TMS Engineers, Inc



CORRIDOR STUDY

Mill Road
Broadview Heights, Ohio

April 10, 2023

Prepared for:

City of Broadview Heights
9543 Broadview Road
Broadview Heights, OH 44147

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Prepared By:

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"This document was prepared consistent with local agency requirements and/or applicable guidelines contained in this report."

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Executive Summary

The Mill Road Corridor Study has been prepared at the request of the Cities Broadview Heights and Brecksville. The study area includes Mill Road from Wallings Road to Brecksville Road (State Route 21). This report analyzed the portion of the roadway within the City of Broadview Heights (**Figure 1.3, Appendix A**).

The complete study area will consist of the following existing intersections with the intersections within the City of Broadview Heights italicized:

1. *Mill Road & Wallings Road/Interstate 77 Northbound Entrance Ramp*
2. *Mill Road & Interstate 77 Northbound Exit Ramp*
3. *Mill Road & Loripat Drive*
4. *Mill Road & Lacey Lane*
5. *Mill Road & Sylmar Drive*
6. *West Mill Road & Karen Lynne Drive*
7. *West Mill Road & Lacey Lane*
8. *Mill Road & Broadmill Drive*
9. *Mill Road & Millwood Drive*
10. *Mill Road & Middle School Driveway*
11. *Mill Road & Middle School/High School Driveway*
12. *Mill Road & Vera Drive*
13. Mill Road & Sunnydale Drive
14. Mill Road & Hunting Valley Drive/High School Driveway
15. Mill Road & Whitewood Road/Hilton Road
16. Mill Road & Hilton Elementary School Driveway
17. Mill Road & St. Basil Driveway
18. Mill Road & Brecksville Road (SR 21)

Traffic forecasts were prepared as part of the procedure to determine future traffic volumes in the study area.

The year 2024 was analyzed for the opening year conditions. The future design year was 2044 based on providing a twenty year design period for any recommended improvements in the study area. The recommendations found in this report were based on the 2044 conditions.

The ODOT **GIS Crash Analysis Tool (GCAT)** was used to collect crash information at the study area intersections for the years 2019 through June of 2022. The Broadview Heights study area experienced a total of 21 intersection related crashes in time period under analysis. Crashes were reported at 2 of the 12 intersections under study.

Rear end crashes were determined to the be the predominate crash type at the intersection of Mill Road and Wallings Road. 15 of the 19 reported crashes at the intersection were read-end crashes.

Conditions at the study area intersections during the AM and PM peak hours were determined to meet the operational goals for capacity shown in **Table 1.2** under the forecasted 2024 opening year and 2044 design year conditions with the exception of the following intersection.

- Mill Road & Wallings Road

Based on the results of the analyses, we offer the following potential improvements and recommendations:

Short Term/Low Cost Improvements

Update all cross walk markings throughout the study area for consistency. It is our recommendation that all crosswalks be striped the same as the crosswalk to the east of Vera Drive. The use of the "longitudinal bar" high visibility pattern is recommended for use throughout the corridor.

The installation of "ALL-WAY" (R1-3P) plaques below each stop sign at the all-way stop intersection of West Mill Road and Lacey Lane is recommended.

There are existing advanced school crossing warning signs located to the east and west of the signalized intersection of Mill Road and the school access driveway. The signs include a "School" plaque below the sign. It is our recommendation that the "SCHOOL" plaques are replaced with the "AHEAD" (W16-9P) plaque in a matching florescent yellow color.

There are existing "School Crossing" (S1-1) signs at the Mill Road crosswalk at the signalized intersection with the school access driveway. The installation of "Supplemental Arrow" (W17-7P) plaque in a matching florescent yellow color below each warning sign is recommended.

It is recommended that a school crossing warning sign assembly be placed on each side of the Mill Road crosswalk to the east of Vera Road. The sign assembly is recommended to consist of fluorescent yellow "School Crossing" (S1-1) sign and "Supplemental Arrow" (W16-7P) plaque.

Long Term/High Cost Improvements

Turn lanes were recommended at the following location:

- Mill Road & Wallings Road
  - Construct dual 450 feet eastbound left turn lanes.
  - Update traffic signal control sequence to provide an eastbound protected only phase for the left turn movement.
  - Widen the IR77 NB entrance ramp to receive the dual turning lanes.

The Wallings Road bridge over Interstate 77 would have to be widened to accommodate dual eastbound left turn lanes at the Mill Road/IR77 northbound entrance ramp intersection.

The need for any westbound left turn lanes at the adjacent ramp for southbound Interstate 77 should be considered as part of any project to widen the Wallings Road bridge.

Improvements to the interchange ramps would require the preparation of an Interchange Modification Study (IMS) for review and approval by the Ohio Department of Transportation (ODOT) and the Federal Highway Administration (FHWA).

Chapter 1
Introduction

1.1 Purpose of Report

The Mill Road Corridor Study has been prepared at the request of the Cities Broadview Heights and Brecksville. The study area includes Mill Road from Wallings Road to Brecksville Road (State Route 21). This report will analyze the portion of the roadway within the City of Broadview Heights (**Figure 1.1, Appendix A**).

The complete study area will consist of the following existing intersections with the intersections within the City of Broadview Heights italicized:

1. *Mill Road & Wallings Road/Interstate 77 Northbound Entrance Ramp*
2. *Mill Road & Interstate 77 Northbound Exit Ramp*
3. *Mill Road & Loripat Drive*
4. *Mill Road & Lacey Lane*
5. *Mill Road & Sylmar Drive*
6. *West Mill Road & Karen Lynne Drive*
7. *West Mill Road & Lacey Lane*
8. *Mill Road & Broadmill Drive*
9. *Mill Road & Millwood Drive*
10. *Mill Road & Middle School Driveway*
11. *Mill Road & Middle School/High School Driveway*
12. *Mill Road & Vera Drive*
13. Mill Road & Sunnydale Drive
14. Mill Road & Hunting Valley Drive/High School Driveway
15. Mill Road & Whitewood Road/Hilton Road
16. Mill Road & Hilton Elementary School Driveway
17. Mill Road & St. Basil Driveway
18. Mill Road & Brecksville Road (SR 21)

These intersections (#1 - #12) will be enumerated and referenced as listed above throughout the report and the analyses contained within it. **Figure 1.2, Appendix A** shows the Mill Road corridor and intersections under study. **Figure 1.3, Appendix A** details the intersections within the City of Broadview Heights.

1.2 Study Objectives

This study is structured for the following purposes;

- to adequately identify and assess the existing and future study area traffic conditions,
- to provide a comprehensive study which evaluates and documents the traffic impacts and improvements, where warranted,
- and to provide a technically sound basis to identify mitigation requirements to traffic impacts.

This study documents the methodologies, findings and conclusions of the analysis, including the basis for all assumptions, traffic parameters utilized and conclusions reached.

The development of future traffic volumes will be based on the forecasting guidelines and methodology found in the Ohio Department of Transportation's **Ohio Traffic Forecasting Manual, Volume 1 [4] & Volume 2 [5]**.

The traffic impacts will be determined through the use of intersection levels-of-service, delay or density, volume to capacity ratio and queue storage ratio. Traffic analyses for the study area intersections will be calculated using the computerized version of the Transportation Research Board's **Highway Capacity Manual 7TH Edition [1], (HCS2022, Release 8.2)**. Data inputs for the HCS software program will be based on the guidance found in the Ohio Department of Transportation's **Analysis & Traffic Simulation Manual (OATS) [6]**.

The justification for any changes in the intersections will be determined by comparing data collected of the existing traffic conditions to the criteria established by the **Ohio Manual of Uniform Traffic Control Devices [2]** and professional engineering judgment from an on-site field review.

Intersection geometric design guidelines will be based in the information and procedures found in the Ohio Department of Transportation's **Location & Design Manual, Volume 1 [3]**.

1.3 Intersection Capacity & Levels-of-Service

Intersection capacity analyses will be performed at the study area intersections using the procedures outlined in the computerized version of the Transportation Research Board's **Highway Capacity Manual** [(1)].

The **HCM** [(1)] is the most widely used document in the transportation industry. It contains a set of methodologies and application procedures for evaluating the capacity and quality of service of various transportation facilities. The **HCM** [(1)] is built from more than 60 years or research work and represents a body of expert transportation consensus.

The capacity analysis procedures provide a calculated "average vehicle delay", which is based on traffic volumes, number of lanes, type of traffic control, channelization, grade, and percentage of large vehicles in the traffic stream at each intersection. The average delay calculated at an intersection is then assigned a "grade" or level of service (LOS) ranging from LOS A, the best, to LOS F, the worst based upon driver expectation. The intersection LOS "grades" as defined by the Transportation Research Board are as follows:

Table 1.1 Intersection Levels-of-Service

LEVEL OF SERVICE (LOS)	UNSIGNALIZED AVERAGE DELAY PER VEHICLE (sec)	SIGNALIZED AVERAGE DELAY PER VEHICLE (sec)
A	≤ 10.0	≤ 10.0
B	10.1 to 15.0	10.1 to 20.0
C	15.1 to 25.0	20.1 to 35.0
D	25.1 to 35.0	35.1 to 55.0
E	35.1 to 50.0	55.1 to 80.0
F	> 50	> 80

Intersection capacity analyses will be performed in order to estimate the maximum amount of traffic that can be accommodated by the intersection while maintaining recommended operational qualities.

The selection of the design level-of-service is most frequently chosen from Section 5.9 of the Ohio Department of Transportation's **OATS Manual** [6]. In most cases, a level-of-service E for approaches and movements is considered the maximum delay threshold after which improvements should be investigated to determine if the delay can be reduced to a level of E or better. Level of service D is the maximum delay threshold for intersections. The following table from *Section 5.9* details the operation goals for intersection analyses (All-Way Stop Control, Two-Way Stop Control, Signalized, & Roundabout).

Table 1.2 Intersection Operational Goals

RESULT	INSIDE AN MPO	OUTSIDE AN MPO
Intersection LOS	D or BETTER	C or BETTER
Approach LOS	E or BETTER	
Control LOS	E or BETTER	
v/c	All movements < 1.0 (<= 0.93 preferred)	
QSR	All movements <1.0 from HCS analysis, TransModeler may be needed to determine if queuing impacts upstream intersections.	

MPO = Metropolitan Planning Organization
v/c = Volume to Capacity Ratio
QSR = Queue Storage Ratio

The capacity analyses will determine if there are any locations, approaches or movements in which the delay, v/c, and QSR exceeds the operational goals shown in *Table 1.2*.

All intersections will be analyzed using the computerized version of the Transportation Research Board's **Highway Capacity Manual 7TH Edition [1], (HCS2023, Release 8.2).** The capacity analyses for signalized intersections will be based on the process detailed in *Section 6.2.2.1* of the ODOT **OATS Manual** [6]. The optimization of any traffic signal timings will be based on the delay minimization function with the objective of Balanced Delay.

It should be noted that any values for queue length, shown in the HCS analysis summary sheets that are displayed in red, indicate that the movement is expected to experience a "spillback" condition where the queue may exceed the existing length of the turn lane and extend into the adjacent through lane. These instances, if they occur, will be investigated for mitigation.

1.4 Intersection Turn Lanes

Turn Lane Warrants

The ODOT **Location and Design Manual, Volume 1** [3] and the **State Highway Access Management Manual** [7] describes the need for auxiliary turn lanes at unsignalized intersections. The Auxiliary Lane Graphs found in *Section 401-6* of the **Location and Design Manual, Volume 1** [4] are used for this determination. This applies to the free-flow approaches at unsignalized intersections. *Section 401.6.1* of the ODOT **Location and Design Manual** [4] states that:

"To determine the number and use of left (right) turn lanes, intersection capacity analysis procedures of the current edition of the Highway Capacity Manual should be used. For unsignalized intersections, left (right) turn lanes may also be needed if they meet warrants provided in Figures 401-5(6)a, b, c and d. The warrants apply only to the free-flow approach of the unsignalized intersection."

Turn Lane Length

Proposed turn lanes and existing turn lanes, found to be deficient in length, will be analyzed to determine the necessary turn lane storage length in accordance with the procedure found in the Ohio Department of Transportation's **Location and Design Manual, Volume 1** [3], *Section 401*. The ODOT criteria and procedures are furnished in **Appendix B**.

It should be noted that the recommended maximum length is 800 feet for a right turn lane and 600 feet for a left turn lane, however if the calculated turn lane length is lower than these values, the maximum length will not be applicable.

Design Speed

The procedure for determining the necessary turn lane storage length with the procedure found in the Ohio Department of Transportation's **Location and Design Manual, Volume 1** [3], *Section 401* is in part based on the design speed of the roadway.

The AASHTO publication, **A Policy on Geometric Design of Highway Streets (Green Book)** [11], defines design speed as a selected speed used to determine the various geometric design features of the roadway. The assumed design speed should be a logical one with respect to the topography, anticipated operating speed, the adjacent land use and the functional classification of highway.

The ODOT **Location and Design Manual, Volume 1** [3] provides guidance for determining the design speed of a roadway. *Section 104.2* of the ODOT **Location and Design Manual** [3] states that:

"The design speed should match the legal speed for facilities with a legal speed of 35 mph or less. For facilities with a legal speed of 40 or 45 mph the design speed should either match the legal speed, or be 5 mph greater than the legal speed, depending on the context of the area. For facilities with a legal speed 50 mph or greater, the design speed should be 5 mph greater than the legal speed."

1.5 References

The following list of references will be utilized for this report and the analysis contained within it:

1. *Highway Capacity Manual,* 7th Edition
   Transportation Research Board of the National Academies, Washington, D.C.

2. *Ohio Manual of Uniform Traffic Control Devices for Streets and Highways,* 2012 Edition
   Ohio Department of Transportation, Office of Traffic Engineering, Columbus, Ohio.

3. *Location and Design Manual,* Volume 1, Roadway Design. Ohio Department of Transportation, Office of Roadway Engineering, Columbus, Ohio.

4. *Ohio Traffic Forecasting Manual,* Volume 1, Traffic Forecasting Background. Ohio Department of Transportation, Office of Statewide Planning & Research, Columbus, Ohio.

5. *Ohio Traffic Forecasting Manual,* Volume 2, Traffic Forecasting Methodologies. Ohio Department of Transportation, Office of Statewide Planning & Research, Columbus, Ohio.

6. *ODOT Analysis and Traffic Simulation Manual (OATS),* Ohio Department of Transportation
   Office of Roadway Engineering, Columbus, Ohio.

7. *State Highway Access Management Manual,* Ohio Department of Transportation
   Office of Roadway Engineering, Columbus, Ohio.

8. *Trip Generation Manual,* 11th Edition, September 2021
   Institute of Transportation Engineers, (ITE), Washington, D.C.

9. *Trip Generation Handbook,* 3rd Edition, September 2017
   Institute of Transportation Engineers, (ITE), Washington, D.C.

10. *Traffic Engineering Manual,* October 23, 2002 Edition (Revised January 15, 2021),
    Ohio Department of Transportation, Office of Roadway Engineering, Columbus, Ohio.

11. *A Policy on Geometric Design of Highways and Streets (Green Book)*, 7TH Edition, September 2018,
    American Association of State Highway and Transportation Officials, Washington, D.C.

12. *Highway Safety Manual w/ 2014 Supplement*, 1ST Edition, September 2014
    American Association of State Highway and Transportation Officials, Washington, D.C.

13. *NCHRP Report 672 Roundabouts: An Informational Guide*, 2ND Edition, 2010
    Transportation Research Board, Washington, D.C.

Chapter 2
Area Conditions

2.1 Transportation Network Study Area

The study area for the portion of Mill Road within the City of Broadview Heights includes the following intersections:

1. Mill Road & Wallings Road/Interstate 77 Northbound Entrance Ramp
2. Mill Road & Interstate 77 Northbound Exit Ramp
3. Mill Road & Loripat Drive
4. Mill Road & Lacey Lane
5. Mill Road & Sylmar Drive
6. West Mill Road & Karen Lynne Drive
7. West Mill Road & Lacey Lane
8. Mill Road & Broadmill Drive
9. Mill Road & Millwood Drive
10. Mill Road & Middle School Driveway
11. Mill Road & Middle School/High School Driveway
12. Mill Road & Vera Drive

A location map detailing the intersection locations can be seen in **Figure 1.3, Appendix A**.

An aerial view of the Broadview Heights study area can be seen in **Figure 2.1, Appendix A**.

The following table details the primary characteristics of the existing intersections and study area roadways:

Table 2.1 - Intersection & Roadway Characteristics
(City of Broadview Heights)

INT. #	ROADWAYS	ORIENTATION	LANE USE		TRAFFIC CONTROL
			THROUGH LANES	TURN LANES	
1	Mill Road IR77 NB Entrance Ramp Wallings Road	North-South North-South East-West	2 1 2	NONE	Traffic Signal
2	Mill Road IR77 NB Exit Ramp	North-South East-West	2 2	EB Left & Right Turn	1-Way Stop
3	Mill Road Loripat Drive	North-South East-West	2 2	NONE	1-Way Stop
4	Mill Road Lacey Lane	North-South East-West	2 2	NONE	1-Way Stop
5	Mill Road Sylmar Drive	North-South East-West	2 2	NONE	1-Way Stop
6	West Mill Road Karen Lynne Drive	North-South East-West	2 2	NONE	1-Way Stop
7	West Mill Road Lacey Lane	North-South East-West	2 2	NONE	All-Way Stop
8	Mill Road Broadmill Drive	North-South East-West	2 2	NONE	1-Way Stop
9	Mill Road Millwood Drive	North-South East-West	2 2	NONE	1-Way Stop
10	Mill Road MS Driveway	East-West North-South	2 2	NONE	1-Way Stop
11	Mill Road MS/HS Driveway	East-West North-South	2 2	NONE	Traffic Signal
12	Mill Road Vera Drive	East-West North-South	2 2	NONE	1-Way Stop

Figure 2.2, Appendix A shows the current lane use and traffic control conditions for the above referenced intersections. These will be considered the existing base conditions for this report.

2.2 Functional Classification

The Ohio Department of Transportation functionally classifies roadways to help define a roadway's characteristics as well as identify roadways that are eligible for federal funds. Functional classification is the grouping of roads, streets, and highways in a hierarchy based on the type of highway service they provide. Generally, streets and highways perform two types of service. They provide either traffic mobility or land access and can be ranked in terms of the proportion of service they provide.

The functional classification as determined by ODOT will be used in this report to apply growth and design hour factors to the study area roadways for use in forecasting the future traffic volumes in the study area. These factors are determined using data, guidelines, and methodology supplied by ODOT. The methods and the corresponding data are based on the roadways assigned functional classification. The ODOT methods for forecasting future traffic volumes are a recognized traffic engineering standard in the State of Ohio.

Roadways that are not listed as having a functional classification can be assigned into one of two categories. The first category is a local roadway and the second category is that of an access drive.

The ODOT functional classification of the roadways in the study area can currently be found using the ODOT Transportation Information Mapping System (TIMS). TIMS is ODOT's web-mapping portal where information about Ohio's transportation system can be found. TIMS can currently be found at the following web address:

https://gis.dot.state.oh.us/tims/

Figure 2.3, Appendix A illustrates the section of the functional classification map for the study area.

The following table lists the study area roadways that have an assigned functional classification as determined by ODOT and local government entities.

Table 2.2 - Functional Classification
(City of Broadview Heights)

INT. #	ROADWAYS	AREA	FC #	CLASSIFICATION
1	Mill Road	Urban	7	Local Roadway
	IR77 NB Entrance Ramp		1	Interstate
	Wallings Road		3	Minor Arterial
2	Mill Road	Urban	7	Local Roadway
	IR77 NB Exit Ramp		1	Interstate
3	Mill Road	Urban	7	Local Roadway
	Loripat Drive		7	Local Roadway
4	Mill Road	Urban	7	Local Roadway
	Lacey Lane		7	Local Roadway
5	Mill Road	Urban	7	Local Roadway
	Sylmar Drive		7	Local Roadway
6	West Mill Road	Urban	7	Local Roadway
	Karen Lynne Drive		7	Local Roadway
7	West Mill Road	Urban	7	Local Roadway
	Lacey Lane		7	Local Roadway
8	Mill Road	Urban	7	Local Roadway
	Broadmill Drive		7	Local Roadway
9	Mill Road	Urban	7	Local Roadway
	Millwood Drive		7	Local Roadway
10	Mill Road	Urban	7	Local Roadway
	MS Driveway		7	Access Drive
11	Mill Road	Urban	7	Local Roadway
	MS/HS Driveway		7	Access Drive
12	Mill Road	Urban	7	Local Roadway
	Vera Drive		7	Local Roadway

2.3 Speed Limits & Design Speeds

Speed Limits

The posted speed limit on a roadway can be categorized as either the statutory speed limit or a journalized speed limit. Statutory speed limits in the State of Ohio are determined by the **Ohio Revised Code, Section 4511.21.** Roadways that have speed limits posted that do not coincide with the **ORC** guidance must be approved and journalized by the Ohio Department of Transportation (ODOT). The approved speed limits in Ohio that are journalized can be found on ODOT's TIMS website at the following web address:

https://gis.dot.state.oh.us/tims

There were no journalized speed zones found in the study area.

Design Speeds

The design speed of a roadway is key component in the design and operation of roadways and their associated facilities. The AASHTO publication, **A Policy on Geometric Design of Highway Streets (Green Book) [11],** defines design speed as a selected speed used to determine the various geometric design features of the roadway. The assumed design speed should be a logical one with respect to the topography, anticipated operating speed, the adjacent land use and the functional classification of highway.

The ODOT **Location and Design Manual, Volume 1 [3]** provides guidance for determining the design speed of a roadway. *Section 104.2* of the ODOT **Location and Design Manual [3]** states that:

"The design speed should match the legal speed for facilities with a legal speed of 35 mph or less. For facilities with a legal speed of 40 or 45 mph the design speed should either match the legal speed, or be 5 mph greater than the legal speed, depending on the context of the area. For facilities with a legal speed 50 mph or greater, the design speed should be 5 mph greater than the legal speed."

The following table details the speed limit and design speed for the study area roadways:

Table 2.3 - Speed Limits & Design Speeds (City of Broadview Heights)

INT. #	ROADWAYS	SPEED LIMIT (MPH)	DESIGN SPEED (MPH)
1	Mill Road	25	25
	IR77 NB Entrance Ramp	Not Posted	35
	Wallings Road	35	35
2	Mill Road	25	25
	IR77 NB Exit Ramp	Not Posted	35
3	Mill Road	25	25
	Loripat Drive	25	25
4	Mill Road	25	25
	Lacey Lane	25	25
5	Mill Road	25	25
	Sylmar Drive	25	25
6	West Mill Road	25	25
	Karen Lynne Drive	25	25
7	West Mill Road	25	25
	Lacey Lane	25	25
8	Mill Road	25	25
	Broadmill Drive	25	25
9	Mill Road	25	25
	Millwood Drive	25	25
10	Mill Road	25	25
	MS Driveway	Not Posted	25
11	Mill Road	25	25
	MS/HS Driveway	Not Posted	25
12	Mill Road	25	25
	Vera Drive	25	25

2.4 Traffic

Weekday Peak Hours

Weekday nine hour turning movement counts were performed at the 18 study area intersections in Brecksville and Broadview Heights. The traffic count locations can be seen in **Figure 1.2, Appendix A**. The traffic counts were conducted between Thursday, January 12, 2023 and Thursday, March 9, 2023.

The 2023 weekday traffic counts were conducted in fifteen (15) minute intervals between the hours of 7 AM - 10 AM, 11 AM - 1 PM, and 2 PM - 6 PM, then hourly totals were calculated. Average daily traffic was calculated for the roadways using expansion factors to account for daily and seasonal variations according to the recommendations and latest data from the Ohio Department of Transportation. Copies of the intersection turn movement counts are included in **Appendix C**.

The AM and PM intersection peak hours are selected by reviewing data in 15-minute intervals. The following table details a summary of the traffic data collection and the AM and PM peak hours for each intersection:

Table 2.4 - Traffic Data Collection Summary

INT. #	ROADWAYS	DATA COLLECTION			AM PEAK HOUR	PM PEAK HOUR
		DATE	MONTH	DAY		
1	Mill Road Wallings Road	1/31/2023	January	Tuesday	7:15 - 8:15	5:00 - 6:00
2	Mill Road IR77 NB Exit Ramp	3/9/2023	March	Thursday	7:15 - 8:15	4:45 - 5:45
3	Mill Road Loripat Drive	1/12/2023	January	Thursday	7:00 - 8:00	5:00 - 6:00
4	Mill Road Lacey Lane	1/12/2023	January	Thursday	7:00 - 8:00	2:30 - 3:30
5	Mill Road Sylmar Drive	1/18/2023	January	Wednesday	7:00 - 8:00	2:30 - 3:30
6	West Mill Road Karen Lynne Drive	1/17/2023	January	Tuesday	7:00 - 8:00	5:00 - 6:00
7	West Mill Road Lacey Lane	1/17/2023	January	Tuesday	7:00 - 8:00	5:00 - 6:00
8	Mill Road Broadmill Drive	1/17/2023	January	Tuesday	7:00 - 8:00	5:00 - 6:00
9	Mill Road Millwood Drive	1/24/2023	January	Tuesday	7:00 - 8:00	2:30 - 3:30
10	Mill Road MS Driveway	1/26/2023	January	Thursday	7:00 - 8:00	2:30 - 3:30
11	Mill Road MS/HS Driveway	1/26/2023	January	Thursday	7:00 - 8:00	2:45 - 3:45
12	Mill Road Vera Drive	1/24/2023	January	Tuesday	7:00 - 8:00	2:30 - 3:30
13	Mill Road Sunnydale Drive	1/24/2023	January	Tuesday	7:00 - 8:00	2:30 - 3:30
14	Mill Road Hunting Valley Drive	1/24/2023	January	Tuesday	7:00 - 8:00	2:30 - 3:30
15	Mille Road Whitewood Road/Hilton Road	1/24/2023	January	Tuesday	7:00 - 8:00	2:45 - 3:45
16	Mill Road Hilton ES Driveway	1/24/2023	January	Tuesday	7:00 - 8:00	2:45 - 3:45
17	Mill Road St. Basil Driveway	1/31/2023	January	Tuesday	7:00 - 8:00	2:45 - 3:45
18	Mill Road Brecksville Road (SR 21)	1/31/2023	January	Tuesday	7:00 - 8:00	3:30 - 4:30

When there is more than one intersection within the study area, a consistent time period should be used for all intersections within the study area in order to develop an existing conditions traffic volume set, the system peak hour.

The following questions should be considered when choosing the peak hours for a study area with multiple intersections:

- What are the individual intersection peak hours?
- Are the individual peak hours the same time or close to each other?
- Would it result in significantly fewer vehicles to use a different peak hour for intersections that are not the same?
- What is the peak hour for intersections with the highest overall volume?
- What peak hour contributes the highest volume to the entire system?

Summaries tables which illustrate the entering traffic volumes during the AM and PM time periods are used to evaluate the previously discussed questions, to identify the peak hours for each intersection, and to determine the peak hour of the system.

These periods will be used to forecast expected and future traffic volumes since they reflect the period of the highest volume of vehicular traffic flow at each intersection. The use of each intersection's peak hour as opposed to a system wide peak hour is expected to provide a conservative estimate of traffic at each intersection and within the study area. The AM and PM peak hour summary tables for the Mill Road corridor from Wallings Road to Brecksville Road (SR 21) can be seen in **Appendix C**.

The peak hours for the study area were determined based on the AM and PM hour experiencing the highest total volumes. The weekday AM peak hour of traffic was determined to be 7:000 AM to 8:00 AM. The weekday PM peak hour of traffic was found 2:45 PM to 3:45 PM. These periods will be used to forecast expected and future traffic volumes since they reflect the period of the highest volume of vehicular traffic flow for the study area roadways.

The existing weekday AM and PM peak hour traffic volumes are shown in **Figure 2.4, Appendix A.**

2.5 Crash Data

The Ohio Department of Transportation provides a tool to retrieve crash data. The ODOT **GIS Crash Analysis Tool (GCAT)** was used to collect crash information at the 12 study area intersections in Broadview Heights. The ODOT **GIS Crash Analysis Tool** can currently be found at the following web address:

https://gis.dot.state.oh.us/tims/

The years 2019 through June of 2022 were reviewed using the ODOT **GCAT** portal. The following intersections were found to have zero reported crashes during the time period under study:

3. Mill Road & Loripat Drive
4. Mill Road & Lacey Lane
5. Mill Road & Sylmar Drive
6. West Mill Road & Karen Lynne Drive
7. West Mill Road & Lacey Lane
8. Mill Road & Broadmill Drive
9. Mill Road & Millwood Drive
10. Mill Road & Middle School Driveway
11. Mill Road & Middle School/High School Driveway
12. Mill Road & Vera Drive

Crash data summaries for the remaining 2 study area intersections with reported crash data can be found in **Appendix D**.

The 2 study area intersections with a reported crash history, experienced a total of 21 intersection related crashes between 2019 and 2022.

Rear end crashes were determined to the be the predominate crash type at the intersection of Mill Road and Wallings Road with 15 crashes. Typical causes of rear end crashes at signalized intersections may include congestion, large turn volumes, slippery surfaces, excessive speed, lack of adequate gaps, and drivers unaware of the intersection. Rear end crashes can also be associated with roadways and intersections that are nearing or exceeding capacity. The cited contributing circumstance for all of the rear end crashes was "Followed Too Closely/ACDA". It is likely that driver inattention was also a factor in the crashes based on a review of the rear-end crash reports .

Typical countermeasures in order to reduce the frequency of rear end crashes may include:

- Update signal timing with optimized change and clearance intervals.
- Install signal backplate/retro-reflective back-plates to increase visibility of traffic control devices.
- Provide surface treatment to increase friction of roadway surface.
- Install dilemma zone radar detection on high speed (> 40 miles per hour) approaches at signalized intersections.

Angle crashes accounted for both crashes reported at the intersection of Mill Road and the IR77 northbound exist ramp. Typical causes of angle, left turn, and right turn crashes are congestion, large turn volumes, slippery surfaces, excessive speed, poor traffic signal coordination between intersections, inadequate clearance intervals, and poor visibility of traffic control devices. Left turn crashes can also be associated with roadways and intersections that are nearing or exceeding capacity.

Typical countermeasures in order to reduce the frequency of left turn, right turn, and angle crashes may include:

- Improve turn lane channelization with turn lanes.
- Update signal timing with optimized change and clearance intervals.
- Install signal backplate/retro-reflective back-plates to increase visibility of traffic control devices.
- Install "Left Turn Yield On Green Ball" signs (R10-12) on the traffic signal mast arms for approaches with protected and permissive left turn phases.
- Upgrade traffic signal control to use the flashing yellow arrow for the left turn movements.
- Install dilemma zone radar detection on high speed (> 40 miles per hour) approaches at signalized intersections.

Crash Diagram

An intersection crash diagram was prepared for the each intersection based on the results from the previous table and the summaries in **Appendix D**.

A crash diagram is a schematic drawing that has been compiled from a series of individual crash reports relative to a specific location (intersection). The diagram includes the vehicles direction of travel prior to contact, and the presence of any pedestrians or bicycles whose presence contributed to a collision or were involved directly in the crash. The crash diagrams can be used as a visual reference in analyzing possible crash patterns at an intersection.

The crash diagrams include the following information:

- Title block with project and study area description.
- Schematic of the location with the approaches labeled and directional arrow indicating north.
- A legend key to denote the symbols and abbreviations used in the diagram.
- Each crash includes the date and hour of the crash in the following format: DD-MM-YR /HH
- Each crash also includes the road conditions.

The crash data from the years 2019 though 2022 was used to create a crash diagram for each intersection under study. The intersection crash diagrams can be seen in **Appendix E**.

ECAT Analysis

The **Highway Safety Manual [12] (HSM)** provides a methodology to conduct a safety performance evaluation for intersections and roadway segments. The Ohio Department of Transportation provides a spreadsheet tool to complete the **Highway Safety Manual [12] (HSM)** calculations. The spreadsheet tool is known as the Economic Crash Analysis Tool (ECAT). The spreadsheet has the ability to calculate predicted crash frequencies, complete Empirical Bayes calculations, predict crash frequencies for proposed conditions, conduct alternative analyses, and complete a benefit-cost analysis.

Predicted crashes are estimated from a Safety Performance Function (SPF). The SPF is an equation to estimate or predict the average crash frequency at a location as a function of traffic volume and intersection characteristics. The predicted number of crashes for a given site is therefore an estimate of the average number of crashes per year based on the crash experience at other locations with similar characteristics. Existing observed crash history is not used to determine the **predicted** crash frequency.

Expected crashes are estimated using the Empirical Bayes (EB) method. The Empirical Bayes method provides a weighted average of the existing observed crashes at the intersection and the predicted crashes from similar sites to estimate its **expected** crash frequency. This improves the accuracy and reliability of the estimate.

An intersection is expected to have the potential for safety improvements if the **expected** crash frequency is greater than the **predicted** crash frequency. The potential for improvement at the study area location is not based on site specific improvements but related to the comparison of similar sites that were used to determine the **predicted** crash frequency. The application of site specific improvements to the **expected** crash analysis may result in crash rate improvements that exceed or fall below the potential for improvement at these locations.

Copies of the ECAT analysis worksheet for each intersection with a reported crash history can be found in **Appendix F**.

The crashes were tabulated by intersection, crash type, and ECAT analysis results in order to address probable causes and corrective measures at each intersection based on the dominate crash type. The table detailing the intersection crash patterns can be seen on the following page:

Table 2.5 - Intersection Crash Patterns

INT. #	ROADWAYS	TOTAL CRASHES (Injuries)	MAJOR CRASH PATTERN	PREDICTED CRASH FREQUENCY	EXPECTED CRASH FREQUENCY	POTENTIAL IMPROVEMENT
1	Mill Road Wallings Road	19 (2)	Rear End (15) Left Turn (2)	3.6161	4.2846	0.6685
2	Mill Road IR77 NB Exit Ramp	2 (0)	Left Turn (2)	0.2909	0.3589	0.0680
3	Mill Road Loripat Drive	0 (0)	NONE	0.0644	0.0000	-0.0644
4	Mill Road Lacey Lane	0 (0)	NONE	0.2085	0.0000	-0.2085
5	Mill Road Sylmar Drive	0 (0)	NONE	0.1178	0.0000	-0.1178
6	West Mill Road Karen Lynne Drive	0 (0)	NONE	0.0625	0.0000	-0.0625
7	West Mill Road Lacey Lane	0 (0)	NONE	0.3047	0.0000	-0.3047
8	Mill Road Broadmill Drive	0 (0)	NONE	0.0826	0.0000	-0.0826
9	Mill Road Millwood Drive	0 (0)	NONE	0.1111	0.0000	-0.1111
10	Mill Road MS Driveway	0 (0)	NONE	0.1400	0.0000	-0.1400
11	Mill Road MS/HS Driveway	0 (0)	NONE	0.6626	0.0000	-0.6626
12	Mill Road Vera Drive	0 (0)	NONE	0.0893	0.0000	-0.0893

Chapter 3
Projected Traffic Conditions

3.1 Non-Site Traffic

Background Traffic Growth

Design of new roadways or improvements to existing roadways should not usually be based on current traffic volumes alone, but should consider future traffic volumes expected to make use of the facilities. Roadways should be designed to accommodate the traffic volume that is likely to occur within the design life of the facility. In a practical sense, this design volume should be a value that can be estimated with reasonable accuracy. It is believed that the maximum design period is in the range of 15 to 24 years. Therefore, a period of twenty years is widely used as a basis for design for large projects. A period of ten years is currently specified by the Ohio Department of Transportation for smaller projects. Traffic cannot usually be forecasted accurately beyond this period on a specific facility because of probable changes in the general regional economy, population, and land development along the roadway.

Roadways, like Mill Road, Wallings Road, and Interstate 77 carry a significant amount of through traffic due to their functional characteristics. This through traffic component generally increases as regional growth occurs. Therefore, it is anticipated that existing traffic on these roadways will increase in future years.

The years 2024 (Opening Year) and 2044 (Design Year) will be analyzed for the study area. Therefore, it is necessary to estimate historical growth rates in order to establish the future traffic on the study area roadways.

The remaining study area roadways and access driveways are classified as urban local roadways and access drives. The Ohio Department of Transportation has identified the following characteristics for local roadways and access drives:

- Provide direct access to adjacent land
- Provide access to higher systems
- Carry no through traffic movement
- Constitute the mileage not classified as part of the Arterial and Collector systems

Therefore, it is anticipated that existing traffic on these local roadways will not increase in future years.

The ODOT Traffic Monitoring Management System (TMMS) was consulted to determine past historical trends on the study area roadways. The ODOT Traffic Monitoring Management System (TMMS) can be currently accessed at the following web address:

http://www.dot.state.oh.us/Divisions/Planning/TechServ/traffic/Pages/TMMS.aspx

Based on the historical traffic data from the ODOT website, there was a lack of available historical data for Mill Road. Brecksville Road (SR 21) and the IR77 northbound exit ramp were determined to have adequate historical data for calculating growth rates. Data from the following locations will be used to forecast the future traffic volumes for the study area intersections on a typical weekday due to their proximity to the Mill Road corridor:

1. **IR77 Northbound Exit Ramp: Location ID 67018**
2. **Brecksville Road (SR 21) - North of Mill Road: Location ID 19918**

A linear regression equation was developed for these locations based on the available historical data. The growth rate for each location was then developed based on the procedure detailed in *Section 4.2* of the **Ohio Traffic Forecasting Manual, Volume 2** [5]. A copy of the ODOT historical traffic data analysis and the growth rate calculations for each location can be seen in **Appendix G**

The growth rate on the IR77 northbound exit ramp was determined to be increasing at a rate of 0.8318% per year. The growth rate on Brecksville Road (SR 21) north of Mill Road was determined to be decreasing at a rate of 1.9097% per year.

In order to provide a conservative forecast for the study area, an increasing linear growth rate of 0.4159% per year will be utilized to estimate non-site related traffic growth on Mill Road, Wallings Road, and the IR77 northbound exit ramp. The growth rate was determined based on the average of the two locations while assuming no growth rate (0.0%) for the Brecksville Road location.

The growth rate will be applied to the existing traffic volumes (**Figure 2.4**). The growth rate and factors for can be seen in the following table:

Table 3.1 - Growth Rate & Factors

GROWTH RATE (Annual Growth)	2024 GROWTH FACTOR	2044 GROWTH FACTOR
0.42%	1.004	1.087

The remaining roadways and driveways with a local classification will not have a growth rate applied to the existing traffic volumes as they are intended to provide access to the adjacent land. This will also apply to movements onto these roadways Mill Road.

Design Hour Traffic

The traffic patterns on any roadway typically show considerable variation in the traffic volumes experienced during the various hours of the day and in the hourly volumes experienced throughout the year. A key decision in the design process involves determining which of these hourly traffic volumes should be used as the basis for the design.

It would be wasteful to predicate a design on the maximum peak hour traffic that occurs during the year and the use of the average hourly traffic would result in an inadequate design. The hourly traffic volumes used in a design should not be exceeded very often or by very much. However, the hourly traffic volumes should not be so high that traffic would rarely be sufficient to make full use of the designed facility.

Normal design policy in the State of Ohio is based upon a review of curves that depict the variation in hourly traffic volumes during the year. The Ohio Department of Transportation recommends using the 30TH highest hour as a design control for urban streets. There is typically very little difference between the volumes in this range. The Ohio Department of Transportation provides factors that are applied to counted daily traffic volumes to determine appropriate design hour traffic volumes.

Following guidelines set forth in the **ODOT State Highway Access Management Manual**, all analyses are required to examine the design hour volume for the adjacent roadway and peak hour traffic volume of the proposed development. The **Ohio Traffic Forecasting Manual** will be used to determined peak hour factors for the study area roadways.

The design hour volumes are determined by multiplying the AM and PM peak hour volumes by the appropriate factors from the ODOT Peak Hour to Design Hour Factor Report based on the functional classification of the roadway, the day of the week and the month that the traffic data was collected. A copy of the ODOT's Peak Hour to Design Hour Factor Report can be seen in **Appendix H**.

Peak Hour Factors

The intersection peak hour factor (PHF) is used to convert the hourly traffic volume into the flow rate that represents the busiest 15 minutes of the peak hour. The PHF is the sum of the traffic entering the intersection during the peak hour divided by four times the highest 15 minute volume during the peak hour. A PHF of 1 indicates that the traffic volume in each 15 minute volume is the same and therefore traffic flow is consistent throughout the hour. A lower PHF indicates a more variable traffic flow and that traffic volume has a spike during the peak 15 minute interval. PHF's under 0.80 occur in locations with highly peaked demand, such as at schools and factories during shift changes.

The ODOT **Analysis and Traffic Simulation Manual** [6] provides guidance to use the existing year PHF for all intersections from traffic counts collected for the project. The PHF is calculated for the intersection as a whole and not individual approaches or movements. A minimum of 0.80 for the PHF is required to be utilized unless justified by highly peaked demands such as for schools and factories noted above. If project specific counts are not available, a default value of 0.92 is to be utilized for arterials.

The calculated intersection peak hour factors will be used at intersections in the study area due to the presence of the schools along Mills Road which create highly peak demands due to the school schedule.

It is assumed for this report that the PHF for the opening and design years are the same as the calculated PHF from the collected existing year traffic counts. The intersection PHF's are included in **Appendix C**.

3.2 Future Traffic

The previously discussed calculation of design hour factors and growth rates for each movement were applied to the existing 2023 traffic volumes shown in **Figure 2.4** in order to estimate the future traffic.

Excel spreadsheets detailing the use of the calculated growth rates, the design hour factors, and the resulting expected 2024 opening year and 2044 design year traffic volumes can be found in **Appendix I**.

The estimated 2024 and 2044 traffic volumes for the study area are shown graphically in **Figures 3.1 and 3.2, Appendix A**.

The future traffic volumes have been rounded to the nearest 10 to adhere to preferred ODOT practices.

Chapter 4
Traffic Analysis

4.1 Capacity & LOS at Study Area Intersections

2024 Traffic Analysis - Opening Year Conditions

Traffic analyses were performed for the projected 2024 opening year conditions so that any existing roadway/intersection deficiencies can be identified.

The traffic volumes used in the 2024 opening year analyses can be seen in **Figure 3.1, Appendix A**. Copies of the capacity worksheets for the 2024 opening year analyses are included in **Appendix J.**

The results of the Year 2024 opening year analyses with the existing roadway conditions are shown in the following tables:

(1) Mill Road & Wallings Road/Interstate 77 Northbound Entrance Ramp

Table 4.1 - 2024 Peak Hour Traffic Analysis Results
(Wallings Road & Mill Road/IR77 NB Entrance Ramp)

Intersection #1	2024 AM Existing Conditions			Traffic Signal Control		Intersection #1	2024 PM Existing Conditions			Traffic Signal Control	
Mill & Wallings	LOS	Delay (sec/veh)	v/c	QSR	95th %tile Queue (ft)	Mill & Wallings	LOS	Delay (sec/veh)	v/c	QSR	95th %tile Queue (ft)
EBT	F	226.9	1.452	0.00	2425	EBT	C	27.9	0.845	0.00	373
EB Approach	F	226.9	-	-	-	EB Approach	C	27.9	-	-	-
WBT	A	6.9	0.306	0.00	108	WBT	B	11.9	0.328	0.00	114
WB Approach	A	6.9	-	-	-	WB Approach	B	11.9	-	-	-
NBT	F	137.1	1.175	0.00	653	NBT	C	22.4	0.904	0.00	302
NB Approach	F	137.1	-	-	-	NB Approach	C	22.4	-	-	-
Intersection	**F**	**167.9**	-	-	-	**Intersection**	**C**	**22.6**	-	-	-

(2) Mill Road & Interstate 77 Northbound Exit Ramp

Table 4.2 - 2024 Peak Hour Traffic Analysis Results
(Mill Road & IR77 NB Exit Ramp)

Intersection #2	2024 AM Existing Conditions			One-Way Stop Control	Intersection #2	2024 PM Existing Conditions			One-Way Stop Control
Mill & IR77 NB Exit	LOS	Delay (sec/veh)	v/c	Q_{95} %tile (Veh/Ln)	Mill & IR77 NB Exit	LOS	Delay (sec/veh)	v/c	Q_{95} %tile (Veh/Ln)
EBL	C	15.2	0.26	1.0	EBL	C	16.2	0.46	2.7
EBR	B	10.8	0.25	1.0	EBR	A	9.5	0.08	0.3
EB Approach	B	12.4	--	--	EB Approach	B	14.9	--	--

(3) Mill Road & Loripat Drive

Table 4.3 - 2024 Peak Hour Traffic Analysis Results
(Mill Road & Loripat Drive)

Intersection #3	2024 AM Existing Conditions			One-Way Stop Control	Intersection #3	2024 PM Existing Conditions			One-Way Stop Control
Mill & Loripat	LOS	Delay (sec/veh)	v/c	Q_{95} %tile (Veh/Ln)	Mill & Loripat	LOS	Delay (sec/veh)	v/c	Q_{95} %tile (Veh/Ln)
WBT	B	13.7	0.07	0.2	WBT	B	11.1	0.04	0.1
WB Approach	B	13.7	--	--	WB Approach	B	11.1	--	--
SBL	A	8.2	0.01	0.0	SBL	A	8.0	0.01	0.0
SB Approach	A	0.4	--	--	SB Approach	A	0.8	--	--

(4) Mill Road & Lacey Lane

Table 4.4 - 2024 Peak Hour Traffic Analysis Results
(Mill Road & Lacey Lane)

Intersection #4	2024 AM Existing Conditions			One-Way Stop Control	Intersection #4	2024 PM Existing Conditions			One-Way Stop Control
Mill & Lacey	LOS	Delay (sec/veh)	v/c	Q_{95} %tile (Veh/Ln)	Mill & Lacey	LOS	Delay (sec/veh)	v/c	Q_{95} %tile (Veh/Ln)
EBT	C	23.6	0.68	5.3	EBT	B	11.3	0.13	0.4
EB Approach	C	23.6	--	--	EB Approach	B	11.3	--	--
NBL	A	8.5	0.09	0.3	NBL	A	8.0	0.13	0.4
NB Approach	A	2.6	--	--	NB Approach	A	3.6	--	--

(5) Mill Road & Sylmar Drive

Table 4.5 - 2024 Peak Hour Traffic Analysis Results
(Mill Road & Sylmar Drive)

Intersection #5	2024 AM Existing Conditions			One-Way Stop Control	Intersection #5	2024 PM Existing Conditions			One-Way Stop Control
Mill & Sylmar	LOS	Delay (sec/veh)	v/c	Q_{95} %tile (Veh/Ln)	Mill & Sylmar	LOS	Delay (sec/veh)	v/c	Q_{95} %tile (Veh/Ln)
WBT	C	19.6	0.17	0.6	WBT	B	13.5	0.07	0.2
WB Approach	C	19.6	--	--	WB Approach	B	13.5	--	--
SBL	A	8.6	0.02	0.1	SBL	A	8.4	0.01	0.0
SB Approach	A	0.4	--	--	SB Approach	A	0.7	--	--

(6) West Mill Road & Karen Lynne Drive

Table 4.6 - 2024 Peak Hour Traffic Analysis Results
(West Mill Road & Karen Lynne Drive)

Intersection #6	2024 AM Existing Conditions			One-Way Stop Control	Intersection #6	2024 PM Existing Conditions			One-Way Stop Control
West Mill & Karen Lynne	LOS	Delay (sec/veh)	v/c	Q_{95} %tile (Veh/Ln)	West Mill & Karen Lynne	LOS	Delay (sec/veh)	v/c	Q_{95} %tile (Veh/Ln)
EBT	B	11.9	0.16	0.6	EBT	A	9.5	0.03	0.1
EB Approach	B	11.9	--	--	EB Approach	A	9.5	--	--
NBL	A	8.2	0.04	0.1	NBL	A	7.7	0.03	0.1
NB Approach	A	2.7	--	--	NB Approach	A	2.7	--	--

(7) West Mill Road & Lacey Lane

Table 4.7 - 2024 Peak Hour Traffic Analysis Results
(West Mill Road & Lacey Lane)

Intersection #7	2024 AM Existing Conditions			All-Way Stop Control	Intersection #7	2024 PM Existing Conditions			All-Way Stop Control
West Mill & Lacey	LOS	Delay (sec/veh)	v/c	Q_{95} %tile (Veh/Ln)	West Mill & Lacey	LOS	Delay (sec/veh)	v/c	Q_{95} %tile (Veh/Ln)
WBLR	A	9.0	0.11	0.7	WBLR	A	7.5	0.09	0.3
WB Approach	A	9.0	--	--	WB Approach	A	7.5	--	--
NBTR	A	8.2	0.10	0.6	NBTR	A	7.3	0.03	0.1
NB Approah	A	8.2	--	--	NB Approah	A	7.3	--	--
SBLT	B	12.4	0.30	2.9	SBLT	A	7.9	0.11	0.4
SB Approach	B	12.4	--	--	SB Approach	A	7.9	--	--
Intersection	B	10.9	--	--	Intersection	A	7.7	--	--

(8) Mill Road & Broadmill Drive

Table 4.8 - 2024 Peak Hour Traffic Analysis Results
(Mill Road & Broadmill Drive)

Intersection #8	2024 AM Existing Conditions			One-Way Stop Control	Intersection #8	2024 PM Existing Conditions			One-Way Stop Control
Mill & Broadmill	LOS	Delay (sec/veh)	v/c	Q_{95} %tile (Veh/Ln)	Mill & Broadmill	LOS	Delay (sec/veh)	v/c	Q_{95} %tile (Veh/Ln)
EBT	C	21.1	0.12	0.4	EBT	B	10.7	0.04	0.1
EB Approach	C	21.1	--	--	EB Approach	B	10.7	--	--
NBL	A	9.8	0.02	0.1	NBL	A	7.7	0.01	0.0
NB Approach	A	0.6	--	--	NB Approach	A	0.4	--	--

(9) Mill Road & Millwood Drive

Table 4.9 - 2024 Peak Hour Traffic Analysis Results
(Mill Road & Millwood Drive)

Intersection #9	2024 AM Existing Conditions			One-Way Stop Control	Intersection #9	2024 PM Existing Conditions			One-Way Stop Control
Mill & Millwood	LOS	Delay (sec/veh)	v/c	Q_{95} %tile (Veh/Ln)	Mill & Millwood	LOS	Delay (sec/veh)	v/c	Q_{95} %tile (Veh/Ln)
WBL	A	9.9	0.02	0.1	WBL	A	7.8	0.01	0.0
WB Approach	A	0.6	--	--	WB Approach	A	0.3	--	--
NBT	D	26.9	0.22	0.8	NBT	B	12.8	0.05	0.2
NB Approach	D	26.9	--	--	NB Approach	B	12.8	--	--

(10) Mill Road & Middle School Driveway

Table 4.10 - 2024 Peak Hour Traffic Analysis Results
(Mill Road & Middle School Driveway)

Intersection #10	2024 AM Existing Conditions			One-Way Stop Control	Intersection #10	2024 PM Existing Conditions			One-Way Stop Control
Mill & MS Driveway	LOS	Delay (sec/veh)	v/c	Q_{95} %tile (Veh/Ln)	Mill & MS Driveway	LOS	Delay (sec/veh)	v/c	Q_{95} %tile (Veh/Ln)
WBL	A	9.9	0.10	0.3	WBL	A	7.8	0.01	0.0
WB Approach	A	3.3	--	--	WB Approach	A	0.4	--	--
NBT	D	33.7	0.62	3.9	NBT	C	15.6	0.28	1.1
NB Approach	D	33.7	--	--	NB Approach	C	15.6	--	--

(11) Mill Road & Middle School/High School Driveway

Table 4.11 - 2024 Peak Hour Traffic Analysis Results
(Mill Road & HS Driveway)

Intersection #11	2024 AM Existing Conditions				Traffic Signal Control	Intersection #11	2024 PM Existing Conditions				Traffic Signal Control
Mill & HS Driveway	LOS	Delay (sec/veh)	v/c	QSR	95th %tile Queue (ft)	Mill & HS Driveway	LOS	Delay (sec/veh)	v/c	QSR	95th %tile Queue (ft)
EBT	A	5.1	0.453	0.00	150	EBT	A	6.5	0.249	0.00	60
EB Approach	A	5.1	-	-	-	EB Approach	A	6.5	-	-	-
WBT	A	3.8	0.270	0.00	70	WBT	A	6.4	0.238	0.00	60
WB Approach	A	3.8	-	-	-	WB Approach	A	6.4	-	-	-
NBT	E	66.9	0.987	0.00	153	NBT	C	25.4	0.853	0.00	182
NB Approach	E	66.9	-	-	-	NB Approach	C	25.4	-	-	-
Intersection	**A**	**9.0**	-	-	-	**Intersection**	**B**	**12.7**	-	-	-

(12) Mill Road & Vera Drive

Table 4.12 - 2024 Peak Hour Traffic Analysis Results
(Mill Road & Vera Drive)

Intersection #12	2024 AM Existing Conditions			One-Way Stop Control	Intersection #12	2024 PM Existing Conditions			One-Way Stop Control
Mill & Vera	LOS	Delay (sec/veh)	v/c	Q_{95} %tile (Veh/Ln)	Mill & Vera	LOS	Delay (sec/veh)	v/c	Q_{95} %tile (Veh/Ln)
EBL	A	8.0	0.01	0.0	EBL	A	8.3	0.02	0.0
EB Approach	A	0.3	--	--	EB Approach	A	0.6	--	--
SBT	B	13.6	0.10	0.3	SBT	B	14.1	0.12	0.4
SB Approach	B	13.6	--	--	SB Approach	B	14.1	--	--

A summary of the intersection and approach levels-of-service can be seen in **Figures 4.1 & 4.2, Appendix A** for the 2024 AM and PM peak hour analyses.

The analysis shows that the following intersection does not meet the operational goals shown in **Table 1.2, Page 4** under the forecasted 2024 opening year conditions.

- Mill Road & Wallings Road/IR77 NB Entrance Ramp

The AM peak hour capacity analysis at this intersection indicates levels-of-service where it is recommended to investigate improvements that could provide a LOS E or better for the approaches and LOS D for the intersection. Analyses will be performed in a later section of this report to determine what improvements will provide an acceptable level of service in the AM and PM peak periods that will adhere to the acceptable ranges shown in **Table 1.2** as stated in the ODOT **OATS Manual**.

2044 Traffic Analysis - Design Year Conditions

Traffic analyses were performed for the projected 2044 design year conditions so that any existing roadway/intersection deficiencies can be identified.

The traffic volumes used in the 2044 design year analyses can be seen in **Figure 3.2, Appendix A**. Copies of the capacity worksheets for the 2044 design year analyses are included in **Appendix K.**

The results of the Year 2044 design year analyses with the existing roadway conditions are shown in the following tables:

(1) Mill Road & Wallings Road/Interstate 77 Northbound Entrance Ramp

Table 4.13 - 2044 Peak Hour Traffic Analysis Results
(Wallings Road & Mill Road/IR77 NB Entrance Ramp)

Intersection #1	2044 AM Existing Conditions			Traffic Signal Control		Intersection #1	2044 PM Existing Conditions			Traffic Signal Control	
Mill & Wallings	LOS	Delay (sec/veh)	v/c	QSR	95th %tile Queue (ft)	Mill & Wallings	LOS	Delay (sec/veh)	v/c	QSR	95th %tile Queue (ft)
EBT	F	296.4	1.606	0.00	3116	EBT	D	49.3	0.954	0.00	664
EB Approach	F	296.4	-	-	-	EB Approach	D	49.3	-	-	-
WBT	A	7.1	0.322	0.00	122	WBT	B	14.8	0.342	0.00	189
WB Approach	A	7.1	-	-	-	WB Approach	B	14.8	-	-	-
NBT	F	163.8	1.239	0.00	768	NBT	C	32.3	0.937	0.00	482
NB Approach	F	163.8	-	-	-	NB Approach	C	32.3	-	-	-
Intersection	F	216.8	-	-	-	Intersection	D	35.9	-	-	-

(2) Mill Road & Interstate 77 Northbound Exit Ramp

Table 4.14 - 2044 Peak Hour Traffic Analysis Results
(Mill Road & IR77 NB Exit Ramp)

Intersection #2	2044 AM Existing Conditions			One-Way Stop Control	Intersection #2	2044 PM Existing Conditions			One-Way Stop Control
Mill & IR77 NB Exit	LOS	Delay (sec/veh)	v/c	Q_{95} %tile (Veh/Ln)	Mill & IR77 NB Exit	LOS	Delay (sec/veh)	v/c	Q_{95} %tile (Veh/Ln)
EBL	C	16.1	0.27	1.1	EBL	C	18.1	0.52	3.0
EBR	B	10.9	0.26	1.0	EBR	A	9.7	0.09	0.3
EB Approach	B	12.8	--	--	EB Approach	C	16.3	--	--

(3) Mill Road & Loripat Drive

Table 4.15 - 2044 Peak Hour Traffic Analysis Results
(Mill Road & Loripat Drive)

Intersection #3	2044 AM Existing Conditions			One-Way Stop Control	Intersection #3	2044 PM Existing Conditions			One-Way Stop Control
Mill & Loripat	LOS	Delay (sec/veh)	v/c	Q_{95} %tile (Veh/Ln)	Mill & Loripat	LOS	Delay (sec/veh)	v/c	Q_{95} %tile (Veh/Ln)
WBT	B	14.4	0.07	0.2	WBT	B	11.4	0.04	0.1
WB Approach	B	14.4	--	--	WB Approach	B	11.4	--	--
SBL	A	8.3	0.01	0.0	SBL	A	8.0	0.01	0.0
SB Approach	A	0.4	--	--	SB Approach	A	0.8	--	--

(4) Mill Road & Lacey Lane

Table 4.16 - 2044 Peak Hour Traffic Analysis Results
(Mill Road & Lacey Lane)

Intersection #4	2044 AM Existing Conditions			One-Way Stop Control	Intersection #4	2044 PM Existing Conditions			One-Way Stop Control
Mill & Lacey	LOS	Delay (sec/veh)	v/c	Q_{95} %tile (Veh/Ln)	Mill & Lacey	LOS	Delay (sec/veh)	v/c	Q_{95} %tile (Veh/Ln)
EBT	D	26.5	0.72	5.9	EBT	B	11.5	0.13	0.4
EB Approach	D	26.5	--	--	EB Approach	B	11.5	--	--
NBL	A	8.6	0.10	0.3	NBL	A	8.0	0.13	0.4
NB Approach	A	2.6	--	--	NB Approach	A	3.5	--	--

(5) Mill Road & Sylmar Drive

Table 4.17 - 2044 Peak Hour Traffic Analysis Results
(Mill Road & Sylmar Drive)

Intersection #5	2044 AM Existing Conditions			One-Way Stop Control	Intersection #5	2044 PM Existing Conditions			One-Way Stop Control
Mill & Sylmar	LOS	Delay (sec/veh)	v/c	Q_{95} %tile (Veh/Ln)	Mill & Sylmar	LOS	Delay (sec/veh)	v/c	Q_{95} %tile (Veh/Ln)
WBT	C	21.6	0.19	0.7	WBT	B	14.0	0.07	0.2
WB Approach	C	21.6	--	--	WB Approach	B	14.0	--	--
SBL	A	8.7	0.02	0.1	SBL	A	8.4	0.01	0.0
SB Approach	A	0.5	--	--	SB Approach	A	0.7	--	--

(6) West Mill Road & Karen Lynne Drive

Table 4.18 - 2044 Peak Hour Traffic Analysis Results
(West Mill Road & Karen Lynne Drive)

Intersection #6	2044 AM Existing Conditions			One-Way Stop Control	Intersection #6	2044 PM Existing Conditions			One-Way Stop Control
West Mill & Karen Lynne	LOS	Delay (sec/veh)	v/c	Q_{95} %tile (Veh/Ln)	West Mill & Karen Lynne	LOS	Delay (sec/veh)	v/c	Q_{95} %tile (Veh/Ln)
EBT	B	11.9	0.16	0.6	EBT	A	9.5	0.03	0.1
EB Approach	B	11.9	--	--	EB Approach	A	9.5	--	--
NBL	A	8.2	0.04	0.1	NBL	A	7.7	0.03	0.1
NB Approach	A	2.7	--	--	NB Approach	A	2.7	--	--

(7) West Mill Road & Lacey Lane

Table 4.19 - 2044 Peak Hour Traffic Analysis Results
(West Mill Road & Lacey Lane)

Intersection #7	2044 AM Existing Conditions			All-Way Stop Control	Intersection #7	2044 PM Existing Conditions			All-Way Stop Control
West Mill & Lacey	LOS	Delay (sec/veh)	v/c	Q_{95} %tile (Veh/Ln)	West Mill & Lacey	LOS	Delay (sec/veh)	v/c	Q_{95} %tile (Veh/Ln)
WBLR	A	9.0	0.11	0.7	WBLR	A	7.5	0.09	0.3
WB Approach	A	9.0	--	--	WB Approach	A	7.5	--	--
NBTR	A	8.2	0.10	0.6	NBTR	A	7.3	0.03	0.1
NB Approah	A	8.2	--	--	NB Approah	A	7.3	--	--
SBLT	B	12.4	0.30	2.9	SBLT	A	7.9	0.11	0.4
SB Approach	B	12.4	--	--	SB Approach	A	7.9	--	--
Intersection	B	10.9	--	--	Intersection	A	7.7	--	--

(8) Mill Road & Broadmill Drive

Table 4.20 - 2044 Peak Hour Traffic Analysis Results
(Mill Road & Broadmill Drive)

Intersection #8	2044 AM Existing Conditions			One-Way Stop Control	Intersection #8	2044 PM Existing Conditions			One-Way Stop Control
Mill & Broadmill	LOS	Delay (sec/veh)	v/c	Q_{95} %tile (Veh/Ln)	Mill & Broadmill	LOS	Delay (sec/veh)	v/c	Q_{95} %tile (Veh/Ln)
EBT	C	23.5	0.13	0.4	EBT	B	11.0	0.04	0.1
EB Approach	C	23.5	--	--	EB Approach	B	11.0	--	--
NBL	B	10.0	0.02	0.1	NBL	A	7.8	0.01	0.0
NB Approach	A	0.6	--	--	NB Approach	A	0.4	--	--

(9) Mill Road & Millwood Drive

Table 4.21 - 2044 Peak Hour Traffic Analysis Results
(Mill Road & Millwood Drive)

Intersection #9	2044 AM Existing Conditions			One-Way Stop Control	Intersection #9	2044 PM Existing Conditions			One-Way Stop Control
Mill & Millwood	LOS	Delay (sec/veh)	v/c	Q_{95} %tile (Veh/Ln)	Mill & Millwood	LOS	Delay (sec/veh)	v/c	Q_{95} %tile (Veh/Ln)
WBL	B	10.2	0.02	0.1	WBL	A	7.9	0.01	0.0
WB Approach	A	0.6	--	--	WB Approach	A	0.3	--	--
NBT	D	31.3	0.26	1.0	NBT	B	13.6	0.06	0.2
NB Approach	D	31.3	--	--	NB Approach	B	13.6	--	--

(10) Mill Road & Middle School Driveway

Table 4.22 - 2044 Peak Hour Traffic Analysis Results
(Mill Road & Middle School Driveway)

Intersection #10	2044 AM Existing Conditions			One-Way Stop Control	Intersection #10	2044 PM Existing Conditions			One-Way Stop Control
Mill & MS Driveway	LOS	Delay (sec/veh)	v/c	Q_{95} %tile (Veh/Ln)	Mill & MS Driveway	LOS	Delay (sec/veh)	v/c	Q_{95} %tile (Veh/Ln)
WBL	B	10.0	0.11	0.4	WBL	A	7.8	0.01	0.0
WB Approach	A	3.3	--	--	WB Approach	A	0.3	--	--
NBT	E	37.7	0.66	4.3	NBT	C	16.7	0.30	1.3
NB Approach	E	37.7	--	--	NB Approach	C	16.7	--	--

(11) Mill Road & Middle School/High School Driveway

Table 4.23 - 2044 Peak Hour Traffic Analysis Results
(Mill Road & HS Driveway)

Intersection #11	2044 AM Existing Conditions				Traffic Signal Control	Intersection #11	2044 PM Existing Conditions				Traffic Signal Control
Mill & HS Driveway	LOS	Delay (sec/veh)	v/c	QSR	95th %tile Queue (ft)	Mill & HS Driveway	LOS	Delay (sec/veh)	v/c	QSR	95th %tile Queue (ft)
EBT	A	5.5	0.495	0.00	173	EBT	A	6.6	0.260	0.00	63
EB Approach	A	5.5	-	-	-	EB Approach	A	6.6	-	-	-
WBT	A	3.9	0.292	0.00	77	WBT	A	6.5	0.249	0.00	63
WB Approach	A	3.9	-	-	-	WB Approach	A	6.5	-	-	-
NBT	E	66.9	0.987	0.00	153	NBT	C	25.4	0.853	0.00	182
NB Approach	E	66.9	-	-	-	NB Approach	C	25.4	-	-	-
Intersection	**A**	**8.9**	-	-	-	**Intersection**	**B**	**12.5**	-	-	-

(12) Mill Road & Vera Drive

Table 4.24 - 2044 Peak Hour Traffic Analysis Results
(Mill Road & Vera Drive)

Intersection #12	2044 AM Existing Conditions			One-Way Stop Control	Intersection #12	2044 PM Existing Conditions			One-Way Stop Control
Mill & Vera	LOS	Delay (sec/veh)	v/c	Q_{95} %tile (Veh/Ln)	Mill & Vera	LOS	Delay (sec/veh)	v/c	Q_{95} %tile (Veh/Ln)
EBL	A	8.1	0.01	0.0	EBL	A	8.4	0.02	0.0
EB Approach	A	0.3	--	--	EB Approach	A	0.6	--	--
SBT	B	14.3	0.10	0.3	SBT	C	15.0	0.13	0.4
SB Approach	B	14.3	--	--	SB Approach	C	15.0	--	--

A summary of the intersection and approach levels-of-service can be seen in **Figures 4.3 & 4.4, Appendix A** for the 2044 AM and PM peak hour analyses.

The analysis shows that the following intersections do not meet the operational goals shown in **Table 1.2, Page 4** under the forecasted 2044 conditions.

- Mill Road & Wallings Road/IR77 NB Entrance Ramp

The AM peak hour capacity analysis at this intersection indicates levels-of-service where it is recommended to investigate improvements that could provide a LOS E or better for the approaches and LOS D for the intersection. Analyses will be performed in a later section of this report to determine what improvements will provide an acceptable level of service in the AM and PM peak periods that will adhere to the acceptable ranges shown in **Table 1.2** as stated in the ODOT **OATS Manual**.

4.2 Improvements for Capacity & LOS at Study Area Intersections

2044 Traffic Analysis - Improvements

Traffic analyses for 2024 and 2044 conditions revealed issues at the intersection of Mill Road and Wallings Road where levels-of-service failed to meet the operational goals shown in **Table 1.2, Page 4**.

Certain improvements were tested with further capacity analyses in order to determine what mitigation would be necessary to improve the levels-of-service at the intersections under the forecasted 2044 conditions.

The following improvements were determined to mitigate the poor levels-of-service at the intersection so that the they will operate at LOS D or better under the forecasted 2044 design year conditions.

- Mill Road & Wallings Road
  - Construct dual eastbound left turn lanes.
  - Upgrade traffic signal sequence to include an eastbound protected phase.

The following table shows the capacity analysis results of the recommended improvements at the intersection. Copies of the capacity worksheets for the intersection are included in **Appendix L.**

(1) Mill Road & Wallings Road/Interstate 77 Northbound Entrance Ramp

Table 4.25 - 2044 Peak Hour Improvments Traffic Analysis Results
(Wallings Road & Mill Road/IR77 NB Entrance Ramp)

Intersection #1	2044 AM Improvements				Traffic Signal Control Dual EB Left Turn Lanes	Intersection #1	2044 PM Improvements				Traffic Signal Control Dual EB Left Turn Lanes
Mill & Wallings	LOS	Delay (sec/veh)	v/c	QSR	95th %tile Queue (ft)	Mill & Wallings	LOS	Delay (sec/veh)	v/c	QSR	95th %tile Queue (ft)
EBL	E	61.2	0.988	0.00	531	EBL	D	39.7	0.765	0.00	150
EBT	A	9.9	0.293	0.00	144	EBT	B	15.2	0.403	0.00	205
EB Approach	D	48.7	-	-	-	EB Approach	C	26.6	-	-	-
WBT	D	47.6	0.797	0.00	394	WBT	C	29.0	0.544	0.00	257
WB Approach	D	47.6	-	-	-	WB Approach	C	29.0	-	-	-
NBT	D	48.0	0.924	0.00	443	NBT	C	32.5	0.934	0.00	466
NB Approach	D	48.0	-	-	-	NB Approach	C	32.5	-	-	-
Intersection	**D**	**48.3**	-	-	-	**Intersection**	**C**	**29.3**	-	-	-

The construction of dual eastbound left turn lanes will require the re-construction of the bridge over Interstate 77 to accommodate the dual turn lanes. The IR 77 northbound entrance ramp would also need to be widened to two lanes in order to receive the dual turning lanes. These improvements would require the preparation of an Interchange Modification Study (IMS) for review and approval by the Ohio Department of Transportation (ODOT) and the Federal Highway Administration (FHWA).

It would also be recommended to analyze the need for any westbound left turn lanes at the adjacent ramp for southbound Interstate 77 to ensure the bridge is wide enough to accommodate traffic at each ramp.

An analysis will be performed in the following section of this report to determine the necessary turn lane length of the recommended eastbound dual left turn lanes.

4.3 Turn Lane Length Analysis

An analysis was performed to determine the necessary turn lane storage length in order to accommodate the recommended turn lanes at the intersection of Mill Road and Wallings Road.

The calculations will be based on the Year 2044 peak hour conditions.

The turn lane calculations at the traffic signal controlled intersections will be based on the following conditions:

- Wallings Road @ Mill Road
  - Design Speed = 35 miles per hour
  - Condition A

The following tables detail the results of the turn lane length analyses based upon the highest anticipated turn volumes at the intersection under the forecasted 2044 conditions.

Table 4.26 - Turn Lane Length Analysis
(Mill Road & Wallings Road)

Movement Direction	DHV	No. of Lanes	Cycles / Hour	Average Veh/ Cycle/ Lane	Design Speed (mph)	Fig. 401-10 Storage Length (ft)	Fig. 401-9 Condition A*	Backup Length (ft)	Turn Lane Length* (ft)
EB L	2	870	40	10.88	35	400	450		450
EB T/RT	1	320	40	8.00	35	325		325	

*** Includes 50' taper**

Chapter 5
Pedestrian Facilities

5.1 Purpose & Need

There has been an increased emphasis on improving pedestrian safety. Pedestrians' ability to safely cross many roadways is affected with traffic conditions changing as traffic volumes and congestion increase. Recent developments in geometric design features, traffic control devices, and technologies may improve pedestrian safety and access by addressing specific problems associated with roadway crossings. Although numerous treatments exist at unsignalized crossings, there is growing concern about their effectiveness and just what should be used in any given location. A recent research project jointly sponsored by the National Cooperative Highway Research Program was initiated to address this particular need. The research was conducted by the Texas Transportation Institute (TTI).

The research team developed guidelines for selecting pedestrian crossing treatments for unsignalized intersections and mid-block locations. Quantitative procedures in the guidelines use key input variables (such as, pedestrian volume, street crossing width, and traffic volume) to recommend one of four possible crossing treatment categories:

- Marked crosswalk;
- Enhanced, high-visibility, or "active when present" traffic control device;
- Red signal or beacon device; or
- Conventional traffic control signal

The use of enhanced traffic control devices related to pedestrian control, beacons and conventional traffic control signals will be discussed in greater detail later in this report. The sections in this chapter will discuss recommended design criteria needed for attaining good design while being sensitive to the needs of both the pedestrian and the motorist. It will provide typical guidelines and recommendations for the designation of crosswalks through the use of striping, signing and pavement markings in advance of and at the crosswalk locations. The following is a discussion of the most common treatment, marked crosswalks.

5.2 Marked Crosswalks

Safe, convenient and well designed facilities are essential to encourage crosswalk use, as well as to provide safe and efficient operating conditions to the pedestrians and motorists involved at a crosswalk location.

Crosswalks are normally established with the appropriate pavement markings and signing along streets in corridors where there is significant pedestrian activity and where there are distinct needs that can be served by them. The purpose should be to provide a safe and efficient place to cross the street for pedestrians while interacting with the motorists traveling the roadway. Crosswalks are intended to provide guidance for pedestrians who are crossing roadways by defining and delineating paths on approaches to and within signalized intersections, and at approaches to other intersections where traffic stops. Crosswalks also serve to alert road users of a pedestrian crossing point across roadways not controlled by traffic signals or stop signs. At mid-block locations, crosswalk markings legally establish the crosswalk. A mid-block crosswalk can concentrate or channelize multiple pedestrian crossings to a single location.

The **Ohio Manual of Uniform Traffic Control Devices** [(2)] (**OMUTCD**) has been established to provide a safe, uniform, and efficient system of traffic control devices on all public streets and highways within the State of Ohio. The **Manual** provides requirements and guidelines for the use of marked crosswalks and associated signage. Title 23 of the Federal regulations require that all private roadways open to public travel are subject to the provisions in the **MUTCD**.

Design, placement, operation, maintenance, and uniformity are aspects that should be carefully considered in order to maximize the ability of a traffic control device to meet the following the five basic requirements:

1. Fulfill a need;
2. Command attention;
3. Convey a clear, simple meaning;
4. Command respect from road users; and
5. Give adequate time for proper response.

Design of Traffic Control Devices

Traffic control devices should be designed so that features such as size, shape, color, composition, lighting or retro-reflection, and contrast are combined to draw attention to the devices; that size, shape, color, and simplicity of message combine to produce a clear meaning; that legibility and size combine with placement to permit adequate time for response; and that uniformity, size, legibility, and reasonableness of the message combine to command respect.

Placement and Operation of Traffic Control Devices

Placement of a traffic control device should be within the road user's view so that adequate visibility is provided. To aid in conveying the proper meaning, the traffic control devices should be appropriately positioned with respect to the location, object, or situation to which it applies. The location and legibility of the traffic control device should be such that a road user has adequate time to make the proper response in both day and night conditions.

Traffic control devices should be placed and operated in a uniform and consistent manner. Unnecessary traffic control devices should be removed. The fact that a device is in good physical condition should not be a basis for deferring needed removal or change.

Maintenance of Traffic Control Devices

Functional maintenance of traffic control devices should be used to determine if certain devices need to be changed to meet current traffic conditions. Physical maintenance of traffic control devices should be performed to retain the legibility and visibility of the device, and to retain the proper functioning of the device. Clean, legible, properly mounted devices in good working condition command the respect of road users.

Uniformity of Traffic Control Devices

Uniformity of devices simplifies the task of the road user because it aids in recognition and understanding, thereby reducing perception/reaction time. Uniformity assists road users, law enforcement officers, and traffic courts by giving everyone the same interpretation. Uniformity assists public highway officials through efficiency in manufacture, installation, maintenance, and administration. Uniformity means treating similar situations in a similar way. The use of uniform traffic control devices does not, in itself, constitute uniformity. A standard device used where it is not appropriate is as objectionable as a nonstandard device; in fact, this might be worse, because such misuse might result in disrespect at those locations where the device is needed and appropriate.

These traffic control devices as they relate to crosswalks include but are not limited to signs and pavement markings. The signs used at crosswalks typically fall into one of two sign categories. The first category is regulatory signs. Regulatory signs are used to inform road users of selected traffic laws or regulations and indicate the applicability of the legal requirements. These signs are to be installed at or near where the regulations apply. The signs are to clearly indicate the requirements imposed by the regulations and shall be designed to and installed to provide adequate visibility and legibility in order to obtain compliance.

The other type of sign is a warning sign. These signs call attention to unexpected conditions on or adjacent to a street and to situations that might not be readily apparent to road users. Warning signs alert road users to conditions that might call for a reduction of speed or an action in the interest of safety and efficient traffic operations. Regulatory and warning signs should be used conservatively because these signs, if used to excess, tend to lose their effectiveness.

Pavement markings on roadways have important functions in providing guidance and information for the road user. Major marking types include pavement and curb markings, object markers, delineators, colored pavements, barricades, channelizing devices and islands. In some cases, markings are used to supplement other traffic control devices such as signs, signals and other markings. In other instances, markings are used alone to effectively convey regulations, guidance, or warnings in ways not obtainable by the use of other devices. Markings have limitations. Visibility of the markings can be limited by snow, debris, and water on or adjacent to the markings. Marking durability is affected by material characteristics, traffic volumes, weather, and location. However, under most highway conditions, markings provide important information while allowing minimal diversion of attention from the roadway. Pavement markings can enhance roadway delineation with the addition of audible and tactile features such as bars, differential surface profiles, raised pavement markers, or other devices intended to alert the road user that a delineation on the roadway is being traversed.

5.3 Signs

Regulatory signs for use at crossing locations can be seen below. The sign code as assigned in the **OMUTCD** is shown below the signs. This code is used to identify the sign and its type.



R1-5



R1-5a



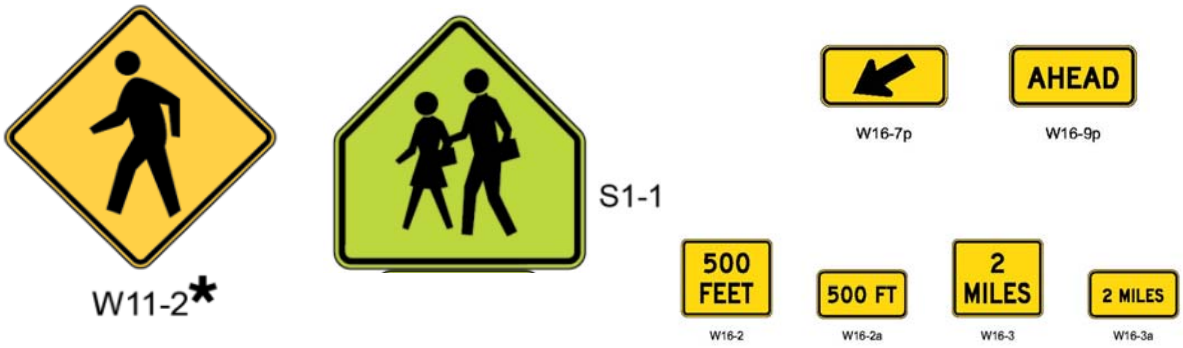
R1-6

The R1-5 series signs are to be mounted along the right side of the roadway facing oncoming traffic. These signs should only be used in conjunction with yield line pavement markings in advance of a marked crosswalk. These signs are to be used on uncontrolled approaches and should not be used at controlled intersections or in advance of crosswalks that cross an approach to or departure from a roundabout.

The R1-6 In-Street Pedestrian Crossing Sign is used to remind road users of laws regarding right-of-way at an unsignalized (mid-block) pedestrian crossing. The sign, if used, shall be placed in the roadway at the crosswalk location on the center line, on a lane line, or on a median island. The R1-6 shall not be post-mounted on the left-hand or right-hand side of the roadway or in advance of the crosswalk.

If the In-Street Pedestrian Crossing sign (R1-6) is placed in the roadway, the sign support shall comply with the breakaway requirements of the latest edition of AASHTO's "Specification for Structural Supports for Highway Signs, Luminaires, and Traffic Signals". The In-Street Pedestrian Crossing sign may be used seasonably to prevent damage in winter because of plowing operations, and may be removed at night if the pedestrian activity at night is minimal.

Warning signs for use at and in advance of a marked crosswalk can be seen below. Also included are variations of the supplemental plaques that can be used in conjunction with the warning sign. The sign code as assigned in the **OMUTCD** is shown below the signs. This code is used to identify the sign and its type.



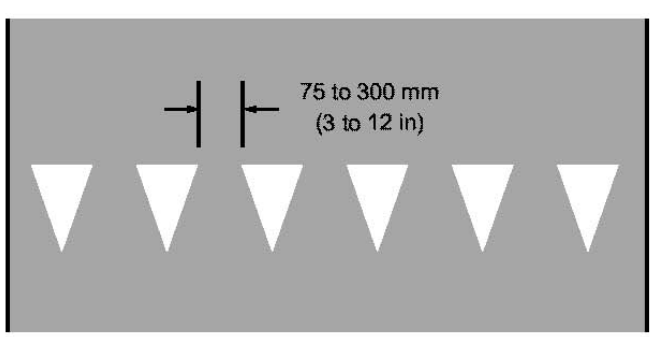
* A fluorescent yellow-green background color may be used for this sign or plaque.

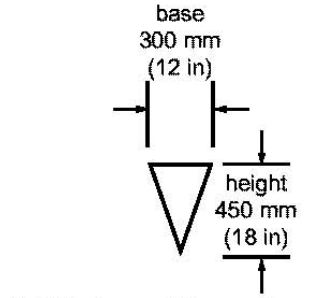
The pedestrian and school crossing warning signs (W11-2 & S1-1) may be used to alert road users in advance of locations where unexpected entries into the roadway by pedestrians might occur. When used in advance of a crossing, the warning sign may be supplemented with plaques such as those shown above to provide advance notice to road users of crossing activity. The advanced warning signs should be placed no less than 150 feet from the intersection and no more than 700 feet from the intersection. It is also important to ensure that the placement of any signs is not obscured from the motorists view by existing signs or trees/landscaping. When used at the crossing, the sign shall be supplemented with a diagonal downward pointing arrow (W16-7p) plaque to indicate the location of the crossing.

Pedestrian crossing signs and their related supplemental plaques may have a fluorescent yellow-green background with a black legend and border. When a fluorescent yellow-green background is used, a systematic approach featuring one background color within a zone or area should be used. The mixing of standard yellow and fluorescent yellow-green backgrounds within a selected site area should be avoided.

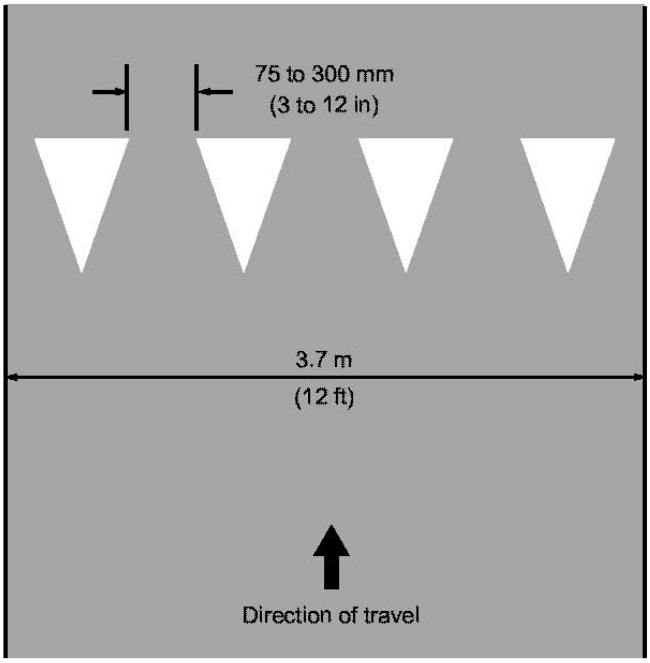
5.4 Pavement Markings

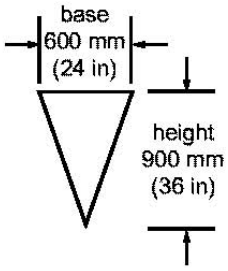
Yield lines consist of a row of solid white isosceles triangles pointing toward approaching vehicles extending across approach lanes to indicate the point at which the yield is intended or required to be made. Yield lines may be used to indicate the point behind which vehicles are required to yield in compliance with a Yield Here to Pedestrians (R1-5) sign. The picture below details the layout and use of yield lines for use at crossings. These are also referred to as "sharks teeth".





(a) Minimum Dimensions



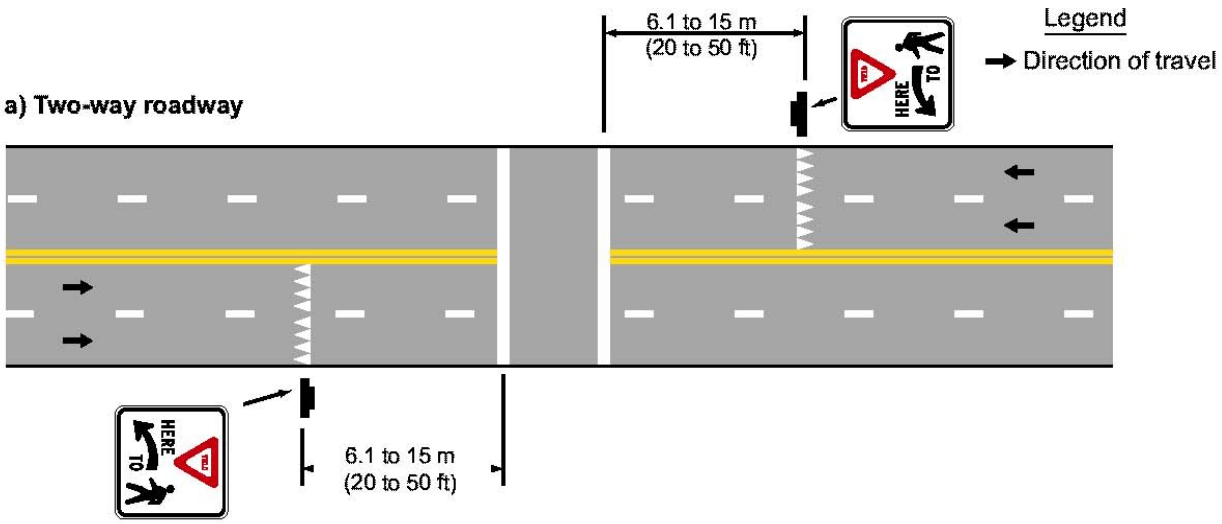


(b) Maximum Dimensions

Notes:
Triangle height is equal to
1.5 times the base dimension.

Yield lines may be smaller than suggested when installed on much narrower, slow-speed facilities such as shared-use paths.

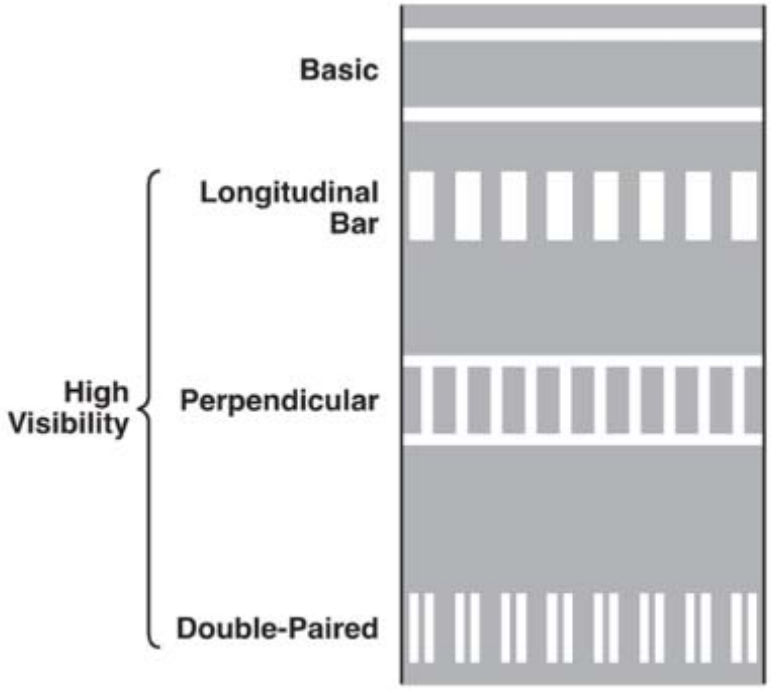
Yield lines when used at an unsignalized crosswalk, should be placed adjacent to the "Yield Here to Pedestrians" sign located 20 to 50 feet in advance of the nearest crosswalk line, and parking should be prohibited in the area between the yield line and the crosswalk. Drivers who yield too close to crosswalks on multi-lane approaches place pedestrians at risk by blocking other drivers' views of pedestrians. The following picture details a typical layout of the yield lines and signs for a mid-block pedestrian crossing.



Pedestrian crossing signs (W11-2) may be placed overhead or may be post-mounted with a diagonal downward pointing arrow (W16-7P) plaque at crosswalk locations where the "Yield Here to Pedestrian" signs have been installed in advance of the crosswalk. The "Yield Here to Pedestrian" signs should not be posted on the same post or block the road users view of the pedestrian crossing sign.

An advance Pedestrian Crossing sign (W11-2) with an AHEAD or a distance supplemental plaque may be used in conjunction with a "Yield Here to Pedestrian" sign on the approach to the same crosswalk.

The following picture details the use of various types of crosswalk markings. It should be noted that while the illustration shows the markings in use at an intersection, these markings can be used at a mid-block location.



When crosswalk lines are used, they typically consist of solid white lines that mark the crosswalk boundaries. If transverse lines (Basic) are used to mark a crosswalk, the gap between the lines should not be less than 6 feet. If longitudinal lines are used without transverse lines to mark a crosswalk, the crosswalk should be not less than 6 feet wide. Transverse crosswalk lines (Basic), if used on both sides of the crosswalk, should extend across the full width of pavement. Because non-intersection pedestrian crossings are generally unexpected by the road user, warning signs should be installed and adequate visibility should be provided by parking prohibitions.

For added visibility, the area of the crosswalk may be marked with white longitudinal lines (high visibility) parallel to traffic flow as shown in the previous picture. When longitudinal lines are used to mark a crosswalk, the transverse crosswalk lines may be omitted. If used, the longitudinal lines should be 12 to 24 inches wide and spaced 12 to 60 inches apart. The marking design should avoid the wheel paths, and the spacing should not exceed 2.5 times the line width.

Section 301-6.4 of the ODOT **TEM** [10] provides the following guidance for the use of high visibility patterns at crosswalks:

High-visibility crosswalks, which are available in three different patterns known as "longitudinal bars", "perpendicular" and "double-paired", have been shown to increase safety by improving visibility to approaching motorists and better emphasizing pedestrian crossing areas than the basic parallel transverse line crosswalks.

The longitudinal bar crosswalk is the default high visibility pattern for ODOT maintained highways.

Where the determination has been made to install crosswalk markings on ODOT maintained highways, a high-visibility crosswalk should be used in the following situations:

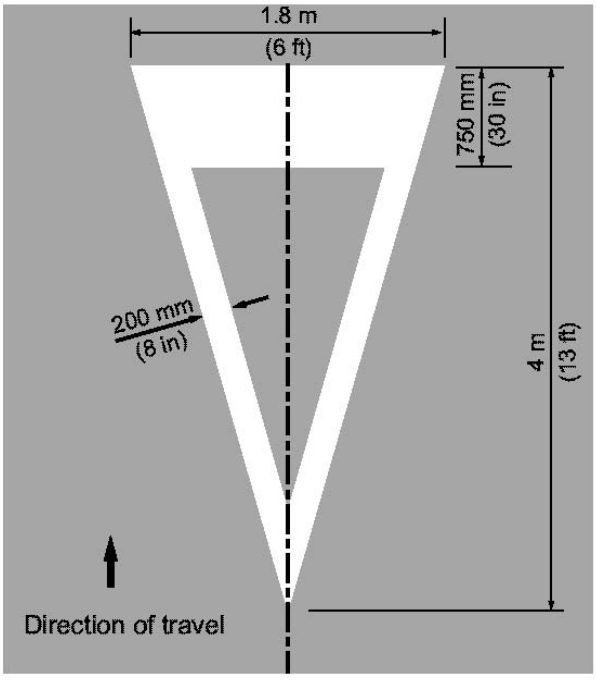
1. *At intersections where at least one approach has a speed limit of 35 mph or higher*
2. *At all established midblock pedestrian crossings and with appropriate signing accompaniment*

Other locations with high pedestrian volumes or with characteristics that may reduce visibility of pedestrian paths such as poor lighting conditions, obstructions like parked cars, or roadway curvature should also be considered for installation of high-visibility crosswalks.

Word and symbol markings on the pavement are used for the purpose of guiding, warning, or regulating traffic. Symbol messages are preferable to word messages. Letters and numerals should be 6 feet or more in height and should not exceed three lines of information. Pavement word and symbol markings should be no more than one lane in width. If a pavement marking word message consists of more than one line of information, it should read in the direction of travel. The first word of the message should be nearest to the road user. The longitudinal space between word or symbol message markings should be at least four times the height of the characters for low-speed roads, but not more than ten times the height of the characters under any conditions. The number of different word and symbol markings used should be minimized to provide effective guidance and avoid misunderstanding.

A yield-ahead triangle symbol or YIELD AHEAD word pavement marking may be used on approaches to intersections where the approaching traffic will encounter a YIELD sign at the intersection. Word and symbol markings for crosswalks may include, but are not limited to, YIELD AHEAD, the YIELD AHEAD Triangle Symbol, and PED XING. A example of a yield ahead triangle symbol can be seen below.

Posted or Statutory Speed Limit less than 70 km/h (45 mph)



5.5 Additional Treatment Options

Street Lighting

Providing adequate levels of lighting that are oriented toward pedestrian activity improves conditions for drivers to see pedestrians. Pedestrians feel safer in such environments. This is a high cost application with regular maintenance concerns.

Sign Illumination

Warning beacons can be used as a supplemental emphasis to pedestrian warning signs and as an emphasis for the presence of mid-block crosswalks. A Warning Beacon shall consist of one or more signal sections of a standard traffic signal face with a flashing circular yellow signal indication in each signal section. A Warning Beacon is to be used only to supplement an appropriate warning or regulatory sign. The beacon shall not be included within the border of the any sign except for school speed limit signs. Warning beacons can be used as part of a side of the road mounted assembly or as part of an overhead assembly. The LED units are typically powered by a solar panel attached to the sign installation or may be wired to a traditional power source.

The use of light emitting diodes (LED) may be used individually within the legend of a sign and in order the border of a sign to improve the conspicuity, increase the legibility of the sign legends and borders, or provide a changeable message.

Raised Intersections & Crosswalks

A raised intersection or crosswalk (speed table) is a term used to describe a very long and broad speed hump, or a flat topped speed hump, where sometimes a pedestrian crossing is provided in the flat portion of the speed table.

A raised intersection is essentially a speed table for the entire intersection. Construction involves providing ramps on each vehicle approach which elevates the intersection to the level of the sidewalk. They can be built with a variety of materials, including asphalt, concrete, or pavers. The crosswalks on each approach are also elevated as part of the treatment to enable pedestrians to cross the road at the same level as the sidewalk, eliminating the need for curb ramps. Detectable warnings to the mark the boundary between the sidewalk and the street are still necessary.

A raised pedestrian crosswalk is also essentially a speed table, with a flat portion the width of a crosswalk. Raised intersections and crosswalks encourage motorists to yield.

Rectangular Rapid Flashing Beacon (RRFB)

Rectangular Rapid Flashing Beacons (RRFB) are an enhancement that can be used in combination with a pedestrian, school, or trail crossing warning sign to improve safety at uncontrolled, marked crosswalks.

The RRFB design differs from the standard flashing beacon by utilizing:

- A different shape.
- A much faster rapid-pulsing flash rate.
- A brighter light intensity.

RRFBs are placed on both sides of a crosswalk below the pedestrian crossing sign and above the arrow indication pointing at the crossing. The RRFB typically includes two rectangular-shaped yellow indications, each with an LED-array-based light source, that flash with high frequency when activated. RRFB's are user activated that can be activated manually by a pedestrian using a push-button or passively by a pedestrian detection system. The RRFB should be unlit when not activated. RRFB's are typically powered by a standalone solar unit but, may also be wired to a traditional power source. The following photo details an example of an RRFB dark and illuminated during the flash period mounted with a pedestrian crossing warning sign:



The Federal Highway Administration has issued interim approval for the use of the RRFB (IA-21). State and local agencies should request permission to use the RRFB before installing.

Pedestrian Warning Systems

Research and data has shown that installing standard signing and markings provide limited safety improvements for pedestrians. Pedestrians may also tend to develop a false sense of security from these warning devices. Over time, motorists who travel areas with these crossings tend to become conditioned to ignore the signs and markings, therefore providing little to no increase in safety for pedestrians.

One potential solution to this is a warning system that operates only when a pedestrian is present. Such a device may be a flashing yellow beacon with a reflective pedestrian crossing sign. This type of system would catch the attention of the motorist that has become conditioned to the crossing by presenting something that is not present at all times such as the flashing yellow beacon. These types of devices and systems can be activated through physical actuation by the pedestrian or through a passive method that does not require a physical actuation by the pedestrian.

- **Active Pedestrian Detection**
  A pedestrian actuated system requires the pedestrian to physically activate the system. The most common method of operating a pedestrian actuated system is through the use of push buttons.

However, not all pedestrians use the push buttons. This may be due to the push button being hard to find, poorly located, not expected, or the pedestrian has a seeing impairment. It would be beneficial to have the warning system activated without having to rely on the pedestrian to push a button. An alternative approach to triggering the system may be passive detection of the pedestrian.

- **Passive Pedestrian Detection**
  Passive pedestrian detection provides a method to detect the presence of pedestrians curbside at or in a pedestrian crossing by means other than those requiring physical actuation by the pedestrian. Typical methods of passive pedestrian detection can include the use of infrared, microwave radar, video imaging, or piezometric sensors.

V2P Crash Avoidance Systems

Vehicle-to-Pedestrian (V2P) based crash avoidance systems use wireless communication to transfer information between vehicles and pedestrians using dedicated short-range communications, Wi-Fi, global positioning system (GPS) tracking via cellular networks, or other wireless technologies. V2P communications can help make drivers and pedestrians aware of each other, and avoid potential collisions.

Chapter 6
Conclusions

Based on the results of the analyses, we offer the following conclusions and recommendations:

6.1 The Mill Road Corridor Study has been prepared at the request of the Cities Broadview Heights and Brecksville. The study area includes Mill Road from Wallings Road to Brecksville Road (State Route 21). This report analyzed the portion of the roadway within the City of Broadview Heights (**Figure 1.3, Appendix A**).

6.2 The complete study area will consist of the following existing intersections with the intersections within the City of Broadview Heights italicized:

1. *Mill Road & Wallings Road/Interstate 77 Northbound Entrance Ramp*
2. *Mill Road & Interstate 77 Northbound Exit Ramp*
3. *Mill Road & Loripat Drive*
4. *Mill Road & Lacey Lane*
5. *Mill Road & Sylmar Drive*
6. *West Mill Road & Karen Lynne Drive*
7. *West Mill Road & Lacey Lane*
8. *Mill Road & Broadmill Drive*
9. *Mill Road & Millwood Drive*
10. *Mill Road & Middle School Driveway*
11. *Mill Road & Middle School/High School Driveway*
12. *Mill Road & Vera Drive*
13. Mill Road & Sunnydale Drive
14. Mill Road & Hunting Valley Drive/High School Driveway
15. Mill Road & Whitewood Road/Hilton Road
16. Mill Road & Hilton Elementary School Driveway
17. Mill Road & St. Basil Driveway
18. Mill Road & Brecksville Road (SR 21)

6.3 Traffic forecasts were prepared as part of the procedure to determine future traffic volumes in the study area.

6.4 The year 2024 was analyzed for the opening year conditions. The future design year was 2044 based on providing a twenty year design period for any recommended improvements in the study area. The recommendations found in this report were based on the 2044 conditions.

6.5 The ODOT **GIS Crash Analysis Tool (GCAT)** was used to collect crash information at the study area intersections for the years 2019 through June of 2022. The Broadview Heights study area experienced a total of 21 intersection related crashes in time period under analysis. Crashes were reported at 2 of the 12 intersections under study.

6.6 Rear end crashes were determined to the be the predominate crash type at the intersection of Mill Road and Wallings Road. 15 of the 19 reported crashes at the intersection were read-end crashes.

6.7 Conditions at the study area intersections during the AM and PM peak hours were determined to meet the operational goals shown in **Table 1.2** under the forecasted 2024 opening year and 2044 design year conditions with the exception of the following intersection.

- Mill Road & Wallings Road

Chapter 7
Improvements & Recommendations

The cost breakdown for the recommended improvements was based upon low, medium, and high cost projects. A high cost project should be expected to exceed $5,000,000. A low cost project should not be expected to exceed $100,000. A medium cost project should be expected to cost between $100,000 and $5,000,000.

The time frame for implementation was broken down into short, medium, and long term projects. A short term project was considered to take less than a year to implement. A medium term project was considered to take between 1 and 5 years to complete. A long term project was considered to take at least 5 years to complete.

Based on the results of the analyses, we offer the following potential improvements and recommendations:

Short Term/Low Cost Improvements

7.1 Update all cross walk markings throughout the study area for consistency. It is our recommendation that all crosswalks be striped the same as the crosswalk to the east of Vera Drive. The use of the "longitudinal bar" high visibility pattern is recommended for use throughout the corridor.

7.2 The installation of "ALL-WAY" (R1-3P) plaques below each stop sign at the all-way stop intersection of West Mill Road and Lacey Lane is recommended.



R1-3P

7.3 There are existing advanced school crossing warning signs located to the east and west of the signalized intersection of Mill Road and the school access driveway. The signs include a "School" plaque below the sign. It is our recommendation that the "SCHOOL" plaques are replaced with the "AHEAD" (W16-9P) plaque in a matching florescent yellow color.



W16-9P

7.4 There are existing "School Crossing" (S1-1) signs at the Mill Road crosswalk at the signalized intersection with the school access driveway. The installation of "Supplemental Arrow" (W17-7P) plaque in a matching florescent yellow color below each warning sign is recommended.



W16-7P

7.5 It is recommended that a school crossing warning sign assembly be placed on each side of the Mill Road crosswalk to the east of Vera Road. The sign assembly is recommended to consist of fluorescent yellow "School Crossing" (S1-1) sign and "Supplemental Arrow" (W16-7P) plaque.



S1-1

W16-7P

Long Term/High Cost Improvements

7.6 Turn lanes were recommended at the following location:

- Mill Road & Wallings Road
  - Construct dual 450 feet eastbound left turn lanes.
  - Update traffic signal control sequence to provide an eastbound protected only phase for the left turn movement.
  - Widen the IR77 NB entrance ramp to receive the dual turning lanes.

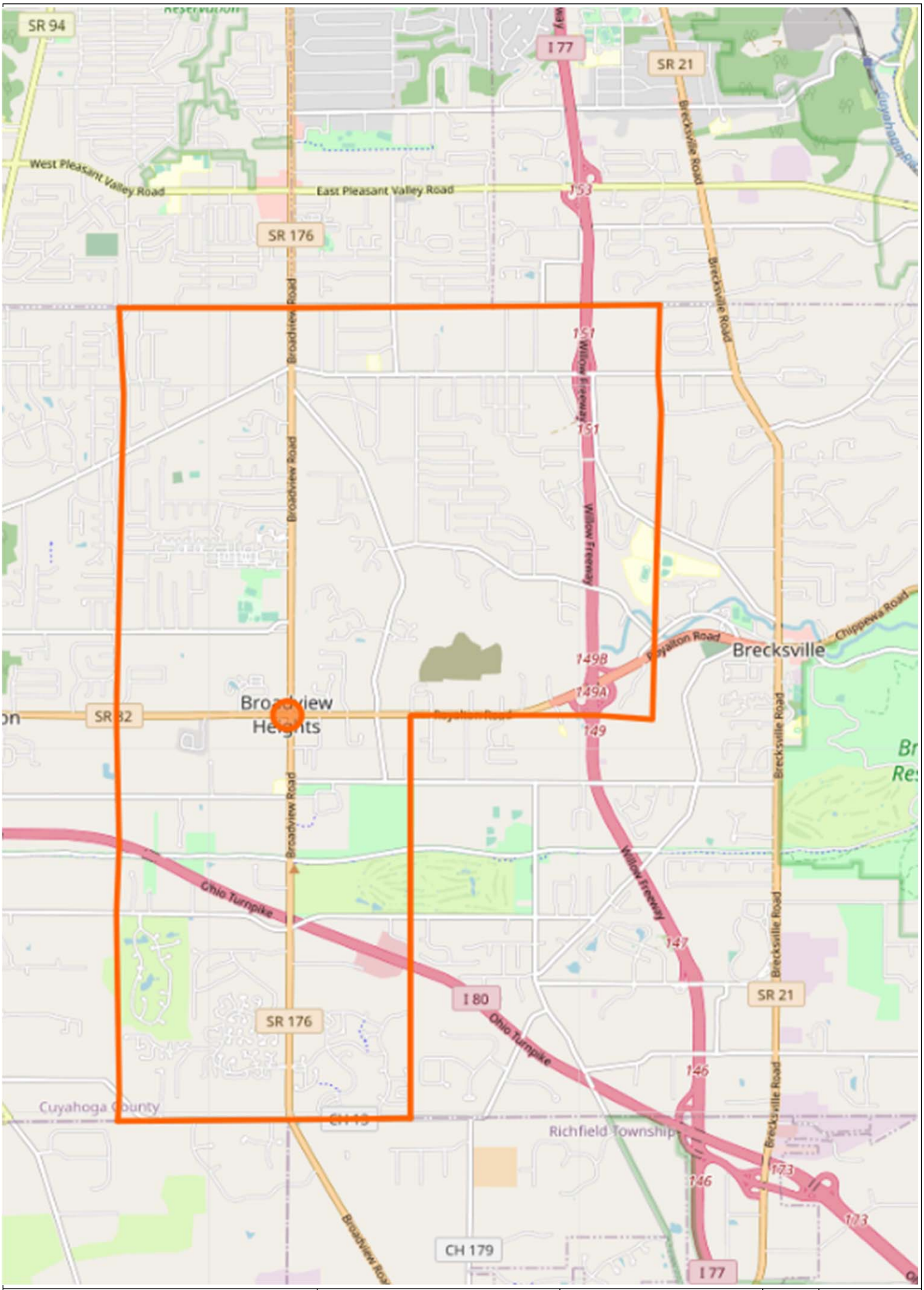
7.7 The Wallings Road bridge over Interstate 77 would have to be widened to accommodate dual eastbound left turn lanes at the Mill Road/IR77 northbound entrance ramp intersection.

7.8 The need for any westbound left turn lanes at the adjacent ramp for southbound Interstate 77 should be considered as part of any project to widen the Wallings Road bridge.

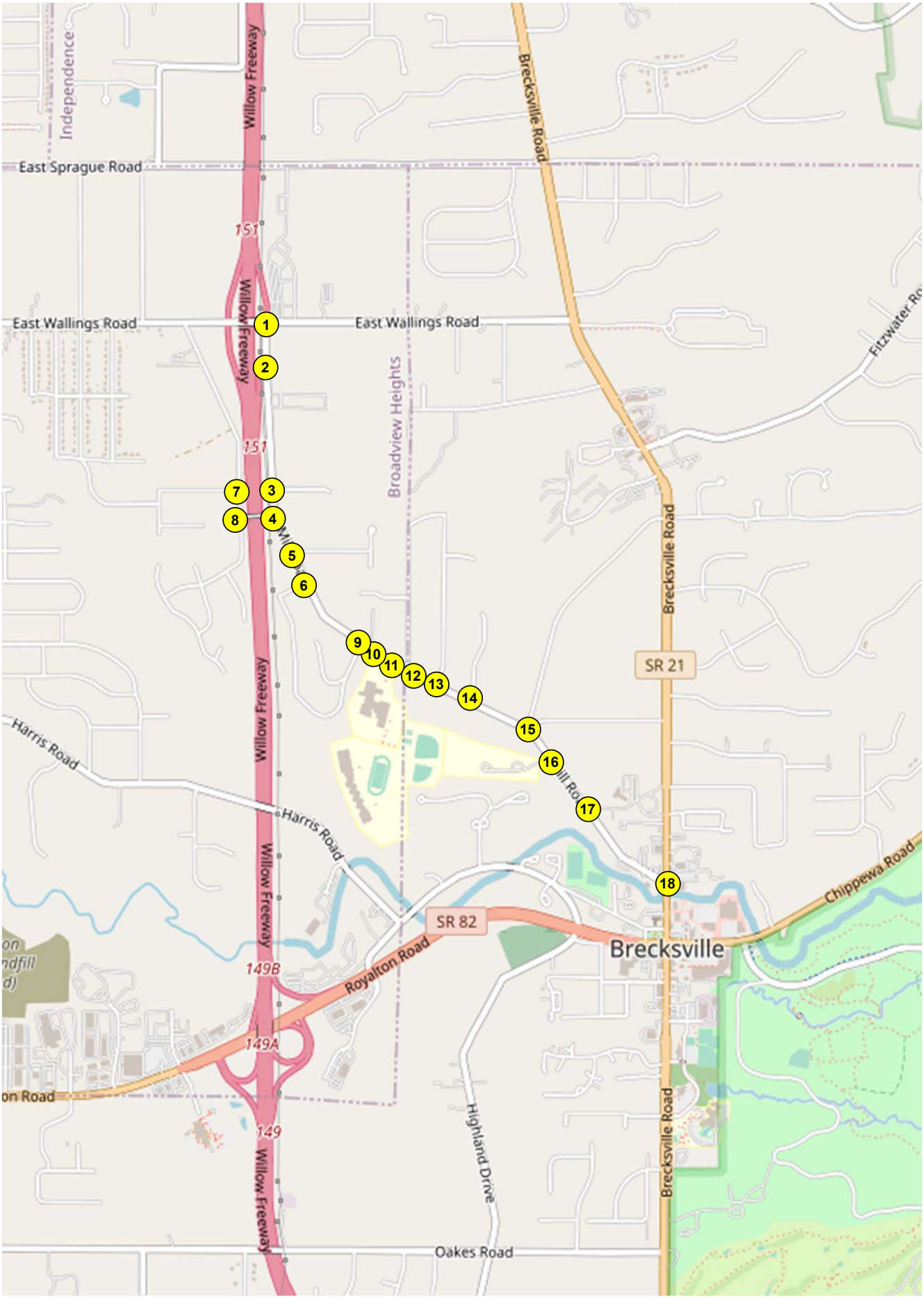
7.9 Improvements to the interchange ramps would require the preparation of an Interchange Modification Study (IMS) for review and approval by the Ohio Department of Transportation (ODOT) and the Federal Highway Administration (FHWA).

A summary figure of the recommended lane use and traffic control improvements for the study area can be seen in **Figure 7.1, Appendix A**.

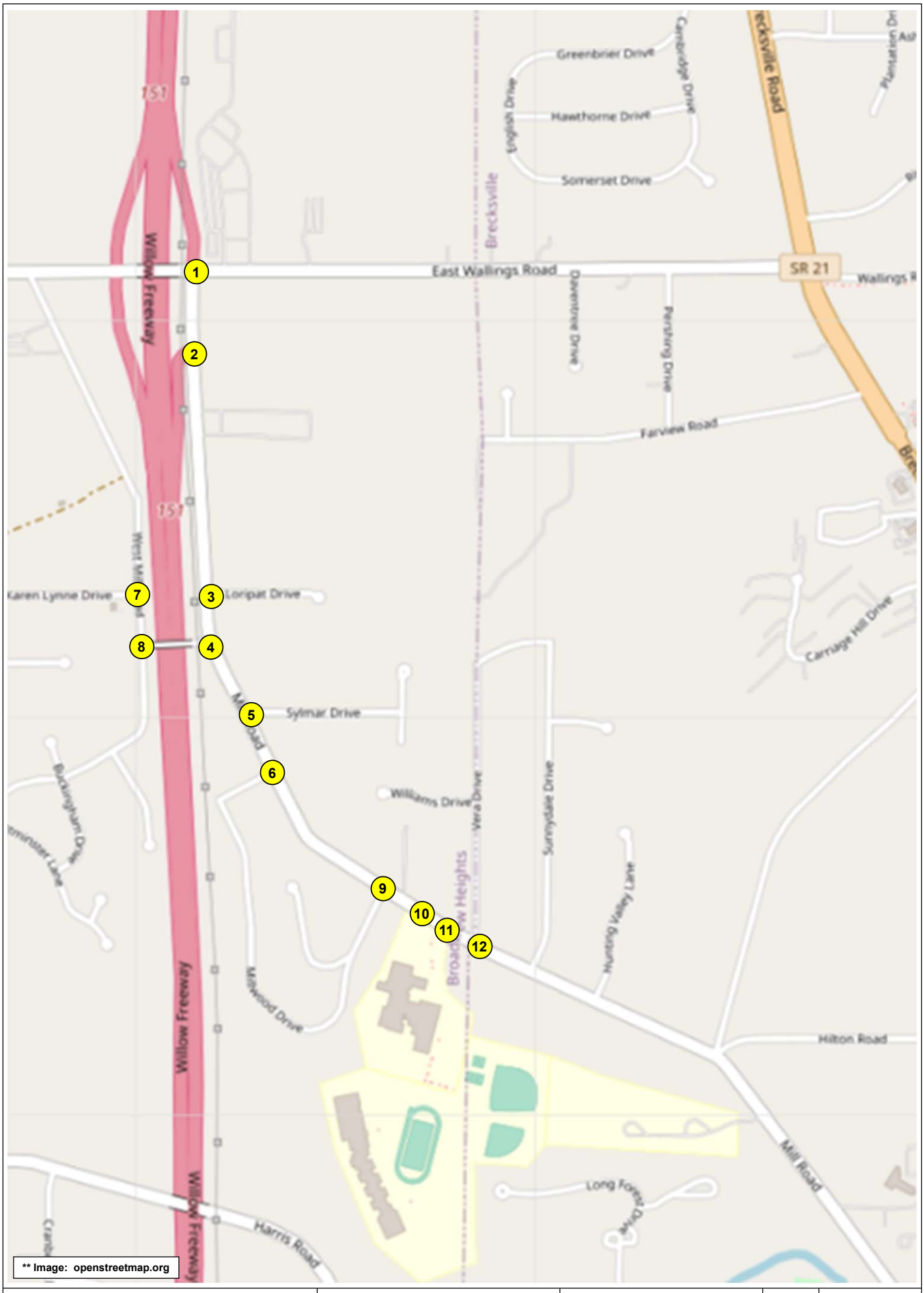
Appendix A
Figures



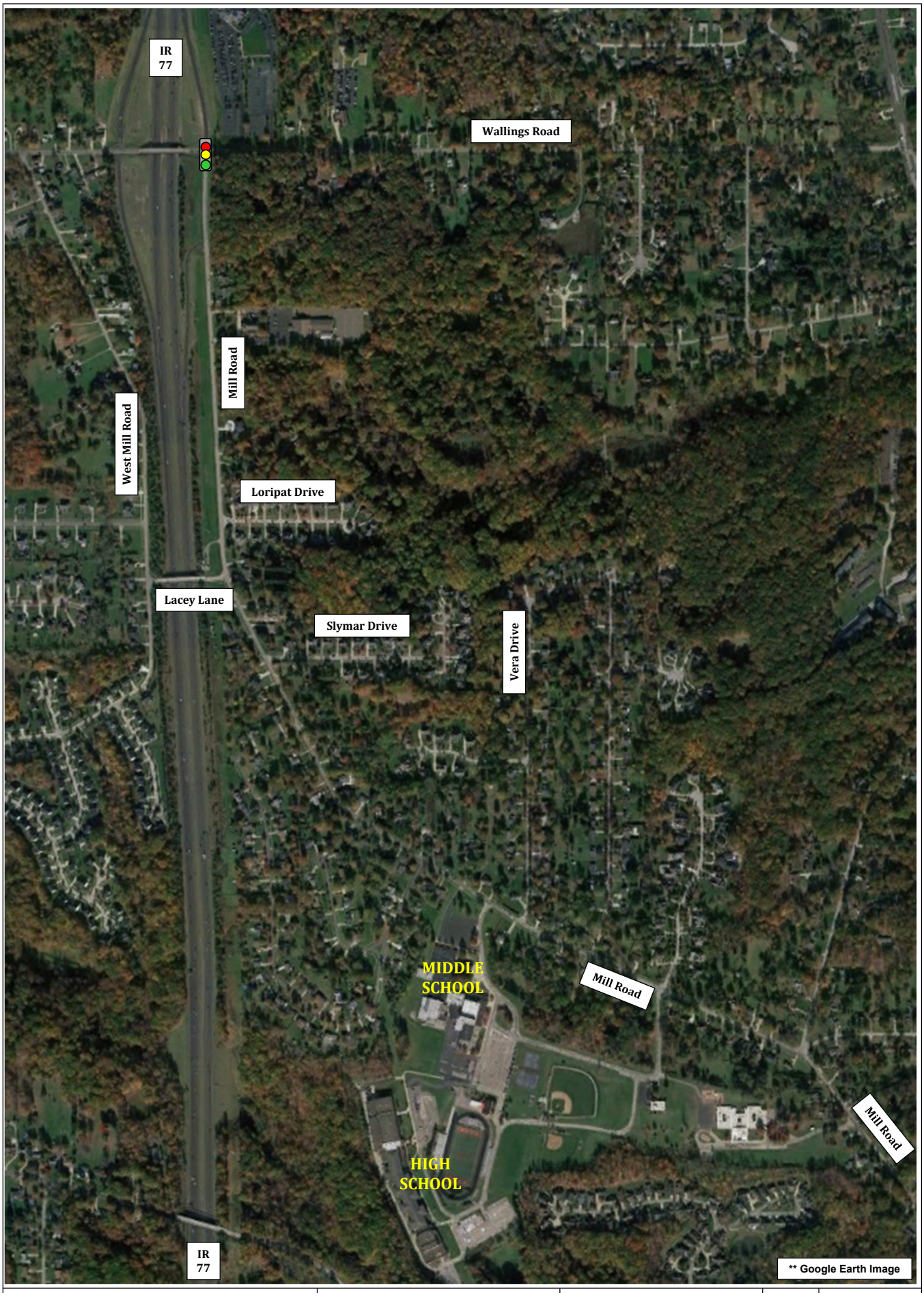
TMS Engineers, Inc. Transportation Management Services 2112 Case Parkway S., Unit 7, Twinsburg, Ohio 44087 www.TMSEngineers.com	**Mill Road Corridor Study Broadview Heights, Ohio**	**City of Broadview Heights Limtis**	NORTH NOT TO SCALE	**Figure: 1.1** **Appendix: A**



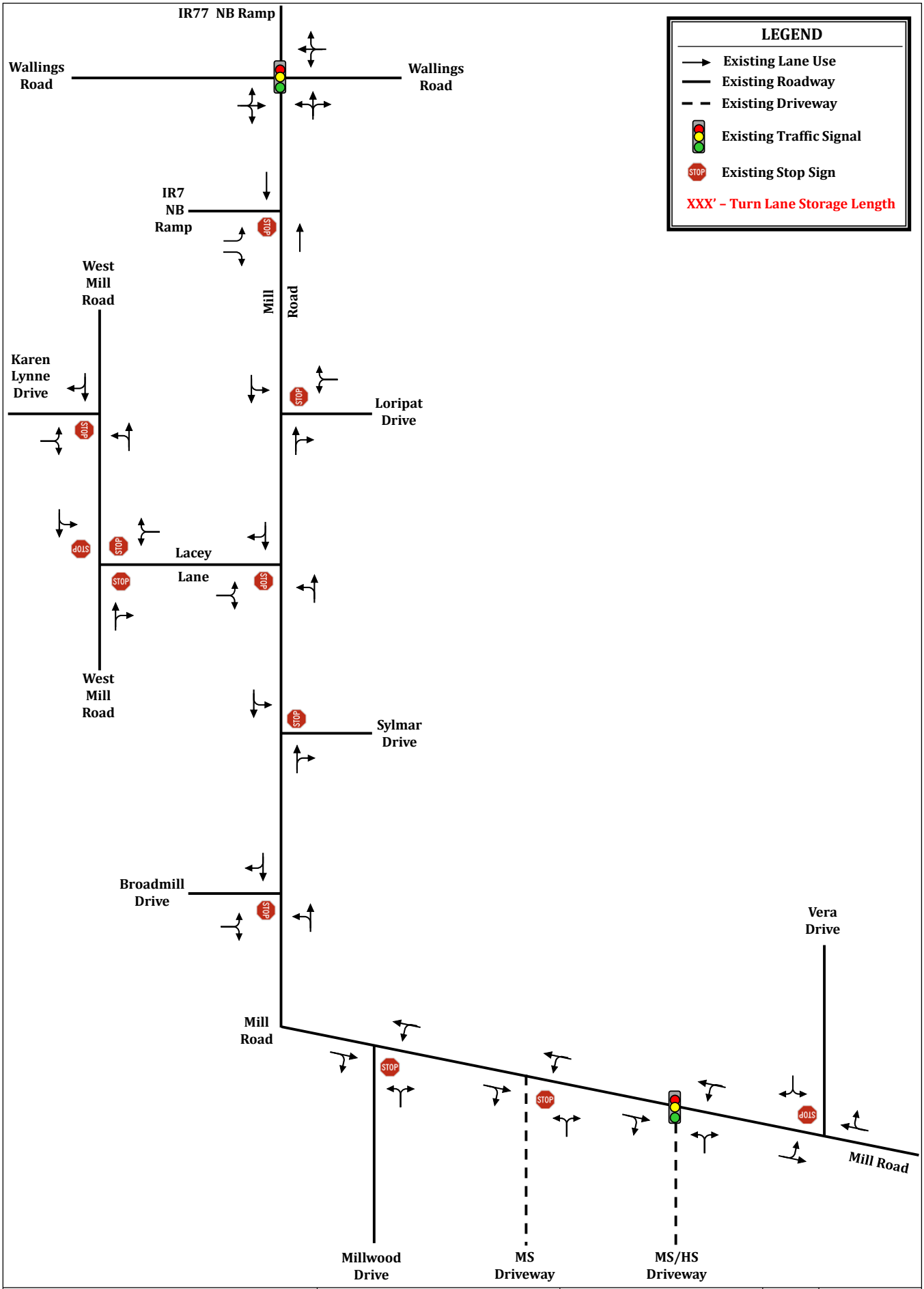
TMS Engineers, Inc. Transportation Management Services 2112 Case Parkway S., Unit 7, Twinsburg, Ohio 44087 www.TMSEngineers.com	**Mill Road** **Corridor Study** **Broadview Heights, Ohio**	**Mill Road Corridor** **Intersections**	**NORTH** NOT TO SCALE	**Figure: 1.2** **Appendix: A**



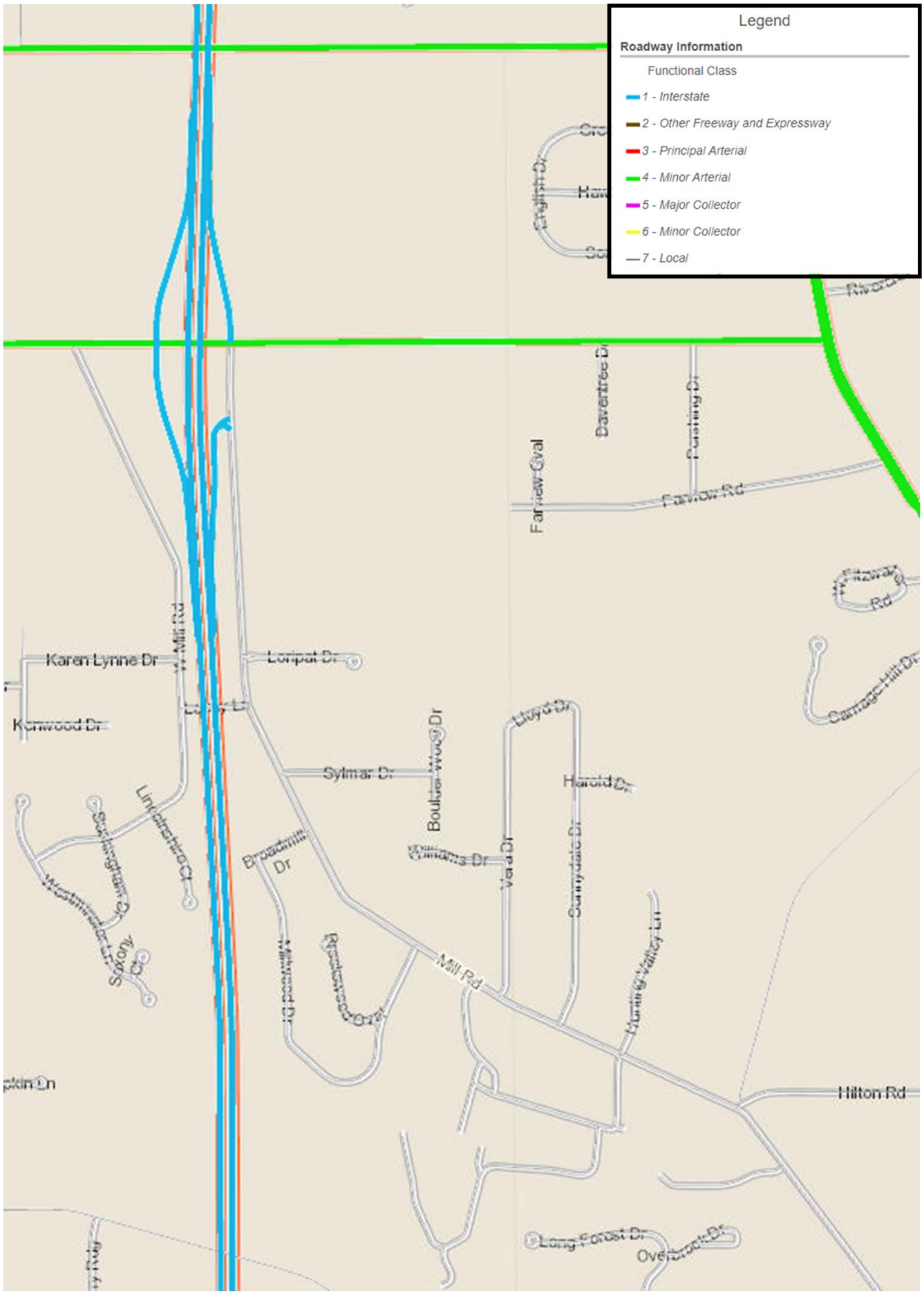
TMS Engineers, Inc. Transportation Management Services 2112 Case Parkway S., Unit 7, Twinsburg, Ohio 44087 www.TMSEngineers.com	Mill Road Corridor Study Broadview Heights, Ohio	Mill Road City of Broadview Heights Intersections	NORTH NOT TO SCALE	Figure: 1.3 Appendix: A



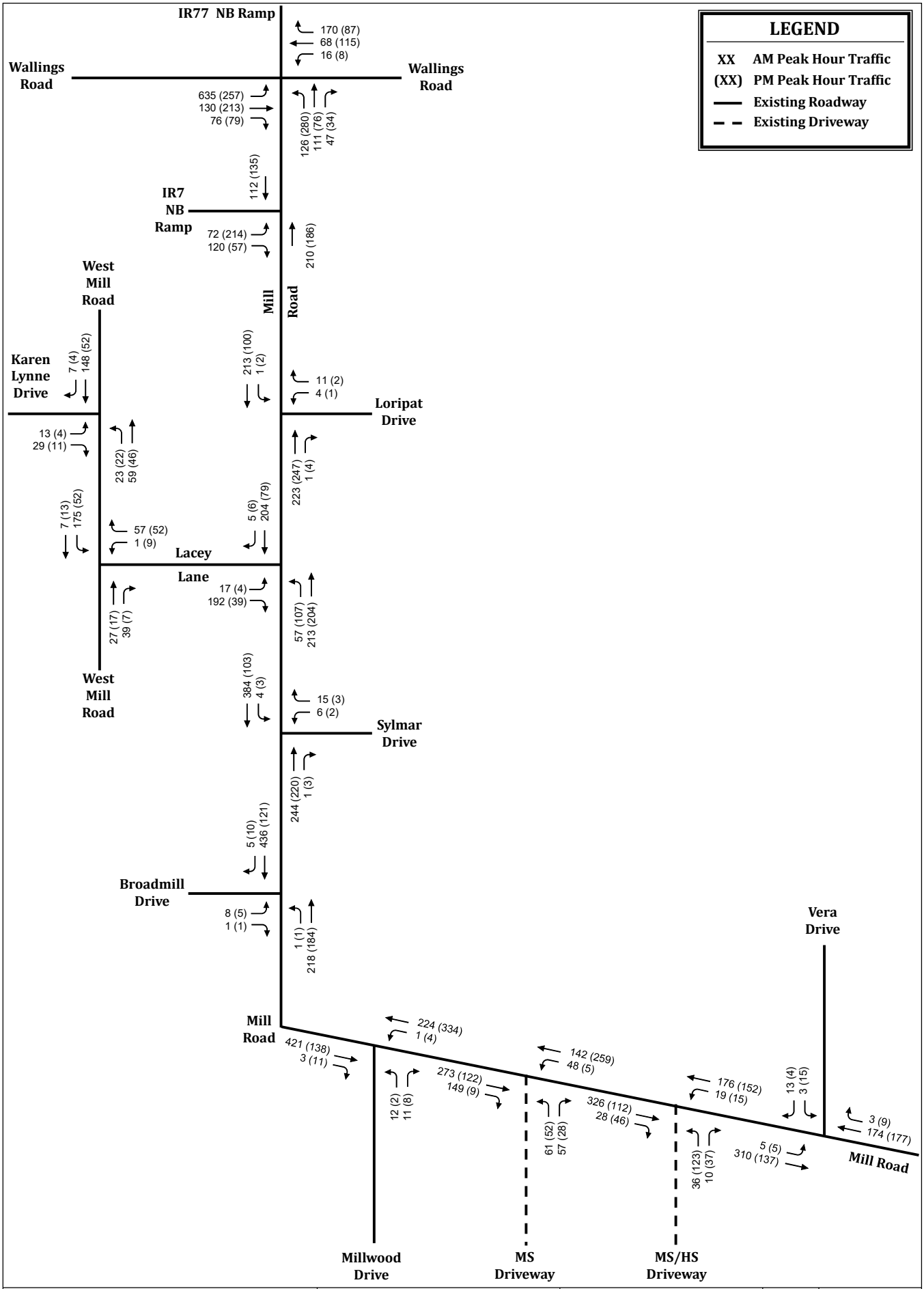
TMS Engineers, Inc. Transportation Management Services 2112 Case Parkway S., Unit 7, Twinsburg, Ohio 44087 www.TMSEngineers.com	Mill Road Corridor Study Broadview Heights, Ohio	Aerial View Broadview Heights	NORTH NOT TO SCALE	Figure: 2.1 Appendix: A



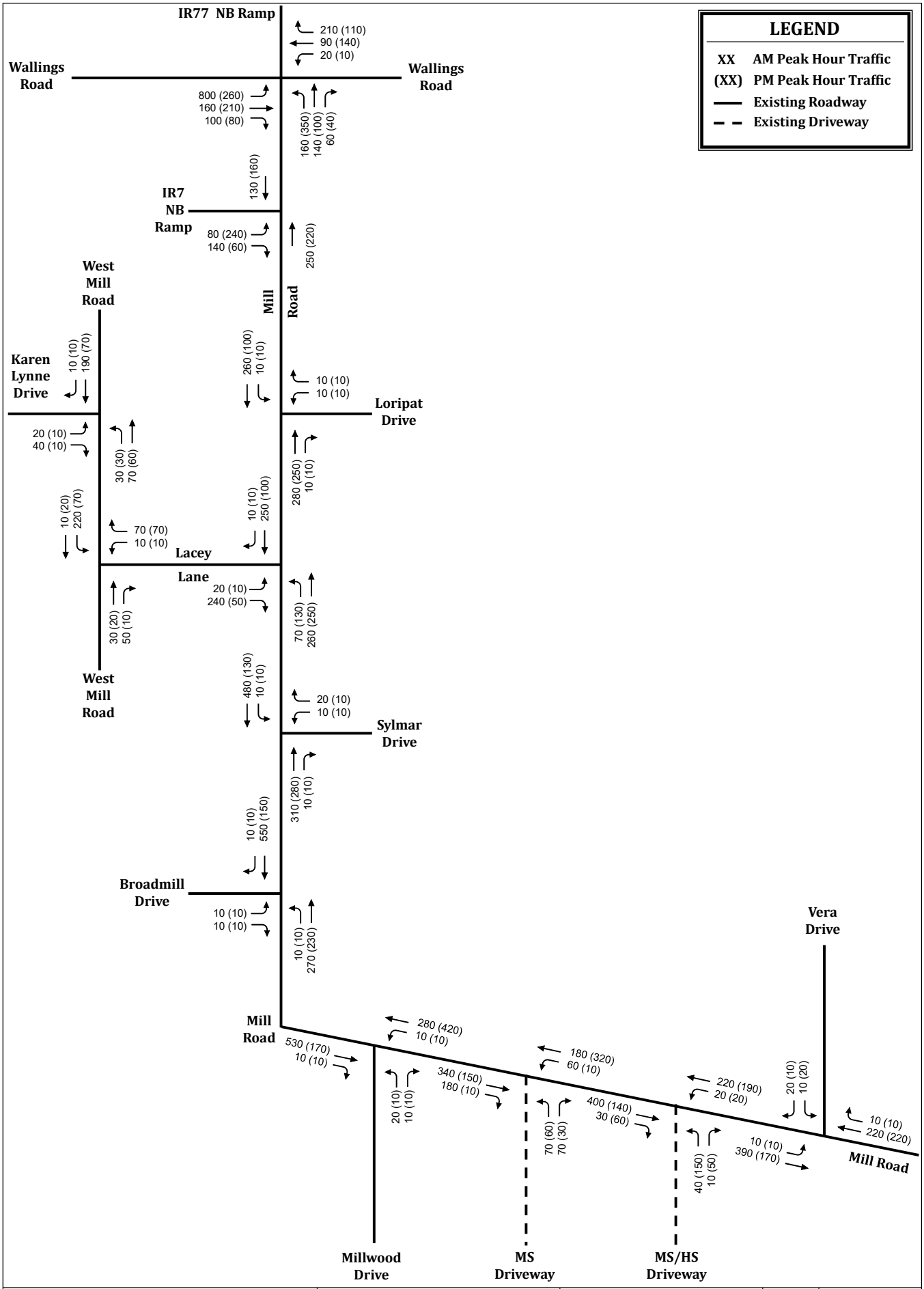
TMS Engineers, Inc. Transportation Management Services 2112 Case Parkway S., Unit 7, Twinsburg, Ohio 44087 www.TMSEngineers.com	Mill Road Corridor Study Broadview Heights, Ohio	Existing Conditions Lane Use & Traffic Control	NORTH NOT TO SCALE	Figure: 2.2 Appendix: A



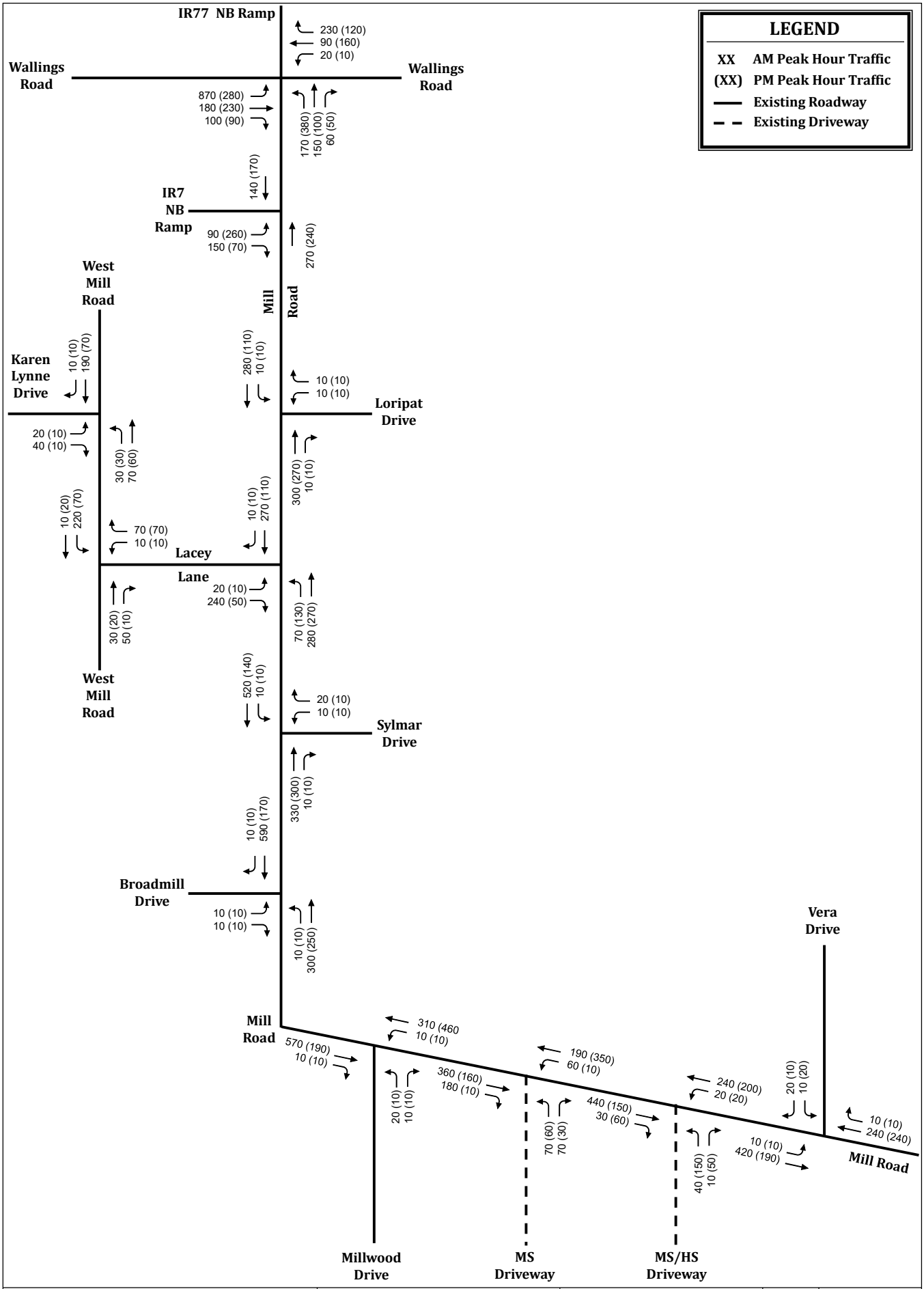
TMS Engineers, Inc. Transportation Management Services 2112 Case Parkway S., Unit 7, Twinsburg, Ohio 44087 www.TMSEngineers.com	**Mill Road** **Corridor Study** **Broadview Heights, Ohio**	**Functional Classification** **(ODOT TIMS)**	**NORTH** NOT TO SCALE	**Figure: 2.3** **Appendix: A**



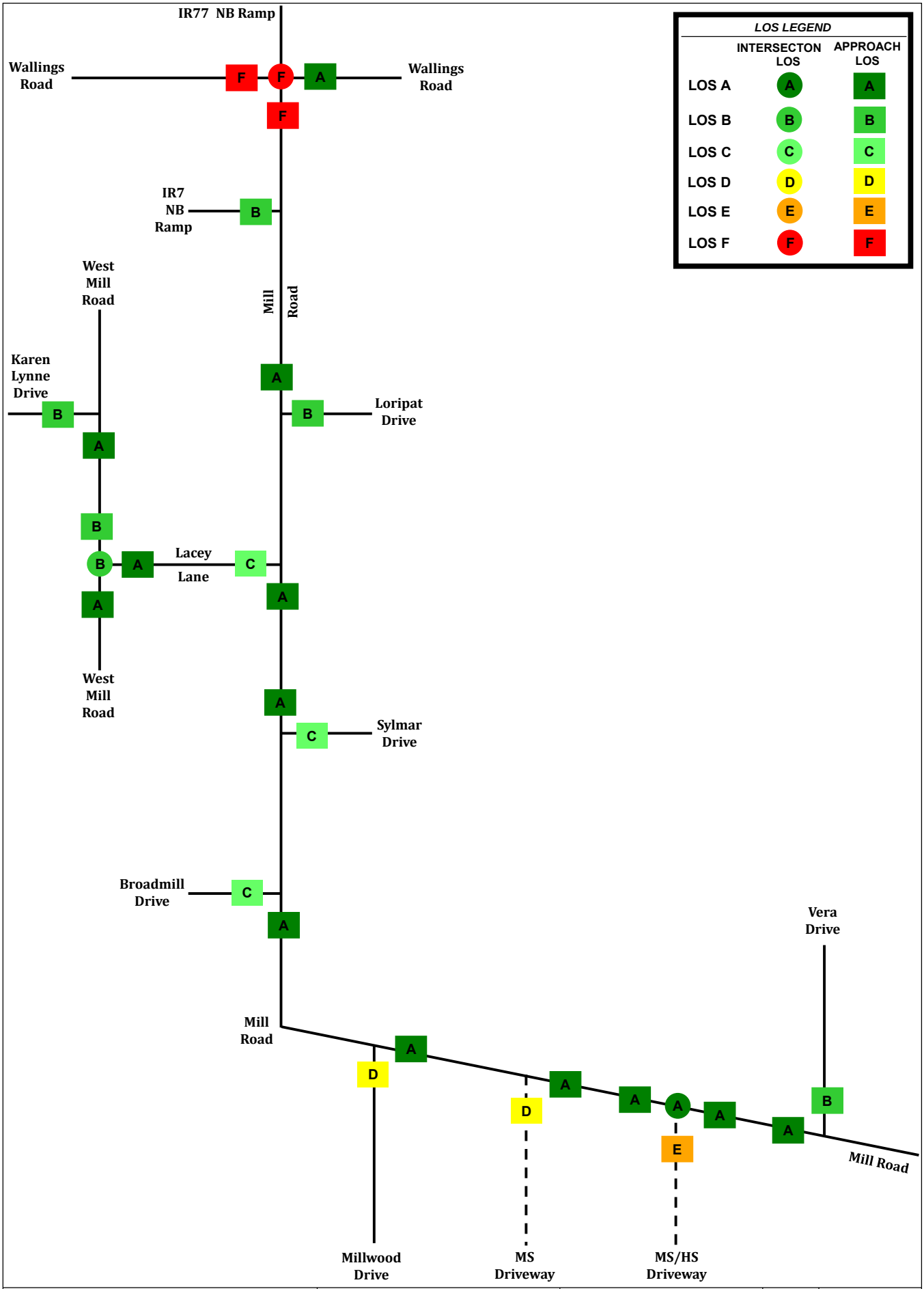
TMS Engineers, Inc. Transportation Management Services 2112 Case Parkway S., Unit 7, Twinsburg, Ohio 44087 www.TMSEngineers.com	Mill Road Corridor Study Broadview Heights, Ohio	Existing Weekday Peak Hour Traffic Volumes	NORTH NOT TO SCALE	Figure: 2.4 Appendix: A



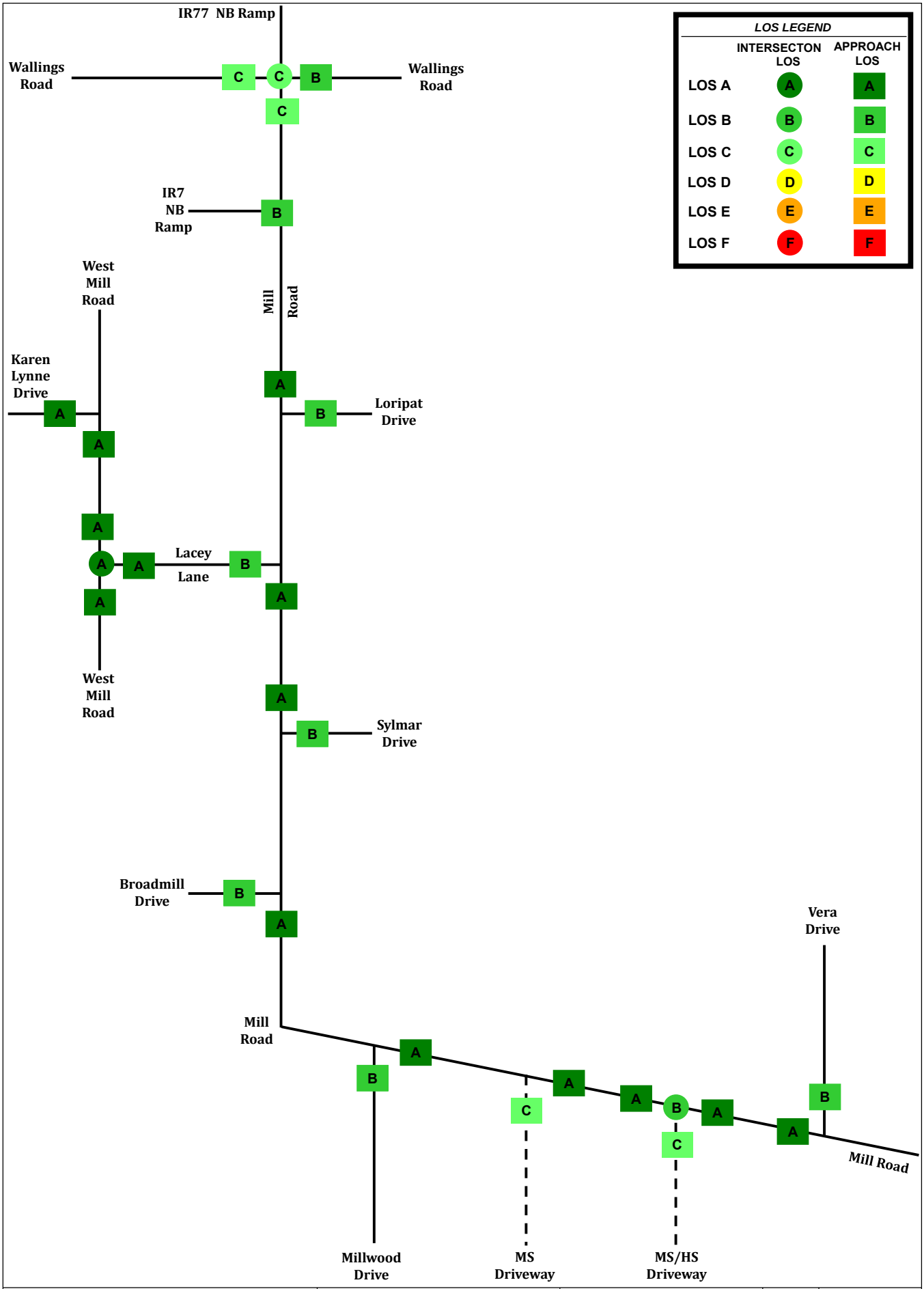
TMS Engineers, Inc. Transportation Management Services 2112 Case Parkway S., Unit 7, Twinsburg, Ohio 44087 www.TMSEngineers.com	Mill Road Corridor Study Broadview Heights, Ohio	2024 Peak Hour Traffic Volumes	NORTH NOT TO SCALE	Figure: 3.1 Appendix: A



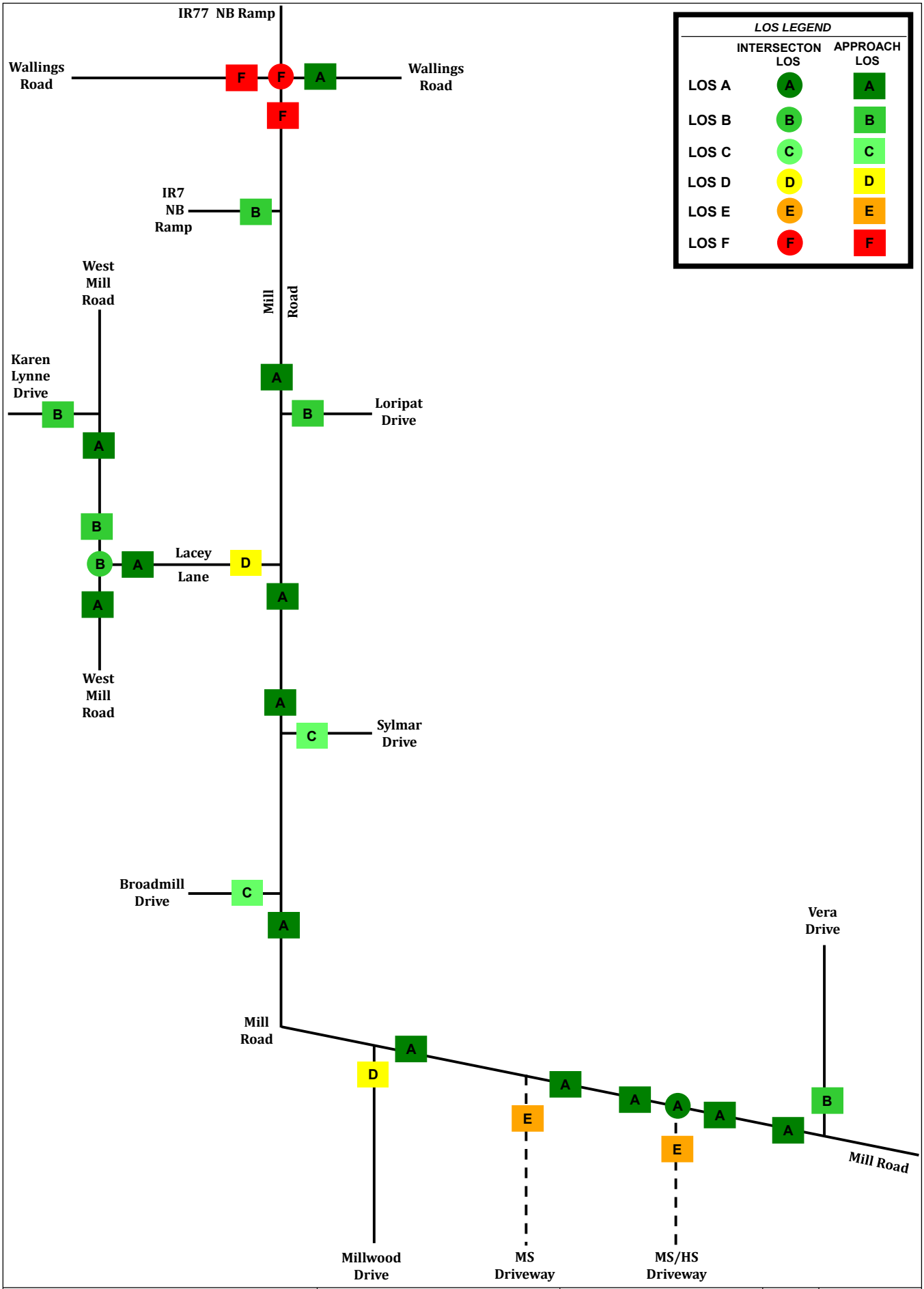
TMS Engineers, Inc. Transportation Management Services 2112 Case Parkway S., Unit 7, Twinsburg, Ohio 44087 www.TMSEngineers.com	Mill Road Corridor Study Broadview Heights, Ohio	2044 Peak Hour Traffic Volumes	NORTH NOT TO SCALE	Figure: 3.2 Appendix: A



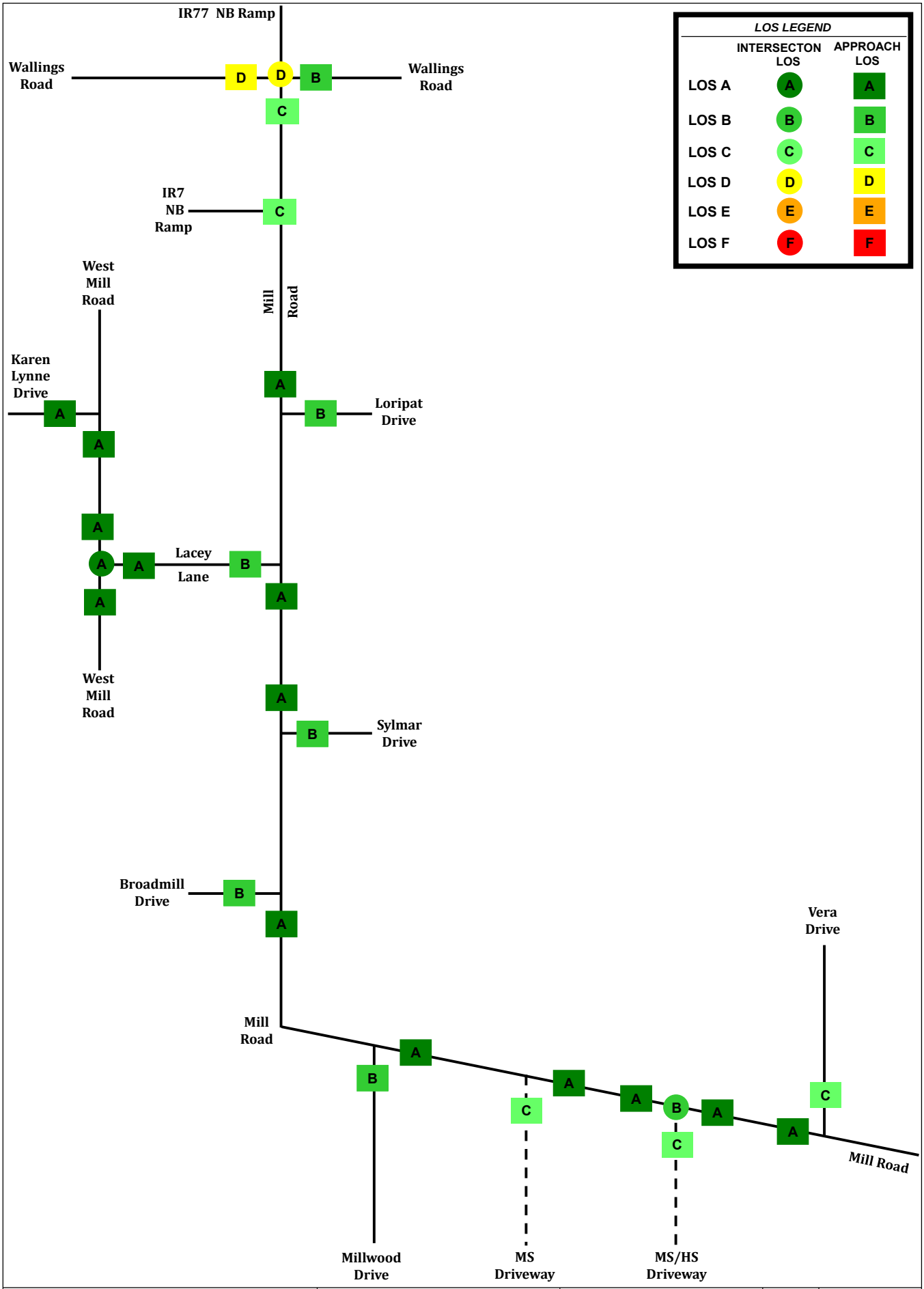
TMS Engineers, Inc. Transportation Management Services 2112 Case Parkway S., Unit 7, Twinsburg, Ohio 44087 www.TMSEngineers.com	Mill Road Corridor Study Broadview Heights, Ohio	2024 AM Peak Hour Levels-of-Service	NORTH NOT TO SCALE	Figure: 4.1 Appendix: A



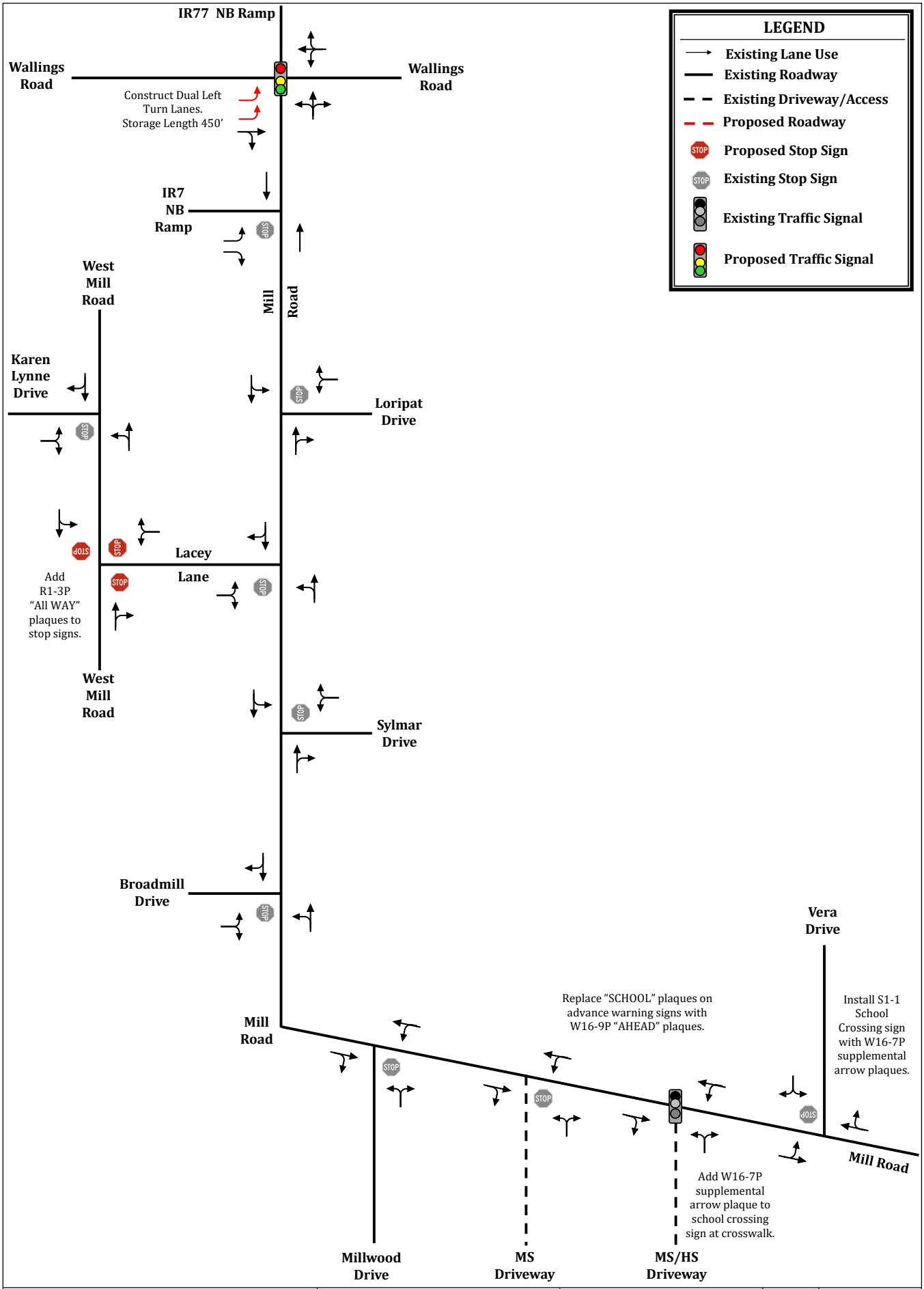
TMS Engineers, Inc. Transportation Management Services 2112 Case Parkway S., Unit 7, Twinsburg, Ohio 44087 www.TMSEngineers.com	Mill Road Corridor Study Broadview Heights, Ohio	2024 PM Peak Hour Levels-of-Service	NORTH NOT TO SCALE	Figure: 4.2 Appendix: A



TMS Engineers, Inc. Transportation Management Services 2112 Case Parkway S., Unit 7, Twinsburg, Ohio 44087 www.TMSEngineers.com	Mill Road Corridor Study Broadview Heights, Ohio	2044 AM Peak Hour Levels-of-Service	NORTH NOT TO SCALE	Figure: 4.3 Appendix: A



TMS Engineers, Inc. Transportation Management Services 2112 Case Parkway S., Unit 7, Twinsburg, Ohio 44087 www.TMSEngineers.com	Mill Road Corridor Study Broadview Heights, Ohio	2044 PM Peak Hour Levels-of-Service	NORTH NOT TO SCALE	Figure: 4.4 Appendix: A



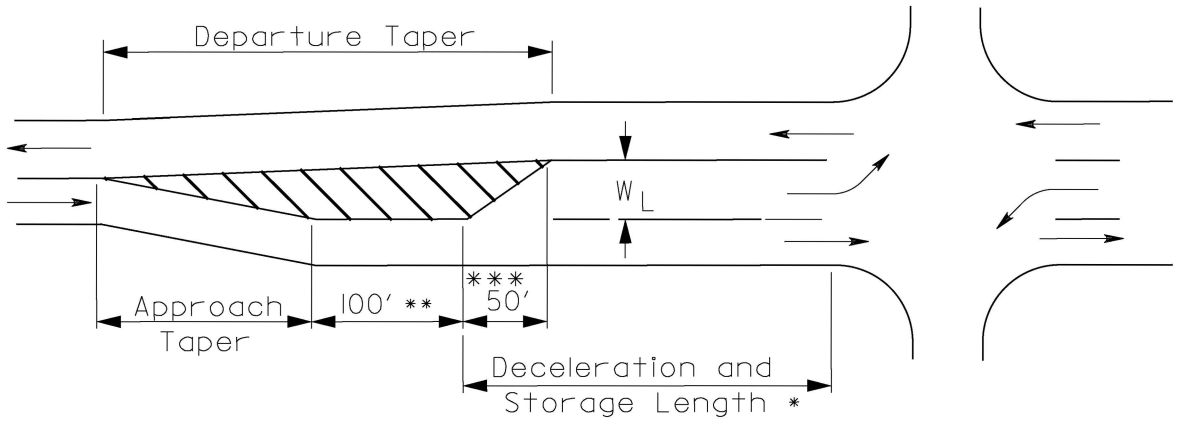
TMS Engineers, Inc. Transportation Management Services 2112 Case Parkway S., Unit 7, Twinsburg, Ohio 44087 www.TMSEngineers.com	Mill Road Corridor Study Broadview Heights, Ohio	Recommended Lane Use & Traffic Control	NORTH NOT TO SCALE	Figure: 7.1 Appendix: A

Appendix B
ODOT Turn Lane Design Criteria

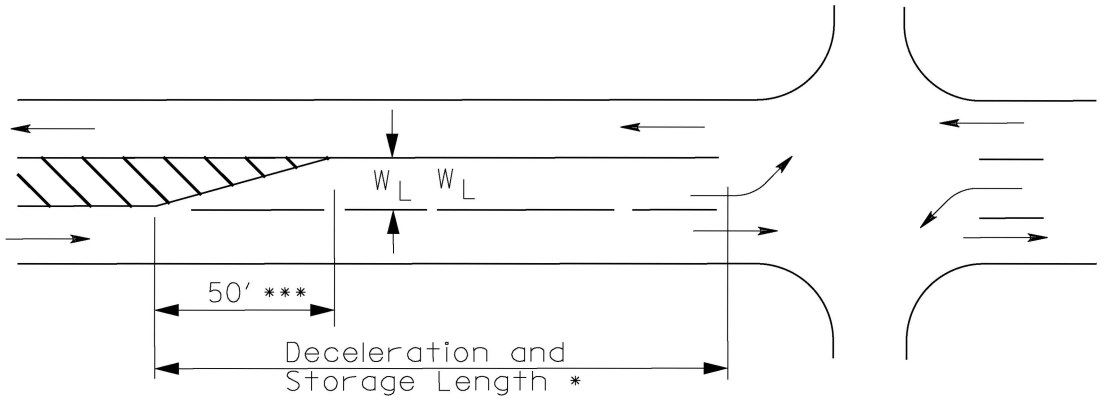
TURNING LANE DESIGN

401-7

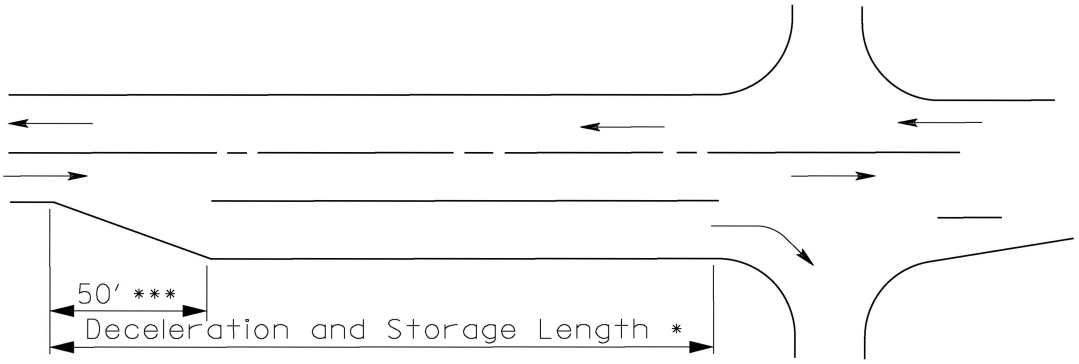
REFERENCE SECTIONS
401.6.1, 401.6.3



LEFT TURN LANE - NO MEDIAN OR MEDIAN WIDTH < W_L



LEFT TURN LANE - MEDIAN WIDTH >= W_L



RIGHT TURN LANE

* See **Figures 401-9 and 401-10** to compute length.

** May be reduced or eliminated in urban areas if intersection spacing or storage is constraining

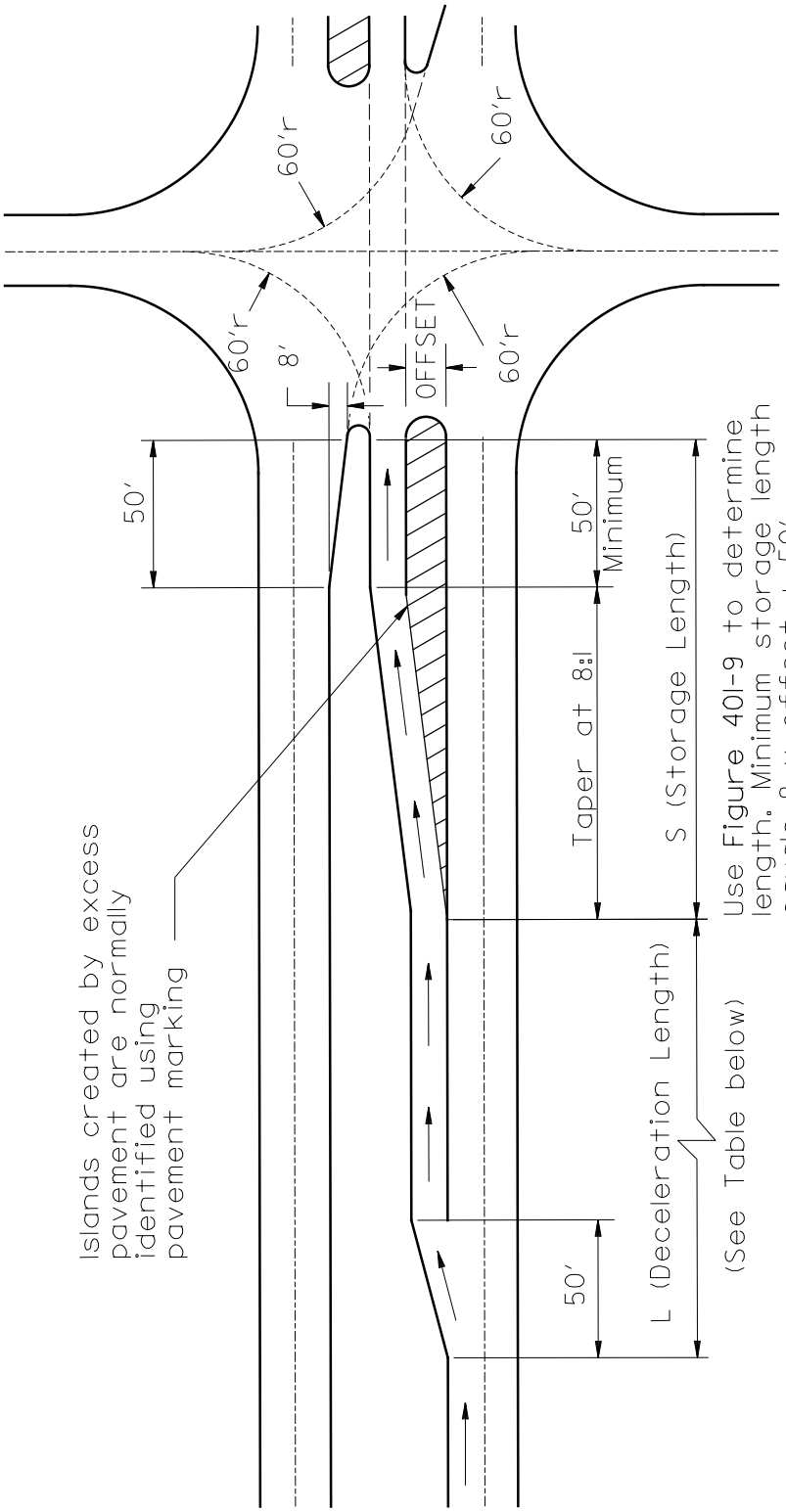
*** Diverging taper

W_L = Turn Lane Width

OFFSET LEFT TURN LANE

401-8

REFERENCE SECTIONS
401.6.1, 401.6.3



Design Speed	L
40 mph	125'
45 mph	175'
50 mph	225'
55 mph	285'
60 mph	345'
65 mph	405'

BASIS FOR COMPUTING LENGTH OF TURN LANES

401-9

REFERENCE SECTIONS 401.6.1 & 401.6.3

Type of Traffic Control	Design Speed		
	30-35	40-65	
	Turn Demand Volume		
	All	Low*	High
Signalized	A	B or C**	B or C**
Unsignalized Stopped Crossroad	A	A	A
Unsignalized Through Road	A	B	B or C**

* Low is considered 10% or less of approach traffic volume

** Whichever is greater

CONDITION A	STORAGE ONLY
Length = 50' (diverging taper) + Storage Length (Figure 401-10)	

CONDITION B	HIGH SPEED DECELERATION ONLY
Design Speed	Length (including 50' Diverging Taper)
40	125
45	175
50	225
55	285
60	345
65	405

CONDITION C	MODERATE SPEED DECELERATION AND STORAGE
Design Speed	Length (including 50' Diverging Taper)
40	115 + Storage Length (Figure 401-10)
45	125 "
50	145 "
55	165 "
60	185 "
65	205 "

For explanation, see Turn Lane Design Example

STORAGE LENGTH AT INTERSECTIONS

401-10

REFERENCE SECTIONS 401.6.1 & 401.6.3

* AVERAGE NO. OF VEHICLES/CYCLE	REQUIRED LENGTH (FT.)
1	50
2	100
3	150
4	175
5	200
6	250
7	275
8	325
9	350
10	375
11	400
12	450
13	475
14	500
15	525
16	550

* AVERAGE NO. OF VEHICLES/CYCLE	REQUIRED LENGTH (FT.)
17	600
18	625
19	650
20	675
21	725
22	750
23	775
24	800
25	825
30	975
35	1125
40	1250
45	1400
50	1550
55	1700
60	1850

$$\text{* AVERAGE VEHICLES PER CYCLE} = \frac{\text{DHV (TURNING LANE)}}{\text{CYCLES/HOUR}}$$

IF CYCLES ARE UNKNOWN ASSUME:

UNSIGNALIZED OR 2 PHASE = 60 CYCLES/HOUR

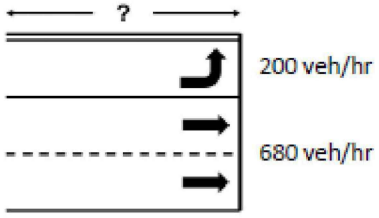
3 PHASE = 40 CYCLES/HOUR

4 PHASE = 30 CYCLES/HOUR

Example - Turn Lane Design Using Figures 401-9 and 401-10

Problem
Calculate the length of an exclusive left turn lane.

Traffic Control: **Signalized**
Design Speed: **55 mph**
Cycle Length: **90 sec**



Determine Storage and Turn Lane Lengths

Turn Lane Demand (High/Low) = $\frac{\left(200\frac{veh}{hr}\right)}{200\frac{veh}{hr}+680\frac{veh}{hr}}$ = 23% = **High Demand**

Refer to the matrix in **Figure 401-9.**

For Signalized, 55 mph, High Demand, use Method B or C, whichever is greater.

Method B - For 55 mph, a **285'** turn lane length is required (235' storage + 50' taper).

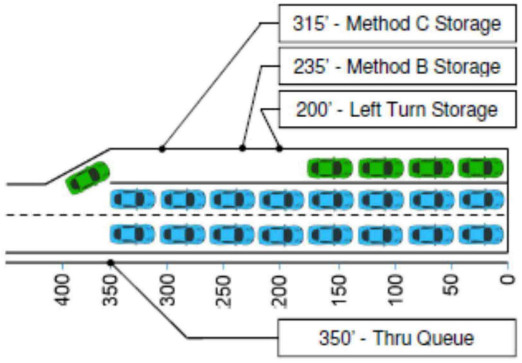
Method C - For 55 mph, 165' + calculated storage length in **Figure 401-10.**

Average Vehicles per Cycle = $\frac{\left(200\frac{veh}{hr}\right)*\left(90\frac{sec}{cyc}\right)}{3600\ sec/hr}$ = 5 veh/cyc → 200'

Total Length = 165' + 200' = **365'** (315' storage + 50' taper)

Method C = 365' > Method B = 285'

Use Method C



Check Length for Thru-Block

Refer to **Figure 401-10** to calculate thru lane(s) queue distance.

680 veh/hr/2 lanes = 340 veh/hr/ln

Average Vehicles per Cycle = $\frac{\left(340\frac{veh}{hr}\right)*\left(90\frac{sec}{cyc}\right)}{3600\ sec/hr}$ = 9 veh/cyc/ln → **350 ft/ln**

Thru Block = **350'** > Method C Storage = **315' → Turn Lane Blocked**

Use **350'** storage + **50'** taper = **400' Turn Lane Length**

Appendix C
Traffic Count Data

VEHICULAR TRAFFIC COUNT SUMMARY

Municipality: Broadview Heights **At Intersection of:** Mill Road **and** East Wallings Road

Date: 1/31/2023 **Day:** Tue. **Comments:** **Project:** 22-156

Weather: Snow **Recorder(s):** JMC **Data entry by:** JJO **Date entered:** Feb. 1, 2023 Mill Rd & E.Wallings Rd 013123

TIME BEGINS	FROM NORTH						Mill Rd. FROM SOUTH						TOTAL NORTH SOUTH	E.Wallings Rd. FROM EAST						E.Wallings Rd. FROM WEST						TOTAL EAST WEST	TOTAL ALL DIREC.	PEAK HOUR FACTOR			
	Left	Thru	Right	Total	Trk	Bus	Left	Thru	Right	Total	Trk	Bus		Left	Thru	Right	Total	Trk	Bus	Left	Thru	Right	Total	Trk	Bus			North	South	East	West
06:00																														
07:00							126	111	47	284	4	14	284	16	68	170	254	1	3	635	130	76	841	6	5	1095	1379	0.000	0.717	0.847	0.914
08:00							84	91	32	207	2	1	207	5	56	154	215	4	2	580	94	35	709	5	3	924	1131	0.000	0.877	0.911	0.909
09:00							71	53	44	168	6	8	168	5	41	91	137	4	2	303	69	19	391	2	3	528	696	0.000	0.750	0.926	0.873
10:00																														
11:00							72	38	43	153	1	4	153	8	77	66	151	2	10	166	141	30	337	6	5	488	641	0.000	0.736	0.878	0.878
12:00							82	27	37	146	2	0	146	6	77	79	162	7	1	172	132	34	338	7	0	500	646	0.000	0.849	0.880	0.909
1:00																														
2:00							135	42	25	202	3	2	202	10	121	92	223	0	6	169	131	52	352	4	3	575	777		0.935	1.593	0.989
3:00							273	69	32	374	1	10	374	9	108	89	206	4	2	251	208	67	526	13	3	732	1106	0.000	0.766	0.792	0.756
4:00							202	38	41	281	1	2	281	7	117	74	198	0	2	255	281	123	659	5	2	857	1138	0.000	0.889	0.811	0.941
5:00							263	69	47	379	2	0	379	12	114	87	213	1	0	271	261	95	627	1	2	840	1219	0.000	0.790	0.903	0.804
6:00																														
7:00																														
8:00																														
9:00																														
TOTALS							1308	538	348	2194	22	41	2194	78	779	902	1759	23	28	2802	1447	531	4780	49	26	6539	8733				
ADT							1799	740	479	3017	2.9%		3017	108	1080	1250	2438	2.9%		3883	2005	736	6624	1.6%		9062	12079				

N Leg Hourly Factor:	0.00	E Leg Hourly Factor:	1.57
S Leg Hourly Factor:	1.56	W leg Hourly Factor:	1.57
N Leg Monthly Factor:	0.00	E Leg Monthly Factor:	0.88
S Leg Monthly Factor:	0.88	W Leg Monthly Factor:	0.88

N Leg Combined Factor:		E Leg Combined Factor:	1.39
S Leg Combined Factor:	1.38	W Leg Combined Factor:	1.39

TMS ENGINEERS, INC.

2112 Case Parkway South #7

Twinsburg, Ohio 44087

(330) 686-6402 FAX: (330) 686-6417

Figure #:

Page #:

TMS Engineers, Inc.

2112 Case Parkway South #7
Twinsburg, Ohio 44087
Transportation Manangement Services

City: Broadview Heights
Intersection: Mill Rd & E.Wallings Rd
Counter: JMC
Day of the Week: Tuesday

File Name : mill rd freeway entrance e wallings jmc 13123 broadview hts
Site Code : 00000000
Start Date : 1/31/2023
Page No : 1

Groups Printed- Cars - Trucks - Buses

	From North					EAST WALLINGS ROAD From East					MILL ROAD From South					EAST WALLINGS ROAD From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	0	0	0	0	0	40	7	2	0	49	6	19	9	0	34	27	26	154	0	207	290
07:15 AM	0	0	0	0	0	38	8	11	1	58	16	28	22	0	66	38	38	149	0	225	349
07:30 AM	0	0	0	0	0	46	28	1	0	75	19	27	39	0	85	6	29	195	0	230	390
07:45 AM	0	0	0	0	0	46	25	2	1	74	6	37	56	0	99	5	37	137	0	179	352
Total	0	0	0	0	0	170	68	16	2	256	47	111	126	0	284	76	130	635	0	841	1381
08:00 AM	0	0	0	0	0	45	10	1	0	56	5	31	23	0	59	7	21	165	0	193	308
08:15 AM	0	0	0	0	0	28	16	1	0	45	10	18	23	0	51	8	23	164	0	195	291
08:30 AM	0	0	0	0	0	38	21	0	0	59	10	23	16	0	49	14	28	142	0	184	292
08:45 AM	0	0	0	0	0	43	9	3	0	55	7	19	22	0	48	6	22	109	0	137	240
Total	0	0	0	0	0	154	56	5	0	215	32	91	84	0	207	35	94	580	0	709	1131
09:00 AM	0	0	0	0	0	20	9	2	0	31	21	16	19	0	56	6	17	73	0	96	183
09:15 AM	0	0	0	0	0	25	12	0	0	37	8	17	17	0	42	6	21	85	0	112	191
09:30 AM	0	0	0	0	0	24	8	3	0	35	10	10	15	0	35	5	9	78	0	92	162
09:45 AM	0	0	0	0	0	22	12	0	0	34	5	10	20	0	35	2	22	67	0	91	160
Total	0	0	0	0	0	91	41	5	0	137	44	53	71	0	168	19	69	303	0	391	696
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	0	13	25	5	0	43	18	14	20	0	52	7	41	48	0	96	191
11:15 AM	0	0	0	0	0	20	18	1	0	39	17	8	15	0	40	8	38	38	0	84	163
11:30 AM	0	0	0	0	0	19	20	2	0	41	4	3	16	0	23	6	31	37	0	74	138
11:45 AM	0	0	0	0	0	14	14	0	0	28	4	13	21	0	38	9	31	43	0	83	149
Total	0	0	0	0	0	66	77	8	0	151	43	38	72	0	153	30	141	166	0	337	641
12:00 PM	0	0	0	0	0	21	24	1	0	46	8	6	23	0	37	9	27	37	0	73	156
12:15 PM	0	0	0	0	0	22	19	1	0	42	9	11	23	0	43	9	39	45	0	93	178
12:30 PM	0	0	0	0	0	15	16	0	0	31	11	7	21	0	39	7	36	37	0	80	150
12:45 PM	0	0	0	0	0	21	18	4	0	43	9	3	15	0	27	9	30	53	0	92	162
Total	0	0	0	0	0	79	77	6	0	162	37	27	82	0	146	34	132	172	0	338	646

TMS Engineers, Inc.

2112 Case Parkway South #7
Twinsburg, Ohio 44087
Transportation Manangement Services

File Name : mill rd freeway entrance e wallings jmc 13123 broadview hts
Site Code : 00000000
Start Date : 1/31/2023
Page No : 2

Groups Printed- Cars - Trucks - Buses

	From North					EAST WALLINGS ROAD From East					MILL ROAD From South					EAST WALLINGS ROAD From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00 PM	0	0	0	0	0	21	13	1	0	35	4	15	35	0	54	19	29	41	0	89	178
02:15 PM	0	0	0	0	0	29	22	3	0	54	2	2	16	0	20	7	36	39	0	82	156
02:30 PM	0	0	0	0	0	26	57	4	0	87	8	9	21	0	38	11	33	51	0	95	220
02:45 PM	0	0	0	0	0	16	29	2	0	47	11	16	63	0	90	15	33	38	0	86	223
Total	0	0	0	0	0	92	121	10	0	223	25	42	135	0	202	52	131	169	0	352	777
03:00 PM	0	0	0	0	0	38	27	0	0	65	10	20	92	0	122	9	41	56	0	106	293
03:15 PM	0	0	0	0	0	19	35	1	0	55	5	18	53	0	76	16	50	47	0	113	244
03:30 PM	0	0	0	0	0	14	24	5	0	43	8	22	72	0	102	23	46	64	0	133	278
03:45 PM	0	0	0	0	0	18	22	3	0	43	9	9	56	0	74	19	71	84	0	174	291
Total	0	0	0	0	0	89	108	9	0	206	32	69	273	0	374	67	208	251	0	526	1106
04:00 PM	0	0	0	0	0	13	31	1	0	45	11	13	48	0	72	31	78	59	0	168	285
04:15 PM	0	0	0	0	0	18	29	0	0	47	10	8	50	0	68	33	64	62	0	159	274
04:30 PM	0	0	0	0	0	27	28	6	0	61	8	13	58	0	79	26	68	63	0	157	297
04:45 PM	0	0	0	0	0	16	29	0	0	45	12	4	46	0	62	33	71	71	0	175	282
Total	0	0	0	0	0	74	117	7	0	198	41	38	202	0	281	123	281	255	0	659	1138
05:00 PM	0	0	0	0	0	19	26	2	0	47	8	16	71	0	95	18	76	67	0	161	303
05:15 PM	0	0	0	0	0	17	36	3	0	56	10	19	60	0	89	29	53	65	0	147	292
05:30 PM	0	0	0	0	0	27	26	6	0	59	11	23	86	0	120	21	60	43	0	124	303
05:45 PM	0	0	0	0	0	24	26	1	0	51	18	11	46	0	75	27	72	96	0	195	321
Total	0	0	0	0	0	87	114	12	0	213	47	69	263	0	379	95	261	271	0	627	1219
Grand Total	0	0	0	0	0	902	779	78	2	1761	348	538	1308	0	2194	531	1447	2802	0	4780	8735
Apprch %	0	0	0	0		51.2	44.2	4.4	0.1		15.9	24.5	59.6	0		11.1	30.3	58.6	0		
Total %	0	0	0	0	0	10.3	8.9	0.9	0	20.2	4	6.2	15	0	25.1	6.1	16.6	32.1	0	54.7	
Cars	0	0	0	0	0	885	753	70	2	1710	329	532	1270	0	2131	524	1417	2764	0	4705	8546
% Cars	0	0	0	0	0	98.1	96.7	89.7	100	97.1	94.5	98.9	97.1	0	97.1	98.7	97.9	98.6	0	98.4	97.8
Trucks	0	0	0	0	0	10	9	4	0	23	4	5	13	0	22	3	16	30	0	49	94
% Trucks	0	0	0	0	0	1.1	1.2	5.1	0	1.3	1.1	0.9	1	0	1	0.6	1.1	1.1	0	1	1.1
Buses	0	0	0	0	0	7	17	4	0	28	15	1	25	0	41	4	14	8	0	26	95
% Buses	0	0	0	0	0	0.8	2.2	5.1	0	1.6	4.3	0.2	1.9	0	1.9	0.8	1	0.3	0	0.5	1.1

TMS Engineers, Inc.

2112 Case Parkway South #7
Twinsburg, Ohio 44087
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File Name : mill rd freeway entrance e wallings jmc 13123 broadview hts
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Page No : 3

	From North					EAST WALLINGS ROAD From East					MILL ROAD From South					EAST WALLINGS ROAD From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	0	0	0	0	40	7	2	0	49	6	19	9	0	34	27	26	154	0	207	290
07:15 AM	0	0	0	0	0	38	8	**11**	**1**	58	16	28	22	0	66	**38**	**38**	149	0	225	349
07:30 AM	0	0	0	0	0	**46**	**28**	1	0	**75**	**19**	27	39	0	85	6	29	**195**	0	**230**	**390**
07:45 AM	0	0	0	0	0	46	25	2	1	74	6	**37**	**56**	0	**99**	5	37	137	0	179	352
Total Volume	0	0	0	0	0	170	68	16	2	256	47	111	126	0	284	76	130	635	0	841	1381
% App. Total	0	0	0	0		66.4	26.6	6.2	0.8		16.5	39.1	44.4	0		9	15.5	75.5	0		
PHF	.000	.000	.000	.000	.000	.924	.607	.364	.500	.853	.618	.750	.563	.000	.717	.500	.855	.814	.000	.914	.885
Cars	0	0	0	0	0	170	64	16	2	252	43	109	114	0	266	75	123	632	0	830	1348
% Cars	0	0	0	0	0	100	94.1	100	100	98.4	91.5	98.2	90.5	0	93.7	98.7	94.6	99.5	0	98.7	97.6
Trucks	0	0	0	0	0	0	1	0	0	1	0	2	2	0	4	0	4	2	0	6	11
% Trucks	0	0	0	0	0	0	1.5	0	0	0.4	0	1.8	1.6	0	1.4	0	3.1	0.3	0	0.7	0.8
Buses	0	0	0	0	0	0	3	0	0	3	4	0	10	0	14	1	3	1	0	5	22
% Buses	0	0	0	0	0	0	4.4	0	0	1.2	8.5	0	7.9	0	4.9	1.3	2.3	0.2	0	0.6	1.6
Peak Hour Analysis From 02:45 PM to 03:30 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 02:45 PM																					
02:45 PM	0	0	0	0	0	16	29	2	0	47	**11**	16	63	0	90	15	33	38	0	86	223
03:00 PM	0	0	0	0	0	**38**	27	0	0	**65**	10	20	**92**	0	**122**	9	41	56	0	106	**293**
03:15 PM	0	0	0	0	0	19	**35**	1	0	55	5	18	53	0	76	16	**50**	47	0	113	244
03:30 PM	0	0	0	0	0	14	24	**5**	0	43	8	**22**	72	0	102	**23**	46	**64**	0	**133**	278
Total Volume	0	0	0	0	0	87	115	8	0	210	34	76	280	0	390	63	170	205	0	438	1038
% App. Total	0	0	0	0		41.4	54.8	3.8	0		8.7	19.5	71.8	0		14.4	38.8	46.8	0		
PHF	.000	.000	.000	.000	.000	.572	.821	.400	.000	.808	.773	.864	.761	.000	.799	.685	.850	.801	.000	.823	.886
Cars	0	0	0	0	0	85	114	8	0	207	34	76	270	0	380	62	166	198	0	426	1013
% Cars	0	0	0	0	0	97.7	99.1	100	0	98.6	100	100	96.4	0	97.4	98.4	97.6	96.6	0	97.3	97.6
Trucks	0	0	0	0	0	2	0	0	0	2	0	0	1	0	1	1	3	5	0	9	12
% Trucks	0	0	0	0	0	2.3	0	0	0	1.0	0	0	0.4	0	0.3	1.6	1.8	2.4	0	2.1	1.2
Buses	0	0	0	0	0	0	1	0	0	1	0	0	9	0	9	0	1	2	0	3	13
% Buses	0	0	0	0	0	0	0.9	0	0	0.5	0	0	3.2	0	2.3	0	0.6	1.0	0	0.7	1.3
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	0	0	0	0	0	19	26	2	0	47	8	16	71	0	95	18	**76**	67	0	161	303
05:15 PM	0	0	0	0	0	17	**36**	3	0	56	10	19	60	0	89	**29**	53	65	0	147	292
05:30 PM	0	0	0	0	0	**27**	26	**6**	0	**59**	11	**23**	**86**	0	**120**	21	60	43	0	124	303
05:45 PM	0	0	0	0	0	24	26	1	0	51	**18**	11	46	0	75	27	72	**96**	0	**195**	**321**
Total Volume	0	0	0	0	0	87	114	12	0	213	47	69	263	0	379	95	261	271	0	627	1219
% App. Total	0	0	0	0		40.8	53.5	5.6	0		12.4	18.2	69.4	0		15.2	41.6	43.2	0		
PHF	.000	.000	.000	.000	.000	.806	.792	.500	.000	.903	.653	.750	.765	.000	.790	.819	.859	.706	.000	.804	.949
Cars	0	0	0	0	0	86	114	12	0	212	47	69	261	0	377	93	261	270	0	624	1213
% Cars	0	0	0	0	0	98.9	100	100	0	99.5	100	100	99.2	0	99.5	97.9	100	99.6	0	99.5	99.5
Trucks	0	0	0	0	0	1	0	0	0	1	0	0	2	0	2	0	0	1	0	1	4
% Trucks	0	0	0	0	0	1.1	0	0	0	0.5	0	0	0.8	0	0.5	0	0	0.4	0	0.2	0.3
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.1	0	0	0	0.3	0.2

VEHICULAR TRAFFIC COUNT SUMMARY

Municipality: Broadview Heights **At Intersection of:** Mill Road **and** I-77 NB Ramp

Date: 3/9/2023 **Day:** Thu. **Comments:** **Project:** 22-156

Weather: Clear **Recorder(s):** RJS **Data entry by:** JJO **Date entered:** Mar. 10, 2023 Mill Rd & I-77 NB Ramp 030923

TIME BEGINS	Mill Rd. FROM NORTH						Mill Rd. FROM SOUTH						TOTAL NORTH SOUTH	FROM EAST						I-77 NB Exit FROM WEST						TOTAL EAST WEST	TOTAL ALL DIREC.	PEAK HOUR FACTOR			
	Left	Thru	Right	Total	Trk	Bus	Left	Thru	Right	Total	Trk	Bus		Left	Thru	Right	Total	Trk	Bus	Left	Thru	Right	Total	Trk	Bus			North	South	East	West
06:00																														
07:00	0	112	0	112	0	2	0	210	0	210	3	14	322							72	0	120	192	4	8	192	514	0.651	0.597	0.000	0.578
08:00	0	39	0	39	0	0	0	140	0	140	4	1	179							106	0	29	135	6	0	135	314	0.650	0.625	0.000	0.912
09:00	0	37	0	37	0	0	0	95	0	95	0	0	132							109	0	15	124	4	0	124	256	0.661	0.720	0.000	0.816
10:00																														
11:00	0	52	0	52	1	2	0	85	0	85	1	3	137							76	0	19	95	0	2	95	232	0.722	0.817	0.000	0.819
12:00	0	57	0	57	3	0	0	59	0	59	2	0	116							70	0	15	85	2	0	85	201	0.792	0.819	0.000	0.733
1:00	0	51	0	51	3	0	0	75	0	75	5	1	126							72	0	15	87	3	1	87	213	0.797	0.815	0.000	0.806
2:00																														
3:00	0	76	0	76	0	0	0	219	0	219	3	7	295							133	0	39	172	3	1	172	467	0.905	0.702	0.000	0.915
4:00	0	113	0	113	4	1	0	128	0	128	1	0	241							205	0	49	254	4	0	254	495	0.706	0.627	0.000	0.738
5:00	0	127	0	127	0	0	0	157	0	157	2	0	284							243	0	81	324	1	0	324	608	0.858	0.701	0.000	0.844
6:00																														
7:00																														
8:00																														
9:00																														
TOTALS	0	664	0	664	11	5	0	1168	0	1168	21	26	1832							1086	0	382	1468	27	12	1468	3300				
ADT	0	1000	0	1000	2.4%		0	1759	0	1759	4.0%		2760							1712	0	602	2314	2.7%		2314	5074				

N Leg Hourly Factor:	1.56	E Leg Hourly Factor:	0.00
S Leg Hourly Factor:	1.56	W leg Hourly Factor:	1.68
N Leg Monthly Factor:	0.96	E Leg Monthly Factor:	0.00
S Leg Monthly Factor:	0.96	W Leg Monthly Factor:	0.94

N Leg Combined Factor:	1.51	E Leg Combined Factor:	
S Leg Combined Factor:	1.51	W Leg Combined Factor:	1.58

TMS ENGINEERS, INC.

2112 Case Parkway South #7

Twinsburg, Ohio 44087

(330) 686-6402 FAX: (330) 686-6417

Figure #:

Page #:

TMS Engineers, Inc.

2112 Case Parkway South #7
Twinsburg, Ohio 44087
Transportation Manangement Services

City: Broadview Heights
Intersection: Mill Rd & I-77 NB Ramps
Counter: RJS
Day of the Week: Thursday

File Name : Mill Rd & I-77 NB Ramps 030923 RJS
Site Code : 00000000
Start Date : 3/9/2023
Page No : 1

Groups Printed- Cars - Trucks - Buses

	MILL ROAD From North					From East					MILL ROAD From South					I-77 NB EXIT From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	0	18	0	0	18	0	0	0	0	0	0	17	0	0	17	16	0	7	0	23	58
07:15 AM	0	41	0	0	41	0	0	0	0	0	0	37	0	0	37	34	0	13	0	47	125
07:30 AM	0	43	0	0	43	0	0	0	0	0	0	68	0	0	68	53	0	30	0	83	194
07:45 AM	0	10	0	0	10	0	0	0	0	0	0	88	0	0	88	17	0	22	0	39	137
Total	0	112	0	0	112	0	0	0	0	0	0	210	0	0	210	120	0	72	0	192	514
08:00 AM	0	4	0	0	4	0	0	0	0	0	0	56	0	0	56	3	0	32	0	35	95
08:15 AM	0	15	0	0	15	0	0	0	0	0	0	20	0	0	20	6	0	23	0	29	64
08:30 AM	0	8	0	0	8	0	0	0	0	0	0	34	0	0	34	12	0	22	0	34	76
08:45 AM	0	12	0	0	12	0	0	0	0	0	0	30	0	0	30	8	0	29	0	37	79
Total	0	39	0	0	39	0	0	0	0	0	0	140	0	0	140	29	0	106	0	135	314
09:00 AM	0	14	0	0	14	0	0	0	0	0	0	25	0	0	25	5	0	27	0	32	71
09:15 AM	0	5	0	0	5	0	0	0	0	0	0	17	0	0	17	4	0	34	0	38	60
09:30 AM	0	7	0	0	7	0	0	0	0	0	0	33	0	0	33	3	0	28	0	31	71
09:45 AM	0	11	0	0	11	0	0	0	0	0	0	20	0	0	20	3	0	20	0	23	54
Total	0	37	0	0	37	0	0	0	0	0	0	95	0	0	95	15	0	109	0	124	256
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	0	14	0	0	14	0	0	0	0	0	0	26	0	0	26	3	0	26	0	29	69
11:15 AM	0	11	0	0	11	0	0	0	0	0	0	22	0	0	22	2	0	17	0	19	52
11:30 AM	0	18	0	0	18	0	0	0	0	0	0	19	0	0	19	8	0	17	0	25	62
11:45 AM	0	9	0	0	9	0	0	0	0	0	0	18	0	0	18	6	0	16	0	22	49
Total	0	52	0	0	52	0	0	0	0	0	0	85	0	0	85	19	0	76	0	95	232
12:00 PM	0	13	0	0	13	0	0	0	0	0	0	12	0	0	12	3	0	26	0	29	54
12:15 PM	0	14	0	0	14	0	0	0	0	0	0	13	0	0	13	3	0	13	0	16	43
12:30 PM	0	12	0	0	12	0	0	0	0	0	0	16	0	0	16	8	0	13	0	21	49
12:45 PM	0	18	0	0	18	0	0	0	0	0	0	18	0	0	18	1	0	18	0	19	55
Total	0	57	0	0	57	0	0	0	0	0	0	59	0	0	59	15	0	70	0	85	201

TMS Engineers, Inc.

2112 Case Parkway South #7
Twinsburg, Ohio 44087
Transportation Manangement Services

File Name : Mill Rd & I-77 NB Ramps 030923 RJS
Site Code : 00000000
Start Date : 3/9/2023
Page No : 2

Groups Printed- Cars - Trucks - Buses

	MILL ROAD From North					From East					MILL ROAD From South					I-77 NB EXIT From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
01:00 PM	0	16	0	0	16	0	0	0	0	0	0	15	0	0	15	7	0	20	0	27	58
01:15 PM	0	10	0	0	10	0	0	0	0	0	0	16	0	0	16	3	0	19	0	22	48
01:30 PM	0	10	0	0	10	0	0	0	0	0	0	21	0	0	21	3	0	20	0	23	54
01:45 PM	0	15	0	0	15	0	0	0	0	0	0	23	0	0	23	2	0	13	0	15	53
Total	0	51	0	0	51	0	0	0	0	0	0	75	0	0	75	15	0	72	0	87	213
02:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00 PM	0	14	0	0	14	0	0	0	0	0	0	78	0	0	78	11	0	29	0	40	132
03:15 PM	0	21	0	0	21	0	0	0	0	0	0	63	0	0	63	4	0	35	0	39	123
03:30 PM	0	20	0	0	20	0	0	0	0	0	0	27	0	0	27	9	0	38	0	47	94
03:45 PM	0	21	0	0	21	0	0	0	0	0	0	51	0	0	51	15	0	31	0	46	118
Total	0	76	0	0	76	0	0	0	0	0	0	219	0	0	219	39	0	133	0	172	467
04:00 PM	0	18	0	0	18	0	0	0	0	0	0	25	0	0	25	12	0	37	0	49	92
04:15 PM	0	18	0	0	18	0	0	0	0	0	0	24	0	0	24	7	0	57	0	64	106
04:30 PM	0	40	0	0	40	0	0	0	0	0	0	28	0	0	28	17	0	69	0	86	154
04:45 PM	0	37	0	0	37	0	0	0	0	0	0	51	0	0	51	13	0	42	0	55	143
Total	0	113	0	0	113	0	0	0	0	0	0	128	0	0	128	49	0	205	0	254	495
05:00 PM	0	30	0	0	30	0	0	0	0	0	0	40	0	0	40	18	0	60	0	78	148
05:15 PM	0	24	0	0	24	0	0	0	0	0	0	56	0	0	56	22	0	74	0	96	176
05:30 PM	0	36	0	0	36	0	0	0	0	0	0	31	0	0	31	26	0	66	0	92	159
05:45 PM	0	37	0	0	37	0	0	0	0	0	0	30	0	0	30	15	0	43	0	58	125
Total	0	127	0	0	127	0	0	0	0	0	0	157	0	0	157	81	0	243	0	324	608
Grand Total	0	664	0	0	664	0	0	0	0	0	0	1168	0	0	1168	382	0	1086	0	1468	3300
Apprch %	0	100	0	0		0	0	0	0		0	100	0	0		26	0	74	0		
Total %	0	20.1	0	0	20.1	0	0	0	0	0	0	35.4	0	0	35.4	11.6	0	32.9	0	44.5	
Cars	0	648	0	0	648	0	0	0	0	0	0	1121	0	0	1121	369	0	1060	0	1429	3198
% Cars	0	97.6	0	0	97.6	0	0	0	0	0	0	96	0	0	96	96.6	0	97.6	0	97.3	96.9
Trucks	0	11	0	0	11	0	0	0	0	0	0	21	0	0	21	6	0	21	0	27	59
% Trucks	0	1.7	0	0	1.7	0	0	0	0	0	0	1.8	0	0	1.8	1.6	0	1.9	0	1.8	1.8
Buses	0	5	0	0	5	0	0	0	0	0	0	26	0	0	26	7	0	5	0	12	43
% Buses	0	0.8	0	0	0.8	0	0	0	0	0	0	2.2	0	0	2.2	1.8	0	0.5	0	0.8	1.3

TMS Engineers, Inc.

2112 Case Parkway South #7
Twinsburg, Ohio 44087
Transportation Manangement Services

File Name : Mill Rd & I-77 NB Ramps 030923 RJS
Site Code : 00000000
Start Date : 3/9/2023
Page No : 3

	MILL ROAD From North					From East					MILL ROAD From South					I-77 NB EXIT From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:00 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	0	41	0	0	41	0	0	0	0	0	0	37	0	0	37	34	0	13	0	47	125
07:30 AM	0	**43**	0	0	**43**	0	0	0	0	0	0	68	0	0	68	**53**	0	30	0	**83**	**194**
07:45 AM	0	10	0	0	10	0	0	0	0	0	0	**88**	0	0	**88**	17	0	22	0	39	137
08:00 AM	0	4	0	0	4	0	0	0	0	0	0	56	0	0	56	3	0	**32**	0	35	95
Total Volume	0	98	0	0	98	0	0	0	0	0	0	249	0	0	249	107	0	97	0	204	551
% App. Total	0	100	0	0		0	0	0	0		0	100	0	0		52.5	0	47.5	0		
PHF	.000	.570	.000	.000	.570	.000	.000	.000	.000	.000	.000	.707	.000	.000	.707	.505	.000	.758	.000	.614	.710
Cars	0	96	0	0	96	0	0	0	0	0	0	232	0	0	232	100	0	93	0	193	521
% Cars	0	98.0	0	0	98.0	0	0	0	0	0	0	93.2	0	0	93.2	93.5	0	95.9	0	94.6	94.6
Trucks	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	2	0	1	0	3	7
% Trucks	0	0	0	0	0	0	0	0	0	0	0	1.6	0	0	1.6	1.9	0	1.0	0	1.5	1.3
Buses	0	2	0	0	2	0	0	0	0	0	0	13	0	0	13	5	0	3	0	8	23
% Buses	0	2.0	0	0	2.0	0	0	0	0	0	0	5.2	0	0	5.2	4.7	0	3.1	0	3.9	4.2
Peak Hour Analysis From 03:00 PM to 03:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:00 PM																					
03:00 PM	0	14	0	0	14	0	0	0	0	0	0	**78**	0	0	**78**	11	0	29	0	40	**132**
03:15 PM	0	**21**	0	0	**21**	0	0	0	0	0	0	63	0	0	63	4	0	35	0	39	123
03:30 PM	0	20	0	0	20	0	0	0	0	0	0	27	0	0	27	9	0	**38**	0	**47**	94
03:45 PM	0	21	0	0	21	0	0	0	0	0	0	51	0	0	51	**15**	0	31	0	46	118
Total Volume	0	76	0	0	76	0	0	0	0	0	0	219	0	0	219	39	0	133	0	172	467
% App. Total	0	100	0	0		0	0	0	0		0	100	0	0		22.7	0	77.3	0		
PHF	.000	.905	.000	.000	.905	.000	.000	.000	.000	.000	.000	.702	.000	.000	.702	.650	.000	.875	.000	.915	.884
Cars	0	76	0	0	76	0	0	0	0	0	0	209	0	0	209	37	0	131	0	168	453
% Cars	0	100	0	0	100	0	0	0	0	0	0	95.4	0	0	95.4	94.9	0	98.5	0	97.7	97.0
Trucks	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	1	0	2	0	3	6
% Trucks	0	0	0	0	0	0	0	0	0	0	0	1.4	0	0	1.4	2.6	0	1.5	0	1.7	1.3
Buses	0	0	0	0	0	0	0	0	0	0	0	7	0	0	7	1	0	0	0	1	8
% Buses	0	0	0	0	0	0	0	0	0	0	0	3.2	0	0	3.2	2.6	0	0	0	0.6	1.7
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	0	30	0	0	30	0	0	0	0	0	0	40	0	0	40	18	0	60	0	78	148
05:15 PM	0	24	0	0	24	0	0	0	0	0	0	**56**	0	0	**56**	22	0	**74**	0	**96**	**176**
05:30 PM	0	36	0	0	36	0	0	0	0	0	0	31	0	0	31	**26**	0	66	0	92	159
05:45 PM	0	**37**	0	0	**37**	0	0	0	0	0	0	30	0	0	30	15	0	43	0	58	125
Total Volume	0	127	0	0	127	0	0	0	0	0	0	157	0	0	157	81	0	243	0	324	608
% App. Total	0	100	0	0		0	0	0	0		0	100	0	0		25	0	75	0		
PHF	.000	.858	.000	.000	.858	.000	.000	.000	.000	.000	.000	.701	.000	.000	.701	.779	.000	.821	.000	.844	.864
Cars	0	127	0	0	127	0	0	0	0	0	0	155	0	0	155	81	0	242	0	323	605
% Cars	0	100	0	0	100	0	0	0	0	0	0	98.7	0	0	98.7	100	0	99.6	0	99.7	99.5
Trucks	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	1	0	1	3
% Trucks	0	0	0	0	0	0	0	0	0	0	0	1.3	0	0	1.3	0	0	0.4	0	0.3	0.5
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

VEHICULAR TRAFFIC COUNT SUMMARY

Municipality: Broadview Heights **At Intersection of:** Mill Road **and** Loripat Drive

Date: 1/12/2023 **Day:** Thu. **Comments:** **Project:** 22-156

Weather: Clear **Recorder(s):** JMC **Data entry by:** JJO **Date entered:** Jan. 13, 2023 Mill Rd s Loripat Dr 011223

TIME BEGINS	Mill Rd. FROM NORTH						Mill Rd. FROM SOUTH						TOTAL NORTH SOUTH	Loripat Dr. FROM EAST						FROM WEST						TOTAL EAST WEST	TOTAL ALL DIREC.	PEAK HOUR FACTOR			
	Left	Thru	Right	Total	Trk	Bus	Left	Thru	Right	Total	Trk	Bus		Left	Thru	Right	Total	Trk	Bus	Left	Thru	Right	Total	Trk	Bus			North	South	East	West
06:00																														
07:00	1	213	0	214	0	9	0	223	1	224	0	18	438	4	0	11	15	0	0							15	453	0.505	0.700	0.750	0.000
08:00	0	54	0	54	1	3	0	103	1	104	1	1	158	2	0	8	10	0	1							10	168	0.643	0.684	0.833	0.000
09:00	1	52	0	53	0	1	0	80	0	80	0	2	133	0	0	2	2	0	0							2	135	0.828	0.800	0.500	0.000
10:00																														
11:00	7	79	0	86	2	3	0	75	2	77	2	3	163	2	0	5	7	0	0							7	170	0.717	0.802	0.583	0.000
12:00	3	57	0	60	0	0	0	65	0	65	0	0	125	2	0	4	6	0	0							6	131	0.833	0.625	0.750	0.000
1:00																														
2:00	3	140	0	143	0	36	0	111	0	111	0	2	254	1	0	1	2	0	0							2	256	1.490	0.793	####	
3:00	4	77	0	81	3	1	0	181	6	187	3	8	268	2	0	4	6	0	0							6	274	0.698	0.615	0.500	0.000
4:00	7	124	0	131	0	1	0	98	3	101	0	1	232	2	0	2	4	0	0							4	236	0.762	0.902	1.000	0.000
5:00	6	169	0	175	0	0	0	129	1	130	2	1	305	0	0	5	5	1	0							5	310	0.911	0.833	0.625	0.000
6:00																														
7:00																														
8:00																														
9:00																														
TOTALS	32	965	0	997	6	54	0	1065	14	1079	8	36	2076	15	0	42	57	1	1							57	2133				
ADT	44	1327	0	1371	6.0%		0	1464	19	1484	4.1%		2855	21	0	58	78	3.5%								78	2933				

N Leg Hourly Factor:	1.56	E Leg Hourly Factor:	1.56
S Leg Hourly Factor:	1.56	W leg Hourly Factor:	0.00
N Leg Monthly Factor:	0.88	E Leg Monthly Factor:	0.88
S Leg Monthly Factor:	0.88	W Leg Monthly Factor:	0.00

N Leg Combined Factor:	1.38	E Leg Combined Factor:	1.38
S Leg Combined Factor:	1.38	W Leg Combined Factor:	

TMS ENGINEERS, INC.

2112 Case Parkway South #7

Twinsburg, Ohio 44087

(330) 686-6402 FAX: (330) 686-6417

Figure #:

Page #:

TMS Engineers, Inc.

2112 Case Parkway South #7
Twinsburg, Ohio 44087
Transportation Manangement Services

City: Broadview Heights
Intersection: Mill Rd & Loripat Dr
Counter: JMC
Day of the Week: Thursday

File Name : mills loripat broadview hts jmc 11223
Site Code : 00000000
Start Date : 1/12/2023
Page No : 1

Groups Printed- Cars - Trucks - Buses

	MILL ROAD From North					LORIPAT DRIVE From East					MILL ROAD From South					From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	0	58	0	0	58	3	0	0	0	3	0	29	0	0	29	0	0	0	0	0	90
07:15 AM	0	106	0	0	106	2	0	3	0	5	1	54	0	0	55	0	0	0	0	0	166
07:30 AM	0	32	1	0	33	4	0	1	0	5	0	80	0	0	80	0	0	0	0	0	118
07:45 AM	0	17	0	0	17	2	0	0	0	2	0	60	0	0	60	0	0	0	0	0	79
Total	0	213	1	0	214	11	0	4	0	15	1	223	0	0	224	0	0	0	0	0	453
08:00 AM	0	9	0	0	9	2	0	1	0	3	0	19	0	0	19	0	0	0	0	0	31
08:15 AM	0	13	0	0	13	2	0	1	0	3	1	26	0	0	27	0	0	0	0	0	43
08:30 AM	0	11	0	0	11	1	0	0	0	1	0	38	0	0	38	0	0	0	0	0	50
08:45 AM	0	21	0	0	21	3	0	0	0	3	0	20	0	0	20	0	0	0	0	0	44
Total	0	54	0	0	54	8	0	2	0	10	1	103	0	0	104	0	0	0	0	0	168
09:00 AM	0	14	0	0	14	1	0	0	0	1	0	19	0	0	19	0	0	0	0	0	34
09:15 AM	0	12	1	0	13	1	0	0	0	1	0	25	0	0	25	0	0	0	0	0	39
09:30 AM	0	16	0	0	16	0	0	0	0	0	0	15	0	0	15	0	0	0	0	0	31
09:45 AM	0	10	0	0	10	0	0	0	0	0	0	21	0	0	21	0	0	0	0	0	31
Total	0	52	1	0	53	2	0	0	0	2	0	80	0	0	80	0	0	0	0	0	135
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1
11:00 AM	0	16	2	0	18	1	0	0	0	1	1	23	0	0	24	0	0	0	0	0	43
11:15 AM	0	19	3	0	22	1	0	2	0	3	0	17	0	0	17	0	0	0	0	0	42
11:30 AM	0	29	1	0	30	2	0	0	0	2	0	16	0	0	16	0	0	0	0	0	48
11:45 AM	0	15	1	0	16	1	0	0	0	1	1	19	0	0	20	0	0	0	0	0	37
Total	0	79	7	0	86	5	0	2	0	7	2	75	0	0	77	0	0	0	0	0	170
12:00 PM	0	10	0	0	10	2	0	0	0	2	0	12	0	0	12	0	0	0	0	0	24
12:15 PM	0	17	0	0	17	0	0	1	0	1	0	11	0	0	11	0	0	0	0	0	29
12:30 PM	0	12	3	0	15	2	0	0	0	2	0	26	0	0	26	0	0	0	0	0	43
12:45 PM	0	18	0	0	18	0	0	1	0	1	0	16	0	0	16	0	0	0	0	0	35
Total	0	57	3	0	60	4	0	2	0	6	0	65	0	0	65	0	0	0	0	0	131

TMS Engineers, Inc.

2112 Case Parkway South #7
Twinsburg, Ohio 44087
Transportation Manangement Services

File Name : mills loripat broadview hts jmc 11223
Site Code : 00000000
Start Date : 1/12/2023
Page No : 2

Groups Printed- Cars - Trucks - Buses

	MILL ROAD From North					LORIPAT DRIVE From East					MILL ROAD From South					From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00 PM	0	23	1	0	24	0	0	0	0	0	0	35	0	0	35	0	0	0	0	0	59
02:15 PM	0	44	1	0	45	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0	53
02:30 PM	0	52	1	0	53	1	0	1	0	2	0	22	0	0	22	0	0	0	0	0	77
02:45 PM	0	21	0	0	21	0	0	0	0	0	0	46	0	0	46	0	0	0	0	0	67
Total	0	140	3	0	143	1	0	1	0	2	0	111	0	0	111	0	0	0	0	0	256
03:00 PM	0	16	0	0	16	1	0	0	0	1	1	75	0	0	76	0	0	0	0	0	93
03:15 PM	0	27	2	0	29	0	0	1	0	1	2	39	0	0	41	0	0	0	0	0	71
03:30 PM	0	17	0	0	17	1	0	0	0	1	0	41	0	0	41	0	0	0	0	0	59
03:45 PM	0	17	2	0	19	2	0	1	0	3	3	26	0	0	29	0	0	0	0	0	51
Total	0	77	4	0	81	4	0	2	0	6	6	181	0	0	187	0	0	0	0	0	274
04:00 PM	0	25	1	0	26	0	0	1	0	1	1	27	0	0	28	0	0	0	0	0	55
04:15 PM	0	23	0	0	23	1	0	0	0	1	1	25	0	0	26	0	0	0	0	0	50
04:30 PM	0	39	4	0	43	0	0	1	0	1	1	21	0	0	22	0	0	0	0	0	66
04:45 PM	0	37	2	0	39	1	0	0	0	1	0	25	0	0	25	0	0	0	0	0	65
Total	0	124	7	0	131	2	0	2	0	4	3	98	0	0	101	0	0	0	0	0	236
05:00 PM	0	43	1	0	44	0	0	0	0	0	0	39	0	0	39	0	0	0	0	0	83
05:15 PM	0	40	0	0	40	1	0	0	0	1	0	29	0	0	29	0	0	0	0	0	70
05:30 PM	0	43	5	0	48	2	0	0	0	2	0	28	0	0	28	0	0	0	0	0	78
05:45 PM	0	43	0	0	43	2	0	0	0	2	1	33	0	0	34	0	0	0	0	0	79
Total	0	169	6	0	175	5	0	0	0	5	1	129	0	0	130	0	0	0	0	0	310
Grand Total	0	965	32	0	997	42	0	15	1	58	14	1065	0	0	1079	0	0	0	0	0	2134
Apprch %	0	96.8	3.2	0		72.4	0	25.9	1.7		1.3	98.7	0	0		0	0	0	0		
Total %	0	45.2	1.5	0	46.7	2	0	0.7	0	2.7	0.7	49.9	0	0	50.6	0	0	0	0	0	
Cars	0	905	32	0	937	41	0	14	1	56	11	1024	0	0	1035	0	0	0	0	0	2028
% Cars	0	93.8	100	0	94	97.6	0	93.3	100	96.6	78.6	96.2	0	0	95.9	0	0	0	0	0	95
Trucks	0	6	0	0	6	1	0	0	0	1	2	6	0	0	8	0	0	0	0	0	15
% Trucks	0	0.6	0	0	0.6	2.4	0	0	0	1.7	14.3	0.6	0	0	0.7	0	0	0	0	0	0.7
Buses	0	54	0	0	54	0	0	1	0	1	1	35	0	0	36	0	0	0	0	0	91
% Buses	0	5.6	0	0	5.4	0	0	6.7	0	1.7	7.1	3.3	0	0	3.3	0	0	0	0	0	4.3

TMS Engineers, Inc.

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Transportation Manangement Services

File Name : mills loripat broadview hts jmc 11223
Site Code : 00000000
Start Date : 1/12/2023
Page No : 3

	MILL ROAD From North					LORIPAT DRIVE From East					MILL ROAD From South					From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	58	0	0	58	3	0	0	0	3	0	29	0	0	29	0	0	0	0	0	90
07:15 AM	0	**106**	0	0	**106**	2	0	**3**	0	**5**	**1**	54	0	0	55	0	0	0	0	0	**166**
07:30 AM	0	32	**1**	0	33	**4**	0	1	0	5	0	**80**	0	0	**80**	0	0	0	0	0	118
07:45 AM	0	17	0	0	17	2	0	0	0	2	0	60	0	0	60	0	0	0	0	0	79
Total Volume	0	213	1	0	214	11	0	4	0	15	1	223	0	0	224	0	0	0	0	0	453
% App. Total	0	99.5	0.5	0		73.3	0	26.7	0		0.4	99.6	0	0		0	0	0	0		
PHF	.000	.502	.250	.000	.505	.688	.000	.333	.000	.750	.250	.697	.000	.000	.700	.000	.000	.000	.000	.000	.682
Cars	0	204	1	0	205	11	0	4	0	15	1	205	0	0	206	0	0	0	0	0	426
% Cars	0	95.8	100	0	95.8	100	0	100	0	100	100	91.9	0	0	92.0	0	0	0	0	0	94.0
Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Buses	0	9	0	0	9	0	0	0	0	0	0	18	0	0	18	0	0	0	0	0	27
% Buses	0	4.2	0	0	4.2	0	0	0	0	0	0	8.1	0	0	8.0	0	0	0	0	0	6.0
Peak Hour Analysis From 02:45 PM to 03:30 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 02:45 PM																					
02:45 PM	0	21	0	0	21	0	0	0	0	0	0	46	0	0	46	0	0	0	0	0	67
03:00 PM	0	16	0	0	16	**1**	0	0	0	**1**	1	**75**	0	0	**76**	0	0	0	0	0	**93**
03:15 PM	0	**27**	**2**	0	**29**	0	0	**1**	0	1	**2**	39	0	0	41	0	0	0	0	0	71
03:30 PM	0	17	0	0	17	1	0	0	0	1	0	41	0	0	41	0	0	0	0	0	59
Total Volume	0	81	2	0	83	2	0	1	0	3	3	201	0	0	204	0	0	0	0	0	290
% App. Total	0	97.6	2.4	0		66.7	0	33.3	0		1.5	98.5	0	0		0	0	0	0		
PHF	.000	.750	.250	.000	.716	.500	.000	.250	.000	.750	.375	.670	.000	.000	.671	.000	.000	.000	.000	.000	.780
Cars	0	79	2	0	81	2	0	1	0	3	3	189	0	0	192	0	0	0	0	0	276
% Cars	0	97.5	100	0	97.6	100	0	100	0	100	100	94.0	0	0	94.1	0	0	0	0	0	95.2
Trucks	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
% Trucks	0	1.2	0	0	1.2	0	0	0	0	0	0	1.0	0	0	1.0	0	0	0	0	0	1.0
Buses	0	1	0	0	1	0	0	0	0	0	0	10	0	0	10	0	0	0	0	0	11
% Buses	0	1.2	0	0	1.2	0	0	0	0	0	0	5.0	0	0	4.9	0	0	0	0	0	3.8
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	0	**43**	1	0	44	0	0	0	0	0	0	**39**	0	0	**39**	0	0	0	0	0	**83**
05:15 PM	0	40	0	0	40	1	0	0	0	1	0	29	0	0	29	0	0	0	0	0	70
05:30 PM	0	43	**5**	0	**48**	**2**	0	0	0	**2**	0	28	0	0	28	0	0	0	0	0	78
05:45 PM	0	43	0	0	43	2	0	0	0	2	**1**	33	0	0	34	0	0	0	0	0	79
Total Volume	0	169	6	0	175	5	0	0	0	5	1	129	0	0	130	0	0	0	0	0	310
% App. Total	0	96.6	3.4	0		100	0	0	0		0.8	99.2	0	0		0	0	0	0		
PHF	.000	.983	.300	.000	.911	.625	.000	.000	.000	.625	.250	.827	.000	.000	.833	.000	.000	.000	.000	.000	.934
Cars	0	169	6	0	175	4	0	0	0	4	0	127	0	0	127	0	0	0	0	0	306
% Cars	0	100	100	0	100	80.0	0	0	0	80.0	0	98.4	0	0	97.7	0	0	0	0	0	98.7
Trucks	0	0	0	0	0	1	0	0	0	1	1	1	0	0	2	0	0	0	0	0	3
% Trucks	0	0	0	0	0	20.0	0	0	0	20.0	100	0.8	0	0	1.5	0	0	0	0	0	1.0
Buses	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
% Buses	0	0	0	0	0	0	0	0	0	0	0	0.8	0	0	0.8	0	0	0	0	0	0.3

VEHICULAR TRAFFIC COUNT SUMMARY

Municipality: Broadview Heights **At Intersection of:** Mill Road **and** Lacey Lane

Date: 1/12/2023 **Day:** Thu. **Comments:** **Project:** 22-156

Weather: Clear **Recorder(s):** NED **Data entry by:** JJO **Date entered:** Jan. 18, 2023 Mill Rd & Lacey Ln 011223

TIME BEGINS	Mill Rd. FROM NORTH						Mill Rd. FROM SOUTH						TOTAL NORTH SOUTH	FROM EAST						Lacey Ln. FROM WEST						TOTAL EAST WEST	TOTAL ALL DIREC.	PEAK HOUR FACTOR			
	Left	Thru	Right	Total	Trk	Bus	Left	Thru	Right	Total	Trk	Bus		Left	Thru	Right	Total	Trk	Bus	Left	Thru	Right	Total	Trk	Bus			North	South	East	West
06:00																														
07:00	0	204	5	209	1	9	57	213	0	270	0	23	479							17	0	192	209	0	11	209	688	0.507	0.582	0.000	0.608
08:00	0	48	8	56	1	4	19	79	0	98	1	1	154							21	0	45	66	0	1	66	220	0.636	0.645	0.000	0.532
09:00	0	46	9	55	1	0	19	65	0	84	0	2	139							11	0	29	40	0	0	40	179	0.688	0.808	0.000	0.833
10:00																														
11:00	0	81	5	86	1	3	29	70	0	99	3	3	185							3	0	35	38	0	0	38	223	0.741	0.669	0.000	0.528
12:00	0	50	5	55	0	1	20	53	0	73	1	0	128							7	0	37	44	1	1	44	172	0.809	0.570	0.000	0.611
1:00																														
2:00	0	129	9	138	0	35	92	117	0	209	2	19	347							1	0	55	56	1	1	56	403	1.568	1.045		7.000
3:00	0	70	8	78	4	1	61	174	0	235	2	4	313							6	0	35	41	0	0	41	354	0.750	0.593	0.000	0.641
4:00	0	118	17	135	1	1	39	86	0	125	0	3	260							7	0	53	60	0	1	60	320	0.785	0.868	0.000	0.682
5:00	0	137	23	160	0	1	37	132	0	169	1	1	329							8	0	60	68	1	0	68	397	0.889	0.880	0.000	0.850
6:00																														
7:00																														
8:00																														
9:00																														
TOTALS	0	883	89	972	9	55	373	989	0	1362	10	56	2334							81	0	541	622	3	15	622	2956				
ADT	0	1214	122	1337	6.6%		513	1360	0	1873	4.8%		3209							111	0	744	855	2.9%		855	4065				

N Leg Hourly Factor:	1.56	E Leg Hourly Factor:	0.00
S Leg Hourly Factor:	1.56	W leg Hourly Factor:	1.56
N Leg Monthly Factor:	0.88	E Leg Monthly Factor:	0.00
S Leg Monthly Factor:	0.88	W Leg Monthly Factor:	0.88

N Leg Combined Factor:	1.38	E Leg Combined Factor:	
S Leg Combined Factor:	1.38	W Leg Combined Factor:	1.38

TMS ENGINEERS, INC.

2112 Case Parkway South #7

Twinsburg, Ohio 44087

(330) 686-6402 FAX: (330) 686-6417

Figure #:

Page #:

TMS Engineers, Inc.

2112 Case Parkway South #7
Twinsburg, Ohio 44087
Transportation Manangement Services

City: Broadview Heights
Intersection: Mill Rd & Lacey Ln
Counter: NED
Day of the Week: Thursday

File Name : Mill Rd & Lacey Ln 011223 NED
Site Code : 00000000
Start Date : 1/12/2023

Groups Printed- Cars - Trucks - Buses

	MILL ROAD From North					From East					MILL ROAD From South					LACEY LANE From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	0	62	0	0	62	0	0	0	0	0	0	31	9	0	40	56	0	4	0	60	162
07:15 AM	2	101	0	0	103	0	0	0	0	0	0	57	15	0	72	85	0	1	0	86	261
07:30 AM	1	27	0	0	28	0	0	0	0	0	0	91	25	0	116	40	0	1	0	41	185
07:45 AM	2	14	0	0	16	0	0	0	0	0	0	34	8	0	42	11	0	11	0	22	80
Total	5	204	0	0	209	0	0	0	0	0	0	213	57	0	270	192	0	17	0	209	688
08:00 AM	3	6	0	0	9	0	0	0	0	0	0	18	3	0	21	8	0	3	0	11	41
08:15 AM	3	12	0	0	15	0	0	0	0	0	0	19	6	0	25	26	0	5	1	32	72
08:30 AM	0	10	0	0	10	0	0	0	0	0	0	31	7	0	38	6	0	2	1	9	57
08:45 AM	2	20	0	0	22	0	0	0	0	0	0	11	3	0	14	5	0	11	0	16	52
Total	8	48	0	0	56	0	0	0	0	0	0	79	19	0	98	45	0	21	2	68	222
09:00 AM	1	11	0	0	12	0	0	0	0	0	0	15	3	0	18	8	0	1	1	10	40
09:15 AM	5	8	0	0	13	0	0	0	0	0	0	20	6	0	26	6	0	3	0	9	48
09:30 AM	1	19	0	0	20	0	0	0	0	0	0	18	7	0	25	8	0	2	1	11	56
09:45 AM	2	8	0	0	10	0	0	0	0	0	0	12	3	0	15	7	0	5	0	12	37
Total	9	46	0	0	55	0	0	0	0	0	0	65	19	0	84	29	0	11	2	42	181
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	1	17	0	0	18	0	0	0	0	0	0	20	17	0	37	6	0	0	0	6	61
11:15 AM	2	21	0	0	23	0	0	0	0	0	0	14	3	0	17	7	0	0	0	7	47
11:30 AM	1	28	0	0	29	0	0	0	0	0	0	20	2	0	22	18	0	0	0	18	69
11:45 AM	1	15	0	0	16	0	0	0	0	0	0	16	7	0	23	4	0	3	0	7	46
Total	5	81	0	0	86	0	0	0	0	0	0	70	29	0	99	35	0	3	0	38	223
12:00 PM	0	10	0	0	10	0	0	0	0	0	0	10	6	0	16	9	0	2	1	12	38
12:15 PM	0	17	0	0	17	0	0	0	0	0	0	9	2	0	11	16	0	2	0	18	46
12:30 PM	3	8	0	0	11	0	0	0	0	0	0	24	8	0	32	10	0	1	0	11	54
12:45 PM	2	15	0	0	17	0	0	0	0	0	0	10	4	0	14	2	0	2	0	4	35
Total	5	50	0	0	55	0	0	0	0	0	0	53	20	0	73	37	0	7	1	45	173

TMS Engineers, Inc.

2112 Case Parkway South #7
Twinsburg, Ohio 44087
Transportation Manangement Services

File Name : Mill Rd & Lacey Ln 011223 NED
Site Code : 00000000
Start Date : 1/12/2023
Page No : 2

Groups Printed- Cars - Trucks - Buses

	MILL ROAD From North					From East					MILL ROAD From South					LACEY LANE From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00 PM	4	18	0	0	22	0	0	0	0	0	0	28	22	0	50	2	0	0	0	2	74
02:15 PM	2	42	0	0	44	0	0	0	0	0	0	9	5	0	14	18	0	0	0	18	76
02:30 PM	2	49	0	0	51	0	0	0	0	0	0	22	10	0	32	17	0	1	0	18	101
02:45 PM	1	20	0	0	21	0	0	0	0	0	0	58	55	0	113	18	0	0	0	18	152
Total	9	129	0	0	138	0	0	0	0	0	0	117	92	0	209	55	0	1	0	56	403
03:00 PM	1	14	0	0	15	0	0	0	0	0	0	66	33	0	99	6	0	1	0	7	121
03:15 PM	2	24	0	0	26	0	0	0	0	0	0	43	9	0	52	9	0	1	0	10	88
03:30 PM	2	21	0	0	23	0	0	0	0	0	0	37	10	0	47	6	0	2	0	8	78
03:45 PM	3	11	0	0	14	0	0	0	0	0	0	28	9	0	37	14	0	2	0	16	67
Total	8	70	0	0	78	0	0	0	0	0	0	174	61	0	235	35	0	6	0	41	354
04:00 PM	3	24	0	0	27	0	0	0	0	0	0	25	11	0	36	9	0	2	0	11	74
04:15 PM	2	21	0	0	23	0	0	0	0	0	0	23	6	0	29	12	0	2	0	14	66
04:30 PM	5	38	0	0	43	0	0	0	0	0	0	17	12	0	29	11	0	2	0	13	85
04:45 PM	7	35	0	0	42	0	0	0	0	0	0	21	10	0	31	21	0	1	0	22	95
Total	17	118	0	0	135	0	0	0	0	0	0	86	39	0	125	53	0	7	0	60	320
05:00 PM	5	31	0	0	36	0	0	0	0	0	0	40	8	0	48	18	0	2	0	20	104
05:15 PM	3	32	0	0	35	0	0	0	0	0	0	30	13	0	43	12	0	3	0	15	93
05:30 PM	10	35	0	0	45	0	0	0	0	0	0	26	13	0	39	14	0	1	0	15	99
05:45 PM	5	39	0	0	44	0	0	0	0	0	0	36	3	0	39	16	0	2	0	18	101
Total	23	137	0	0	160	0	0	0	0	0	0	132	37	0	169	60	0	8	0	68	397
Grand Total	89	883	0	0	972	0	0	0	0	0	0	989	373	0	1362	541	0	81	5	627	2961
Apprch %	9.2	90.8	0	0		0	0	0	0		0	72.6	27.4	0		86.3	0	12.9	0.8		
Total %	3	29.8	0	0	32.8	0	0	0	0	0	0	33.4	12.6	0	46	18.3	0	2.7	0.2	21.2	
Cars	83	825	0	0	908	0	0	0	0	0	0	950	346	0	1296	524	0	80	5	609	2813
% Cars	93.3	93.4	0	0	93.4	0	0	0	0	0	0	96.1	92.8	0	95.2	96.9	0	98.8	100	97.1	95
Trucks	1	8	0	0	9	0	0	0	0	0	0	7	3	0	10	2	0	1	0	3	22
% Trucks	1.1	0.9	0	0	0.9	0	0	0	0	0	0	0.7	0.8	0	0.7	0.4	0	1.2	0	0.5	0.7
Buses	5	50	0	0	55	0	0	0	0	0	0	32	24	0	56	15	0	0	0	15	126
% Buses	5.6	5.7	0	0	5.7	0	0	0	0	0	0	3.2	6.4	0	4.1	2.8	0	0	0	2.4	4.3

TMS Engineers, Inc.

2112 Case Parkway South #7
Twinsburg, Ohio 44087
Transportation Manangement Services

File Name : Mill Rd & Lacey Ln 011223 NED
Site Code : 00000000
Start Date : 1/12/2023
Page No : 3

	MILL ROAD From North					From East					MILL ROAD From South					LACEY LANE From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	62	0	0	62	0	0	0	0	0	0	31	9	0	40	56	0	4	0	60	162
07:15 AM	**2**	**101**	0	0	**103**	0	0	0	0	0	0	57	15	0	72	**85**	0	1	0	**86**	**261**
07:30 AM	1	27	0	0	28	0	0	0	0	0	0	**91**	**25**	0	**116**	40	0	1	0	41	185
07:45 AM	2	14	0	0	16	0	0	0	0	0	0	34	8	0	42	11	0	**11**	0	22	80
Total Volume	5	204	0	0	209	0	0	0	0	0	0	213	57	0	270	192	0	17	0	209	688
% App. Total	2.4	97.6	0	0		0	0	0	0		0	78.9	21.1	0		91.9	0	8.1	0		
PHF	.625	.505	.000	.000	.507	.000	.000	.000	.000	.000	.000	.585	.570	.000	.582	.565	.000	.386	.000	.608	.659
Cars	5	194	0	0	199	0	0	0	0	0	0	197	50	0	247	181	0	17	0	198	644
% Cars	100	95.1	0	0	95.2	0	0	0	0	0	0	92.5	87.7	0	91.5	94.3	0	100	0	94.7	93.6
Trucks	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
% Trucks	0	0.5	0	0	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1
Buses	0	9	0	0	9	0	0	0	0	0	0	16	7	0	23	11	0	0	0	11	43
% Buses	0	4.4	0	0	4.3	0	0	0	0	0	0	7.5	12.3	0	8.5	5.7	0	0	0	5.3	6.3
Peak Hour Analysis From 02:45 PM to 03:30 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 02:45 PM																					
02:45 PM	1	20	0	0	21	0	0	0	0	0	0	58	**55**	0	**113**	**18**	0	0	0	**18**	**152**
03:00 PM	1	14	0	0	15	0	0	0	0	0	0	**66**	33	0	99	6	0	1	0	7	121
03:15 PM	**2**	**24**	0	0	**26**	0	0	0	0	0	0	43	9	0	52	9	0	1	0	10	88
03:30 PM	2	21	0	0	23	0	0	0	0	0	0	37	10	0	47	6	0	**2**	0	8	78
Total Volume	6	79	0	0	85	0	0	0	0	0	0	204	107	0	311	39	0	4	0	43	439
% App. Total	7.1	92.9	0	0		0	0	0	0		0	65.6	34.4	0		90.7	0	9.3	0		
PHF	.750	.823	.000	.000	.817	.000	.000	.000	.000	.000	.000	.773	.486	.000	.688	.542	.000	.500	.000	.597	.722
Cars	5	77	0	0	82	0	0	0	0	0	0	195	93	0	288	39	0	4	0	43	413
% Cars	83.3	97.5	0	0	96.5	0	0	0	0	0	0	95.6	86.9	0	92.6	100	0	100	0	100	94.1
Trucks	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
% Trucks	0	2.5	0	0	2.4	0	0	0	0	0	0	0.5	0	0	0.3	0	0	0	0	0	0.7
Buses	1	0	0	0	1	0	0	0	0	0	0	8	14	0	22	0	0	0	0	0	23
% Buses	16.7	0	0	0	1.2	0	0	0	0	0	0	3.9	13.1	0	7.1	0	0	0	0	0	5.2
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	5	31	0	0	36	0	0	0	0	0	0	**40**	8	0	**48**	**18**	0	2	0	**20**	**104**
05:15 PM	3	32	0	0	35	0	0	0	0	0	0	30	**13**	0	43	12	0	**3**	0	15	93
05:30 PM	**10**	35	0	0	**45**	0	0	0	0	0	0	26	13	0	39	14	0	1	0	15	99
05:45 PM	5	**39**	0	0	44	0	0	0	0	0	0	36	3	0	39	16	0	2	0	18	101
Total Volume	23	137	0	0	160	0	0	0	0	0	0	132	37	0	169	60	0	8	0	68	397
% App. Total	14.4	85.6	0	0		0	0	0	0		0	78.1	21.9	0		88.2	0	11.8	0		
PHF	.575	.878	.000	.000	.889	.000	.000	.000	.000	.000	.000	.825	.712	.000	.880	.833	.000	.667	.000	.850	.954
Cars	22	137	0	0	159	0	0	0	0	0	0	130	37	0	167	60	0	7	0	67	393
% Cars	95.7	100	0	0	99.4	0	0	0	0	0	0	98.5	100	0	98.8	100	0	87.5	0	98.5	99.0
Trucks	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	2
% Trucks	0	0	0	0	0	0	0	0	0	0	0	0.8	0	0	0.6	0	0	12.5	0	1.5	0.5
Buses	1	0	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
% Buses	4.3	0	0	0	0.6	0	0	0	0	0	0	0.8	0	0	0.6	0	0	0	0	0	0.5

VEHICULAR TRAFFIC COUNT SUMMARY

Municipality: Broadview Heights **At Intersection of:** Mill Road **and** Sylmar Drive

Date: 1/18/2023 **Day:** Wed. **Comments:** **Project:** 22-156

Weather: Clear **Recorder(s):** NED **Data entry by:** JJO **Date entered:** Jan. 30, 2023 Mill Rd & Sylmar Dr 011823

TIME BEGINS	Mill Rd. FROM NORTH						Mill Rd. FROM SOUTH						TOTAL NORTH SOUTH	Sylmar Dr. FROM EAST						FROM WEST						TOTAL EAST WEST	TOTAL ALL DIREC.	PEAK HOUR FACTOR			
	Left	Thru	Right	Total	Trk	Bus	Left	Thru	Right	Total	Trk	Bus		Left	Thru	Right	Total	Trk	Bus	Left	Thru	Right	Total	Trk	Bus			North	South	East	West
06:00																														
07:00	4	384	0	388	1	17	0	244	1	245	0	27	633	6	0	15	21	0	0							21	654	0.500	0.557	0.750	0.000
08:00	6	110	0	116	1	2	0	94	4	98	0	1	214	0	0	15	15	0	1							15	229	0.617	0.721	0.750	0.000
09:00	7	122	0	129	1	1	0	151	2	153	1	2	282	1	0	2	3	0	0							3	285	0.442	0.461	0.375	0.000
10:00																														
11:00	8	153	0	161	2	2	0	151	1	152	5	3	313	1	0	5	6	0	0							6	319	0.544	0.452	0.750	0.000
12:00	5	80	0	85	4	1	0	70	3	73	2	0	158	1	0	8	9	1	0							9	167	0.817	0.830	0.750	0.000
1:00																														
2:00	3	175	0	178	1	29	0	153	4	157	4	17	335	3	0	2	5	1	0							5	340	2.342	1.570	1.250	
3:00	5	104	0	109	5	0	0	146	2	148	0	1	257	2	0	2	4	0	0							4	261	0.779	0.725	0.333	0.000
4:00	9	167	0	176	2	3	0	122	3	125	1	3	301	1	0	7	8	2	0							8	309	0.880	0.893	0.667	0.000
5:00	5	128	0	133	1	0	0	138	0	138	4	0	271	5	0	12	17	0	0							17	288	0.792	0.663	0.531	0.000
6:00																														
7:00																														
8:00																														
9:00																														
TOTALS	52	1423	0	1475	18	55	0	1269	20	1289	17	54	2764	20	0	68	88	4	1							88	2852				
ADT	81	2210	0	2291	4.9%		0	1971	31	2002	5.5%		4293	31	0	106	137	5.7%								137	4430				

N Leg Hourly Factor:	1.56	E Leg Hourly Factor:	1.56
S Leg Hourly Factor:	1.56	W leg Hourly Factor:	0.00
N Leg Monthly Factor:	0.99	E Leg Monthly Factor:	0.99
S Leg Monthly Factor:	0.99	W Leg Monthly Factor:	0.00

N Leg Combined Factor:	1.55	E Leg Combined Factor:	1.55
S Leg Combined Factor:	1.55	W Leg Combined Factor:	

TMS ENGINEERS, INC.

2112 Case Parkway South #7

Twinsburg, Ohio 44087

(330) 686-6402 FAX: (330) 686-6417

Figure #:

Page #:

TMS Engineers, Inc.

2112 Case Parkway South #7
Twinsburg, Ohio 44087
Transportation Manangement Services

City: Broadview Heights
Intersection: Mill Rd & Sylmar Dr
Counter: NED
Day of the Week: Wednesday

File Name : Mill Rd & Sylmar Dr 011823NED
Site Code : 00000000
Start Date : 1/18/2023
Page No : 1

Groups Printed- Cars - Trucks - Buses

	MILL ROAD From North					SYLMAR DRIVE From East					MILL ROAD From South					From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	0	121	0	0	121	4	0	2	0	6	0	28	0	0	28	0	0	0	0	0	155
07:15 AM	0	194	0	0	194	2	0	1	0	3	0	80	0	0	80	0	0	0	0	0	277
07:30 AM	0	53	2	0	55	4	0	1	0	5	1	109	0	0	110	0	0	0	0	0	170
07:45 AM	0	16	2	0	18	5	0	2	0	7	0	27	0	0	27	0	0	0	0	0	52
Total	0	384	4	0	388	15	0	6	0	21	1	244	0	0	245	0	0	0	0	0	654
08:00 AM	0	13	2	0	15	4	0	0	0	4	1	20	0	0	21	0	0	0	0	0	40
08:15 AM	0	24	2	0	26	4	0	0	0	4	0	25	0	0	25	0	0	0	0	0	55
08:30 AM	0	26	2	0	28	2	0	0	0	2	2	32	0	0	34	0	0	0	0	0	64
08:45 AM	0	47	0	0	47	5	0	0	0	5	1	17	0	0	18	0	0	0	0	0	70
Total	0	110	6	0	116	15	0	0	0	15	4	94	0	0	98	0	0	0	0	0	229
09:00 AM	0	71	2	0	73	0	0	1	0	1	2	33	0	0	35	0	0	0	0	0	109
09:15 AM	0	28	2	0	30	0	0	0	0	0	0	83	0	0	83	0	0	0	0	0	113
09:30 AM	0	14	0	0	14	2	0	0	0	2	0	22	0	0	22	0	0	0	0	0	38
09:45 AM	0	9	3	0	12	0	0	0	0	0	0	13	0	0	13	0	0	0	0	0	25
Total	0	122	7	0	129	2	0	1	0	3	2	151	0	0	153	0	0	0	0	0	285
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	0	19	2	0	21	1	0	1	0	2	0	84	0	0	84	0	0	0	1	1	108
11:15 AM	0	36	0	0	36	2	0	0	0	2	1	25	0	0	26	0	0	0	1	1	65
11:30 AM	0	71	3	0	74	1	0	0	0	1	0	19	0	0	19	0	0	0	0	0	94
11:45 AM	0	27	3	0	30	1	0	0	0	1	0	23	0	0	23	0	0	0	2	2	56
Total	0	153	8	0	161	5	0	1	0	6	1	151	0	0	152	0	0	0	4	4	323
12:00 PM	0	17	1	0	18	1	0	0	0	1	1	15	0	0	16	0	0	0	0	0	35
12:15 PM	0	20	3	0	23	3	0	0	0	3	1	21	0	0	22	0	0	0	1	1	49
12:30 PM	0	17	1	0	18	1	0	1	1	3	0	21	0	0	21	0	0	0	0	0	42
12:45 PM	0	26	0	0	26	3	0	0	0	3	1	13	0	0	14	0	0	0	1	1	44
Total	0	80	5	0	85	8	0	1	1	10	3	70	0	0	73	0	0	0	2	2	170

TMS Engineers, Inc.

2112 Case Parkway South #7
Twinsburg, Ohio 44087
Transportation Manangement Services

File Name : Mill Rd & Sylmar Dr 011823NED
Site Code : 00000000
Start Date : 1/18/2023
Page No : 2

Groups Printed- Cars - Trucks - Buses

	MILL ROAD From North					SYLMAR DRIVE From East					MILL ROAD From South					From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00 PM	0	19	0	1	20	0	0	1	0	1	1	24	0	0	25	0	0	0	2	2	48
02:15 PM	0	54	1	0	55	1	0	0	0	1	1	9	0	0	10	0	0	0	0	0	66
02:30 PM	0	71	1	0	72	0	0	2	0	2	0	22	0	0	22	0	0	0	0	0	96
02:45 PM	0	31	1	0	32	1	0	0	0	1	2	98	0	0	100	0	0	0	1	1	134
Total	0	175	3	1	179	2	0	3	0	5	4	153	0	0	157	0	0	0	3	3	344
03:00 PM	0	21	1	0	22	0	0	1	0	1	1	28	0	0	29	0	0	0	0	0	52
03:15 PM	0	27	0	0	27	0	0	0	0	0	0	51	0	0	51	0	0	0	0	0	78
03:30 PM	0	24	1	0	25	2	0	1	0	3	0	43	0	0	43	0	0	0	0	0	71
03:45 PM	0	32	3	0	35	0	0	0	0	0	1	24	0	0	25	0	0	0	0	0	60
Total	0	104	5	0	109	2	0	2	0	4	2	146	0	0	148	0	0	0	0	0	261
04:00 PM	0	46	4	0	50	2	0	0	0	2	1	31	0	0	32	0	0	0	1	1	85
04:15 PM	0	43	2	0	45	2	0	0	0	2	0	35	0	0	35	0	0	0	0	0	82
04:30 PM	0	37	2	0	39	0	0	1	0	1	1	30	0	0	31	0	0	0	1	1	72
04:45 PM	0	41	1	0	42	3	0	0	0	3	1	26	0	0	27	0	0	0	0	0	72
Total	0	167	9	0	176	7	0	1	0	8	3	122	0	0	125	0	0	0	2	2	311
05:00 PM	0	38	3	0	41	3	0	0	0	3	0	28	0	0	28	0	0	0	0	0	72
05:15 PM	0	31	0	0	31	5	0	1	0	6	0	43	0	0	43	0	0	0	1	1	81
05:30 PM	0	41	1	0	42	0	0	0	0	0	0	52	0	0	52	0	0	0	0	0	94
05:45 PM	0	18	1	0	19	4	0	4	0	8	0	15	0	0	15	0	0	0	0	0	42
Total	0	128	5	0	133	12	0	5	0	17	0	138	0	0	138	0	0	0	1	1	289
Grand Total	0	1423	52	1	1476	68	0	20	1	89	20	1269	0	0	1289	0	0	0	12	12	2866
Apprch %	0	96.4	3.5	0.1		76.4	0	22.5	1.1		1.6	98.4	0	0		0	0	0	100		
Total %	0	49.7	1.8	0	51.5	2.4	0	0.7	0	3.1	0.7	44.3	0	0	45	0	0	0	0.4	0.4	
Cars	0	1353	49	1	1403	63	0	20	1	84	17	1201	0	0	1218	0	0	0	12	12	2717
% Cars	0	95.1	94.2	100	95.1	92.6	0	100	100	94.4	85	94.6	0	0	94.5	0	0	0	100	100	94.8
Trucks	0	16	2	0	18	4	0	0	0	4	2	15	0	0	17	0	0	0	0	0	39
% Trucks	0	1.1	3.8	0	1.2	5.9	0	0	0	4.5	10	1.2	0	0	1.3	0	0	0	0	0	1.4
Buses	0	54	1	0	55	1	0	0	0	1	1	53	0	0	54	0	0	0	0	0	110
% Buses	0	3.8	1.9	0	3.7	1.5	0	0	0	1.1	5	4.2	0	0	4.2	0	0	0	0	0	3.8

TMS Engineers, Inc.

2112 Case Parkway South #7
Twinsburg, Ohio 44087
Transportation Manangement Services

File Name : Mill Rd & Sylmar Dr 011823NED
Site Code : 00000000
Start Date : 1/18/2023
Page No : 3

	MILL ROAD From North					SYLMAR DRIVE From East					MILL ROAD From South					From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	121	0	0	121	4	0	**2**	0	6	0	28	0	0	28	0	0	0	0	0	155
07:15 AM	0	**194**	0	0	**194**	2	0	1	0	3	0	80	0	0	80	0	0	0	0	0	**277**
07:30 AM	0	53	**2**	0	55	4	0	1	0	5	**1**	**109**	0	0	**110**	0	0	0	0	0	170
07:45 AM	0	16	2	0	18	**5**	0	2	0	**7**	0	27	0	0	27	0	0	0	0	0	52
Total Volume	0	384	4	0	388	15	0	6	0	21	1	244	0	0	245	0	0	0	0	0	654
% App. Total	0	99	1	0		71.4	0	28.6	0		0.4	99.6	0	0		0	0	0	0		
PHF	.000	.495	.500	.000	.500	.750	.000	.750	.000	.750	.250	.560	.000	.000	.557	.000	.000	.000	.000	.000	.590
Cars	0	366	4	0	370	15	0	6	0	21	1	217	0	0	218	0	0	0	0	0	609
% Cars	0	95.3	100	0	95.4	100	0	100	0	100	100	88.9	0	0	89.0	0	0	0	0	0	93.1
Trucks	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
% Trucks	0	0.3	0	0	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2
Buses	0	17	0	0	17	0	0	0	0	0	0	27	0	0	27	0	0	0	0	0	44
% Buses	0	4.4	0	0	4.4	0	0	0	0	0	0	11.1	0	0	11.0	0	0	0	0	0	6.7
Peak Hour Analysis From 02:45 PM to 03:30 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 02:45 PM																					
02:45 PM	0	**31**	**1**	0	**32**	1	0	0	0	1	**2**	**98**	0	0	**100**	0	0	0	**1**	**1**	**134**
03:00 PM	0	21	1	0	22	0	0	**1**	0	1	1	28	0	0	29	0	0	0	0	0	52
03:15 PM	0	27	0	0	27	0	0	0	0	0	0	51	0	0	51	0	0	0	0	0	78
03:30 PM	0	24	1	0	25	**2**	0	1	0	**3**	0	43	0	0	43	0	0	0	0	0	71
Total Volume	0	103	3	0	106	3	0	2	0	5	3	220	0	0	223	0	0	0	1	1	335
% App. Total	0	97.2	2.8	0		60	0	40	0		1.3	98.7	0	0		0	0	0	100		
PHF	.000	.831	.750	.000	.828	.375	.000	.500	.000	.417	.375	.561	.000	.000	.558	.000	.000	.000	.250	.250	.625
Cars	0	100	2	0	102	2	0	2	0	4	3	199	0	0	202	0	0	0	1	1	309
% Cars	0	97.1	66.7	0	96.2	66.7	0	100	0	80.0	100	90.5	0	0	90.6	0	0	0	100	100	92.2
Trucks	0	3	1	0	4	1	0	0	0	1	0	4	0	0	4	0	0	0	0	0	9
% Trucks	0	2.9	33.3	0	3.8	33.3	0	0	0	20.0	0	1.8	0	0	1.8	0	0	0	0	0	2.7
Buses	0	0	0	0	0	0	0	0	0	0	0	17	0	0	17	0	0	0	0	0	17
% Buses	0	0	0	0	0	0	0	0	0	0	0	7.7	0	0	7.6	0	0	0	0	0	5.1
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	0	38	**3**	0	41	3	0	0	0	3	0	28	0	0	28	0	0	0	0	0	72
05:15 PM	0	31	0	0	31	**5**	0	1	0	6	0	43	0	0	43	0	0	0	**1**	**1**	81
05:30 PM	0	**41**	1	0	**42**	0	0	0	0	0	0	**52**	0	0	**52**	0	0	0	0	0	**94**
05:45 PM	0	18	1	0	19	4	0	**4**	0	**8**	0	15	0	0	15	0	0	0	0	0	42
Total Volume	0	128	5	0	133	12	0	5	0	17	0	138	0	0	138	0	0	0	1	1	289
% App. Total	0	96.2	3.8	0		70.6	0	29.4	0		0	100	0	0		0	0	0	100		
PHF	.000	.780	.417	.000	.792	.600	.000	.313	.000	.531	.000	.663	.000	.000	.663	.000	.000	.000	.250	.250	.769
Cars	0	127	5	0	132	12	0	5	0	17	0	134	0	0	134	0	0	0	1	1	284
% Cars	0	99.2	100	0	99.2	100	0	100	0	100	0	97.1	0	0	97.1	0	0	0	100	100	98.3
Trucks	0	1	0	0	1	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	5
% Trucks	0	0.8	0	0	0.8	0	0	0	0	0	0	2.9	0	0	2.9	0	0	0	0	0	1.7
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

VEHICULAR TRAFFIC COUNT SUMMARY

Municipality: Broadview Heights **At Intersection of:** West Mill Road **and** Karen Lynne Drive

Date: 1/17/2023 **Day:** Tue. **Comments:** **Project:** 22-156

Weather: Clear **Recorder(s):** SLC **Data entry by:** JJO **Date entered:** Jan. 18, 2023 W. Mill Rd & Karen Lynne Dr 011723

TIME BEGINS	W. Mill Rd. FROM NORTH						W. Mill Rd. FROM SOUTH						TOTAL NORTH SOUTH	FROM EAST						Karen Lynne Dr. FROM WEST						TOTAL EAST WEST	TOTAL ALL DIREC.	PEAK HOUR FACTOR			
	Left	Thru	Right	Total	Trk	Bus	Left	Thru	Right	Total	Trk	Bus		Left	Thru	Right	Total	Trk	Bus	Left	Thru	Right	Total	Trk	Bus			North	South	East	West
06:00																														
07:00	0	148	7	155	0	8	23	59	0	82	0	10	237							13	0	29	42	1	1	42	279	0.497	0.554	0.000	0.750
08:00	0	38	4	42	1	0	6	23	0	29	0	1	71							10	0	8	18	1	0	18	89	0.500	0.725	0.000	0.750
09:00	0	67	1	68	2	1	11	34	0	45	1	0	113							3	0	6	9	0	0	9	122	0.395	0.592	0.000	0.563
10:00																														
11:00	0	56	4	60	1	0	16	70	0	86	1	0	146							6	0	13	19	0	0	19	165	0.789	0.384	0.000	0.679
12:00	0	23	1	24	0	1	6	9	0	15	0	0	39							2	0	1	3	0	0	3	42	0.667	0.469	0.000	0.375
1:00																														
2:00	0	52	6	58	1	1	18	37	0	55	2	12	113							4	0	10	14	0	0	14	127	2.417	1.146		0.875
3:00	0	62	2	64	0	0	20	35	0	55	0	2	119							6	0	10	16	1	0	16	135	0.889	0.724	0.000	0.667
4:00	0	69	10	79	0	0	20	32	0	52	0	1	131							4	0	9	13	0	0	13	144	0.760	0.765	0.000	0.406
5:00	0	97	7	104	0	0	30	24	0	54	0	0	158							4	0	9	13	0	0	13	171	0.839	0.587	0.000	0.542
6:00																														
7:00																														
8:00																														
9:00																														
TOTALS	0	612	42	654	5	11	150	323	0	473	4	26	1127							52	0	95	147	3	1	147	1274				
ADT	0	842	58	899	2.4%		206	444	0	650	6.3%		1550							72	0	131	202	2.7%		202	1752				

N Leg Hourly Factor:	1.56	E Leg Hourly Factor:	0.00
S Leg Hourly Factor:	1.56	W leg Hourly Factor:	1.56
N Leg Monthly Factor:	0.88	E Leg Monthly Factor:	0.00
S Leg Monthly Factor:	0.88	W Leg Monthly Factor:	0.88

N Leg Combined Factor:	1.38	E Leg Combined Factor:	
S Leg Combined Factor:	1.38	W Leg Combined Factor:	1.38

TMS ENGINEERS, INC.

2112 Case Parkway South #7

Twinsburg, Ohio 44087

(330) 686-6402 FAX: (330) 686-6417

Figure #:

Page #:

TMS Engineers, Inc.

2112 Case Parkway South #7
Twinsburg, Ohio 44087
Transportation Manangement Services

City: Broadview Heights File Name : Broadview Hgt Traffic Count #7 W Mill Rd & Karen Lynne Dr 011723 Sue
Intersection: W. Mill Rd. & Karen Lynne Dr
Counter: SLC Start Date : 1/17/2023
Day of the Week: Tuesday Project # : 23-00010000

Groups Printed- Cars - Trucks - Buses

	WEST MILL ROAD From North					From East					WEST MILL ROAD From South					KAREN LYNNE DRIVE From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	3	51	0	2	56	0	0	0	0	0	0	4	1	0	5	6	0	4	0	10	71
07:15 AM	2	76	0	0	78	0	0	0	0	0	0	16	6	0	22	9	0	5	0	14	114
07:30 AM	1	18	0	0	19	0	0	0	0	0	0	26	11	0	37	10	0	4	0	14	70
07:45 AM	1	3	0	0	4	0	0	0	0	0	0	13	5	0	18	4	0	0	0	4	26
Total	7	148	0	2	157	0	0	0	0	0	0	59	23	0	82	29	0	13	0	42	281
08:00 AM	0	6	0	0	6	0	0	0	0	0	0	6	1	0	7	2	0	4	0	6	19
08:15 AM	0	5	0	0	5	0	0	0	0	0	0	6	0	0	6	1	0	4	0	5	16
08:30 AM	3	7	0	0	10	0	0	0	0	0	0	7	3	0	10	2	0	1	0	3	23
08:45 AM	1	20	0	0	21	0	0	0	0	0	0	4	2	0	6	3	0	1	0	4	31
Total	4	38	0	0	42	0	0	0	0	0	0	23	6	0	29	8	0	10	0	18	89
09:00 AM	0	43	0	0	43	0	0	0	0	0	0	12	7	0	19	4	0	0	0	4	66
09:15 AM	0	14	0	0	14	0	0	0	0	0	0	17	2	0	19	2	0	0	0	2	35
09:30 AM	0	4	0	0	4	0	0	0	0	0	0	5	0	0	5	0	0	1	0	1	10
09:45 AM	1	6	0	0	7	0	0	0	0	0	0	0	2	0	2	0	0	2	0	2	11
Total	1	67	0	0	68	0	0	0	0	0	0	34	11	0	45	6	0	3	0	9	122
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	0	7	0	0	7	0	0	0	0	0	0	49	7	0	56	4	0	3	0	7	70
11:15 AM	2	14	0	1	17	0	0	0	0	0	0	11	1	0	12	3	0	0	0	3	32
11:30 AM	0	19	0	0	19	0	0	0	0	0	0	4	3	0	7	4	0	1	0	5	31
11:45 AM	2	16	0	0	18	0	0	0	0	0	0	6	5	0	11	2	0	2	0	4	33
Total	4	56	0	1	61	0	0	0	0	0	0	70	16	0	86	13	0	6	0	19	166
12:00 PM	0	6	0	0	6	0	0	0	0	0	0	2	0	0	2	0	0	1	0	1	9
12:15 PM	1	3	0	0	4	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	5
12:30 PM	0	5	0	1	6	0	0	0	0	0	0	1	3	0	4	0	0	0	0	0	10
12:45 PM	0	9	0	0	9	0	0	0	0	0	0	5	3	0	8	1	0	1	0	2	19
Total	1	23	0	1	25	0	0	0	0	0	0	9	6	0	15	1	0	2	0	3	43

TMS Engineers, Inc.

2112 Case Parkway South #7
Twinsburg, Ohio 44087
Transportation Manangement Services

File Name : Broadview Hgt Traffic Count #7 W Mill Rd & Karen Lynne Dr 011723 Sue
Site Code : 00000000
Start Date : 1/17/2023
Page No : 2

Groups Printed- Cars - Trucks - Buses

	WEST MILL ROAD From North					From East					WEST MILL ROAD From South					KAREN LYNNE DRIVE From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00 PM	0	6	0	1	7	0	0	0	0	0	0	9	3	0	12	2	0	2	0	4	23
02:15 PM	2	15	0	0	17	0	0	0	0	0	0	5	3	0	8	2	0	1	0	3	28
02:30 PM	2	23	0	0	25	0	0	0	0	0	0	6	2	0	8	1	0	1	0	2	35
02:45 PM	2	8	0	0	10	0	0	0	0	0	0	17	10	0	27	5	0	0	0	5	42
Total	6	52	0	1	59	0	0	0	0	0	0	37	18	0	55	10	0	4	0	14	128
03:00 PM	0	11	0	0	11	0	0	0	0	0	0	13	6	0	19	3	0	1	0	4	34
03:15 PM	0	18	0	0	18	0	0	0	0	0	0	9	3	0	12	1	0	3	0	4	34
03:30 PM	2	15	0	2	19	0	0	0	0	0	0	7	3	0	10	2	0	0	0	2	31
03:45 PM	0	18	0	0	18	0	0	0	0	0	0	6	8	0	14	4	0	2	0	6	38
Total	2	62	0	2	66	0	0	0	0	0	0	35	20	0	55	10	0	6	0	16	137
04:00 PM	2	19	0	0	21	0	0	0	0	0	0	8	4	0	12	2	0	0	0	2	35
04:15 PM	2	24	0	1	27	0	0	0	0	0	0	11	3	0	14	1	0	0	0	1	42
04:30 PM	4	13	0	0	17	0	0	0	0	0	0	9	8	0	17	1	0	1	0	2	36
04:45 PM	2	13	0	0	15	0	0	0	0	0	0	4	5	0	9	5	0	3	0	8	32
Total	10	69	0	1	80	0	0	0	0	0	0	32	20	0	52	9	0	4	0	13	145
05:00 PM	3	19	0	0	22	0	0	0	0	0	0	2	12	0	14	4	0	1	0	5	41
05:15 PM	3	28	0	0	31	0	0	0	0	0	0	2	4	0	6	1	0	0	0	1	38
05:30 PM	0	26	0	0	26	0	0	0	0	0	0	9	2	0	11	1	0	0	0	1	38
05:45 PM	1	24	0	0	25	0	0	0	0	0	0	11	12	0	23	3	0	3	0	6	54
Total	7	97	0	0	104	0	0	0	0	0	0	24	30	0	54	9	0	4	0	13	171
Grand Total	42	612	0	8	662	0	0	0	0	0	0	323	150	0	473	95	0	52	0	147	1282
Apprch %	6.3	92.4	0	1.2		0	0	0	0		0	68.3	31.7	0		64.6	0	35.4	0		
Total %	3.3	47.7	0	0.6	51.6	0	0	0	0	0	0	25.2	11.7	0	36.9	7.4	0	4.1	0	11.5	
Cars	39	599	0	8	646	0	0	0	0	0	0	303	140	0	443	91	0	52	0	143	1232
% Cars	92.9	97.9	0	100	97.6	0	0	0	0	0	0	93.8	93.3	0	93.7	95.8	0	100	0	97.3	96.1
Trucks	2	3	0	0	5	0	0	0	0	0	0	3	1	0	4	3	0	0	0	3	12
% Trucks	4.8	0.5	0	0	0.8	0	0	0	0	0	0	0.9	0.7	0	0.8	3.2	0	0	0	2	0.9
Buses	1	10	0	0	11	0	0	0	0	0	0	17	9	0	26	1	0	0	0	1	38
% Buses	2.4	1.6	0	0	1.7	0	0	0	0	0	0	5.3	6	0	5.5	1.1	0	0	0	0.7	3

TMS Engineers, Inc.

2112 Case Parkway South #7
Twinsburg, Ohio 44087
Transportation Manangement Services

File Name : Broadview Hgt Traffic Count #7 W Mill Rd & Karen Lynne Dr 011723 Sue
Site Code : 00000000
Start Date : 1/17/2023
Page No : 3

	WEST MILL ROAD From North					From East					WEST MILL ROAD From South					KAREN LYNNE DRIVE From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	**3**	51	0	**2**	56	0	0	0	0	0	0	4	1	0	5	6	0	4	0	10	71
07:15 AM	2	**76**	0	0	**78**	0	0	0	0	0	0	16	6	0	22	9	0	**5**	0	**14**	**114**
07:30 AM	1	18	0	0	19	0	0	0	0	0	0	**26**	**11**	0	**37**	**10**	0	4	0	14	70
07:45 AM	1	3	0	0	4	0	0	0	0	0	0	13	5	0	18	4	0	0	0	4	26
Total Volume	7	148	0	2	157	0	0	0	0	0	0	59	23	0	82	29	0	13	0	42	281
% App. Total	4.5	94.3	0	1.3		0	0	0	0		0	72	28	0		69	0	31	0		
PHF	.583	.487	.000	.250	.503	.000	.000	.000	.000	.000	.000	.567	.523	.000	.554	.725	.000	.650	.000	.750	.616
Cars	7	140	0	2	149	0	0	0	0	0	0	52	20	0	72	27	0	13	0	40	261
% Cars	100	94.6	0	100	94.9	0	0	0	0	0	0	88.1	87.0	0	87.8	93.1	0	100	0	95.2	92.9
Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
% Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.4	0	0	0	2.4	0.4
Buses	0	8	0	0	8	0	0	0	0	0	0	7	3	0	10	1	0	0	0	1	19
% Buses	0	5.4	0	0	5.1	0	0	0	0	0	0	11.9	13.0	0	12.2	3.4	0	0	0	2.4	6.8
Peak Hour Analysis From 02:45 PM to 03:30 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 02:45 PM																					
02:45 PM	**2**	8	0	0	10	0	0	0	0	0	0	**17**	**10**	0	**27**	**5**	0	0	0	**5**	**42**
03:00 PM	0	11	0	0	11	0	0	0	0	0	0	13	6	0	19	3	0	1	0	4	34
03:15 PM	0	**18**	0	0	18	0	0	0	0	0	0	9	3	0	12	1	0	**3**	0	4	34
03:30 PM	2	15	0	**2**	**19**	0	0	0	0	0	0	7	3	0	10	2	0	0	0	2	31
Total Volume	4	52	0	2	58	0	0	0	0	0	0	46	22	0	68	11	0	4	0	15	141
% App. Total	6.9	89.7	0	3.4		0	0	0	0		0	67.6	32.4	0		73.3	0	26.7	0		
PHF	.500	.722	.000	.250	.763	.000	.000	.000	.000	.000	.000	.676	.550	.000	.630	.550	.000	.333	.000	.750	.839
Cars	3	52	0	2	57	0	0	0	0	0	0	38	16	0	54	10	0	4	0	14	125
% Cars	75.0	100	0	100	98.3	0	0	0	0	0	0	82.6	72.7	0	79.4	90.9	0	100	0	93.3	88.7
Trucks	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	1	2
% Trucks	0	0	0	0	0	0	0	0	0	0	0	0	4.5	0	1.5	9.1	0	0	0	6.7	1.4
Buses	1	0	0	0	1	0	0	0	0	0	0	8	5	0	13	0	0	0	0	0	14
% Buses	25.0	0	0	0	1.7	0	0	0	0	0	0	17.4	22.7	0	19.1	0	0	0	0	0	9.9
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	**3**	19	0	0	22	0	0	0	0	0	0	2	**12**	0	14	**4**	0	1	0	5	41
05:15 PM	3	**28**	0	0	**31**	0	0	0	0	0	0	2	4	0	6	1	0	0	0	1	38
05:30 PM	0	26	0	0	26	0	0	0	0	0	0	9	2	0	11	1	0	0	0	1	38
05:45 PM	1	24	0	0	25	0	0	0	0	0	0	**11**	12	0	**23**	3	0	**3**	0	**6**	**54**
Total Volume	7	97	0	0	104	0	0	0	0	0	0	24	30	0	54	9	0	4	0	13	171
% App. Total	6.7	93.3	0	0		0	0	0	0		0	44.4	55.6	0		69.2	0	30.8	0		
PHF	.583	.866	.000	.000	.839	.000	.000	.000	.000	.000	.000	.545	.625	.000	.587	.563	.000	.333	.000	.542	.792
Cars	7	97	0	0	104	0	0	0	0	0	0	24	30	0	54	9	0	4	0	13	171
% Cars	100	100	0	0	100	0	0	0	0	0	0	100	100	0	100	100	0	100	0	100	100
Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

VEHICULAR TRAFFIC COUNT SUMMARY

Municipality: Broadview Heights **At Intersection of:** West Mill Road **and** Lacey Lane

Date: 1/17/2023 **Day:** Tue. **Comments:** **Project:** 22-156

Weather: Clear **Recorder(s):** JMC **Data entry by:** JJO **Date entered:** Jan. 18, 2023 W. Mill Rd & Lacey Ln 011723

TIME BEGINS	W. Mill Rd. FROM NORTH						W. Mill Rd. FROM SOUTH						TOTAL NORTH SOUTH	Lacey Ln. FROM EAST						FROM WEST						TOTAL EAST WEST	TOTAL ALL DIREC.	PEAK HOUR FACTOR			
	Left	Thru	Right	Total	Trk	Bus	Left	Thru	Right	Total	Trk	Bus		Left	Thru	Right	Total	Trk	Bus	Left	Thru	Right	Total	Trk	Bus			North	South	East	West
06:00																														
07:00	175	7	0	182	1	9	0	27	39	66	1	1	248	1	0	57	58	0	9							58	306	0.506	0.660	0.558	0.000
08:00	31	9	0	40	0	0	0	13	24	37	0	1	77	4	0	19	23	0	2							23	100	0.526	0.925	0.958	0.000
09:00	82	4	0	86	2	0	0	10	10	20	2	0	106	7	0	38	45	0	0							45	151	0.439	0.556	0.489	0.000
10:00																														
11:00	66	6	0	72	1	0	0	14	13	27	0	0	99	13	0	74	87	1	0							87	186	0.818	0.563	0.435	0.000
12:00	19	9	0	28	0	1	0	6	6	12	0	0	40	2	0	24	26	1	0							26	66	0.778	0.429	0.813	0.000
1:00																														
2:00	56	5	0	61	1	0	0	10	5	15	2	0	76	5	0	39	44	0	10							44	120	3.813	1.875	1.222	
3:00	47	19	0	66	1	0	0	16	8	24	1	1	90	7	0	45	52	1	4							52	142	0.825	0.750	0.619	0.000
4:00	55	25	0	80	0	0	0	20	17	37	0	1	117	15	0	33	48	0	2							48	165	0.769	0.771	0.750	0.000
5:00	77	28	0	105	0	0	0	11	13	24	0	0	129	17	0	41	58	0	0							58	187	0.875	0.857	0.558	0.000
6:00																														
7:00																														
8:00																														
9:00																														
TOTALS	608	112	0	720	6	10	0	127	135	262	6	4	982	71	0	370	441	3	27							441	1423				
ADT	836	154	0	990	2.2%		0	175	186	360	3.8%		1350	98	0	509	606	6.8%								606	1957				

N Leg Hourly Factor:	1.56	E Leg Hourly Factor:	1.56
S Leg Hourly Factor:	1.56	W leg Hourly Factor:	0.00
N Leg Monthly Factor:	0.88	E Leg Monthly Factor:	0.88
S Leg Monthly Factor:	0.88	W Leg Monthly Factor:	0.00

N Leg Combined Factor:	1.38	E Leg Combined Factor:	1.38
S Leg Combined Factor:	1.38	W Leg Combined Factor:	

TMS ENGINEERS, INC.

2112 Case Parkway South #7

Twinsburg, Ohio 44087

(330) 686-6402 FAX: (330) 686-6417

Figure #:

Page #:

TMS Engineers, Inc.

2112 Case Parkway South #7
Twinsburg, Ohio 44087
Transportation Manangement Services

City: Broadview Heights
Intersection: W.Mill Rd & Lacey Ln
Counter: JMC
Day of the Week: Tuesday

File Name : lacey lane old mill rd jmc 11723 broadview hts
Site Code : 00000000
Start Date : 1/17/2023
Page No : 1

Groups Printed- Cars - Trucks - Buses

	WEST MILL ROAD From North					LACEY LANE From East					WEST MILL ROAD From South					From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	0	2	46	0	48	3	0	0	0	3	6	2	0	0	8	0	0	0	0	0	59
07:15 AM	0	3	87	0	90	14	0	0	0	14	17	8	0	0	25	0	0	0	0	0	129
07:30 AM	0	1	33	0	34	25	0	1	0	26	7	11	0	0	18	0	0	0	0	0	78
07:45 AM	0	1	9	0	10	15	0	0	0	15	9	6	0	0	15	0	0	0	0	0	40
Total	0	7	175	0	182	57	0	1	0	58	39	27	0	0	66	0	0	0	0	0	306
08:00 AM	0	1	6	0	7	4	0	2	0	6	5	5	0	0	10	0	0	0	0	0	23
08:15 AM	0	3	4	0	7	6	0	0	0	6	9	1	0	0	10	0	0	0	0	0	23
08:30 AM	0	3	4	0	7	5	0	0	0	5	5	3	0	0	8	0	0	0	0	0	20
08:45 AM	0	2	17	0	19	4	0	2	0	6	5	4	0	0	9	0	0	0	0	0	34
Total	0	9	31	0	40	19	0	4	0	23	24	13	0	0	37	0	0	0	0	0	100
09:00 AM	0	2	47	0	49	13	0	1	0	14	5	4	0	0	9	0	0	0	0	0	72
09:15 AM	0	0	24	0	24	20	0	3	1	24	3	3	0	0	6	0	0	0	0	0	54
09:30 AM	0	1	6	0	7	3	0	0	0	3	2	2	0	0	4	0	0	0	0	0	14
09:45 AM	0	1	5	0	6	2	0	3	0	5	0	1	0	0	1	0	0	0	0	0	12
Total	0	4	82	0	86	38	0	7	1	46	10	10	0	0	20	0	0	0	0	0	152
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	0	2	13	0	15	47	0	3	0	50	2	5	0	0	7	0	0	0	0	0	72
11:15 AM	0	2	12	0	14	9	0	5	0	14	5	7	0	0	12	0	0	0	0	0	40
11:30 AM	0	1	21	0	22	7	0	2	1	10	4	2	0	0	6	0	0	0	0	0	38
11:45 AM	0	1	20	0	21	11	0	3	0	14	2	0	0	0	2	0	0	0	0	0	37
Total	0	6	66	0	72	74	0	13	1	88	13	14	0	0	27	0	0	0	0	0	187
12:00 PM	0	2	6	0	8	8	0	0	0	8	1	1	0	0	2	0	0	0	0	0	18
12:15 PM	0	1	4	0	5	4	0	1	0	5	4	3	0	0	7	0	0	0	0	0	17
12:30 PM	0	2	4	0	6	5	0	1	0	6	1	0	0	0	1	0	0	0	0	0	13
12:45 PM	0	4	5	0	9	7	0	0	0	7	0	2	0	0	2	0	0	0	0	0	18
Total	0	9	19	0	28	24	0	2	0	26	6	6	0	0	12	0	0	0	0	0	66

TMS Engineers, Inc.

2112 Case Parkway South #7
Twinsburg, Ohio 44087
Transportation Manangement Services

File Name : lacey lane old mill rd jmc 11723 broadview hts
Site Code : 00000000
Start Date : 1/17/2023
Page No : 2

Groups Printed- Cars - Trucks - Buses

	WEST MILL ROAD From North					LACEY LANE From East					WEST MILL ROAD From South					From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00 PM	0	1	3	0	4	9	0	0	0	9	1	1	0	1	3	0	0	0	2	2	18
02:15 PM	0	1	15	0	16	7	0	0	0	7	1	2	0	0	3	0	0	0	0	0	26
02:30 PM	0	3	21	0	24	5	0	3	0	8	1	4	0	0	5	0	0	0	0	0	37
02:45 PM	0	0	17	0	17	18	0	2	0	20	2	3	0	0	5	0	0	0	0	0	42
Total	0	5	56	0	61	39	0	5	0	44	5	10	0	1	16	0	0	0	2	2	123
03:00 PM	0	4	7	0	11	17	0	4	0	21	0	7	0	0	7	0	0	0	0	0	39
03:15 PM	0	2	15	0	17	11	0	0	0	11	2	2	0	0	4	0	0	0	0	0	32
03:30 PM	0	7	13	0	20	6	0	3	0	9	3	5	0	0	8	0	0	0	1	1	38
03:45 PM	0	6	12	0	18	11	0	0	0	11	3	2	0	0	5	0	0	0	0	0	34
Total	0	19	47	0	66	45	0	7	0	52	8	16	0	0	24	0	0	0	1	1	143
04:00 PM	0	9	13	0	22	10	0	4	0	14	6	2	0	0	8	0	0	0	0	0	44
04:15 PM	0	5	21	0	26	6	0	3	1	10	5	7	0	0	12	0	0	0	1	1	49
04:30 PM	0	5	11	0	16	13	0	3	0	16	5	5	0	0	10	0	0	0	0	0	42
04:45 PM	0	6	10	0	16	4	0	5	1	10	1	6	0	0	7	0	0	0	0	0	33
Total	0	25	55	0	80	33	0	15	2	50	17	20	0	0	37	0	0	0	1	1	168
05:00 PM	0	8	13	0	21	8	0	6	1	15	2	3	0	0	5	0	0	0	0	0	41
05:15 PM	0	5	24	0	29	6	0	3	0	9	5	1	0	0	6	0	0	0	0	0	44
05:30 PM	0	8	17	0	25	6	0	3	0	9	1	5	0	0	6	0	0	0	0	0	40
05:45 PM	0	7	23	0	30	21	0	5	0	26	5	2	0	0	7	0	0	0	0	0	63
Total	0	28	77	0	105	41	0	17	1	59	13	11	0	0	24	0	0	0	0	0	188
Grand Total	0	112	608	0	720	370	0	71	5	446	135	127	0	1	263	0	0	0	4	4	1433
Apprch %	0	15.6	84.4	0		83	0	15.9	1.1		51.3	48.3	0	0.4		0	0	0	100		
Total %	0	7.8	42.4	0	50.2	25.8	0	5	0.3	31.1	9.4	8.9	0	0.1	18.4	0	0	0	0.3	0.3	
Cars	0	107	597	0	704	344	0	67	5	416	130	122	0	1	253	0	0	0	4	4	1377
% Cars	0	95.5	98.2	0	97.8	93	0	94.4	100	93.3	96.3	96.1	0	100	96.2	0	0	0	100	100	96.1
Trucks	0	4	2	0	6	1	0	2	0	3	2	4	0	0	6	0	0	0	0	0	15
% Trucks	0	3.6	0.3	0	0.8	0.3	0	2.8	0	0.7	1.5	3.1	0	0	2.3	0	0	0	0	0	1
Buses	0	1	9	0	10	25	0	2	0	27	3	1	0	0	4	0	0	0	0	0	41
% Buses	0	0.9	1.5	0	1.4	6.8	0	2.8	0	6.1	2.2	0.8	0	0	1.5	0	0	0	0	0	2.9

TMS Engineers, Inc.

2112 Case Parkway South #7
Twinsburg, Ohio 44087
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File Name : lacey lane old mill rd jmc 11723 broadview hts
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Page No : 3

	WEST MILL ROAD From North					LACEY LANE From East					WEST MILL ROAD From South					From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	2	46	0	48	3	0	0	0	3	6	2	0	0	8	0	0	0	0	0	59
07:15 AM	0	**3**	**87**	0	**90**	14	0	0	0	14	**17**	8	0	0	**25**	0	0	0	0	0	**129**
07:30 AM	0	1	33	0	34	**25**	0	**1**	0	**26**	7	**11**	0	0	18	0	0	0	0	0	78
07:45 AM	0	1	9	0	10	15	0	0	0	15	9	6	0	0	15	0	0	0	0	0	40
Total Volume	0	7	175	0	182	57	0	1	0	58	39	27	0	0	66	0	0	0	0	0	306
% App. Total	0	3.8	96.2	0		98.3	0	1.7	0		59.1	40.9	0	0		0	0	0	0		
PHF	.000	.583	.503	.000	.506	.570	.000	.250	.000	.558	.574	.614	.000	.000	.660	.000	.000	.000	.000	.000	.593
Cars	0	5	167	0	172	48	0	1	0	49	37	27	0	0	64	0	0	0	0	0	285
% Cars	0	71.4	95.4	0	94.5	84.2	0	100	0	84.5	94.9	100	0	0	97.0	0	0	0	0	0	93.1
Trucks	0	1	0	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	2
% Trucks	0	14.3	0	0	0.5	0	0	0	0	0	2.6	0	0	0	1.5	0	0	0	0	0	0.7
Buses	0	1	8	0	9	9	0	0	0	9	1	0	0	0	1	0	0	0	0	0	19
% Buses	0	14.3	4.6	0	4.9	15.8	0	0	0	15.5	2.6	0	0	0	1.5	0	0	0	0	0	6.2
Peak Hour Analysis From 02:45 PM to 03:30 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 02:45 PM																					
02:45 PM	0	0	**17**	0	17	**18**	0	2	0	20	2	3	0	0	5	0	0	0	0	0	**42**
03:00 PM	0	4	7	0	11	17	0	**4**	0	**21**	0	**7**	0	0	7	0	0	0	0	0	39
03:15 PM	0	2	15	0	17	11	0	0	0	11	2	2	0	0	4	0	0	0	0	0	32
03:30 PM	0	**7**	13	0	**20**	6	0	3	0	9	**3**	5	0	0	**8**	0	0	0	**1**	**1**	38
Total Volume	0	13	52	0	65	52	0	9	0	61	7	17	0	0	24	0	0	0	1	1	151
% App. Total	0	20	80	0		85.2	0	14.8	0		29.2	70.8	0	0		0	0	0	100		
PHF	.000	.464	.765	.000	.813	.722	.000	.563	.000	.726	.583	.607	.000	.000	.750	.000	.000	.000	.250	.250	.899
Cars	0	12	52	0	64	40	0	7	0	47	7	15	0	0	22	0	0	0	1	1	134
% Cars	0	92.3	100	0	98.5	76.9	0	77.8	0	77.0	100	88.2	0	0	91.7	0	0	0	100	100	88.7
Trucks	0	1	0	0	1	0	0	1	0	1	0	1	0	0	1	0	0	0	0	0	3
% Trucks	0	7.7	0	0	1.5	0	0	11.1	0	1.6	0	5.9	0	0	4.2	0	0	0	0	0	2.0
Buses	0	0	0	0	0	12	0	1	0	13	0	1	0	0	1	0	0	0	0	0	14
% Buses	0	0	0	0	0	23.1	0	11.1	0	21.3	0	5.9	0	0	4.2	0	0	0	0	0	9.3
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	0	**8**	13	0	21	8	0	**6**	**1**	15	2	3	0	0	5	0	0	0	0	0	41
05:15 PM	0	5	**24**	0	29	6	0	3	0	9	**5**	1	0	0	6	0	0	0	0	0	44
05:30 PM	0	8	17	0	25	6	0	3	0	9	1	**5**	0	0	6	0	0	0	0	0	40
05:45 PM	0	7	23	0	**30**	**21**	0	5	0	**26**	5	2	0	0	**7**	0	0	0	0	0	**63**
Total Volume	0	28	77	0	105	41	0	17	1	59	13	11	0	0	24	0	0	0	0	0	188
% App. Total	0	26.7	73.3	0		69.5	0	28.8	1.7		54.2	45.8	0	0		0	0	0	0		
PHF	.000	.875	.802	.000	.875	.488	.000	.708	.250	.567	.650	.550	.000	.000	.857	.000	.000	.000	.000	.000	.746
Cars	0	28	77	0	105	41	0	17	1	59	13	11	0	0	24	0	0	0	0	0	188
% Cars	0	100	100	0	100	100	0	100	100	100	100	100	0	0	100	0	0	0	0	0	100
Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

VEHICULAR TRAFFIC COUNT SUMMARY

Municipality: Broadview Heights **At Intersection of:** Mill Road **and** Broadmill Drive

Date: 1/17/2023 **Day:** Tue. **Comments:** **Project:** 22-156

Weather: Clear **Recorder(s):** RJS **Data entry by:** JJO **Date entered:** Jan. 30, 2023 Mill Rd & Broadmill Dr 011723

TIME BEGINS	Mill Rd. FROM NORTH						Mill Rd. FROM SOUTH						TOTAL NORTH SOUTH	FROM EAST						Broadmill Dr. FROM WEST						TOTAL EAST WEST	TOTAL ALL DIREC.	PEAK HOUR FACTOR			
	Left	Thru	Right	Total	Trk	Bus	Left	Thru	Right	Total	Trk	Bus		Left	Thru	Right	Total	Trk	Bus	Left	Thru	Right	Total	Trk	Bus			North	South	East	West
06:00																														
07:00	0	436	5	441	1	17	1	218	0	219	0	23	660							8	0	1	9	0	0	9	669	0.583	0.711	0.000	0.750
08:00	0	69	3	72	2	2	1	67	0	68	1	2	140							10	0	0	10	1	0	10	150	0.818	0.739	0.000	0.625
09:00	0	159	4	163	1	1	0	146	0	146	1	3	309							2	0	0	2	0	0	2	311	0.608	0.689	0.000	0.250
10:00																														
11:00	0	126	5	131	2	2	1	179	0	180	1	2	311							3	0	2	5	0	0	5	316	0.712	0.506	0.000	0.417
12:00	0	61	9	70	1	1	1	61	0	62	0	0	132							6	0	1	7	0	0	7	139	0.833	0.674	0.000	0.583
1:00																														
2:00	0	145	7	152	0	31	0	87	0	87	0	0	239							4	0	1	5	0	0	5	244	2.000	0.837		1.250
3:00	0	112	10	122	1	0	1	201	0	202	1	18	324							1	0	1	2	0	0	2	326	0.803	0.682	0.000	0.500
4:00	0	216	7	223	1	4	2	117	0	119	1	4	342							4	0	4	8	0	2	8	350	0.832	0.902	0.000	0.667
5:00	0	259	8	267	0	1	1	128	0	129	0	0	396							5	0	1	6	0	0	6	402	0.867	0.733	0.000	0.375
6:00																														
7:00																														
8:00																														
9:00																														
TOTALS	0	1583	58	1641	9	59	8	1204	0	1212	5	52	2853							43	0	11	54	1	2	54	2907				
ADT	0	2177	80	2257	4.1%		11	1656	0	1667	4.7%		3923							59	0	15	74	5.6%		74	3997				

N Leg Hourly Factor:	1.56	E Leg Hourly Factor:	0.00
S Leg Hourly Factor:	1.56	W leg Hourly Factor:	1.56
N Leg Monthly Factor:	0.88	E Leg Monthly Factor:	0.00
S Leg Monthly Factor:	0.88	W Leg Monthly Factor:	0.88

N Leg Combined Factor:	1.38	E Leg Combined Factor:	
S Leg Combined Factor:	1.38	W Leg Combined Factor:	1.38

TMS ENGINEERS, INC.

2112 Case Parkway South #7

Twinsburg, Ohio 44087

(330) 686-6402 FAX: (330) 686-6417

Figure #:

Page #:

TMS Engineers, Inc.

2112 Case Parkway South #7
Twinsburg, Ohio 44087
Transportation Manangement Services

City: Broadview Heights
Intersection: Mill Rd & Broadmill Dr
Counter: RJS
Day of the Week: Tuesday

File Name : Mill Rd & Broadmill Rd 011723 RJS
Site Code : 00000000
Start Date : 1/17/2023

Groups Printed- Cars - Trucks - Buses

	MILL ROAD From North					From East					MILL ROAD From South					BROADMILL DRIVE From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	0	54	0	0	54	0	0	0	0	0	0	15	0	0	15	1	0	1	0	2	71
07:15 AM	1	188	0	0	189	0	0	0	0	0	0	55	0	0	55	0	0	2	0	2	246
07:30 AM	3	162	0	0	165	0	0	0	0	0	0	77	0	0	77	0	0	2	0	2	244
07:45 AM	1	32	0	0	33	0	0	0	0	0	0	71	1	0	72	0	0	3	0	3	108
Total	5	436	0	0	441	0	0	0	0	0	0	218	1	0	219	1	0	8	0	9	669
08:00 AM	1	13	0	0	14	0	0	0	0	0	0	12	0	0	12	0	0	2	0	2	28
08:15 AM	1	16	0	0	17	0	0	0	0	0	0	22	1	0	23	0	0	3	1	4	44
08:30 AM	1	21	0	0	22	0	0	0	0	0	0	14	0	0	14	0	0	4	0	4	40
08:45 AM	0	19	0	0	19	0	0	0	0	0	0	19	0	0	19	0	0	1	0	1	39
Total	3	69	0	0	72	0	0	0	0	0	0	67	1	0	68	0	0	10	1	11	151
09:00 AM	2	64	0	0	66	0	0	0	0	0	0	25	0	0	25	0	0	0	0	0	91
09:15 AM	1	66	0	0	67	0	0	0	2	2	0	53	0	0	53	0	0	0	0	0	122
09:30 AM	1	20	0	0	21	0	0	0	0	0	0	48	0	0	48	0	0	2	0	2	71
09:45 AM	0	9	0	0	9	0	0	0	0	0	0	20	0	0	20	0	0	0	2	2	31
Total	4	159	0	0	163	0	0	0	2	2	0	146	0	0	146	0	0	2	2	4	315
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	1	45	0	0	46	0	0	0	0	0	0	89	0	0	89	0	0	0	0	0	135
11:15 AM	1	12	0	0	13	0	0	0	0	0	0	39	0	0	39	0	0	0	0	0	52
11:30 AM	1	29	0	0	30	0	0	0	0	0	0	16	0	2	18	0	0	3	2	5	53
11:45 AM	2	40	0	0	42	0	0	0	0	0	0	35	1	1	37	2	0	0	2	4	83
Total	5	126	0	0	131	0	0	0	0	0	0	179	1	3	183	2	0	3	4	9	323
12:00 PM	2	19	0	2	23	0	0	0	0	0	0	22	1	0	23	0	0	2	2	4	50
12:15 PM	6	10	0	0	16	0	0	0	0	0	0	8	0	0	8	0	0	0	1	1	25
12:30 PM	1	14	0	0	15	0	0	0	0	0	0	15	0	1	16	1	0	2	0	3	34
12:45 PM	0	18	0	0	18	0	0	0	0	0	0	16	0	0	16	0	0	2	0	2	36
Total	9	61	0	2	72	0	0	0	0	0	0	61	1	1	63	1	0	6	3	10	145

TMS Engineers, Inc.

2112 Case Parkway South #7
Twinsburg, Ohio 44087
Transportation Manangement Services

File Name : Mill Rd & Broadmill Rd 011723 RJS
Site Code : 00000000
Start Date : 1/17/2023
Page No : 2

Groups Printed- Cars - Trucks - Buses

	MILL ROAD From North					From East					MILL ROAD From South					BROADMILL DRIVE From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00 PM	2	17	0	0	19	0	0	0	0	0	0	26	0	0	26	1	0	0	2	3	48
02:15 PM	1	23	0	2	26	0	0	0	0	0	0	18	0	1	19	0	0	3	9	12	57
02:30 PM	3	59	0	0	62	0	0	0	0	0	0	16	0	1	17	0	0	1	3	4	83
02:45 PM	1	46	0	0	47	0	0	0	0	0	0	27	0	0	27	0	0	0	1	1	75
Total	7	145	0	2	154	0	0	0	0	0	0	87	0	2	89	1	0	4	15	20	263
03:00 PM	5	15	0	0	20	0	0	0	0	0	0	73	1	0	74	1	0	0	2	3	97
03:15 PM	1	29	0	0	30	0	0	0	0	0	0	44	0	0	44	0	0	0	0	0	74
03:30 PM	3	31	0	0	34	0	0	0	0	0	0	40	0	0	40	0	0	0	2	2	76
03:45 PM	1	37	0	0	38	0	0	0	0	0	0	44	0	0	44	0	0	1	2	3	85
Total	10	112	0	0	122	0	0	0	0	0	0	201	1	0	202	1	0	1	6	8	332
04:00 PM	2	38	0	0	40	0	0	0	0	0	0	33	0	0	33	1	0	1	0	2	75
04:15 PM	1	66	0	0	67	0	0	0	0	0	0	25	1	0	26	1	0	2	4	7	100
04:30 PM	2	62	0	1	65	0	0	0	0	0	0	30	1	1	32	2	0	1	4	7	104
04:45 PM	2	50	0	0	52	0	0	0	0	0	0	29	0	0	29	0	0	0	0	0	81
Total	7	216	0	1	224	0	0	0	0	0	0	117	2	1	120	4	0	4	8	16	360
05:00 PM	5	55	0	0	60	0	0	0	0	0	0	23	0	0	23	0	0	2	0	2	85
05:15 PM	1	76	0	1	78	0	0	0	0	0	0	29	1	0	30	0	0	0	3	3	111
05:30 PM	1	67	0	2	70	0	0	0	0	0	0	32	0	0	32	0	0	0	4	4	106
05:45 PM	1	61	0	0	62	0	0	0	0	0	0	44	0	0	44	1	0	3	0	4	110
Total	8	259	0	3	270	0	0	0	0	0	0	128	1	0	129	1	0	5	7	13	412
Grand Total	58	1583	0	8	1649	0	0	0	2	2	0	1204	8	7	1219	11	0	43	46	100	2970
Apprch %	3.5	96	0	0.5		0	0	0	100		0	98.8	0.7	0.6		11	0	43	46		
Total %	2	53.3	0	0.3	55.5	0	0	0	0.1	0.1	0	40.5	0.3	0.2	41	0.4	0	1.4	1.5	3.4	
Cars	55	1518	0	8	1581	0	0	0	2	2	0	1149	6	7	1162	11	0	40	46	97	2842
% Cars	94.8	95.9	0	100	95.9	0	0	0	100	100	0	95.4	75	100	95.3	100	0	93	100	97	95.7
Trucks	3	6	0	0	9	0	0	0	0	0	0	5	0	0	5	0	0	1	0	1	15
% Trucks	5.2	0.4	0	0	0.5	0	0	0	0	0	0	0.4	0	0	0.4	0	0	2.3	0	1	0.5
Buses	0	59	0	0	59	0	0	0	0	0	0	50	2	0	52	0	0	2	0	2	113
% Buses	0	3.7	0	0	3.6	0	0	0	0	0	0	4.2	25	0	4.3	0	0	4.7	0	2	3.8

TMS Engineers, Inc.

2112 Case Parkway South #7
Twinsburg, Ohio 44087
Transportation Manangement Services

File Name : Mill Rd & Broadmill Rd 011723 RJS
Site Code : 00000000
Start Date : 1/17/2023
Page No : 3

	MILL ROAD From North					From East					MILL ROAD From South					BROADMILL DRIVE From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	54	0	0	54	0	0	0	0	0	0	15	0	0	15	**1**	0	1	0	2	71
07:15 AM	1	**188**	0	0	**189**	0	0	0	0	0	0	55	0	0	55	0	0	2	0	2	**246**
07:30 AM	**3**	162	0	0	165	0	0	0	0	0	0	**77**	0	0	**77**	0	0	2	0	2	244
07:45 AM	1	32	0	0	33	0	0	0	0	0	0	71	**1**	0	72	0	0	**3**	0	**3**	108
Total Volume	5	436	0	0	441	0	0	0	0	0	0	218	1	0	219	1	0	8	0	9	669
% App. Total	1.1	98.9	0	0		0	0	0	0		0	99.5	0.5	0		11.1	0	88.9	0		
PHF	.417	.580	.000	.000	.583	.000	.000	.000	.000	.000	.000	.708	.250	.000	.711	.250	.000	.667	.000	.750	.680
Cars	5	418	0	0	423	0	0	0	0	0	0	195	1	0	196	1	0	8	0	9	628
% Cars	100	95.9	0	0	95.9	0	0	0	0	0	0	89.4	100	0	89.5	100	0	100	0	100	93.9
Trucks	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
% Trucks	0	0.2	0	0	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1
Buses	0	17	0	0	17	0	0	0	0	0	0	23	0	0	23	0	0	0	0	0	40
% Buses	0	3.9	0	0	3.9	0	0	0	0	0	0	10.6	0	0	10.5	0	0	0	0	0	6.0
Peak Hour Analysis From 02:45 PM to 03:30 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 02:45 PM																					
02:45 PM	1	**46**	0	0	**47**	0	0	0	0	0	0	27	0	0	27	0	0	0	1	1	75
03:00 PM	**5**	15	0	0	20	0	0	0	0	0	0	**73**	**1**	0	**74**	**1**	0	0	**2**	**3**	**97**
03:15 PM	1	29	0	0	30	0	0	0	0	0	0	44	0	0	44	0	0	0	0	0	74
03:30 PM	3	31	0	0	34	0	0	0	0	0	0	40	0	0	40	0	0	0	2	2	76
Total Volume	10	121	0	0	131	0	0	0	0	0	0	184	1	0	185	1	0	0	5	6	322
% App. Total	7.6	92.4	0	0		0	0	0	0		0	99.5	0.5	0		16.7	0	0	83.3		
PHF	.500	.658	.000	.000	.697	.000	.000	.000	.000	.000	.000	.630	.250	.000	.625	.250	.000	.000	.625	.500	.830
Cars	10	121	0	0	131	0	0	0	0	0	0	165	1	0	166	1	0	0	5	6	303
% Cars	100	100	0	0	100	0	0	0	0	0	0	89.7	100	0	89.7	100	0	0	100	100	94.1
Trucks	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
% Trucks	0	0	0	0	0	0	0	0	0	0	0	0.5	0	0	0.5	0	0	0	0	0	0.3
Buses	0	0	0	0	0	0	0	0	0	0	0	18	0	0	18	0	0	0	0	0	18
% Buses	0	0	0	0	0	0	0	0	0	0	0	9.8	0	0	9.7	0	0	0	0	0	5.6
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	**5**	55	0	0	60	0	0	0	0	0	0	23	0	0	23	0	0	2	0	2	85
05:15 PM	1	**76**	0	1	**78**	0	0	0	0	0	0	29	**1**	0	30	0	0	0	3	3	**111**
05:30 PM	1	67	0	**2**	70	0	0	0	0	0	0	32	0	0	32	0	0	0	**4**	**4**	106
05:45 PM	1	61	0	0	62	0	0	0	0	0	0	**44**	0	0	**44**	**1**	0	**3**	0	4	110
Total Volume	8	259	0	3	270	0	0	0	0	0	0	128	1	0	129	1	0	5	7	13	412
% App. Total	3	95.9	0	1.1		0	0	0	0		0	99.2	0.8	0		7.7	0	38.5	53.8		
PHF	.400	.852	.000	.375	.865	.000	.000	.000	.000	.000	.000	.727	.250	.000	.733	.250	.000	.417	.438	.813	.928
Cars	8	258	0	3	269	0	0	0	0	0	0	128	1	0	129	1	0	5	7	13	411
% Cars	100	99.6	0	100	99.6	0	0	0	0	0	0	100	100	0	100	100	0	100	100	100	99.8
Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Buses	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
% Buses	0	0.4	0	0	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2

VEHICULAR TRAFFIC COUNT SUMMARY

Municipality: Brecksville **At Intersection of:** Mill Road **and** Millwood Drive

Date: 1/24/2023 **Day:** Tue. **Comments:** **Project:** 22-155

Weather: Clear **Recorder(s):** JMC **Data entry by:** JJO **Date entered:** Jan. 25, 2023 Mill Rd & Millwood Dr 012423

TIME BEGINS	FROM NORTH						Millwood Dr. FROM SOUTH						TOTAL NORTH SOUTH	Mill Rd. FROM EAST						Mill Rd. FROM WEST						TOTAL EAST WEST	TOTAL ALL DIREC.	PEAK HOUR FACTOR			
	Left	Thru	Right	Total	Trk	Bus	Left	Thru	Right	Total	Trk	Bus		Left	Thru	Right	Total	Trk	Bus	Left	Thru	Right	Total	Trk	Bus			North	South	East	West
06:00																														
07:00							12	0	11	23	0	0	23	1	224	0	225	2	26	0	421	3	424	1	21	649	672	0.000	0.575	0.625	0.555
08:00							3	0	8	11	0	1	11	5	77	0	82	0	1	0	95	0	95	0	2	177	188	0.000	0.550	0.641	0.516
09:00							5	0	6	11	1	0	11	4	63	0	67	1	3	0	59	3	62	0	0	129	140	0.000	0.688	0.698	0.738
10:00																														
11:00							4	0	5	9	1	1	9	1	104	0	105	2	3	0	88	3	91	1	2	196	205	0.000	0.750	0.610	0.843
12:00							3	0	3	6	0	0	6	2	76	0	78	1	0	0	107	3	110	5	1	188	194	0.000	0.500	0.780	0.917
1:00																														
2:00							2	0	7	9	0	0	9	7	204	0	211	1	17	0	187	7	194	2	36	405	414		####	0.909	3.031
3:00							4	0	4	8	1	0	8	2	268	0	270	0	7	0	145	12	157	3	1	427	435	0.000	1.000	0.527	0.714
4:00							8	0	4	12	1	0	12	9	123	0	132	1	2	0	229	6	235	1	0	367	379	0.000	0.750	0.750	0.864
5:00							3	0	5	8	0	0	8	2	173	0	175	1	0	0	249	7	256	0	0	431	439	0.000	0.667	0.754	0.719
6:00																														
7:00																														
8:00																														
9:00																														
TOTALS							44	0	53	97	4	2	97	33	1312	0	1345	9	59	0	1580	44	1624	13	63	2969	3066				
ADT							61	0	73	133	6.2%		133	45	1804	0	1849	5.1%		0	2173	61	2233	4.7%		4083	4216				

N Leg Hourly Factor:	0.00	E Leg Hourly Factor:	1.56
S Leg Hourly Factor:	1.56	W leg Hourly Factor:	1.56
N Leg Monthly Factor:	0.00	E Leg Monthly Factor:	0.88
S Leg Monthly Factor:	0.88	W Leg Monthly Factor:	0.88

N Leg Combined Factor:		E Leg Combined Factor:	1.38
S Leg Combined Factor:	1.38	W Leg Combined Factor:	1.38

TMS ENGINEERS, INC.

2112 Case Parkway South #7

Twinsburg, Ohio 44087

(330) 686-6402 FAX: (330) 686-6417

Figure #:

Page #:

TMS Engineers, Inc.

2112 Case Parkway South #7
Twinsburg, Ohio 44087
Transportation Manangement Services

City: Brecksville
Intersection: Mill Rd & Millwood Dr
Counter: JMC
Day of the Week: Tuesday

File Name : mill rd millwood broadview hts jmc 12422
Site Code : 00000000
Start Date : 1/24/2023
Page No : 1

Groups Printed- Cars - Trucks - Buses

	From North					MILL ROAD From East					MILLWOOD DRIVE From South					MILL ROAD From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	23	0	0	23	2	0	2	0	4	1	85	0	0	86	113
07:15 AM	0	0	0	0	0	0	67	0	0	67	3	0	4	0	7	0	191	0	1	192	266
07:30 AM	0	0	0	0	0	0	89	1	0	90	5	0	5	0	10	2	132	0	3	137	237
07:45 AM	0	0	0	0	0	0	45	0	0	45	1	0	1	0	2	0	13	0	0	13	60
Total	0	0	0	0	0	0	224	1	0	225	11	0	12	0	23	3	421	0	4	428	676
08:00 AM	0	0	0	0	0	0	15	0	0	15	1	0	1	0	2	0	23	0	0	23	40
08:15 AM	0	0	0	0	0	0	22	1	0	23	1	0	0	0	1	0	46	0	0	46	70
08:30 AM	0	0	0	0	0	0	29	3	0	32	2	0	1	0	3	0	17	0	0	17	52
08:45 AM	0	0	0	0	0	0	11	1	0	12	4	0	1	0	5	0	9	0	0	9	26
Total	0	0	0	0	0	0	77	5	0	82	8	0	3	0	11	0	95	0	0	95	188
09:00 AM	0	0	0	0	0	0	12	1	0	13	1	0	2	0	3	0	21	0	0	21	37
09:15 AM	0	0	0	0	0	0	21	3	0	24	0	0	1	0	1	2	10	0	0	12	37
09:30 AM	0	0	0	0	0	0	15	0	0	15	2	0	2	0	4	0	11	0	0	11	30
09:45 AM	0	0	0	0	0	0	15	0	0	15	3	0	0	0	3	1	17	0	0	18	36
Total	0	0	0	0	0	0	63	4	0	67	6	0	5	0	11	3	59	0	0	62	140
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	0	0	43	0	0	43	0	0	3	0	3	0	23	0	0	23	69
11:15 AM	0	0	0	0	0	0	19	1	0	20	2	0	0	0	2	0	21	0	0	21	43
11:30 AM	0	0	0	0	0	0	12	0	0	12	1	0	1	0	2	2	25	0	0	27	41
11:45 AM	0	0	0	0	0	0	30	0	0	30	2	0	0	0	2	1	19	0	0	20	52
Total	0	0	0	0	0	0	104	1	0	105	5	0	4	0	9	3	88	0	0	91	205
12:00 PM	0	0	0	0	0	0	15	1	0	16	0	0	1	0	1	1	24	0	0	25	42
12:15 PM	0	0	0	0	0	0	19	0	0	19	0	0	0	0	0	1	25	0	1	27	46
12:30 PM	0	0	0	0	0	0	24	1	0	25	3	0	0	0	3	1	29	0	0	30	58
12:45 PM	0	0	0	0	0	0	18	0	0	18	0	0	2	0	2	0	29	0	0	29	49
Total	0	0	0	0	0	0	76	2	0	78	3	0	3	0	6	3	107	0	1	111	195

TMS Engineers, Inc.

2112 Case Parkway South #7
Twinsburg, Ohio 44087
Transportation Manangement Services

File Name : mill rd millwood broadview hts jmc 12422
Site Code : 00000000
Start Date : 1/24/2023
Page No : 2

Groups Printed- Cars - Trucks - Buses

	From North					MILL ROAD From East					MILLWOOD DRIVE From South					MILL ROAD From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00 PM	0	0	0	0	0	0	58	0	0	58	0	0	0	0	0	0	16	0	0	16	74
02:15 PM	0	0	0	0	0	0	11	2	0	13	2	0	1	0	3	2	54	0	2	58	74
02:30 PM	0	0	0	0	0	0	25	2	0	27	1	0	1	0	2	1	74	0	0	75	104
02:45 PM	0	0	0	0	0	0	110	3	0	113	4	0	0	0	4	4	43	0	1	48	165
Total	0	0	0	0	0	0	204	7	0	211	7	0	2	0	9	7	187	0	3	197	417
03:00 PM	0	0	0	0	0	0	127	1	0	128	1	0	1	0	2	2	19	0	4	25	155
03:15 PM	0	0	0	0	0	0	47	0	0	47	1	0	1	0	2	4	33	0	0	37	86
03:30 PM	0	0	0	0	0	0	50	0	0	50	2	0	0	0	2	1	43	0	0	44	96
03:45 PM	0	0	0	0	0	0	44	1	0	45	0	0	2	0	2	5	50	0	0	55	102
Total	0	0	0	0	0	0	268	2	0	270	4	0	4	0	8	12	145	0	4	161	439
04:00 PM	0	0	0	0	0	0	43	1	0	44	1	0	0	0	1	0	61	0	0	61	106
04:15 PM	0	0	0	0	0	0	19	2	0	21	1	0	2	0	3	3	65	0	1	69	93
04:30 PM	0	0	0	0	0	0	31	5	0	36	1	0	3	0	4	2	50	0	0	52	92
04:45 PM	0	0	0	0	0	0	30	1	0	31	1	0	3	0	4	1	53	0	1	55	90
Total	0	0	0	0	0	0	123	9	0	132	4	0	8	0	12	6	229	0	2	237	381
05:00 PM	0	0	0	0	0	0	33	0	0	33	1	0	1	0	2	2	48	0	0	50	85
05:15 PM	0	0	0	0	0	0	33	0	0	33	1	0	0	0	1	4	50	0	0	54	88
05:30 PM	0	0	0	0	0	0	51	0	0	51	2	0	1	0	3	0	63	0	1	64	118
05:45 PM	0	0	0	0	0	0	56	2	0	58	1	0	1	0	2	1	88	0	1	90	150
Total	0	0	0	0	0	0	173	2	0	175	5	0	3	0	8	7	249	0	2	258	441
Grand Total	0	0	0	0	0	0	1312	33	0	1345	53	0	44	0	97	44	1580	0	16	1640	3082
Apprch %	0	0	0	0		0	97.5	2.5	0		54.6	0	45.4	0		2.7	96.3	0	1		
Total %	0	0	0	0	0	0	42.6	1.1	0	43.6	1.7	0	1.4	0	3.1	1.4	51.3	0	0.5	53.2	
Cars	0	0	0	0	0	0	1245	32	0	1277	50	0	41	0	91	40	1508	0	16	1564	2932
% Cars	0	0	0	0	0	0	94.9	97	0	94.9	94.3	0	93.2	0	93.8	90.9	95.4	0	100	95.4	95.1
Trucks	0	0	0	0	0	0	8	1	0	9	2	0	2	0	4	4	9	0	0	13	26
% Trucks	0	0	0	0	0	0	0.6	3	0	0.7	3.8	0	4.5	0	4.1	9.1	0.6	0	0	0.8	0.8
Buses	0	0	0	0	0	0	59	0	0	59	1	0	1	0	2	0	63	0	0	63	124
% Buses	0	0	0	0	0	0	4.5	0	0	4.4	1.9	0	2.3	0	2.1	0	4	0	0	3.8	4

TMS Engineers, Inc.

2112 Case Parkway South #7
Twinsburg, Ohio 44087
Transportation Manangement Services

File Name : mill rd millwood broadview hts jmc 12422
Site Code : 00000000
Start Date : 1/24/2023
Page No : 3

	From North					MILL ROAD From East					MILLWOOD DRIVE From South					MILL ROAD From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	0	0	0	0	0	23	0	0	23	2	0	2	0	4	1	85	0	0	86	113
07:15 AM	0	0	0	0	0	0	67	0	0	67	3	0	4	0	7	0	**191**	0	1	**192**	**266**
07:30 AM	0	0	0	0	0	0	**89**	**1**	0	**90**	**5**	0	**5**	0	**10**	**2**	132	0	**3**	137	237
07:45 AM	0	0	0	0	0	0	45	0	0	45	1	0	1	0	2	0	13	0	0	13	60
Total Volume	0	0	0	0	0	0	224	1	0	225	11	0	12	0	23	3	421	0	4	428	676
% App. Total	0	0	0	0		0	99.6	0.4	0		47.8	0	52.2	0		0.7	98.4	0	0.9		
PHF	.000	.000	.000	.000	.000	.000	.629	.250	.000	.625	.550	.000	.600	.000	.575	.375	.551	.000	.333	.557	.635
Cars	0	0	0	0	0	0	196	1	0	197	11	0	12	0	23	3	399	0	4	406	626
% Cars	0	0	0	0	0	0	87.5	100	0	87.6	100	0	100	0	100	100	94.8	0	100	94.9	92.6
Trucks	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	3
% Trucks	0	0	0	0	0	0	0.9	0	0	0.9	0	0	0	0	0	0	0.2	0	0	0.2	0.4
Buses	0	0	0	0	0	0	26	0	0	26	0	0	0	0	0	0	21	0	0	21	47
% Buses	0	0	0	0	0	0	11.6	0	0	11.6	0	0	0	0	0	0	5.0	0	0	4.9	7.0
Peak Hour Analysis From 02:45 PM to 03:30 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 02:45 PM																					
02:45 PM	0	0	0	0	0	0	110	**3**	0	113	**4**	0	0	0	**4**	**4**	**43**	0	1	**48**	**165**
03:00 PM	0	0	0	0	0	0	**127**	1	0	**128**	1	0	**1**	0	2	2	19	0	**4**	25	155
03:15 PM	0	0	0	0	0	0	47	0	0	47	1	0	1	0	2	4	33	0	0	37	86
03:30 PM	0	0	0	0	0	0	50	0	0	50	2	0	0	0	2	1	43	0	0	44	96
Total Volume	0	0	0	0	0	0	334	4	0	338	8	0	2	0	10	11	138	0	5	154	502
% App. Total	0	0	0	0		0	98.8	1.2	0		80	0	20	0		7.1	89.6	0	3.2		
PHF	.000	.000	.000	.000	.000	.000	.657	.333	.000	.660	.500	.000	.500	.000	.625	.688	.802	.000	.313	.802	.761
Cars	0	0	0	0	0	0	311	4	0	315	8	0	2	0	10	9	137	0	5	151	476
% Cars	0	0	0	0	0	0	93.1	100	0	93.2	100	0	100	0	100	81.8	99.3	0	100	98.1	94.8
Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2
% Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18.2	0	0	0	1.3	0.4
Buses	0	0	0	0	0	0	23	0	0	23	0	0	0	0	0	0	1	0	0	1	24
% Buses	0	0	0	0	0	0	6.9	0	0	6.8	0	0	0	0	0	0	0.7	0	0	0.6	4.8
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	0	0	0	0	0	0	33	0	0	33	1	0	**1**	0	2	2	48	0	0	50	85
05:15 PM	0	0	0	0	0	0	33	0	0	33	1	0	0	0	1	**4**	50	0	0	54	88
05:30 PM	0	0	0	0	0	0	51	0	0	51	**2**	0	1	0	**3**	0	63	0	**1**	64	118
05:45 PM	0	0	0	0	0	0	**56**	**2**	0	**58**	1	0	1	0	2	1	**88**	0	1	**90**	**150**
Total Volume	0	0	0	0	0	0	173	2	0	175	5	0	3	0	8	7	249	0	2	258	441
% App. Total	0	0	0	0		0	98.9	1.1	0		62.5	0	37.5	0		2.7	96.5	0	0.8		
PHF	.000	.000	.000	.000	.000	.000	.772	.250	.000	.754	.625	.000	.750	.000	.667	.438	.707	.000	.500	.717	.735
Cars	0	0	0	0	0	0	172	2	0	174	5	0	3	0	8	7	249	0	2	258	440
% Cars	0	0	0	0	0	0	99.4	100	0	99.4	100	0	100	0	100	100	100	0	100	100	99.8
Trucks	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
% Trucks	0	0	0	0	0	0	0.6	0	0	0.6	0	0	0	0	0	0	0	0	0	0	0.2
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

VEHICULAR TRAFFIC COUNT SUMMARY

Municipality: Broadview Heights **At Intersection of:** Mill Road **and** Middle School Driveway

Date: 1/26/2023 **Day:** Thu. **Comments:** **Project:** 22-156

Weather: Snow **Recorder(s):** NED **Data entry by:** JJO **Date entered:** Jan. 30, 2023 Mill Rd & Middle School Driveway 01262

TIME BEGINS	Middle School Driveway FROM NORTH						Middle School Driveway FROM SOUTH						TOTAL NORTH SOUTH	Mill Rd. FROM EAST						Mill Rd. FROM WEST						TOTAL EAST WEST	TOTAL ALL DIREC.	PEAK HOUR FACTOR			
	Left	Thru	Right	Total	Trk	Bus	Left	Thru	Right	Total	Trk	Bus		Left	Thru	Right	Total	Trk	Bus	Left	Thru	Right	Total	Trk	Bus			North	South	East	West
06:00																														
07:00							61	0	57	118	0	0	118	48	142	0	190	1	24	0	273	149	422	1	20	612	730	0.000	0.536	0.848	0.672
08:00							0	0	0	0	0	0	0	1	73	0	74	3	1	0	87	1	88	0	2	162	162	0.000	0.000	0.661	0.710
09:00							0	0	0	0	0	0	0	1	63	0	64	2	2	0	71	0	71	1	1	135	135	0.000	0.000	0.727	0.845
10:00																														
11:00							2	0	4	6	0	0	6	2	69	0	71	1	4	0	83	1	84	3	4	155	161	0.000	0.500	0.740	0.724
12:00							0	0	0	0	0	0	0	4	71	0	75	1	0	0	79	2	81	0	1	156	156	0.000	0.000	0.750	0.810
1:00																														
2:00							34	0	19	53	0	0	53	18	172	0	190	1	20	0	163	30	193	0	37	383	436		6.625	0.931	2.413
3:00							24	0	11	35	0	0	35	2	204	0	206	2	2	0	125	4	129	1	3	335	370	0.000	0.486	0.628	0.872
4:00							6	0	0	6	0	0	6	3	105	0	108	0	3	0	155	7	162	2	2	270	276	0.000	0.375	0.931	0.764
5:00							2	0	0	2	1	0	2	2	139	0	141	0	0	0	183	3	186	2	0	327	329	0.000	0.500	0.860	0.845
6:00																														
7:00																														
8:00																														
9:00																														
TOTALS							129	0	91	220	1	0	220	81	1038	0	1119	11	56	0	1219	197	1416	10	70	2535	2755				
ADT							177	0	125	303	0.5%		303	111	1427	0	1539	6.0%		0	1676	271	1947	5.6%		3486	3788				

N Leg Hourly Factor:	0.00	E Leg Hourly Factor:	1.56
S Leg Hourly Factor:	1.56	W leg Hourly Factor:	1.56
N Leg Monthly Factor:	0.00	E Leg Monthly Factor:	0.88
S Leg Monthly Factor:	0.88	W Leg Monthly Factor:	0.88

N Leg Combined Factor:		E Leg Combined Factor:	1.38
S Leg Combined Factor:	1.38	W Leg Combined Factor:	1.38

TMS ENGINEERS, INC.

2112 Case Parkway South #7

Twinsburg, Ohio 44087

(330) 686-6402 FAX: (330) 686-6417

Figure #:

Page #:

TMS Engineers, Inc.

2112 Case Parkway South #7
Twinsburg, Ohio 44087
Transportation Manangement Services

City: Broadview Heights
Intersection: Mill Rd & MS Driveway
Counter: NED
Day of the Week: Thursday

File Name : Mill Rd & MS Driveway 012623NED
Site Code : 00000000
Start Date : 1/26/2023
Page No : 1

Groups Printed- Cars - Trucks - Buses

	From North					MILL ROAD From East					MIDDLE SCHOOL DRIVEWAY From South					MILL ROAD From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	16	20	0	36	10	0	3	0	13	38	83	0	0	121	170
07:15 AM	0	0	0	0	0	0	37	14	0	51	22	0	26	0	48	48	109	0	0	157	256
07:30 AM	0	0	0	0	0	0	42	14	0	56	24	0	31	0	55	63	67	0	0	130	241
07:45 AM	0	0	0	0	0	0	47	0	0	47	1	0	1	0	2	0	14	0	0	14	63
Total	0	0	0	0	0	0	142	48	0	190	57	0	61	0	118	149	273	0	0	422	730
08:00 AM	0	0	0	0	0	0	14	0	0	14	0	0	0	0	0	0	14	0	0	14	28
08:15 AM	0	0	0	0	0	0	19	0	0	19	0	0	0	0	0	0	31	0	1	32	51
08:30 AM	0	0	0	0	0	0	28	0	0	28	0	0	0	0	0	0	25	0	0	25	53
08:45 AM	0	0	0	0	0	0	12	1	0	13	0	0	0	0	0	1	17	0	0	18	31
Total	0	0	0	0	0	0	73	1	0	74	0	0	0	0	0	1	87	0	1	89	163
09:00 AM	0	0	0	0	0	0	11	0	0	11	0	0	0	0	0	0	19	0	0	19	30
09:15 AM	0	0	0	0	0	0	22	0	0	22	0	0	0	0	0	0	21	0	0	21	43
09:30 AM	0	0	0	0	0	0	17	1	0	18	0	0	0	0	0	0	15	0	0	15	33
09:45 AM	0	0	0	0	0	0	13	0	0	13	0	0	0	0	0	0	16	0	0	16	29
Total	0	0	0	0	0	0	63	1	0	64	0	0	0	0	0	0	71	0	0	71	135
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	0	0	23	1	0	24	1	0	0	0	1	1	22	0	0	23	48
11:15 AM	0	0	0	0	0	0	13	0	0	13	2	0	1	0	3	0	14	0	0	14	30
11:30 AM	0	0	0	0	0	0	15	0	0	15	1	0	1	0	2	0	29	0	0	29	46
11:45 AM	0	0	0	0	0	0	18	1	0	19	0	0	0	0	0	0	18	0	0	18	37
Total	0	0	0	0	0	0	69	2	0	71	4	0	2	0	6	1	83	0	0	84	161
12:00 PM	0	0	0	0	0	0	9	1	0	10	0	0	0	0	0	1	20	0	0	21	31
12:15 PM	0	0	0	0	0	0	21	2	0	23	0	0	0	0	0	0	25	0	0	25	48
12:30 PM	0	0	0	0	0	0	25	0	0	25	0	0	0	0	0	0	16	0	0	16	41

TMS Engineers, Inc.

2112 Case Parkway South #7
Twinsburg, Ohio 44087
Transportation Manangement Services

File Name : Mill Rd & MS Driveway 012623NED
Site Code : 00000000
Start Date : 1/26/2023
Page No : 2

Groups Printed- Cars - Trucks - Buses

	From North					MILL ROAD From East					MIDDLE SCHOOL DRIVEWAY From South					MILL ROAD From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
12:45 PM	0	0	0	0	0	0	16	1	0	17	0	0	0	0	0	1	18	0	0	19	36
Total	0	0	0	0	0	0	71	4	0	75	0	0	0	0	0	2	79	0	0	81	156
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00 PM	0	0	0	0	0	0	50	1	0	51	2	0	0	0	2	0	20	0	0	20	73
02:15 PM	0	0	0	0	0	0	13	2	0	15	0	0	1	0	1	7	54	0	0	61	77
02:30 PM	0	0	0	0	0	0	21	11	0	32	0	0	2	0	2	17	59	0	0	76	110
02:45 PM	0	0	0	0	0	0	88	4	0	92	17	0	31	0	48	6	30	0	0	36	176
Total	0	0	0	0	0	0	172	18	0	190	19	0	34	0	53	30	163	0	0	193	436
03:00 PM	0	0	0	0	0	0	81	1	0	82	7	0	11	0	18	3	22	0	0	25	125
03:15 PM	0	0	0	0	0	0	43	0	0	43	4	0	5	0	9	0	33	0	0	33	85
03:30 PM	0	0	0	0	0	0	47	0	0	47	0	0	5	0	5	0	37	0	0	37	89
03:45 PM	0	0	0	0	0	0	33	1	0	34	0	0	3	0	3	1	33	0	0	34	71
Total	0	0	0	0	0	0	204	2	0	206	11	0	24	0	35	4	125	0	0	129	370
04:00 PM	0	0	0	0	0	0	25	0	0	25	0	0	4	0	4	1	29	0	0	30	59
04:15 PM	0	0	0	0	0	0	27	0	0	27	0	0	0	0	0	3	38	0	0	41	68
04:30 PM	0	0	0	0	0	0	28	1	0	29	0	0	1	0	1	1	37	0	0	38	68
04:45 PM	0	0	0	0	0	0	25	2	0	27	0	0	1	0	1	2	51	0	0	53	81
Total	0	0	0	0	0	0	105	3	0	108	0	0	6	0	6	7	155	0	0	162	276
05:00 PM	0	0	0	0	0	0	32	0	0	32	0	0	1	0	1	1	47	0	0	48	81
05:15 PM	0	0	0	0	0	0	31	0	0	31	0	0	1	0	1	1	54	0	0	55	87
05:30 PM	0	0	0	0	0	0	41	0	0	41	0	0	0	0	0	1	36	0	0	37	78
05:45 PM	0	0	0	1	1	0	35	2	0	37	0	0	0	0	0	0	46	0	0	46	84
Total	0	0	0	1	1	0	139	2	0	141	0	0	2	0	2	3	183	0	0	186	330
Grand Total	0	0	0	1	1	0	1038	81	0	1119	91	0	129	0	220	197	1219	0	1	1417	2757
Apprch %	0	0	0	100		0	92.8	7.2	0		41.4	0	58.6	0		13.9	86	0	0.1		
Total %	0	0	0	0	0	0	37.6	2.9	0	40.6	3.3	0	4.7	0	8	7.1	44.2	0	0	51.4	
Cars	0	0	0	1	1	0	972	80	0	1052	91	0	128	0	219	196	1140	0	1	1337	2609
% Cars	0	0	0	100	100	0	93.6	98.8	0	94	100	0	99.2	0	99.5	99.5	93.5	0	100	94.4	94.6
Trucks	0	0	0	0	0	0	10	1	0	11	0	0	1	0	1	0	10	0	0	10	22
% Trucks	0	0	0	0	0	0	1	1.2	0	1	0	0	0.8	0	0.5	0	0.8	0	0	0.7	0.8
Buses	0	0	0	0	0	0	56	0	0	56	0	0	0	0	0	1	69	0	0	70	126
% Buses	0	0	0	0	0	0	5.4	0	0	5	0	0	0	0	0	0.5	5.7	0	0	4.9	4.6

TMS Engineers, Inc.

2112 Case Parkway South #7
Twinsburg, Ohio 44087
Transportation Manangement Services

	From North					MILL ROAD From East					MIDDLE SCHOOL DRIVEWAY From South					MILL ROAD From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	0	0	0	0	0	16	**20**	0	36	10	0	3	0	13	38	83	0	0	121	170
07:15 AM	0	0	0	0	0	0	37	14	0	51	22	0	26	0	48	48	**109**	0	0	**157**	**256**
07:30 AM	0	0	0	0	0	0	42	14	0	**56**	**24**	0	**31**	0	**55**	**63**	67	0	0	130	241
07:45 AM	0	0	0	0	0	0	**47**	0	0	47	1	0	1	0	2	0	14	0	0	14	63
Total Volume	0	0	0	0	0	0	142	48	0	190	57	0	61	0	118	149	273	0	0	422	730
% App. Total	0	0	0	0		0	74.7	25.3	0		48.3	0	51.7	0		35.3	64.7	0	0		
PHF	.000	.000	.000	.000	.000	.000	.755	.600	.000	.848	.594	.000	.492	.000	.536	.591	.626	.000	.000	.672	.713
Cars	0	0	0	0	0	0	117	48	0	165	57	0	61	0	118	149	252	0	0	401	684
% Cars	0	0	0	0	0	0	82.4	100	0	86.8	100	0	100	0	100	100	92.3	0	0	95.0	93.7
Trucks	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2
% Trucks	0	0	0	0	0	0	0.7	0	0	0.5	0	0	0	0	0	0	0.4	0	0	0.2	0.3
Buses	0	0	0	0	0	0	24	0	0	24	0	0	0	0	0	0	20	0	0	20	44
% Buses	0	0	0	0	0	0	16.9	0	0	12.6	0	0	0	0	0	0	7.3	0	0	4.7	6.0
Peak Hour Analysis From 02:45 PM to 03:30 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 02:45 PM																					
02:45 PM	0	0	0	0	0	0	**88**	**4**	0	**92**	**17**	0	**31**	0	**48**	**6**	30	0	0	36	**176**
03:00 PM	0	0	0	0	0	0	81	1	0	82	7	0	11	0	18	3	22	0	0	25	125
03:15 PM	0	0	0	0	0	0	43	0	0	43	4	0	5	0	9	0	33	0	0	33	85
03:30 PM	0	0	0	0	0	0	47	0	0	47	0	0	5	0	5	0	**37**	0	0	**37**	89
Total Volume	0	0	0	0	0	0	259	5	0	264	28	0	52	0	80	9	122	0	0	131	475
% App. Total	0	0	0	0		0	98.1	1.9	0		35	0	65	0		6.9	93.1	0	0		
PHF	.000	.000	.000	.000	.000	.000	.736	.313	.000	.717	.412	.000	.419	.000	.417	.375	.824	.000	.000	.885	.675
Cars	0	0	0	0	0	0	238	5	0	243	28	0	52	0	80	9	119	0	0	128	451
% Cars	0	0	0	0	0	0	91.9	100	0	92.0	100	0	100	0	100	100	97.5	0	0	97.7	94.9
Trucks	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2
% Trucks	0	0	0	0	0	0	0.4	0	0	0.4	0	0	0	0	0	0	0.8	0	0	0.8	0.4
Buses	0	0	0	0	0	0	20	0	0	20	0	0	0	0	0	0	2	0	0	2	22
% Buses	0	0	0	0	0	0	7.7	0	0	7.6	0	0	0	0	0	0	1.6	0	0	1.5	4.6
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	0	0	0	0	0	0	32	0	0	32	0	0	**1**	0	**1**	**1**	47	0	0	48	81
05:15 PM	0	0	0	0	0	0	31	0	0	31	0	0	1	0	1	1	**54**	0	0	**55**	**87**
05:30 PM	0	0	0	0	0	0	**41**	0	0	**41**	0	0	0	0	0	1	36	0	0	37	78
05:45 PM	0	0	0	**1**	**1**	0	35	**2**	0	37	0	0	0	0	0	0	46	0	0	46	84
Total Volume	0	0	0	1	1	0	139	2	0	141	0	0	2	0	2	3	183	0	0	186	330
% App. Total	0	0	0	100		0	98.6	1.4	0		0	0	100	0		1.6	98.4	0	0		
PHF	.000	.000	.000	.250	.250	.000	.848	.250	.000	.860	.000	.000	.500	.000	.500	.750	.847	.000	.000	.845	.948
Cars	0	0	0	1	1	0	139	2	0	141	0	0	1	0	1	3	181	0	0	184	327
% Cars	0	0	0	100	100	0	100	100	0	100	0	0	50.0	0	50.0	100	98.9	0	0	98.9	99.1
Trucks	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	2	0	0	2	3
% Trucks	0	0	0	0	0	0	0	0	0	0	0	0	50.0	0	50.0	0	1.1	0	0	1.1	0.9
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

VEHICULAR TRAFFIC COUNT SUMMARY

Municipality: Broadview Heights **At Intersection of:** Mill Road **and** gh School / Middle School Drivewa

Date: 1/26/2023 **Day:** Thu. **Comments:** **Project:** 22-156

Weather: Snow **Recorder(s):** JMC **Data entry by:** JJO **Date entered:** Jan. 30, 2023 Mill Rd & HS + MS Driveway 012623

TIME BEGINS	FROM NORTH						School Driveway FROM SOUTH						TOTAL NORTH SOUTH	Mill Rd. FROM EAST						Mill Rd. FROM WEST						TOTAL EAST WEST	TOTAL ALL DIREC.	PEAK HOUR FACTOR			
	Left	Thru	Right	Total	Trk	Bus	Left	Thru	Right	Total	Trk	Bus		Left	Thru	Right	Total	Trk	Bus	Left	Thru	Right	Total	Trk	Bus			North	South	East	West
06:00																														
07:00							36	0	10	46	0	37	46	19	176	0	195	1	20	0	326	28	354	1	20	549	595	0.000	0.605	0.886	0.641
08:00							13	0	5	18	0	0	18	4	63	0	67	3	1	0	55	36	91	0	2	158	176	0.000	0.643	0.698	0.875
09:00							23	0	3	26	1	2	26	2	43	0	45	1	0	0	45	26	71	1	1	116	142	0.000	0.542	0.750	0.888
10:00																														
11:00							37	0	10	47	1	3	47	5	43	0	48	0	1	0	53	42	95	2	4	143	190	0.000	0.653	0.667	0.819
12:00							20	0	8	28	0	0	28	4	57	0	61	1	0	0	55	21	76	0	1	137	165	0.000	0.438	0.726	0.792
1:00																														
2:00							64	0	10	74	0	33	74	2	115	0	117	1	1	0	110	59	169	3	33	286	360		0.500	1.950	2.485
3:00							119	0	38	157	1	6	157	20	110	0	130	1	2	0	87	65	152	0	3	282	439	0.000	0.770	0.458	0.884
4:00							33	0	12	45	0	3	45	15	79	0	94	0	3	0	93	67	160	1	2	254	299	0.000	0.865	0.758	0.816
5:00							81	0	12	93	0	0	93	38	77	0	115	0	2	0	88	113	201	1	0	316	409	0.000	0.861	0.927	0.838
6:00																														
7:00																														
8:00																														
9:00																														
TOTALS							426	0	108	534	3	84	534	109	763	0	872	8	30	0	912	457	1369	9	66	2241	2775				
ADT							586	0	149	734	16.3%		734	150	1049	0	1199	4.4%		0	1254	628	1882	5.5%		3082	3816				

N Leg Hourly Factor:	0.00	E Leg Hourly Factor:	1.56
S Leg Hourly Factor:	1.56	W leg Hourly Factor:	1.56
N Leg Monthly Factor:	0.00	E Leg Monthly Factor:	0.88
S Leg Monthly Factor:	0.88	W Leg Monthly Factor:	0.88

N Leg Combined Factor:		E Leg Combined Factor:	1.38
S Leg Combined Factor:	1.38	W Leg Combined Factor:	1.38

TMS ENGINEERS, INC.

2112 Case Parkway South #7

Twinsburg, Ohio 44087

(330) 686-6402 FAX: (330) 686-6417

Figure #:

Page #:

TMS Engineers, Inc.

2112 Case Parkway South #7
Twinsburg, Ohio 44087
Transportation Manangement Services

City: Broadview Heights
Intersection: Mill Rd & HS + MS Driveway
Counter: JMC
Day of the Week: Thursday

File Name : mill rd school driveway jmc 12623 broadview hts
Site Code : 00000000
Start Date : 1/26/2023
Page No : 1

Groups Printed- Cars - Trucks - Buses

	From North					MILL ROAD From East					HIGH SCHOOL / MIDDLE SCHOOL DRIVEWAY From South					MILL ROAD From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	30	3	0	33	0	0	1	0	1	5	71	0	0	76	110
07:15 AM	0	0	0	3	3	0	41	14	0	55	6	0	13	0	19	14	124	0	0	138	215
07:30 AM	0	0	0	0	0	0	50	2	0	52	4	0	13	0	17	4	111	0	0	115	184
07:45 AM	0	0	0	0	0	0	55	0	0	55	0	0	9	0	9	5	20	0	0	25	89
Total	0	0	0	3	3	0	176	19	0	195	10	0	36	0	46	28	326	0	0	354	598
08:00 AM	0	0	0	0	0	0	15	0	0	15	1	0	1	0	2	4	15	0	0	19	36
08:15 AM	0	0	0	0	0	0	17	1	0	18	2	0	2	0	4	16	10	0	2	28	50
08:30 AM	0	0	0	1	1	0	22	2	0	24	0	0	7	0	7	10	16	0	2	28	60
08:45 AM	0	0	0	0	0	0	9	1	0	10	2	0	3	0	5	6	14	0	0	20	35
Total	0	0	0	1	1	0	63	4	0	67	5	0	13	0	18	36	55	0	4	95	181
09:00 AM	0	0	0	0	0	0	7	1	0	8	1	0	3	0	4	7	13	0	0	20	32
09:15 AM	0	0	0	0	0	0	11	0	0	11	0	0	12	0	12	8	12	0	0	20	43
09:30 AM	0	0	0	0	0	0	14	1	0	15	1	0	5	0	6	6	10	0	0	16	37
09:45 AM	0	0	0	0	0	0	11	0	0	11	1	0	3	0	4	5	10	0	0	15	30
Total	0	0	0	0	0	0	43	2	0	45	3	0	23	0	26	26	45	0	0	71	142
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	0	0	11	1	0	12	0	0	18	0	18	8	17	0	0	25	55
11:15 AM	0	0	0	0	0	0	11	1	0	12	1	0	6	0	7	7	10	0	0	17	36
11:30 AM	0	0	0	0	0	0	5	1	0	6	4	0	7	0	11	19	10	0	0	29	46
11:45 AM	0	0	0	0	0	0	16	2	0	18	5	0	6	0	11	8	16	0	0	24	53
Total	0	0	0	0	0	0	43	5	0	48	10	0	37	0	47	42	53	0	0	95	190
12:00 PM	0	0	0	0	0	0	10	1	0	11	3	0	1	0	4	6	11	0	0	17	32
12:15 PM	0	0	0	0	0	0	18	3	0	21	0	0	4	0	4	9	15	0	1	25	50
12:30 PM	0	0	0	0	0	0	11	0	0	11	4	0	12	0	16	1	18	0	0	19	46
12:45 PM	0	0	0	0	0	0	18	0	0	18	1	0	3	0	4	5	11	0	1	17	39
Total	0	0	0	0	0	0	57	4	0	61	8	0	20	0	28	21	55	0	2	78	167

TMS Engineers, Inc.

2112 Case Parkway South #7
Twinsburg, Ohio 44087
Transportation Manangement Services

File Name : mill rd school driveway jmc 12623 broadview hts
Site Code : 00000000
Start Date : 1/26/2023
Page No : 2

Groups Printed- Cars - Trucks - Buses

	From North					MILL ROAD From East					HIGH SCHOOL / MIDDLE SCHOOL DRIVEWAY From South					MILL ROAD From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00 PM	0	0	0	0	0	0	15	0	0	15	0	0	37	0	37	9	8	0	0	17	69
02:15 PM	0	0	0	0	0	0	13	1	0	14	1	0	2	0	3	26	27	0	0	53	70
02:30 PM	0	0	0	0	0	0	29	1	0	30	1	0	0	0	1	24	36	0	0	60	91
02:45 PM	0	0	0	18	18	0	58	0	0	58	8	0	25	0	33	0	39	0	3	42	151
Total	0	0	0	18	18	0	115	2	0	117	10	0	64	0	74	59	110	0	3	172	381
03:00 PM	0	0	0	3	3	0	69	2	0	71	18	0	33	0	51	9	31	0	0	40	165
03:15 PM	0	0	0	0	0	0	14	6	0	20	3	0	29	0	32	17	19	0	1	37	89
03:30 PM	0	0	0	0	0	0	11	7	0	18	8	0	36	0	44	20	23	0	0	43	105
03:45 PM	0	0	0	0	0	0	16	5	0	21	9	0	21	0	30	19	14	0	1	34	85
Total	0	0	0	3	3	0	110	20	0	130	38	0	119	0	157	65	87	0	2	154	444
04:00 PM	0	0	0	0	0	0	22	2	0	24	4	0	9	0	13	8	25	0	0	33	70
04:15 PM	0	0	0	0	0	0	15	5	0	20	3	0	9	0	12	25	15	0	0	40	72
04:30 PM	0	0	1	0	1	0	25	6	0	31	2	0	7	0	9	14	24	0	0	38	79
04:45 PM	0	0	0	0	0	0	17	2	0	19	3	0	8	0	11	20	29	0	0	49	79
Total	0	0	1	0	1	0	79	15	0	94	12	0	33	0	45	67	93	0	0	160	300
05:00 PM	0	0	0	0	0	0	18	5	0	23	2	0	20	0	22	22	26	0	0	48	93
05:15 PM	0	0	0	0	0	0	17	13	0	30	3	0	19	0	22	34	26	0	0	60	112
05:30 PM	0	0	0	0	0	0	21	10	0	31	4	0	18	0	22	19	14	0	0	33	86
05:45 PM	0	0	0	0	0	0	21	10	0	31	3	0	24	0	27	38	22	0	0	60	118
Total	0	0	0	0	0	0	77	38	0	115	12	0	81	0	93	113	88	0	0	201	409
Grand Total	0	0	1	25	26	0	763	109	0	872	108	0	426	0	534	457	912	0	11	1380	2812
Apprch %	0	0	3.8	96.2		0	87.5	12.5	0		20.2	0	79.8	0		33.1	66.1	0	0.8		
Total %	0	0	0	0.9	0.9	0	27.1	3.9	0	31	3.8	0	15.1	0	19	16.3	32.4	0	0.4	49.1	
Cars	0	0	1	25	26	0	748	86	0	834	82	0	365	0	447	395	899	0	11	1305	2612
% Cars	0	0	100	100	100	0	98	78.9	0	95.6	75.9	0	85.7	0	83.7	86.4	98.6	0	100	94.6	92.9
Trucks	0	0	0	0	0	0	8	0	0	8	0	0	3	0	3	3	6	0	0	9	20
% Trucks	0	0	0	0	0	0	1	0	0	0.9	0	0	0.7	0	0.6	0.7	0.7	0	0	0.7	0.7
Buses	0	0	0	0	0	0	7	23	0	30	26	0	58	0	84	59	7	0	0	66	180
% Buses	0	0	0	0	0	0	0.9	21.1	0	3.4	24.1	0	13.6	0	15.7	12.9	0.8	0	0	4.8	6.4

TMS Engineers, Inc.

2112 Case Parkway South #7
Twinsburg, Ohio 44087
Transportation Manangement Services

File Name : mill rd school driveway jmc 12623 broadview hts
Site Code : 00000000
Start Date : 1/26/2023
Page No : 3

	From North					MILL ROAD From East					HIGH SCHOOL / MIDDLE SCHOOL DRIVEWAY From South					MILL ROAD From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	0	0	0	0	0	30	3	0	33	0	0	1	0	1	5	71	0	0	76	110
07:15 AM	0	0	0	**3**	**3**	0	41	**14**	0	**55**	**6**	0	**13**	0	**19**	**14**	**124**	0	0	**138**	**215**
07:30 AM	0	0	0	0	0	0	50	2	0	52	4	0	13	0	17	4	111	0	0	115	184
07:45 AM	0	0	0	0	0	0	**55**	0	0	55	0	0	9	0	9	5	20	0	0	25	89
Total Volume	0	0	0	3	3	0	176	19	0	195	10	0	36	0	46	28	326	0	0	354	598
% App. Total	0	0	0	100		0	90.3	9.7	0		21.7	0	78.3	0		7.9	92.1	0	0		
PHF	.000	.000	.000	.250	.250	.000	.800	.339	.000	.886	.417	.000	.692	.000	.605	.500	.657	.000	.000	.641	.695
Cars	0	0	0	3	3	0	173	1	0	174	0	0	9	0	9	9	324	0	0	333	519
% Cars	0	0	0	100	100	0	98.3	5.3	0	89.2	0	0	25.0	0	19.6	32.1	99.4	0	0	94.1	86.8
Trucks	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2
% Trucks	0	0	0	0	0	0	0.6	0	0	0.5	0	0	0	0	0	0	0.3	0	0	0.3	0.3
Buses	0	0	0	0	0	0	2	18	0	20	10	0	27	0	37	19	1	0	0	20	77
% Buses	0	0	0	0	0	0	1.1	94.7	0	10.3	100	0	75.0	0	80.4	67.9	0.3	0	0	5.6	12.9
Peak Hour Analysis From 02:45 PM to 03:30 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 02:45 PM																					
02:45 PM	0	0	0	**18**	**18**	0	58	0	0	58	8	0	25	0	33	0	**39**	0	**3**	42	151
03:00 PM	0	0	0	3	3	0	**69**	2	0	**71**	**18**	0	33	0	**51**	9	31	0	0	40	**165**
03:15 PM	0	0	0	0	0	0	14	6	0	20	3	0	29	0	32	17	19	0	1	37	89
03:30 PM	0	0	0	0	0	0	11	**7**	0	18	8	0	**36**	0	44	**20**	23	0	0	**43**	105
Total Volume	0	0	0	21	21	0	152	15	0	167	37	0	123	0	160	46	112	0	4	162	510
% App. Total	0	0	0	100		0	91	9	0		23.1	0	76.9	0		28.4	69.1	0	2.5		
PHF	.000	.000	.000	.292	.292	.000	.551	.536	.000	.588	.514	.000	.854	.000	.784	.575	.718	.000	.333	.942	.773
Cars	0	0	0	21	21	0	152	15	0	167	25	0	98	0	123	45	110	0	4	159	470
% Cars	0	0	0	100	100	0	100	100	0	100	67.6	0	79.7	0	76.9	97.8	98.2	0	100	98.1	92.2
Trucks	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	0	1	2
% Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0.8	0	0.6	0	0.9	0	0	0.6	0.4
Buses	0	0	0	0	0	0	0	0	0	0	12	0	24	0	36	1	1	0	0	2	38
% Buses	0	0	0	0	0	0	0	0	0	0	32.4	0	19.5	0	22.5	2.2	0.9	0	0	1.2	7.5
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	0	0	0	0	0	0	18	5	0	23	2	0	20	0	22	22	**26**	0	0	48	93
05:15 PM	0	0	0	0	0	0	17	**13**	0	30	3	0	19	0	22	34	26	0	0	**60**	112
05:30 PM	0	0	0	0	0	0	**21**	10	0	**31**	**4**	0	18	0	22	19	14	0	0	33	86
05:45 PM	0	0	0	0	0	0	21	10	0	31	3	0	**24**	0	**27**	**38**	22	0	0	60	**118**
Total Volume	0	0	0	0	0	0	77	38	0	115	12	0	81	0	93	113	88	0	0	201	409
% App. Total	0	0	0	0		0	67	33	0		12.9	0	87.1	0		56.2	43.8	0	0		
PHF	.000	.000	.000	.000	.000	.000	.917	.731	.000	.927	.750	.000	.844	.000	.861	.743	.846	.000	.000	.838	.867
Cars	0	0	0	0	0	0	77	36	0	113	12	0	81	0	93	112	88	0	0	200	406
% Cars	0	0	0	0	0	0	100	94.7	0	98.3	100	0	100	0	100	99.1	100	0	0	99.5	99.3
Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
% Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.9	0	0	0	0.5	0.2
Buses	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	2
% Buses	0	0	0	0	0	0	0	5.3	0	1.7	0	0	0	0	0	0	0	0	0	0	0.5

VEHICULAR TRAFFIC COUNT SUMMARY

Municipality: Broadview Heights **At Intersection of:** Mill Road **and** Vera Drive

Date: 1/24/2023 **Day:** Tue. **Comments:** **Project:** 22-156

Weather: Clear **Recorder(s):** SLC **Data entry by:** JJO **Date entered:** Jan. 25, 2023 Mill Rd & Vera Dr 012423

TIME BEGINS	Vera Dr. FROM NORTH						FROM SOUTH						TOTAL NORTH SOUTH	Mill Rod. FROM EAST						Mill Rd. FROM WEST						TOTAL EAST WEST	TOTAL ALL DIREC.	PEAK HOUR FACTOR			
	Left	Thru	Right	Total	Trk	Bus	Left	Thru	Right	Total	Trk	Bus		Left	Thru	Right	Total	Trk	Bus	Left	Thru	Right	Total	Trk	Bus			North	South	East	West
06:00																														
07:00	3	0	13	16	1	0							16	0	174	3	177	1	19	5	310	0	315	0	13	492	508	0.571	0.000	0.651	0.656
08:00	9	0	11	20	0	1							20	0	55	0	55	0	0	1	60	0	61	0	2	116	136	0.714	0.000	0.655	0.803
09:00	5	0	7	12	0	0							12	0	44	3	47	0	0	5	42	0	47	1	0	94	106	0.600	0.000	0.691	0.691
10:00																														
11:00	4	0	10	14	1	0							14	0	58	9	67	1	1	5	62	0	67	1	1	134	148	0.875	0.000	0.644	0.882
12:00	8	0	5	13	1	1							13	0	54	4	58	0	1	9	65	0	74	4	1	132	145	0.813	0.000	0.725	0.685
1:00																														
2:00	8	0	4	12	1	0							12	0	145	10	155	0	1	4	135	0	139	1	13	294	306	3.000		1.685	2.044
3:00	13	0	5	18	0	0							18	0	120	5	125	0	0	7	99	0	106	0	0	231	249	0.643	0.000	0.504	0.883
4:00	4	0	10	14	0	1							14	0	83	6	89	1	2	15	95	0	110	0	2	199	213	0.500	0.000	0.767	0.743
5:00	6	0	10	16	0	0							16	0	100	7	107	1	1	16	105	0	121	0	0	228	244	0.667	0.000	0.764	0.644
6:00																														
7:00																														
8:00																														
9:00																														
TOTALS	60	0	75	135	4	3							135	0	833	47	880	4	25	67	973	0	1040	7	32	1920	2055				
ADT	83	0	103	186	5.2%								186	0	1145	65	1210	3.3%		92	1338	0	1430	3.8%		2640	2826				

N Leg Hourly Factor:	1.56	E Leg Hourly Factor:	1.56
S Leg Hourly Factor:	0.00	W leg Hourly Factor:	1.56
N Leg Monthly Factor:	0.88	E Leg Monthly Factor:	0.88
S Leg Monthly Factor:	0.00	W Leg Monthly Factor:	0.88

N Leg Combined Factor:	1.38	E Leg Combined Factor:	1.38
S Leg Combined Factor:		W Leg Combined Factor:	1.38

TMS ENGINEERS, INC.

2112 Case Parkway South #7

Twinsburg, Ohio 44087

(330) 686-6402 FAX: (330) 686-6417

Figure #:

Page #:

TMS Engineers, Inc.

2112 Case Parkway South #7
Twinsburg, Ohio 44087
Transportation Manangement Services

City: Broadview Heights
Intersection: Mill Rd & Vera Dr
Counter: SLC
Day of the Week: Tuesday

File Name : Broadview Hgt Traffic Count #Unk Mill Rd & Vera Drive 012423 Sue
Site Code : 00000000
Start Date : 1/24/2023
Page No : 1

Groups Printed- Cars - Trucks - Buses

	VERA DRIVE From North					MILL ROAD From East					From South					MILL ROAD From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	3	0	1	0	4	0	32	0	0	32	0	0	0	0	0	0	77	0	0	77	113
07:15 AM	3	0	0	0	3	0	68	0	0	68	0	0	0	0	0	0	119	1	0	120	191
07:30 AM	2	0	0	0	2	1	44	0	0	45	0	0	0	0	0	0	101	3	0	104	151
07:45 AM	5	0	2	0	7	2	30	0	0	32	0	0	0	0	0	0	13	1	0	14	53
Total	13	0	3	0	16	3	174	0	0	177	0	0	0	0	0	0	310	5	0	315	508
08:00 AM	5	0	2	0	7	0	8	0	0	8	0	0	0	0	0	0	19	0	0	19	34
08:15 AM	2	0	4	0	6	0	16	0	0	16	0	0	0	0	0	0	19	0	0	19	41
08:30 AM	3	0	2	0	5	0	21	0	0	21	0	0	0	0	0	0	16	1	0	17	43
08:45 AM	1	0	1	0	2	0	10	0	0	10	0	0	0	0	0	0	6	0	0	6	18
Total	11	0	9	0	20	0	55	0	0	55	0	0	0	0	0	0	60	1	0	61	136
09:00 AM	1	0	2	0	3	0	11	0	0	11	0	0	0	0	0	0	15	2	0	17	31
09:15 AM	2	0	0	0	2	2	15	0	0	17	0	0	0	0	0	0	3	1	0	4	23
09:30 AM	2	0	0	0	2	1	11	0	0	12	0	0	0	0	0	0	11	2	0	13	27
09:45 AM	2	0	3	0	5	0	7	0	0	7	0	0	0	0	0	0	13	0	0	13	25
Total	7	0	5	0	12	3	44	0	0	47	0	0	0	0	0	0	42	5	0	47	106
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	2	0	1	0	3	2	20	0	0	22	0	0	0	0	0	0	19	0	0	19	44
11:15 AM	4	0	0	0	4	2	8	0	0	10	0	0	0	0	0	0	14	1	0	15	29
11:30 AM	1	0	2	0	3	1	8	0	0	9	0	0	0	0	0	0	14	2	0	16	28
11:45 AM	3	0	1	0	4	4	22	0	1	27	0	0	0	0	0	0	15	2	0	17	48
Total	10	0	4	0	14	9	58	0	1	68	0	0	0	0	0	0	62	5	0	67	149
12:00 PM	1	0	1	0	2	1	13	0	0	14	0	0	0	0	0	0	12	0	0	12	28
12:15 PM	1	0	2	0	3	2	18	0	0	20	0	0	0	0	0	0	11	0	0	11	34
12:30 PM	2	0	2	0	4	0	7	0	0	7	0	0	0	0	0	0	21	6	0	27	38
12:45 PM	1	0	3	0	4	1	16	0	0	17	0	0	0	0	0	0	21	3	0	24	45
Total	5	0	8	0	13	4	54	0	0	58	0	0	0	0	0	0	65	9	0	74	145

TMS Engineers, Inc.

2112 Case Parkway South #7
Twinsburg, Ohio 44087
Transportation Manangement Services

File Name : Broadview Hgt Traffic Count #Unk Mill Rd & Vera Drive 012423 Sue
Site Code : 00000000
Start Date : 1/24/2023
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Groups Printed- Cars - Trucks - Buses

	VERA DRIVE From North					MILL ROAD From East					From South					MILL ROAD From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00 PM	0	0	1	0	1	0	23	0	1	24	0	0	0	0	0	0	16	1	0	17	42
02:15 PM	2	0	1	0	3	1	7	0	0	8	0	0	0	0	0	0	24	0	0	24	35
02:30 PM	0	0	0	0	0	4	39	0	0	43	0	0	0	0	0	0	36	1	0	37	80
02:45 PM	2	0	6	0	8	5	76	0	6	87	0	0	0	0	0	0	59	2	0	61	156
Total	4	0	8	0	12	10	145	0	7	162	0	0	0	0	0	0	135	4	0	139	313
03:00 PM	1	0	3	0	4	1	61	0	1	63	0	0	0	0	0	0	30	0	0	30	97
03:15 PM	1	0	4	0	5	0	17	0	0	17	0	0	0	0	0	0	26	2	0	28	50
03:30 PM	0	0	2	0	2	3	23	0	2	28	0	0	0	0	0	0	22	1	0	23	53
03:45 PM	3	0	4	0	7	1	19	0	0	20	0	0	0	0	0	0	21	4	0	25	52
Total	5	0	13	0	18	5	120	0	3	128	0	0	0	0	0	0	99	7	0	106	252
04:00 PM	1	0	2	0	3	1	26	0	3	30	0	0	0	0	0	0	21	5	0	26	59
04:15 PM	1	0	0	0	1	1	10	0	0	11	0	0	0	0	0	0	26	2	0	28	40
04:30 PM	3	0	0	0	3	1	28	0	0	29	0	0	0	0	0	0	17	2	0	19	51
04:45 PM	5	0	2	0	7	3	19	0	0	22	0	0	0	0	0	0	31	6	0	37	66
Total	10	0	4	0	14	6	83	0	3	92	0	0	0	0	0	0	95	15	0	110	216
05:00 PM	0	0	2	0	2	3	22	0	0	25	0	0	0	0	0	0	16	4	0	20	47
05:15 PM	4	0	2	0	6	2	27	0	0	29	0	0	0	0	0	0	12	2	0	14	49
05:30 PM	3	0	0	0	3	1	17	0	0	18	0	0	0	0	0	0	34	6	0	40	61
05:45 PM	3	0	2	0	5	1	34	0	1	36	0	0	0	0	0	0	43	4	0	47	88
Total	10	0	6	0	16	7	100	0	1	108	0	0	0	0	0	0	105	16	0	121	245
Grand Total	75	0	60	0	135	47	833	0	15	895	0	0	0	0	0	0	973	67	0	1040	2070
Apprch %	55.6	0	44.4	0		5.3	93.1	0	1.7		0	0	0	0		0	93.6	6.4	0		
Total %	3.6	0	2.9	0	6.5	2.3	40.2	0	0.7	43.2	0	0	0	0	0	0	47	3.2	0	50.2	
Cars	69	0	59	0	128	46	805	0	15	866	0	0	0	0	0	0	936	65	0	1001	1995
% Cars	92	0	98.3	0	94.8	97.9	96.6	0	100	96.8	0	0	0	0	0	0	96.2	97	0	96.2	96.4
Trucks	4	0	0	0	4	0	4	0	0	4	0	0	0	0	0	0	5	2	0	7	15
% Trucks	5.3	0	0	0	3	0	0.5	0	0	0.4	0	0	0	0	0	0	0.5	3	0	0.7	0.7
Buses	2	0	1	0	3	1	24	0	0	25	0	0	0	0	0	0	32	0	0	32	60
% Buses	2.7	0	1.7	0	2.2	2.1	2.9	0	0	2.8	0	0	0	0	0	0	3.3	0	0	3.1	2.9

TMS Engineers, Inc.

2112 Case Parkway South #7
Twinsburg, Ohio 44087
Transportation Manangement Services

File Name : Broadview Hgt Traffic Count #Unk Mill Rd & Vera Drive 012423 Sue
Site Code : 00000000
Start Date : 1/24/2023
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	VERA DRIVE From North					MILL ROAD From East					From South					MILL ROAD From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	3	0	1	0	4	0	32	0	0	32	0	0	0	0	0	0	77	0	0	77	113
07:15 AM	3	0	0	0	3	0	**68**	0	0	**68**	0	0	0	0	0	0	**119**	1	0	**120**	**191**
07:30 AM	2	0	0	0	2	1	44	0	0	45	0	0	0	0	0	0	101	**3**	0	104	151
07:45 AM	**5**	0	**2**	0	**7**	**2**	30	0	0	32	0	0	0	0	0	0	13	1	0	14	53
Total Volume	13	0	3	0	16	3	174	0	0	177	0	0	0	0	0	0	310	5	0	315	508
% App. Total	81.2	0	18.8	0		1.7	98.3	0	0		0	0	0	0		0	98.4	1.6	0		
PHF	.650	.000	.375	.000	.571	.375	.640	.000	.000	.651	.000	.000	.000	.000	.000	.000	.651	.417	.000	.656	.665
Cars	12	0	3	0	15	3	154	0	0	157	0	0	0	0	0	0	297	5	0	302	474
% Cars	92.3	0	100	0	93.8	100	88.5	0	0	88.7	0	0	0	0	0	0	95.8	100	0	95.9	93.3
Trucks	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2
% Trucks	7.7	0	0	0	6.3	0	0.6	0	0	0.6	0	0	0	0	0	0	0	0	0	0	0.4
Buses	0	0	0	0	0	0	19	0	0	19	0	0	0	0	0	0	13	0	0	13	32
% Buses	0	0	0	0	0	0	10.9	0	0	10.7	0	0	0	0	0	0	4.2	0	0	4.1	6.3
Peak Hour Analysis From 02:45 PM to 03:30 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 02:45 PM																					
02:45 PM	**2**	0	**6**	0	**8**	**5**	**76**	0	**6**	**87**	0	0	0	0	0	0	**59**	**2**	0	**61**	**156**
03:00 PM	1	0	3	0	4	1	61	0	1	63	0	0	0	0	0	0	30	0	0	30	97
03:15 PM	1	0	4	0	5	0	17	0	0	17	0	0	0	0	0	0	26	2	0	28	50
03:30 PM	0	0	2	0	2	3	23	0	2	28	0	0	0	0	0	0	22	1	0	23	53
Total Volume	4	0	15	0	19	9	177	0	9	195	0	0	0	0	0	0	137	5	0	142	356
% App. Total	21.1	0	78.9	0		4.6	90.8	0	4.6		0	0	0	0		0	96.5	3.5	0		
PHF	.500	.000	.625	.000	.594	.450	.582	.000	.375	.560	.000	.000	.000	.000	.000	.000	.581	.625	.000	.582	.571
Cars	4	0	15	0	19	9	177	0	9	195	0	0	0	0	0	0	125	5	0	130	344
% Cars	100	0	100	0	100	100	100	0	100	100	0	0	0	0	0	0	91.2	100	0	91.5	96.6
Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	0	0	12	12
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8.8	0	0	8.5	3.4
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	0	0	**2**	0	2	**3**	22	0	0	25	0	0	0	0	0	0	16	4	0	20	47
05:15 PM	**4**	0	2	0	**6**	2	27	0	0	29	0	0	0	0	0	0	12	2	0	14	49
05:30 PM	3	0	0	0	3	1	17	0	0	18	0	0	0	0	0	0	34	**6**	0	40	61
05:45 PM	3	0	2	0	5	1	**34**	0	**1**	**36**	0	0	0	0	0	0	**43**	4	0	**47**	**88**
Total Volume	10	0	6	0	16	7	100	0	1	108	0	0	0	0	0	0	105	16	0	121	245
% App. Total	62.5	0	37.5	0		6.5	92.6	0	0.9		0	0	0	0		0	86.8	13.2	0		
PHF	.625	.000	.750	.000	.667	.583	.735	.000	.250	.750	.000	.000	.000	.000	.000	.000	.610	.667	.000	.644	.696
Cars	10	0	6	0	16	7	98	0	1	106	0	0	0	0	0	0	105	16	0	121	243
% Cars	100	0	100	0	100	100	98.0	0	100	98.1	0	0	0	0	0	0	100	100	0	100	99.2
Trucks	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
% Trucks	0	0	0	0	0	0	1.0	0	0	0.9	0	0	0	0	0	0	0	0	0	0	0.4
Buses	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
% Buses	0	0	0	0	0	0	1.0	0	0	0.9	0	0	0	0	0	0	0	0	0	0	0.4

Appendix D
Crash Data Summaries

(1) MILL ROAD & WALLINGS ROAD

Crash Summary Sheet

Fatalities	0
Serious Injuries	0
Other Injuries	2

Crashes Per Year	4.75
Fatal and All Injury Crashes	2
Percent Injury	10.5%
Equivalent PDO Index Value	1.36

Crash Severity	Crashes	%
(4) Injury Possible	2	10.53%
(5) PDO/No Injury	17	89.47%
Grand Total	19	100.00%

Year	Crashes	%
2019	7	36.84%
2020	5	26.32%
2021	2	10.53%
2022	5	26.32%
Grand Total	19	100.00%

Day of Week	Crashes	%
(1) Sunday	2	10.53%
(2) Monday	1	5.26%
(3) Tuesday	4	21.05%
(4) Wednesday	7	36.84%
(5) Thursday	2	10.53%
(6) Friday	2	10.53%
(7) Saturday	1	5.26%
Grand Total	19	100.00%

Crash Type	Crashes	%
Rear End	14	73.68%
Left Turn	3	15.79%
Unknown	1	5.26%
Head On	1	5.26%
Grand Total	19	100.00%

Hour of Day	Crashes	%
6	1	5.26%
7	2	10.53%
8	1	5.26%
9	1	5.26%
10	1	5.26%
12	2	10.53%
14	1	5.26%
15	1	5.26%
16	1	5.26%
17	3	15.79%
19	3	15.79%
20	1	5.26%
22	1	5.26%
Grand Total	19	100.00%

Month	Crashes	%
1	2	10.53%
2	1	5.26%
3	1	5.26%
4	1	5.26%
6	1	5.26%
7	3	15.79%
8	1	5.26%
9	2	10.53%
10	3	15.79%
11	4	21.05%
Grand Total	19	100.00%

(1) MILL ROAD & WALLINGS ROAD

Crash Summary Sheet

Weather Condition	Crashes	%
Clear	13	68.42%
Cloudy	4	21.05%
Snow	1	5.26%
Rain	1	5.26%
Grand Total	19	100.00%

Road Condition	Crashes	%
Dry	14	73.68%
Wet	5	26.32%
Grand Total	19	100.00%

Light Condition	Crashes	%
Daylight	14	73.68%
Dark - Lighted Roadway	4	21.05%
Dawn/Dusk	1	5.26%
Grand Total	19	100.00%

Number of Units	Crashes	%
2	18	94.74%
3	1	5.26%
Grand Total	19	100.00%

ODOT Location	Crashes	%
T-Intersection	12	63.16%
Data Not Valid or Not Provided	4	21.05%
Not An Intersection	2	10.53%
Four-Way Intersection	1	5.26%
Grand Total	19	100.00%

Work Zone Related	Crashes	%
No	19	100.00%
Grand Total	19	100.00%

Alcohol Related	Crashes	%
No	19	100.00%
Grand Total	19	100.00%

Drug Related (Inc. Marijuana)	Crashes	%
No	19	100.00%
Grand Total	19	100.00%

Contour	Crashes	%
Straight Grade	3	15.79%
Straight Level	16	84.21%
Grand Total	19	100.00%

Marijuana Related	Crashes	%
No	19	100.00%
Grand Total	19	100.00%

Roadway Departure	Crashes	%
No	19	100.00%
Grand Total	19	100.00%

Older Driver (65+)	Crashes	%
No	17	89.47%
Yes	2	10.53%
Grand Total	19	100.00%

Intersection Related	Crashes	%
Yes	18	94.74%
No	1	5.26%
Grand Total	19	100.00%

Young Driver (15-25)	Crashes	%
No	12	63.16%
Yes	7	36.84%
Grand Total	19	100.00%

Speed Related	Crashes	%
No	19	100.00%
Grand Total	19	100.00%

Motorcycle Involved	Crashes	%
No	19	100.00%
Grand Total	19	100.00%

(1) MILL ROAD & WALLINGS ROAD

Crash Summary Sheet

Unit 1 Summary

Unit 1 Pre-Crash Action	Crashes	%
Straight Ahead	12	63.16%
Making Left Turn	4	21.05%
Slowing or Stopped In Traffic	2	10.53%
Other / Unknown	1	5.26%
Grand Total	19	100.00%

Unit 1 Contributing Factor	Crashes	%
Following Too Closely/ACDA	15	78.95%
Failure to Yield	3	15.79%
Other Improper Action	1	5.26%
Grand Total	19	100.00%

Unit 1 Object Struck	Crashes	%
Nothing Struck	19	100.00%
Grand Total	19	100.00%

Unit 1 Traffic Control	Crashes	%
Signal	17	89.47%
No Control	2	10.53%
Grand Total	19	100.00%

Unit 1 Posted Speed	Crashes	%
0	1	5.26%
25	5	26.32%
35	13	68.42%
Grand Total	19	100.00%

Unit 1 Direction From	Crashes	%
West	12	63.16%
South	5	26.32%
East	1	5.26%
Unknown	1	5.26%
Grand Total	19	100.00%

Unit 1 Direction To	Crashes	%
East	9	47.37%
North	8	42.11%
Unknown	1	5.26%
South	1	5.26%
Grand Total	19	100.00%

(1) MILL ROAD & WALLINGS ROAD

Crash Summary Sheet

Unit 1 Summary

Unit 1 Type	Crashes	%
Passenger Car	10	52.63%
Sport Utility Vehicle	5	26.32%
Single Unit Truck	1	5.26%
Passenger Van (minivan)	1	5.26%
Unknown or Hit/Skip	1	5.26%
Pick up	1	5.26%
Grand Total	19	100.00%

Unit 1 Special Function	Crashes	%
None	19	100.00%
Grand Total	19	100.00%

(1) MILL ROAD & WALLINGS ROAD

Crash Summary Sheet

Unit 2 Summary

Unit 2 Pre-Crash Action	Crashes	%
Slowing or Stopped In Traffic	14	73.68%
Straight Ahead	4	21.05%
Making Right Turn	1	5.26%
Grand Total	19	100.00%

Unit 2 Contributing Factor	Crashes	%
None	19	100.00%
Grand Total	19	100.00%

Unit 2 Direction From	Crashes	%
East	2	10.53%
South	6	31.58%
West	11	57.89%
Grand Total	19	100.00%

Unit 2 Direction To	Crashes	%
East	11	57.89%
North	7	36.84%
West	1	5.26%
Grand Total	19	100.00%

Unit 2 Type	Crashes	%
Sport Utility Vehicle	9	47.37%
Passenger Car	8	42.11%
Pick up	2	10.53%
Grand Total	19	100.00%

Unit 2 Special Function	Crashes	%
None	19	100.00%
Grand Total	19	100.00%

(2) MILL ROAD 7 IR77 NB EXIT RAMP

Crash Summary Sheet

Fatalities	0
Serious Injuries	0
Other Injuries	0

Crashes Per Year	1.00
Fatal and All Injury Crashes	0
Percent Injury	0.0%
Equivalent PDO Index Value	1.00

Crash Severity	Crashes	%
(5) PDO/No Injury	2	100.00%
Grand Total	2	100.00%

Year	Crashes	%
2019	1	50.00%
2020	1	50.00%
Grand Total	2	100.00%

Day of Week	Crashes	%
(1) Sunday	1	50.00%
(4) Wednesday	1	50.00%
Grand Total	2	100.00%

Hour of Day	Crashes	%
9	2	100.00%
Grand Total	2	100.00%

Crash Type	Crashes	%
Left Turn	1	50.00%
Angle	1	50.00%
Grand Total	2	100.00%

Month	Crashes	%
6	1	50.00%
7	1	50.00%
Grand Total	2	100.00%

(2) MILL ROAD 7 IR77 NB EXIT RAMP

Crash Summary Sheet

Weather Condition	Crashes	%
Clear	2	100.00%
Grand Total	2	100.00%

Road Condition	Crashes	%
Dry	2	100.00%
Grand Total	2	100.00%

Light Condition	Crashes	%
Daylight	2	100.00%
Grand Total	2	100.00%

Number of Units	Crashes	%
2	2	100.00%
Grand Total	2	100.00%

ODOT Location	Crashes	%
T-Intersection	1	50.00%
Not An Intersection	1	50.00%
Grand Total	2	100.00%

Work Zone Related	Crashes	%
No	2	100.00%
Grand Total	2	100.00%

Alcohol Related	Crashes	%
No	2	100.00%
Grand Total	2	100.00%

Drug Related (Inc. Marijuana)	Crashes	%
No	2	100.00%
Grand Total	2	100.00%

Contour	Crashes	%
Straight Level	2	100.00%
Grand Total	2	100.00%

Marijuana Related	Crashes	%
No	2	100.00%
Grand Total	2	100.00%

Roadway Departure	Crashes	%
No	2	100.00%
Grand Total	2	100.00%

Older Driver (65+)	Crashes	%
No	2	100.00%
Grand Total	2	100.00%

Intersection Related	Crashes	%
Yes	2	100.00%
Grand Total	2	100.00%

Young Driver (15-25)	Crashes	%
No	1	50.00%
Yes	1	50.00%
Grand Total	2	100.00%

Speed Related	Crashes	%
No	1	50.00%
Yes	1	50.00%
Grand Total	2	100.00%

Motorcycle Involved	Crashes	%
No	2	100.00%
Grand Total	2	100.00%

(2) MILL ROAD 7 IR77 NB EXIT RAMP

Crash Summary Sheet

Unit 1 Summary

Unit 1 Pre-Crash Action	Crashes	%
Making Left Turn	2	100.00%
Grand Total	2	100.00%

Unit 1 Contributing Factor	Crashes	%
Ran Stop Sign	1	50.00%
Failure to Yield	1	50.00%
Grand Total	2	100.00%

Unit 1 Object Struck	Crashes	%
Nothing Struck	2	100.00%
Grand Total	2	100.00%

Unit 1 Traffic Control	Crashes	%
Stop Sign	2	100.00%
Grand Total	2	100.00%

Unit 1 Posted Speed	Crashes	%
25	2	100.00%
Grand Total	2	100.00%

Unit 1 Direction From	Crashes	%
West	1	50.00%
South	1	50.00%
Grand Total	2	100.00%

Unit 1 Direction To	Crashes	%
Southwest	1	50.00%
North	1	50.00%
Grand Total	2	100.00%

(2) MILL ROAD 7 IR77 NB EXIT RAMP

Crash Summary Sheet

Unit 1 Summary

Unit 1 Type	Crashes	%
Sport Utility Vehicle	1	50.00%
Other Vehicle	1	50.00%
Grand Total	2	100.00%

Unit 1 Special Function	Crashes	%
None	2	100.00%
Grand Total	2	100.00%

(2) MILL ROAD 7 IR77 NB EXIT RAMP
Crash Summary Sheet

Unit 2 Summary

Unit 2 Pre-Crash Action	Crashes	%
Straight Ahead	2	100.00%
Grand Total	2	100.00%

Unit 2 Contributing Factor	Crashes	%
None	2	100.00%
Grand Total	2	100.00%

Unit 2 Direction From	Crashes	%
South	2	100.00%
Grand Total	2	100.00%

Unit 2 Direction To	Crashes	%
North	2	100.00%
Grand Total	2	100.00%

Unit 2 Type	Crashes	%
Passenger Van (minivan)	1	50.00%
Cargo Van	1	50.00%
Grand Total	2	100.00%

Unit 2 Special Function	Crashes	%
None	2	100.00%
Grand Total	2	100.00%

Appendix E
Crash Diagrams

CRASH DIAGRAM

(1) Mill Road & Wallings Road
2019-2022

IR77 NORTHBOUND ENTRANCE RAMP

Crashes By Year
2019: 7
2020: 5
2021: 2
2022: 5

WALLINGS ROAD

09-17-19/Dry

04-17-19/Dry
02-23-22/Wet

09-20-19/Dry
10-16-19/Wet
01-22-20/Dry
03-03-20/Wet
08-19-20/Dry
07-14-21/Dry
11-04-21/Dry
07-12-22/Dry
07-13-22/Wet

01-18-20/Wet

WALLINGS ROAD

MILL ROAD

06-12-22/Dry
10-09-22/Dry
11-03-20/Dry
10-03-19/Dry
11-22-19/Dry
11-25-19/Dry

LEGEND

Symbols	Types of Collisions
Other	Rear End
Backing Vehicle	Head On
Pedestrian	Side-Swipe Passing
Parked Vehicle	Side-Swipe Meeting
Fixed Object	Out-of-Control
Red Light Run	Angle
Animal	Angle
Bicycle	Left Turn
Property Damage	Right Turn
Injury	Right Turn

CRASH DIAGRAM

(2) Mill Road & IR 77 NB Exit Ramp
2019-2022

Crashes By Year
2019: 1
2020: 1
2021: 0

06-17-20/Dry

07-14-19/Dry

MILL ROAD

IR77 NB EXIT RAMP

LEGEND

Symbols	Types of Collisions
Other	Rear End
Backing Vehicle	Head On
Pedestrian	Side-Swipe Passing
Parked Vehicle	Side-Swipe Meeting
Fixed Object	Out-of-Control
Red Light Run	Angle
Animal	Angle
Bicycle	Left Turn
Property Damage	Right Turn
Injury	Right Turn

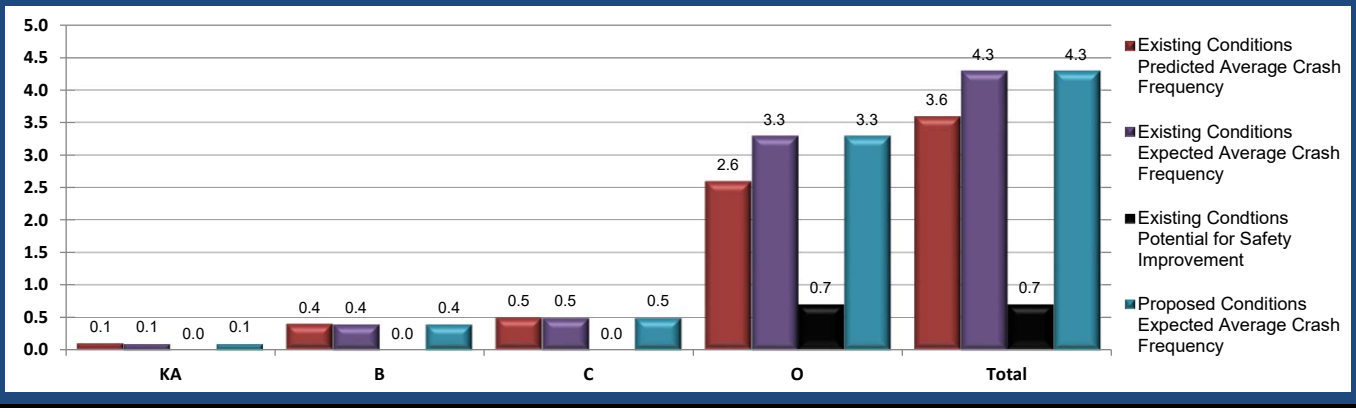
Appendix F
ECAT Analysis Worksheets

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor Study	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 686-6402
Reference Number	23-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Summary of Anticipated Safety Performance of the Project (average crashes/year)



Project Summary Results (Without Animal Crashes)

	KA	B	C	O	Total
$N_{predicted}$ - Existing Conditions	0.0723	0.3738	0.5497	2.6203	3.6161
$N_{expected}$ - Existing Conditions	0.0687	0.3529	0.5133	3.3497	4.2846
$N_{potential\ for\ improvement}$ - Existing Conditions	-0.0036	-0.0209	-0.0364	**0.7294**	**0.6685**
$N_{expected}$ - Proposed Conditions	0.0687	0.3529	0.5133	3.3497	4.2846

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor Study	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 686-6402
Reference Number	23-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Existing Conditions Project Element Predicted Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
1	Mill Rd & Wallings Rd	0.0723	0.3738	0.5497	2.6203	3.6161

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor Study	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 686-6402
Reference Number	23-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Existing Conditions Project Element Expected Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
1	Mill Rd & Wallings Rd	0.0687	0.3529	0.5133	3.3497	4.2846

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor Study	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 686-6402
Reference Number	23-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Existing Conditions Project Element Potential for Safety Improvement Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
1	Mill Rd & Wallings Rd	-0.0036	-0.0209	-0.0364	**0.7294**	**0.6685**

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor Study	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 686-6402
Reference Number	23-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Proposed Conditions Project Element Expected Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
1	Mill Rd & Wallings Rd	0.0687	0.3529	0.5133	3.3497	4.2846

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor Study	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 686-6402
Reference Number	23-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Summary by Crash Type

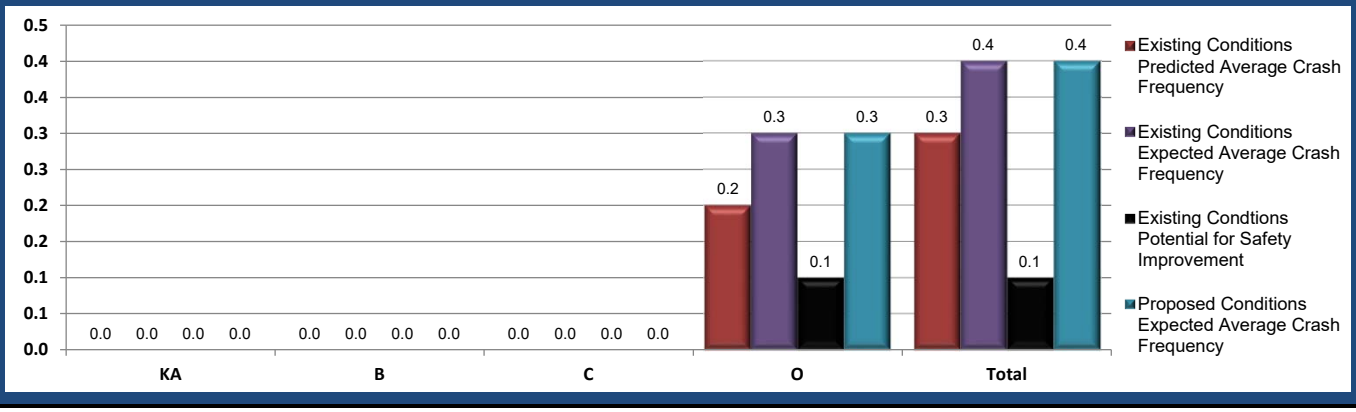
Crash Type	Existing			Proposed
	Predicted Crash Frequency	Expected Crash Frequency	PSI	Expected Crash Frequency
Unknown	0.0000	0.0000	0.0000	0.0000
Head On	0.0000	0.0000	0.0000	0.0000
Rear End	0.0000	0.0000	0.0000	0.0000
Backing	0.0000	0.0000	0.0000	0.0000
Sideswipe - Meeting	0.0000	0.0000	0.0000	0.0000
Sideswipe - Passing	0.0000	0.0000	0.0000	0.0000
Angle	0.0000	0.0000	0.0000	0.0000
Parked Vehicle	0.0000	0.0000	0.0000	0.0000
Pedestrian	0.0000	0.0000	0.0000	0.0000
Animal	0.0000	0.0000	0.0000	0.0000
Train	0.0000	0.0000	0.0000	0.0000
Pedalcycles	0.0000	0.0000	0.0000	0.0000
Other Non-Vehicle	0.0000	0.0000	0.0000	0.0000
Fixed Object	0.0000	0.0000	0.0000	0.0000
Other Object	0.0000	0.0000	0.0000	0.0000
Overturning	0.0000	0.0000	0.0000	0.0000
Other Non-Collision	0.0000	0.0000	0.0000	0.0000
Left Turn	0.0000	0.0000	0.0000	0.0000
Right Turn	0.0000	0.0000	0.0000	0.0000

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor Study	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 686-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Summary of Anticipated Safety Performance of the Project (average crashes/year)



Project Summary Results (Without Animal Crashes)

	KA	B	C	O	Total
$N_{predicted}$ - Existing Conditions	0.0105	0.0368	0.0436	0.2000	0.2909
$N_{expected}$ - Existing Conditions	0.0102	0.0355	0.0421	0.2711	0.3589
$N_{potential\ for\ improvement}$ - Existing Conditions	-0.0003	-0.0013	-0.0015	**0.0711**	**0.0680**
$N_{expected}$ - Proposed Conditions	0.0102	0.0355	0.0421	0.2711	0.3589

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor Study	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 686-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Existing Conditions Project Element Predicted Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
2	Mill Rd & IR77 NB Exit	0.0105	0.0368	0.0436	0.2	0.2909

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor Study	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 686-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Existing Conditions Project Element Expected Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
2	Mill Rd & IR77 NB Exit	0.0102	0.0355	0.0421	0.2711	0.3589

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor Study	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 686-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Existing Conditions Project Element Potential for Safety Improvement Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
2	Mill Rd & IR77 NB Exit	-0.0003	-0.0013	-0.0015	**0.0711**	**0.068**

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor Study	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 686-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Proposed Conditions Project Element Expected Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
2	Mill Rd & IR77 NB Exit	0.0102	0.0355	0.0421	0.2711	0.3589

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor Study	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 686-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Summary by Crash Type

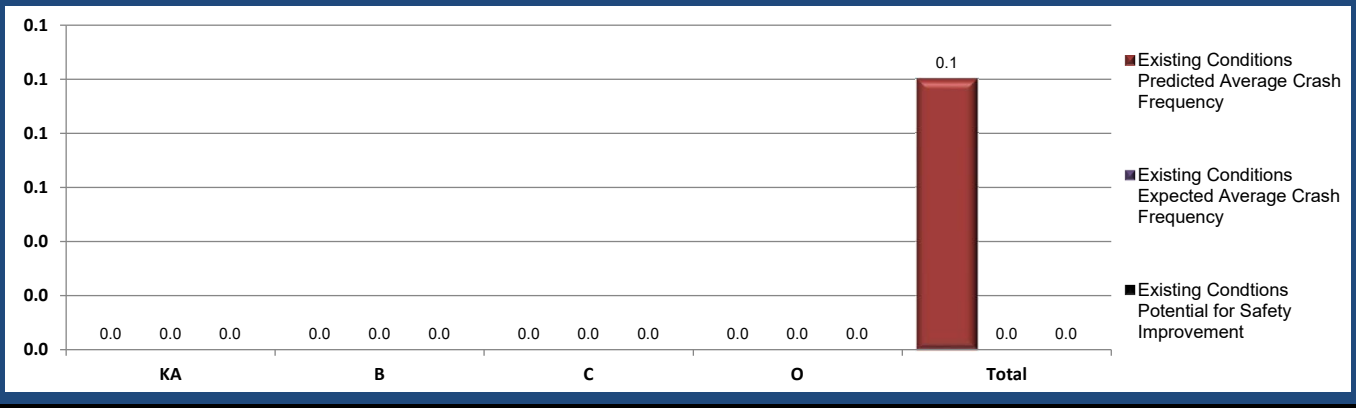
Crash Type	Existing			Proposed
	Predicted Crash Frequency	Expected Crash Frequency	PSI	Expected Crash Frequency
Unknown	0.0000	0.0000	0.0000	0.0000
Head On	0.0000	0.0000	0.0000	0.0000
Rear End	0.0000	0.0000	0.0000	0.0000
Backing	0.0000	0.0000	0.0000	0.0000
Sideswipe - Meeting	0.0000	0.0000	0.0000	0.0000
Sideswipe - Passing	0.0000	0.0000	0.0000	0.0000
Angle	0.0000	0.0000	0.0000	0.0000
Parked Vehicle	0.0000	0.0000	0.0000	0.0000
Pedestrian	0.0000	0.0000	0.0000	0.0000
Animal	0.0000	0.0000	0.0000	0.0000
Train	0.0000	0.0000	0.0000	0.0000
Pedalcycles	0.0000	0.0000	0.0000	0.0000
Other Non-Vehicle	0.0000	0.0000	0.0000	0.0000
Fixed Object	0.0000	0.0000	0.0000	0.0000
Other Object	0.0000	0.0000	0.0000	0.0000
Overturning	0.0000	0.0000	0.0000	0.0000
Other Non-Collision	0.0000	0.0000	0.0000	0.0000
Left Turn	0.0000	0.0000	0.0000	0.0000
Right Turn	0.0000	0.0000	0.0000	0.0000

Project Safety Performance Report

General Information

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Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Summary of Anticipated Safety Performance of the Project (average crashes/year)



Project Summary Results (Without Animal Crashes)

	KA	B	C	O	Total
$N_{predicted}$ - Existing Conditions	0.0029	0.0111	0.0141	0.0363	0.0644
$N_{expected}$ - Existing Conditions	0.0000	0.0000	0.0000	0.0000	0.0000
$N_{potential\ for\ improvement}$ - Existing Conditions	0.0000	0.0000	0.0000	0.0000	0.0000

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor Study	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 686-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Existing Conditions Project Element Predicted Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
3	Mill Rd & Loripat Dr	0.0029	0.0111	0.0141	0.0363	0.0644

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor Study	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 686-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Existing Conditions Project Element Expected Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
3	Mill Rd & Loripat Dr	0	0	0	0	0

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor Study	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 686-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Existing Conditions Project Element Potential for Safety Improvement Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
3	Mill Rd & Loripat Dr					0

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor Study	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 686-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor Study	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 686-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Summary by Crash Type

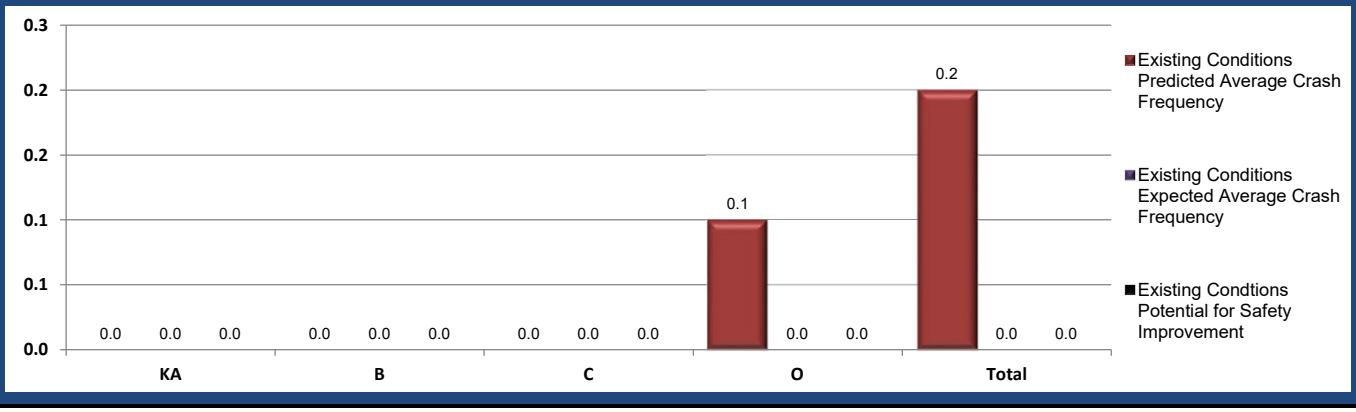
Crash Type	Existing			Proposed
	Predicted Crash Frequency	Expected Crash Frequency	PSI	Expected Crash Frequency
Unknown	0.0000	0.0000		
Head On	0.0000	0.0000		
Rear End	0.0000	0.0000		
Backing	0.0000	0.0000		
Sideswipe - Meeting	0.0000	0.0000		
Sideswipe - Passing	0.0000	0.0000		
Angle	0.0000	0.0000		
Parked Vehicle	0.0000	0.0000		
Pedestrian	0.0000	0.0000		
Animal	0.0000	0.0000		
Train	0.0000	0.0000		
Pedalcycles	0.0000	0.0000		
Other Non-Vehicle	0.0000	0.0000		
Fixed Object	0.0000	0.0000		
Other Object	0.0000	0.0000		
Overturning	0.0000	0.0000		
Other Non-Collision	0.0000	0.0000		
Left Turn	0.0000	0.0000		
Right Turn	0.0000	0.0000		

Project Safety Performance Report

General Information

Project Name	Broadview HTs - Mill Road Corridor Study	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 686-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Summary of Anticipated Safety Performance of the Project (average crashes/year)



Project Summary Results (Without Animal Crashes)

	KA	B	C	O	Total
$N_{predicted}$ - Existing Conditions	0.0079	0.0286	0.0352	0.1368	0.2085
$N_{expected}$ - Existing Conditions	0.0000	0.0000	0.0000	0.0000	0.0000
$N_{potential\ for\ improvement}$ - Existing Conditions	0.0000	0.0000	0.0000	0.0000	0.0000

Project Safety Performance Report

General Information

Project Name	Broadview HTs - Mill Road Corridor Study	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 686-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Existing Conditions Project Element Predicted Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
4	Mill Rd & Lacey Ln	0.0079	0.0286	0.0352	0.1368	0.2085

Project Safety Performance Report

General Information

Project Name	Broadview HTs - Mill Road Corridor Study	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 686-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Existing Conditions Project Element Expected Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
4	Mill Rd & Lacey Ln	0	0	0	0	0

Project Safety Performance Report

General Information

Project Name	Broadview HTs - Mill Road Corridor Study	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 686-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Existing Conditions Project Element Potential for Safety Improvement Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
4	Mill Rd & Lacey Ln					0

Project Safety Performance Report

General Information

Project Name	Broadview HTs - Mill Road Corridor Study	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 686-6402
Reference Number	22-156	Date Performed	3/1/2023
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Agency/Company	TMS Engineers, Inc.		

Project Safety Performance Report

General Information

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Project Description	Existing Conditions	Contact Phone	(330) 686-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Summary by Crash Type

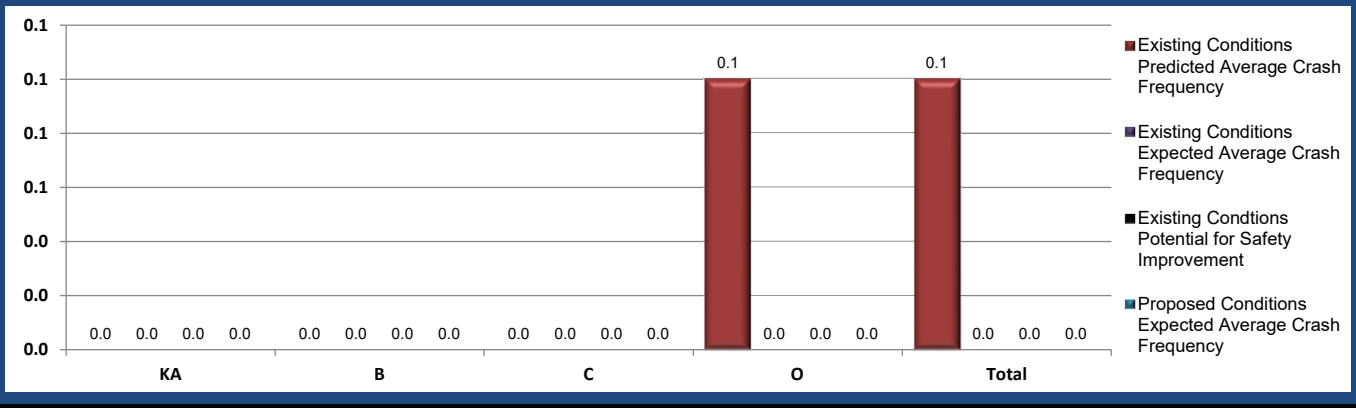
Crash Type	Existing			Proposed
	Predicted Crash Frequency	Expected Crash Frequency	PSI	Expected Crash Frequency
Unknown	0.0000	0.0000		
Head On	0.0000	0.0000		
Rear End	0.0000	0.0000		
Backing	0.0000	0.0000		
Sideswipe - Meeting	0.0000	0.0000		
Sideswipe - Passing	0.0000	0.0000		
Angle	0.0000	0.0000		
Parked Vehicle	0.0000	0.0000		
Pedestrian	0.0000	0.0000		
Animal	0.0000	0.0000		
Train	0.0000	0.0000		
Pedalcycles	0.0000	0.0000		
Other Non-Vehicle	0.0000	0.0000		
Fixed Object	0.0000	0.0000		
Other Object	0.0000	0.0000		
Overturning	0.0000	0.0000		
Other Non-Collision	0.0000	0.0000		
Left Turn	0.0000	0.0000		
Right Turn	0.0000	0.0000		

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor Study	Contact Email	andy@tmsnengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 686-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Summary of Anticipated Safety Performance of the Project (average crashes/year)



Project Summary Results (Without Animal Crashes)

	KA	B	C	O	Total
$N_{predicted}$ - Existing Conditions	0.0049	0.0192	0.0249	0.0688	0.1178
$N_{expected}$ - Existing Conditions	0.0000	0.0000	0.0000	0.0000	0.0000
$N_{potential\ for\ improvement}$ - Existing Conditions	0.0000	0.0000	0.0000	0.0000	0.0000
$N_{expected}$ - Proposed Conditions	0.0000	0.0000	0.0000	0.0000	0.0000

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor Study	Contact Email	andy@tmsnengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 686-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Existing Conditions Project Element Predicted Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
5	Mill Rd & Sylmar Dr	0.0049	0.0192	0.0249	0.0688	0.1178
						0

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor Study	Contact Email	andy@tmsnengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 686-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Existing Conditions Project Element Expected Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
5	Mill Rd & Sylmar Dr	0	0	0	0	0
						0

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor Study	Contact Email	andy@tmsnengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 686-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Existing Conditions Project Element Potential for Safety Improvement Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
5	Mill Rd & Sylmar Dr					0
						0

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor Study	Contact Email	andy@tmsnengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 686-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Proposed Conditions Project Element Expected Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
5	Mill Rd & Sylmar Dr	0	0	0	0	0
						0

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor Study	Contact Email	andy@tmsnengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 686-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Summary by Crash Type

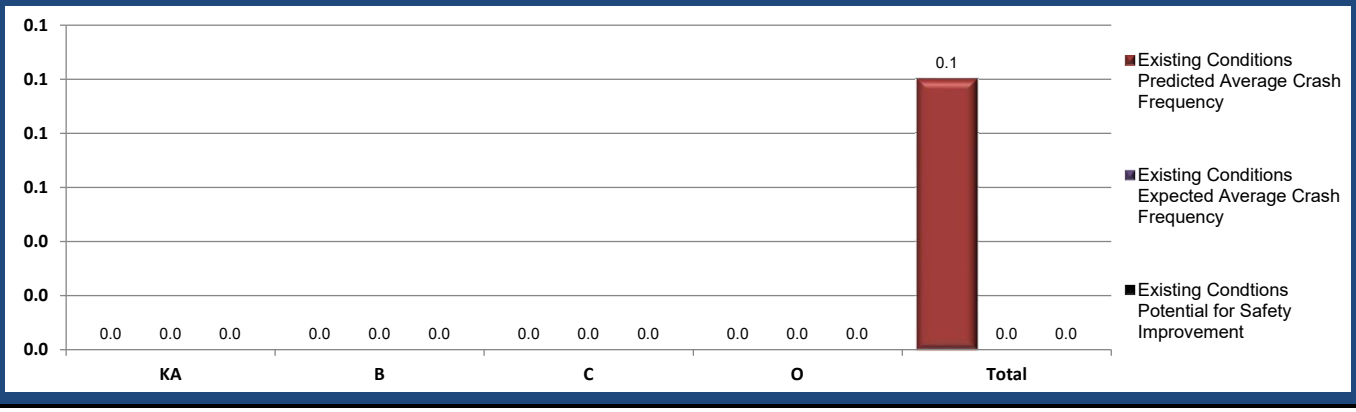
Crash Type	Existing			Proposed
	Predicted Crash Frequency	Expected Crash Frequency	PSI	Expected Crash Frequency
Unknown				
Head On				
Rear End				
Backing				
Sideswipe - Meeting				
Sideswipe - Passing				
Angle				
Parked Vehicle				
Pedestrian				
Animal				
Train				
Pedalcycles				
Other Non-Vehicle				
Fixed Object				
Other Object				
Overturning				
Other Non-Collision				
Left Turn				
Right Turn				

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor Study	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 686-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Summary of Anticipated Safety Performance of the Project (average crashes/year)



Project Summary Results (Without Animal Crashes)

	KA	B	C	O	Total
$N_{predicted}$ - Existing Conditions	0.0029	0.0099	0.0118	0.0379	0.0625
$N_{expected}$ - Existing Conditions	0.0000	0.0000	0.0000	0.0000	0.0000
$N_{potential\ for\ improvement}$ - Existing Conditions	0.0000	0.0000	0.0000	0.0000	0.0000

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor Study	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 686-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Existing Conditions Project Element Predicted Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
6	West Mill Rd & Karen Lynne Dr	0.0029	0.0099	0.0118	0.0379	0.0625

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor Study	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 686-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Existing Conditions Project Element Expected Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
6	West Mill Rd & Karen Lynne Dr	0	0	0	0	0

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor Study	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 686-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Existing Conditions Project Element Potential for Safety Improvement Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
6	West Mill Rd & Karen Lynne Dr					0

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor Study	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 686-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor Study	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 686-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Summary by Crash Type

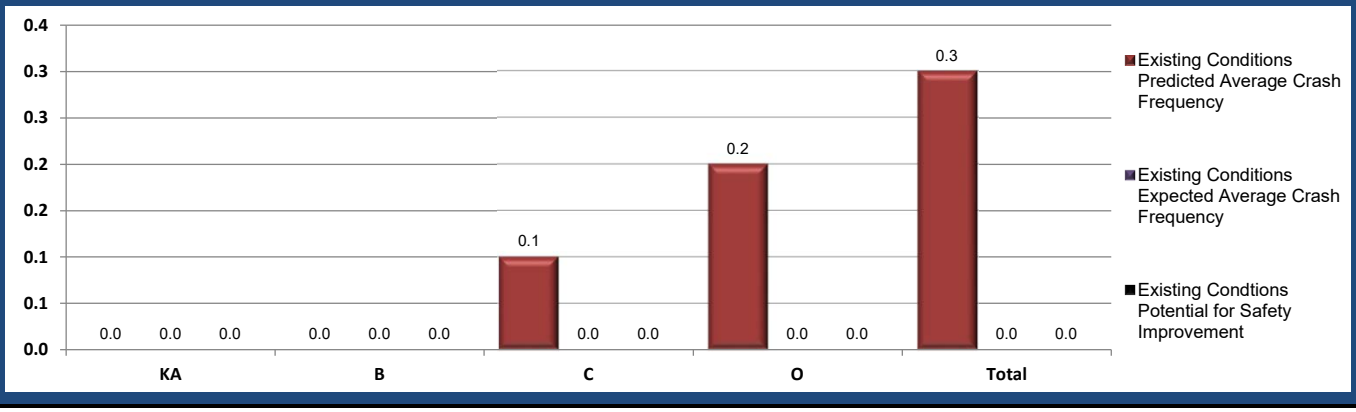
Crash Type	Existing			Proposed
	Predicted Crash Frequency	Expected Crash Frequency	PSI	Expected Crash Frequency
Unknown		0.0000		
Head On		0.0000		
Rear End		0.0000		
Backing		0.0000		
Sideswipe - Meeting		0.0000		
Sideswipe - Passing		0.0000		
Angle		0.0000		
Parked Vehicle		0.0000		
Pedestrian		0.0000		
Animal		0.0000		
Train		0.0000		
Pedalcycles		0.0000		
Other Non-Vehicle		0.0000		
Fixed Object		0.0000		
Other Object		0.0000		
Overturning		0.0000		
Other Non-Collision		0.0000		
Left Turn		0.0000		
Right Turn		0.0000		

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor Study	Contact Email	andy@tmsnegineers.com
Project Description	Existing Conditions	Contact Phone	(330) 846-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Summary of Anticipated Safety Performance of the Project (average crashes/year)



Project Summary Results (Without Animal Crashes)

	KA	B	C	O	Total
$N_{predicted}$ - Existing Conditions	0.0133	0.0290	0.0544	0.2080	0.3047
$N_{expected}$ - Existing Conditions	0.0000	0.0000	0.0000	0.0000	0.0000
$N_{potential\ for\ improvement}$ - Existing Conditions	0.0000	0.0000	0.0000	0.0000	0.0000

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor Study	Contact Email	andy@tmsnegineers.com
Project Description	Existing Conditions	Contact Phone	(330) 846-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Existing Conditions Project Element Predicted Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
7	West Mill Rd & Lacey Ln	0.0133	0.029	0.0544	0.208	0.3047

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor Study	Contact Email	andy@tmsnegineers.com
Project Description	Existing Conditions	Contact Phone	(330) 846-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Existing Conditions Project Element Expected Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
7	West Mill Rd & Lacey Ln	0	0	0	0	0

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor Study	Contact Email	andy@tmsnegineers.com
Project Description	Existing Conditions	Contact Phone	(330) 846-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Existing Conditions Project Element Potential for Safety Improvement Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
7	West Mill Rd & Lacey Ln					0

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor Study	Contact Email	andy@tmsnegineers.com
Project Description	Existing Conditions	Contact Phone	(330) 846-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor Study	Contact Email	andy@tmsnegineers.com
Project Description	Existing Conditions	Contact Phone	(330) 846-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Summary by Crash Type

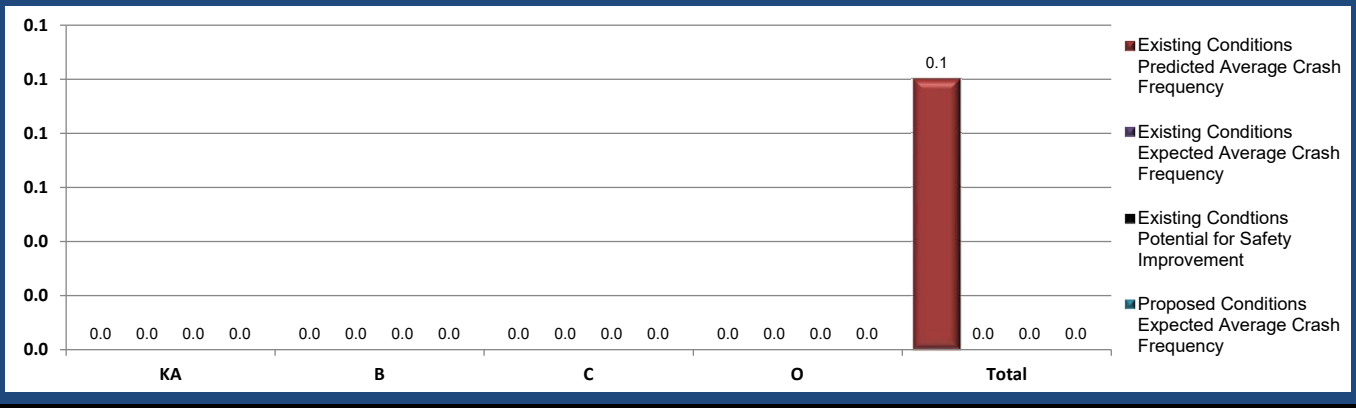
Crash Type	Existing			Proposed
	Predicted Crash Frequency	Expected Crash Frequency	PSI	Expected Crash Frequency
Unknown	0.0000	0.0000		
Head On	0.0000	0.0000		
Rear End	0.0000	0.0000		
Backing	0.0000	0.0000		
Sideswipe - Meeting	0.0000	0.0000		
Sideswipe - Passing	0.0000	0.0000		
Angle	0.0000	0.0000		
Parked Vehicle	0.0000	0.0000		
Pedestrian	0.0000	0.0000		
Animal	0.0000	0.0000		
Train	0.0000	0.0000		
Pedalcycles	0.0000	0.0000		
Other Non-Vehicle	0.0000	0.0000		
Fixed Object	0.0000	0.0000		
Other Object	0.0000	0.0000		
Overturning	0.0000	0.0000		
Other Non-Collision	0.0000	0.0000		
Left Turn	0.0000	0.0000		
Right Turn	0.0000	0.0000		

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor Study	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 684-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Summary of Anticipated Safety Performance of the Project (average crashes/year)



Project Summary Results (Without Animal Crashes)

	KA	B	C	O	Total
$N_{predicted}$ - Existing Conditions	0.0036	0.0143	0.0186	0.0461	0.0826
$N_{expected}$ - Existing Conditions	0.0000	0.0000	0.0000	0.0000	0.0000
$N_{potential\ for\ improvement}$ - Existing Conditions	0.0000	0.0000	0.0000	0.0000	0.0000
$N_{expected}$ - Proposed Conditions	0.0000	0.0000	0.0000	0.0000	0.0000

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor Study	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 684-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Existing Conditions Project Element Predicted Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
8	Mill Rd & Broadmill Dr	0.0036	0.0143	0.0186	0.0461	0.0826
						0

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor Study	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 684-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Existing Conditions Project Element Expected Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
8	Mill Rd & Broadmill Dr	0	0	0	0	0
						0

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor Study	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 684-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Existing Conditions Project Element Potential for Safety Improvement Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
8	Mill Rd & Broadmill Dr					0
						0

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor Study	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 684-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Proposed Conditions Project Element Expected Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
8	Mill Rd & Broadmill Dr	0	0	0	0	0
						0

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor Study	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 684-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Summary by Crash Type

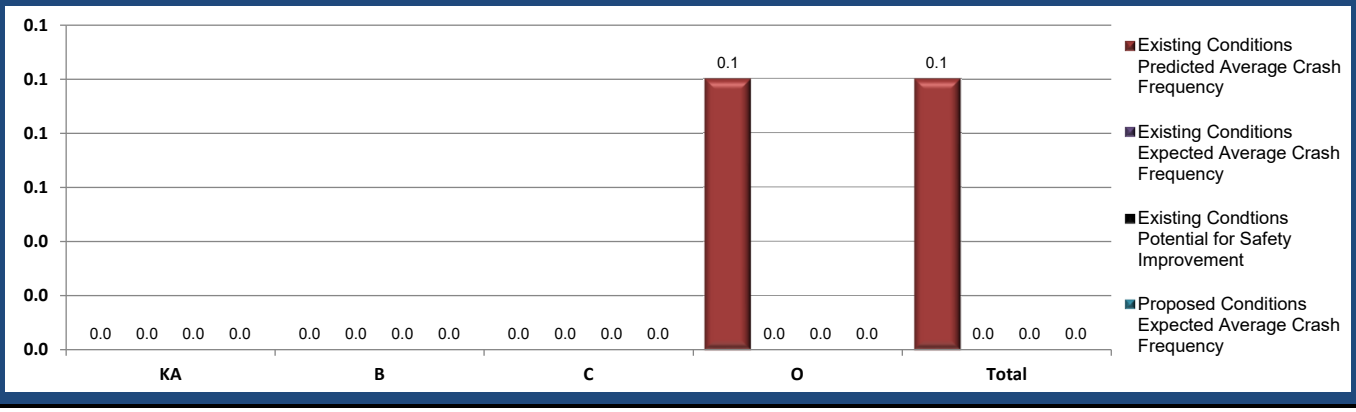
Crash Type	Existing			Proposed
	Predicted Crash Frequency	Expected Crash Frequency	PSI	Expected Crash Frequency
Unknown				
Head On				
Rear End				
Backing				
Sideswipe - Meeting				
Sideswipe - Passing				
Angle				
Parked Vehicle				
Pedestrian				
Animal				
Train				
Pedalcycles				
Other Non-Vehicle				
Fixed Object				
Other Object				
Overturning				
Other Non-Collision				
Left Turn				
Right Turn				

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor Study	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 846-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Summary of Anticipated Safety Performance of the Project (average crashes/year)



Project Summary Results (Without Animal Crashes)

	KA	B	C	O	Total
$N_{predicted}$ - Existing Conditions	0.0046	0.0182	0.0235	0.0648	0.1111
$N_{expected}$ - Existing Conditions	0.0000	0.0000	0.0000	0.0000	0.0000
$N_{potential\ for\ improvement}$ - Existing Conditions	0.0000	0.0000	0.0000	0.0000	0.0000
$N_{expected}$ - Proposed Conditions	0.0000	0.0000	0.0000	0.0000	0.0000

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor Study	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 846-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Existing Conditions Project Element Predicted Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
9	Mill Rd & Millwood Dr	0.0046	0.0182	0.0235	0.0648	0.1111
						0

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor Study	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 846-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Existing Conditions Project Element Expected Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
9	Mill Rd & Millwood Dr	0	0	0	0	0
						0

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor Study	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 846-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Existing Conditions Project Element Potential for Safety Improvement Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
9	Mill Rd & Millwood Dr					0
						0

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor Study	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 846-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Proposed Conditions Project Element Expected Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
9	Mill Rd & Millwood Dr	0	0	0	0	0
						0

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor Study	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 846-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Summary by Crash Type

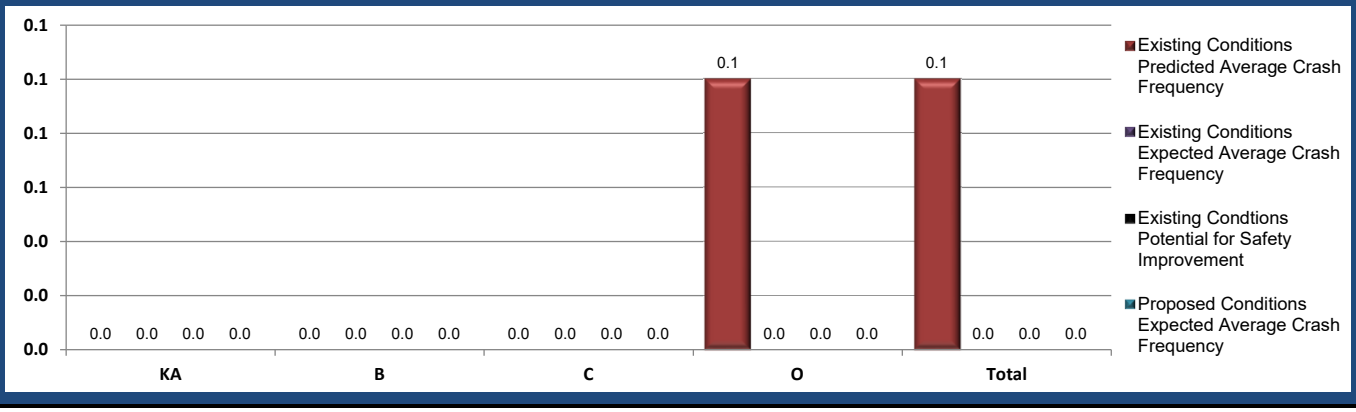
Crash Type	Existing			Proposed
	Predicted Crash Frequency	Expected Crash Frequency	PSI	Expected Crash Frequency
Unknown				
Head On				
Rear End				
Backing				
Sideswipe - Meeting				
Sideswipe - Passing				
Angle				
Parked Vehicle				
Pedestrian				
Animal				
Train				
Pedalcycles				
Other Non-Vehicle				
Fixed Object				
Other Object				
Overturning				
Other Non-Collision				
Left Turn				
Right Turn				

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor Study	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 846-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Summary of Anticipated Safety Performance of the Project (average crashes/year)



Project Summary Results (Without Animal Crashes)

	KA	B	C	O	Total
$N_{predicted}$ - Existing Conditions	0.0056	0.0212	0.0267	0.0865	0.1400
$N_{expected}$ - Existing Conditions	0.0000	0.0000	0.0000	0.0000	0.0000
$N_{potential\ for\ improvement}$ - Existing Conditions	0.0000	0.0000	0.0000	0.0000	0.0000
$N_{expected}$ - Proposed Conditions	0.0000	0.0000	0.0000	0.0000	0.0000

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor Study	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 846-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Existing Conditions Project Element Predicted Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
10	Mill Rd & MS Driveway	0.0056	0.0212	0.0267	0.0865	0.14
						0

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor Study	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 846-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Existing Conditions Project Element Expected Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
10	Mill Rd & MS Driveway	0	0	0	0	0
						0

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor Study	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 846-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Existing Conditions Project Element Potential for Safety Improvement Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
10	Mill Rd & MS Driveway					0
						0

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor Study	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 846-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Proposed Conditions Project Element Expected Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
10	Mill Rd & MS Driveway	0	0	0	0	0
						0

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor Study	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 846-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Summary by Crash Type

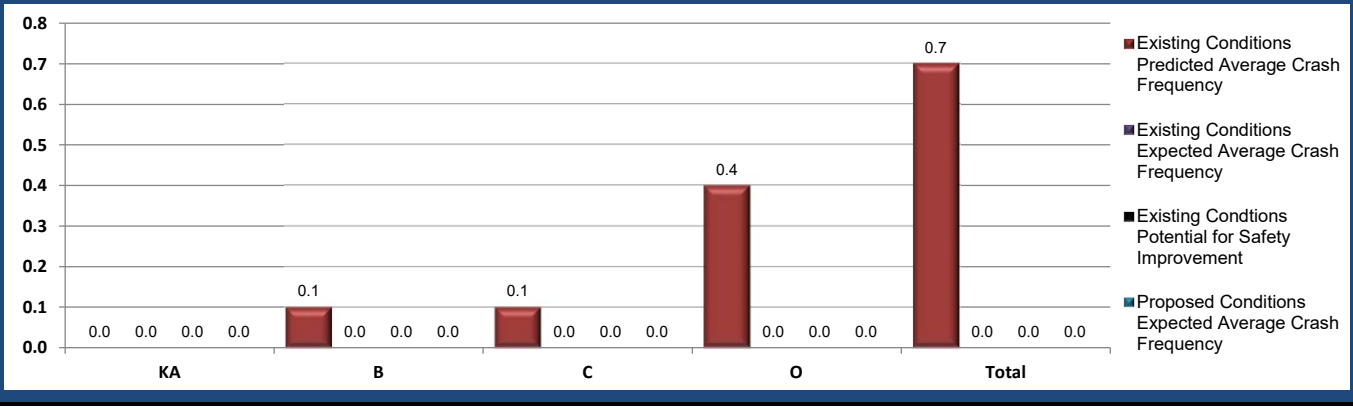
Crash Type	Existing			Proposed
	Predicted Crash Frequency	Expected Crash Frequency	PSI	Expected Crash Frequency
Unknown				
Head On				
Rear End				
Backing				
Sideswipe - Meeting				
Sideswipe - Passing				
Angle				
Parked Vehicle				
Pedestrian				
Animal				
Train				
Pedalcycles				
Other Non-Vehicle				
Fixed Object				
Other Object				
Overturning				
Other Non-Collision				
Left Turn				
Right Turn				

Project Safety Performance Report

General Information

Project Name	Boardview Hts - Mill Road Corridor Study	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 846-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Summary of Anticipated Safety Performance of the Project (average crashes/year)



Project Summary Results (Without Animal Crashes)

	KA	B	C	O	Total
$N_{predicted}$ - Existing Conditions	0.0171	0.0844	0.1226	0.4385	0.6626
$N_{expected}$ - Existing Conditions	0.0000	0.0000	0.0000	0.0000	0.0000
$N_{potential\ for\ improvement}$ - Existing Conditions	0.0000	0.0000	0.0000	0.0000	0.0000
$N_{expected}$ - Proposed Conditions	0.0000	0.0000	0.0000	0.0000	0.0000

Project Safety Performance Report

General Information

Project Name	Boardview Hts - Mill Road Corridor Study	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 846-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Existing Conditions Project Element Predicted Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
11	Mill Rd & HS Driveway	0.0171	0.0844	0.1226	0.4385	0.6626
						0

Project Safety Performance Report

General Information

Project Name	Boardview Hts - Mill Road Corridor Study	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 846-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Existing Conditions Project Element Expected Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
11	Mill Rd & HS Driveway	0	0	0	0	0
						0

Project Safety Performance Report

General Information

Project Name	Boardview Hts - Mill Road Corridor Study	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 846-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Existing Conditions Project Element Potential for Safety Improvement Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
11	Mill Rd & HS Driveway					0
						0

Project Safety Performance Report

General Information

Project Name	Boardview Hts - Mill Road Corridor Study	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 846-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Proposed Conditions Project Element Expected Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
11	Mill Rd & HS Driveway	0	0	0	0	0
						0

Project Safety Performance Report

General Information

Project Name	Boardview Hts - Mill Road Corridor Study	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 846-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Summary by Crash Type

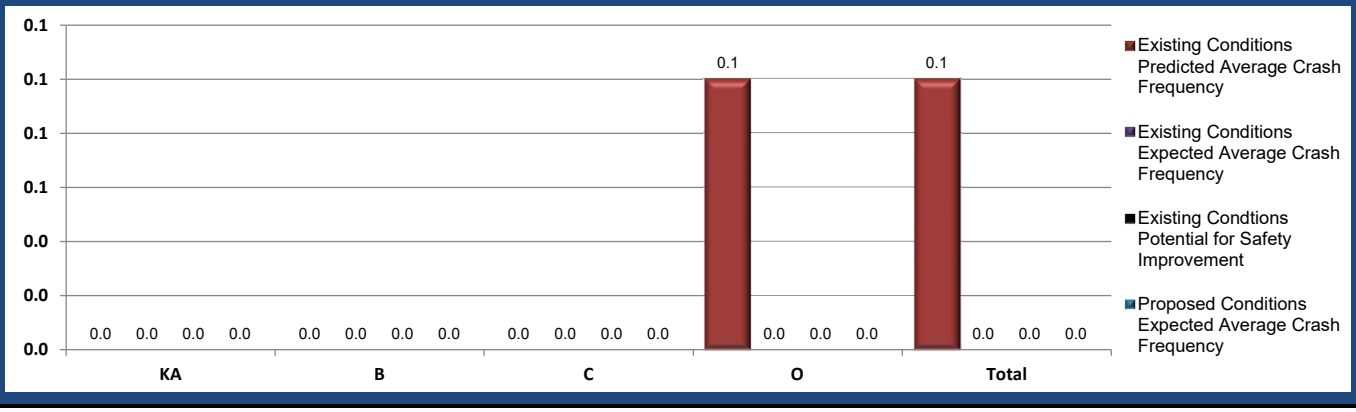
Crash Type	Existing			Proposed
	Predicted Crash Frequency	Expected Crash Frequency	PSI	Expected Crash Frequency
Unknown				
Head On				
Rear End				
Backing				
Sideswipe - Meeting				
Sideswipe - Passing				
Angle				
Parked Vehicle				
Pedestrian				
Animal				
Train				
Pedalcycles				
Other Non-Vehicle				
Fixed Object				
Other Object				
Overturning				
Other Non-Collision				
Left Turn				
Right Turn				

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 846-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Summary of Anticipated Safety Performance of the Project (average crashes/year)



Project Summary Results (Without Animal Crashes)

	KA	B	C	O	Total
$N_{predicted}$ - Existing Conditions	0.0038	0.0142	0.0177	0.0536	0.0893
$N_{expected}$ - Existing Conditions	0.0000	0.0000	0.0000	0.0000	0.0000
$N_{potential\ for\ improvement}$ - Existing Conditions	0.0000	0.0000	0.0000	0.0000	0.0000
$N_{expected}$ - Proposed Conditions	0.0000	0.0000	0.0000	0.0000	0.0000

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 846-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Existing Conditions Project Element Predicted Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
12	Mill Rd & Vera Dr	0.0038	0.0142	0.0177	0.0536	0.0893
						0

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 846-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Existing Conditions Project Element Expected Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
12	Mill Rd & Vera Dr	0	0	0	0	0
						0

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 846-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Existing Conditions Project Element Potential for Safety Improvement Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
12	Mill Rd & Vera Dr					0
						0

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 846-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Proposed Conditions Project Element Expected Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
12	Mill Rd & Vera Dr	0	0	0	0	0
						0

Project Safety Performance Report

General Information

Project Name	Broadview Hts - Mill Road Corridor	Contact Email	andy@tmsengineers.com
Project Description	Existing Conditions	Contact Phone	(330) 846-6402
Reference Number	22-156	Date Performed	3/1/2023
Analyst	ABC	Analysis Year	2023
Agency/Company	TMS Engineers, Inc.		

Summary by Crash Type

Crash Type	Existing			Proposed
	Predicted Crash Frequency	Expected Crash Frequency	PSI	Expected Crash Frequency
Unknown				
Head On				
Rear End				
Backing				
Sideswipe - Meeting				
Sideswipe - Passing				
Angle				
Parked Vehicle				
Pedestrian				
Animal				
Train				
Pedalcycles				
Other Non-Vehicle				
Fixed Object				
Other Object				
Overturning				
Other Non-Collision				
Left Turn				
Right Turn				

Appendix G
Growth Rate Data

WORKSHEET FOR N-S GROWTH RATES

BRECKSVILLE ROAD (SR 21) - NORTH OF MILL ROAD
LOCATION ID: 19918 - COUNT DATA FROM ODOT WEBSITE

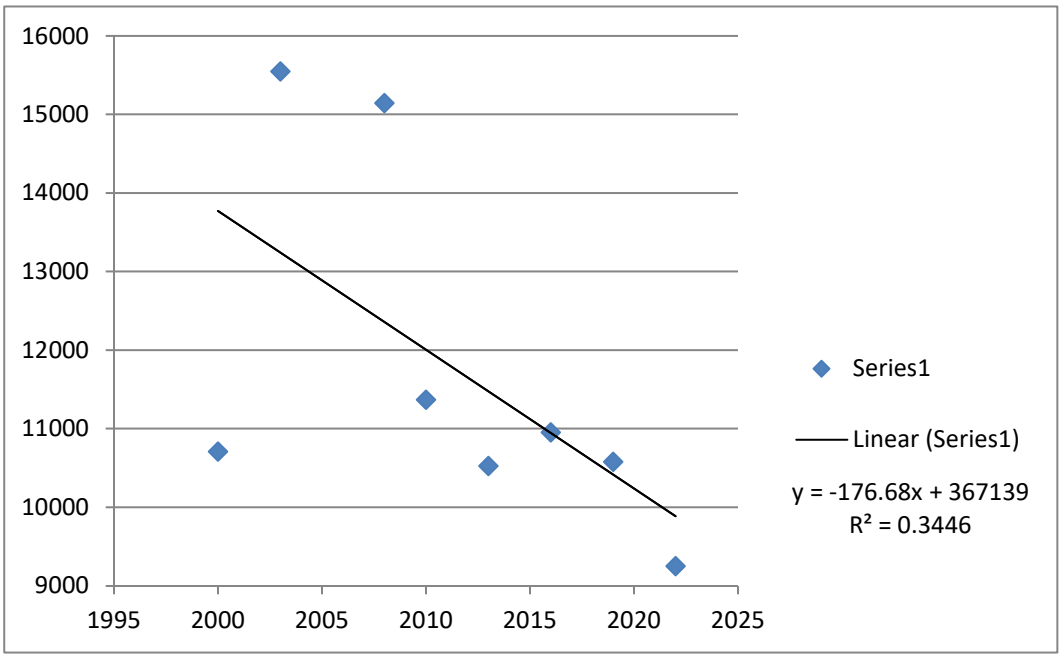
Year	*Volume*	*% Diff per Yr to Prev Yr Count*	*% Diff per Yr Since 2022*
2022	9252	-4.18%	
2019	10580	-1.14%	-4.18%
2016	10956	1.35%	-2.59%
2013	10530	-2.46%	-1.35%
2010	11370	-12.48%	-1.55%
2008	15150	-0.51%	-2.78%
2003	15550	15.06%	-2.13%
2000	10710		-0.62%

AVG/YEAR Since 2016
-2.592%

AVG/YEAR Since 2013
-1.35%

AVG/YEAR Since 2010
-0.62%

Coefficient (b) of Regression Equation:		**-176.683**
Growth Rate =	b / Most Recent Count x 100%	
Growth Rate =	-176.683 / 9252 X 100%	
Growth Rate =	**-1.9097%**	

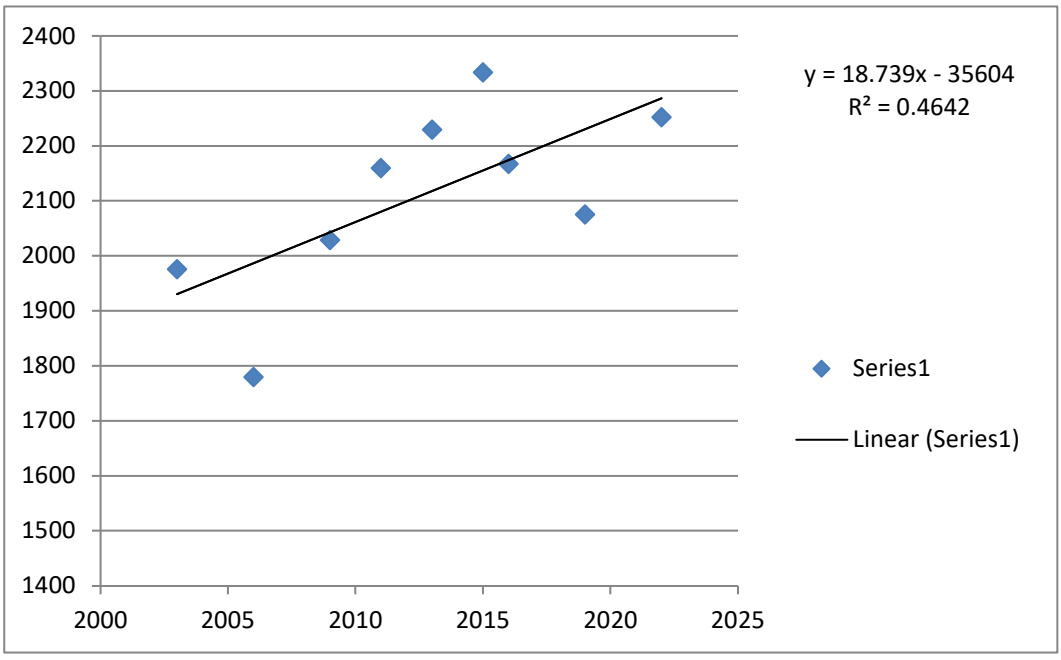


WORKSHEET FOR N-S GROWTH RATES

IR77 NB RAMP TO MILL ROAD
LOCATION ID: 67018 - COUNT DATA FROM ODOT WEBSITE

Year	*Volume*	*% Diff per Yr to Prev Yr Count*	*% Diff per Yr Since 2022*	
2022	2253	2.84%		**AVG/YEAR Since 2016**
2019	2076	-1.41%	2.84%	***0.653%***
2016	2168	-7.11%	0.65%	
2015	2334	2.33%	-0.50%	**AVG/YEAR Since 2013**
2013	2230	1.62%	0.11%	***0.11%***
2011	2160	3.23%	0.39%	
2009	2029	4.66%	0.85%	
2006	1780	-3.31%	1.66%	**AVG/YEAR Since 2000**
2003	1976	2.29%	0.74%	***0.99%***
2000	1849		0.99%	

Coefficient (b) of Regression Equation:		**18.739**
Growth Rate =	b / Most Recent Count x 100%	
Growth Rate =	18.739 / 2253 X 100%	
Growth Rate =	**0.8318%**	



Appendix H
ODOT Peak Hour to Design Hour Factors

PEAK HOUR to DESIGN HOUR FACTORS

FUNCTIONAL CLASSIFICATION = 01u

(Urban Interstate)

Day / Month	Monthly Average by Day-of-Week							
	WEEKDAY MON-THUR	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
January	1.22	1.89	1.25	1.23	1.22	1.20	1.16	1.70
February	1.20	1.84	1.24	1.20	1.20	1.17	1.13	1.64
March	1.14	1.66	1.17	1.14	1.13	1.13	1.07	1.53
April	1.10	1.60	1.13	1.11	1.09	1.08	1.06	1.51
May	1.08	1.54	1.11	1.09	1.08	1.06	1.04	1.45
June	1.09	1.52	1.12	1.08	1.08	1.06	1.05	1.46
July	1.09	1.51	1.11	1.09	1.07	1.06	1.06	1.47
August	1.08	1.49	1.11	1.09	1.08	1.05	1.03	1.43
September	1.09	1.56	1.13	1.09	1.09	1.06	1.02	1.47
October	1.08	1.52	1.11	1.08	1.08	1.05	1.02	1.47
November	1.10	1.62	1.13	1.10	1.09	1.09	1.04	1.53
December	1.11	1.61	1.15	1.11	1.10	1.09	1.06	1.51

peak hour volume * factor = design hour volume

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

ATR Stations:

2018: 53 Stations
2019: 41 Stations
2021: 44 Stations

Ohio Department of Transportation
Modeling & Forecasting Section
Nov 2022

NOTE: These are NOT seasonal adjustment factors!!!

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.

Appendix I
Background Traffic Volume Forecast Calculations

WORKSHEET FOR NO BUILD VEHICULAR TRAFFIC VOLUME CALCULATIONS

Mill Rd & E.Wallings Rd 013123

			IR77 Northbound Entrance Ramp FROM NORTH						Mill Rd. FROM SOUTH						TOTAL NORTH SOUTH	E.Wallings Rd. FROM EAST						E.Wallings Rd. FROM WEST						TOTAL EAST WEST	TOTAL ALL DIREC.
			Left	Thru	Right	Total	Trk	Bus	Left	Thru	Right	Total	Trk	Bus		Left	Thru	Right	Total	Trk	Bus	Left	Thru	Right	Total	Trk	Bus		
AM PEAK	2023	Raw	0	0	0	0			126	111	47	284			284	16	68	170	254			635	130	76	841			1095	1379
	DHV	Factor	1.2287	1.2287	1.2287				1.2546	1.2546	1.2546					1.2546	1.2546	1.2546				1.2546	1.2546	1.2546					
	2023	No Build	0	0	0	0			158	139	59	356			356	20	85	213	318			797	163	95	1055			1373	1729
	Growth	Factor	0.0042	0.0042	0.0042				0.0042	0.0042	0.0042					0.0042	0.0042	0.0042				0.0042	0.0042	0.0042					
	2024	Adj +Growth+DHV	0	0	0	0			159	140	59	358			358	20	86	214	320			800	164	96	1060			1380	1738
	Opening Year	Round	**0**	**0**	**0**	**0**			**160**	**140**	**60**	**360**			**360**	**20**	**90**	**210**	**320**			**800**	**160**	**100**	**1060**			**1380**	**1740**
	2044	Adj +Growth+DHV	0	0	0	0			172	151	64	387			387	22	93	232	347			866	177	104	1147			1494	1881
	Design Year	Round	**0**	**0**	**0**	**0**			**170**	**150**	**60**	**380**			**380**	**20**	**90**	**230**	**340**			**870**	**180**	**100**	**1150**			**1490**	**1870**
PM PEAK	2023	Raw	0	0	0	0			280	76	34	390			390	8	115	87	210			205	170	63	438			648	1038
	DHV	Factor	1.2287	1.2287	1.2287				1.2546	1.2546	1.2546					1.2546	1.2546	1.2546				1.2546	1.2546	1.2546					
	2023	No Build	0	0	0	0			351	95	43	489			489	10	144	109	263			257	213	79	549			812	1301
	Growth	Factor	0.0042	0.0042	0.0042				0.0042	0.0042	0.0042					0.0042	0.0042	0.0042				0.0042	0.0042	0.0042					
	2024	Adj+Growth+DHV	0	0	0	0			353	96	43	492			492	10	145	110	265			258	214	79	551			816	1308
	Opening Year	Round	**0**	**0**	**0**	**0**			**350**	**100**	**40**	**490**			**490**	**10**	**140**	**110**	**260**			**260**	**210**	**80**	**550**			**810**	**1300**
	2044	Adj+Growth+DHV	0	0	0	0			382	104	46	532			532	11	157	119	287			280	232	86	598			885	1417
	Design Year	Round	**0**	**0**	**0**	**0**			**380**	**100**	**50**	**530**			**530**	**10**	**160**	**120**	**290**			**280**	**230**	**90**	**600**			**890**	**1420**

TMS Engineers, Inc.
2112 Case Parkway S.
Unit #7
Twinsburg, Ohio 44087

WORKSHEET FOR NO BUILD VEHICULAR TRAFFIC VOLUME CALCULATIONS

Mill Rd & I-77 NB Ramp 030923

			Mill Rd. FROM NORTH						Mill Rd. FROM SOUTH						TOTAL NORTH SOUTH	FROM EAST						I-77 NB Exit FROM WEST						TOTAL EAST WEST	TOTAL ALL DIREC.
			Left	Thru	Right	Total	Trk	Bus	Left	Thru	Right	Total	Trk	Bus		Left	Thru	Right	Total	Trk	Bus	Left	Thru	Right	Total	Trk	Bus		
AM PEAK	2023	Raw	0	112	0	112			0	210	0	210			322	0	0	0	0			72	0	120	192			192	514
	DHV	Factor	1.1727	1.1727	1.1727				1.1727	1.1727	1.1727					1.0000	1.0000	1.0000				1.1277	1.1277	1.1277					
	2023	No Build	0	131	0	131			0	246	0	246			377	0	0	0	0			81	0	135	216			216	593
	Growth	Factor	0.0042	0.0042	0.0042				0.0042	0.0042	0.0042					0.0000	0.0000	0.0000				0.0042	0.0042	0.0042					
	2024	Adj +Growth+DHV	0	132	0	132			0	247	0	247			379	0	0	0	0			82	0	136	218			218	597
	Opening Year	Round	**0**	**130**	**0**	**130**			**0**	**250**	**0**	**250**			**380**	**0**	**0**	**0**	**0**			**80**	**0**	**140**	**220**			**220**	**600**
	2044	Adj +Growth+DHV	0	143	0	143			0	268	0	268			411	0	0	0	0			88	0	147	235			235	646
	Design Year	Round	**0**	**140**	**0**	**140**			**0**	**270**	**0**	**270**			**410**	**0**	**0**	**0**	**0**			**90**	**0**	**150**	**240**			**240**	**650**
PM PEAK	2023	Raw	0	135	0	135			0	186	0	186			321	0	0	0	0			214	0	57	271			271	592
	DHV	Factor	1.1727	1.1727	1.1727				1.1727	1.1727	1.1727					1.0000	1.0000	1.0000				1.1277	1.1277	1.1277					
	2023	No Build	0	158	0	158			0	218	0	218			376	0	0	0	0			241	0	64	305			305	681
	Growth	Factor	0.0042	0.0042	0.0042				0.0042	0.0042	0.0042					0.0000	0.0000	0.0000				0.0042	0.0042	0.0042					
	2024	Adj+Growth+DHV	0	159	0	159			0	219	0	219			378	0	0	0	0			242	0	65	307			307	685
	Opening Year	Round	**0**	**160**	**0**	**160**			**0**	**220**	**0**	**220**			**380**	**0**	**0**	**0**	**0**			**240**	**0**	**60**	**300**			**300**	**680**
	2044	Adj+Growth+DHV	0	172	0	172			0	237	0	237			409	0	0	0	0			262	0	70	332			332	741
	Design Year	Round	**0**	**170**	**0**	**170**			**0**	**240**	**0**	**240**			**410**	**0**	**0**	**0**	**0**			**260**	**0**	**70**	**330**			**330**	**740**

TMS Engineers, Inc.
2112 Case Parkway S.
Unit #7
Twinsburg, Ohio 44087

WORKSHEET FOR NO BUILD VEHICULAR TRAFFIC VOLUME CALCULATIONS

Mill Rd & Loripat Dr 011223

			Mill Rd. FROM NORTH						Mill Rd. FROM SOUTH						TOTAL NORTH SOUTH	Loripat Dr. FROM EAST						FROM WEST						TOTAL EAST WEST	TOTAL ALL DIREC.
			Left	Thru	Right	Total	Trk	Bus	Left	Thru	Right	Total	Trk	Bus		Left	Thru	Right	Total	Trk	Bus	Left	Thru	Right	Total	Trk	Bus		
AM PEAK	2023	Raw	1	213	0	214			0	223	1	224			438	4	0	11	15			0	0	0	0			15	453
	DHV	Factor	1.2286	1.2286	1.2286				1.2286	1.2286	1.2286					1.2286	1.2286	1.2286				1.0000	1.0000	1.0000					
	2023	No Build	1	262	0	263			0	274	1	275			538	5	0	14	19			0	0	0	0			19	557
	Growth	Factor	0.0000	0.0042	0.0000				0.0000	0.0042	0.0000					0.0000	0.0000	0.0000				0.0000	0.0000	0.0000					
	2024	Adj +Growth+DHV	1	263	0	264			0	275	1	276			540	5	0	14	19			0	0	0	0			19	559
	Opening Year	Round	**10**	**260**	**0**	**270**			**0**	**280**	**10**	**290**			**560**	**10**	**0**	**10**	**20**			**0**	**0**	**0**	**0**			**20**	**580**
	2044	Adj +Growth+DHV	1	285	0	286			0	298	1	299			585	5	0	14	19			0	0	0	0			19	604
	Design Year	Round	**10**	**280**	**0**	**290**			**0**	**300**	**10**	**310**			**600**	**10**	**0**	**10**	**20**			**0**	**0**	**0**	**0**			**20**	**620**
PM PEAK	2023	Raw	2	81	0	83			0	201	3	204			287	1	0	2	3			0	0	0	0			3	290
	DHV	Factor	1.2286	1.2286	1.2286				1.2286	1.2286	1.2286					1.2286	1.2286	1.2286				1.0000	1.0000	1.0000					
	2023	No Build	2	100	0	102			0	247	4	251			353	1	0	2	3			0	0	0	0			3	356
	Growth	Factor	0.0000	0.0042	0.0000				0.0000	0.0042	0.0000					0.0000	0.0000	0.0000				0.0000	0.0000	0.0000					
	2024	Adj+Growth+DHV	2	100	0	102			0	248	4	252			354	1	0	2	3			0	0	0	0			3	357
	Opening Year	Round	**10**	**100**	**0**	**110**			**0**	**250**	**10**	**260**			**370**	**10**	**0**	**10**	**20**			**0**	**0**	**0**	**0**			**20**	**390**
	2044	Adj+Growth+DHV	2	108	0	110			0	269	4	273			383	1	0	2	3			0	0	0	0			3	386
	Design Year	Round	**10**	**110**	**0**	**120**			**0**	**270**	**10**	**280**			**400**	**10**	**0**	**10**	**20**			**0**	**0**	**0**	**0**			**20**	**420**

TMS Engineers, Inc.
2112 Case Parkway S.
Unit #7
Twinsburg, Ohio 44087

WORKSHEET FOR NO BUILD VEHICULAR TRAFFIC VOLUME CALCULATIONS

Mill Rd & Lacey Ln 011223

			Mill Rd. FROM NORTH						Mill Rd. FROM SOUTH						TOTAL NORTH SOUTH	FROM EAST						Lacey Ln. FROM WEST						TOTAL EAST WEST	TOTAL ALL DIREC.
			Left	Thru	Right	Total	Trk	Bus	Left	Thru	Right	Total	Trk	Bus		Left	Thru	Right	Total	Trk	Bus	Left	Thru	Right	Total	Trk	Bus		
AM PEAK	2023	Raw	0	204	5	209			57	213	0	270			479	0	0	0	0			17	0	192	209			209	688
	DHV	Factor	1.2286	1.2286	1.2286				1.2286	1.2286	1.2286					1.0000	1.0000	1.0000				1.2286	1.2286	1.2286					
	2023	No Build	0	251	6	257			70	262	0	332			589	0	0	0	0			21	0	236	257			257	846
	Growth	Factor	0.0000	0.0042	0.0000				0.0000	0.0042	0.0000					0.0000	0.0000	0.0000				0.0000	0.0000	0.0000					
	2024	Adj +Growth+DHV	0	252	6	258			70	263	0	333			591	0	0	0	0			21	0	236	257			257	848
	Opening Year	Round	**0**	**250**	**10**	**260**			**70**	**260**	**0**	**330**			**590**	**0**	**0**	**0**	**0**			**20**	**0**	**240**	**260**			**260**	**850**
	2044	Adj +Growth+DHV	0	273	6	279			70	285	0	355			634	0	0	0	0			21	0	236	257			257	891
	Design Year	Round	**0**	**270**	**10**	**280**			**70**	**280**	**0**	**350**			**630**	**0**	**0**	**0**	**0**			**20**	**0**	**240**	**260**			**260**	**890**
PM PEAK	2023	Raw	0	79	6	85			107	204	0	311			396	0	0	0	0			4	0	39	43			43	439
	DHV	Factor	1.2286	1.2286	1.2286				1.2286	1.2286	1.2286					1.0000	1.0000	1.0000				1.2286	1.2286	1.2286					
	2023	No Build	0	97	7	104			131	251	0	382			486	0	0	0	0			5	0	48	53			53	539
	Growth	Factor	0.0000	0.0042	0.0000				0.0000	0.0042	0.0000					0.0000	0.0000	0.0000				0.0000	0.0000	0.0000					
	2024	Adj+Growth+DHV	0	97	7	104			131	252	0	383			487	0	0	0	0			5	0	48	53			53	540
	Opening Year	Round	**0**	**100**	**10**	**110**			**130**	**250**	**0**	**380**			**490**	**0**	**0**	**0**	**0**			**10**	**0**	**50**	**60**			**60**	**550**
	2044	Adj+Growth+DHV	0	106	7	113			131	273	0	404			517	0	0	0	0			5	0	48	53			53	570
	Design Year	Round	**0**	**110**	**10**	**120**			**130**	**270**	**0**	**400**			**520**	**0**	**0**	**0**	**0**			**10**	**0**	**50**	**60**			**60**	**580**

TMS Engineers, Inc.
2112 Case Parkway S.
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WORKSHEET FOR NO BUILD VEHICULAR TRAFFIC VOLUME CALCULATIONS

Mill Rd & Sylmar Dr 011823

			Mill Rd. FROM NORTH						Mill Rd. FROM SOUTH						TOTAL NORTH SOUTH	Sylmar Dr. FROM EAST						FROM WEST						TOTAL EAST WEST	TOTAL ALL DIREC.
			Left	Thru	Right	Total	Trk	Bus	Left	Thru	Right	Total	Trk	Bus		Left	Thru	Right	Total	Trk	Bus	Left	Thru	Right	Total	Trk	Bus		
AM PEAK	2023	Raw	4	384	0	388			0	244	1	245			633	6	0	15	21			0	0	0	0			21	654
	DHV	Factor	1.2525	1.2525	1.2525				1.2525	1.2525	1.2525					1.2525	1.2525	1.2525				1.0000	1.0000	1.0000					
	2023	No Build	5	481	0	486			0	306	1	307			793	8	0	19	27			0	0	0	0			27	820
	Growth	Factor	0.0000	0.0042	0.0000				0.0000	0.0042	0.0000					0.0000	0.0000	0.0000				0.0000	0.0000	0.0000					
	2024	Adj +Growth+DHV	5	483	0	488			0	307	1	308			796	8	0	19	27			0	0	0	0			27	823
	Opening Year	Round	**10**	**480**	**0**	**490**			**0**	**310**	**10**	**320**			**810**	**10**	**0**	**20**	**30**			**0**	**0**	**0**	**0**			**30**	**840**
	2044	Adj +Growth+DHV	5	523	0	528			0	332	1	333			861	8	0	19	27			0	0	0	0			27	888
	Design Year	Round	**10**	**520**	**0**	**530**			**0**	**330**	**10**	**340**			**870**	**10**	**0**	**20**	**30**			**0**	**0**	**0**	**0**			**30**	**900**
PM PEAK	2023	Raw	3	103	0	106			0	220	3	223			329	2	0	3	5			0	0	0	0			5	334
	DHV	Factor	1.2525	1.2525	1.2525				1.2525	1.2525	1.2525					1.2525	1.2525	1.2525				1.0000	1.0000	1.0000					
	2023	No Build	4	129	0	133			0	276	4	280			413	3	0	4	7			0	0	0	0			7	420
	Growth	Factor	0.0000	0.0042	0.0000				0.0000	0.0042	0.0000					0.0000	0.0000	0.0000				0.0000	0.0000	0.0000					
	2024	Adj+Growth+DHV	4	130	0	134			0	277	4	281			415	3	0	4	7			0	0	0	0			7	422
	Opening Year	Round	**10**	**130**	**0**	**140**			**0**	**280**	**10**	**290**			**430**	**10**	**0**	**10**	**20**			**0**	**0**	**0**	**0**			**20**	**450**
	2044	Adj+Growth+DHV	4	140	0	144			0	300	4	304			448	3	0	4	7			0	0	0	0			7	455
	Design Year	Round	**10**	**140**	**0**	**150**			**0**	**300**	**10**	**310**			**460**	**10**	**0**	**10**	**20**			**0**	**0**	**0**	**0**			**20**	**480**

TMS Engineers, Inc.
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WORKSHEET FOR NO BUILD VEHICULAR TRAFFIC VOLUME CALCULATIONS

W. Mill Rd & Karen Lynne Dr 011723

			W. Mill Rd. FROM NORTH						W. Mill Rd. FROM SOUTH						TOTAL NORTH SOUTH	FROM EAST						Karen Lynne Dr. FROM WEST						TOTAL EAST WEST	TOTAL ALL DIREC.
			Left	Thru	Right	Total	Trk	Bus	Left	Thru	Right	Total	Trk	Bus		Left	Thru	Right	Total	Trk	Bus	Left	Thru	Right	Total	Trk	Bus		
AM PEAK	2023	Raw	0	148	7	155			23	59	0	82			237	0	0	0	0			13	0	29	42			42	279
	DHV	Factor	1.2546	1.2546	1.2546				1.2546	1.2546	1.2546					1.0000	1.0000	1.0000				1.2546	1.2546	1.2546					
	2023	No Build	0	186	9	195			29	74	0	103			298	0	0	0	0			16	0	36	52			52	350
	Growth	Factor	0.0000	0.0000	0.0000				0.0000	0.0000	0.0000					0.0000	0.0000	0.0000				0.0000	0.0000	0.0000					
	2024	Adj +Growth+DHV	0	186	9	195			29	74	0	103			298	0	0	0	0			16	0	36	52			52	350
	Opening Year	Round	**0**	**190**	**10**	**200**			**30**	**70**	**0**	**100**			**300**	**0**	**0**	**0**	**0**			**20**	**0**	**40**	**60**			**60**	**360**
	2044	Adj +Growth+DHV	0	186	9	195			29	74	0	103			298	0	0	0	0			16	0	36	52			52	350
	Design Year	Round	**0**	**190**	**10**	**200**			**30**	**70**	**0**	**100**			**300**	**0**	**0**	**0**	**0**			**20**	**0**	**40**	**60**			**60**	**360**
PM PEAK	2023	Raw	0	52	4	56			22	46	0	68			124	0	0	0	0			4	0	11	15			15	139
	DHV	Factor	1.2546	1.2546	1.2546				1.2546	1.2546	1.2546					1.0000	1.0000	1.0000				1.2546	1.2546	1.2546					
	2023	No Build	0	65	5	70			28	58	0	86			156	0	0	0	0			5	0	14	19			19	175
	Growth	Factor	0.0000	0.0000	0.0000				0.0000	0.0000	0.0000					0.0000	0.0000	0.0000				0.0000	0.0000	0.0000					
	2024	Adj+Growth+DHV	0	65	5	70			28	58	0	86			156	0	0	0	0			5	0	14	19			19	175
	Opening Year	Round	**0**	**70**	**10**	**80**			**30**	**60**	**0**	**90**			**170**	**0**	**0**	**0**	**0**			**10**	**0**	**10**	**20**			**20**	**190**
	2044	Adj+Growth+DHV	0	65	5	70			28	58	0	86			156	0	0	0	0			5	0	14	19			19	175
	Design Year	Round	**0**	**70**	**10**	**80**			**30**	**60**	**0**	**90**			**170**	**0**	**0**	**0**	**0**			**10**	**0**	**10**	**20**			**20**	**190**

TMS Engineers, Inc.
2112 Case Parkway S.
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WORKSHEET FOR NO BUILD VEHICULAR TRAFFIC VOLUME CALCULATIONS

W. Mill Rd & Lacey Ln 011723

			W. Mill Rd. FROM NORTH						W. Mill Rd. FROM SOUTH						TOTAL NORTH SOUTH	Lacey Ln. FROM EAST						FROM WEST						TOTAL EAST WEST	TOTAL ALL DIREC.
			Left	Thru	Right	Total	Trk	Bus	Left	Thru	Right	Total	Trk	Bus		Left	Thru	Right	Total	Trk	Bus	Left	Thru	Right	Total	Trk	Bus		
AM PEAK	2023	Raw	175	7	0	182			0	27	39	66			248	1	0	57	58			0	0	0	0			58	306
	DHV	Factor	1.2546	1.2546	1.2546				1.2546	1.2546	1.2546					1.2546	1.2546	1.2546				1.0000	1.0000	1.0000					
	2023	No Build	220	9	0	229			0	34	49	83			312	1	0	72	73			0	0	0	0			73	385
	Growth	Factor	0.0000	0.0000	0.0000				0.0000	0.0000	0.0000					0.0000	0.0000	0.0000				0.0000	0.0000	0.0000					
	2024	Adj +Growth+DHV	220	9	0	229			0	34	49	83			312	1	0	72	73			0	0	0	0			73	385
	Opening Year	Round	**220**	**10**	**0**	**230**			**0**	**30**	**50**	**80**			**310**	**10**	**0**	**70**	**80**			**0**	**0**	**0**	**0**			**80**	**390**
	2044	Adj +Growth+DHV	220	9	0	229			0	34	49	83			312	1	0	72	73			0	0	0	0			73	385
	Design Year	Round	**220**	**10**	**0**	**230**			**0**	**30**	**50**	**80**			**310**	**10**	**0**	**70**	**80**			**0**	**0**	**0**	**0**			**80**	**390**
PM PEAK	2023	Raw	52	13	0	65			0	17	7	24			89	9	0	52	61			0	0	0	0			61	150
	DHV	Factor	1.2546	1.2546	1.2546				1.2546	1.2546	1.2546					1.2546	1.2546	1.2546				1.0000	1.0000	1.0000					
	2023	No Build	65	16	0	81			0	21	9	30			111	11	0	65	76			0	0	0	0			76	187
	Growth	Factor	0.0000	0.0000	0.0000				0.0000	0.0000	0.0000					0.0000	0.0000	0.0000				0.0000	0.0000	0.0000					
	2024	Adj+Growth+DHV	65	16	0	81			0	21	9	30			111	11	0	65	76			0	0	0	0			76	187
	Opening Year	Round	**70**	**20**	**0**	**90**			**0**	**20**	**10**	**30**			**120**	**10**	**0**	**70**	**80**			**0**	**0**	**0**	**0**			**80**	**200**
	2044	Adj+Growth+DHV	65	16	0	81			0	21	9	30			111	11	0	65	76			0	0	0	0			76	187
	Design Year	Round	**70**	**20**	**0**	**90**			**0**	**20**	**10**	**30**			**120**	**10**	**0**	**70**	**80**			**0**	**0**	**0**	**0**			**80**	**200**

TMS Engineers, Inc.
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Twinsburg, Ohio 44087

WORKSHEET FOR NO BUILD VEHICULAR TRAFFIC VOLUME CALCULATIONS

Mill Rd & Broadmill Dr 011723

			Mill Rd. FROM NORTH						Mill Rd. FROM SOUTH						TOTAL NORTH SOUTH	FROM EAST						Broadmill Dr. FROM WEST						TOTAL EAST WEST	TOTAL ALL DIREC.
			Left	Thru	Right	Total	Trk	Bus	Left	Thru	Right	Total	Trk	Bus		Left	Thru	Right	Total	Trk	Bus	Left	Thru	Right	Total	Trk	Bus		
AM PEAK	2023	Raw	0	436	5	441			1	218	0	219			660	0	0	0	0			8	0	1	9			9	669
	DHV	Factor	1.2546	1.2546	1.2546				1.2546	1.2546	1.2546					1.0000	1.0000	1.0000				1.2546	1.2546	1.2546					
	2023	No Build	0	547	6	553			1	273	0	274			827	0	0	0	0			10	0	1	11			11	838
	Growth	Factor	0.0000	0.0042	0.0000				0.0000	0.0042	0.0000					0.0000	0.0042	0.0000				0.0000	0.0042	0.0000					
	2024	Adj +Growth+DHV	0	549	6	555			1	275	0	276			831	0	0	0	0			10	0	1	11			11	842
	Opening Year	**Round**	**0**	**550**	**10**	**560**			**10**	**270**	**0**	**280**			**840**	**0**	**0**	**0**	**0**			**10**	**0**	**10**	**20**			**20**	**860**
	2044	Adj +Growth+DHV	0	595	6	601			1	297	0	298			899	0	0	0	0			10	0	1	11			11	910
	Design Year	**Round**	**0**	**590**	**10**	**600**			**10**	**300**	**0**	**310**			**910**	**0**	**0**	**0**	**0**			**10**	**0**	**10**	**20**			**20**	**930**
PM PEAK	2023	Raw	0	121	10	131			1	184	0	185			316	0	0	0	0			5	0	1	6			6	322
	DHV	Factor	1.2546	1.2546	1.2546				1.2546	1.2546	1.2546					1.0000	1.0000	1.0000				1.2546	1.2546	1.2546					
	2023	No Build	0	152	13	165			1	231	0	232			397	0	0	0	0			6	0	1	7			7	404
	Growth	Factor	0.0000	0.0042	0.0000				0.0000	0.0042	0.0000					0.0000	0.0042	0.0000				0.0000	0.0042	0.0000					
	2024	Adj+Growth+DHV	0	152	13	165			1	232	0	233			398	0	0	0	0			6	0	1	7			7	405
	Opening Year	**Round**	**0**	**150**	**10**	**160**			**10**	**230**	**0**	**240**			**400**	**0**	**0**	**0**	**0**			**10**	**0**	**10**	**20**			**20**	**420**
	2044	Adj+Growth+DHV	0	165	13	178			1	251	0	252			430	0	0	0	0			6	0	1	7			7	437
	Design Year	**Round**	**0**	**170**	**10**	**180**			**10**	**250**	**0**	**260**			**440**	**0**	**0**	**0**	**0**			**10**	**0**	**10**	**20**			**20**	**460**

TMS Engineers, Inc.
2112 Case Parkway S.
Unit #7
Twinsburg, Ohio 44087

WORKSHEET FOR NO BUILD VEHICULAR TRAFFIC VOLUME CALCULATIONS

Mill Rd & Millwood Dr 012423

			FROM NORTH						Millwood Dr. FROM SOUTH						TOTAL NORTH SOUTH	Mill Rd. FROM EAST						Mill Rd. FROM WEST						TOTAL EAST WEST	TOTAL ALL DIREC.
			Left	Thru	Right	Total	Trk	Bus	Left	Thru	Right	Total	Trk	Bus		Left	Thru	Right	Total	Trk	Bus	Left	Thru	Right	Total	Trk	Bus		
AM PEAK	2023	Raw	0	0	0	0			12	0	11	23			23	1	224	0	225			0	421	3	424			649	672
	DHV	Factor	1.0000	1.0000	1.0000				1.2546	1.2546	1.2546					1.2546	1.2546	1.2546				1.2546	1.2546	1.2546					
	2023	No Build	0	0	0	0			15	0	14	29			29	1	281	0	282			0	528	4	532			814	843
	Growth	Factor	0.0000	0.0000	0.0000				0.0000	0.0000	0.0000					0.0000	0.0042	0.0000				0.0000	0.0042	0.0000					
	2024	Adj +Growth+DHV	0	0	0	0			15	0	14	29			29	1	282	0	283			0	530	4	534			817	846
	Opening Year	Round	**0**	**0**	**0**	**0**			**20**	**0**	**10**	**30**			**30**	**10**	**280**	**0**	**290**			**0**	**530**	**10**	**540**			**830**	**860**
	2044	Adj +Growth+DHV	0	0	0	0			15	0	14	29			29	1	306	0	307			0	574	4	578			885	914
	Design Year	Round	**0**	**0**	**0**	**0**			**20**	**0**	**10**	**30**			**30**	**10**	**310**	**0**	**320**			**0**	**570**	**10**	**580**			**900**	**930**
PM PEAK	2023	Raw	0	0	0	0			2	0	8	10			10	4	334	0	338			0	138	11	149			487	497
	DHV	Factor	1.0000	1.0000	1.0000				1.2546	1.2546	1.2546					1.2546	1.2546	1.2546				1.2546	1.2546	1.2546					
	2023	No Build	0	0	0	0			3	0	10	13			13	5	419	0	424			0	173	14	187			611	624
	Growth	Factor	0.0000	0.0000	0.0000				0.0000	0.0000	0.0000					0.0000	0.0042	0.0000				0.0000	0.0042	0.0000					
	2024	Adj+Growth+DHV	0	0	0	0			3	0	10	13			13	5	421	0	426			0	174	14	188			614	627
	Opening Year	Round	**0**	**0**	**0**	**0**			**10**	**0**	**10**	**20**			**20**	**10**	**420**	**0**	**430**			**0**	**170**	**10**	**180**			**610**	**630**
	2044	Adj+Growth+DHV	0	0	0	0			3	0	10	13			13	5	456	0	461			0	188	14	202			663	676
	Design Year	Round	**0**	**0**	**0**	**0**			**10**	**0**	**10**	**20**			**20**	**10**	**460**	**0**	**470**			**0**	**190**	**10**	**200**			**670**	**690**

TMS Engineers, Inc.
2112 Case Parkway S.
Unit #7
Twinsburg, Ohio 44087

WORKSHEET FOR NO BUILD VEHICULAR TRAFFIC VOLUME CALCULATIONS

Mill Rd & Middle School Driveway 012623

			FROM NORTH						Middle School Driveway FROM SOUTH						TOTAL NORTH SOUTH	Mill Rd. FROM EAST						Mill Rd. FROM WEST						TOTAL EAST WEST	TOTAL ALL DIREC.
			Left	Thru	Right	Total	Trk	Bus	Left	Thru	Right	Total	Trk	Bus		Left	Thru	Right	Total	Trk	Bus	Left	Thru	Right	Total	Trk	Bus		
AM PEAK	2023	Raw	0	0	0	0			61	0	57	118			118	48	142	0	190			0	273	149	422			612	730
	DHV	Factor	1.0000	1.0000	1.0000				1.2286	1.2286	1.2286					1.2286	1.2286	1.2286				1.2286	1.2286	1.2286					
	2023	No Build	0	0	0	0			75	0	70	145			145	59	174	0	233			0	335	183	518			751	896
	Growth	Factor	0.0000	0.0000	0.0000				0.0000	0.0000	0.0000					0.0000	0.0042	0.0000				0.0000	0.0042	0.0000					
	2024	Adj +Growth+DHV	0	0	0	0			75	0	70	145			145	59	175	0	234			0	337	183	520			754	899
	Opening Year	Round	**0**	**0**	**0**	**0**			**70**	**0**	**70**	**140**			**140**	**60**	**180**	**0**	**240**			**0**	**340**	**180**	**520**			**760**	**900**
	2044	Adj +Growth+DHV	0	0	0	0			75	0	70	145			145	59	190	0	249			0	365	183	548			797	942
	Design Year	Round	**0**	**0**	**0**	**0**			**70**	**0**	**70**	**140**			**140**	**60**	**190**	**0**	**250**			**0**	**360**	**180**	**540**			**790**	**930**
PM PEAK	2023	Raw	0	0	0	0			52	0	28	80			80	5	259	0	264			0	122	9	131			395	475
	DHV	Factor	1.0000	1.0000	1.0000				1.2286	1.2286	1.2286					1.2286	1.2286	1.2286				1.2286	1.2286	1.2286					
	2023	No Build	0	0	0	0			64	0	34	98			98	6	318	0	324			0	150	11	161			485	583
	Growth	Factor	0.0000	0.0000	0.0000				0.0000	0.0000	0.0000					0.0000	0.0042	0.0000				0.0000	0.0042	0.0000					
	2024	Adj+Growth+DHV	0	0	0	0			64	0	34	98			98	6	320	0	326			0	151	11	162			488	586
	Opening Year	Round	**0**	**0**	**0**	**0**			**60**	**0**	**30**	**90**			**90**	**10**	**320**	**0**	**330**			**0**	**150**	**10**	**160**			**490**	**580**
	2044	Adj+Growth+DHV	0	0	0	0			64	0	34	98			98	6	346	0	352			0	163	11	174			526	624
	Design Year	Round	**0**	**0**	**0**	**0**			**60**	**0**	**30**	**90**			**90**	**10**	**350**	**0**	**360**			**0**	**160**	**10**	**170**			**530**	**620**

TMS Engineers, Inc.
2112 Case Parkway S.
Unit #7
Twinsburg, Ohio 44087

WORKSHEET FOR NO BUILD VEHICULAR TRAFFIC VOLUME CALCULATIONS

Mill Rd & HS + MS Driveway 012623

			FROM NORTH						School Driveway FROM SOUTH						TOTAL NORTH SOUTH	Mill Rd. FROM EAST						Mill Rd. FROM WEST						TOTAL EAST WEST	TOTAL ALL DIREC.
			Left	Thru	Right	Total	Trk	Bus	Left	Thru	Right	Total	Trk	Bus		Left	Thru	Right	Total	Trk	Bus	Left	Thru	Right	Total	Trk	Bus		
AM PEAK	2023	Raw	0	0	0	0			36	0	10	46			46	19	176	0	195			0	326	28	354			549	595
	DHV	Factor	1.0000	1.0000	1.0000				1.2286	1.2286	1.2286					1.2286	1.2286	1.2286				1.2286	1.2286	1.2286					
	2023	No Build	0	0	0	0			44	0	12	56			56	23	216	0	239			0	401	34	435			674	730
	Growth	Factor	0.0000	0.0000	0.0000				0.0000	0.0000	0.0000					0.0000	0.0042	0.0000				0.0000	0.0042	0.0000					
	2024	Adj +Growth+DHV	0	0	0	0			44	0	12	56			56	23	217	0	240			0	402	34	436			676	732
	Opening Year	Round	**0**	**0**	**0**	**0**			**40**	**0**	**10**	**50**			**50**	**20**	**220**	**0**	**240**			**0**	**400**	**30**	**430**			**670**	**720**
	2044	Adj +Growth+DHV	0	0	0	0			44	0	12	56			56	23	235	0	258			0	436	34	470			728	784
	Design Year	Round	**0**	**0**	**0**	**0**			**40**	**0**	**10**	**50**			**50**	**20**	**240**	**0**	**260**			**0**	**440**	**30**	**470**			**730**	**780**
PM PEAK	2023	Raw	0	0	0	0			123	0	37	160			160	15	152	0	167			0	112	46	158			325	485
	DHV	Factor	1.0000	1.0000	1.0000				1.2286	1.2286	1.2286					1.2286	1.2286	1.2286				1.2286	1.2286	1.2286					
	2023	No Build	0	0	0	0			151	0	45	196			196	18	187	0	205			0	138	57	195			400	596
	Growth	Factor	0.0000	0.0000	0.0000				0.0000	0.0000	0.0000					0.0000	0.0042	0.0000				0.0000	0.0042	0.0000					
	2024	Adj+Growth+DHV	0	0	0	0			151	0	45	196			196	18	188	0	206			0	138	57	195			401	597
	Opening Year	Round	**0**	**0**	**0**	**0**			**150**	**0**	**50**	**200**			**200**	**20**	**190**	**0**	**210**			**0**	**140**	**60**	**200**			**410**	**610**
	2044	Adj+Growth+DHV	0	0	0	0			151	0	45	196			196	18	203	0	221			0	150	57	207			428	624
	Design Year	Round	**0**	**0**	**0**	**0**			**150**	**0**	**50**	**200**			**200**	**20**	**200**	**0**	**220**			**0**	**150**	**60**	**210**			**430**	**630**

TMS Engineers, Inc.
2112 Case Parkway S.
Unit #7
Twinsburg, Ohio 44087

WORKSHEET FOR NO BUILD VEHICULAR TRAFFIC VOLUME CALCULATIONS

Mill Rd & Vera Dr 012423

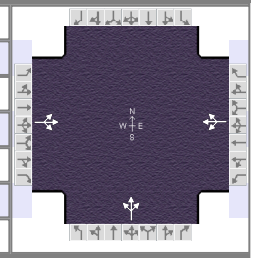
			Vera Dr. FROM NORTH						FROM SOUTH						TOTAL NORTH SOUTH	Mill Rd. FROM EAST						Mill Rd. FROM WEST						TOTAL EAST WEST	TOTAL ALL DIREC.
			Left	Thru	Right	Total	Trk	Bus	Left	Thru	Right	Total	Trk	Bus		Left	Thru	Right	Total	Trk	Bus	Left	Thru	Right	Total	Trk	Bus		
AM PEAK	2023	Raw	3	0	13	16			0	0	0	0			16	0	174	3	177			5	310	0	315			492	508
	DHV	Factor	1.2546	1.2546	1.2546				1.0000	1.0000	1.0000					1.2546	1.2546	1.2546				1.2546	1.2546	1.2546					
	2023	No Build	4	0	16	20			0	0	0	0			20	0	218	4	222			6	389	0	395			617	637
	Growth	Factor	0.0000	0.0000	0.0000				0.0000	0.0000	0.0000					0.0000	0.0042	0.0000				0.0000	0.0042	0.0000					
	2024	Adj +Growth+DHV	4	0	16	20			0	0	0	0			20	0	219	4	223			6	391	0	397			620	640
	Opening Year	Round	**10**	**0**	**20**	**30**			**0**	**0**	**0**	**0**			**30**	**0**	**220**	**10**	**230**			**10**	**390**	**0**	**400**			**630**	**660**
	2044	Adj +Growth+DHV	4	0	16	20			0	0	0	0			20	0	237	4	241			6	423	0	429			670	690
	Design Year	Round	**10**	**0**	**20**	**30**			**0**	**0**	**0**	**0**			**30**	**0**	**240**	**10**	**250**			**10**	**420**	**0**	**430**			**680**	**710**
PM PEAK	2023	Raw	15	0	4	19			0	0	0	0			19	0	177	9	186			5	137	0	142			328	347
	DHV	Factor	1.2546	1.2546	1.2546				1.0000	1.0000	1.0000					1.2546	1.2546	1.2546				1.2546	1.2546	1.2546					
	2023	No Build	19	0	5	24			0	0	0	0			24	0	222	11	233			6	172	0	178			411	435
	Growth	Factor	0.0000	0.0000	0.0000				0.0000	0.0000	0.0000					0.0000	0.0042	0.0000				0.0000	0.0042	0.0000					
	2024	Adj+Growth+DHV	19	0	5	24			0	0	0	0			24	0	223	11	234			6	173	0	179			413	437
	Opening Year	Round	**20**	**0**	**10**	**30**			**0**	**0**	**0**	**0**			**30**	**0**	**220**	**10**	**230**			**10**	**170**	**0**	**180**			**410**	**440**
	2044	Adj+Growth+DHV	19	0	5	24			0	0	0	0			24	0	241	11	252			6	187	0	193			445	469
	Design Year	Round	**20**	**0**	**10**	**30**			**0**	**0**	**0**	**0**			**30**	**0**	**240**	**10**	**250**			**10**	**190**	**0**	**200**			**450**	**480**

TMS Engineers, Inc.
2112 Case Parkway S.
Unit #7
Twinsburg, Ohio 44087

Appendix J
Capacity Analysis Worksheets - 2024

HCS Signalized Intersection Results Summary

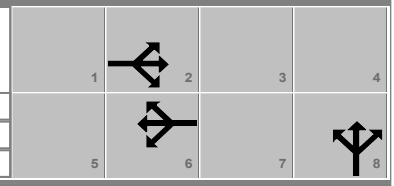
General Information				Intersection Information	
Agency	TMS Engineers, Inc.			Duration, h	0.250
Analyst	ABC	Analysis Date	Mar 1, 2023	Area Type	Other
Jurisdiction	Broadview Heights, OH	Time Period	AM Peak	PHF	0.89
Urban Street	Mill Road	Analysis Year	2024	Analysis Period	1> 7:00
Intersection	@ Wallings Road	File Name	1_AM 24 Wallings.xus		
Project Description	Existing Conditions				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	800	160	100	20	90	210	160	140	60			

Signal Information			
Cycle, s	80.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	52.0	16.0	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	2.0	2.0	0.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		
Case Number		8.0		8.0		12.0		
Phase Duration, s		58.0		58.0		22.0		
Change Period, ($Y+R_c$), s		6.0		6.0		6.0		
Max Allow Headway (*MAH*), s		0.0		0.0		3.1		
Queue Clearance Time (g_s), s						18.0		
Green Extension Time (g_e), s		0.0		0.0		0.0		
Phase Call Probability						1.00		
Max Out Probability						1.00		

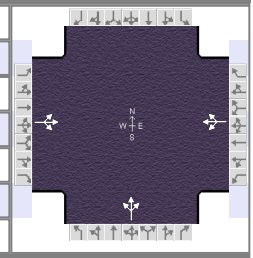
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18			
Adjusted Flow Rate (*v*), veh/h		1191			360			404				
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1141			1735			1721				
Queue Service Time (g_s), s		44.3			0.0			16.0				
Cycle Queue Clearance Time (g_c), s		52.0			7.7			16.0				
Green Ratio (*g/C*)		0.65			0.65			0.20				
Capacity (*c*), veh/h		820			1175			344				
Volume-to-Capacity Ratio (*X*)		1.452			0.306			1.175				
Back of Queue (*Q*), ft/ln (95 th percentile)		2424.7			108.2			652.7				
Back of Queue (*Q*), veh/ln (95 th percentile)		95.5			4.3			24.9				
Queue Storage Ratio (*RQ*) (95 th percentile)		0.00			0.00			0.00				
Uniform Delay (d_1), s/veh		16.8			6.2			32.0				
Incremental Delay (d_2), s/veh		210.1			0.7			105.1				
Initial Queue Delay (d_3), s/veh		0.0			0.0			0.0				
Control Delay (*d*), s/veh		226.9			6.9			137.1				
Level of Service (LOS)		F			A			F				
Approach Delay, s/veh / LOS	226.9	F		6.9	A		137.1	F		0.0		
Intersection Delay, s/veh / LOS	167.9						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS								
Bicycle LOS Score / LOS								

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HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	TMS Engineers, Inc.			Duration, h	0.250
Analyst	ABC	Analysis Date	Mar 1, 2023	Area Type	Other
Jurisdiction	Broadview Heights, OH	Time Period	PM Peak	PHF	0.89
Urban Street	Mill Road	Analysis Year	2024	Analysis Period	1> 7:00
Intersection	@ Wallings Road	File Name	1_PM 24 Wallings.xus		
Project Description	Existing Conditions				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	260	210	80	10	140	110	350	100	40			

Signal Information			
Cycle, s	65.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

								1	2	3	4	
Green	30.6	22.4	0.0	0.0	0.0	0.0						
Yellow	4.0	4.0	0.0	0.0	0.0	0.0		5	6	7	8	
Red	2.0	2.0	0.0	0.0	0.0	0.0						

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		
Case Number		8.0		8.0		12.0		
Phase Duration, s		36.6		36.6		28.4		
Change Period, ($Y+R_c$), s		6.0		6.0		6.0		
Max Allow Headway (*MAH*), s		0.0		0.0		3.1		
Queue Clearance Time (g_s), s						21.3		
Green Extension Time (g_e), s		0.0		0.0		1.1		
Phase Call Probability						1.00		
Max Out Probability						0.00		

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18			
Adjusted Flow Rate (*v*), veh/h		618			292			551				
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1380			1767			1766				
Queue Service Time (g_s), s		21.0			0.0			19.3				
Cycle Queue Clearance Time (g_c), s		27.9			6.9			19.3				
Green Ratio (*g/C*)		0.47			0.47			0.34				
Capacity (*c*), veh/h		731			889			609				
Volume-to-Capacity Ratio (*X*)		0.845			0.328			0.904				
Back of Queue (*Q*), ft/ln (95 th percentile)		372.6			113.8			301.5				
Back of Queue (*Q*), veh/ln (95 th percentile)		14.6			4.5			11.8				
Queue Storage Ratio (*RQ*) (95 th percentile)		0.00			0.00			0.00				
Uniform Delay (d_1), s/veh		16.3			10.9			20.3				
Incremental Delay (d_2), s/veh		11.5			1.0			2.1				
Initial Queue Delay (d_3), s/veh		0.0			0.0			0.0				
Control Delay (*d*), s/veh		27.9			11.9			22.4				
Level of Service (LOS)		C			B			C				
Approach Delay, s/veh / LOS	27.9	C		11.9	B		22.4	C		0.0		
Intersection Delay, s/veh / LOS	22.6						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS								
Bicycle LOS Score / LOS								

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HCS Two-Way Stop-Control Report

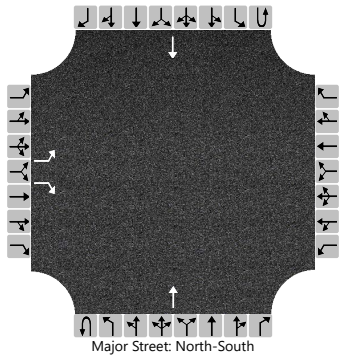
General Information

Analyst	ABC
Agency/Co.	TMS Engineers, Inc.
Date Performed	3/1/2023
Analysis Year	2024
Time Analyzed	AM Peak
Intersection Orientation	North-South
Project Description	Existing Conditions

Site Information

Intersection	Mill & IR77NB Exit
Jurisdiction	Broadview Heights, OH
East/West Street	IR77 NB Exit Ramp
North/South Street	Mill Road
Peak Hour Factor	0.66
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0	0	0	1	0	0	0	1	0
Configuration		L		R							T				T	
Volume (veh/h)		80		140							250				130	
Percent Heavy Vehicles (%)		6		6												
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		No														
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2												
Critical Headway (sec)		6.46		6.26												
Base Follow-Up Headway (sec)		3.5		3.3												
Follow-Up Headway (sec)		3.55		3.35												

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		121		212												
Capacity, c (veh/h)		473		834												
v/c Ratio		0.26		0.25												
95% Queue Length, Q_{95} (veh)		1.0		1.0												
Control Delay (s/veh)		15.2		10.8												
Level of Service (LOS)		C		B												
Approach Delay (s/veh)		12.4														
Approach LOS		B														

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HCS Two-Way Stop-Control Report

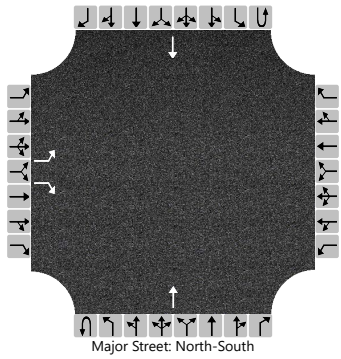
General Information

Analyst	ABC
Agency/Co.	TMS Engineers, Inc.
Date Performed	3/1/2023
Analysis Year	2024
Time Analyzed	PM Peak
Intersection Orientation	North-South
Project Description	Existing Conditions

Site Information

Intersection	Mill & IR77NB Exit
Jurisdiction	Broadview Heights, OH
East/West Street	IR77 NB Exit Ramp
North/South Street	Mill Road
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0	0	0	1	0	0	0	1	0
Configuration		L		R							T				T	
Volume (veh/h)		240		60							220				160	
Percent Heavy Vehicles (%)		4		4												
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		No														
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2												
Critical Headway (sec)		6.44		6.24												
Base Follow-Up Headway (sec)		3.5		3.3												
Follow-Up Headway (sec)		3.54		3.34												

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		267		67												
Capacity, c (veh/h)		584		860												
v/c Ratio		0.46		0.08												
95% Queue Length, Q_{95} (veh)		2.4		0.3												
Control Delay (s/veh)		16.2		9.5												
Level of Service (LOS)		C		A												
Approach Delay (s/veh)		14.9														
Approach LOS		B														

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HCS Two-Way Stop-Control Report

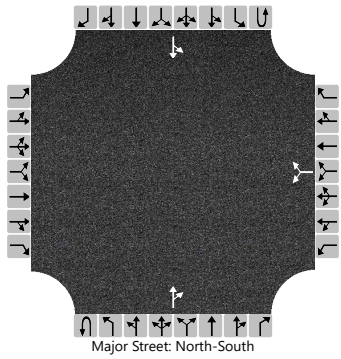
General Information

Analyst	ABC
Agency/Co.	TMS Engineers, Inc.
Date Performed	3/1/2023
Analysis Year	2024
Time Analyzed	AM Peak
Intersection Orientation	North-South
Project Description	Existing Conditions

Site Information

Intersection	Mill & Loripat
Jurisdiction	Broadview Heights, OH
East/West Street	Loripat Drive
North/South Street	Mill Road
Peak Hour Factor	0.68
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						10		10			280	10		10	260	
Percent Heavy Vehicles (%)						0		0						4		
Proportion Time Blocked																
Percent Grade (%)							0									
Right Turn Channelized																
Median Type | Storage							Undivided									

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.40		6.20						4.14		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.50		3.30						2.24		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							29							15		
Capacity, c (veh/h)							442							1123		
v/c Ratio							0.07							0.01		
95% Queue Length, Q_{95} (veh)							0.2							0.0		
Control Delay (s/veh)							13.7							8.2	0.1	
Level of Service (LOS)							B							A	A	
Approach Delay (s/veh)							13.7							0.4		
Approach LOS							B							A		

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HCS Two-Way Stop-Control Report

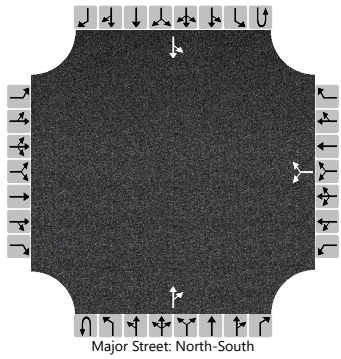
General Information

Analyst	ABC
Agency/Co.	TMS Engineers, Inc.
Date Performed	3/1/2023
Analysis Year	2024
Time Analyzed	PM Peak
Intersection Orientation	North-South
Project Description	Existing Conditions

Site Information

Intersection	Mill & Loripat
Jurisdiction	Broadview Heights, OH
East/West Street	Loripat Drive
North/South Street	Mill Road
Peak Hour Factor	0.78
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						10		10			250	10		10	100	
Percent Heavy Vehicles (%)						0		0						2		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.40		6.20						4.12		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.50		3.30						2.22		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							26							13		
Capacity, c (veh/h)							618							1226		
v/c Ratio							0.04							0.01		
95% Queue Length, Q_{95} (veh)							0.1							0.0		
Control Delay (s/veh)							11.1							8.0	0.1	
Level of Service (LOS)							B							A	A	
Approach Delay (s/veh)						11.1								0.8		
Approach LOS						B								A		

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HCS Two-Way Stop-Control Report

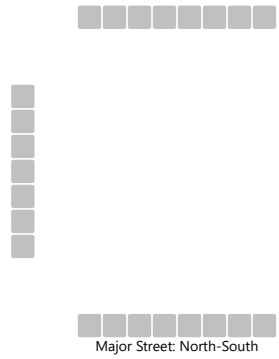
General Information

Analyst	ABC
Agency/Co.	TMS Engineers, Inc.
Date Performed	3/1/2023
Analysis Year	2024
Time Analyzed	AM Peak
Intersection Orientation	North-South
Project Description	Existing Conditions

Site Information

Intersection	Mill & Lacey
Jurisdiction	Broadview Heights, OH
East/West Street	Lacey Lane
North/South Street	Mill Road
Peak Hour Factor	0.66
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		20		240						70	260				250	10
Percent Heavy Vehicles (%)		5		5						9						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.45		6.25						4.19						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.55		3.35						2.28						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			394							106						
Capacity, c (veh/h)			576							1128						
v/c Ratio			0.68							0.09						
95% Queue Length, Q_{95} (veh)			5.3							0.3						
Control Delay (s/veh)			23.6							8.5	1.0					
Level of Service (LOS)			C							A	A					
Approach Delay (s/veh)		23.6								2.6						
Approach LOS		C								A						

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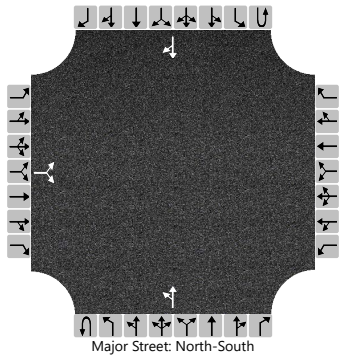
General Information

Analyst	ABC
Agency/Co.	TMS Engineers, Inc.
Date Performed	3/1/2023
Analysis Year	2024
Time Analyzed	PM Peak
Intersection Orientation	North-South
Project Description	Existing Conditions

Site Information

Intersection	Mill & Lacey
Jurisdiction	Broadview Heights, OH
East/West Street	Lacey Lane
North/South Street	Mill Road
Peak Hour Factor	0.72
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		10		50						130	250				100	10
Percent Heavy Vehicles (%)		0		0						7						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.40		6.20						4.17						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.50		3.30						2.26						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			83							181						
Capacity, c (veh/h)			659							1398						
v/c Ratio			0.13							0.13						
95% Queue Length, Q_{95} (veh)			0.4							0.4						
Control Delay (s/veh)			11.3							8.0	1.3					
Level of Service (LOS)			B							A	A					
Approach Delay (s/veh)		11.3								3.6						
Approach LOS		B								A						

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HCS Two-Way Stop-Control Report

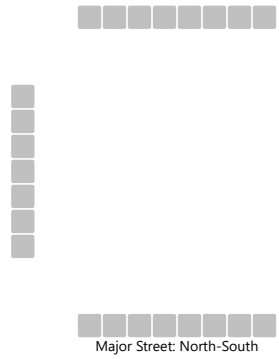
General Information

Analyst	ABC
Agency/Co.	TMS Engineers, Inc.
Date Performed	3/1/2023
Analysis Year	2024
Time Analyzed	AM Peak
Intersection Orientation	North-South
Project Description	Existing Conditions

Site Information

Intersection	Mill & Sylmar
Jurisdiction	Broadview Heights, OH
East/West Street	Sylmar Drive
North/South Street	Mill Road
Peak Hour Factor	0.59
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						10		20			310	10		10	480	
Percent Heavy Vehicles (%)						0		0						5		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage						Undivided										

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.40		6.20						4.15		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.50		3.30						2.25		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							51							17		
Capacity, c (veh/h)							298							1011		
v/c Ratio							0.17							0.02		
95% Queue Length, Q_{95} (veh)							0.6							0.1		
Control Delay (s/veh)							19.6							8.6	0.3	
Level of Service (LOS)							C							A	A	
Approach Delay (s/veh)						19.6								0.4		
Approach LOS						C								A		

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HCS Two-Way Stop-Control Report

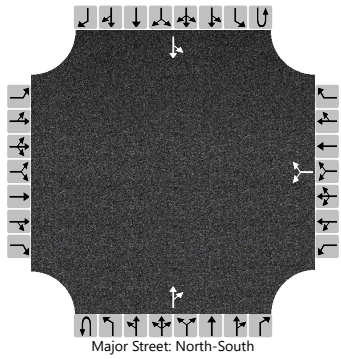
General Information

Analyst	ABC
Agency/Co.	TMS Engineers, Inc.
Date Performed	3/1/2023
Analysis Year	2024
Time Analyzed	PM Peak
Intersection Orientation	North-South
Project Description	Existing Conditions

Site Information

Intersection	Mill & Sylmar
Jurisdiction	Broadview Heights, OH
East/West Street	Sylmar Drive
North/South Street	Mill Road
Peak Hour Factor	0.63
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						10		10			280	10		10	130	
Percent Heavy Vehicles (%)						20		20						4		
Proportion Time Blocked																
Percent Grade (%)							0									
Right Turn Channelized																
Median Type | Storage							Undivided									

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.60		6.40						4.14		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.68		3.48						2.24		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							32							16		
Capacity, c (veh/h)							455							1090		
v/c Ratio							0.07							0.01		
95% Queue Length, Q_{95} (veh)							0.2							0.0		
Control Delay (s/veh)							13.5							8.4	0.1	
Level of Service (LOS)							B							A	A	
Approach Delay (s/veh)							13.5							0.7		
Approach LOS							B							A		

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HCS Two-Way Stop-Control Report

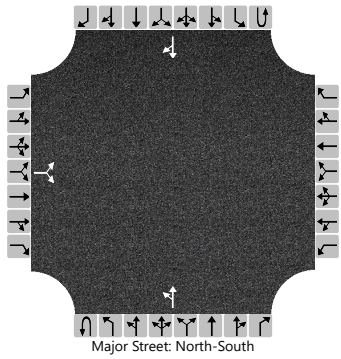
General Information

Analyst	ABC
Agency/Co.	TMS Engineers, Inc.
Date Performed	3/1/2023
Analysis Year	2024
Time Analyzed	AM Peak
Intersection Orientation	North-South
Project Description	Existing Conditions

Site Information

Intersection	West Mill & Karen Lynne
Jurisdiction	Broadview Heights, OH
East/West Street	Karen Lynne Drive
North/South Street	West Mill Road
Peak Hour Factor	0.62
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		20		40						30	70				190	10
Percent Heavy Vehicles (%)		5		5						12						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.45		6.25						4.22						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.55		3.35						2.31						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			97							48						
Capacity, c (veh/h)			620							1183						
v/c Ratio			0.16							0.04						
95% Queue Length, Q_{95} (veh)			0.6							0.1						
Control Delay (s/veh)			11.9							8.2	0.4					
Level of Service (LOS)			B							A	A					
Approach Delay (s/veh)		11.9								2.7						
Approach LOS		B								A						

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HCS Two-Way Stop-Control Report

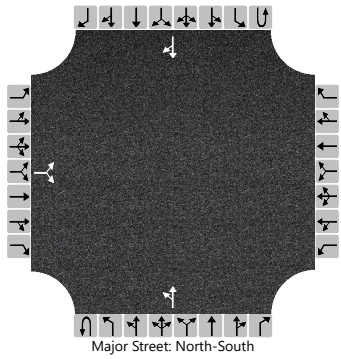
General Information

Analyst	ABC
Agency/Co.	TMS Engineers, Inc.
Date Performed	3/1/2023
Analysis Year	2024
Time Analyzed	PM Peak
Intersection Orientation	North-South
Project Description	Existing Conditions

Site Information

Intersection	West Mill & Karen Lynne
Jurisdiction	Broadview Heights, OH
East/West Street	Karen Lynne Drive
North/South Street	West Mill Road
Peak Hour Factor	0.84
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		10		10						30	60				70	10
Percent Heavy Vehicles (%)		7		7						20						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.47		6.27						4.30						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.56		3.36						2.38						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			24							36						
Capacity, c (veh/h)			824							1393						
v/c Ratio			0.03							0.03						
95% Queue Length, Q_{95} (veh)			0.1							0.1						
Control Delay (s/veh)			9.5							7.7	0.2					
Level of Service (LOS)			A							A	A					
Approach Delay (s/veh)		9.5								2.7						
Approach LOS		A								A						

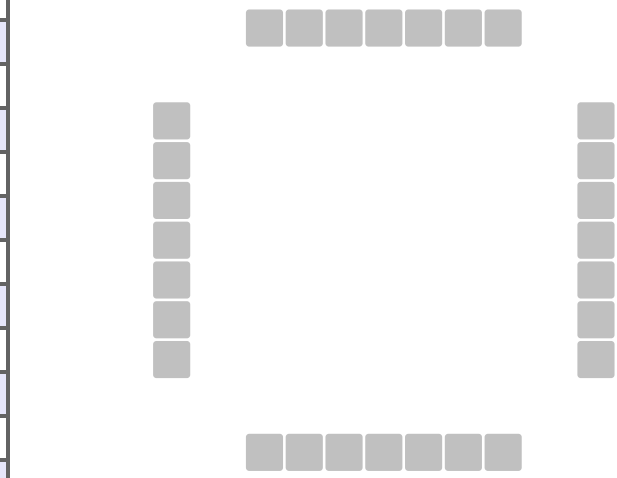
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HCS All-Way Stop Control Report

General and Site Information

Analyst	ABC
Agency/Co.	TMS Engineers, Inc.
Date Performed	3/1/2023
Analysis Year	2024
Analysis Time Period (hrs)	0.25
Time Analyzed	AM Peak
Project Description	Existing Conditions
Intersection	West Mill & Lacey
Jurisdiction	Broadview Heights, OH
East/West Street	Lacey Lane
North/South Street	West Mill Road
Peak Hour Factor	0.59

Lanes



Turning Movement Demand Volumes

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh/h)				10		70		30	50	220	10	
% Thrus in Shared Lane												

Lane Flow Rate and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration				LR			TR			LT		
Flow Rate, v (veh/h)				135			135			388		
Percent Heavy Vehicles				16			3			6		
Initial Departure Headway, h_d (s)				3.20			3.20			3.20		
Initial Degree of Utilization, x				0.120			0.120			0.345		
Final Departure Headway, h_d (s)				4.90			4.39			4.70		
Final Degree of Utilization, x				0.184			0.164			0.506		
Move-Up Time, m (s)				2.0			2.0			2.0		
Service Time, t_s (s)				2.90			2.39			2.70		

Capacity, Delay and Level of Service

Approach	Eastbound			Westbound			Northbound			Southbound		
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration				LR			TR			LT		
Flow Rate, v (veh/h)				135			135			388		
Capacity (veh/h)				735			821			766		
95% Queue Length, Q_{95} (veh)				0.7			0.6			2.9		
Control Delay (s/veh)				9.0			8.2			12.4		
Level of Service, LOS				A			A			B		
Approach Delay (s/veh) | LOS				9.0		A	8.2		A	12.4		B
Intersection Delay (s/veh) | LOS	10.9						B					

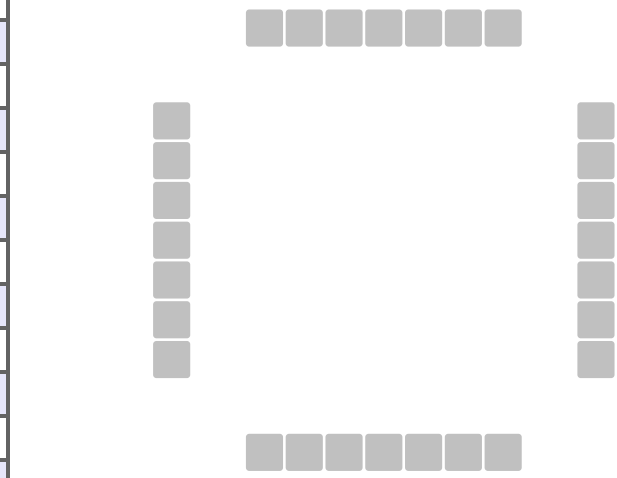
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HCS All-Way Stop Control Report

General and Site Information

Analyst	ABC
Agency/Co.	TMS Engineers, Inc.
Date Performed	3/1/2023
Analysis Year	2024
Analysis Time Period (hrs)	0.25
Time Analyzed	PM Peak
Project Description	Existing Conditions
Intersection	West Mill & Lacey
Jurisdiction	Broadview Heights, OH
East/West Street	Lacey Lane
North/South Street	West Mill Road
Peak Hour Factor	0.90

Lanes



Turning Movement Demand Volumes

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh/h)				10		70		20	10	70	20	
% Thrus in Shared Lane												

Lane Flow Rate and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration				LR			TR			LT		
Flow Rate, v (veh/h)				89			33			100		
Percent Heavy Vehicles				23			8			2		
Initial Departure Headway, h_d (s)				3.20			3.20			3.20		
Initial Degree of Utilization, x				0.079			0.030			0.089		
Final Departure Headway, h_d (s)				4.09			4.13			4.32		
Final Degree of Utilization, x				0.101			0.038			0.120		
Move-Up Time, m (s)				2.0			2.0			2.0		
Service Time, t_s (s)				2.09			2.13			2.32		

Capacity, Delay and Level of Service

Approach	Eastbound			Westbound			Northbound			Southbound		
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration				LR			TR			LT		
Flow Rate, v (veh/h)				89			33			100		
Capacity (veh/h)				881			871			834		
95% Queue Length, Q_{95} (veh)				0.3			0.1			0.4		
Control Delay (s/veh)				7.5			7.3			7.9		
Level of Service, LOS				A			A			A		
Approach Delay (s/veh) | LOS				7.5		A	7.3		A	7.9		A
Intersection Delay (s/veh) | LOS	7.7						A					

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HCS Two-Way Stop-Control Report

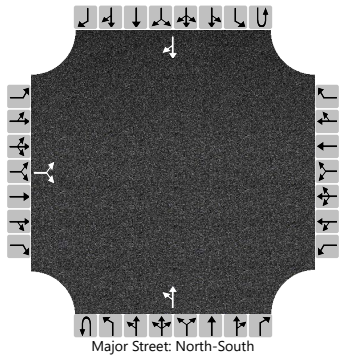
General Information

Analyst	ABC
Agency/Co.	TMS Engineers, Inc.
Date Performed	3/1/2023
Analysis Year	2024
Time Analyzed	AM Peak
Intersection Orientation	North-South
Project Description	Existing Conditions

Site Information

Intersection	Mill & Broadmill
Jurisdiction	Broadview Heights, OH
East/West Street	Broadmill Drive
North/South Street	Mill Road
Peak Hour Factor	0.68
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		10		10						10	270				550	10
Percent Heavy Vehicles (%)		0		0						11						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.40		6.20						4.21						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.50		3.30						2.30						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			29							15						
Capacity, c (veh/h)			253							769						
v/c Ratio			0.12							0.02						
95% Queue Length, Q_{95} (veh)			0.4							0.1						
Control Delay (s/veh)			21.1							9.8	0.2					
Level of Service (LOS)			C							A	A					
Approach Delay (s/veh)		21.1								0.6						
Approach LOS		C								A						

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HCS Two-Way Stop-Control Report

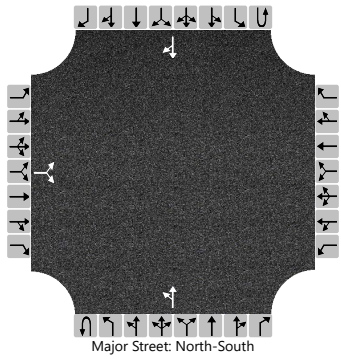
General Information

Analyst	ABC
Agency/Co.	TMS Engineers, Inc.
Date Performed	3/1/2023
Analysis Year	2024
Time Analyzed	PM Peak
Intersection Orientation	North-South
Project Description	Existing Conditions

Site Information

Intersection	Mill & Broadmill
Jurisdiction	Broadview Heights, OH
East/West Street	Broadmill Drive
North/South Street	Mill Road
Peak Hour Factor	0.83
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		10		10						10	230				150	10
Percent Heavy Vehicles (%)		0		0						10						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.40		6.20						4.20						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.50		3.30						2.29						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			24							12						
Capacity, c (veh/h)			661							1334						
v/c Ratio			0.04							0.01						
95% Queue Length, Q_{95} (veh)			0.1							0.0						
Control Delay (s/veh)			10.7							7.7	0.1					
Level of Service (LOS)			B							A	A					
Approach Delay (s/veh)		10.7								0.4						
Approach LOS		B								A						

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HCS Two-Way Stop-Control Report

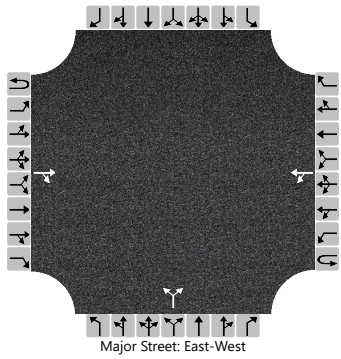
General Information

Analyst	ABC
Agency/Co.	TMS Engineers, Inc.
Date Performed	3/1/2023
Analysis Year	2024
Time Analyzed	AM Peak
Intersection Orientation	East-West
Project Description	Existing Conditions

Site Information

Intersection	Mill & Millwood
Jurisdiction	Broadview Heights, OH
East/West Street	Mill Road
North/South Street	Millwood Drive
Peak Hour Factor	0.64
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume (veh/h)			530	10		10	280			20		10				
Percent Heavy Vehicles (%)						12				0		0				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized																
Median Type | Storage						Undivided										

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.22				6.40		6.20				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.31				3.50		3.30				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						16					47					
Capacity, c (veh/h)						751					211					
v/c Ratio						0.02					0.22					
95% Queue Length, Q_{95} (veh)						0.1					0.8					
Control Delay (s/veh)						9.9	0.3				26.9					
Level of Service (LOS)						A	A				D					
Approach Delay (s/veh)						0.6				26.9						
Approach LOS						A				D						

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HCS Two-Way Stop-Control Report

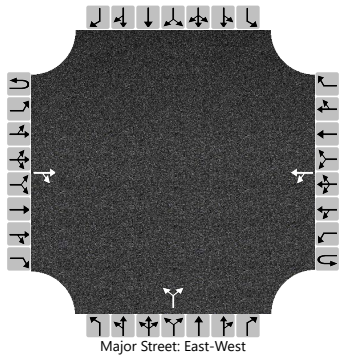
General Information

Analyst	ABC
Agency/Co.	TMS Engineers, Inc.
Date Performed	3/1/2023
Analysis Year	2024
Time Analyzed	PM Peak
Intersection Orientation	East-West
Project Description	Existing Conditions

Site Information

Intersection	Mill & Millwood
Jurisdiction	Broadview Heights, OH
East/West Street	Mill Road
North/South Street	Millwood Drive
Peak Hour Factor	0.76
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume (veh/h)			170	10		10	420			10		10				
Percent Heavy Vehicles (%)						7				0		0				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.17				6.40		6.20				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.26				3.50		3.30				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						13					26					
Capacity, c (veh/h)						1301					487					
v/c Ratio						0.01					0.05					
95% Queue Length, Q_{95} (veh)						0.0					0.2					
Control Delay (s/veh)						7.8	0.1				12.8					
Level of Service (LOS)						A	A				B					
Approach Delay (s/veh)					0.3				12.8							
Approach LOS					A				B							

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HCS Two-Way Stop-Control Report

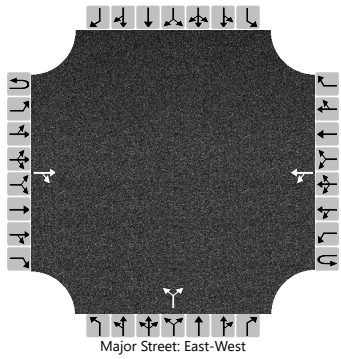
General Information

Analyst	ABC
Agency/Co.	TMS Engineers, Inc.
Date Performed	3/1/2023
Analysis Year	2024
Time Analyzed	AM Peak
Intersection Orientation	East-West
Project Description	Existing Conditions

Site Information

Intersection	Mill & MS Driveway
Jurisdiction	Boardview Heights, OH
East/West Street	Mill Road
North/South Street	Middle School Driveway
Peak Hour Factor	0.71
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume (veh/h)			340	180		60	180			70		70				
Percent Heavy Vehicles (%)						13				0		0				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.23				6.40		6.20				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.32				3.50		3.30				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						85					197					
Capacity, c (veh/h)						824					316					
v/c Ratio						0.10					0.62					
95% Queue Length, Q_{95} (veh)						0.3					3.9					
Control Delay (s/veh)						9.9	1.2				33.7					
Level of Service (LOS)						A	A				D					
Approach Delay (s/veh)					3.3				33.7							
Approach LOS					A				D							

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HCS Two-Way Stop-Control Report

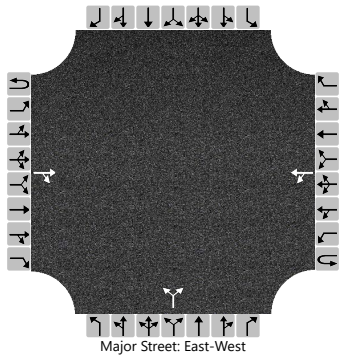
General Information

Analyst	ABC
Agency/Co.	TMS Engineers, Inc.
Date Performed	3/1/2023
Analysis Year	2024
Time Analyzed	PM Peak
Intersection Orientation	East-West
Project Description	Existing Conditions

Site Information

Intersection	Mill & MS Driveway
Jurisdiction	Boardview Heights, OH
East/West Street	Mill Road
North/South Street	Middle School Driveway
Peak Hour Factor	0.68
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume (veh/h)			150	10		10	320			60		30				
Percent Heavy Vehicles (%)						8				0		0				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized																
Median Type | Storage																

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.18				6.40		6.20				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.27				3.50		3.30				

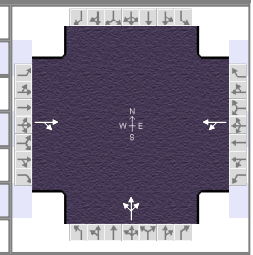
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						15					132					
Capacity, c (veh/h)						1297					470					
v/c Ratio						0.01					0.28					
95% Queue Length, Q_{95} (veh)						0.0					1.1					
Control Delay (s/veh)						7.8	0.1				15.6					
Level of Service (LOS)						A	A				C					
Approach Delay (s/veh)					0.4				15.6							
Approach LOS					A				C							

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HCS Signalized Intersection Results Summary

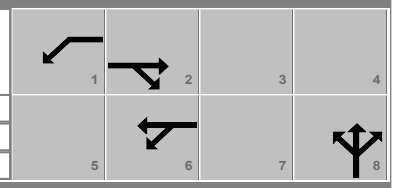
General Information				Intersection Information	
Agency	TMS Engineers, Inc.			Duration, h	0.250
Analyst	ABC	Analysis Date	Mar 1, 2023	Area Type	Other
Jurisdiction	Broadview Heights, OH	Time Period	AM Peak	PHF	0.70
Urban Street	Mill Road @	Analysis Year	2024	Analysis Period	1> 7:00
Intersection	HS/MS Driveway	File Name	11_AM 24 HS.xus		
Project Description	Existing Conditions				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		400	30	20	220		40	0	10			

Signal Information			
Cycle, s	90.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Float	Simult. Gap N/S	On

Green	68.2	9.8	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	2.0	2.0	0.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6		8		
Case Number		8.3	0.0	14.2		12.0		
Phase Duration, s		74.2	0.0	74.2		15.8		
Change Period, ($Y+R_c$), s		6.0	6.0	6.0		6.0		
Max Allow Headway (*MAH*), s		0.0	0.0	0.0		3.2		
Queue Clearance Time (g_s), s						11.7		
Green Extension Time (g_e), s		0.0	0.0	0.0		0.1		
Phase Call Probability						0.83		
Max Out Probability						0.00		

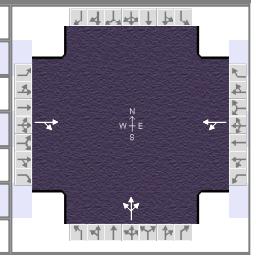
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement		2	12	1	6		3	8	18			
Adjusted Flow Rate (*v*), veh/h		614			343			71				
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1789			1618			664				
Queue Service Time (g_s), s		11.4			5.4			9.7				
Cycle Queue Clearance Time (g_c), s		11.4			5.4			9.7				
Green Ratio (*g/C*)		0.76			0.76			0.11				
Capacity (*c*), veh/h		1355			1269			72				
Volume-to-Capacity Ratio (*X*)		0.453			0.270			0.987				
Back of Queue (*Q*), ft/ln (95 th percentile)		149.8			70.1			153.1				
Back of Queue (*Q*), veh/ln (95 th percentile)		5.7			2.6			3.7				
Queue Storage Ratio (*RQ*) (95 th percentile)		0.00			0.00			0.00				
Uniform Delay (d_1), s/veh		4.0			3.3			40.0				
Incremental Delay (d_2), s/veh		1.1			0.5			26.9				
Initial Queue Delay (d_3), s/veh		0.0			0.0			0.0				
Control Delay (*d*), s/veh		5.1			3.8			66.9				
Level of Service (LOS)		A			A			E				
Approach Delay, s/veh / LOS	5.1	A		3.8	A		66.9	E		0.0		
Intersection Delay, s/veh / LOS	9.0						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS								
Bicycle LOS Score / LOS								

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HCS Signalized Intersection Results Summary

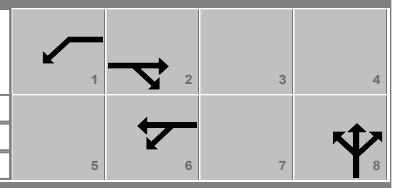
General Information				Intersection Information	
Agency	TMS Engineers, Inc.			Duration, h	0.250
Analyst	ABC	Analysis Date	Mar 1, 2023	Area Type	Other
Jurisdiction	Broadview Heights, OH	Time Period	PM Peak	PHF	0.77
Urban Street	Mill Road @	Analysis Year	2024	Analysis Period	1> 7:00
Intersection	HS/MS Driveway	File Name	11_PM 24 HS.xus		
Project Description	Existing Conditions				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		140	60	20	190		150	0	50			

Signal Information			
Cycle, s	60.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Float	Simult. Gap N/S	On

Green	35.3	12.7	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	2.0	2.0	0.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6		8		
Case Number		8.3	0.0	14.2		12.0		
Phase Duration, s		41.3	0.0	41.3		18.7		
Change Period, ($Y+R_c$), s		6.0	6.0	6.0		6.0		
Max Allow Headway (*MAH*), s		0.0	0.0	0.0		3.2		
Queue Clearance Time (g_s), s						12.4		
Green Extension Time (g_e), s		0.0	0.0	0.0		0.4		
Phase Call Probability						0.99		
Max Out Probability						0.00		

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement		2	12	1	6		3	8	18			
Adjusted Flow Rate (*v*), veh/h		260			273			260				
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1775			1838			1440				
Queue Service Time (g_s), s		4.2			4.2			10.4				
Cycle Queue Clearance Time (g_c), s		4.2			4.2			10.4				
Green Ratio (*g/C*)		0.59			0.59			0.21				
Capacity (*c*), veh/h		1044			1148			304				
Volume-to-Capacity Ratio (*X*)		0.249			0.238			0.853				
Back of Queue (*Q*), ft/ln (95 th percentile)		59.7			59.8			181.5				
Back of Queue (*Q*), veh/ln (95 th percentile)		2.3			2.4			6.1				
Queue Storage Ratio (*RQ*) (95 th percentile)		0.00			0.00			0.00				
Uniform Delay (d_1), s/veh		5.9			5.9			22.8				
Incremental Delay (d_2), s/veh		0.6			0.5			2.6				
Initial Queue Delay (d_3), s/veh		0.0			0.0			0.0				
Control Delay (*d*), s/veh		6.5			6.4			25.4				
Level of Service (LOS)		A			A			C				
Approach Delay, s/veh / LOS	6.5	A		6.4	A		25.4	C		0.0		
Intersection Delay, s/veh / LOS	12.7						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS								
Bicycle LOS Score / LOS								

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HCS Two-Way Stop-Control Report

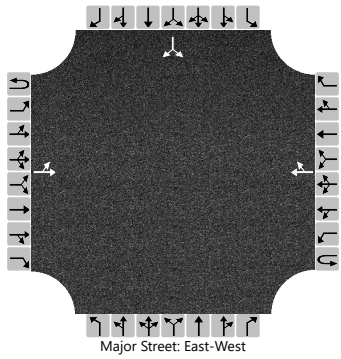
General Information

Analyst	ABC
Agency/Co.	TMS Engineers, Inc.
Date Performed	3/1/2023
Analysis Year	2024
Time Analyzed	AM Peak
Intersection Orientation	East-West
Project Description	Existing Conditions

Site Information

Intersection	Mill & Vera
Jurisdiction	Broadview Heights, OH
East/West Street	Mill Road
North/South Street	Vera Drive
Peak Hour Factor	0.67
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration		LT						TR							LR	
Volume (veh/h)		10	390				220	10						10		20
Percent Heavy Vehicles (%)		4												6		6
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized																
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.14												6.46		6.26
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.24												3.55		3.35

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		15													45	
Capacity, c (veh/h)		1205													465	
v/c Ratio		0.01													0.10	
95% Queue Length, Q_{95} (veh)		0.0													0.3	
Control Delay (s/veh)		8.0	0.1												13.6	
Level of Service (LOS)		A	A												B	
Approach Delay (s/veh)		0.3												13.6		
Approach LOS		A												B		

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HCS Two-Way Stop-Control Report

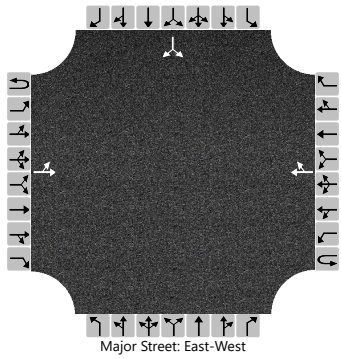
General Information

Analyst	ABC
Agency/Co.	TMS Engineers, Inc.
Date Performed	3/1/2023
Analysis Year	2024
Time Analyzed	PM Peak
Intersection Orientation	East-West
Project Description	Existing Conditions

Site Information

Intersection	Mill & Vera
Jurisdiction	Broadview Heights, OH
East/West Street	Mill Road
North/South Street	Vera Drive
Peak Hour Factor	0.57
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration		LT						TR							LR	
Volume (veh/h)		10	170				220	10						20		10
Percent Heavy Vehicles (%)		9												0		0
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized																
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.19												6.40		6.20
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.28												3.50		3.30

Delay, Queue Length, and Level of Service

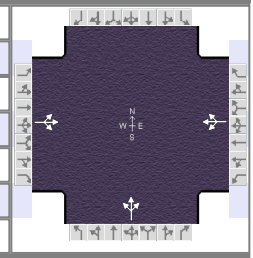
Flow Rate, v (veh/h)		18													53	
Capacity, c (veh/h)		1118													448	
v/c Ratio		0.02													0.12	
95% Queue Length, Q_{95} (veh)		0.0													0.4	
Control Delay (s/veh)		8.3	0.2												14.1	
Level of Service (LOS)		A	A												B	
Approach Delay (s/veh)		0.6												14.1		
Approach LOS		A												B		

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Appendix K
Capacity Analysis Worksheets - 2044

HCS Signalized Intersection Results Summary

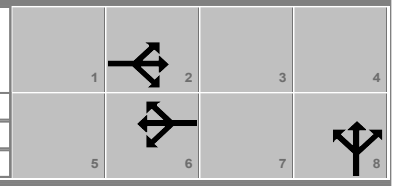
General Information				Intersection Information	
Agency	TMS Engineers, Inc.			Duration, h	0.250
Analyst	ABC	Analysis Date	Mar 1, 2023	Area Type	Other
Jurisdiction	Broadview Heights, OH	Time Period	AM Peak	PHF	0.89
Urban Street	Mill Road	Analysis Year	2044	Analysis Period	1> 7:00
Intersection	@ Wallings Road	File Name	1_AM 44 Wallings.xus		
Project Description	Existing Conditions				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	870	180	100	20	90	230	170	150	60			

Signal Information			
Cycle, s	85.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	56.0	17.0	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	2.0	2.0	0.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		
Case Number		8.0		8.0		12.0		
Phase Duration, s		62.0		62.0		23.0		
Change Period, ($Y+R_c$), s		6.0		6.0		6.0		
Max Allow Headway (*MAH*), s		0.0		0.0		3.1		
Queue Clearance Time (g_s), s						19.0		
Green Extension Time (g_e), s		0.0		0.0		0.0		
Phase Call Probability						1.00		
Max Out Probability						1.00		

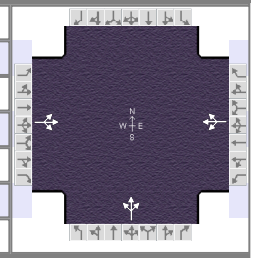
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18			
Adjusted Flow Rate (*v*), veh/h		1292			382			427				
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1108			1733			1724				
Queue Service Time (g_s), s		47.4			0.0			17.0				
Cycle Queue Clearance Time (g_c), s		56.0			8.6			17.0				
Green Ratio (*g/C*)		0.66			0.66			0.20				
Capacity (*c*), veh/h		804			1187			345				
Volume-to-Capacity Ratio (*X*)		1.606			0.322			1.239				
Back of Queue (*Q*), ft/ln (95 th percentile)		3116.4			122.4			768.1				
Back of Queue (*Q*), veh/ln (95 th percentile)		122.7			4.8			29.3				
Queue Storage Ratio (*RQ*) (95 th percentile)		0.00			0.00			0.00				
Uniform Delay (d_1), s/veh		17.7			6.4			34.0				
Incremental Delay (d_2), s/veh		278.7			0.7			129.8				
Initial Queue Delay (d_3), s/veh		0.0			0.0			0.0				
Control Delay (*d*), s/veh		296.4			7.1			163.8				
Level of Service (LOS)		F			A			F				
Approach Delay, s/veh / LOS	296.4	F		7.1	A		163.8	F		0.0		
Intersection Delay, s/veh / LOS	216.8						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS								
Bicycle LOS Score / LOS								

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HCS Signalized Intersection Results Summary

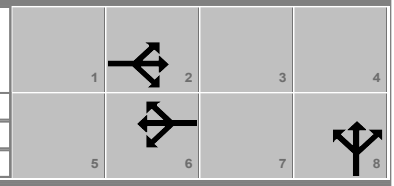
General Information				Intersection Information	
Agency	TMS Engineers, Inc.			Duration, h	0.250
Analyst	ABC	Analysis Date	Mar 1, 2023	Area Type	Other
Jurisdiction	Broadview Heights, OH	Time Period	PM Peak	PHF	0.89
Urban Street	Mill Road	Analysis Year	2044	Analysis Period	1> 7:00
Intersection	@ Wallings Road	File Name	1_PM 44 Wallings.xus		
Project Description	Existing Conditions				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	280	230	90	10	160	120	380	100	50			

Signal Information			
Cycle, s	95.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	48.7	34.3	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	2.0	2.0	0.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		
Case Number		8.0		8.0		12.0		
Phase Duration, s		54.7		54.7		40.3		
Change Period, ($Y+R_c$), s		6.0		6.0		6.0		
Max Allow Headway (*MAH*), s		0.0		0.0		3.1		
Queue Clearance Time (g_s), s						33.0		
Green Extension Time (g_e), s		0.0		0.0		1.3		
Phase Call Probability						1.00		
Max Out Probability						0.00		

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18			
Adjusted Flow Rate (*v*), veh/h		674			326			596				
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1270			1778			1762				
Queue Service Time (g_s), s		38.2			0.0			31.0				
Cycle Queue Clearance Time (g_c), s		48.7			10.6			31.0				
Green Ratio (*g/C*)		0.51			0.51			0.36				
Capacity (*c*), veh/h		707			951			636				
Volume-to-Capacity Ratio (*X*)		0.954			0.342			0.937				
Back of Queue (*Q*), ft/ln (95 th percentile)		663.5			188.7			481.8				
Back of Queue (*Q*), veh/ln (95 th percentile)		25.9			7.5			18.8				
Queue Storage Ratio (*RQ*) (95 th percentile)		0.00			0.00			0.00				
Uniform Delay (d_1), s/veh		25.1			13.8			29.3				
Incremental Delay (d_2), s/veh		24.3			1.0			3.0				
Initial Queue Delay (d_3), s/veh		0.0			0.0			0.0				
Control Delay (*d*), s/veh		49.3			14.8			32.3				
Level of Service (LOS)		D			B			C				
Approach Delay, s/veh / LOS	49.3	D		14.8	B		32.3	C		0.0		
Intersection Delay, s/veh / LOS	35.9						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS								
Bicycle LOS Score / LOS								

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HCS Two-Way Stop-Control Report

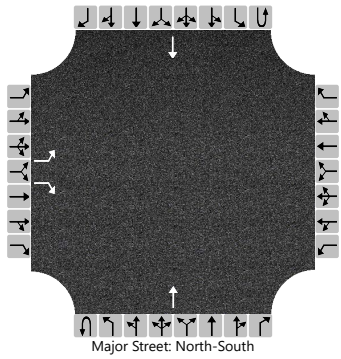
General Information

Analyst	ABC
Agency/Co.	TMS Engineers, Inc.
Date Performed	3/1/2023
Analysis Year	2044
Time Analyzed	AM Peak
Intersection Orientation	North-South
Project Description	Existing Conditions

Site Information

Intersection	Mill & IR77NB Exit
Jurisdiction	Broadview Heights, OH
East/West Street	IR77 NB Exit Ramp
North/South Street	Mill Road
Peak Hour Factor	0.66
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0	0	0	1	0	0	0	1	0
Configuration		L		R							T				T	
Volume (veh/h)		80		140							270				140	
Percent Heavy Vehicles (%)		6		6												
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		No														
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2												
Critical Headway (sec)		6.46		6.26												
Base Follow-Up Headway (sec)		3.5		3.3												
Follow-Up Headway (sec)		3.55		3.35												

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		121		212												
Capacity, c (veh/h)		444		818												
v/c Ratio		0.27		0.26												
95% Queue Length, Q_{95} (veh)		1.1		1.0												
Control Delay (s/veh)		16.1		10.9												
Level of Service (LOS)		C		B												
Approach Delay (s/veh)		12.8														
Approach LOS		B														

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HCS Two-Way Stop-Control Report

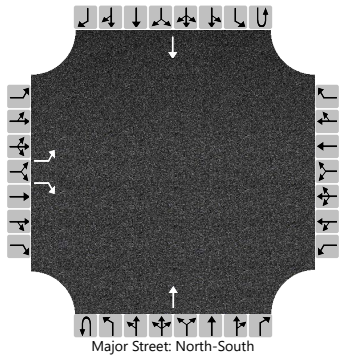
General Information

Analyst	ABC
Agency/Co.	TMS Engineers, Inc.
Date Performed	3/1/2023
Analysis Year	2044
Time Analyzed	PM Peak
Intersection Orientation	North-South
Project Description	Existing Conditions

Site Information

Intersection	Mill & IR77NB Exit
Jurisdiction	Broadview Heights, OH
East/West Street	IR77 NB Exit Ramp
North/South Street	Mill Road
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0	0	0	1	0	0	0	1	0
Configuration		L		R							T				T	
Volume (veh/h)		260		70							240				170	
Percent Heavy Vehicles (%)		4		4												
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		No														
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2												
Critical Headway (sec)		6.44		6.24												
Base Follow-Up Headway (sec)		3.5		3.3												
Follow-Up Headway (sec)		3.54		3.34												

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		289		78												
Capacity, c (veh/h)		559		848												
v/c Ratio		0.52		0.09												
95% Queue Length, Q_{95} (veh)		3.0		0.3												
Control Delay (s/veh)		18.1		9.7												
Level of Service (LOS)		C		A												
Approach Delay (s/veh)		16.3														
Approach LOS		C														

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HCS Two-Way Stop-Control Report

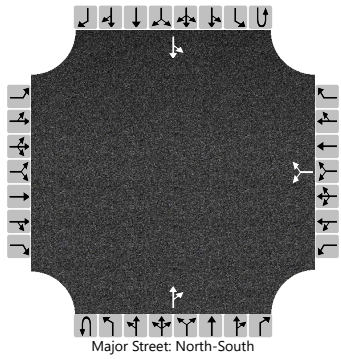
General Information

Analyst	ABC
Agency/Co.	TMS Engineers, Inc.
Date Performed	3/1/2023
Analysis Year	2044
Time Analyzed	AM Peak
Intersection Orientation	North-South
Project Description	Existing Conditions

Site Information

Intersection	Mill & Loripat
Jurisdiction	Broadview Heights, OH
East/West Street	Loripat Drive
North/South Street	Mill Road
Peak Hour Factor	0.68
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						10		10			300	10		10	280	
Percent Heavy Vehicles (%)						0		0						4		
Proportion Time Blocked																
Percent Grade (%)							0									
Right Turn Channelized																
Median Type | Storage							Undivided									

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.40		6.20						4.14		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.50		3.30						2.24		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							29							15		
Capacity, c (veh/h)							414							1096		
v/c Ratio							0.07							0.01		
95% Queue Length, Q_{95} (veh)							0.2							0.0		
Control Delay (s/veh)							14.4							8.3	0.1	
Level of Service (LOS)							B							A	A	
Approach Delay (s/veh)							14.4							0.4		
Approach LOS							B							A		

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HCS Two-Way Stop-Control Report

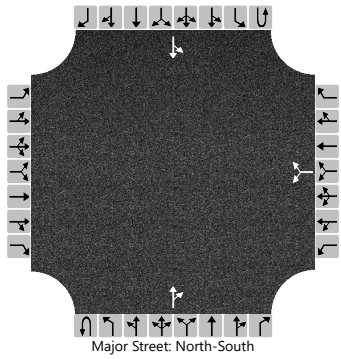
General Information

Analyst	ABC
Agency/Co.	TMS Engineers, Inc.
Date Performed	3/1/2023
Analysis Year	2044
Time Analyzed	PM Peak
Intersection Orientation	North-South
Project Description	Existing Conditions

Site Information

Intersection	Mill & Loripat
Jurisdiction	Broadview Heights, OH
East/West Street	Loripat Drive
North/South Street	Mill Road
Peak Hour Factor	0.78
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

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

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.40		6.20						4.12		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.50		3.30						2.22		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							26							13		
Capacity, c (veh/h)							591							1200		
v/c Ratio							0.04							0.01		
95% Queue Length, Q_{95} (veh)							0.1							0.0		
Control Delay (s/veh)							11.4							8.0	0.1	
Level of Service (LOS)							B							A	A	
Approach Delay (s/veh)						11.4								0.8		
Approach LOS						B								A		

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HCS Two-Way Stop-Control Report

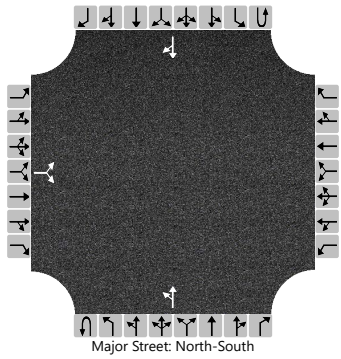
General Information

Analyst	ABC
Agency/Co.	TMS Engineers, Inc.
Date Performed	3/1/2023
Analysis Year	2044
Time Analyzed	AM Peak
Intersection Orientation	North-South
Project Description	Existing Conditions

Site Information

Intersection	Mill & Lacey
Jurisdiction	Broadview Heights, OH
East/West Street	Lacey Lane
North/South Street	Mill Road
Peak Hour Factor	0.66
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		20		240						70	280				270	10
Percent Heavy Vehicles (%)		5		5						9						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.45		6.25						4.19						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.55		3.35						2.28						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			394							106						
Capacity, c (veh/h)			549							1098						
v/c Ratio			0.72							0.10						
95% Queue Length, Q_{95} (veh)			5.9							0.3						
Control Delay (s/veh)			26.5							8.6	1.1					
Level of Service (LOS)			D							A	A					
Approach Delay (s/veh)		26.5								2.6						
Approach LOS		D								A						

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HCS Two-Way Stop-Control Report

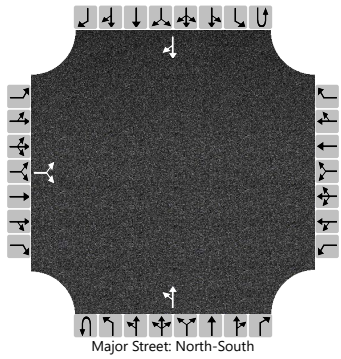
General Information

Analyst	ABC
Agency/Co.	TMS Engineers, Inc.
Date Performed	3/1/2023
Analysis Year	2044
Time Analyzed	PM Peak
Intersection Orientation	North-South
Project Description	Existing Conditions

Site Information

Intersection	Mill & Lacey
Jurisdiction	Broadview Heights, OH
East/West Street	Lacey Lane
North/South Street	Mill Road
Peak Hour Factor	0.72
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		10		50						130	270				110	10
Percent Heavy Vehicles (%)		0		0						7						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.40		6.20						4.17						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.50		3.30						2.26						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			83							181						
Capacity, c (veh/h)			636							1381						
v/c Ratio			0.13							0.13						
95% Queue Length, Q_{95} (veh)			0.4							0.4						
Control Delay (s/veh)			11.5							8.0	1.3					
Level of Service (LOS)			B							A	A					
Approach Delay (s/veh)		11.5								3.5						
Approach LOS		B								A						

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HCS Two-Way Stop-Control Report

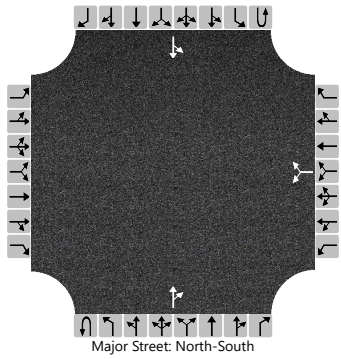
General Information

Analyst	ABC
Agency/Co.	TMS Engineers, Inc.
Date Performed	3/1/2023
Analysis Year	2044
Time Analyzed	AM Peak
Intersection Orientation	North-South
Project Description	Existing Conditions

Site Information

Intersection	Mill & Sylmar
Jurisdiction	Broadview Heights, OH
East/West Street	Sylmar Drive
North/South Street	Mill Road
Peak Hour Factor	0.59
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						10		20			330	10		10	520	
Percent Heavy Vehicles (%)						0		0						5		
Proportion Time Blocked																
Percent Grade (%)							0									
Right Turn Channelized																
Median Type | Storage							Undivided									

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.40		6.20						4.15		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.50		3.30						2.25		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							51							17		
Capacity, c (veh/h)							267							982		
v/c Ratio							0.19							0.02		
95% Queue Length, Q_{95} (veh)							0.7							0.1		
Control Delay (s/veh)							21.6							8.7	0.3	
Level of Service (LOS)							C							A	A	
Approach Delay (s/veh)							21.6							0.5		
Approach LOS							C							A		

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HCS Two-Way Stop-Control Report

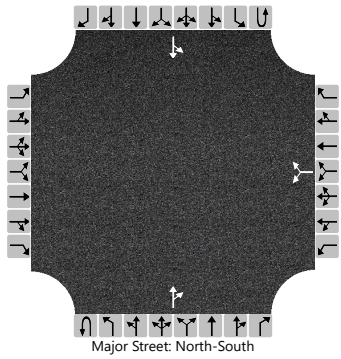
General Information

Analyst	ABC
Agency/Co.	TMS Engineers, Inc.
Date Performed	3/1/2023
Analysis Year	2044
Time Analyzed	PM Peak
Intersection Orientation	North-South
Project Description	Existing Conditions

Site Information

Intersection	Mill & Sylmar
Jurisdiction	Broadview Heights, OH
East/West Street	Sylmar Drive
North/South Street	Mill Road
Peak Hour Factor	0.63
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						10		10			300	10		10	140	
Percent Heavy Vehicles (%)						20		20						4		
Proportion Time Blocked																
Percent Grade (%)							0									
Right Turn Channelized																
Median Type | Storage							Undivided									

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.60		6.40						4.14		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.68		3.48						2.24		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							32							16		
Capacity, c (veh/h)							430							1061		
v/c Ratio							0.07							0.01		
95% Queue Length, Q_{95} (veh)							0.2							0.0		
Control Delay (s/veh)							14.0							8.4	0.1	
Level of Service (LOS)							B							A	A	
Approach Delay (s/veh)							14.0							0.7		
Approach LOS							B							A		

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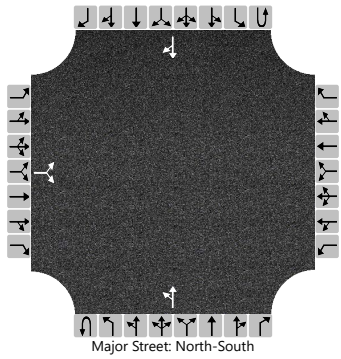
General Information

Analyst	ABC
Agency/Co.	TMS Engineers, Inc.
Date Performed	3/1/2023
Analysis Year	2044
Time Analyzed	AM Peak
Intersection Orientation	North-South
Project Description	Existing Conditions

Site Information

Intersection	West Mill & Karen Lynne
Jurisdiction	Broadview Heights, OH
East/West Street	Karen Lynne Drive
North/South Street	West Mill Road
Peak Hour Factor	0.62
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		20		40						30	70				190	10
Percent Heavy Vehicles (%)		5		5						12						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.45		6.25						4.22						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.55		3.35						2.31						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			97							48						
Capacity, c (veh/h)			620							1183						
v/c Ratio			0.16							0.04						
95% Queue Length, Q_{95} (veh)			0.6							0.1						
Control Delay (s/veh)			11.9							8.2	0.4					
Level of Service (LOS)			B							A	A					
Approach Delay (s/veh)		11.9								2.7						
Approach LOS		B								A						

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HCS Two-Way Stop-Control Report

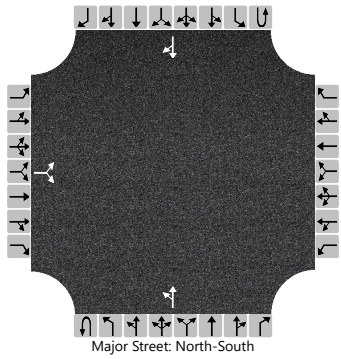
General Information

Analyst	ABC
Agency/Co.	TMS Engineers, Inc.
Date Performed	3/1/2023
Analysis Year	2044
Time Analyzed	PM Peak
Intersection Orientation	North-South
Project Description	Existing Conditions

Site Information

Intersection	West Mill & Karen Lynne
Jurisdiction	Broadview Heights, OH
East/West Street	Karen Lynne Drive
North/South Street	West Mill Road
Peak Hour Factor	0.84
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		10		10						30	60				70	10
Percent Heavy Vehicles (%)		7		7						20						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.47		6.27						4.30						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.56		3.36						2.38						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			24							36						
Capacity, c (veh/h)			824							1393						
v/c Ratio			0.03							0.03						
95% Queue Length, Q_{95} (veh)			0.1							0.1						
Control Delay (s/veh)			9.5							7.7	0.2					
Level of Service (LOS)			A							A	A					
Approach Delay (s/veh)		9.5								2.7						
Approach LOS		A								A						

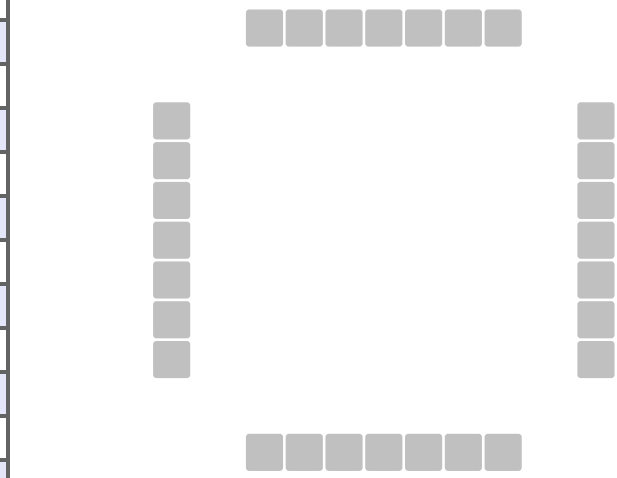
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HCS All-Way Stop Control Report

General and Site Information

Analyst	ABC
Agency/Co.	TMS Engineers, Inc.
Date Performed	3/1/2023
Analysis Year	2044
Analysis Time Period (hrs)	0.25
Time Analyzed	AM Peak
Project Description	Existing Conditions
Intersection	West Mill & Lacey
Jurisdiction	Broadview Heights, OH
East/West Street	Lacey Lane
North/South Street	West Mill Road
Peak Hour Factor	0.59

Lanes



Turning Movement Demand Volumes

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh/h)				10		70		30	50	220	10	
% Thrus in Shared Lane												

Lane Flow Rate and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration				LR			TR			LT		
Flow Rate, v (veh/h)				135			135			388		
Percent Heavy Vehicles				16			3			6		
Initial Departure Headway, h_d (s)				3.20			3.20			3.20		
Initial Degree of Utilization, x				0.120			0.120			0.345		
Final Departure Headway, h_d (s)				4.90			4.39			4.70		
Final Degree of Utilization, x				0.184			0.164			0.506		
Move-Up Time, m (s)				2.0			2.0			2.0		
Service Time, t_s (s)				2.90			2.39			2.70		

Capacity, Delay and Level of Service

Approach	Eastbound			Westbound			Northbound			Southbound		
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration				LR			TR			LT		
Flow Rate, v (veh/h)				135			135			388		
Capacity (veh/h)				735			821			766		
95% Queue Length, Q_{95} (veh)				0.7			0.6			2.9		
Control Delay (s/veh)				9.0			8.2			12.4		
Level of Service, LOS				A			A			B		
Approach Delay (s/veh) | LOS				9.0		A	8.2		A	12.4		B
Intersection Delay (s/veh) | LOS	10.9						B					

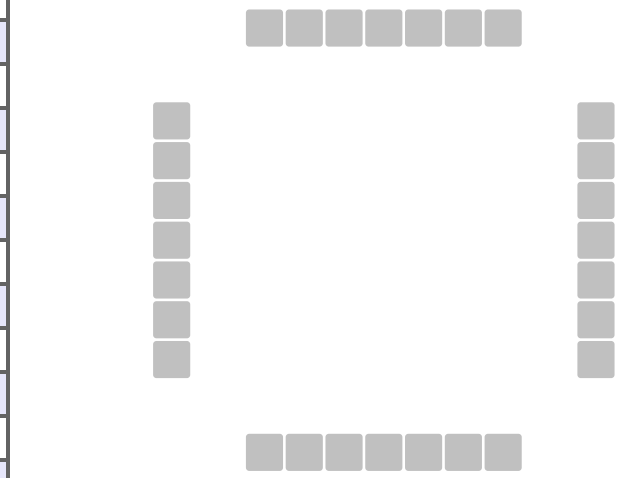
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HCS All-Way Stop Control Report

General and Site Information

Analyst	ABC
Agency/Co.	TMS Engineers, Inc.
Date Performed	3/1/2023
Analysis Year	2044
Analysis Time Period (hrs)	0.25
Time Analyzed	PM Peak
Project Description	Existing Conditions
Intersection	West Mill & Lacey
Jurisdiction	Broadview Heights, OH
East/West Street	Lacey Lane
North/South Street	West Mill Road
Peak Hour Factor	0.90

Lanes



Turning Movement Demand Volumes

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh/h)				10		70		20	10	70	20	
% Thrus in Shared Lane												

Lane Flow Rate and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration				LR			TR			LT		
Flow Rate, v (veh/h)				89			33			100		
Percent Heavy Vehicles				23			8			2		
Initial Departure Headway, h_d (s)				3.20			3.20			3.20		
Initial Degree of Utilization, x				0.079			0.030			0.089		
Final Departure Headway, h_d (s)				4.09			4.13			4.32		
Final Degree of Utilization, x				0.101			0.038			0.120		
Move-Up Time, m (s)				2.0			2.0			2.0		
Service Time, t_s (s)				2.09			2.13			2.32		

Capacity, Delay and Level of Service

Approach	Eastbound			Westbound			Northbound			Southbound		
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration				LR			TR			LT		
Flow Rate, v (veh/h)				89			33			100		
Capacity (veh/h)				881			871			834		
95% Queue Length, Q_{95} (veh)				0.3			0.1			0.4		
Control Delay (s/veh)				7.5			7.3			7.9		
Level of Service, LOS				A			A			A		
Approach Delay (s/veh) | LOS				7.5		A	7.3		A	7.9		A
Intersection Delay (s/veh) | LOS	7.7						A					

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HCS Two-Way Stop-Control Report

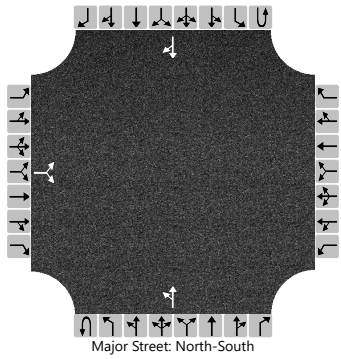
General Information

Analyst	ABC
Agency/Co.	TMS Engineers, Inc.
Date Performed	3/1/2023
Analysis Year	2044
Time Analyzed	AM Peak
Intersection Orientation	North-South
Project Description	Existing Conditions

Site Information

Intersection	Mill & Broadmill
Jurisdiction	Broadview Heights, OH
East/West Street	Broadmill Drive
North/South Street	Mill Road
Peak Hour Factor	0.68
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		10		10						10	300				590	10
Percent Heavy Vehicles (%)		0		0						11						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.40		6.20						4.21						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.50		3.30						2.30						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			29							15						
Capacity, c (veh/h)			224							730						
v/c Ratio			0.13							0.02						
95% Queue Length, Q_{95} (veh)			0.4							0.1						
Control Delay (s/veh)			23.5							10.0	0.3					
Level of Service (LOS)			C							B	A					
Approach Delay (s/veh)		23.5								0.6						
Approach LOS		C								A						

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HCS Two-Way Stop-Control Report

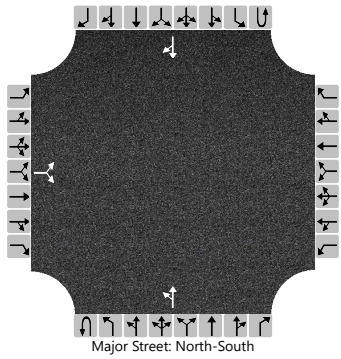
General Information

Analyst	ABC
Agency/Co.	TMS Engineers, Inc.
Date Performed	3/1/2023
Analysis Year	2044
Time Analyzed	PM Peak
Intersection Orientation	North-South
Project Description	Existing Conditions

Site Information

Intersection	Mill & Broadmill
Jurisdiction	Broadview Heights, OH
East/West Street	Broadmill Drive
North/South Street	Mill Road
Peak Hour Factor	0.83
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		10		10						10	250				170	10
Percent Heavy Vehicles (%)		0		0						10						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.40		6.20						4.20						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.50		3.30						2.29						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			24							12						
Capacity, c (veh/h)			628							1307						
v/c Ratio			0.04							0.01						
95% Queue Length, Q_{95} (veh)			0.1							0.0						
Control Delay (s/veh)			11.0							7.8	0.1					
Level of Service (LOS)			B							A	A					
Approach Delay (s/veh)		11.0								0.4						
Approach LOS		B								A						

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HCS Two-Way Stop-Control Report

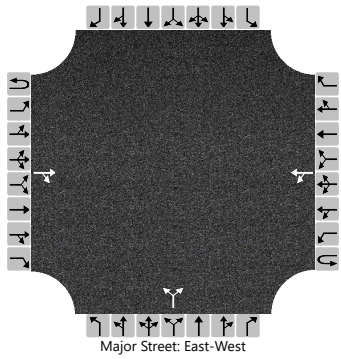
General Information

Analyst	ABC
Agency/Co.	TMS Engineers, Inc.
Date Performed	3/1/2023
Analysis Year	2044
Time Analyzed	AM Peak
Intersection Orientation	East-West
Project Description	Existing Conditions

Site Information

Intersection	Mill & Millwood
Jurisdiction	Broadview Heights, OH
East/West Street	Mill Road
North/South Street	Millwood Drive
Peak Hour Factor	0.64
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume (veh/h)			570	10		10	310			20		10				
Percent Heavy Vehicles (%)						12				0		0				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.22				6.40		6.20				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.31				3.50		3.30				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						16					47					
Capacity, c (veh/h)						711					183					
v/c Ratio						0.02					0.26					
95% Queue Length, Q_{95} (veh)						0.1					1.0					
Control Delay (s/veh)						10.2	0.3				31.3					
Level of Service (LOS)						B	A				D					
Approach Delay (s/veh)					0.6				31.3							
Approach LOS					A				D							

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HCS Two-Way Stop-Control Report

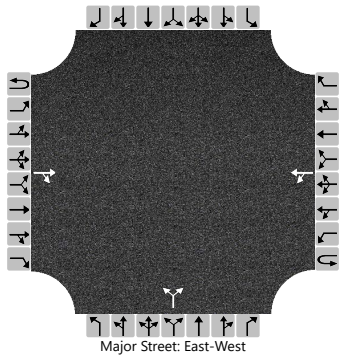
General Information

Analyst	ABC
Agency/Co.	TMS Engineers, Inc.
Date Performed	3/1/2023
Analysis Year	2044
Time Analyzed	PM Peak
Intersection Orientation	East-West
Project Description	Existing Conditions

Site Information

Intersection	Mill & Millwood
Jurisdiction	Broadview Heights, OH
East/West Street	Mill Road
North/South Street	Millwood Drive
Peak Hour Factor	0.76
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume (veh/h)			190	10		10	460			10		10				
Percent Heavy Vehicles (%)						7				0		0				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized																
Median Type | Storage						Undivided										

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.17				6.40		6.20				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.26				3.50		3.30				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						13					26					
Capacity, c (veh/h)						1273					447					
v/c Ratio						0.01					0.06					
95% Queue Length, Q_{95} (veh)						0.0					0.2					
Control Delay (s/veh)						7.9	0.1				13.6					
Level of Service (LOS)						A	A				B					
Approach Delay (s/veh)						0.3				13.6						
Approach LOS						A				B						

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HCS Two-Way Stop-Control Report

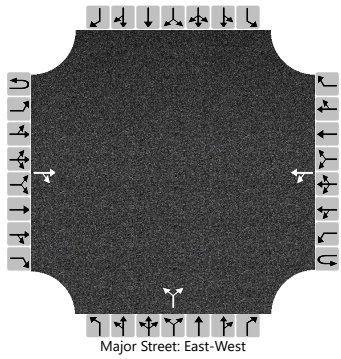
General Information

Analyst	ABC
Agency/Co.	TMS Engineers, Inc.
Date Performed	3/1/2023
Analysis Year	2044
Time Analyzed	AM Peak
Intersection Orientation	East-West
Project Description	Existing Conditions

Site Information

Intersection	Mill & MS Driveway
Jurisdiction	Boardview Heights, OH
East/West Street	Mill Road
North/South Street	Middle School Driveway
Peak Hour Factor	0.71
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume (veh/h)			360	180		60	190			70		70				
Percent Heavy Vehicles (%)						13				0		0				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.23				6.40		6.20				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.32				3.50		3.30				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						85					197					
Capacity, c (veh/h)						804					299					
v/c Ratio						0.11					0.66					
95% Queue Length, Q_{95} (veh)						0.4					4.3					
Control Delay (s/veh)						10.0	1.2				37.7					
Level of Service (LOS)						B	A				E					
Approach Delay (s/veh)					3.3				37.7							
Approach LOS					A				E							

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HCS Two-Way Stop-Control Report

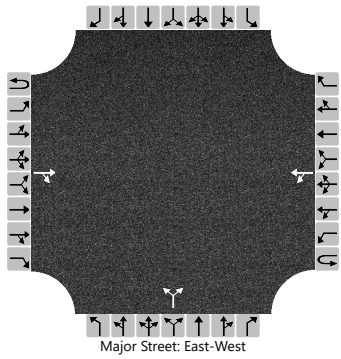
General Information

Analyst	ABC
Agency/Co.	TMS Engineers, Inc.
Date Performed	3/1/2023
Analysis Year	2044
Time Analyzed	PM Peak
Intersection Orientation	East-West
Project Description	Existing Conditions

Site Information

Intersection	Mill & MS Driveway
Jurisdiction	Boardview Heights, OH
East/West Street	Mill Road
North/South Street	Middle School Driveway
Peak Hour Factor	0.68
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume (veh/h)			160	10		10	350			60		30				
Percent Heavy Vehicles (%)						8				0		0				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.18				6.40		6.20				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.27				3.50		3.30				

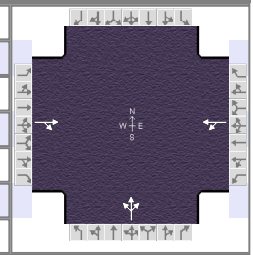
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						15					132					
Capacity, c (veh/h)						1281					438					
v/c Ratio						0.01					0.30					
95% Queue Length, Q_{95} (veh)						0.0					1.3					
Control Delay (s/veh)						7.8	0.1				16.7					
Level of Service (LOS)						A	A				C					
Approach Delay (s/veh)					0.3				16.7							
Approach LOS					A				C							

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HCS Signalized Intersection Results Summary

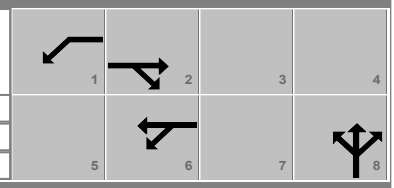
General Information				Intersection Information	
Agency	TMS Engineers, Inc.			Duration, h	0.250
Analyst	ABC	Analysis Date	Mar 1, 2023	Area Type	Other
Jurisdiction	Broadview Heights, OH	Time Period	AM Peak	PHF	0.70
Urban Street	Mill Road @	Analysis Year	2044	Analysis Period	1> 7:00
Intersection	HS/MS Driveway	File Name	11_AM 44 HS.xus		
Project Description	Existing Conditions				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		440	30	20	240		40	0	10			

Signal Information			
Cycle, s	90.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Float	Simult. Gap N/S	On

Green	68.2	9.8	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	2.0	2.0	0.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6		8		
Case Number		8.3	0.0	14.2		12.0		
Phase Duration, s		74.2	0.0	74.2		15.8		
Change Period, ($Y+R_c$), s		6.0	6.0	6.0		6.0		
Max Allow Headway (*MAH*), s		0.0	0.0	0.0		3.2		
Queue Clearance Time (g_s), s						11.7		
Green Extension Time (g_e), s		0.0	0.0	0.0		0.1		
Phase Call Probability						0.83		
Max Out Probability						0.00		

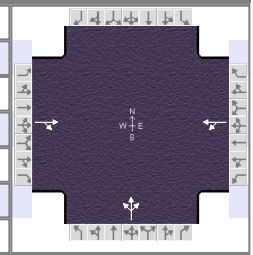
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement		2	12	1	6		3	8	18			
Adjusted Flow Rate (*v*), veh/h		671			371			71				
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1791			1621			664				
Queue Service Time (g_s), s		13.1			6.0			9.7				
Cycle Queue Clearance Time (g_c), s		13.1			6.0			9.7				
Green Ratio (*g/C*)		0.76			0.76			0.11				
Capacity (*c*), veh/h		1357			1271			72				
Volume-to-Capacity Ratio (*X*)		0.495			0.292			0.987				
Back of Queue (*Q*), ft/ln (95 th percentile)		173.4			77.3			153.1				
Back of Queue (*Q*), veh/ln (95 th percentile)		6.6			2.8			3.7				
Queue Storage Ratio (*RQ*) (95 th percentile)		0.00			0.00			0.00				
Uniform Delay (d_1), s/veh		4.2			3.4			40.0				
Incremental Delay (d_2), s/veh		1.3			0.6			26.9				
Initial Queue Delay (d_3), s/veh		0.0			0.0			0.0				
Control Delay (*d*), s/veh		5.5			3.9			66.9				
Level of Service (LOS)		A			A			E				
Approach Delay, s/veh / LOS	5.5	A		3.9	A		66.9	E		0.0		
Intersection Delay, s/veh / LOS	8.9						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS								
Bicycle LOS Score / LOS								

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HCS Signalized Intersection Results Summary

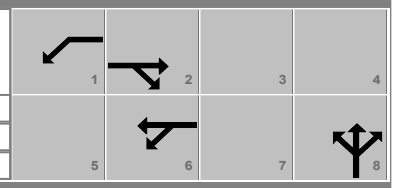
General Information				Intersection Information	
Agency	TMS Engineers, Inc.			Duration, h	0.250
Analyst	ABC	Analysis Date	Mar 1, 2023	Area Type	Other
Jurisdiction	Broadview Heights, OH	Time Period	PM Peak	PHF	0.77
Urban Street	Mill Road @	Analysis Year	2044	Analysis Period	1> 7:00
Intersection	HS/MS Driveway	File Name	11_PM 44 HS.xus		
Project Description	Existing Conditions				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		150	60	20	200		150	0	50			

Signal Information			
Cycle, s	60.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Float	Simult. Gap N/S	On

Green	35.3	12.7	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	2.0	2.0	0.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6		8		
Case Number		8.3	0.0	14.2		12.0		
Phase Duration, s		41.3	0.0	41.3		18.7		
Change Period, ($Y+R_c$), s		6.0	6.0	6.0		6.0		
Max Allow Headway (*MAH*), s		0.0	0.0	0.0		3.2		
Queue Clearance Time (g_s), s						12.4		
Green Extension Time (g_e), s		0.0	0.0	0.0		0.4		
Phase Call Probability						0.99		
Max Out Probability						0.00		

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement		2	12	1	6		3	8	18			
Adjusted Flow Rate (*v*), veh/h		273			286			260				
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1779			1841			1440				
Queue Service Time (g_s), s		4.5			4.4			10.4				
Cycle Queue Clearance Time (g_c), s		4.5			4.4			10.4				
Green Ratio (*g/C*)		0.59			0.59			0.21				
Capacity (*c*), veh/h		1047			1149			304				
Volume-to-Capacity Ratio (*X*)		0.260			0.249			0.853				
Back of Queue (*Q*), ft/ln (95 th percentile)		63.1			63.1			181.5				
Back of Queue (*Q*), veh/ln (95 th percentile)		2.5			2.5			6.1				
Queue Storage Ratio (*RQ*) (95 th percentile)		0.00			0.00			0.00				
Uniform Delay (d_1), s/veh		6.0			6.0			22.8				
Incremental Delay (d_2), s/veh		0.6			0.5			2.6				
Initial Queue Delay (d_3), s/veh		0.0			0.0			0.0				
Control Delay (*d*), s/veh		6.6			6.5			25.4				
Level of Service (LOS)		A			A			C				
Approach Delay, s/veh / LOS	6.6	A		6.5	A		25.4	C		0.0		
Intersection Delay, s/veh / LOS	12.5						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS								
Bicycle LOS Score / LOS								

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HCS Two-Way Stop-Control Report

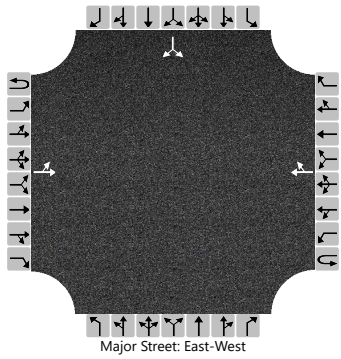
General Information

Analyst	ABC
Agency/Co.	TMS Engineers, Inc.
Date Performed	3/1/2023
Analysis Year	2044
Time Analyzed	AM Peak
Intersection Orientation	East-West
Project Description	Existing Conditions

Site Information

Intersection	Mill & Vera
Jurisdiction	Broadview Heights, OH
East/West Street	Mill Road
North/South Street	Vera Drive
Peak Hour Factor	0.67
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration		LT						TR							LR	
Volume (veh/h)		10	420				240	10						10		20
Percent Heavy Vehicles (%)		4												6		6
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized																
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.14												6.46		6.26
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.24												3.55		3.35

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		15													45	
Capacity, c (veh/h)		1174													431	
v/c Ratio		0.01													0.10	
95% Queue Length, Q_{95} (veh)		0.0													0.3	
Control Delay (s/veh)		8.1	0.2												14.3	
Level of Service (LOS)		A	A												B	
Approach Delay (s/veh)		0.3												14.3		
Approach LOS		A												B		

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HCS Two-Way Stop-Control Report

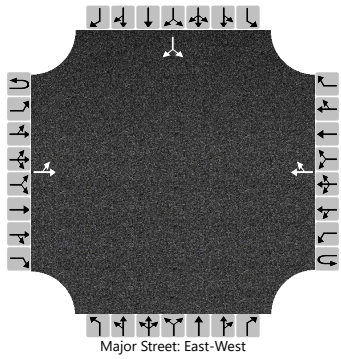
General Information

Analyst	ABC
Agency/Co.	TMS Engineers, Inc.
Date Performed	3/1/2023
Analysis Year	2044
Time Analyzed	PM Peak
Intersection Orientation	East-West
Project Description	Existing Conditions

Site Information

Intersection	Mill & Vera
Jurisdiction	Broadview Heights, OH
East/West Street	Mill Road
North/South Street	Vera Drive
Peak Hour Factor	0.57
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration		LT						TR							LR	
Volume (veh/h)		10	190				240	10						20		10
Percent Heavy Vehicles (%)		9												0		0
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized																
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.19												6.40		6.20
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.28												3.50		3.30

Delay, Queue Length, and Level of Service

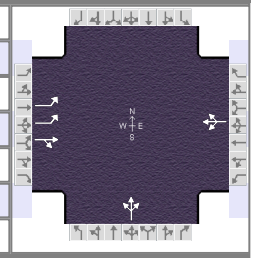
Flow Rate, v (veh/h)		18													53	
Capacity, c (veh/h)		1085													411	
v/c Ratio		0.02													0.13	
95% Queue Length, Q_{95} (veh)		0.0													0.4	
Control Delay (s/veh)		8.4	0.2												15.0	
Level of Service (LOS)		A	A												C	
Approach Delay (s/veh)		0.6												15.0		
Approach LOS		A												C		

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Appendix L
Capacity Analysis Worksheets - 2044 w/ Improvements

HCS Signalized Intersection Results Summary

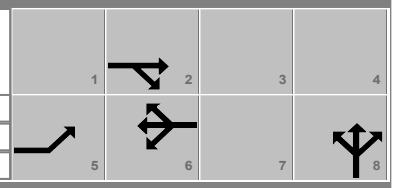
General Information				Intersection Information	
Agency	TMS Engineers, Inc.			Duration, h	0.250
Analyst	ABC	Analysis Date	Mar 1, 2023	Area Type	Other
Jurisdiction	Broadview Heights, OH	Time Period	AM Peak	PHF	0.89
Urban Street	Mill Road	Analysis Year	2044	Analysis Period	1> 7:00
Intersection	@ Wallings Road	File Name	1_AM 44 Wallings IMP.xus		
Project Description	Improvements - Dual EB LT				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	870	180	100	20	90	230	170	150	60			

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	28.2	27.0	26.8	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2		6		8		
Case Number	2.0	4.0		8.3		12.0		
Phase Duration, s	34.2	67.2		33.0		32.8		
Change Period, (*Y+R c*), s	6.0	6.0		6.0		6.0		
Max Allow Headway (*MAH*), s	3.1	0.0		0.0		3.1		
Queue Clearance Time (*g s*), s	29.7					26.1		
Green Extension Time (*g e*), s	0.0	0.0		0.0		0.7		
Phase Call Probability	1.00					1.00		
Max Out Probability	1.00					0.00		

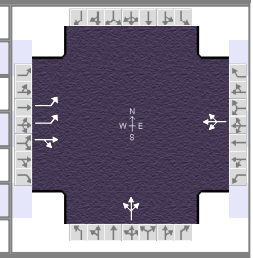
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18			
Adjusted Flow Rate (*v*), veh/h	978	315			382			427				
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1757	1757			1633			1724				
Queue Service Time (*g s*), s	27.7	8.5			9.9			24.1				
Cycle Queue Clearance Time (*g c*), s	27.7	8.5			22.2			24.1				
Green Ratio (*g/C*)	0.28	0.61			0.27			0.27				
Capacity (*c*), veh/h	990	1075			479			462				
Volume-to-Capacity Ratio (*X*)	0.988	0.293			0.797			0.924				
Back of Queue (*Q*), ft/ln (95 th percentile)	530.7	144.1			393.9			442.8				
Back of Queue (*Q*), veh/ln (95 th percentile)	21.2	5.7			15.5			16.9				
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00			0.00			0.00				
Uniform Delay (*d 1*), s/veh	35.7	9.2			34.6			35.6				
Incremental Delay (*d 2*), s/veh	25.4	0.7			12.9			12.4				
Initial Queue Delay (*d 3*), s/veh	0.0	0.0			0.0			0.0				
Control Delay (*d*), s/veh	61.2	9.9			47.6			48.0				
Level of Service (LOS)	E	A			D			D				
Approach Delay, s/veh / LOS	48.7	D		47.6	D		48.0	D		0.0		
Intersection Delay, s/veh / LOS	48.3						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS								
Bicycle LOS Score / LOS								

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HCS Signalized Intersection Results Summary

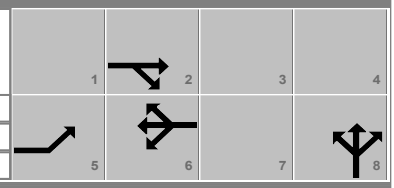
General Information				Intersection Information	
Agency	TMS Engineers, Inc.			Duration, h	0.250
Analyst	ABC	Analysis Date	Mar 1, 2023	Area Type	Other
Jurisdiction	Broadview Heights, OH	Time Period	PM Peak	PHF	0.89
Urban Street	Mill Road	Analysis Year	2044	Analysis Period	1> 7:00
Intersection	@ Wallings Road	File Name	1_PM 44 Wallings IMP.xus		
Project Description	Existing Conditions				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	280	230	90	10	160	120	380	100	50			

Signal Information			
Cycle, s	90.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	10.5	28.9	32.6	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2		6		8		
Case Number	2.0	4.0		8.3		12.0		
Phase Duration, s	16.5	51.4		34.9		38.6		
Change Period, ($Y+R_c$), s	6.0	6.0		6.0		6.0		
Max Allow Headway (*MAH*), s	3.1	0.0		0.0		3.1		
Queue Clearance Time (g_s), s	9.8					31.3		
Green Extension Time (g_e), s	0.7	0.0		0.0		1.3		
Phase Call Probability	1.00					1.00		
Max Out Probability	0.00					0.00		

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18			
Adjusted Flow Rate (*v*), veh/h	315	360			326			596				
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1757	1766			1737			1762				
Queue Service Time (g_s), s	7.8	11.4			0.0			29.3				
Cycle Queue Clearance Time (g_c), s	7.8	11.4			13.9			29.3				
Green Ratio (*g/C*)	0.12	0.50			0.32			0.36				
Capacity (*c*), veh/h	411	891			599			638				
Volume-to-Capacity Ratio (*X*)	0.765	0.403			0.544			0.934				
Back of Queue (*Q*), ft/ln (95 th percentile)	150.4	205			257.3			465.9				
Back of Queue (*Q*), veh/ln (95 th percentile)	6.0	8.0			10.2			18.2				
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00			0.00			0.00				
Uniform Delay (d_1), s/veh	38.5	13.9			25.5			27.7				
Incremental Delay (d_2), s/veh	1.1	1.4			3.5			4.8				
Initial Queue Delay (d_3), s/veh	0.0	0.0			0.0			0.0				
Control Delay (*d*), s/veh	39.7	15.2			29.0			32.5				
Level of Service (LOS)	D	B			C			C				
Approach Delay, s/veh / LOS	26.6	C		29.0	C		32.5	C		0.0		
Intersection Delay, s/veh / LOS	29.3						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS								
Bicycle LOS Score / LOS								

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