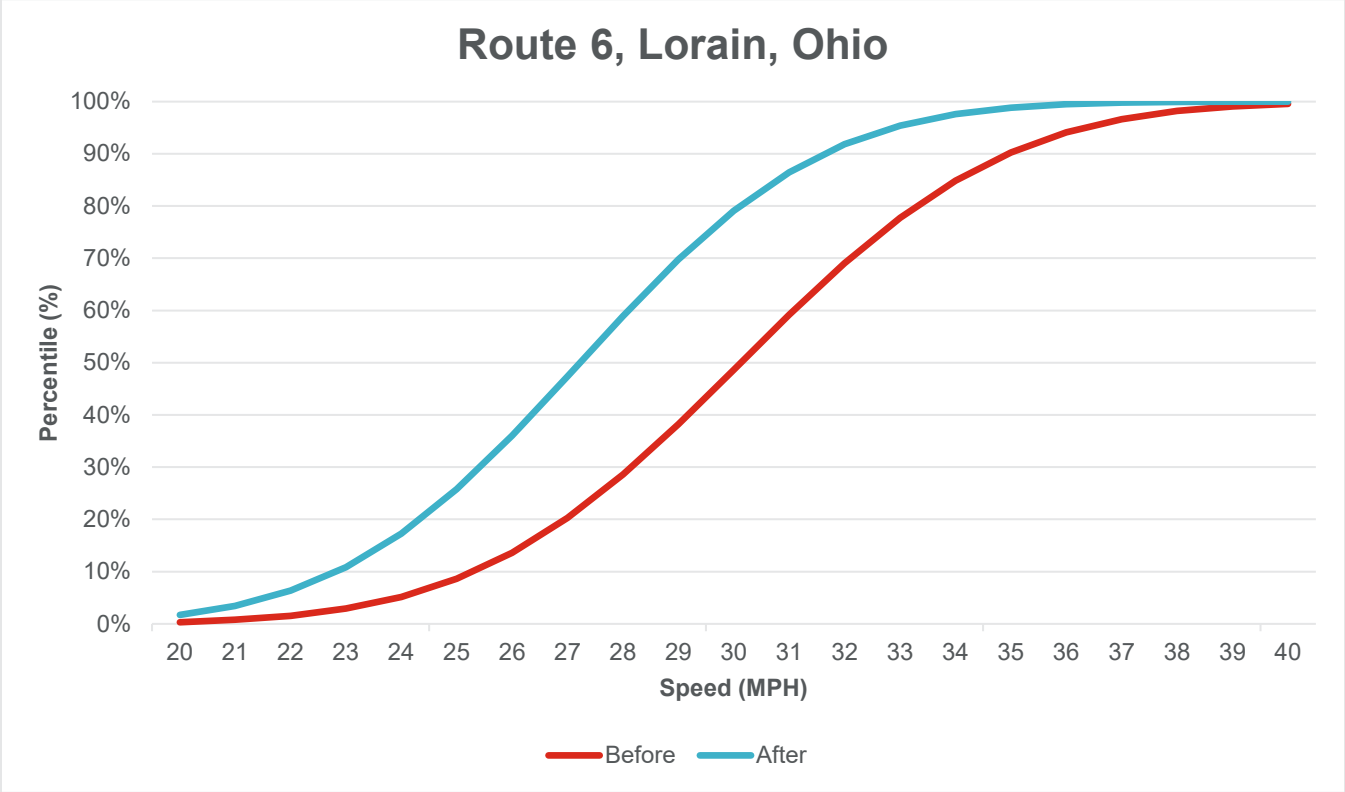


Figure 2 US 6 All Day Speed Distribution

Jefferson Street, Toledo, Ohio

The city of Toledo implemented a road diet in 2021 along Jefferson Street from Summit Street to 23rd Street.

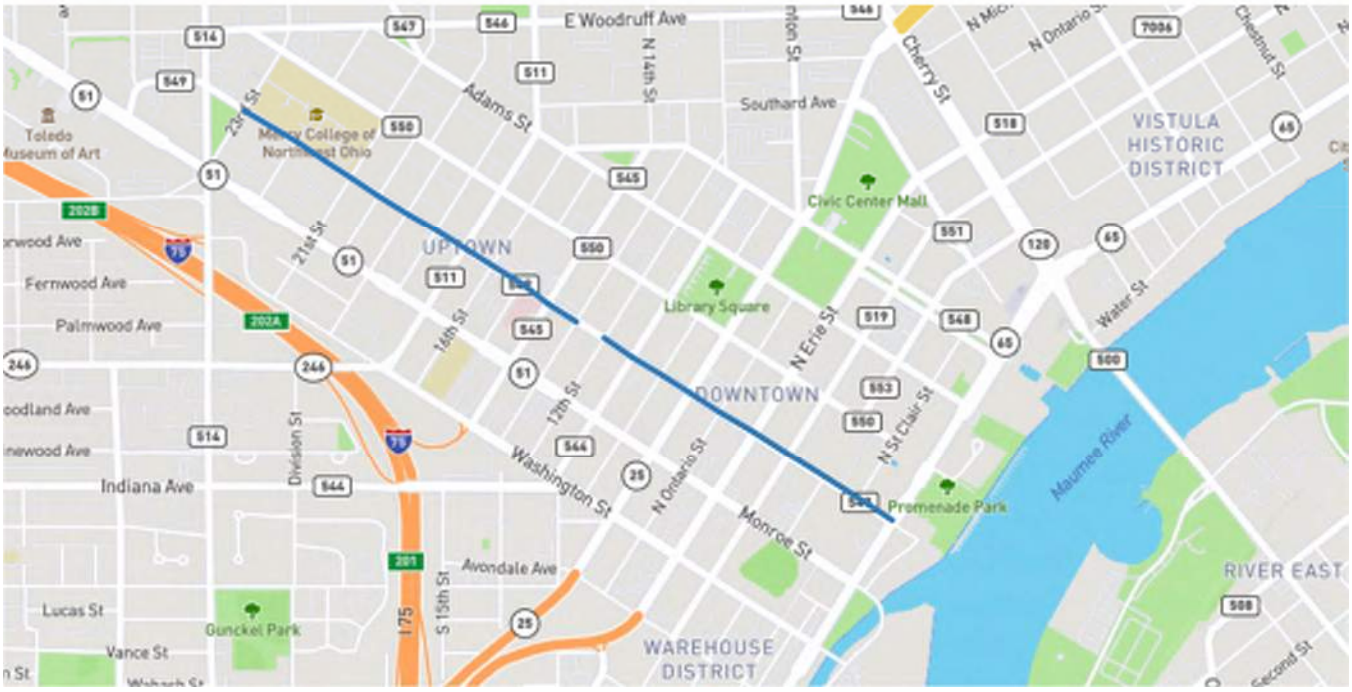


Figure 3 Jefferson Street INRIX Segment Limits

Source / Year / Time of Day	50th Pctl Speed (MPH)	85th Pctl Speed (MPH)
ODOT TIMS / August 2019	25-30	30
INRIX / April 2019	18	27
INRIX / April 2024	17	25

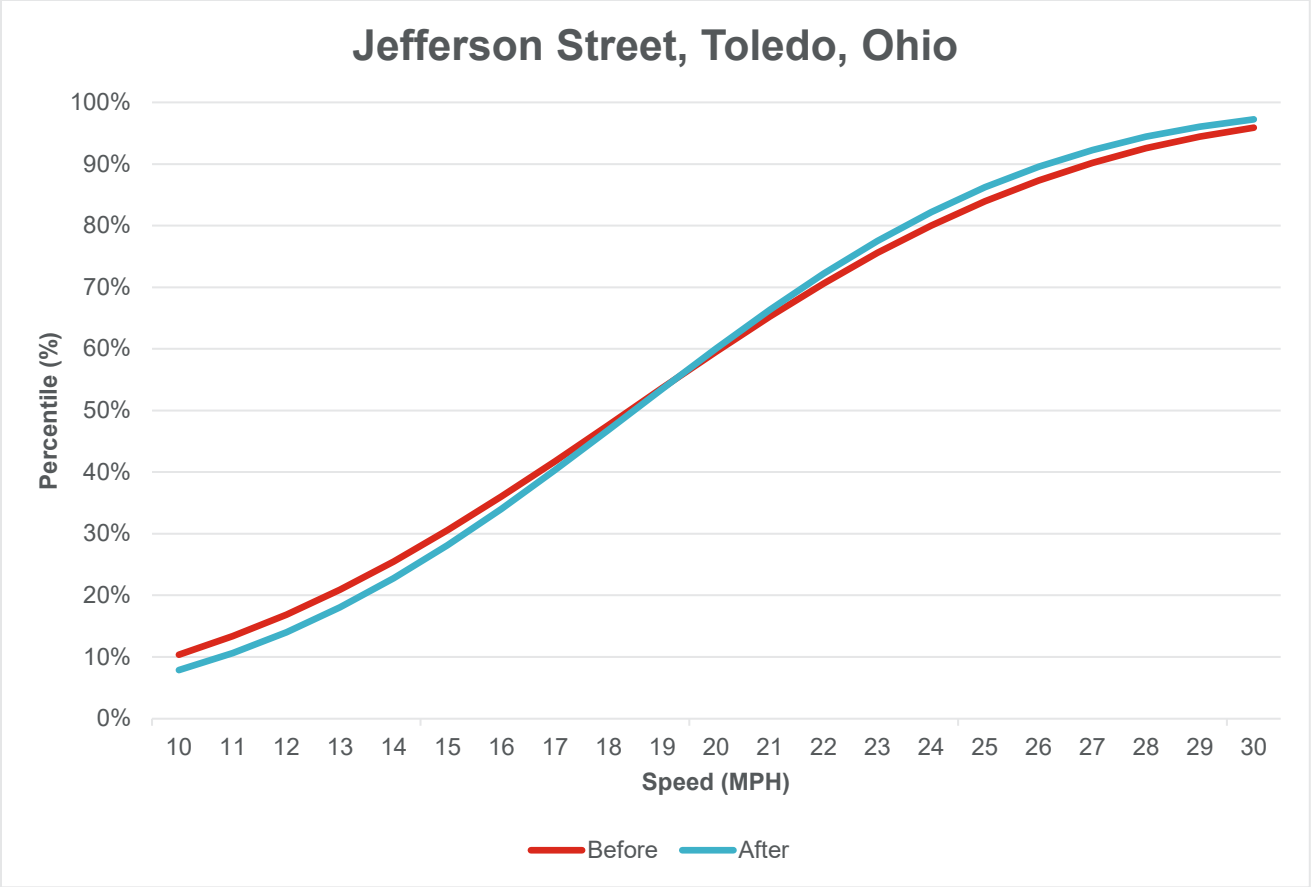


Figure 4 Jefferson Street All Day Speed Distribution

Shoyer Road, Oakwood, Ohio

In 2016, Oakwood implemented a road diet for Shoyer Road from Dayton-Kettering Connector to East Drive.

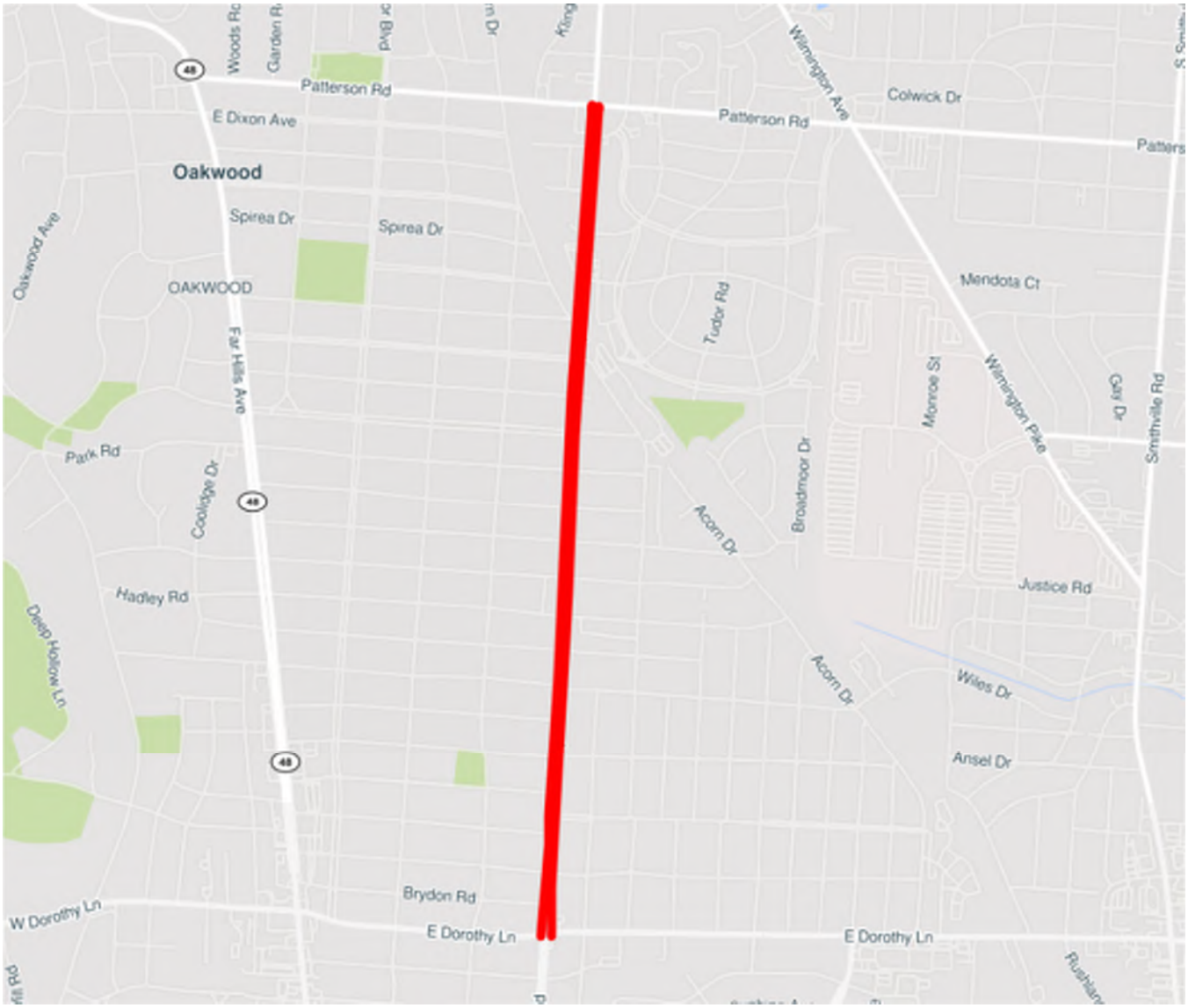


Figure 5 Shroyer Road INRIX Segment Limits

Source / Year	Location	50th Pctl Speed (MPH)	85th Pctl Speed (MPH)
INRIX / 9-2015 / 24 HRS	Corridor	31	33
INRIX / 9-2017 / 24 HRS	Corridor	25	30

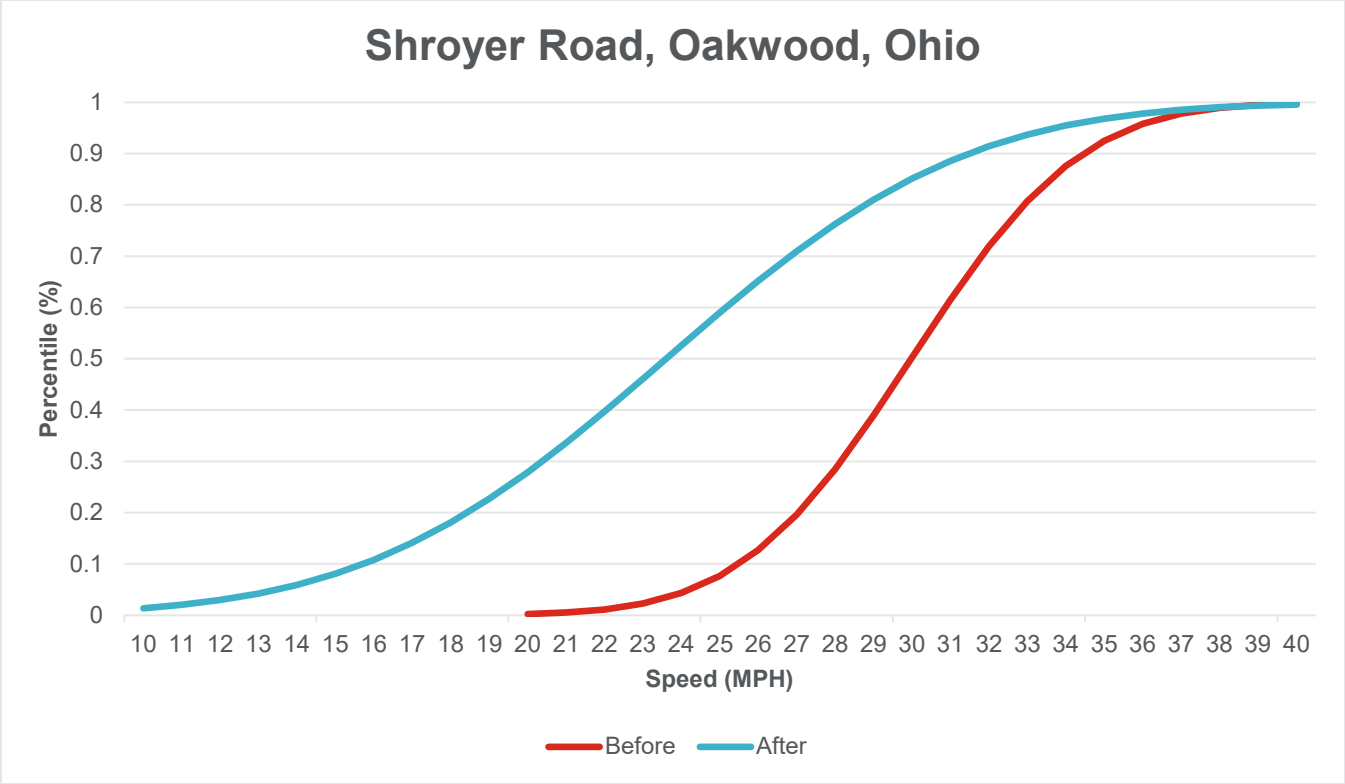


Figure 6 Shroyer Road All Day Speed Distribution

Summary of Findings

While the use of case studies cannot conclusively answer the questions we wish to answer, they can start to help us understand the range of outcomes we may expect when using INRIX data. The following summarizes observations, limitations, and preliminary recommendations for the use of INRIX data for measuring speeds before and after proven safety countermeasures are implemented to reach a target speed:

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- In all case studies, a change in the 50th and 85th percentile speed was observed, and it is therefore likely that INRIX data can confirm that speeds have been reduced, but the actual reduction will likely be higher
- When comparing 24-hour distributions, consider normalizing the distribution using the vehicle volumes to show a more accurate representation of the distribution.
- While mid-day hours may show higher speeds, evenings from 7-12PM or 24hrs can also be used and may actually show higher speeds that are more indicative of free flow speeds that may be occurring when volumes are low.
- The number of segments that can be compared depend on INRIX (e.g., a designer cannot select unique start and end points). While this is a limitation, if segments are available, a comparison on a segment to segment level before and after could be reviewed and may provide more site specific performance evaluations of the implemented design, particularly on streets where implementation varies.

- Only per-minute data, not per-vehicle data, is available, meaning that across that minute, vehicle travel times are averaged. However, as travel times are often a function of how many vehicles are on the road, this averaging likely is less of a concern than how travel times are impacted based on traffic control.
- Overnight may show free flow. Based on graphing some data, though, the confidence scores of speeds after 12 AM are often less than 70 and, therefore, are not used per District 12's filtering measure.
- Community members are often concerned about the impacts of travel times. INRIX data may be an effective tool for assuaging public fears about the overall impact on their daily trips.

Sincerely,

Mariel Colman, PE, AICP | Senior Engineer | Associate

TOOLE DESIGN
20 E. Broad Street | Columbus, OH 43215
mcolman@tooledesign.com | 614.407.9122 x452

Location ID	11247	Located On	BROADWAY AVE	Community	LORAIN
Counted By	TCDS_Combined		SR57 BROADWAY N OF 25TH ST, IN LORAIN	County	LORAIN
Start Date	10/19/2023			Module	odot
Start Time	12:00:00 AM	Direction	2-WAY	Agency	ODOT
Source	TCDS_BIN_IMPORT_COMBINE	QC Status	Accepted	Owner ID	traffic.group

Speed Range (mph)

Start Time	0-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65	65-70	70-75	75-80	80-85	85-200	Total
12:00 AM	0	2	24	30	17	0	1	2	4	1	1	1	2	0	0	85
1:00 AM	0	1	12	19	9	1	0	1	0	0	0	0	0	0	0	43
2:00 AM	1	0	10	15	3	2	0	0	1	0	0	0	0	0	0	32
3:00 AM	0	5	11	10	7	2	1	0	1	0	0	0	0	0	0	37
4:00 AM	1	6	20	23	14	6	2	0	0	0	0	0	0	0	0	72
5:00 AM	1	10	41	63	31	12	0	0	0	0	0	0	0	0	0	158
6:00 AM	3	8	65	165	76	9	3	0	0	0	0	0	0	0	0	329
7:00 AM	7	27	191	295	102	22	2	1	0	0	0	0	0	0	0	647
8:00 AM	10	33	179	301	136	22	1	3	0	0	0	0	0	0	0	685
9:00 AM	17	46	196	232	106	12	2	0	1	0	1	0	0	0	0	613
10:00 AM	18	38	195	295	110	19	3	0	0	0	0	0	0	0	0	678
11:00 AM	17	32	189	309	125	18	0	0	0	0	0	0	0	0	0	690
12:00 PM	23	54	235	333	122	29	5	0	0	2	0	0	0	0	0	803
1:00 PM	21	39	202	353	154	26	2	0	0	0	0	0	0	0	0	797
2:00 PM	28	59	267	451	142	21	3	0	1	0	0	0	0	0	0	972
3:00 PM	44	66	239	447	214	29	1	1	0	1	0	0	0	0	0	1042
4:00 PM	23	58	241	467	206	44	5	3	1	0	0	0	0	0	0	1048
5:00 PM	25	39	244	455	183	24	1	0	0	0	0	0	0	0	0	971
6:00 PM	11	40	196	340	121	12	3	0	3	0	0	0	0	0	1	727
7:00 PM	15	28	209	253	85	13	1	0	0	0	0	0	0	0	0	604
8:00 PM	7	31	143	174	62	4	4	1	2	0	0	0	2	0	2	432
9:00 PM	10	21	101	115	52	8	3	0	0	0	0	0	0	0	0	310
10:00 PM	0	14	76	103	22	2	1	0	0	0	0	0	0	0	0	218
11:00 PM	1	12	53	53	20	1	0	0	0	0	0	0	0	0	0	140
TOTAL	283	669	3339	5301	2119	338	44	12	14	4	2	1	4	0	3	12133

TOOLE DESIGN

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SUITE 400
COLUMBUS, OH 43215

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BIG DATA FOR SPEED STUDIES

December 17, 2024

To: Scott Knebel
Organization: Crawford, Murphy, and Tilly (CMT)
From: Mariel Colman
Project: ODOT STW Safety Design Task Order - Target Speed Concept Development

Re: Usefulness of INRIX data for Before & After Speed Comparison Summary

---

Project Background

The goal of this project is to implement proven safety countermeasures to achieve the target speed for the corridor. To evaluate the effectiveness of the countermeasure(s) selected, before and after speed data is typically collected. ODOT has requested that instead of standard spot speed studies, INRIX data be used to gather existing speed data for later comparison to post-implementation speeds.

INRIX collects probe data using "*mobile phones, connected vehicles, trucks, delivery vans, and other fleet vehicles equipped with GPS telematics devices. The acquired raw data is then aggregated and anonymized. The data provider monitors the movement of the probes as they travel across a stretch of roadway called a segment. The amount of time it takes for the probes to travel across a segment can be used to derive near real-time traffic speeds and travel times and can be archived for look-back analysis and performance reporting*."

In other words, speeds are inferred using travel time over a distance. While this may closely approximate roadways with little to no intersection traffic control (e.g., freeways, highways, etc.), in small towns and urban areas where intersections are frequent and may be stopped or signal-controlled, travel times factor in time spent stopped and slowing for these devices. Therefore, as the frequency and likelihood of controlled intersections go up, the use of travel time over distance to approximate speed diminishes.

In addition, during a road diet or safety improvement project, traffic control devices are often changed or retimed, which may reduce travel times. Therefore, it is possible that midblock speeds may be reduced, but because the overall travel time has decreased, this method of estimating speeds may result in a calculated speed equal to or greater than the calculated speed before changes to the roadway.

Understanding these limitations, our team has looked for other road diets that have been implemented in the last ten years with intersections similar to the study locations to understand:

- How closely the 50th and 85th percentile speeds match available spot speed studies either available via ODOT TIMS or via the community's own speed study analysis
- If a change in speeds can be detected, and if available, how much does the change in speeds from INRIX data match the spot speed observations

- If there is a preferred time window to improve the estimation of free flow speeds (e.g. overnight) and/or if segments are available that are not within the functional intersection areas and therefore may more closely estimate free flow speeds

Case Studies

US 6, Lorain, Ohio

Between 2023 and 2024, the City of Lorain implemented a road diet along US 6 from the Charles Berry Bridge over the Black River to the State Route 611 underpass on the city's West Side.

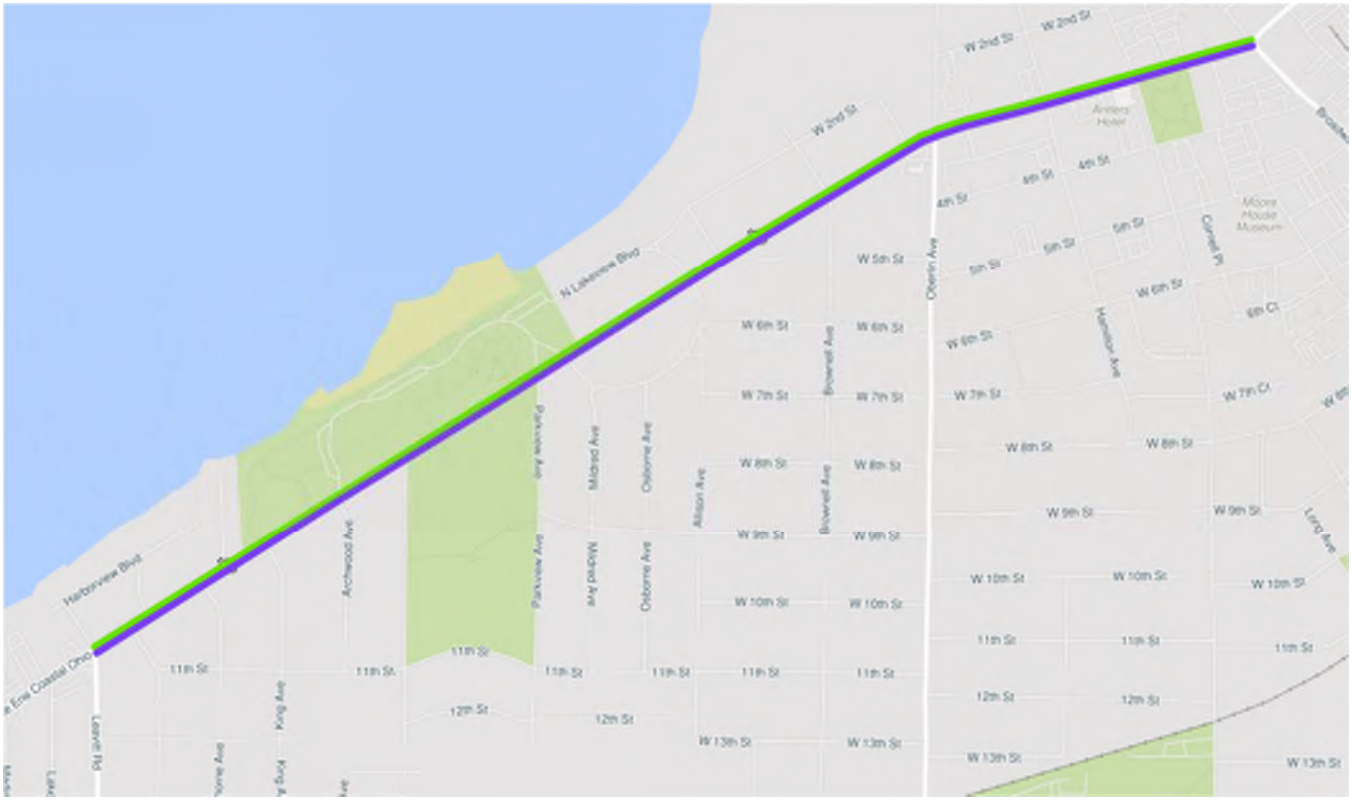


Figure 1 US 6 INRIX Segment Limits

Source / Year	Location	50th Pctl Speed (MPH)	85th Pctl Speed (MPH)
ODOT TIMS / 9-2020 / 24HRS	SW of Wallace Lane	40-45	48
ODOT TIMS / 9-2020 / 24HRS	W of SR58 Leavitt	35-40	38
ODOT TIMS / 9-2020 / 24HRS	W of Hamilton Ave	35-40	40
ODOT TIMS / 8-2023 / 24HRS	SW of Wallace Lane	40-45	47
ODOT TIMS / 10-2023 / 24HRS	W of SR58 Leavitt	35-40	40
ODOT TIMS / 9-2023 / 24HRS	W of Hamilton Ave	35-40	40
INRIX / 9-2020 / 24 HRS	Corridor	29	34

INRIX / 9-2022 / 24 HRS	Corridor	30	34
INRIX / 9-2022 / 7-12 PM	Corridor	30	34
INRIX / 9-2022 / 9 AM – 3 PM	Corridor	29	33
INRIX / 9-2024 / 24 HRS	Corridor	27	30
INRIX / 9-2024 / 7-12 PM	Corridor	28	31
INRIX / 9-2024 / 9 AM – 3 PM	Corridor	26	29

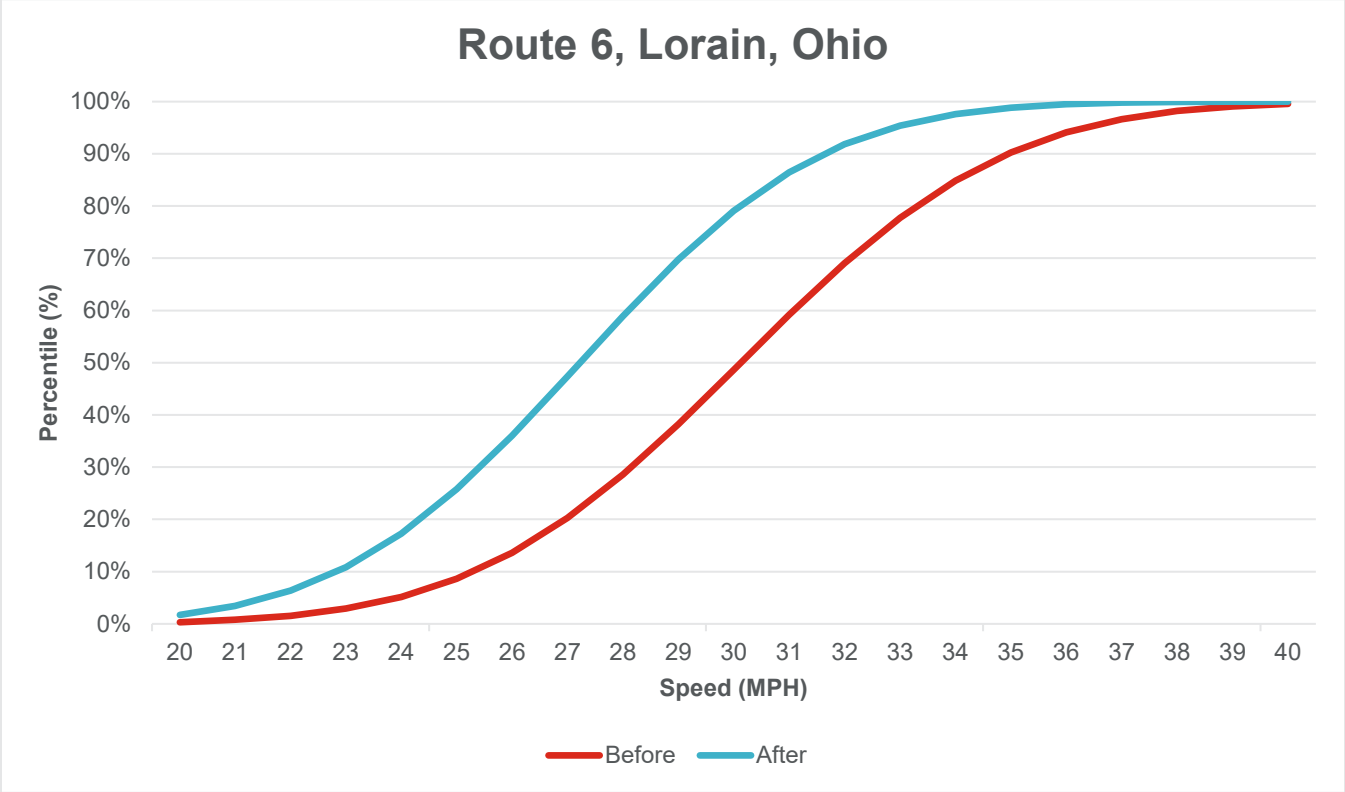


Figure 2 US 6 All Day Speed Distribution

Jefferson Street, Toledo, Ohio

The city of Toledo implemented a road diet in 2021 along Jefferson Street from Summit Street to 23rd Street.

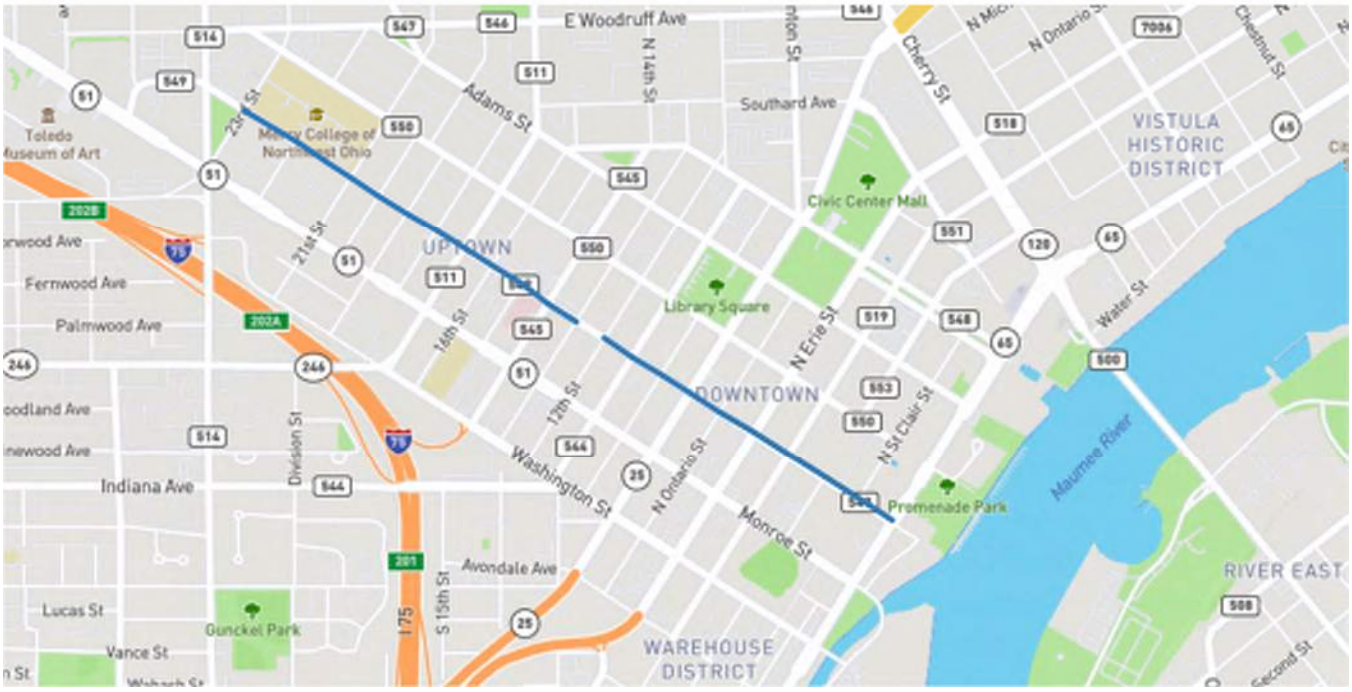


Figure 3 Jefferson Street INRIX Segment Limits

Source / Year / Time of Day	50th Pctl Speed (MPH)	85th Pctl Speed (MPH)
ODOT TIMS / August 2019	25-30	30
INRIX / April 2019	18	27
INRIX / April 2024	17	25

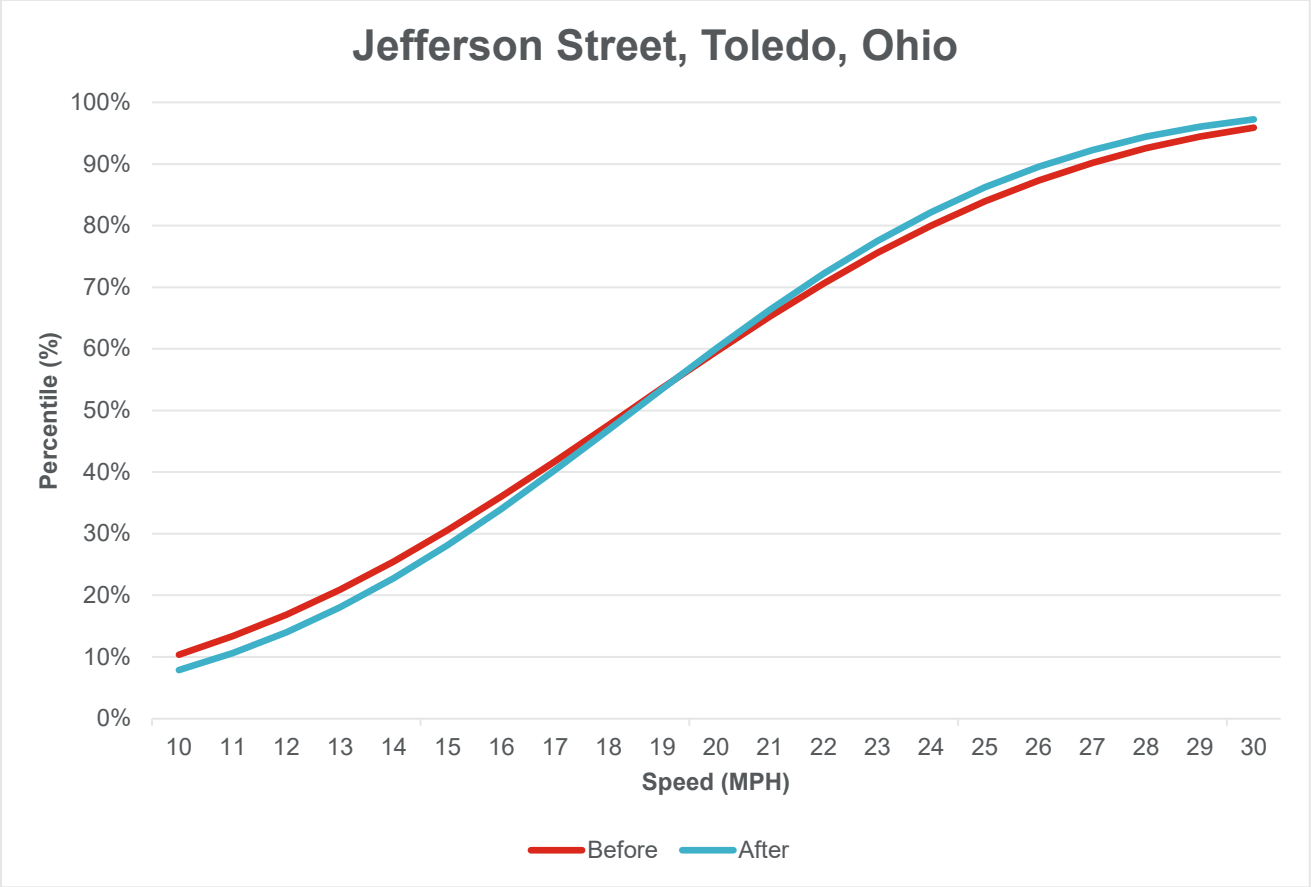


Figure 4 Jefferson Street All Day Speed Distribution

Shoyer Road, Oakwood, Ohio

In 2016, Oakwood implemented a road diet for Shoyer Road from Dayton-Kettering Connector to East Drive.

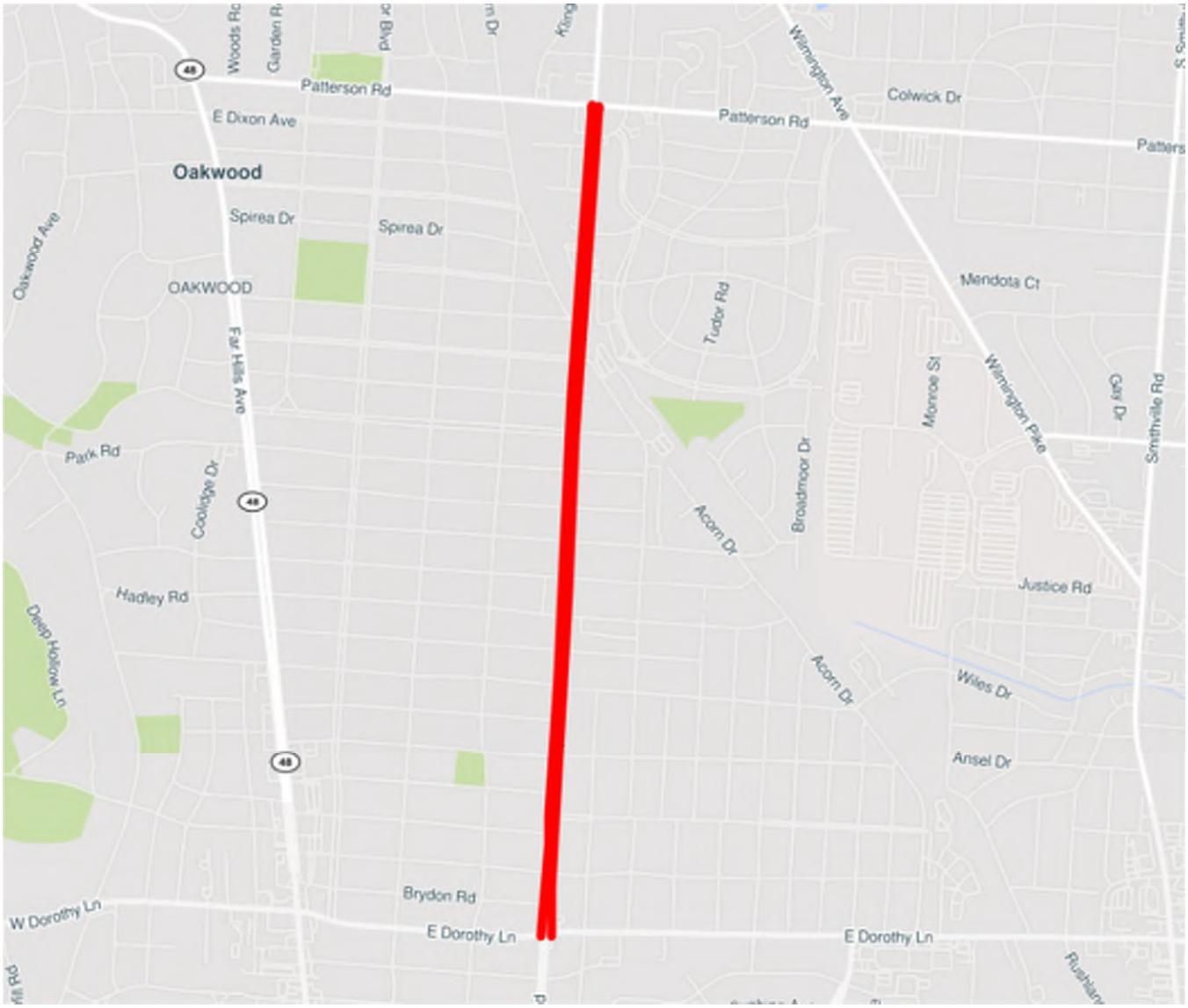
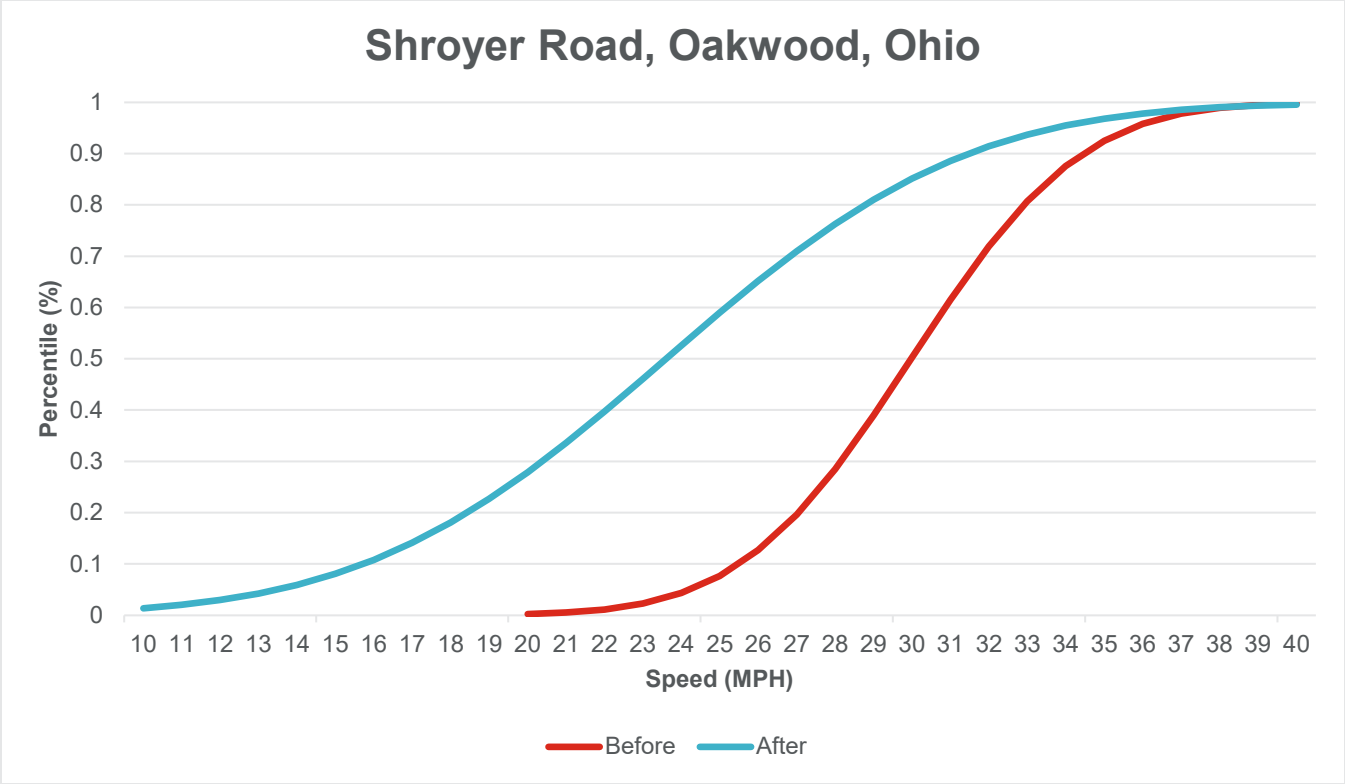


Figure 5 Shroyer Road INRIX Segment Limits

Source / Year	Location	50th Pctl Speed (MPH)	85th Pctl Speed (MPH)
INRIX / 9-2015 / 24 HRS	Corridor	31	33
INRIX / 9-2017 / 24 HRS	Corridor	25	30



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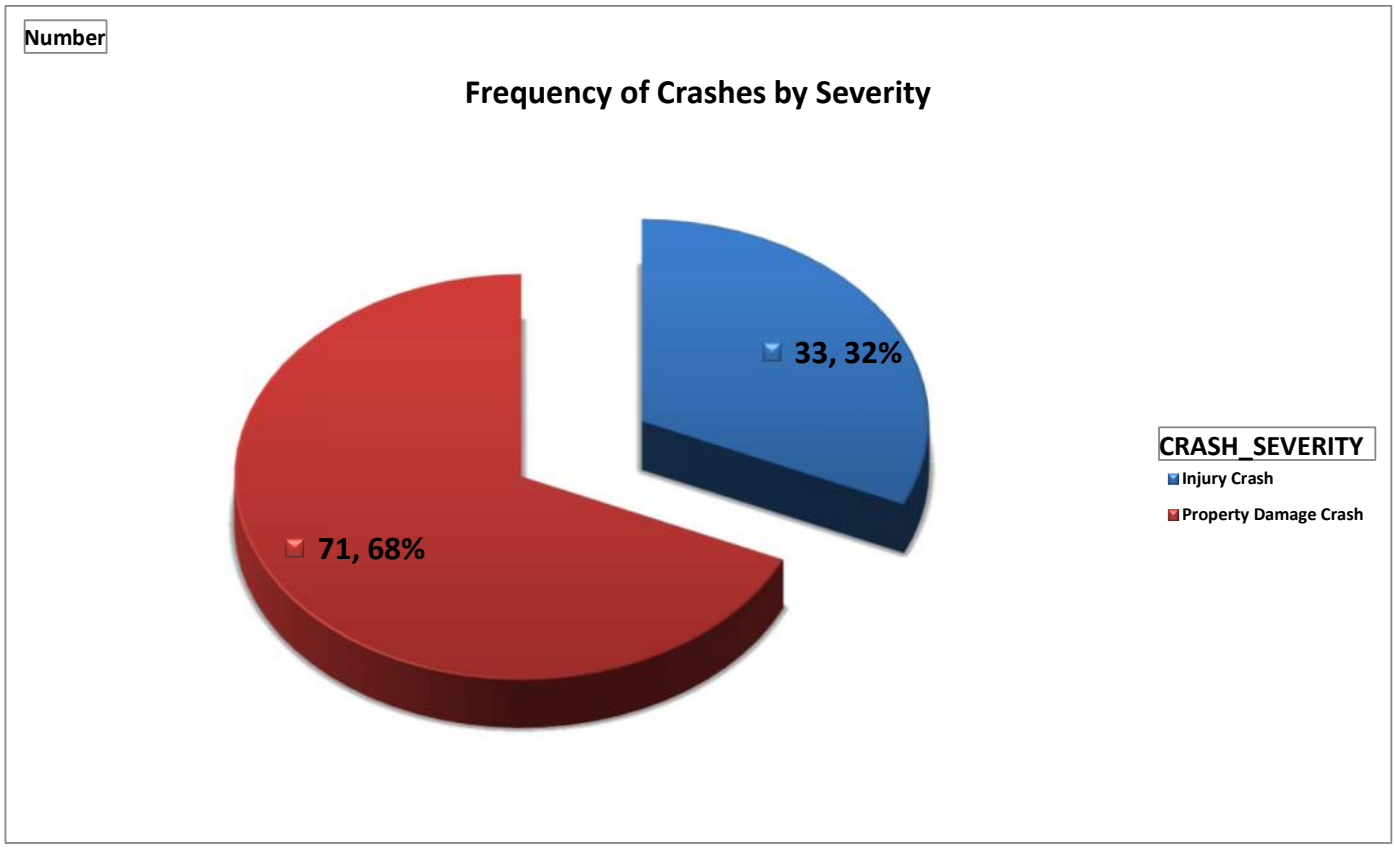
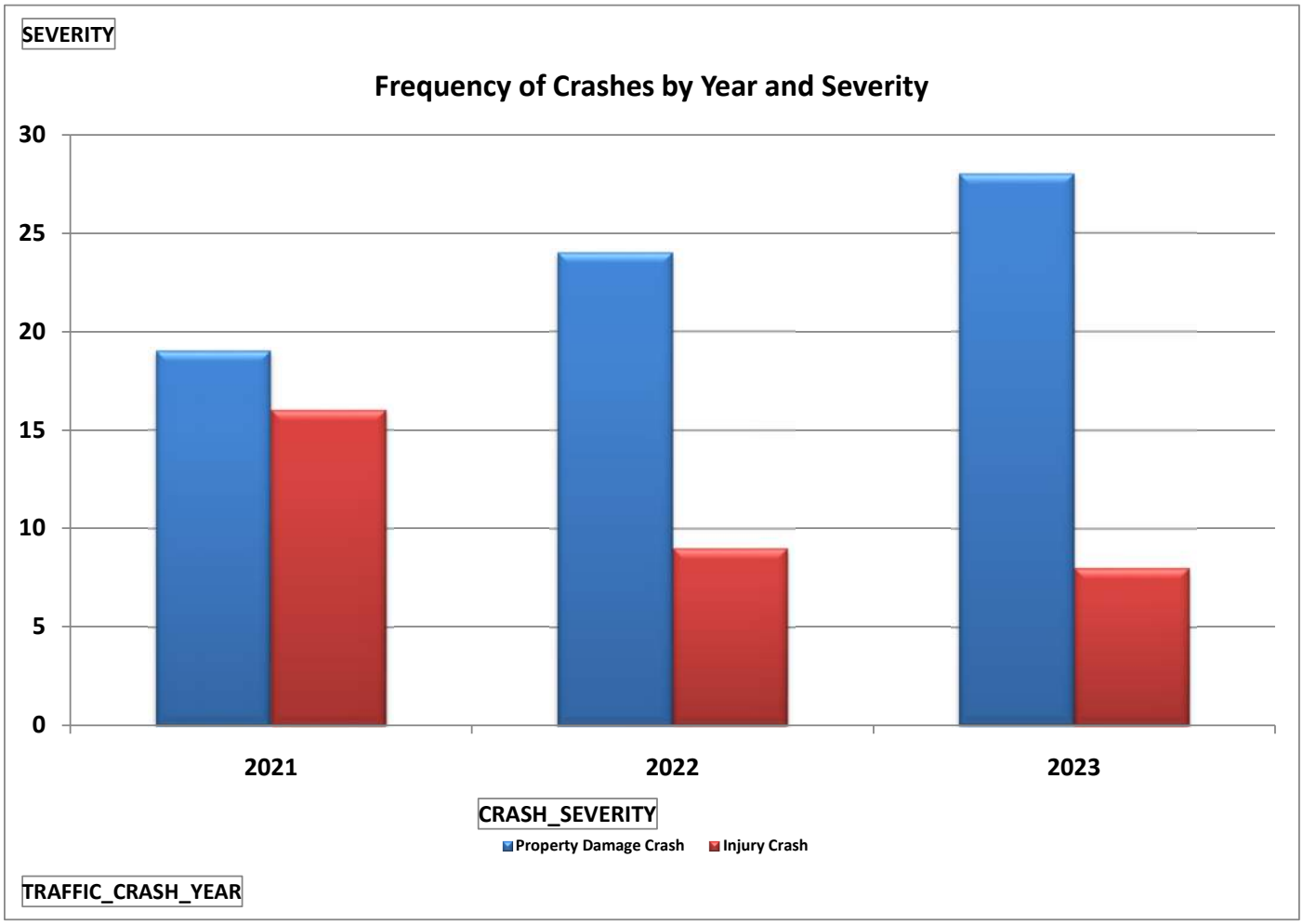
BROADWAY (SR57)
TARGET SPEED STUDY

APPENDIX F: SAFETY ANALYSIS

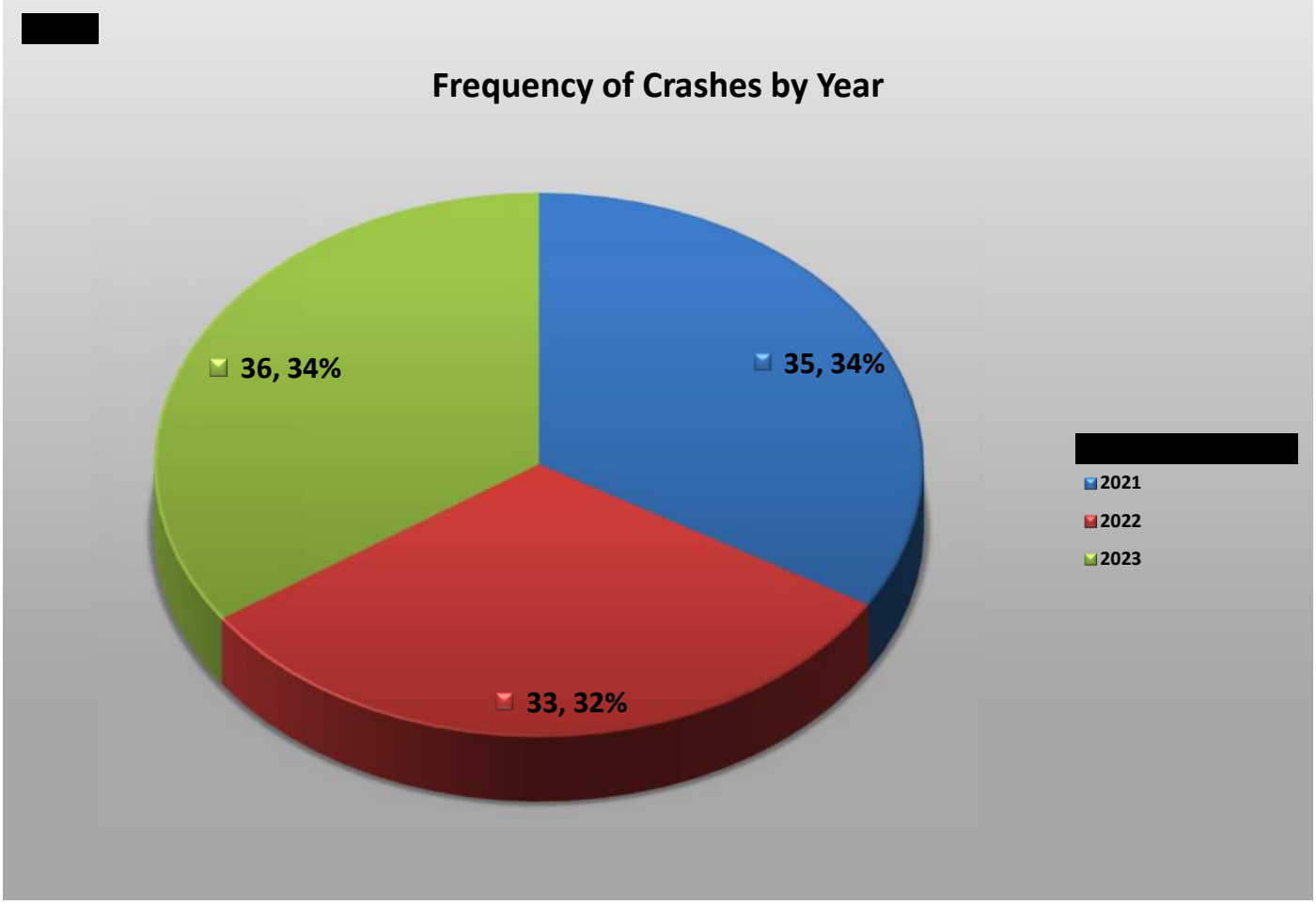
CMT

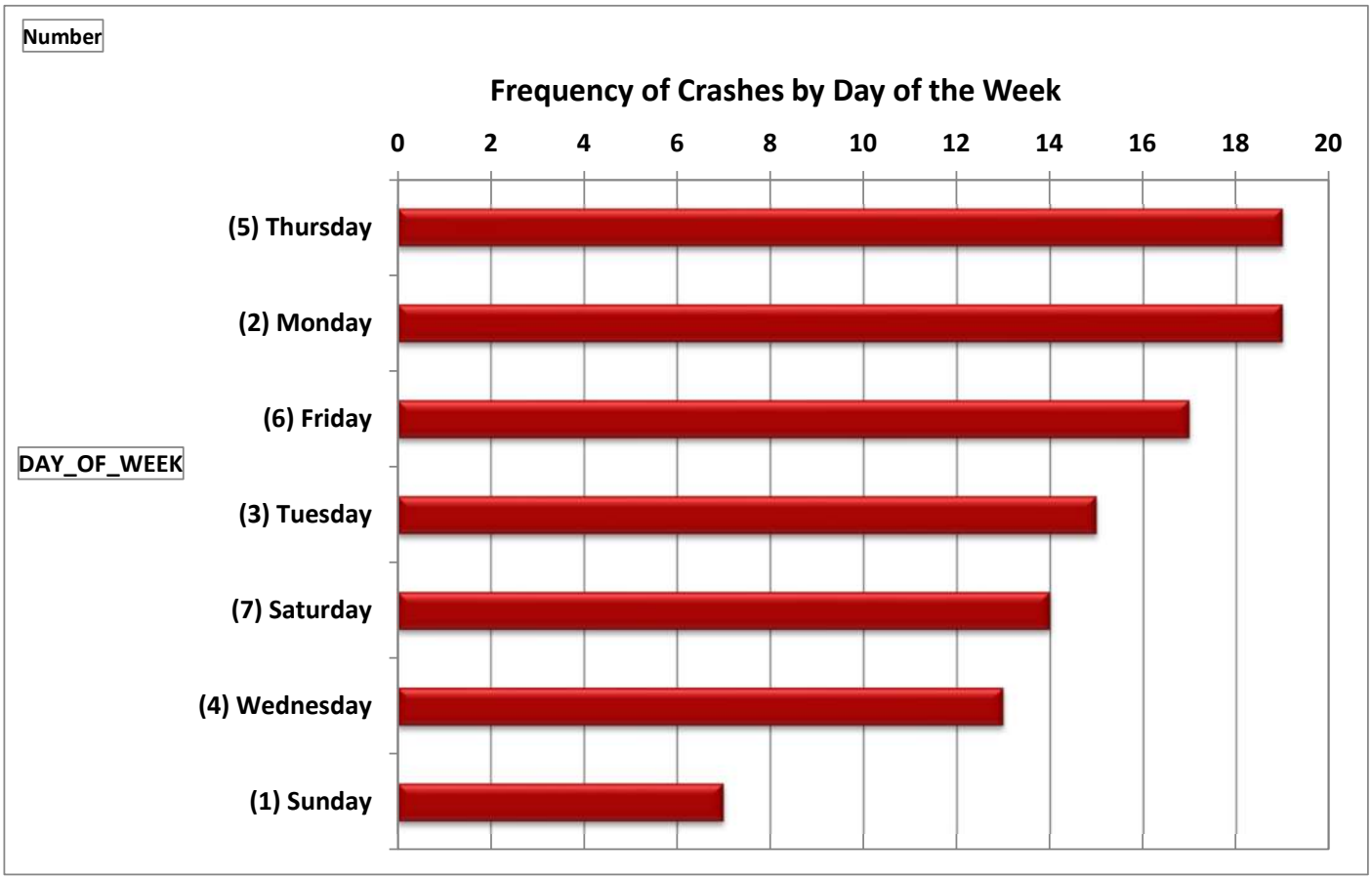
Broadway (Lorain) - 9th/Broadway to 28th/Elyria





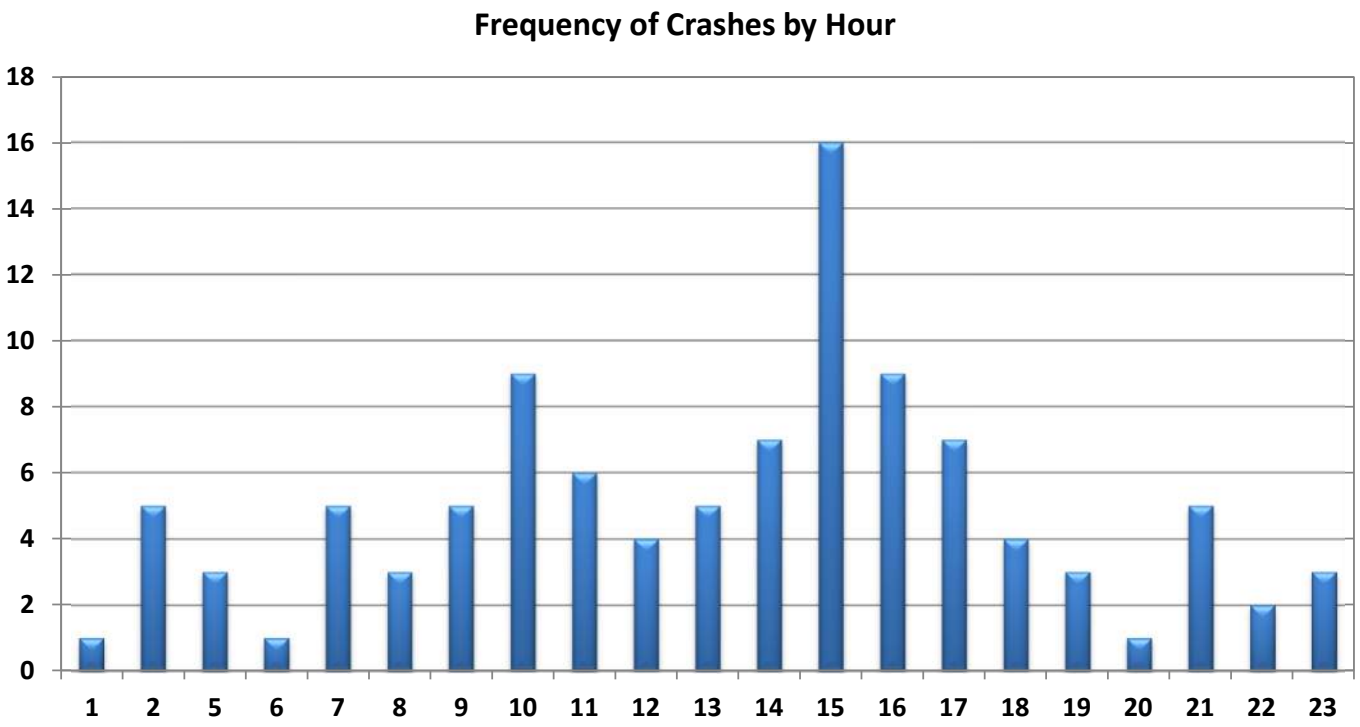
Broadway (Lorain) - 9th/Broadway to 28th/Elyria





Broadway (Lorain) - 9th/Broadway to 28th/Elyria

[redacted]



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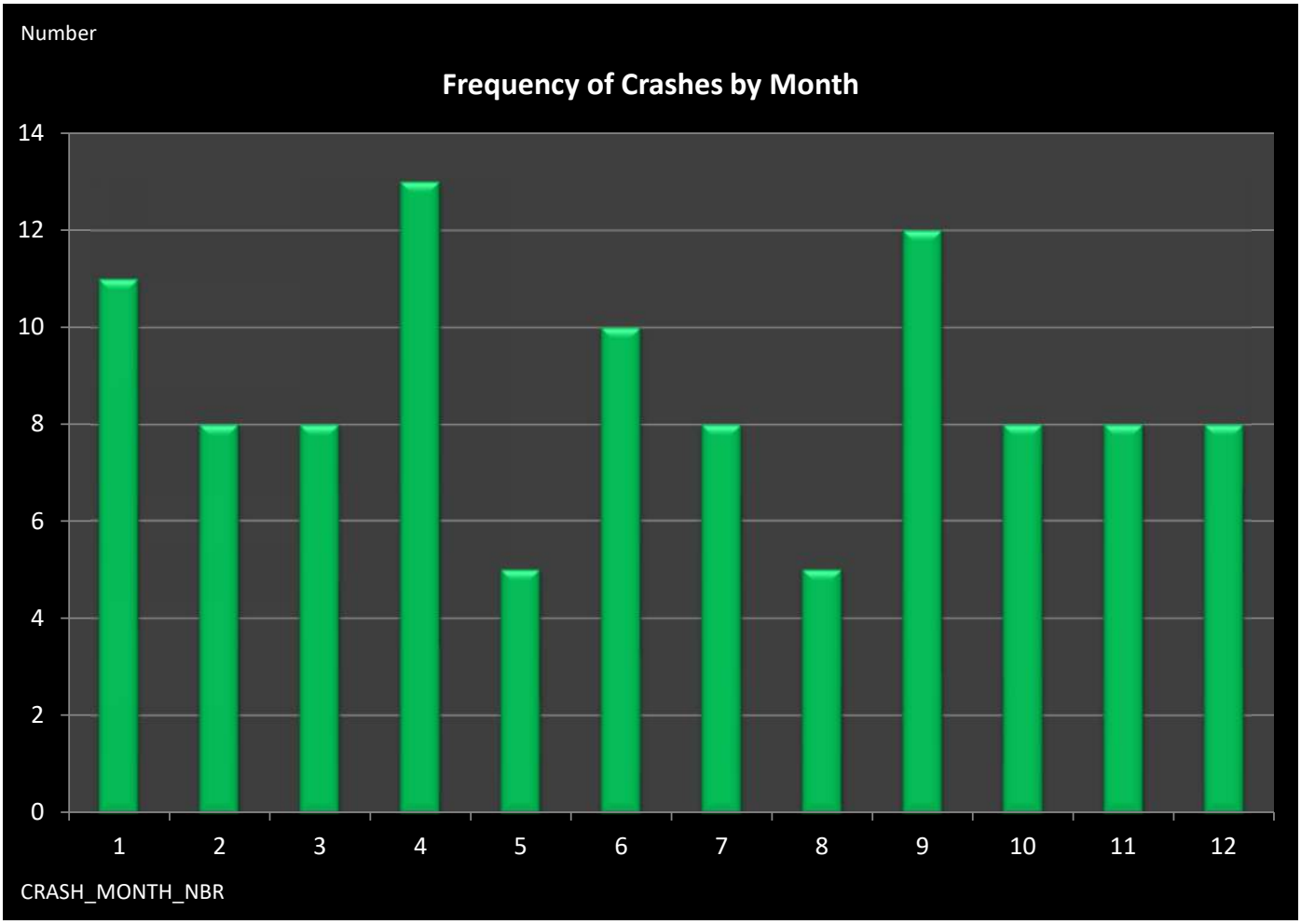

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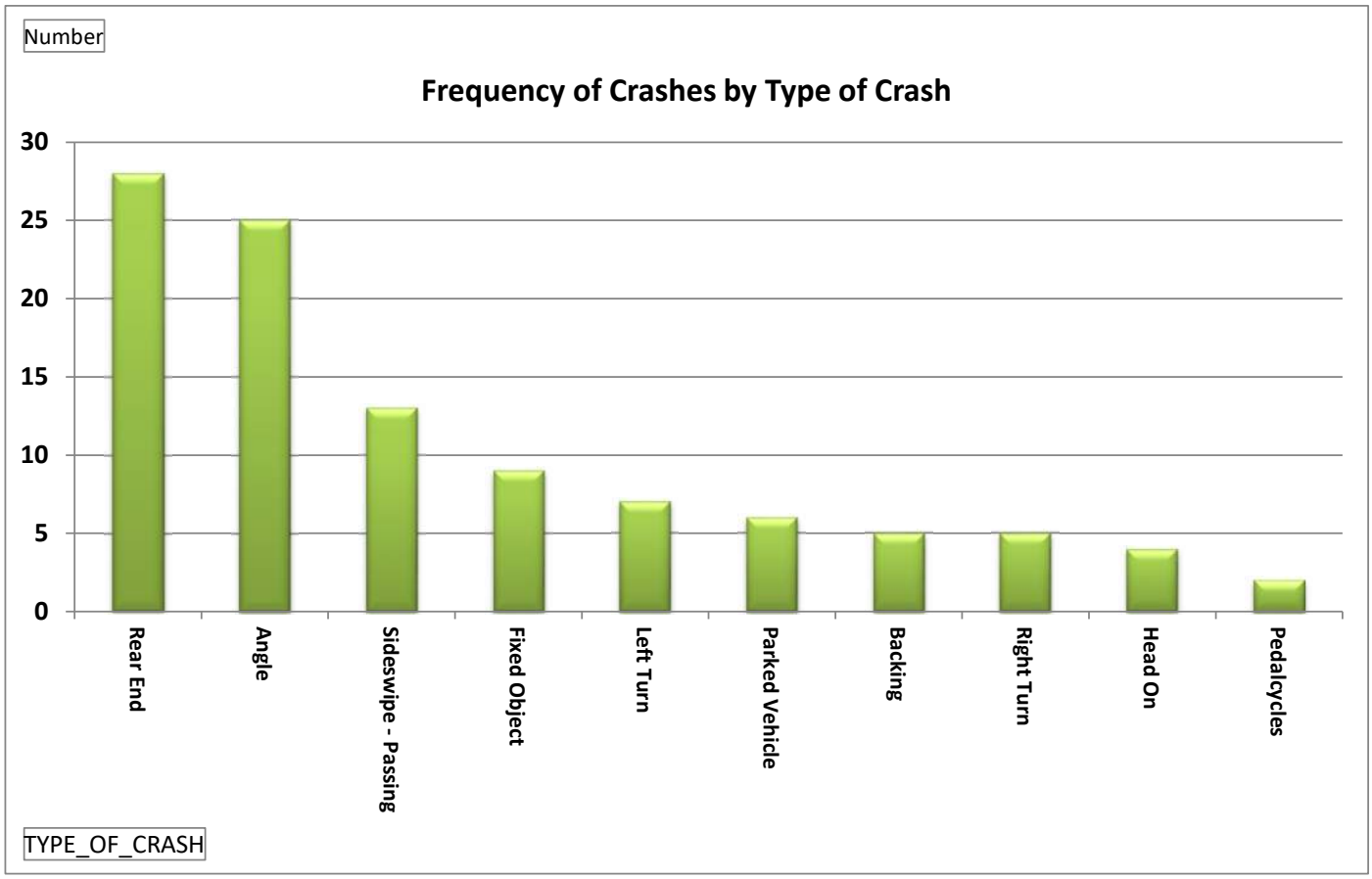

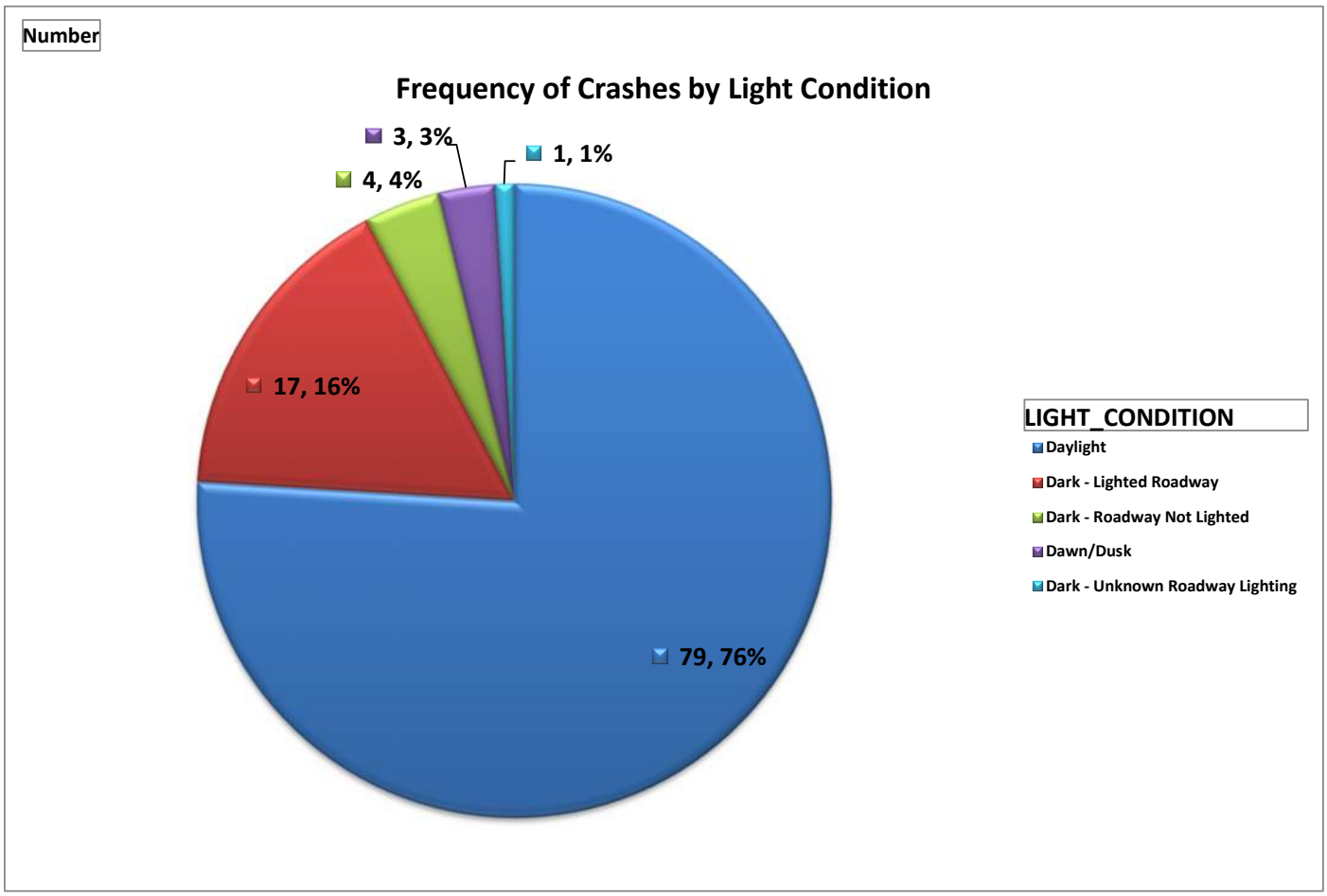

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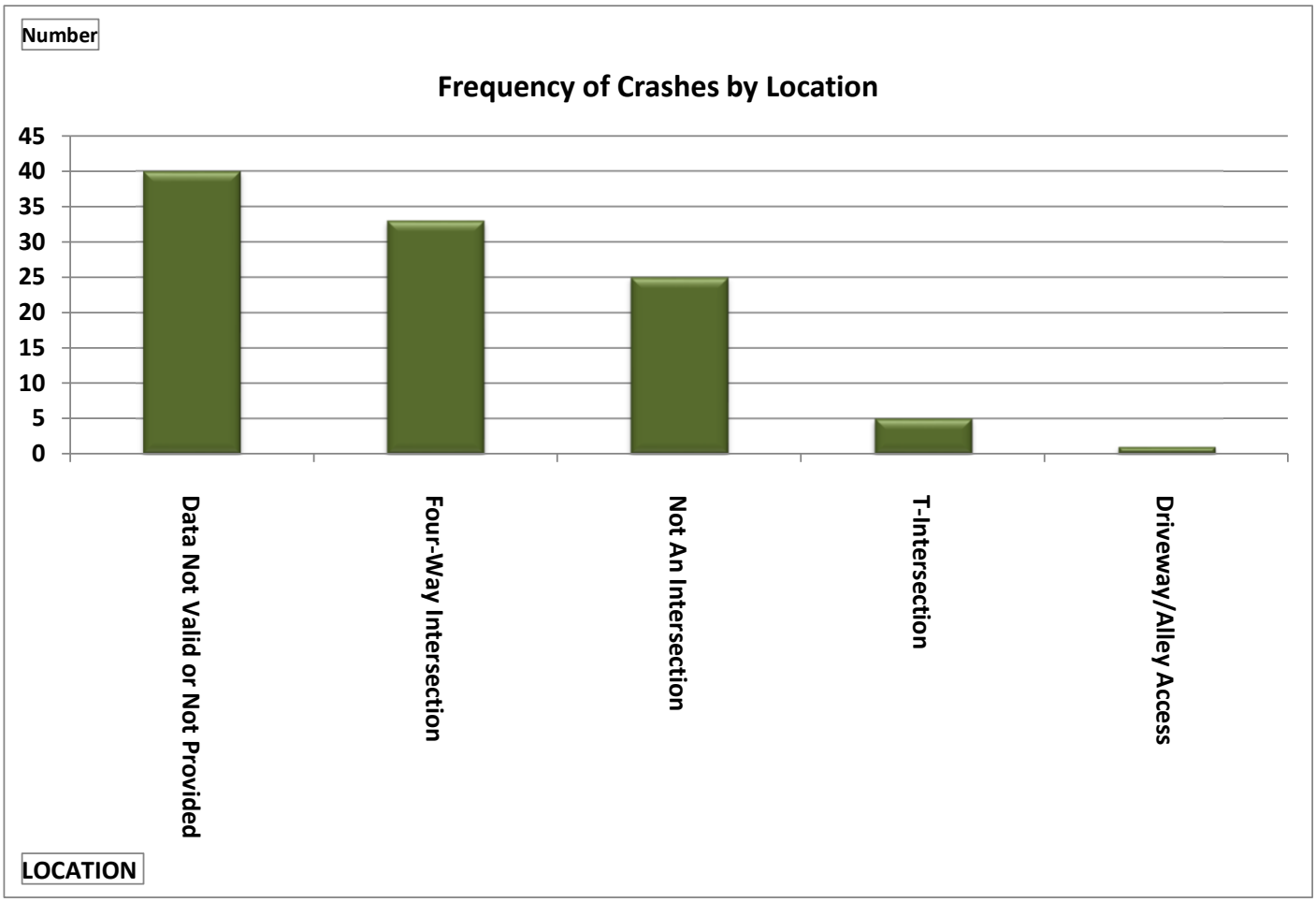

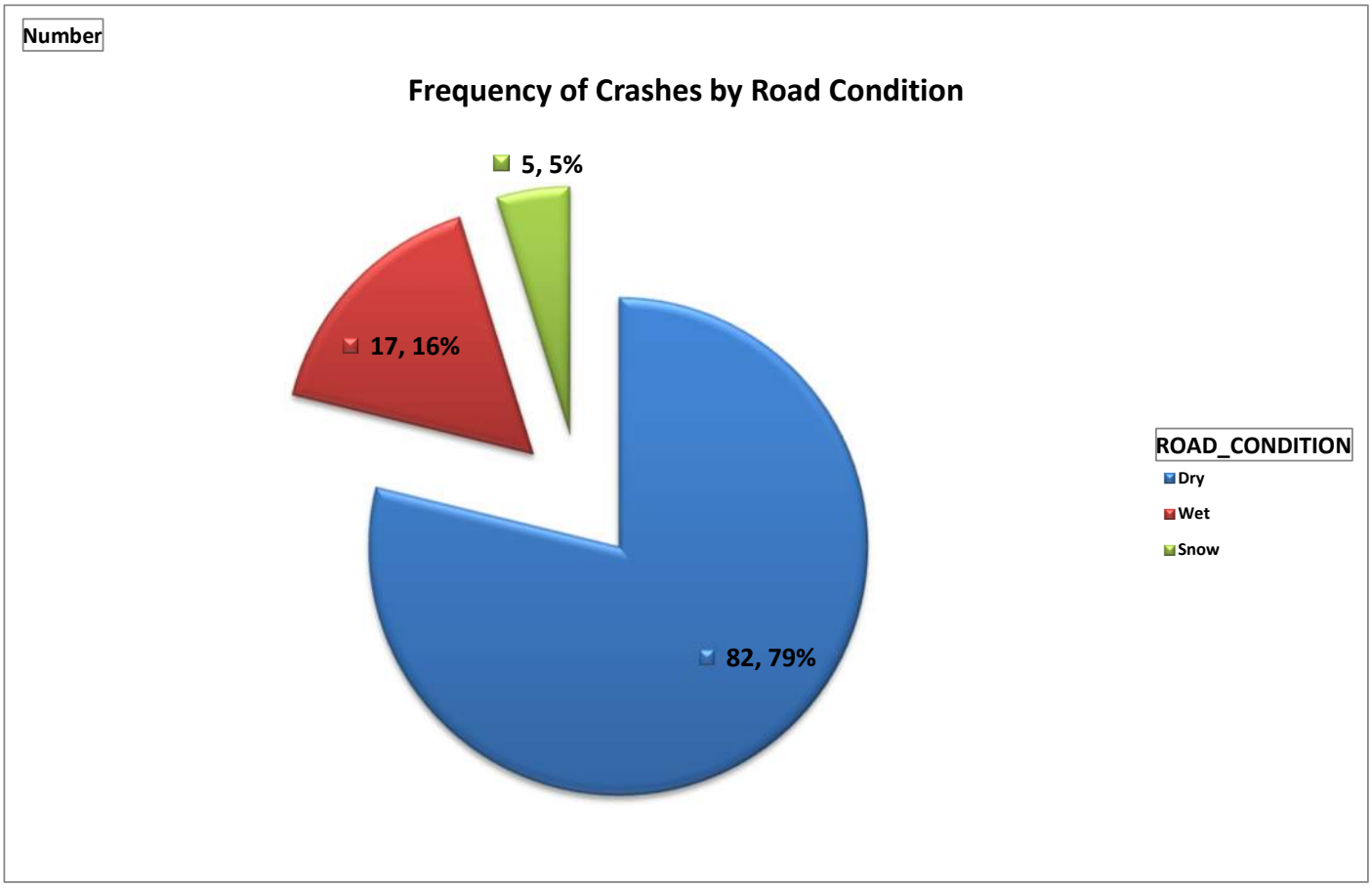

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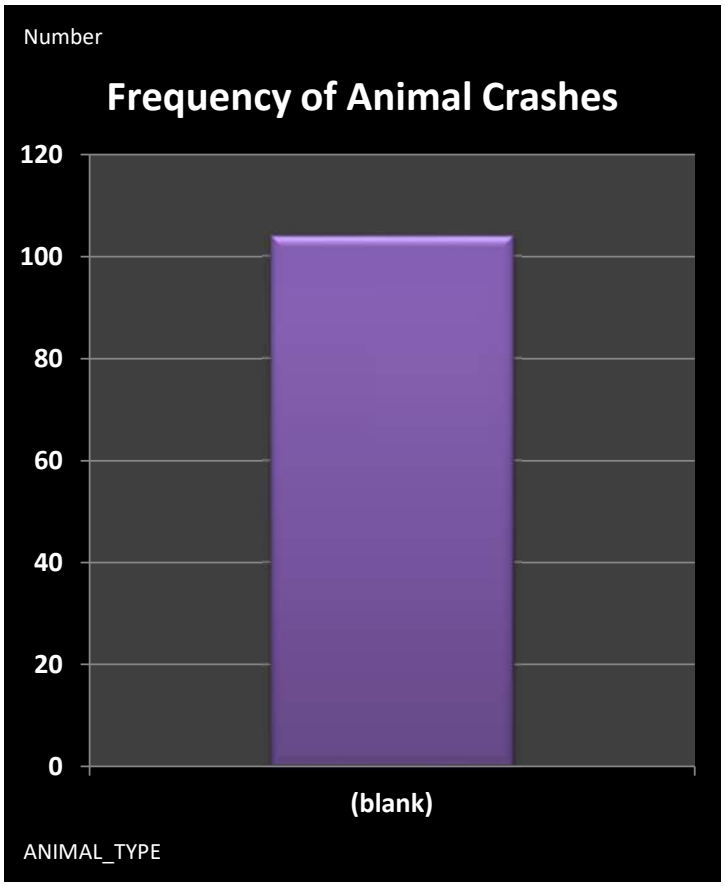

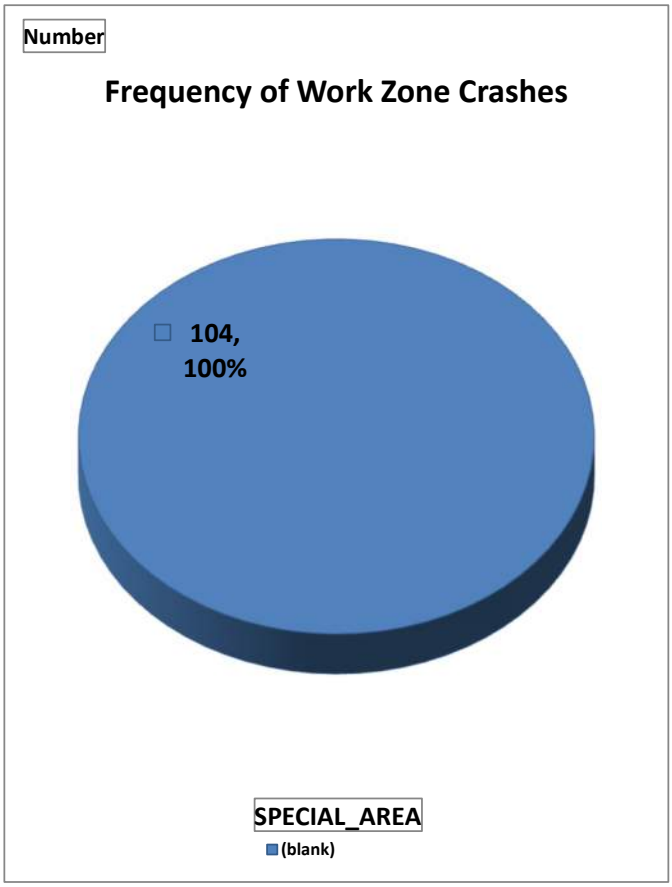

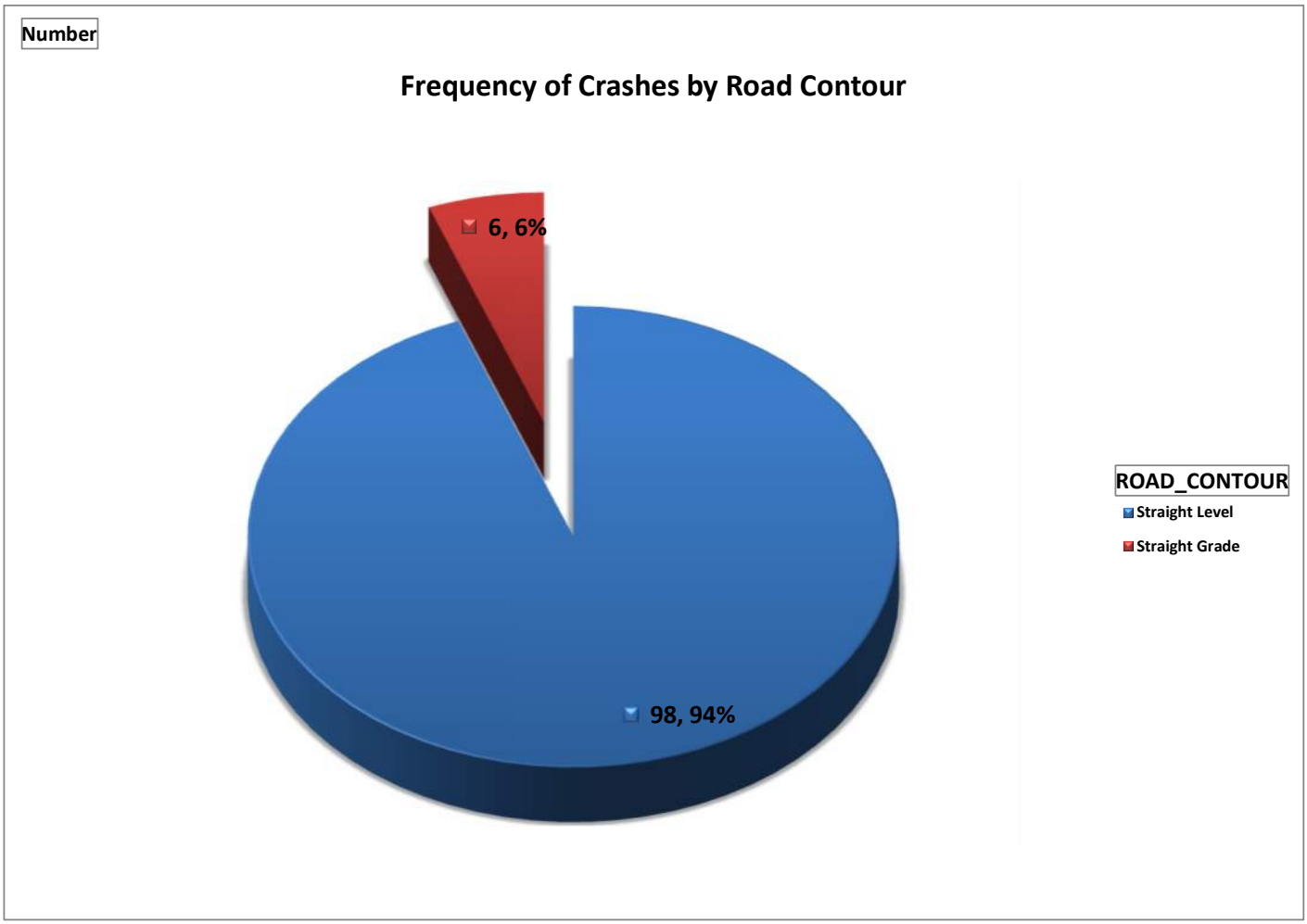

Broadway (Lorain) - 9th/Broadway to 28th/Elyria

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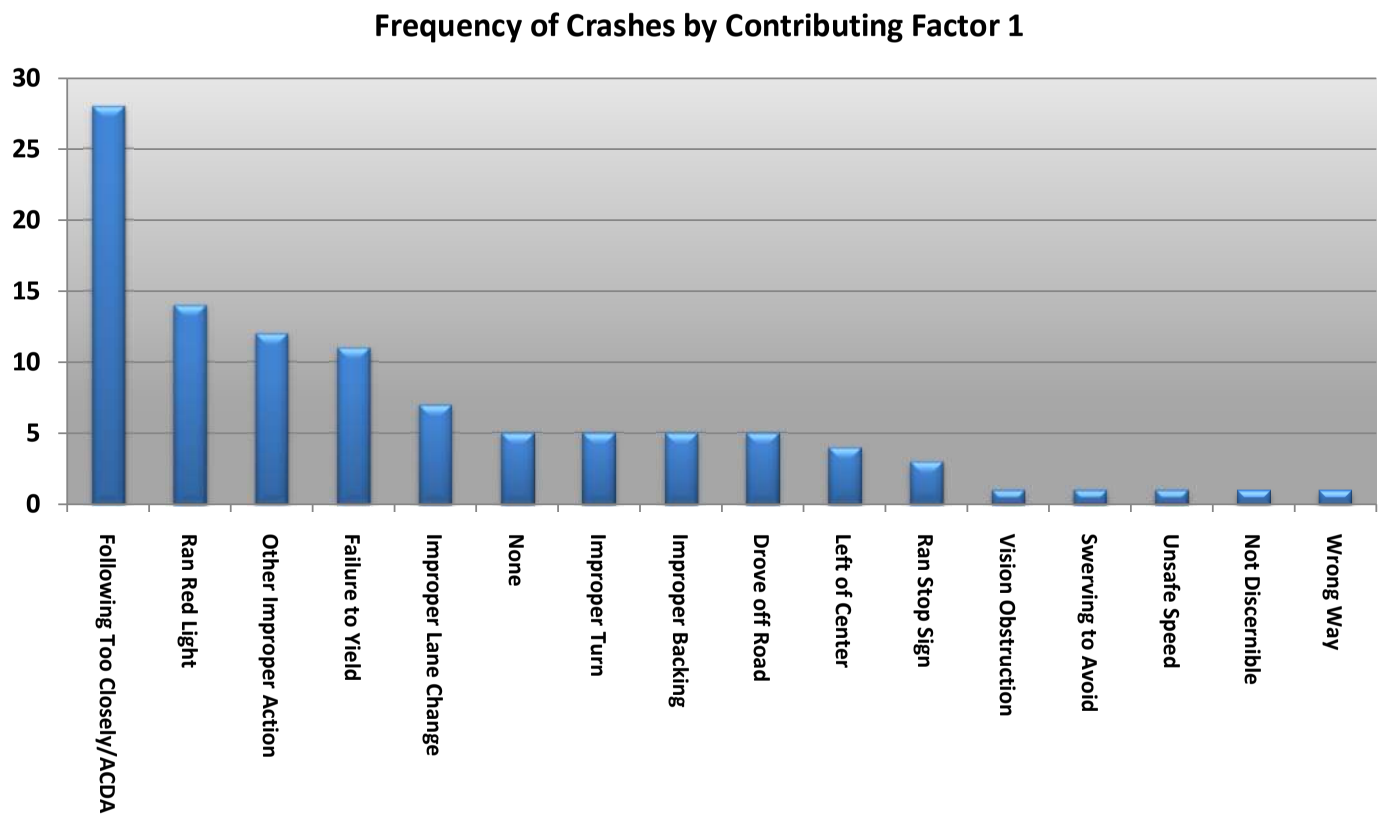

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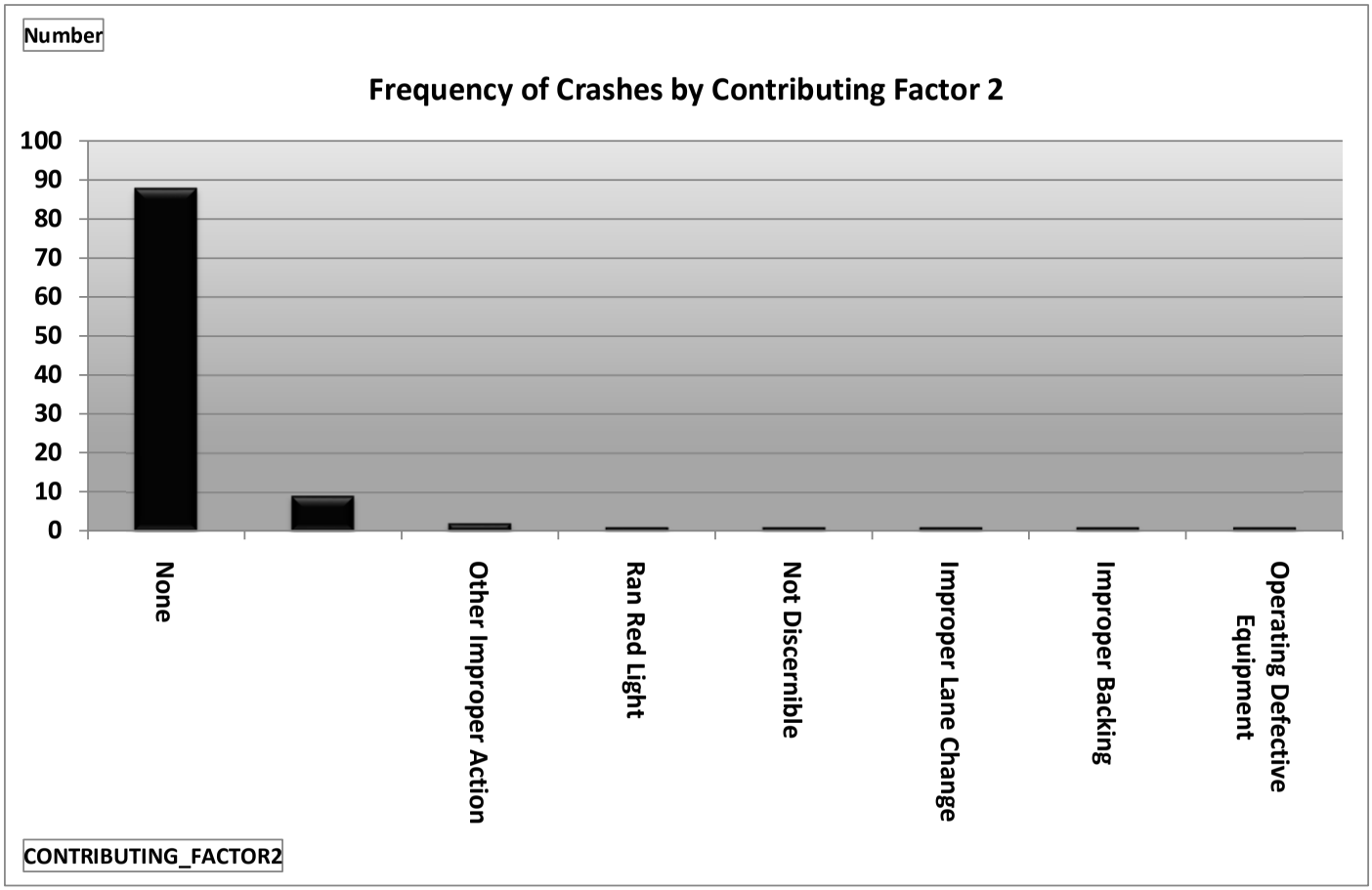

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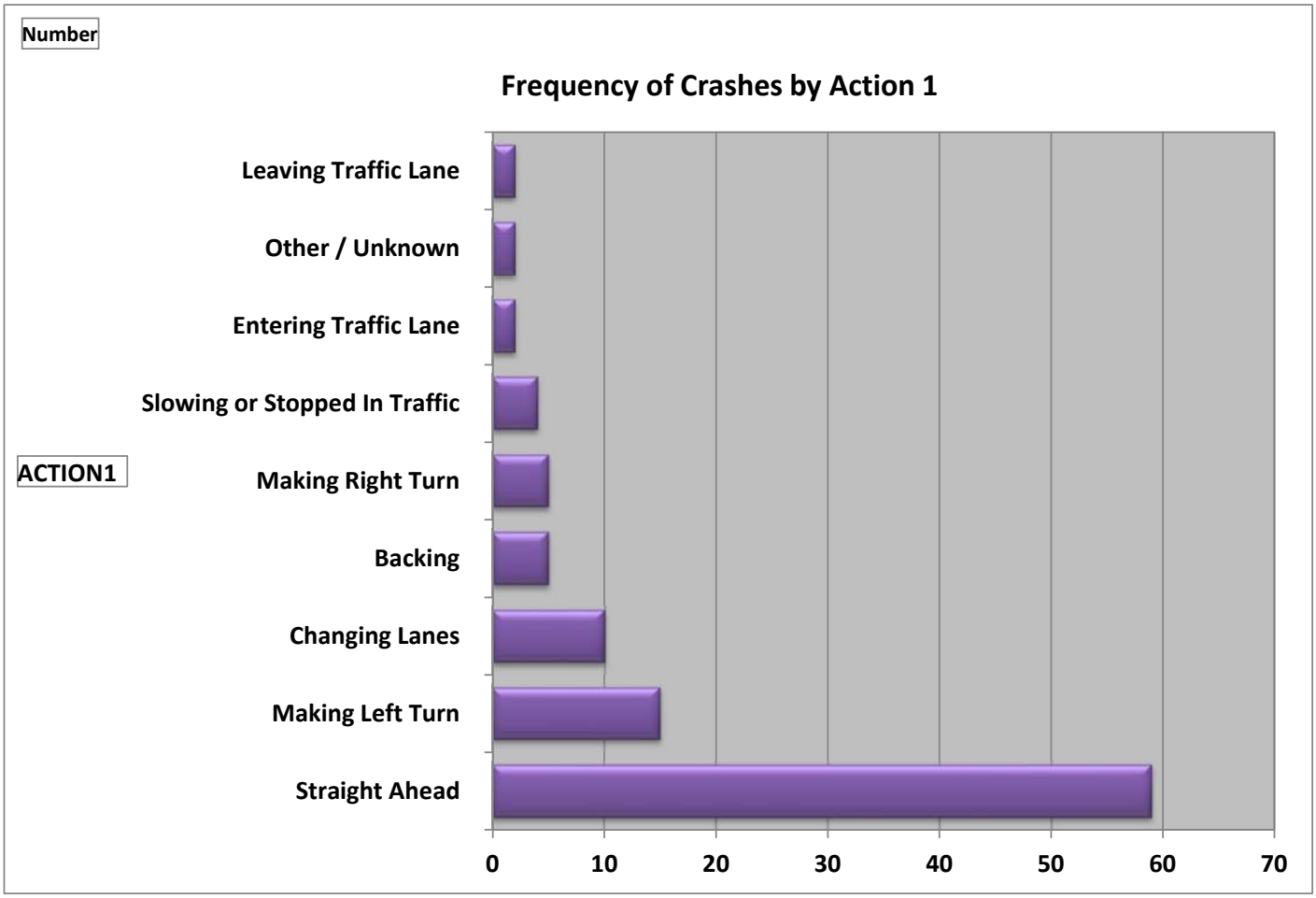

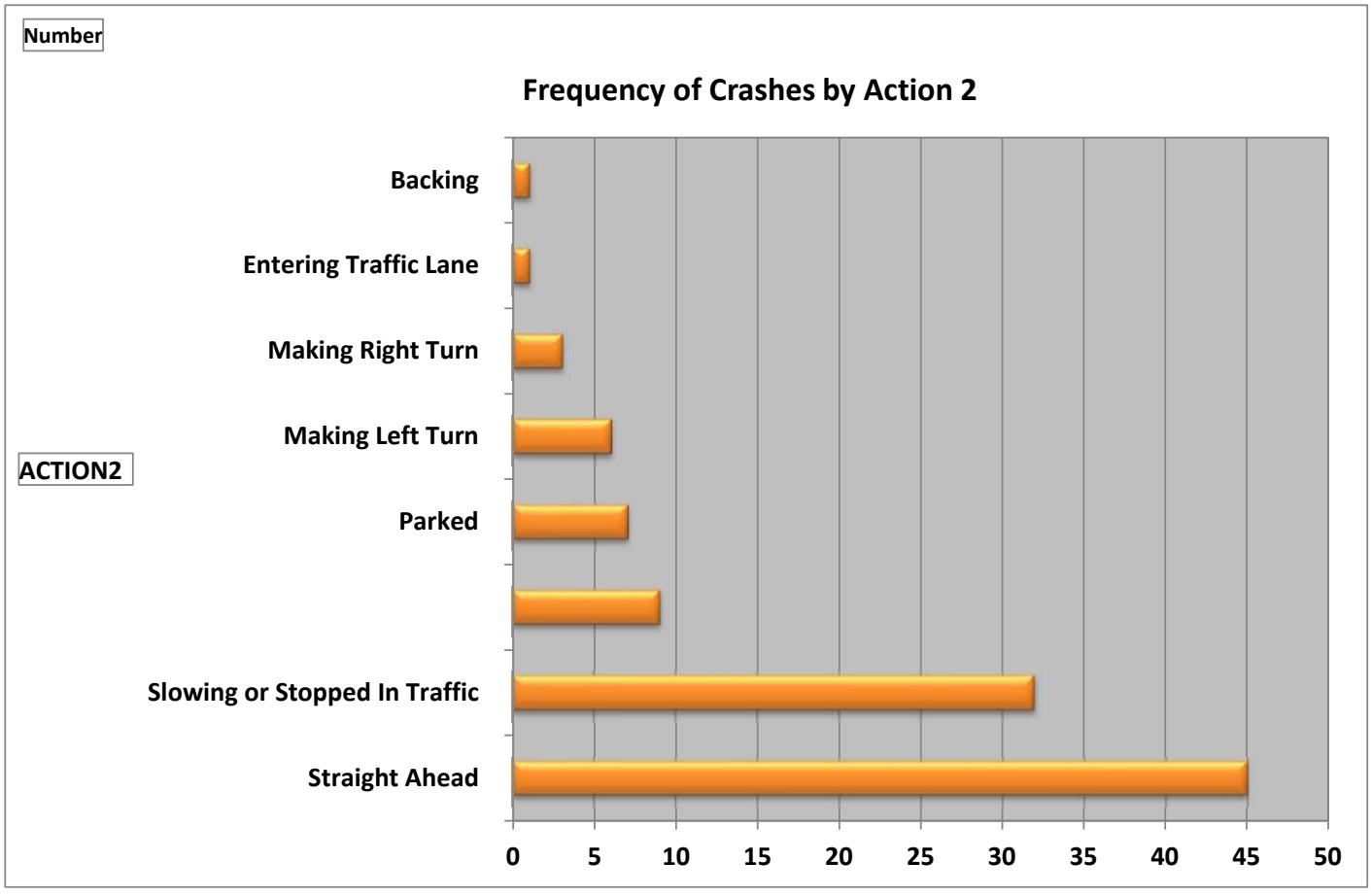

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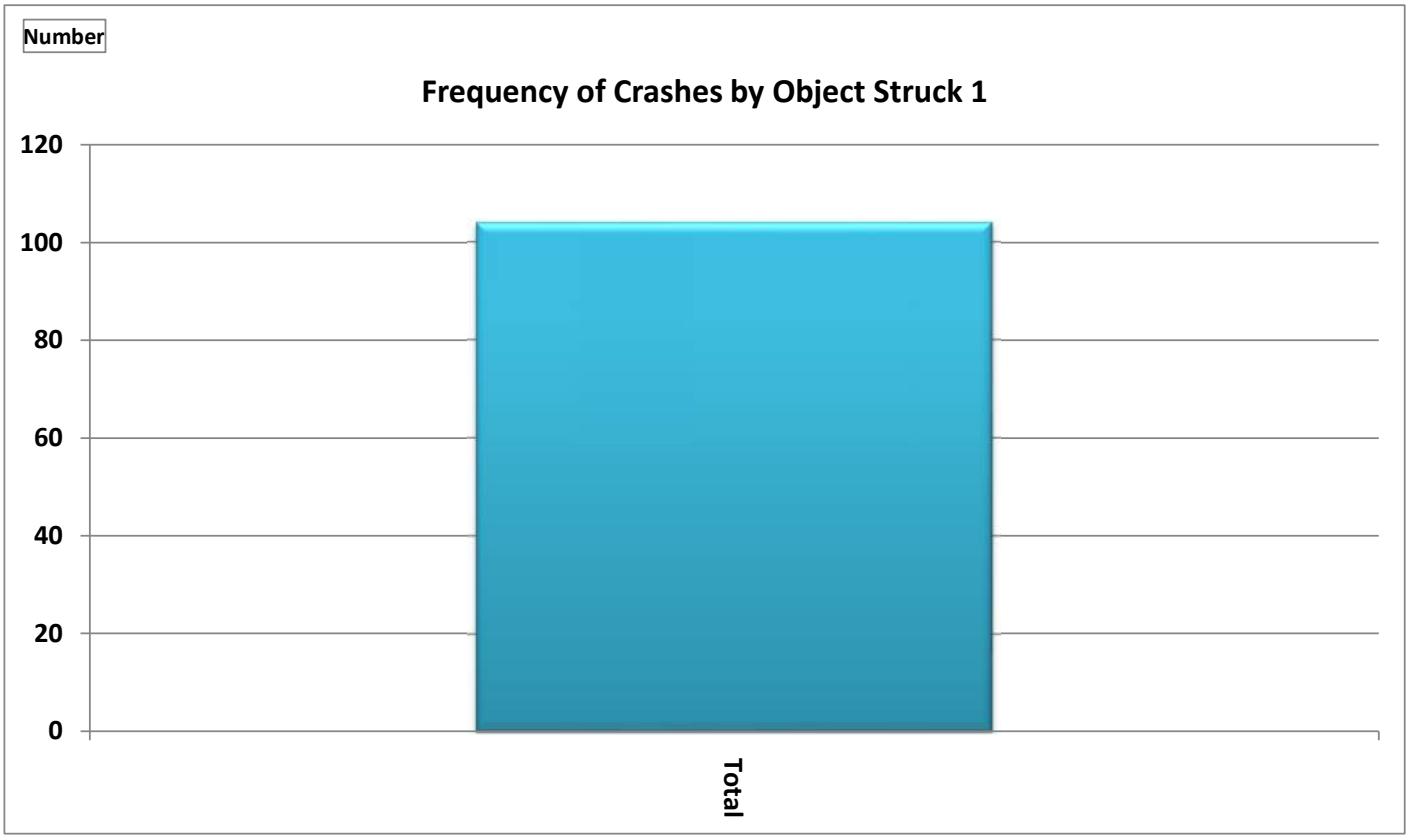
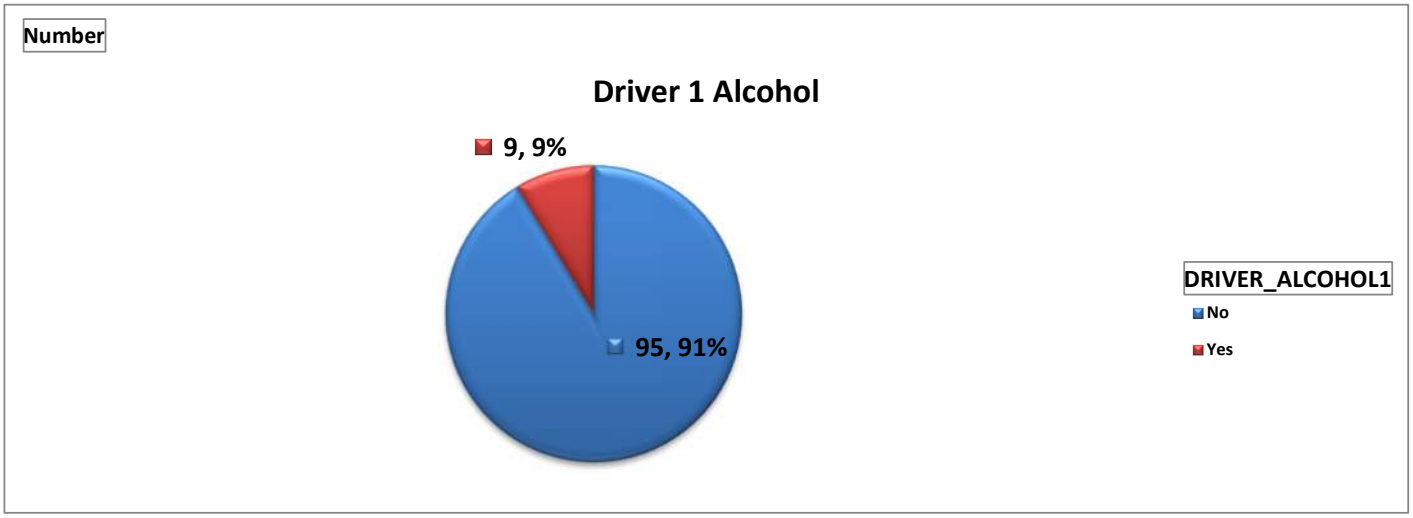
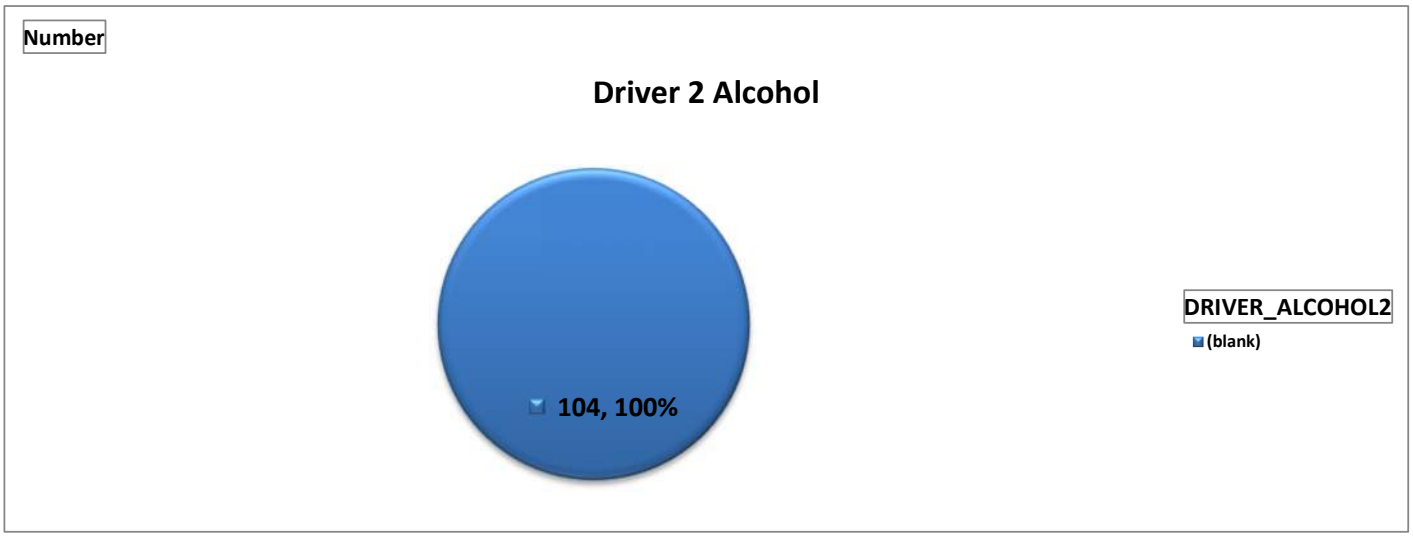




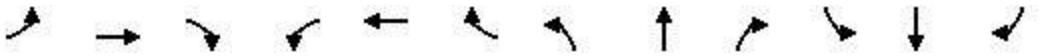


BROADWAY (SR57)
TARGET SPEED STUDY

APPENDIX G1: CAPACITY ANALYSES (NO BUILD)

CMT

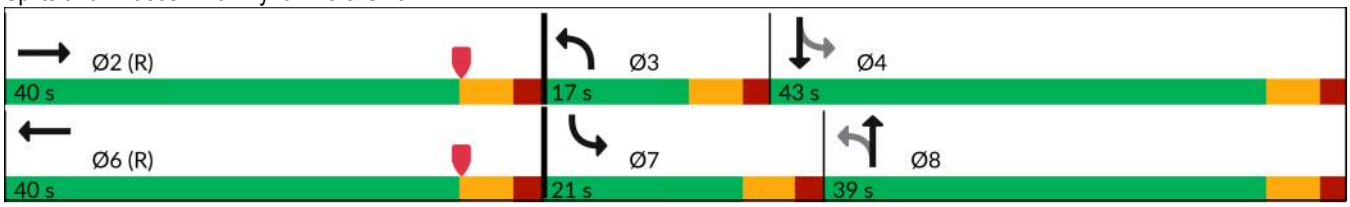
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	170	20	0	200	70	20	130	30	70	150	10
Future Volume (vph)	0	170	20	0	200	70	20	130	30	70	150	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	50			50			50			50		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.984			0.961			0.972			0.991	
Flt Protected							0.950			0.950		
Satd. Flow (prot)	0	3320	0	0	3273	0	1752	1793	0	1805	1883	0
Flt Permitted							0.652			0.442		
Satd. Flow (perm)	0	3320	0	0	3273	0	1203	1793	0	840	1883	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		853			397			280			279	
Travel Time (s)		23.3			10.8			7.6			7.6	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	7%	7%	7%	6%	6%	6%	3%	3%	3%	0%	0%	0%
Adj. Flow (vph)	0	177	21	0	208	73	21	135	31	73	156	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	198	0	0	281	0	21	166	0	73	166	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2			2		1	2		1	2	
Detector Template		Thru			Thru		Left	Thru		Left	Thru	
Leading Detector (ft)		100			100		20	100		20	100	
Trailing Detector (ft)		0			0		0	0		0	0	
Detector 1 Position(ft)		0			0		0	0		0	0	
Detector 1 Size(ft)		6			6		20	6		20	6	
Detector 1 Type		Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type		NA			NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2			6		3	8		7	4	

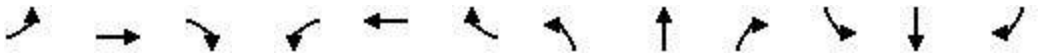


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases							8			4		
Detector Phase		2			6		3	8		7	4	
Switch Phase												
Minimum Initial (s)		20.0			20.0		7.0	10.0		7.0	10.0	
Minimum Split (s)		26.0			26.0		13.0	24.0		13.0	24.0	
Total Split (s)		40.0			40.0		17.0	39.0		21.0	43.0	
Total Split (%)		40.0%			40.0%		17.0%	39.0%		21.0%	43.0%	
Maximum Green (s)		34.0			34.0		11.0	33.0		15.0	37.0	
Yellow Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)		2.0			2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Recall Mode		C-Max			C-Max		None	None		None	None	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)		60.9			60.9		20.5	14.8		25.9	21.8	
Actuated g/C Ratio		0.61			0.61		0.21	0.15		0.26	0.22	
v/c Ratio		0.09			0.14		0.07	0.62		0.24	0.40	
Control Delay (s/veh)		10.7			10.2		23.3	50.0		26.0	36.0	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)		10.7			10.2		23.3	50.0		26.0	36.0	
LOS		B			B		C	D		C	D	
Approach Delay (s/veh)		10.8			10.3			47.0			33.0	
Approach LOS		B			B			D			C	
Queue Length 50th (ft)		22			40		10	101		34	81	
Queue Length 95th (ft)		57			72		24	159		60	150	
Internal Link Dist (ft)		773			317			200			199	
Turn Bay Length (ft)							100			100		
Base Capacity (vph)		2021			1992		346	591		380	696	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.10			0.14		0.06	0.28		0.19	0.24	

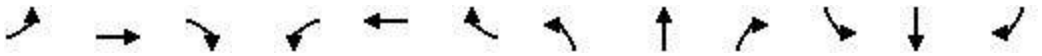
Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 65 (65%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.63			
Intersection Signal Delay (s/veh): 24.0		Intersection LOS: C	
Intersection Capacity Utilization 46.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Elyria Ave & SR57





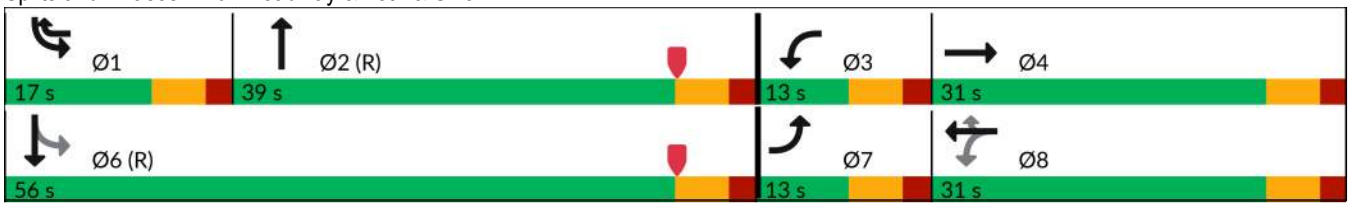
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	60	20	50	50	130	0	260	50	100	220	10
Future Volume (vph)	10	60	20	50	50	130	0	260	50	100	220	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	140		0	0		100	0		0	250		0
Storage Lanes	1		0	1		1	0		0	1		0
Taper Length (ft)	50			50			50			50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.962				0.850		0.976			0.993	
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1671	1692	0	1687	1776	1509	0	3293	0	1671	3319	0
Flt Permitted	0.950			0.538						0.489		
Satd. Flow (perm)	1671	1692	0	955	1776	1509	0	3293	0	860	3319	0
Right Turn on Red			Yes			No			No			Yes
Satd. Flow (RTOR)		16									7	
Link Speed (mph)		25			35			35			25	
Link Distance (ft)		741			853			602			2393	
Travel Time (s)		20.2			16.6			11.7			65.3	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	8%	8%	8%	7%	7%	7%	7%	7%	7%	8%	8%	8%
Adj. Flow (vph)	11	65	22	54	54	140	0	280	54	108	237	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	11	87	0	54	54	140	0	334	0	108	248	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1		2		1	2	
Detector Template	Left	Thru		Left	Thru	Right		Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100	20		100		20	100	
Trailing Detector (ft)	0	0		0	0	0		0		0	0	
Detector 1 Position(ft)	0	0		0	0	0		0		0	0	
Detector 1 Size(ft)	20	6		20	6	20		6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		pm+pt	NA	pm+ov		NA		pm+pt	NA	
Protected Phases	7	4		3	8	1		2		1	6	

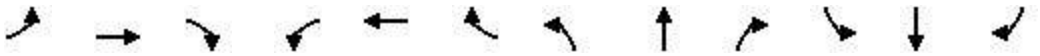


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases				8		8				6		
Detector Phase	7	4		3	8	1		2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	10.0		7.0	20.0	7.0		20.0		7.0	20.0	
Minimum Split (s)	13.0	24.0		13.0	26.0	13.0		26.0		13.0	26.0	
Total Split (s)	13.0	31.0		13.0	31.0	17.0		39.0		17.0	56.0	
Total Split (%)	13.0%	31.0%		13.0%	31.0%	17.0%		39.0%		17.0%	56.0%	
Maximum Green (s)	7.0	25.0		7.0	25.0	11.0		33.0		11.0	50.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0		2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0		6.0		6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lead		Lag		Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes		Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Recall Mode	None	None		None	None	None		C-Max		None	C-Max	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	7.0	12.3		20.9	22.1	31.5		53.9		68.5	69.7	
Actuated g/C Ratio	0.07	0.12		0.21	0.22	0.32		0.54		0.69	0.70	
v/c Ratio	0.09	0.39		0.21	0.13	0.29		0.18		0.16	0.10	
Control Delay (s/veh)	45.6	37.1		24.3	25.6	19.1		15.1		6.2	5.1	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	
Total Delay (s/veh)	45.6	37.1		24.3	25.6	19.1		15.1		6.2	5.1	
LOS	D	D		C	C	B		B		A	A	
Approach Delay (s/veh)		38.1			21.7			15.1			5.5	
Approach LOS		D			C			B			A	
Queue Length 50th (ft)	7	43		21	21	42		58		14	16	
Queue Length 95th (ft)	25	82		35	38	53		110		51	49	
Internal Link Dist (ft)		661			773			522			2313	
Turn Bay Length (ft)	140					100				250		
Base Capacity (vph)	116	435		250	444	510		1773		678	2316	
Starvation Cap Reductn	0	0		0	0	0		0		0	0	
Spillback Cap Reductn	0	0		0	0	0		0		0	0	
Storage Cap Reductn	0	0		0	0	0		0		0	0	
Reduced v/c Ratio	0.09	0.20		0.22	0.12	0.27		0.19		0.16	0.11	

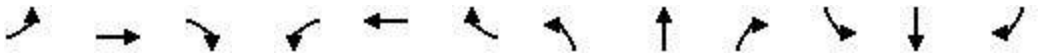
Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 3 (3%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.39			
Intersection Signal Delay (s/veh): 15.6		Intersection LOS: B	
Intersection Capacity Utilization 54.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 6: Broadway & 28th & SR57





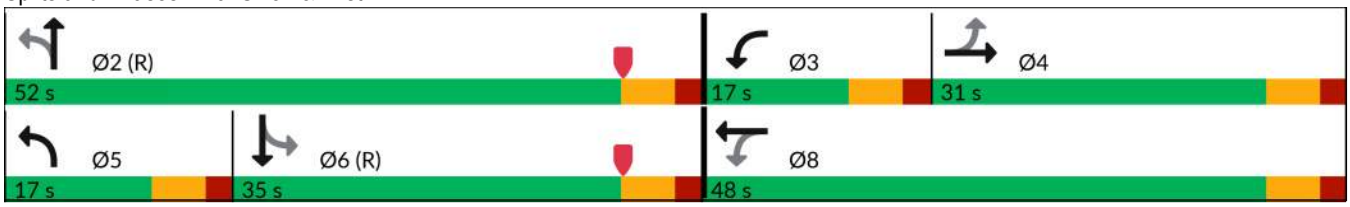
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	100	40	80	120	20	90	170	100	20	180	40
Future Volume (vph)	10	100	40	80	120	20	90	170	100	20	180	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	120		0	220		0	200		0	150		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	50			50			50			50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.957			0.978			0.944			0.973	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1687	1699	0	1656	1705	0	1687	3185	0	1671	3252	0
Flt Permitted	0.664			0.402			0.541			0.579		
Satd. Flow (perm)	1179	1699	0	701	1705	0	961	3185	0	1019	3252	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		19			10			104			27	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		727			505			2393			319	
Travel Time (s)		19.8			13.8			65.3			8.7	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	7%	7%	7%	9%	9%	9%	7%	7%	7%	8%	8%	8%
Adj. Flow (vph)	10	104	42	83	125	21	94	177	104	21	188	42
Shared Lane Traffic (%)												
Lane Group Flow (vph)	10	146	0	83	146	0	94	281	0	21	230	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA		Perm	NA	
Protected Phases		4		3	8		5	2			6	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	4	4		3	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		7.0	20.0		20.0	20.0	
Minimum Split (s)	24.0	24.0		13.0	24.0		13.0	26.0		26.0	26.0	
Total Split (s)	31.0	31.0		17.0	48.0		17.0	52.0		35.0	35.0	
Total Split (%)	31.0%	31.0%		17.0%	48.0%		17.0%	52.0%		35.0%	35.0%	
Maximum Green (s)	25.0	25.0		11.0	42.0		11.0	46.0		29.0	29.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lag	Lag		Lead			Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes			Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0			7.0			7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0			11.0			11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0			0			0		0	0	
Act Effct Green (s)	13.4	13.4		26.0	26.0		62.0	62.0		50.4	50.4	
Actuated g/C Ratio	0.13	0.13		0.26	0.26		0.62	0.62		0.50	0.50	
v/c Ratio	0.06	0.60		0.30	0.32		0.14	0.13		0.04	0.13	
Control Delay (s/veh)	36.4	45.2		28.7	27.4		8.1	4.9		17.7	13.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	36.4	45.2		28.7	27.4		8.1	4.9		17.7	13.7	
LOS	D	D		C	C		A	A		B	B	
Approach Delay (s/veh)		44.7			27.9			5.8			14.1	
Approach LOS		D			C			A			B	
Queue Length 50th (ft)	6	77		40	67		23	1		7	37	
Queue Length 95th (ft)	20	134		70	108		39	33		25	74	
Internal Link Dist (ft)		647			425			2313			239	
Turn Bay Length (ft)	120			220			200			150		
Base Capacity (vph)	294	439		288	721		676	2015		512	1651	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.03	0.33		0.29	0.20		0.14	0.14		0.04	0.14	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 65 (65%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay (s/veh): 18.9		Intersection LOS: B	
Intersection Capacity Utilization 70.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 9: SR57 & 21st

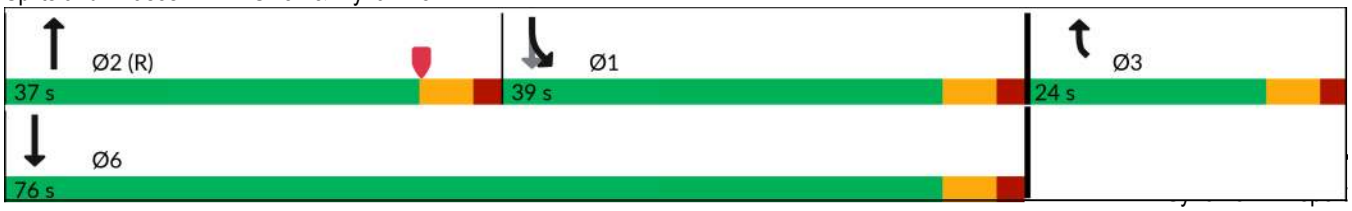


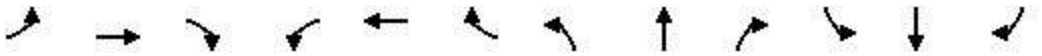
Lane Group	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Traffic Volume (vph)	120	10	100	130	0	120
Future Volume (vph)	120	10	100	130	0	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	0.88
Frt	0.989					0.850
Flt Protected			0.950			
Satd. Flow (prot)	3535	0	1736	1827	0	2787
Flt Permitted			0.950			
Satd. Flow (perm)	3535	0	1736	1827	0	2787
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	9					1522
Link Speed (mph)	25			25	25	
Link Distance (ft)	1391			2662	761	
Travel Time (s)	37.9			72.6	20.8	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	1%	1%	4%	4%	2%	2%
Adj. Flow (vph)	135	11	112	146	0	135
Shared Lane Traffic (%)						
Lane Group Flow (vph)	146	0	112	146	0	135
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			12	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Number of Detectors	2		1	2		1
Detector Template	Thru		Left	Thru		Right
Leading Detector (ft)	100		20	100		20
Trailing Detector (ft)	0		0	0		0
Detector 1 Position(ft)	0		0	0		0
Detector 1 Size(ft)	6		20	6		20
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0		0.0
Detector 1 Queue (s)	0.0		0.0	0.0		0.0
Detector 1 Delay (s)	0.0		0.0	0.0		0.0
Detector 2 Position(ft)	94			94		
Detector 2 Size(ft)	6			6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		Prot	NA		Prot
Protected Phases	2		1	6		3
Permitted Phases				1		
Detector Phase	2		1	6		3
Switch Phase						

Lane Group	NBT	NBR	SBL	SBT	NWL	NWR
Minimum Initial (s)	20.0		10.0	20.0		10.0
Minimum Split (s)	26.0		16.0	26.0		16.0
Total Split (s)	37.0		39.0	76.0		24.0
Total Split (%)	37.0%		39.0%	76.0%		24.0%
Maximum Green (s)	31.0		33.0	70.0		18.0
Yellow Time (s)	4.0		4.0	4.0		4.0
All-Red Time (s)	2.0		2.0	2.0		2.0
Lost Time Adjust (s)	0.0		0.0	0.0		0.0
Total Lost Time (s)	6.0		6.0	6.0		6.0
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0		3.0
Recall Mode	C-Max		None	Max		None
Act Effct Green (s)	39.0		33.0	78.0		10.0
Actuated g/C Ratio	0.39		0.33	0.78		0.10
v/c Ratio	0.10		0.19	0.10		0.08
Control Delay (s/veh)	11.0		25.1	2.8		0.1
Queue Delay	0.0		0.0	0.0		0.0
Total Delay (s/veh)	11.0		25.1	2.8		0.1
LOS	B		C	A		A
Approach Delay (s/veh)	11.1			12.5	0.1	
Approach LOS	B			B	A	
Queue Length 50th (ft)	17		51	18		0
Queue Length 95th (ft)	26		92	30		0
Internal Link Dist (ft)	1311			2582	681	
Turn Bay Length (ft)						
Base Capacity (vph)	1384		572	1425		1749
Starvation Cap Reductn	0		0	0		0
Spillback Cap Reductn	0		0	0		0
Storage Cap Reductn	0		0	0		0
Reduced v/c Ratio	0.11		0.20	0.10		0.08

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 88 (88%), Referenced to phase 2:NBT, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.20			
Intersection Signal Delay (s/veh): 9.0		Intersection LOS: A	
Intersection Capacity Utilization 35.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 12: SR57 & Elyria Ave





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	10	20	10	10	10	10	200	10	10	190	10
Future Volume (vph)	10	10	20	10	10	10	10	200	10	10	190	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.932			0.955			0.994			0.994	
Flt Protected		0.988			0.984			0.998			0.998	
Satd. Flow (prot)	0	1750	0	0	1785	0	0	1866	0	0	1848	0
Flt Permitted		0.988			0.984			0.998			0.998	
Satd. Flow (perm)	0	1750	0	0	1785	0	0	1866	0	0	1848	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		549			288			376			448	
Travel Time (s)		13.1			9.2			10.3			12.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	1%	1%	2%	2%	2%
Adj. Flow (vph)	11	11	22	11	11	11	11	217	11	11	207	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	44	0	0	33	0	0	239	0	0	229	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 24.6%		ICU Level of Service A	
Analysis Period (min) 15			

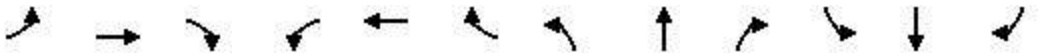
Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	10	20	10	10	10	10	200	10	10	190	10
Future Vol, veh/h	10	10	20	10	10	10	10	200	10	10	190	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	1	1	1	2	2	2
Mvmt Flow	11	11	22	11	11	11	11	217	11	11	207	11

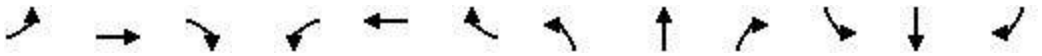
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	478	484	212	478	484	223	217	0	0	228	0	0
Stage 1	234	234	-	245	245	-	-	-	-	-	-	-
Stage 2	245	250	-	234	239	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.11	-	-	4.12	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.209	-	-	2.218	-	-
Pot Cap-1 Maneuver	501	486	833	501	486	822	1358	-	-	1340	-	-
Stage 1	774	715	-	764	707	-	-	-	-	-	-	-
Stage 2	764	704	-	774	711	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	474	477	833	468	477	822	1358	-	-	1340	-	-
Mov Cap-2 Maneuver	474	477	-	468	477	-	-	-	-	-	-	-
Stage 1	767	708	-	757	701	-	-	-	-	-	-	-
Stage 2	735	697	-	735	705	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	11.4	11.95	0.35	0.37
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	81	-	-	606	550	85	-	-
HCM Lane V/C Ratio	0.008	-	-	0.072	0.059	0.008	-	-
HCM Control Delay (s/veh)	7.7	0	-	11.4	12	7.7	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.2	0	-	-



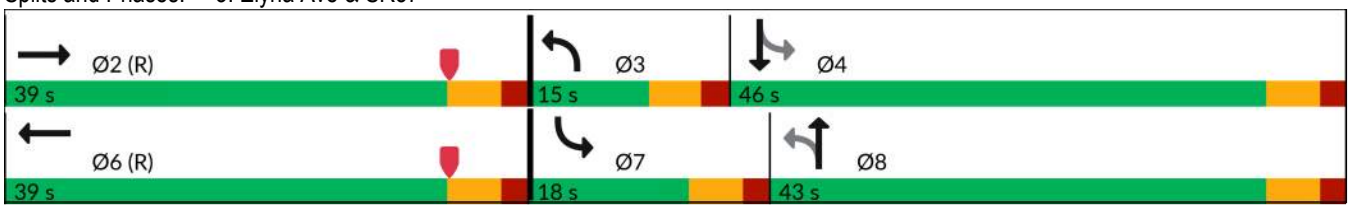
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	330	30	0	400	110	30	270	30	120	250	10
Future Volume (vph)	0	330	30	0	400	110	30	270	30	120	250	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	50			50			50			50		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.988			0.968			0.985			0.994	
Flt Protected							0.950			0.950		
Satd. Flow (prot)	0	3497	0	0	3426	0	1787	1853	0	1770	1852	0
Flt Permitted							0.566			0.266		
Satd. Flow (perm)	0	3497	0	0	3426	0	1065	1853	0	495	1852	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		853			397			280			279	
Travel Time (s)		23.3			10.8			7.6			7.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	2%	2%	2%
Adj. Flow (vph)	0	367	33	0	444	122	33	300	33	133	278	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	400	0	0	566	0	33	333	0	133	289	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2			2		1	2		1	2	
Detector Template		Thru			Thru		Left	Thru		Left	Thru	
Leading Detector (ft)		100			100		20	100		20	100	
Trailing Detector (ft)		0			0		0	0		0	0	
Detector 1 Position(ft)		0			0		0	0		0	0	
Detector 1 Size(ft)		6			6		20	6		20	6	
Detector 1 Type		Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type		NA			NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2			6		3	8		7	4	



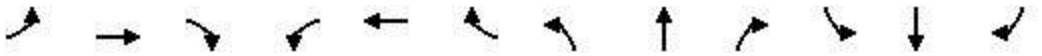
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases							8			4		
Detector Phase		2			6		3	8		7	4	
Switch Phase												
Minimum Initial (s)		20.0			20.0		7.0	10.0		7.0	10.0	
Minimum Split (s)		26.0			26.0		13.0	24.0		13.0	24.0	
Total Split (s)		39.0			39.0		15.0	43.0		18.0	46.0	
Total Split (%)		39.0%			39.0%		15.0%	43.0%		18.0%	46.0%	
Maximum Green (s)		33.0			33.0		9.0	37.0		12.0	40.0	
Yellow Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)		2.0			2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Recall Mode		C-Max			C-Max		None	None		None	None	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)		47.8			47.8		30.8	23.6		39.2	32.2	
Actuated g/C Ratio		0.48			0.48		0.31	0.24		0.39	0.32	
v/c Ratio		0.23			0.34		0.08	0.76		0.40	0.48	
Control Delay (s/veh)		16.7			18.5		16.4	46.5		21.4	30.2	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)		16.7			18.5		16.4	46.5		21.4	30.2	
LOS		B			B		B	D		C	C	
Approach Delay (s/veh)		16.7			18.5			43.8			27.5	
Approach LOS		B			B			D			C	
Queue Length 50th (ft)		91			115		13	199		53	158	
Queue Length 95th (ft)		128			185		26	266		78	213	
Internal Link Dist (ft)		773			317			200			199	
Turn Bay Length (ft)							100			100		
Base Capacity (vph)		1670			1637		412	685		348	740	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.24			0.35		0.08	0.49		0.38	0.39	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 25 (25%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay (s/veh): 25.5		Intersection LOS: C	
Intersection Capacity Utilization 54.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Elyria Ave & SR57



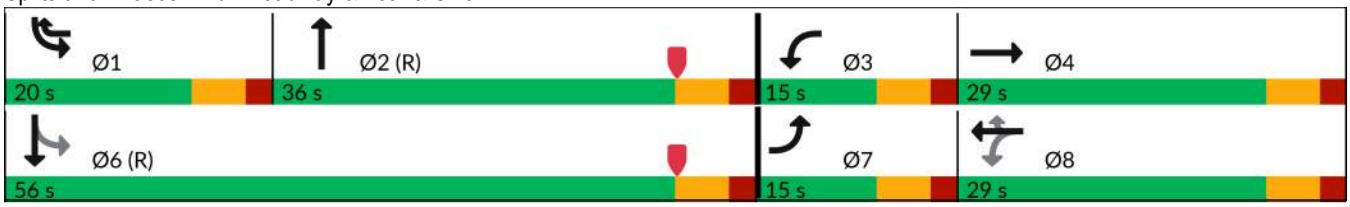
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	150	20	100	150	180	0	410	60	150	370	20
Future Volume (vph)	20	150	20	100	150	180	0	410	60	150	370	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	140		0	0		100	0		0	250		0
Storage Lanes	1		0	1		1	0		0	1		0
Taper Length (ft)	50			50			50			50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.982				0.850		0.981			0.992	
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1770	1829	0	1787	1881	1599	0	3472	0	1770	3511	0
Flt Permitted	0.950			0.459						0.365		
Satd. Flow (perm)	1770	1829	0	863	1881	1599	0	3472	0	680	3511	0
Right Turn on Red			Yes			No			No			Yes
Satd. Flow (RTOR)		6									8	
Link Speed (mph)		25			35			35			25	
Link Distance (ft)		741			853			602			2393	
Travel Time (s)		20.2			16.6			11.7			65.3	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	21	158	21	105	158	189	0	432	63	158	389	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	21	179	0	105	158	189	0	495	0	158	410	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1		2		1	2	
Detector Template	Left	Thru		Left	Thru	Right		Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100	20		100		20	100	
Trailing Detector (ft)	0	0		0	0	0		0		0	0	
Detector 1 Position(ft)	0	0		0	0	0		0		0	0	
Detector 1 Size(ft)	20	6		20	6	20		6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		pm+pt	NA	pm+ov		NA		pm+pt	NA	
Protected Phases	7	4		3	8	1		2		1	6	

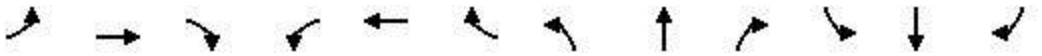


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases				8		8				6		
Detector Phase	7	4		3	8	1		2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	10.0		7.0	20.0	7.0		20.0		7.0	20.0	
Minimum Split (s)	13.0	24.0		13.0	26.0	13.0		26.0		13.0	26.0	
Total Split (s)	15.0	29.0		15.0	29.0	20.0		36.0		20.0	56.0	
Total Split (%)	15.0%	29.0%		15.0%	29.0%	20.0%		36.0%		20.0%	56.0%	
Maximum Green (s)	9.0	23.0		9.0	23.0	14.0		30.0		14.0	50.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0		2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0		6.0		6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lead		Lag		Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes		Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Recall Mode	None	None		None	None	None		C-Max		None	C-Max	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	7.4	17.2		27.1	23.5	39.4		43.0		58.9	58.9	
Actuated g/C Ratio	0.07	0.17		0.27	0.24	0.39		0.43		0.59	0.59	
v/c Ratio	0.16	0.56		0.33	0.35	0.30		0.33		0.31	0.19	
Control Delay (s/veh)	46.1	44.0		13.5	20.6	15.9		21.3		12.2	9.3	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	
Total Delay (s/veh)	46.1	44.0		13.5	20.6	15.9		21.3		12.2	9.3	
LOS	D	D		B	C	B		C		B	A	
Approach Delay (s/veh)		44.2			17.0			21.4			10.2	
Approach LOS		D			B			C			B	
Queue Length 50th (ft)	13	105		52	80	87		108		42	57	
Queue Length 95th (ft)	36	166		12	156	179		175		83	84	
Internal Link Dist (ft)		661			773			522			2313	
Turn Bay Length (ft)	140					100				250		
Base Capacity (vph)	159	425		317	473	695		1494		553	2071	
Starvation Cap Reductn	0	0		0	0	0		0		0	0	
Spillback Cap Reductn	0	0		0	0	0		0		0	0	
Storage Cap Reductn	0	0		0	0	0		0		0	0	
Reduced v/c Ratio	0.13	0.42		0.33	0.33	0.27		0.33		0.29	0.20	

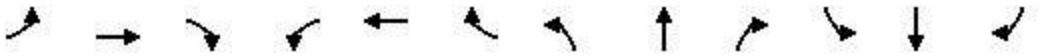
Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 2 (2%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.56			
Intersection Signal Delay (s/veh): 19.2		Intersection LOS: B	
Intersection Capacity Utilization 67.5%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 6: Broadway & 28th & SR57





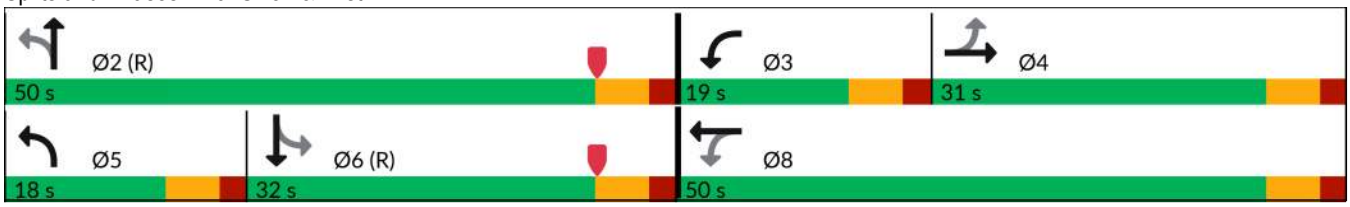
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	150	50	150	250	20	150	260	160	40	270	40
Future Volume (vph)	20	150	50	150	250	20	150	260	160	40	270	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	120		0	220		0	200		0	150		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	50			50			50			50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.962			0.989			0.943			0.981	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1736	1758	0	1770	1842	0	1770	3337	0	1787	3506	0
Flt Permitted	0.586			0.316			0.474			0.496		
Satd. Flow (perm)	1071	1758	0	589	1842	0	883	3337	0	933	3506	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		16			5			166			16	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		727			505			2393			319	
Travel Time (s)		19.8			13.8			65.3			8.7	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	2%	2%	2%	1%	1%	1%
Adj. Flow (vph)	21	158	53	158	263	21	158	274	168	42	284	42
Shared Lane Traffic (%)												
Lane Group Flow (vph)	21	211	0	158	284	0	158	442	0	42	326	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA		Perm	NA	
Protected Phases		4		3	8		5	2			6	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	4	4		3	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		7.0	20.0		20.0	20.0	
Minimum Split (s)	24.0	24.0		13.0	24.0		13.0	26.0		26.0	26.0	
Total Split (s)	31.0	31.0		19.0	50.0		18.0	50.0		32.0	32.0	
Total Split (%)	31.0%	31.0%		19.0%	50.0%		18.0%	50.0%		32.0%	32.0%	
Maximum Green (s)	25.0	25.0		13.0	44.0		12.0	44.0		26.0	26.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lag	Lag		Lead			Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes			Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0			7.0			7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0			11.0			11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0			0			0		0	0	
Act Effct Green (s)	16.4	16.4		33.8	33.8		54.2	54.2		38.4	38.4	
Actuated g/C Ratio	0.16	0.16		0.34	0.34		0.54	0.54		0.38	0.38	
v/c Ratio	0.12	0.70		0.47	0.45		0.27	0.23		0.11	0.24	
Control Delay (s/veh)	34.6	48.3		27.4	26.7		10.2	4.7		23.7	20.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	34.6	48.3		27.4	26.7		10.2	4.7		23.7	20.7	
LOS	C	D		C	C		B	A		C	C	
Approach Delay (s/veh)		47.1			27.0			6.2			21.1	
Approach LOS		D			C			A			C	
Queue Length 50th (ft)	12	119		72	136		44	26		17	70	
Queue Length 95th (ft)	31	182		108	186		71	46		48	120	
Internal Link Dist (ft)		647			425			2313			239	
Turn Bay Length (ft)	120			220			200			150		
Base Capacity (vph)	267	451		352	813		584	1884		358	1354	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.08	0.47		0.45	0.35		0.27	0.23		0.12	0.24	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 50 (50%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay (s/veh): 20.9		Intersection LOS: C	
Intersection Capacity Utilization 76.0%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 9: SR57 & 21st

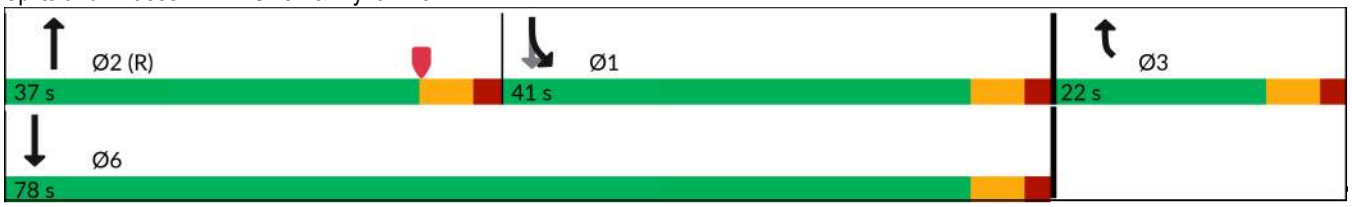


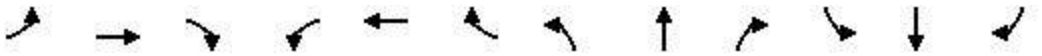
Lane Group	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Traffic Volume (vph)	200	10	160	230	0	150
Future Volume (vph)	200	10	160	230	0	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	0.88
Frt	0.993					0.850
Flt Protected			0.950			
Satd. Flow (prot)	3514	0	1770	1863	0	2787
Flt Permitted			0.950			
Satd. Flow (perm)	3514	0	1770	1863	0	2787
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	5					1398
Link Speed (mph)	25			25	25	
Link Distance (ft)	1391			2662	761	
Travel Time (s)	37.9			72.6	20.8	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	208	10	167	240	0	156
Shared Lane Traffic (%)						
Lane Group Flow (vph)	218	0	167	240	0	156
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			12	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Number of Detectors	2		1	2		1
Detector Template	Thru		Left	Thru		Right
Leading Detector (ft)	100		20	100		20
Trailing Detector (ft)	0		0	0		0
Detector 1 Position(ft)	0		0	0		0
Detector 1 Size(ft)	6		20	6		20
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0		0.0
Detector 1 Queue (s)	0.0		0.0	0.0		0.0
Detector 1 Delay (s)	0.0		0.0	0.0		0.0
Detector 2 Position(ft)	94			94		
Detector 2 Size(ft)	6			6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		Prot	NA		Prot
Protected Phases	2		1	6		3
Permitted Phases				1		
Detector Phase	2		1	6		3
Switch Phase						
Minimum Initial (s)	20.0		10.0	20.0		10.0

Lane Group	NBT	NBR	SBL	SBT	NWL	NWR
Minimum Split (s)	26.0		16.0	26.0		16.0
Total Split (s)	37.0		41.0	78.0		22.0
Total Split (%)	37.0%		41.0%	78.0%		22.0%
Maximum Green (s)	31.0		35.0	72.0		16.0
Yellow Time (s)	4.0		4.0	4.0		4.0
All-Red Time (s)	2.0		2.0	2.0		2.0
Lost Time Adjust (s)	0.0		0.0	0.0		0.0
Total Lost Time (s)	6.0		6.0	6.0		6.0
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0		3.0
Recall Mode	C-Max		None	Max		None
Act Effct Green (s)	37.0		35.0	78.0		10.0
Actuated g/C Ratio	0.37		0.35	0.78		0.10
v/c Ratio	0.16		0.26	0.16		0.10
Control Delay (s/veh)	14.7		24.8	3.0		0.1
Queue Delay	0.0		0.0	0.0		0.0
Total Delay (s/veh)	14.7		24.8	3.0		0.1
LOS	B		C	A		A
Approach Delay (s/veh)	14.7			12.0	0.1	
Approach LOS	B			B	A	
Queue Length 50th (ft)	38		76	31		0
Queue Length 95th (ft)	45		128	49		0
Internal Link Dist (ft)	1311			2582	681	
Turn Bay Length (ft)						
Base Capacity (vph)	1303		619	1453		1620
Starvation Cap Reductn	0		0	0		0
Spillback Cap Reductn	0		0	0		0
Storage Cap Reductn	0		0	0		0
Reduced v/c Ratio	0.17		0.27	0.17		0.10

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 97 (97%), Referenced to phase 2:NBT, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.27			
Intersection Signal Delay (s/veh): 10.4		Intersection LOS: B	
Intersection Capacity Utilization 35.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 12: SR57 & Elyria Ave





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	10	30	10	10	10	30	270	10	10	300	20
Future Volume (vph)	20	10	30	10	10	10	30	270	10	10	300	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.932			0.955			0.996			0.992	
Flt Protected		0.983			0.984			0.995			0.999	
Satd. Flow (prot)	0	1690	0	0	1785	0	0	1864	0	0	1864	0
Flt Permitted		0.983			0.984			0.995			0.999	
Satd. Flow (perm)	0	1690	0	0	1785	0	0	1864	0	0	1864	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		549			288			376			448	
Travel Time (s)		13.1			9.2			10.3			12.2	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	3%	3%	3%	0%	0%	0%	1%	1%	1%	1%	1%	1%
Adj. Flow (vph)	23	11	34	11	11	11	34	307	11	11	341	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	68	0	0	33	0	0	352	0	0	375	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 39.8%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	20	10	30	10	10	10	30	270	10	10	300	20
Future Vol, veh/h	20	10	30	10	10	10	30	270	10	10	300	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	0	0	0	1	1	1	1	1	1
Mvmt Flow	23	11	34	11	11	11	34	307	11	11	341	23

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	756	761	352	750	767	313	364	0	0	318	0	0
Stage 1	375	375	-	381	381	-	-	-	-	-	-	-
Stage 2	381	386	-	369	386	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.1	6.5	6.2	4.11	-	-	4.11	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.5	4	3.3	2.209	-	-	2.209	-	-
Pot Cap-1 Maneuver	323	334	689	330	335	732	1200	-	-	1248	-	-
Stage 1	644	615	-	646	617	-	-	-	-	-	-	-
Stage 2	640	608	-	655	613	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	294	319	689	289	320	732	1200	-	-	1248	-	-
Mov Cap-2 Maneuver	294	319	-	289	320	-	-	-	-	-	-	-
Stage 1	637	608	-	623	596	-	-	-	-	-	-	-
Stage 2	596	587	-	604	606	-	-	-	-	-	-	-

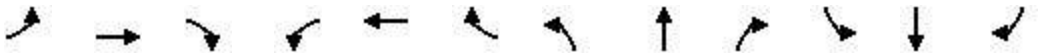
Approach	EB	WB	NB	SB
HCM Control Delay, s/v	15.24	15.49	0.78	0.24
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	173	-	-	419	377	54	-	-
HCM Lane V/C Ratio	0.028	-	-	0.163	0.09	0.009	-	-
HCM Control Delay (s/veh)	8.1	0	-	15.2	15.5	7.9	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.6	0.3	0	-	-

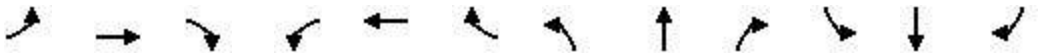
BROADWAY (SR57)
TARGET SPEED STUDY

APPENDIX G2: CAPACITY ANALYSES (BUILD)

CMT



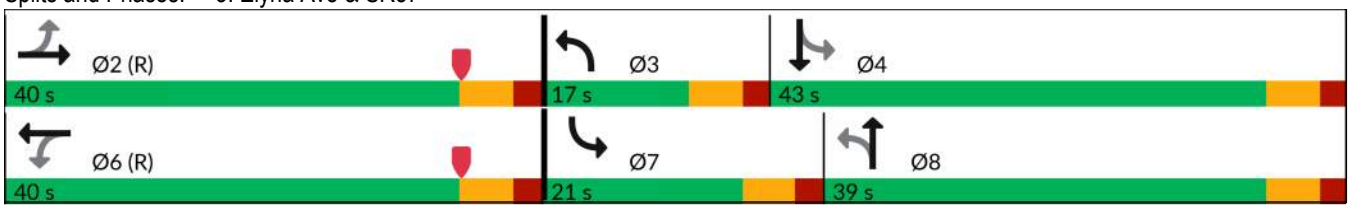
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	170	20	30	200	70	20	130	30	70	150	10
Future Volume (vph)	60	170	20	30	200	70	20	130	30	70	150	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	100		0	100		0	100		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	50			50			50			50		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.984			0.961			0.972			0.991	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1687	1747	0	1703	3273	0	1752	1793	0	1805	1883	0
Flt Permitted	0.579			0.633			0.652			0.442		
Satd. Flow (perm)	1028	1747	0	1135	3273	0	1203	1793	0	840	1883	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		853			397			280			279	
Travel Time (s)		23.3			10.8			7.6			7.6	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	7%	7%	7%	6%	6%	6%	3%	3%	3%	0%	0%	0%
Adj. Flow (vph)	63	177	21	31	208	73	21	135	31	73	156	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	63	198	0	31	281	0	21	166	0	73	166	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2			6		3	8		7	4	



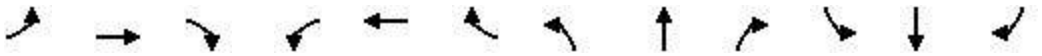
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	20.0	20.0		20.0	20.0		7.0	10.0		7.0	10.0	
Minimum Split (s)	26.0	26.0		26.0	26.0		13.0	24.0		13.0	24.0	
Total Split (s)	40.0	40.0		40.0	40.0		17.0	39.0		21.0	43.0	
Total Split (%)	40.0%	40.0%		40.0%	40.0%		17.0%	39.0%		21.0%	43.0%	
Maximum Green (s)	34.0	34.0		34.0	34.0		11.0	33.0		15.0	37.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0			11.0			11.0	
Pedestrian Calls (#/hr)	0	0		0	0			0			0	
Act Effct Green (s)	60.9	60.9		60.9	60.9		20.5	14.8		25.9	21.8	
Actuated g/C Ratio	0.61	0.61		0.61	0.61		0.21	0.15		0.26	0.22	
v/c Ratio	0.10	0.18		0.04	0.14		0.07	0.62		0.24	0.40	
Control Delay (s/veh)	8.7	8.6		11.1	10.2		23.3	50.0		26.0	36.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	8.7	8.6		11.1	10.2		23.3	50.0		26.0	36.0	
LOS	A	A		B	B		C	D		C	D	
Approach Delay (s/veh)		8.7			10.3			47.0			33.0	
Approach LOS		A			B			D			C	
Queue Length 50th (ft)	17	60		8	40		10	101		34	81	
Queue Length 95th (ft)	43	111		25	72		24	159		60	150	
Internal Link Dist (ft)		773			317			200			199	
Turn Bay Length (ft)				100			100			100		
Base Capacity (vph)	625	1063		690	1992		346	591		380	696	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.10	0.19		0.04	0.14		0.06	0.28		0.19	0.24	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 17 (17%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.63			
Intersection Signal Delay (s/veh): 22.2		Intersection LOS: C	
Intersection Capacity Utilization 67.8%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Elyria Ave & SR57



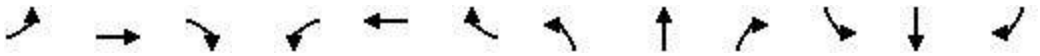
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	60	20	50	50	130	10	260	50	100	220	10
Future Volume (vph)	10	60	20	50	50	130	10	260	50	100	220	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	140		0	0		0	0		0	250		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	50			50			50			50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.970				0.850		0.976			0.993	
Flt Protected		0.994			0.976		0.950			0.950		
Satd. Flow (prot)	0	1696	0	0	1733	1509	1687	1733	0	1671	1747	0
Flt Permitted		0.959			0.801		0.605			0.475		
Satd. Flow (perm)	0	1637	0	0	1422	1509	1074	1733	0	836	1747	0
Right Turn on Red			Yes			No			No			Yes
Satd. Flow (RTOR)		15									4	
Link Speed (mph)		25			35			35			25	
Link Distance (ft)		741			853			602			2393	
Travel Time (s)		20.2			16.6			11.7			65.3	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	8%	8%	8%	7%	7%	7%	7%	7%	7%	8%	8%	8%
Adj. Flow (vph)	11	65	22	54	54	140	11	280	54	108	237	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	98	0	0	108	140	11	334	0	108	248	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane											Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	pm+ov	Perm	NA		pm+pt	NA	
Protected Phases		4			8	1		2		1	6	



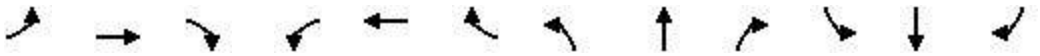
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8		8	2			6		
Detector Phase	4	4		8	8	1	2	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		20.0	20.0	7.0	20.0	20.0		7.0	20.0	
Minimum Split (s)	24.0	24.0		26.0	26.0	13.0	26.0	26.0		13.0	26.0	
Total Split (s)	37.0	37.0		37.0	37.0	21.0	42.0	42.0		21.0	63.0	
Total Split (%)	37.0%	37.0%		37.0%	37.0%	21.0%	42.0%	42.0%		21.0%	63.0%	
Maximum Green (s)	31.0	31.0		31.0	31.0	15.0	36.0	36.0		15.0	57.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0			6.0	6.0	6.0	6.0		6.0	6.0	
Lead/Lag						Lead	Lag	Lag		Lead		
Lead-Lag Optimize?						Yes	Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	C-Max	C-Max		None	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0			7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0			11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)		18.0			20.0	29.0	59.0	59.0		73.2	74.4	
Actuated g/C Ratio		0.18			0.20	0.29	0.59	0.59		0.73	0.74	
v/c Ratio		0.31			0.38	0.31	0.01	0.32		0.15	0.19	
Control Delay (s/veh)		32.0			31.0	20.9	11.3	13.3		4.3	4.0	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay (s/veh)		32.0			31.0	20.9	11.3	13.3		4.3	4.0	
LOS		C			C	C	B	B		A	A	
Approach Delay (s/veh)		32.0			25.3			13.3			4.1	
Approach LOS		C			C			B			A	
Queue Length 50th (ft)		45			62	69	3	114		15	34	
Queue Length 95th (ft)		92			116	118	12	182		28	55	
Internal Link Dist (ft)		661			773			522			2313	
Turn Bay Length (ft)										250		
Base Capacity (vph)		517			440	540	633	1021		737	1301	
Starvation Cap Reductn		0			0	0	0	0		0	0	
Spillback Cap Reductn		0			0	0	0	0		0	0	
Storage Cap Reductn		0			0	0	0	0		0	0	
Reduced v/c Ratio		0.19			0.25	0.26	0.02	0.33		0.15	0.19	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 79 (79%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.38			
Intersection Signal Delay (s/veh): 14.8		Intersection LOS: B	
Intersection Capacity Utilization 65.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 6: Broadway & 28th & SR57



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	100	40	80	120	20	90	170	100	20	180	40
Future Volume (vph)	10	100	40	80	120	20	90	170	100	20	180	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	120		0	220		0	200		0	150		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	50			50			50			50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.957			0.978			0.944			0.973	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1687	1699	0	1656	1705	0	1687	1676	0	1671	1712	0
Flt Permitted	0.664			0.402			0.530			0.587		
Satd. Flow (perm)	1179	1699	0	701	1705	0	941	1676	0	1033	1712	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		19			10			41			12	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		727			505			2393			1710	
Travel Time (s)		19.8			13.8			65.3			46.6	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	7%	7%	7%	9%	9%	9%	7%	7%	7%	8%	8%	8%
Adj. Flow (vph)	10	104	42	83	125	21	94	177	104	21	188	42
Shared Lane Traffic (%)												
Lane Group Flow (vph)	10	146	0	83	146	0	94	281	0	21	230	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA		Perm	NA	
Protected Phases		4		3	8		5	2			6	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	4	4		3	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		7.0	20.0		20.0	20.0	
Minimum Split (s)	24.0	24.0		13.0	24.0		13.0	26.0		26.0	26.0	
Total Split (s)	29.0	29.0		16.0	45.0		16.0	55.0		39.0	39.0	
Total Split (%)	29.0%	29.0%		16.0%	45.0%		16.0%	55.0%		39.0%	39.0%	
Maximum Green (s)	23.0	23.0		10.0	39.0		10.0	49.0		33.0	33.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lag	Lag		Lead			Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes			Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0			7.0			7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0			11.0			11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0			0			0		0	0	
Act Effct Green (s)	13.4	13.4		25.6	25.6		62.4	62.4		50.8	50.8	
Actuated g/C Ratio	0.13	0.13		0.26	0.26		0.62	0.62		0.51	0.51	
v/c Ratio	0.06	0.60		0.31	0.32		0.14	0.26		0.04	0.26	
Control Delay (s/veh)	36.4	45.2		29.2	27.8		9.9	8.6		17.0	16.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	36.4	45.2		29.2	27.8		9.9	8.6		17.0	16.4	
LOS	D	D		C	C		A	A		B	B	
Approach Delay (s/veh)		44.7			28.3			9.0			16.5	
Approach LOS		D			C			A			B	
Queue Length 50th (ft)	6	77		40	67		15	37		5	84	
Queue Length 95th (ft)	20	134		71	110		51	108		25	161	
Internal Link Dist (ft)		647			425			2313			1630	
Turn Bay Length (ft)	120			220			200			150		
Base Capacity (vph)	271	405		275	671		661	1060		524	876	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.04	0.36		0.30	0.22		0.14	0.27		0.04	0.26	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 1 (1%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay (s/veh): 20.7		Intersection LOS: C	
Intersection Capacity Utilization 70.0%		ICU Level of Service C	
Analysis Period (min) 15			

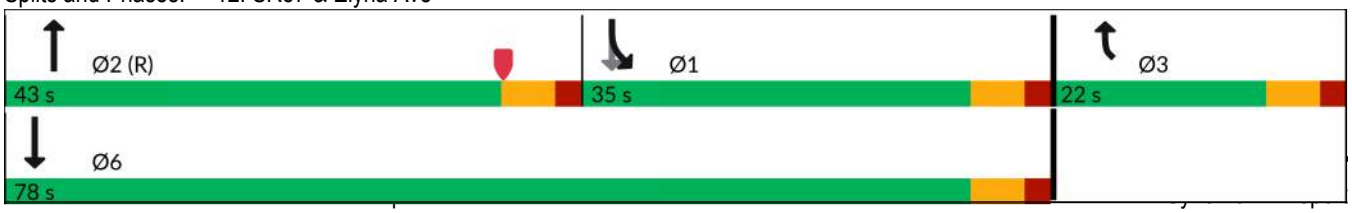
Splits and Phases: 9: SR57 & 21st

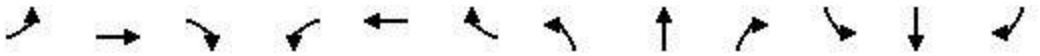
Lane Group	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Traffic Volume (vph)	120	10	100	130	0	120
Future Volume (vph)	120	10	100	130	0	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.990					0.865
Flt Protected			0.950			
Satd. Flow (prot)	1862	0	1736	1827	0	1611
Flt Permitted			0.950			
Satd. Flow (perm)	1862	0	1736	1827	0	1611
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	5					863
Link Speed (mph)	25			25	25	
Link Distance (ft)	1710			301	761	
Travel Time (s)	46.6			8.2	20.8	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	1%	1%	4%	4%	2%	2%
Adj. Flow (vph)	135	11	112	146	0	135
Shared Lane Traffic (%)						
Lane Group Flow (vph)	146	0	112	146	0	135
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			12	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane	Yes					
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Number of Detectors	2		1	2		1
Detector Template	Thru		Left	Thru		Right
Leading Detector (ft)	100		20	100		20
Trailing Detector (ft)	0		0	0		0
Detector 1 Position(ft)	0		0	0		0
Detector 1 Size(ft)	6		20	6		20
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0		0.0
Detector 1 Queue (s)	0.0		0.0	0.0		0.0
Detector 1 Delay (s)	0.0		0.0	0.0		0.0
Detector 2 Position(ft)	94			94		
Detector 2 Size(ft)	6			6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		Prot	NA		Prot
Protected Phases	2		1	6		3
Permitted Phases				1		
Detector Phase	2		1	6		3
Switch Phase						

Lane Group	NBT	NBR	SBL	SBT	NWL	NWR
Minimum Initial (s)	20.0		10.0	20.0		10.0
Minimum Split (s)	26.0		16.0	26.0		16.0
Total Split (s)	43.0		35.0	78.0		22.0
Total Split (%)	43.0%		35.0%	78.0%		22.0%
Maximum Green (s)	37.0		29.0	72.0		16.0
Yellow Time (s)	4.0		4.0	4.0		4.0
All-Red Time (s)	2.0		2.0	2.0		2.0
Lost Time Adjust (s)	0.0		0.0	0.0		0.0
Total Lost Time (s)	6.0		6.0	6.0		6.0
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0		3.0
Recall Mode	C-Max		None	Max		None
Act Effct Green (s)	43.0		29.0	78.0		10.0
Actuated g/C Ratio	0.43		0.29	0.78		0.10
v/c Ratio	0.18		0.22	0.10		0.14
Control Delay (s/veh)	13.1		28.4	2.8		0.3
Queue Delay	0.0		0.0	0.0		0.0
Total Delay (s/veh)	13.1		28.4	2.8		0.3
LOS	B		C	A		A
Approach Delay (s/veh)	13.2			13.9	0.3	
Approach LOS	B			B	A	
Queue Length 50th (ft)	57		54	18		0
Queue Length 95th (ft)	97		98	30		0
Internal Link Dist (ft)	1630			221	681	
Turn Bay Length (ft)						
Base Capacity (vph)	803		503	1425		982
Starvation Cap Reductn	0		0	0		0
Spillback Cap Reductn	0		0	0		0
Storage Cap Reductn	0		0	0		0
Reduced v/c Ratio	0.18		0.22	0.10		0.14

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 47 (47%), Referenced to phase 2:NBT, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.22			
Intersection Signal Delay (s/veh): 10.3		Intersection LOS: B	
Intersection Capacity Utilization 35.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 12: SR57 & Elyria Ave





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	10	20	10	10	10	10	200	10	10	190	10
Future Volume (vph)	10	10	20	10	10	10	10	200	10	10	190	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.932			0.955			0.994			0.994	
Flt Protected		0.988			0.984			0.998			0.998	
Satd. Flow (prot)	0	1750	0	0	1785	0	0	1866	0	0	1848	0
Flt Permitted		0.988			0.984			0.998			0.998	
Satd. Flow (perm)	0	1750	0	0	1785	0	0	1866	0	0	1848	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		549			288			2737			448	
Travel Time (s)		13.1			9.2			10.3			12.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	1%	1%	2%	2%	2%
Adj. Flow (vph)	11	11	22	11	11	11	11	217	11	11	207	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	44	0	0	33	0	0	239	0	0	229	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 24.6%		ICU Level of Service A	
Analysis Period (min) 15			

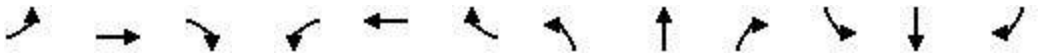
Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	10	20	10	10	10	10	200	10	10	190	10
Future Vol, veh/h	10	10	20	10	10	10	10	200	10	10	190	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	1	1	1	2	2	2
Mvmt Flow	11	11	22	11	11	11	11	217	11	11	207	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	478	484	212	478	484	223	217	0	0	228	0	0
Stage 1	234	234	-	245	245	-	-	-	-	-	-	-
Stage 2	245	250	-	234	239	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.11	-	-	4.12	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.209	-	-	2.218	-	-
Pot Cap-1 Maneuver	501	486	833	501	486	822	1358	-	-	1340	-	-
Stage 1	774	715	-	764	707	-	-	-	-	-	-	-
Stage 2	764	704	-	774	711	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	474	477	833	468	477	822	1358	-	-	1340	-	-
Mov Cap-2 Maneuver	474	477	-	468	477	-	-	-	-	-	-	-
Stage 1	767	708	-	757	701	-	-	-	-	-	-	-
Stage 2	735	697	-	735	705	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	11.4	11.95	0.35	0.37
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	81	-	-	606	550	85	-	-
HCM Lane V/C Ratio	0.008	-	-	0.072	0.059	0.008	-	-
HCM Control Delay (s/veh)	7.7	0	-	11.4	12	7.7	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.2	0	-	-

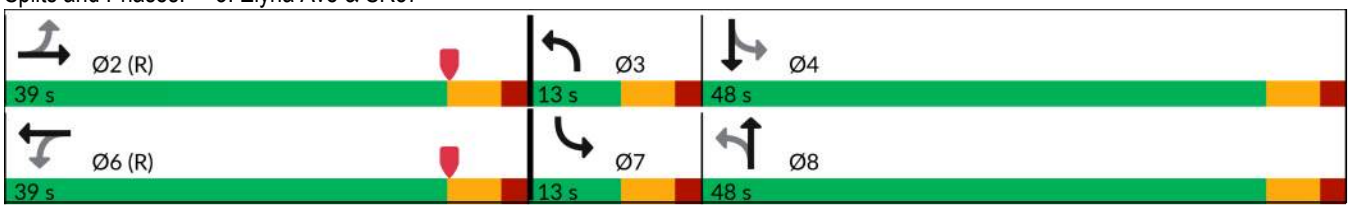


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	330	30	40	400	110	30	270	30	120	250	10
Future Volume (vph)	90	330	30	40	400	110	30	270	30	120	250	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	100		0	100		0	100		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	50			50			50			50		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.988			0.968			0.985			0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1840	0	1770	3426	0	1787	1853	0	1770	1852	0
Flt Permitted	0.402			0.433			0.477			0.300		
Satd. Flow (perm)	749	1840	0	807	3426	0	897	1853	0	559	1852	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		853			397			280			279	
Travel Time (s)		23.3			10.8			7.6			7.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	2%	2%	2%
Adj. Flow (vph)	100	367	33	44	444	122	33	300	33	133	278	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	100	400	0	44	566	0	33	333	0	133	289	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2			6		3	8		7	4	

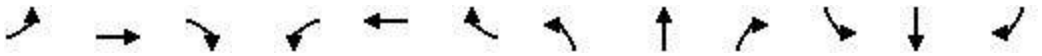
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	20.0	20.0		20.0	20.0		7.0	10.0		7.0	10.0	
Minimum Split (s)	26.0	26.0		26.0	26.0		13.0	24.0		13.0	24.0	
Total Split (s)	39.0	39.0		39.0	39.0		13.0	48.0		13.0	48.0	
Total Split (%)	39.0%	39.0%		39.0%	39.0%		13.0%	48.0%		13.0%	48.0%	
Maximum Green (s)	33.0	33.0		33.0	33.0		7.0	42.0		7.0	42.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0			11.0			11.0	
Pedestrian Calls (#/hr)	0	0		0	0			0			0	
Act Effct Green (s)	51.1	51.1		51.1	51.1		30.9	23.9		33.3	29.1	
Actuated g/C Ratio	0.51	0.51		0.51	0.51		0.31	0.24		0.33	0.29	
v/c Ratio	0.26	0.42		0.10	0.32		0.09	0.75		0.49	0.53	
Control Delay (s/veh)	17.2	17.0		16.0	16.0		18.6	45.6		26.9	34.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	17.2	17.0		16.0	16.0		18.6	45.6		26.9	34.1	
LOS	B	B		B	B		B	D		C	C	
Approach Delay (s/veh)		17.1			16.0			43.2			31.9	
Approach LOS		B			B			D			C	
Queue Length 50th (ft)	30	128		14	105		13	198		57	167	
Queue Length 95th (ft)	81	259		40	171		29	264		86	226	
Internal Link Dist (ft)		773			317			200			199	
Turn Bay Length (ft)				100			100			100		
Base Capacity (vph)	382	939		412	1749		339	778		270	777	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.26	0.43		0.11	0.32		0.10	0.43		0.49	0.37	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 96 (96%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay (s/veh): 25.1		Intersection LOS: C	
Intersection Capacity Utilization 78.5%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 3: Elyria Ave & SR57



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	150	20	100	150	180	20	410	60	150	370	20
Future Volume (vph)	20	150	20	100	150	180	20	410	60	150	370	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	140		0	0		0	0		0	250		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	50			50			50			50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.986				0.850		0.981			0.992	
Flt Protected		0.995			0.980		0.950			0.950		
Satd. Flow (prot)	0	1827	0	0	1844	1599	1770	1827	0	1770	1848	0
Flt Permitted		0.945			0.704		0.522			0.313		
Satd. Flow (perm)	0	1736	0	0	1324	1599	972	1827	0	583	1848	0
Right Turn on Red			Yes			No			No			Yes
Satd. Flow (RTOR)		6									5	
Link Speed (mph)		25			35			35			25	
Link Distance (ft)		741			853			602			2393	
Travel Time (s)		20.2			16.6			11.7			65.3	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	21	158	21	105	158	189	21	432	63	158	389	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	200	0	0	263	189	21	495	0	158	410	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane											Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	pm+ov	Perm	NA		pm+pt	NA	
Protected Phases		4			8	1		2		1	6	

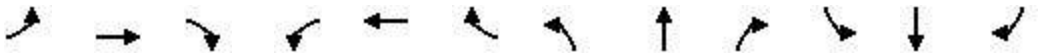


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8		8	2			6		
Detector Phase	4	4		8	8	1	2	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		20.0	20.0	7.0	20.0	20.0		7.0	20.0	
Minimum Split (s)	24.0	24.0		26.0	26.0	13.0	26.0	26.0		13.0	26.0	
Total Split (s)	37.0	37.0		37.0	37.0	15.0	48.0	48.0		15.0	63.0	
Total Split (%)	37.0%	37.0%		37.0%	37.0%	15.0%	48.0%	48.0%		15.0%	63.0%	
Maximum Green (s)	31.0	31.0		31.0	31.0	9.0	42.0	42.0		9.0	57.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0			6.0	6.0	6.0	6.0		6.0	6.0	
Lead/Lag						Lead	Lag	Lag		Lead		
Lead-Lag Optimize?						Yes	Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	C-Max	C-Max		None	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0			7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0			11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)		24.6			24.6	38.9	49.1	49.1		63.4	63.4	
Actuated g/C Ratio		0.25			0.25	0.39	0.49	0.49		0.63	0.63	
v/c Ratio		0.46			0.80	0.30	0.04	0.55		0.33	0.34	
Control Delay (s/veh)		33.9			40.2	9.6	16.1	22.0		8.4	8.7	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay (s/veh)		33.9			40.2	9.6	16.1	22.0		8.4	8.7	
LOS		C			D	A	B	C		A	A	
Approach Delay (s/veh)		33.9			27.5			21.8			8.7	
Approach LOS		C			C			C			A	
Queue Length 50th (ft)		106			162	23	7	213		42	119	
Queue Length 95th (ft)		159			67	22	23	359		m80	196	
Internal Link Dist (ft)		661			773			522			2313	
Turn Bay Length (ft)										250		
Base Capacity (vph)		542			410	632	476	896		476	1173	
Starvation Cap Reductn		0			0	0	0	0		0	0	
Spillback Cap Reductn		0			0	0	0	0		0	0	
Storage Cap Reductn		0			0	0	0	0		0	0	
Reduced v/c Ratio		0.37			0.64	0.30	0.04	0.55		0.33	0.35	

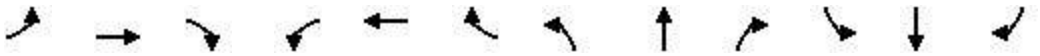
Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 58 (58%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay (s/veh): 20.4		Intersection LOS: C	
Intersection Capacity Utilization 84.2%		ICU Level of Service E	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Broadway & 28th & SR57



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	150	50	150	250	20	150	260	160	40	270	40
Future Volume (vph)	20	150	50	150	250	20	150	260	160	40	270	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	120		0	220		0	200		0	150		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	50			50			50			50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.962			0.989			0.943			0.981	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1736	1758	0	1770	1842	0	1770	1757	0	1787	1845	0
Flt Permitted	0.586			0.295			0.437			0.507		
Satd. Flow (perm)	1071	1758	0	550	1842	0	814	1757	0	954	1845	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15			4			51			10	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		727			505			2393			1710	
Travel Time (s)		19.8			13.8			65.3			46.6	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	2%	2%	2%	1%	1%	1%
Adj. Flow (vph)	21	158	53	158	263	21	158	274	168	42	284	42
Shared Lane Traffic (%)												
Lane Group Flow (vph)	21	211	0	158	284	0	158	442	0	42	326	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA		Perm	NA	
Protected Phases		4		3	8		5	2			6	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	4	4		3	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		7.0	20.0		20.0	20.0	
Minimum Split (s)	24.0	24.0		13.0	24.0		13.0	26.0		26.0	26.0	
Total Split (s)	24.0	24.0		13.0	37.0		13.0	63.0		50.0	50.0	
Total Split (%)	24.0%	24.0%		13.0%	37.0%		13.0%	63.0%		50.0%	50.0%	
Maximum Green (s)	18.0	18.0		7.0	31.0		7.0	57.0		44.0	44.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lag	Lag		Lead			Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes			Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0			7.0			7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0			11.0			11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0			0			0		0	0	
Act Effct Green (s)	15.3	15.3		28.3	28.3		59.7	59.7		46.7	46.7	
Actuated g/C Ratio	0.15	0.15		0.28	0.28		0.60	0.60		0.47	0.47	
v/c Ratio	0.12	0.75		0.65	0.54		0.28	0.41		0.09	0.37	
Control Delay (s/veh)	37.0	54.2		42.0	33.7		9.4	11.0		15.1	17.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	37.0	54.2		42.0	33.7		9.4	11.0		15.1	17.0	
LOS	D	D		D	C		A	B		B	B	
Approach Delay (s/veh)		52.7			36.7			10.6			16.8	
Approach LOS		D			D			B			B	
Queue Length 50th (ft)	12	119		78	148		58	166		15	128	
Queue Length 95th (ft)	33	195		130	225		69	256		37	204	
Internal Link Dist (ft)		647			425			2313			1630	
Turn Bay Length (ft)	120			220			200			150		
Base Capacity (vph)	192	328		240	573		553	1070		445	867	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.11	0.64		0.66	0.50		0.29	0.41		0.09	0.38	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 57 (57%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay (s/veh): 25.0		Intersection LOS: C	
Intersection Capacity Utilization 82.8%		ICU Level of Service E	
Analysis Period (min) 15			

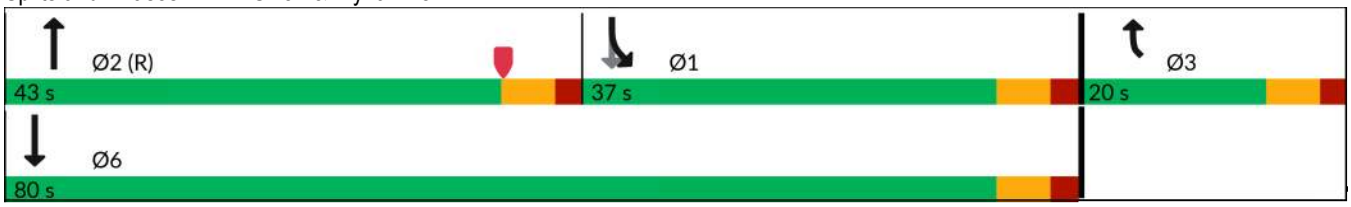
Splits and Phases: 9: SR57 & 21st

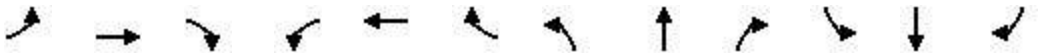
Lane Group	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Traffic Volume (vph)	200	10	160	230	0	150
Future Volume (vph)	200	10	160	230	0	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.994					0.865
Flt Protected			0.950			
Satd. Flow (prot)	1852	0	1770	1863	0	1611
Flt Permitted			0.950			
Satd. Flow (perm)	1852	0	1770	1863	0	1611
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	3					786
Link Speed (mph)	25			25	25	
Link Distance (ft)	1710			301	761	
Travel Time (s)	46.6			8.2	20.8	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	208	10	167	240	0	156
Shared Lane Traffic (%)						
Lane Group Flow (vph)	218	0	167	240	0	156
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			12	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane	Yes					
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Number of Detectors	2		1	2		1
Detector Template	Thru		Left	Thru		Right
Leading Detector (ft)	100		20	100		20
Trailing Detector (ft)	0		0	0		0
Detector 1 Position(ft)	0		0	0		0
Detector 1 Size(ft)	6		20	6		20
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0		0.0
Detector 1 Queue (s)	0.0		0.0	0.0		0.0
Detector 1 Delay (s)	0.0		0.0	0.0		0.0
Detector 2 Position(ft)	94			94		
Detector 2 Size(ft)	6			6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		Prot	NA		Prot
Protected Phases	2		1	6		3
Permitted Phases				1		
Detector Phase	2		1	6		3
Switch Phase						
Minimum Initial (s)	20.0		10.0	20.0		10.0

Lane Group	NBT	NBR	SBL	SBT	NWL	NWR
Minimum Split (s)	26.0		16.0	26.0		16.0
Total Split (s)	43.0		37.0	80.0		20.0
Total Split (%)	43.0%		37.0%	80.0%		20.0%
Maximum Green (s)	37.0		31.0	74.0		14.0
Yellow Time (s)	4.0		4.0	4.0		4.0
All-Red Time (s)	2.0		2.0	2.0		2.0
Lost Time Adjust (s)	0.0		0.0	0.0		0.0
Total Lost Time (s)	6.0		6.0	6.0		6.0
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0		3.0
Recall Mode	C-Max		None	Max		None
Act Effct Green (s)	41.0		31.0	78.0		10.0
Actuated g/C Ratio	0.41		0.31	0.78		0.10
v/c Ratio	0.28		0.30	0.16		0.17
Control Delay (s/veh)	10.1		28.2	3.0		0.4
Queue Delay	0.0		0.0	0.0		0.0
Total Delay (s/veh)	10.1		28.2	3.0		0.4
LOS	B		C	A		A
Approach Delay (s/veh)	10.1			13.4	0.5	
Approach LOS	B			B	A	
Queue Length 50th (ft)	43		81	31		0
Queue Length 95th (ft)	76		137	49		0
Internal Link Dist (ft)	1630			221	681	
Turn Bay Length (ft)						
Base Capacity (vph)	761		548	1453		901
Starvation Cap Reductn	0		0	0		0
Spillback Cap Reductn	0		0	0		0
Storage Cap Reductn	0		0	0		0
Reduced v/c Ratio	0.29		0.30	0.17		0.17

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 91 (91%), Referenced to phase 2:NBT, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.30			
Intersection Signal Delay (s/veh): 9.9		Intersection LOS: A	
Intersection Capacity Utilization 36.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 12: SR57 & Elyria Ave





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	10	30	10	10	10	30	270	10	10	300	20
Future Volume (vph)	20	10	30	10	10	10	30	270	10	10	300	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.932			0.955			0.996			0.992	
Flt Protected		0.983			0.984			0.995			0.999	
Satd. Flow (prot)	0	1690	0	0	1785	0	0	1864	0	0	1864	0
Flt Permitted		0.983			0.984			0.995			0.999	
Satd. Flow (perm)	0	1690	0	0	1785	0	0	1864	0	0	1864	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		549			288			2737			448	
Travel Time (s)		13.1			9.2			10.3			12.2	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	3%	3%	3%	0%	0%	0%	1%	1%	1%	1%	1%	1%
Adj. Flow (vph)	23	11	34	11	11	11	34	307	11	11	341	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	68	0	0	33	0	0	352	0	0	375	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 39.8%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	20	10	30	10	10	10	30	270	10	10	300	20
Future Vol, veh/h	20	10	30	10	10	10	30	270	10	10	300	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	0	0	0	1	1	1	1	1	1
Mvmt Flow	23	11	34	11	11	11	34	307	11	11	341	23

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	756	761	352	750	767	313	364	0	0	318	0	0
Stage 1	375	375	-	381	381	-	-	-	-	-	-	-
Stage 2	381	386	-	369	386	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.1	6.5	6.2	4.11	-	-	4.11	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.5	4	3.3	2.209	-	-	2.209	-	-
Pot Cap-1 Maneuver	323	334	689	330	335	732	1200	-	-	1248	-	-
Stage 1	644	615	-	646	617	-	-	-	-	-	-	-
Stage 2	640	608	-	655	613	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	294	319	689	289	320	732	1200	-	-	1248	-	-
Mov Cap-2 Maneuver	294	319	-	289	320	-	-	-	-	-	-	-
Stage 1	637	608	-	623	596	-	-	-	-	-	-	-
Stage 2	596	587	-	604	606	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	15.24	15.49	0.78	0.24
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	173	-	-	419	377	54	-	-
HCM Lane V/C Ratio	0.028	-	-	0.163	0.09	0.009	-	-
HCM Control Delay (s/veh)	8.1	0	-	15.2	15.5	7.9	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.6	0.3	0	-	-

BROADWAY (SR57)
TARGET SPEED STUDY

APPENDIX H: CONCEPT PLANS

CMT

LEGEND

- EXISTING PARCELS WITHOUT OFF-STREET PARKING
- PROPOSED BUS STOP LOCATION
- SIGNALIZED INTERSECTION

MATCH LINE SEE SHEET 2

SR-57

28TH ST

PROP. OVERHEAD LANE USE SIGN

PROP. TRAFFIC SIGNAL SUPPORT REUSE EX. SIGNAL SUPPORTS WITH NEW SIGNAL HEADS

BROADWAY ST

SR-57

MATCH LINE BOTTOM LEFT

PROP. OVERHEAD LANE USE SIGN

ELYRIA AVE

MATCH EXISTING

SR-57

MATCH LINE TOP RIGHT

PROP. OVERHEAD LANE USE SIGN

HORIZONTAL SCALE IN FEET
0 25 50 100

CONCEPT PLAN - ALTERNATE 1
SR-57

SR-57 BROADWAY RD TARGET SPEED

MODEL: 121822_TP701 PAPERSIZE: 17x11 (in.) DATE: 9/19/2024 TIME: 3:45:33 PM USER: ghansel
L:\ODOT\24007093-00_VARSafetyDsn2024\01_ConceptDev\121822\v400-Engineering\Traffic\Sheets\121822_TP701.dgn

DESIGN AGENCY
CMT
CRAWFORD, MURPHY & TILLY, INC.
8101 N. HIGH STREET
SUITE 350
COLUMBUS, OHIO 43235
PH: (614) 985-1500
www.cmtinc.com

DESIGNER GSH

REVIEWER SAK 08/13/24

PROJECT ID 121822

SHEET 1 TOTAL 5

SR-57 BROADWAY RD TARGET SPEED

MODEL: 121822_TP703 PAPERSIZE: 17x11 (in.) DATE: 9/19/2024 TIME: 3:45:38 PM USER: ghansel
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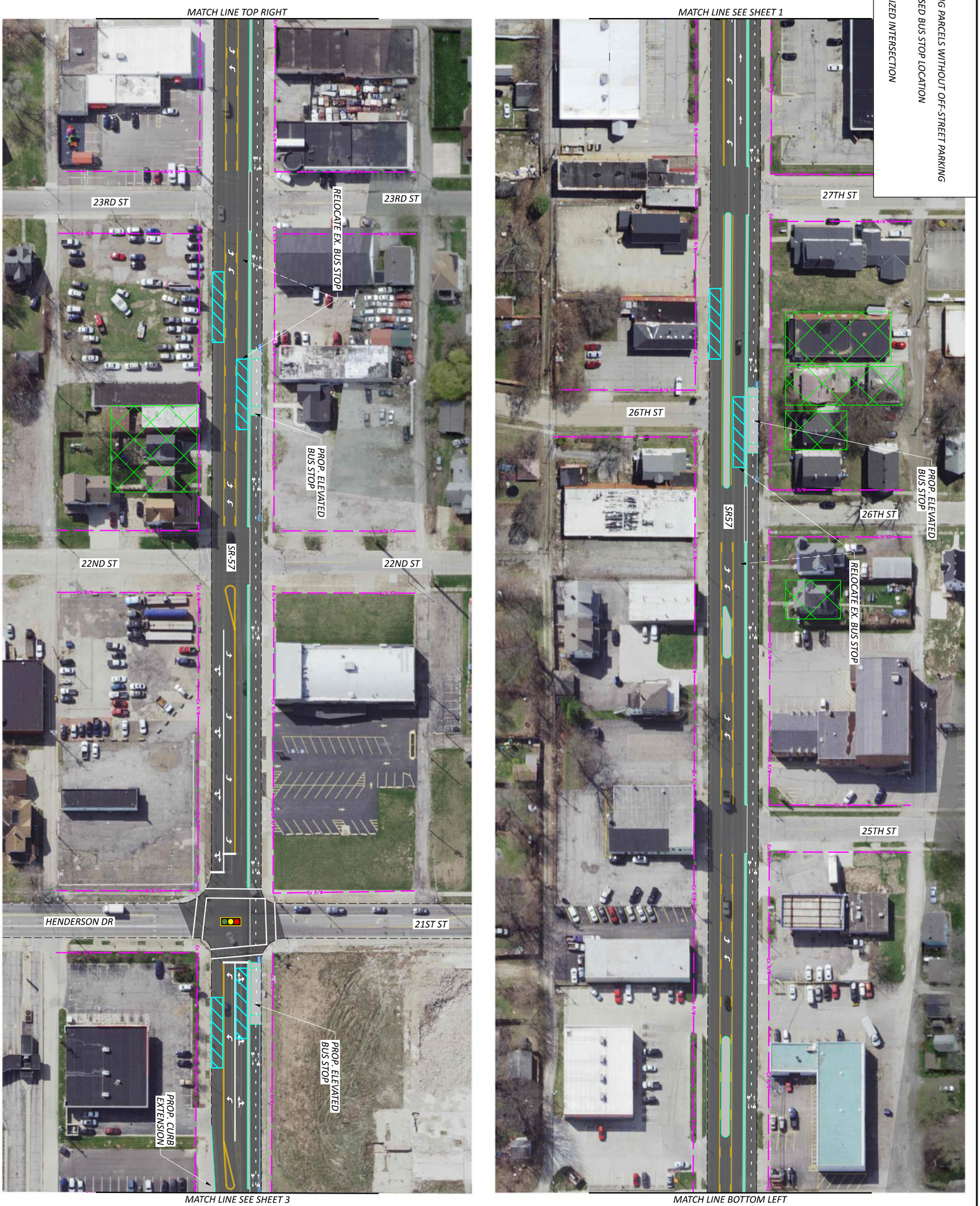

SHEET	TOTAL	PROJECT ID	REVIEWER	DESIGNER	DESIGN AGENCY
2	5	121822	SAK 08/13/24	GSH	CMT CRAWFORD, MURPHY & TILLY, INC. 8101 N. HIGH STREET SUITE 150 COLUMBUS, OHIO 43235 PH (614)406-1200 www.cmtengr.com

CONCEPT PLAN - ALTERNATE 1
SR-57

HORIZONTAL SCALE IN FEET
0 50
25 100

SR-57 BROADWAY RD TARGET SPEED

MODEL: 121822_TP704 PAPERSIZE: 17x11 (in.) DATE: 9/19/2024 TIME: 3:45:40 PM USER: ghansel
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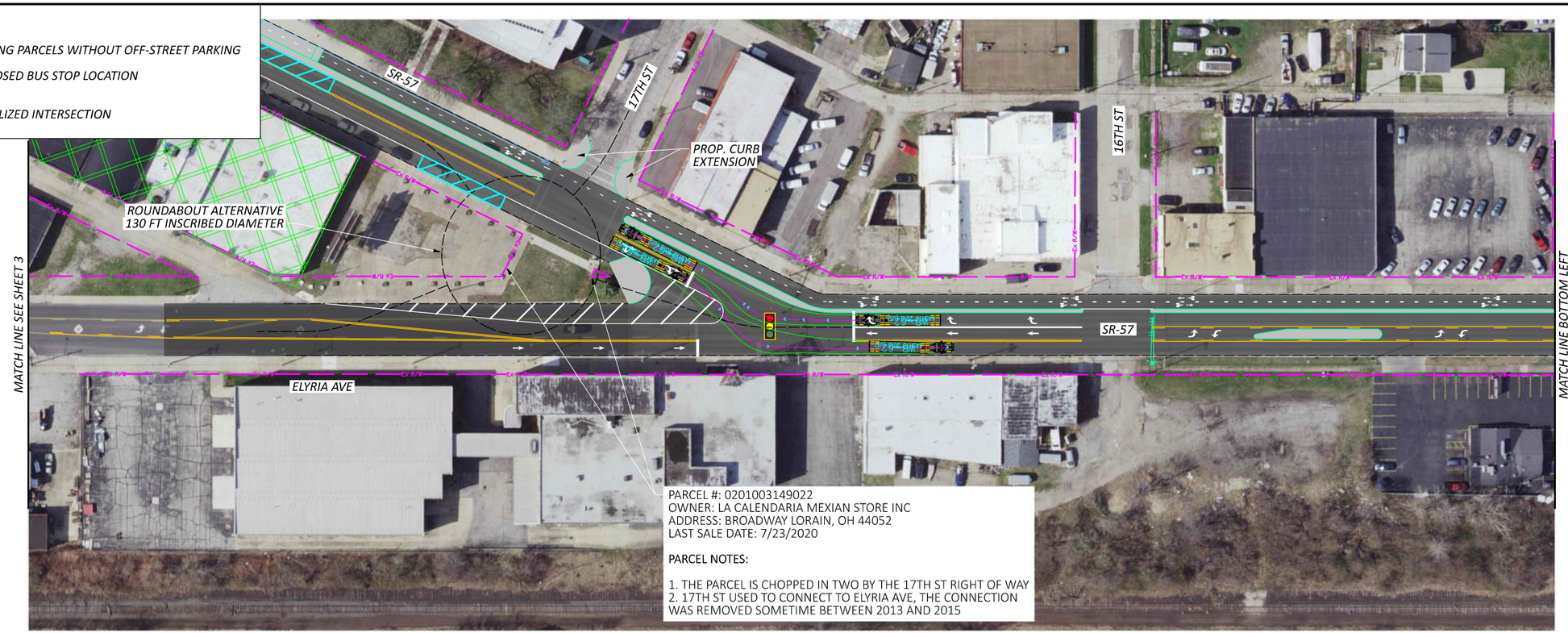
CONCEPT PLAN - ALTERNATE 1
SR-57

HORIZONTAL SCALE IN FEET
0 50
25 100

SHEET	TOTAL	PROJECT ID	REVIEWER	DESIGNER	DESIGN AGENCY
3	5	121822	SAK 08/13/24	GSH	CMT CRAWFORD, MURPHY & TILLY, INC. 8101 N. HIGH STREET SUITE 150 COLUMBUS, OHIO 43235 PH (614)408-1200 www.cmtengr.com

LEGEND

- EXISTING PARCELS WITHOUT OFF-STREET PARKING
- PROPOSED BUS STOP LOCATION
- SIGNALIZED INTERSECTION



PARCEL #: 0201003149022
OWNER: LA CALENDARIA MEXIAN STORE INC
ADDRESS: BROADWAY LORAIN, OH 44052
LAST SALE DATE: 7/23/2020

PARCEL NOTES:

1. THE PARCEL IS CHOPPED IN TWO BY THE 17TH ST RIGHT OF WAY
2. 17TH ST USED TO CONNECT TO ELYRIA AVE, THE CONNECTION WAS REMOVED SOMETIME BETWEEN 2013 AND 2015

HORIZONTAL SCALE IN FEET
0 25 50 100

CONCEPT PLAN - ALTERNATE 1
SR-57

SR-57 BROADWAY RD TARGET SPEED

MODEL: 121822_TP707 PAPERSIZE: 17x11 (in.) DATE: 9/19/2024 TIME: 3:45:41 PM USER: ghansel
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DESIGN AGENCY
CMT
CRAWFORD, MURPHY & TILLY, INC.
8101 N. HIGH STREET
SUITE 370
COLUMBUS, OHIO 43235
PH: 614.985.1200
www.CMTinc.com

DESIGNER	
GSH	
REVIEWER	
SAK 08/13/24	
PROJECT ID	
121822	
SHEET	TOTAL
4	5

SR-57 BROADWAY RD TARGET SPEED

MODEL: 121822_TP708 PAPERSIZE: 17x11 (in.) DATE: 9/19/2024 TIME: 3:45:43 PM USER: ghansel
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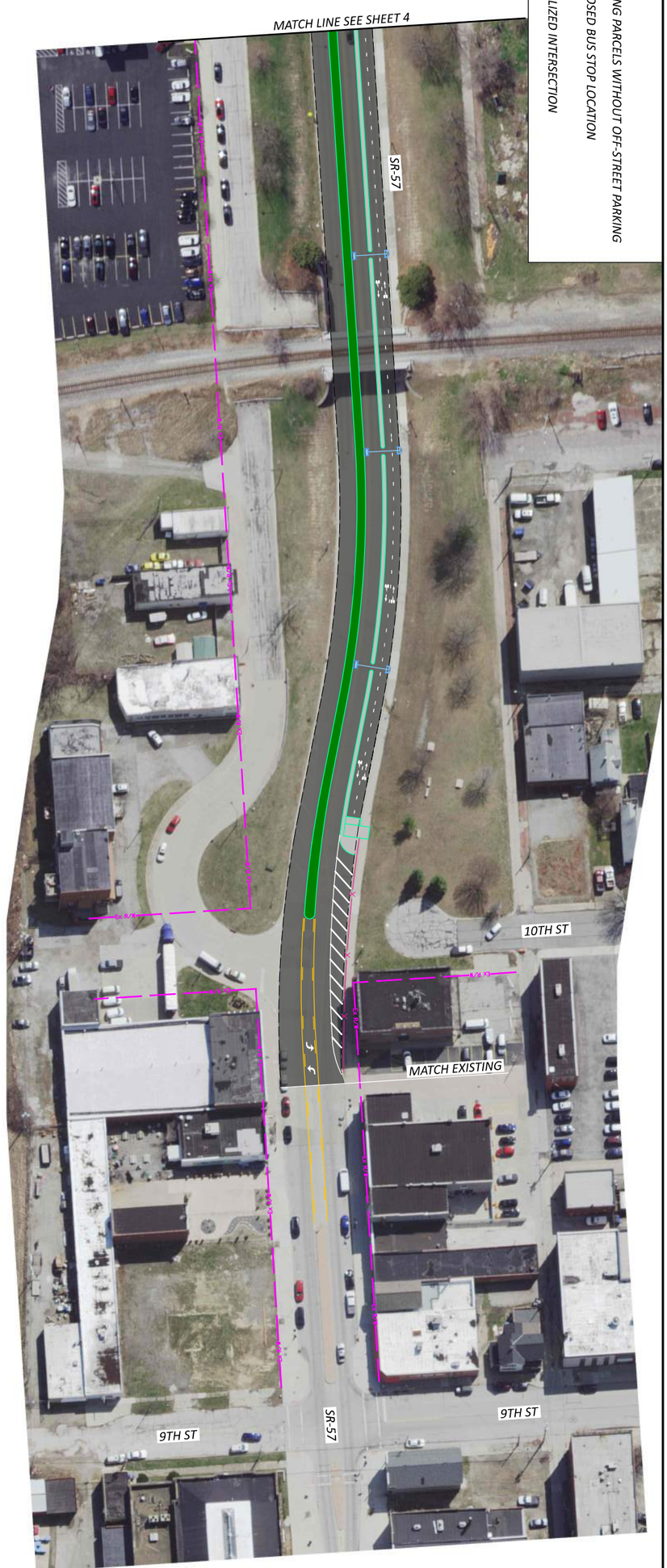

SHEET	TOTAL	PROJECT ID	REVIEWER	DESIGNER	DESIGN AGENCY
5	5	121822	SAK 08/13/24	GSH	CRAWFORD, MURPHY & TILLY, INC.

CMT
CRAWFORD, MURPHY & TILLY, INC.
8101 N. HIGH STREET
SUITE 150
COLUMBUS, OHIO 43235
PH (614)486-1200
www.cmtengr.com

CONCEPT PLAN - ALTERNATE 1
SR-57

HORIZONTAL SCALE IN FEET
0 50
25 100

BROADWAY (SR 57)
TARGET SPEED STUDY

APPENDIX I: COST ESTIMATE

CMT

ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST

Broadway Ave Target Speed Concept Plan

PID: 120561 **Date:** January, 13th 2025

Client name: ODOT

Ref. No.	Item No.	Description	Total Estimated Quantity	Unit	Estimated Unit Cost	Total Estimated Cost
1	202	CLEARING AND GRUBBING	1	LUMP	$ 10,000.00	$ 10,000
2	202	PAVEMENT REMOVED	4900	SQ YD	$ 15.00	$ 73,500
3	202	CURB REMOVED	1425	FEET	$ 8.00	$ 11,400
4	301	ASPHALT CONCRETE BASE	277	CU YD	$ 170.00	$ 47,065
5	304	AGGREGATE BASE	369	CU YD	$ 75.00	$ 27,685
6	441	ASPHALT CONCRETE SURFACE COURSE	138	CU YD	$ 300.00	$ 41,528
7	608	SIDEWALK	5700	SQ FT	$ 13.00	$ 74,100
8	608	CURB RAMPS	2704	SQ FT	$ 25.00	$ 67,600
9	608	RAISED BUS STOP	3900	SQ FT	$ 20	$ 78,000
10	609	CURB, TYPE 6	2700	FEET	$ 25.00	$ 67,500
11	609	RAIN GARDEN MEDIAN	875	SQ YD	$ 80.00	$ 70,000
12	609	FORMED BIKE LANE MEDIAN	2425	SQ YD	$ 140.00	$ 339,500
13	609	CONCRETE MEDIAN	625	SQ YD	$ 120.00	$ 75,000
14	611	DRAINAGE	1	LS	$ 210,000.00	$ 210,000
15	630	GROUND MOUNTED SIGNS	1	LUMP	$ 25,000.00	$ 25,000
16	630	OVERHEAD SIGNING	4	EACH	$ 32,000.00	$ 128,000
17	632	TRAFFIC SIGNAL (MOD)	1	EACH	$ 90,000.00	$ 90,000
18	644	PAVEMENT MARKING REMOVAL	25000	FT	$ 3.75	$ 93,750
19	644	PAVEMENT MARKINGS REMOVAL	24	EACH	$ 130.00	$ 3,120
20	644	PAVEMENT MARKINGS	1	LUMP	$ 40,000.00	$ 40,000
21	644	LANE ARROWS	79	EACH	$ 150.00	$ 11,850
22	644	BIKE ARROWS	71	EACH	$ 350.00	$ 24,850
23	832	EROSION CONTROL	35000	EACH	$ 1.00	$ 35,000
						$ 1,644,448
24	614	MAINTENANCE OF TRAFFIC	1	LUMP	$ 100,000.00	$ 100,000
25	619	FIELD OFFICE	6	MONTH	$ 2,100.00	$ 12,600
26	623	CONSTRUCTION LAYOUT STAKES AND SURVEYING	1	LUMP	$ 20,000.00	$ 20,000
27	624	MOBILIZATION	1	LUMP	$ 100,000.00	$ 100,000
					SUBTOTAL ESTIMATED CONSTRUCTION COST	$ 1,880,000
					SUBTOTAL ESTIMATED RIGHT OF WAY COST	$ 20,000
						$ 1,900,000
					CONSTRUCTION CONTINGENCY 25%	$ 475,000
					ENGINEERING, DESIGN & CONSTRUCTION ADMINISTRATION 30%	$ 570,000
						$ 2,945,000
					INFLATION CONTINGENCY (2025 CONSTRUCTION) 13.0%	$ 380,000
					TOTAL ESTIMATED PROJECT COST	$ 3,330,000

Notes:

No anticipated right of way takes.

Net increase cost of $30,000 for alternate 2 for signalization work at Elyria Avenue intersection.

Roadway costs assumed to be similar for mirror design of alternate 2.

BROADWAY (SR57)
TARGET SPEED STUDY

APPENDIX J: FHWA SAFE SYSTEM FRAMEWORK

CMT

Alignment Framework – Final Scoring Matrix

Project Location: **Broadway in Lorain, OH** **Caroline Ave to 28th Street**

Existing Conditions

Category	Vulnerable Road Users (VRU)	VRU Score	Motor Vehicles	Motor Vehicles Score
Exposure Score:	Vulnerable Road Users Subtotal	***16***	Motor Vehicles Subtotal	***18***
Likelihood Score:	Vulnerable Road Users Subtotal	***9***	Motor Vehicles Subtotal	***9***
Severity Score:	Vulnerable Road Users Subtotal	***20***	Motor Vehicles Subtotal	***12***
Mode Subtotal:	Vulnerable Road Users	***2,880***	Motor Vehicles	***1,944***

Total Score:

4,824

Alignment Framework – Final Scoring Matrix

Project Location: **Broadway in Lorain, OH** **Caroline Avenue to 28th Street**

Proposed Conditions

Category	Vulnerable Road Users (VRU)	VRU Score	Motor Vehicles	Motor Vehicles Score
Exposure Score:	Vulnerable Road Users Subtotal	***16***	Motor Vehicles Subtotal	***18***
Likelihood Score:	Vulnerable Road Users Subtotal	***9***	Motor Vehicles Subtotal	***9***
Severity Score:	Vulnerable Road Users Subtotal	***20***	Motor Vehicles Subtotal	***12***
Mode Subtotal:	Vulnerable Road Users	***2,880***	Motor Vehicles	***1,944***

Total Score:

4,824

Alignment Framework – Final Scoring Matrix

Project Location: **Broadway in Lorain, OH** **28th Street to 20th Street**

Existing Conditions

Category	Vulnerable Road Users (VRU)	VRU Score	Motor Vehicles	Motor Vehicles Score
Exposure Score:	Vulnerable Road Users Subtotal	***16***	Motor Vehicles Subtotal	***18***
Likelihood Score:	Vulnerable Road Users Subtotal	***9***	Motor Vehicles Subtotal	***9***
Severity Score:	Vulnerable Road Users Subtotal	***20***	Motor Vehicles Subtotal	***9***
Mode Subtotal:	Vulnerable Road Users	***2,880***	Motor Vehicles	***1,458***

Total Score:

4,338

Alignment Framework – Final Scoring Matrix

Project Location: **Broadway in Lorain, OH** **28th Street to 20th Street**

Proposed Conditions

Category	Vulnerable Road Users (VRU)	VRU Score	Motor Vehicles	Motor Vehicles Score
Exposure Score:	Vulnerable Road Users Subtotal	***14***	Motor Vehicles Subtotal	***14***
Likelihood Score:	Vulnerable Road Users Subtotal	***6***	Motor Vehicles Subtotal	***3***
Severity Score:	Vulnerable Road Users Subtotal	***10***	Motor Vehicles Subtotal	***3***
Mode Subtotal:	Vulnerable Road Users	***840***	Motor Vehicles	***126***

Total Score:

966

Alignment Framework – Final Scoring Matrix

Project Location: **Broadway in Lorain, OH** **20th Street to Elyria Avenue**

Existing Conditions

Category	Vulnerable Road Users (VRU)	VRU Score	Motor Vehicles	Motor Vehicles Score
Exposure Score:	Vulnerable Road Users Subtotal	***18***	Motor Vehicles Subtotal	***16***
Likelihood Score:	Vulnerable Road Users Subtotal	***6***	Motor Vehicles Subtotal	***6***
Severity Score:	Vulnerable Road Users Subtotal	***20***	Motor Vehicles Subtotal	***9***
Mode Subtotal:	Vulnerable Road Users	***2,160***	Motor Vehicles	***864***

Total Score:

3,024

Alignment Framework – Final Scoring Matrix

Project Location: **Broadway in Lorain, OH** **20th Street to Elyria Avenue**

With Road Diet Improvements

Category	Vulnerable Road Users (VRU)	VRU Score	Motor Vehicles	Motor Vehicles Score
Exposure Score:	Vulnerable Road Users Subtotal	***12***	Motor Vehicles Subtotal	***10***
Likelihood Score:	Vulnerable Road Users Subtotal	***3***	Motor Vehicles Subtotal	***1***
Severity Score:	Vulnerable Road Users Subtotal	***15***	Motor Vehicles Subtotal	***6***
Mode Subtotal:	Vulnerable Road Users	***540***	Motor Vehicles	***60***

Total Score:

600

Alignment Framework – Final Scoring Matrix

Project Location: **Broadway in Lorain, OH** **Elyria Avenue to 10th Street**

Existing Conditions

Category	Vulnerable Road Users (VRU)	VRU Score	Motor Vehicles	Motor Vehicles Score
Exposure Score:	Vulnerable Road Users Subtotal	***16***	Motor Vehicles Subtotal	***16***
Likelihood Score:	Vulnerable Road Users Subtotal	***12***	Motor Vehicles Subtotal	***15***
Severity Score:	Vulnerable Road Users Subtotal	***20***	Motor Vehicles Subtotal	***9***
Mode Subtotal:	Vulnerable Road Users	***3,840***	Motor Vehicles	***2,160***

Total Score:

6,000

Alignment Framework – Final Scoring Matrix

Project Location: **Broadway in Lorain, OH** **Elyria Avenue to 10th Street**

With Road Diet Improvements

Category	Vulnerable Road Users (VRU)	VRU Score	Motor Vehicles	Motor Vehicles Score
Exposure Score:	Vulnerable Road Users Subtotal	***14***	Motor Vehicles Subtotal	***10***
Likelihood Score:	Vulnerable Road Users Subtotal	***9***	Motor Vehicles Subtotal	***9***
Severity Score:	Vulnerable Road Users Subtotal	***15***	Motor Vehicles Subtotal	***6***
Mode Subtotal:	Vulnerable Road Users	***1,890***	Motor Vehicles	***540***

Total Score:

2,430