

DHL Facility Village of Ashville, Ohio

August 22, 2022 October 24, 2022 REVISED December 5, 2022

Prepared for:

Poggemeyer Design Group, Inc. 101 Clinton Street Defiance, Ohio 43512

TRAFFIC IMPACT STUDY

DHL Facility

Village of Ashville, Ohio

August 22, 2022 October 24, 2022 REVISED December 5, 2022

Prepared For:

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Executive Summary

This Traffic Impact Study (TIS) has been prepared at the request of Poggemeyer Design Group for a proposed DHL facility. The proposed development is located in the Village of Ashville, Pickaway County, Ohio.

The development is expected to consist of a single 545,200 square foot building. The proposed building is located along the south side of State Route 752 to the east of US Route 23 and to the west of Business Place North. The building and site is expected to accommodate land uses related to commerce and fulfillment operations.

The year 2024 will be analyzed for the opening year conditions of the development based on the expected time line.

The development is proposed with two access locations. The project proposes an intersection along State Route 752 that would provide full access to the site. A second access location is proposed along Business Place North.

A **Traffic Volume Forecast** was previously prepared for use in this Traffic Impact Study. The development and submission of the traffic volume forecasts for the proposed project are intended to follow the TIS Review Process detailed in *Section 9.32* and the TIS Flow Chart shown *Figure 9.1* of the ODOT **State Highway Access Management Manual** (7). A copy of the July 18, 2022 Traffic Volume Forecast report can be seen in **Appendix B**.

The project has significantly changed to include only one proposed building since the completion of the **July 18, 2022 Traffic Volume Forecast**. The traffic volume forecast was updated within this TIS per the procedures, guidelines, and assumptions that were made in the July 18, 2022 forecast document.

The weekday peak hours of traffic for the study area roadways were based on the traffic data collected for this report. The weekday AM peak hour of traffic was determined to be 7:00 AM to 8:00 AM. The weekday PM peak hour of traffic was found to be 3:45 PM to 4:45 PM. These periods were analyzed since they reflect the period of the highest volume of traffic flow for the study area roadways.

The proposed development is expected to generate the following hourly traffic volumes during the peak period as shown in the table below:

	SIZE	TRIP ENDS							
OPENING YEAR		Weekday Peak Hour Between 7-9 AM				Weekday Peak Hour Between 4-6 PM			
		ENTER		EX	EXIT		ENTER		EXIT
		Vehicles	Trucks	Vehicles	Trucks	Vehicles	Trucks	Vehicles	Trucks
2024	545,200	103	15	102	15	139	10	66	10
2024	SF	105	15	102	15	139	10	00	10
TOTAL NEW TRIPS		118 117		149 76			6		
		235			2:	25			

The year 2044 was forecasted for the twenty year design hour conditions in the July 18, 2022 forecast document. The year 2044 will continued to be used for the design year in order to provide a conservative analysis of the expected future conditions in the study area and to provide consistency with the previously prepared forecast document.

Recommended Improvements to Mitigate the Traffic Associated with the Development

The following improvements are recommended to improve the levels-of-service under the 2024 No-Build conditions at the study area intersections.

SR 752 and SR 316/Ashville Pike (Village of Ashville)

• Extend the length of the southbound left turn lane (600').

Recommended Improvements to Mitigate the Traffic Associated with the Development

The following improvements are recommended to improve the levels-of-service under the 2024 Build conditions at the study area intersections.

US Route 23 and SR 752 (ODOT)

Construct a northbound right turn lane (800').

Development Access Recommendations

The following lane use and traffic control is recommended at the intersection where access to the site is proposed.

State Route 752 & Proposed Site Access Driveway (Village of Ashville)

- Construct an exclusive eastbound right turn lane (345') for the opening year of the development (2024 Build).
- Construct an exclusive westbound left turn lane (345') in the opening year of the development (2024 Build).
- Construct the proposed south approach with one egress lanes and one ingress lane (2024 Build).
- Install stop sign control on the northbound approach (2024 Build).

Conclusion

Based upon the results of the analysis in this study and the corresponding recommendations, it can be seen that the development traffic can be accommodated without adversely impacting the area roadway network.

Chapter 1 Introduction

1.1 Purpose of Report

This Traffic Impact Study (TIS) has been prepared at the request of Poggemeyer Design Group for a proposed DHL facility. The proposed development is located in the Village of Ashville, Pickaway County, Ohio. **Figure 1.1, Appendix A** details the development location.

The development is expected to consist of a single 545,200 square foot building. The building and site is expected to accommodate land uses related to commerce and fulfillment operations.

The year 2024 will be analyzed for the opening year conditions of the development based on the expected time line. The design year for the proposed project will be based on the opening year and the expected volume of new site generated traffic under the full build condition of the building.

The proposed building is located along the south side of State Route 752 to the east of US Route 23 and to the west of Business Place North.

The development is proposed with two access locations. The project proposes an intersection along State Route 752 that would provide full access to the site. A second access location is proposed along Business Place North. **Figure 1.2, Appendix A** shows the proposed development site plan.

A Traffic Volume Forecast was previously prepared for use in this Traffic Impact Study. The development and submission of the traffic volume forecasts for the proposed project are intended to follow the TIS Review Process detailed in *Section 9.32* and the TIS Flow Chart shown *Figure 9.1* of the ODOT **State Highway Access Management Manual**⁽⁷⁾. A copy of the **July 18, 2022 Traffic Volume Forecast** report can be seen in **Appendix B**.

It should be noted that since the completion of the **July 18, 2022 Traffic Volume Forecast** the project has significantly changed to include only one proposed building. The traffic volume forecast will be updated within this TIS per the procedures, guidelines, and assumptions that were made in the July 18, 2022 forecast document.

1.2 Study Objectives

This study is structured for the following purposes;

- to adequately assess the traffic impacts associated with the proposed development, and identify the level of off-site access and traffic,
- to provide a comprehensive study which evaluates and documents the traffic impacts and off-site improvements, where warranted,
- and to provide a technically sound basis to identify mitigation requirements to off-site 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 by comparing the existing intersection levels-of-service, delay or density, volume to capacity ratio and queue storage ratio before the construction of the proposed development to the anticipated measures after the development is completed. Traffic analyses for the study area and access intersections will be calculated using the computerized version of the Transportation Research Board's **Highway Capacity Manual 7**TH **Edition** ⁽¹⁾, (HCS2022, Release 8.1) and Synchro. 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⁾. The left and right turn lane warrants provided in *Section 401-6* of the **Location & Design Manual, Volume 1**⁽³⁾ will be used in addition to the capacity analyses to determine the need for deceleration and exclusive turn lanes at unsignalized site access locations.

1.3 Intersection Capacity & Levels-of-Service

Intersection capacity analyses will be performed at the study area and development access 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:

LOS	UNSIGNALIZED AVERAGE DELAY PER VEHICLE (sec)	SIGNALIZED AVERAGE DELAY PER VEHICLE (sec)
А	< 10.0	≤ 10.0
В	10.1 to 15.0	10.1 to 20.0
С	15.1 to 25.0	20.1 to 35.0
D	25.1 to 35.0	35.1 to 55.0
Е	35.1 to 50.0	55.1 to 80.0
F	> 50	> 80

Table 1.1 Intersection Levels-of-Service

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. No-Build and Build peak hour traffic volumes will be analyzed to determine the level-of-service (LOS) at the study area intersections.

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 D is considered the maximum delay threshold after which improvements should be investigated to determine if the delay can be reduced to a level of D or better. The following table from *Section 5.9* details the operation goals for intersection analyses (All-Way Stop Control, Two-Way Stop Control, Signalized, & Roundabout).

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 (Queue Storage Ratio)	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.

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⁾. All stop controlled intersections will be analyzed using the computerized version of the Transportation Research Board's **Highway Capacity Manual 7TH Edition** ⁽¹⁾, **(HCS2022, Release 8.1)**. The signalized intersections will be analyzed as coordinated signal system.

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 401.6.3* 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."

It is the intent of this report to evaluate the need for exclusive deceleration and turn lanes at the proposed access location along State Route 752.

Turn Lane Length

Proposed turn lanes and existing turn lanes 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.
- 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. *Access Management Manual*, 2ND Edition, 2014. Transportation Research Board of the National Academies, Washington, D.C.

Chapter 2 Area Conditions

2.1 Transportation Network Study Area

The study area for the proposed development includes the previously discussed development access locations as shown in **Figure 1.2, Appendix A** and the following intersections:

- 1. US Route 23 & State Route 752/*Rudi Lane*
- 2. State Route 752 & Business Place North
- 3. State Route 752 & Ashville Pike

Rudi Lane is a proposed roadway that will be constructed as the west approach at the intersection of US Route 23 and State Route 752. The proposed roadway is part of the project to construct a Sheetz development at the intersection.

The Ohio Department of Transportation maintains the traffic signal control facilities at the intersection of State Route 752 and US Route 23. The Village of Ashville maintains the traffic signal control facility at the intersection of State Route 752 and State Route 316/Ashville Pike.

A location map detailing the traffic count locations can be seen in **Figure 2.1, Appendix A**.

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

ROADWAY	#	ORIENTATION	SPEED LIMIT (MPH)		
	LANES		POSTED	DESIGN	
US Route 23 @ SR 752	4	North-South	50	55	
US Route 23 @ SR 316 (North)	4	North-South	35	35	
US Route 23 @ SR 316 (South)	4	North-South	50	35	
Ashville Pike	2	North-South	35	35	
State Route 752 @ US 23	2	East-West	55	60	
State Route 752 @ Proposed Access	2	East-West	55	60	
State Route 752 @ Ashville Pike	2	East-West	35	35	
Business Place North	2	North-South	25	25	
Rudi Lane	2	East-West	25	25	

 Table 2.1 Roadway Characteristics

An aerial view of the of the study area can be seen in **Figure 2.2 Appendix A**.

Figure 2.3, Appendix A shows the lane use and traffic control conditions based upon the existing conditions in the study area. 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/

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

ROADWAY	AREA	FC #	CLASSIFICATION
US Route 23	Urban	3	Principal Arterial
State Route 752	Urban	5	Major Collector
Ashville Pike	Urban	7	Local Roadway
Business Place North	Urban	7	Local Roadway
Rudi Lane	Urban	7	Local Roadway

Table 2.1 Functional Classification

Figure 2.4, Appendix A illustrates the section of the functional classification map for the study area.

2.3 Traffic

The traffic data and resulting traffic forecast for the expected No-Build and Build conditions were previously detailed in the "Traffic Volume Forecast - DHL Facility" that was dated July 18, 2022. A copy of the traffic volume forecast report can be found in **Appendix B**. The development project has since changed to include only one building along the south side of the State Route 752. The TIS will update the traffic forecast using the procedures and guidelines that were detailed in the July 18, 2022 forecast.

Weekday Peak Hours

Weekday nine hour turning movement counts were performed at the following intersections:

- 1. US Route 23 & State Route 752 (Thursday, 2/17/2022)
- 2. State Route 752 & Business Place North (Tuesday, 8/9/2022)
- 3. State Route 752 & Ashville Pike (Wednesday, 2/16/2022)

The weekday traffic counts were conducted in fifteen (15) minute intervals between the hours of 7AM - 10 AM, 11 AM - 2 PM, and 3 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 B** for the intersections of State Route 752 at US Route 23 and Ashville Pike. A copy of the intersection turn movement count for the intersection of State Route 752 and Business Place North is included in **Appendix D**.

Based on the collected traffic data, the peak hours for the study area were determined based on the AM and PM hour experiencing the highest total volume indicated in red in the previous tables. The weekday AM peak hour of traffic was determined to be 7:00 AM to 8:00 AM. The weekday PM peak hour of traffic was found to be 3:45 PM to 4:45: 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 on a weekday.

The existing AM and PM peak hour traffic volumes are shown in **Figure 2.5, Appendix A.** It should be noted that the discrepancy between traffic volumes at the intersection of SR 752/Business Place North and the adjacent intersections can be attributed to the data collection being performed on different dates.

Chapter 3 Projected Traffic Conditions

3.1 Site Traffic

Trip Generation

Calculating future total driveway trips requires an estimate of the traffic generated by the proposed development. The most widely accepted method of determining the amount of traffic that the proposed development will generate is to compare the proposed land use with existing facilities of the same use. The Institute of Transportation Engineers (ITE) has prepared a manual titled "**Trip Generation Manual**" ⁽⁸⁾, which is a compilation of similar traffic generation studies to aide in making such a comparison. The most recent update of this manual is the 11TH edition and was utilized for this study.

The ITE **Trip Generation Manual**⁽⁸⁾ was used in conjunction with available site specific data provided by DHL in order to forecast the expected development site generated traffic. Site generated traffic was prepared for passenger vehicle **(vehicle)** type traffic and truck **(truck)** traffic.

The following table details a breakdown of the building that is expected to occupy the site:

BUILDING LOCATION	OPENING YEAR	SIZE (Square Feet)
South of SR 752 - East of US 23	2024	545,200

Table 3.1 Development Summary

The developer provided an overview of the their North American facility operations. The overview showed that for buildings over 400,000 square feet that the 90% are operating 2 or 3 shift operations. The overview also provided a total headcount for each of the sectors that are served at the facilities. The sectors for the AM and PM peak hour vehicle traffic were determined to be the five highest. A copy of the facilities overview can be seen in **Appendix B**.

In order to determine the volume of expected site generated **vehicle** traffic a weighted average of the total headcount for the 5 largest sectors was calculated. It was assumed for the purpose of this report that one employee was equal to one trip in the peak hour due to the shift operations. The following table details the calculation of the site generated trip rate that will be used to forecast the volume of **vehicle** generated traffic by each building in the development:

SECTOR	HEADCOUNT per 100,000 sf	WEIGHTED AVERAGE	WEIGHTED VALUE
Automotive	24	15.00%	3.600
Consumer	20	12.50%	2.500
Retail	51	31.88%	16.256
Technology	45	28.13%	12.656
Life Science/Healthcare	20	12.50%	2.500
TOTAL	160	100%	37.513

Table 3.2 Vehicle Trip Rate Calculation

The weighted average should provide a conservative estimate of future traffic as the sectors being served at each building are currently unknown.

A rate of 37.5125 trips per 100,000 square foot will be applied to each building in the development in order to determine the peak hour site generated trips based on the results shown above in **Table 3.2**.

The peak hour site generated trips will be split in to entering and exiting trips based on the peak hour directional distributions provided for land use #156 - High Cube Parcel Hub Warehouse from the ITE **Trip Generation Manual**⁽⁸⁾.

The developer provided the expected facility truck volumes from the consumer and ecommerce sectors. These sectors were selected as they provide the highest peak hour volume of truck traffic at DHL facilities and should provide a conservative estimate of the expected truck volumes during the AM and PM peak hours. These truck volumes were applied to the each of the proposed buildings based on the square footage of each. A copy of the provided truck data can be seen in **Appendix B**.

Trip generation calculations for the development were performed utilizing the supplied site specific data for **vehicle and truck** trips as well as data contained in the **Trip Generation Manual**⁽⁸⁾ and the methods outlined in the (ITE) **Trip Generation Handbook**⁽⁹⁾. A spreadsheet detailing the **vehicle** trip generation calculations can be found in **Appendix E**. The following table details the site generated **vehicle** and **truck** traffic volumes for each building in the proposed development.

	SIZE	TRIP ENDS								
OPENING		Weekday Peak Hour				Weekday Peak Hour				
YEAR		Between 7-9 AM				Between 4-6 PM				
		ENTER		EXIT		ENTER		EXIT		
		Vehicles	Trucks	Vehicles	Trucks	Vehicles	Trucks	Vehicles	Trucks	
2024	545,200	103	15	102	15	139	10	66	10	
2024	SF									
TOTAL NEW TRIPS		118 117		149 76			6			
		235					2	25		

Table	3.3	New	Trin	Summary
Tuble	0.0	110.11	TTTP	Summury

The ODOT **State Highway Access Management Manual** ⁽⁷⁾ requires that ten year design hour traffic volumes be analyzed for a proposed development when the number of generated trips is below 500 in the peak hour and twenty year design hour traffic volumes when the number of generated trips is greater than 500 in the peak hour.

The proposed development is expected to generate a total of 235 driveway trips in the AM peak hour and a total of 225 driveway trips in the PM peak hour.

The year 2044 was forecasted for the twenty year design hour conditions in the **July 18, 2022 Traffic Volume Forecast**. The year 2044 will continued to be used for the design year in order to provide a conservative analysis of the expected future conditions in the study area and to provide consistency with the previously prepared forecast document.

Distribution of New Site Generated Weekday Traffic

Separate directional distributions will be prepared for passenger vehicle **(vehicle)** type traffic and truck **(truck)** traffic.

The directional distribution for the new generated **vehicle** traffic is a function of the prevailing operating conditions on the existing roadways. The distribution pattern that was assumed is shown in the tables that follow and is based upon the distributions detailed in the **July 18, 2022 Traffic Volume Forecast**. The vehicle trips were assumed to be primary trips made by people leaving home for work and then returning home. The **vehicle** trips were therefore assumed to enter and exit the study using the same route.

The following tables detail the distribution of the new generated **vehicle** trips for the proposed development under the opening and design year conditions.

ORIGIN/ DESTINATION	ROUTE	ENTER % TOTAL	ENTER NEW TRIPS	EXIT % TOTAL	EXIT NEW TRIPS
North	US 23	20%	21	20%	21
South	US 23	40%	41	40%	41
East	SR 752	20%	21	20%	20
North	Ashville Pike	10%	10	10%	10
South	Long Street (SR 316)	10%	10	10%	10
TOTALS		100%	103	100%	102

 Table 3.4 AM New Trip Origins and Destinations

ORIGIN/ DESTINATION	ROUTE	ENTER % TOTAL	ENTER NEW TRIPS	EXIT % TOTAL	EXIT NEW TRIPS
North	US 23	20%	28	20%	13
South	US 23	30%	41	30%	20
East	SR 752	20%	28	20%	13
North	Ashville Pike	20%	28	20%	13
South	Long Street (SR 316)	10%	14	10%	7
TOTALS		100%	139	100%	66

Table 3.5 PM New Trip Origins and Destinations2024 Opening Year

All **truck** traffic will enter and exit the development at the proposed intersection along State Route 752. **Trucks** will be prohibited from exiting the site to the east along State Route 752 through the use of way finding signs both on-site and off-site.

The distribution of the **truck** traffic was based on the all **trucks** using US Route 23 to travel north or south. The trucks were split with 60% originating from and destined to the north. The remaining 40% were assumed to enter from or exit to the south. The distribution was based on the existing volume patterns on US Route 23, the location of Rickenbacker International Airport, and the location of the facility to the south of the greater Columbus area.

Distribution of Site Generated Traffic

The distribution of new site generated **vehicle** traffic between the proposed access and the Business Place North access were based on the following assumptions:

- The site plan shows two symmetric parking fields on the on the east and west sides of the building. It will be assumed that the vehicles will park in the two areas at 50/50 split.
- It was assumed that 75% of entering traffic would use the first available access they encounter and 25% would use the other location. For example 50% of the vehicles from the west would use the west parking and 50% of the vehicles from the west would use the east parking area. 100% of the 50% of vehicles parking in the west parking lot would use the proposed SR 752 access. 50% of the 50% of vehicles parking in the east parking lot would use the proposed SR 752 access and travel through the site to the east parking lot and the remaining 50% of the 50% of vehicles parking in the east parking lot would use the Business Place North access.
- It was assumed that exiting traffic would use the access closest to the parking area to exit the site. Exiting traffic was therefore split 50/50 between the access locations.

The directional distribution for the new AM and PM peak hour generated **vehicle** traffic is shown graphically in **Figure 3.1, Appendix A** for the opening year conditions.

The directional distribution for the new AM and PM peak hour generated **truck** traffic is shown graphically in **Figure 3.2**, **Appendix A** for the opening year conditions.

Assignment of Site Generated Traffic - 2024 Opening Year

Based upon the distribution patterns shown in **Figure 3.1**, the new AM and PM peak site generated **vehicle** traffic was assigned to the study intersections. The assignment of the estimated site generated new **vehicle** traffic for the proposed development under the opening year conditions is shown graphically in **Figure 3.3**, **Appendix A**.

Based upon the distribution patterns shown in **Figure 3.2**, the new AM and PM peak site generated **truck** traffic was assigned to the study intersections. The assignment of the estimated site generated new **truck** traffic for the proposed development under the opening year conditions is shown graphically in **Figure 3.4**, **Appendix A**.

3.2 Adjusted Traffic

The collected peak hour traffic volumes detailed in the **Traffic Volume Forecast**, **Appendix A** were reviewed to determine if they have been impacted due to the COVID-19 pandemic. The traffic volumes as they were collected may not be representative of a typical weekday under normal travel patterns and show less volume. The ODOT Modeling and Forecasting Section of the Office of Statewide Planning and Research has developed a process to calibrate counts that are artificially low due to the COVID-19 situation. An overview of the ODOT guidance and process is included in the **Traffic Volume Forecast**, **Appendix B**.

A calculated factor greater than 1.0 indicates that the 2022 volumes do not exceed the 2020 historical data, therefore a calibration factor *is* necessary to account for the impact of the COVID-19 pandemic.

A calculated factor of less than 1.0 indicates that the 2022 volumes exceed the 2020 historical data, therefore a calibration factor *is not* necessary to account for the impact of the COVID-19 pandemic.

A COVID adjustment factor of 0.9682 detailed in the **Traffic Volume Forecast**, **Appendix B** indicates that the 2022 volumes exceed the 2020 historical data, therefore a calibration factor *is not* necessary to account for the impact of the COVID-19 pandemic on the collected traffic data.

3.3 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.

The year 2044 (Design Year) will be analyzed for the proposed development. Therefore, it is necessary to estimate historical growth rates in order to establish the future traffic on the study area roadways due to non-site related conditions.

Roadways, like those found in the study area, 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 may increase in future years.

The Mid-Ohio Regional Planning Commision (MORPC) was contacted in order to determine appropriate growth rates for the study area roadways. MORPC provided linear annual growth rates for the approaches at the study area intersections. A copy of the email correspondence regarding growth rates for the study area can be seen in the **Traffic Volume Forecast, Appendix B**.

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 rural streets. There is typically very little difference between the volumes in this range. The Ohio Department of Transportation provides factors or a methodology to determine 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** ⁽⁷⁾, 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** ^(4 & 5) 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 the **Traffic Volume Forecast, Appendix B**.

The peak hour to design hour factors assigned to the study area roadways can be seen in the **Traffic Volume Forecast, Appendix B.**

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.

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 **Appendices B & D**.

Sheetz Development

A Sheetz development is currently under construction at the intersection of US Route 23 and State Route 752. The Sheetz development was analyzed in a Traffic Impact Study dated March 17, 2021. The TIS was reviewed and approved by ODOT.

A copy of the traffic volume figures from the Sheetz TIS that were added to the No-Build background traffic volumes can be seen in the **Traffic Volume Forecast**, **Appendix B**.

The site generated traffic as detailed in the Sheetz TIS were added to the calculated No-Build traffic volumes detailed in the **Traffic Volume Forecast**, **Appendix B**.

US Route 23 & SR-316 Development

A Traffic Impact Study is currently being performed for a proposed mixed-used development at the southeast quadrant of the US Route 23 and State Route 316/Northup Avenue intersection. The development is expected to consist of retail space, commercial out lot parcels, multi-family units, duplex units, and single-family lots.

A copy of the traffic volume figures from the US 23/SR 316 Development TIS that were added to the No-Build background traffic volumes can be seen in the **Traffic Volume Forecast, Appendix B**.

The site generated traffic as detailed in the US 23/SR 316 Development TIS were added to the calculated No-Build traffic volumes detailed in the **Traffic Volume Forecast, Appendix B**.

3.4 Future Traffic

No-Build Conditions w/out Sheetz & US 23/SR 316 Development

The previously discussed calculation of design hour factors and growth rates for each movement were applied to the existing 2022 traffic volumes in order to estimate the future traffic considering non-project traffic conditions without the development of the Sheetz or the proposed mixed-use development.

Spreadsheets detailing the use of the calculated growth rates and the design hour factors and the resulting expected 2024 and 2044 No-Build traffic volumes can be found in **Appendix D** for the intersection of State Route 752 and Business Place North. The remaining intersections can be seen in **Appendix B**.

The No-Build traffic volumes detailed in **Appendices B & D** do not include the site generated traffic volumes from the Sheetz or the US 23/SR316 mixed-use development

Balancing traffic volumes is a process by which the differences between traffic volume data at adjacent traffic count locations is eliminated. The traffic volumes along State Route 752 were not "balanced" for the purpose of this report due to the number of driveways, intersections, and commercial/retail businesses between the three SR 752 count locations.

This traffic is the expected traffic if the proposed additional developments and the DHL facility **are not** constructed, a **"No-Build w/out Additional Developments"** condition. The estimated 2024 and 2044 No-Build w/out Additional Developments traffic volumes for the study area are shown graphically in **Figures 3.5 & 3.6, Appendix A**.

The No-Build w/out Additional Developments traffic volumes have been rounded to the nearest 10 to adhere to preferred ODOT practices.

No-Build Conditions w/ Sheetz & US 23/SR 316 Development

In order to estimate the 2024 opening year No-Build traffic considering the background traffic and the additional developments in the study area, the sum of the 2024 No-Build volumes, shown in **Figure 3.5**, **Appendix A**, were added to the new generated traffic (**Appendix B**). These traffic volumes are the expected volumes if the additional developments in the study area are constructed and the proposed DHL development **is not** constructed, or a **"No-Build with Additional Development"** condition.

The estimated 2024 opening year No-Build with Additional Development traffic volumes for the study area are shown graphically in **Figure 3.7**, **Appendix A** for the study area.

In order to estimate the 2044 design year No-Build traffic considering the background traffic and the additional developments in the study area, the sum of the 2044 No-Build volumes, shown in **Figure 3.6**, **Appendix A**, were added to the new generated traffic (**Appendix B**). These traffic volumes are the expected volumes if the additional developments in the study area are constructed and the proposed DHL development **is not** constructed, or a **"No-Build with Additional Development"** condition.

The estimated 2044 design year No-Build with Additional Development traffic volumes for the study area are shown graphically in **Figure 3.8**, **Appendix A** for the study area.

Project Build Conditions

In order to estimate the future opening year traffic considering project traffic conditions, the sum of the 2024 No-Build with Additional Development volumes, shown in **Figure 3.7, Appendix A**, were added to the new generated traffic (**Figures 3.3 & 3.4**) to equal the future 2024 Build peak hour volumes.

The estimated 2024 Build traffic volumes for the study area are shown graphically in **Figure 3.9**, **Appendix A** for the proposed development. These traffic volumes are the expected volumes if the proposed development **is** constructed, or a **"Build"** condition. These conditions represent the expected opening year conditions.

In order to estimate the future design year traffic considering project traffic conditions, the sum of the 2044 with Additional Development No-Build volumes, shown in **Figure 3.8**, **Appendix A**, were added to the new generated traffic (**Figures 3.3 - 3.4**) to equal the future 2044 Build peak hour volumes.

The estimated 2044 Build traffic volumes for the study area are shown graphically in **Figure 3.10**, **Appendix A** for the proposed development. These traffic volumes are the expected volumes if the proposed development **is** constructed, or a **"Build"** condition. These conditions represent the expected design year conditions.

Chapter 4 Traffic Analysis

4.1 Capacity & LOS at Study Area Intersection

2024 Traffic Analysis - No-Build & Build Conditions

Traffic analyses were performed for the projected 2024 conditions under the No-Build and Build scenarios so:

- 1. any existing roadway/intersection deficiencies can be identified in the No-Build scenario which would not be attributable to the development, and;
- 2. a comparison can be made to determine the changes in the traffic operations which may be attributed to the development.

The traffic volumes used in the No-Build analyses can be seen in **Figure 3.7**, **Appendix A**. Copies of the capacity worksheets for the No-Build analyses are included in **Appendix F**.

The traffic volumes used in the Build analyses can be seen in **Figure 3.9**, **Appendix A**. Copies of the capacity worksheets for the Build analyses are included in **Appendix G**.

Intersection #1 - US Route 23 & State Route 752

Comparison tables of the 2024 No-Build versus Build traffic analyses for the signalized intersection of US Route 23 and State Route 752 are shown in the following tables:

	(US 23 & SR 752)												
Intersection #1	2024 Al No-Bui	M Id Condition	IS	Traffic Signal Control		Intersection #1	2024 Al Build C	M onditions		Traffic Signal Control			
US 23 & SR 752	LOS	Delay (sec/veh)	v/c	QSR	95th %tile Queue (ft)	US 23 & SR 752	LOS	Delay (sec/veh)	v/c	QSR	95th %tile Queue (ft)		
EBT	D	37.1	0.522	0.00	125	EBT	D	39.3	0.446	0.00	145		
EBR	С	34.6	0.304	0.22	62	EBR	D	36.5	0.217	0.26	73		
EB Approach	D	36.2	-	-	-	EB Approach	D	38.3	-	-	-		
WBT	D	38.1	0.659	0.00	178	WBT	D	43.8	0.774	0.00	290		
WB Approach	D	38.1	-	-	-	WB Approach	D	43.8	-	-	-		
NBL	А	8.9	0.279	0.08	36	NBL	В	12.4	0.319	0.11	50		
NBT	D	36.1	0.940	0.46	736	NBT	D	50.3	0.985	0.63	1008		
NBR	D	42.8	0.972	0.50	800	NBR	F	63.0	1.030	0.69	1104		
NB Approach	D	37.7	-	-	-	NB Approach	D	54.2	-	-	-		
SBL	С	21.4	0.544	0.28	62	SBL	С	33.3	0.835	0.49	108		
SBT	В	15.7	0.566	0.00	275	SBT	В	19.1	0.572	0.00	340		
SBR	В	15.7	0.566	0.00	270	SBR	В	19.2	0.572	0.00	335		
SB Approach	В	16.2	-	-	-	SB Approach	С	20.9	-	-	-		
Intersection	С	30.6	-	-	-	Intersection	D	41.8	-	-	-		

Table 4.1 - 2024 AM Peak Hour Traffic Analysis Results (US 23 & SR 752)

Table 4.2 - 2024 PM Peak Hour Traffic Analysis Results (US 23 & SR 752)

Intersection #1	2024 PI No-Buil	M Id Condition	s	Traffic Signal Control		Intersection #1	2024 PI Build C	M onditions		Traffic Signal Control	
US 23 & SR 752	LOS	Delay (sec/veh)	v/c	QSR	95th %tile Queue (ft)	US 23 & SR 752	LOS	Delay (sec/veh)	v/c	QSR	95th %tile Queue (ft)
EBT	С	30.1	0.269	0.00	83	EBT	С	31.1	0.250	0.00	90
EBR	С	30.0	0.251	0.24	67	EBR	С	30.9	0.221	0.26	73
EB Approach	С	30.0	-	-	-	EB Approach	С	31.0	-	-	-
WBT	D	35.4	0.720	0.00	233	WBT	D	38.8	0.772	0.00	290
WB Approach	D	35.4	-	-	-	WB Approach	D	38.8	-	-	-
NBL	С	20.1	0.366	0.08	36	NBL	С	22.6	0.398	0.09	41
NBT	С	21.8	0.686	0.25	400	NBT	С	25.3	0.722	0.30	480
NBR	С	22.1	0.687	0.24	384	NBR	С	25.7	0.724	0.28	448
NB Approach	С	21.8	-	-	-	NB Approach	С	25.3	-	-	-
SBL	В	13.0	0.309	0.17	37	SBL	В	16.5	0.464	0.29	64
SBT	D	43.4	0.958	0.00	695	SBT	D	46.2	0.960	0.00	765
SBR	D	44.7	0.964	0.00	703	SBR	D	47.6	0.965	0.00	770
SB Approach	D	42.4	-	-	-	SB Approach	D	44.7	-	-	-
Intersection	С	33.9	-	-	-	Intersection	D	36.6	-	-	-

Conditions at the signalized intersection of US Route 23 and State Route 752 during the AM and PM peak hours were determined to operate with level-of-service D or better under the forecasted 2024 No-Build conditions. No improvements were found to be necessary to improve the levels-of-service under the 2024 No-Build conditions at the study area intersection.

The 2024 AM and PM peak hour comparison tables for the intersection of US Route 23 and State Route 752 shown previously, indicate that the intersection and approach delays are impacted with the addition of the development generated traffic under the forecasted 2024 AM and PM peak hour conditions. An analysis will be performed in a later section of this report to determine what improvement will provide an acceptable level of service in the AM and PM peak periods that will adhere to the acceptable ranges shown in *Table 1.3* as stated in the ODOT **OATS Manual** ⁽⁶⁾.

Intersection #2 - State Route 752 & Business Place North

Comparison tables of the 2024 No-Build versus Build traffic analyses for the unsignalized intersection of State Route 752 and Business Place North are shown in the following tables:

Intersection #2	2024 Al No-Buil	۷ d Condition	s	Two-Way Stop Control	Intersection #2	2024 AM Build C	M onditions		Two-Way Stop Control	
SR 752 & Business Place	LOS	Delay (sec/veh)	v/c	Q ₉₅ %tile (Veh/Ln)	SR 752 & Business Place	LOS	Delay (sec/veh)	v/c	Q ₉₅ %tile (Veh/Ln)	
EBL	А	7.7	0.01	0.0	EBL	А	7.8	0.01	0.0	
EB Approach	А	0.5			EB Approach	А	0.4			
WBL	А	7.7	0.01	0.0	WBL	А	7.8	0.04	0.1	
WB Approach	А	0.4			WB Approach	А	1.6			
NBT	В	11.3	0.04	0.1	NBT	В	14.1	0.18	0.6	
NB Approach	В	11.3			NB Approach	В	14.1			
SBT	А	9.4	0.00	0.0	SBT	А	9.5	0.00	0.0	
SB Approach	А	9.4			SB Approach	А	9.5			

Table 4.3 - 2024 Traffic Analysis Results (SR 752 & Business Place North)

					ess Flace Non	,				
Intersection #2	2024 PI No-Buil	M d Condition	s	Two-Way Stop Control	Intersection #2					
SR 752 & Business Place	LOS	Delay (sec/veh)	v/c	Q ₉₅ %tile (Veh/Ln)	SR 752 & Business Place	LOS	Delay (sec/veh)	v/c	Q ₉₅ %tile (Veh/Ln)	
EBL	А	7.8	0.00	0.0	EBL	А	7.8	0.00	0.0	
EB Approach	А	0.0			EB Approach	А	0.0			
WBL	А	7.9	0.01	0.0	WBL	А	8.2	0.06	0.2	
WB Approach	А	0.4			WB Approach	А	2.2			
NBT	В	12.5	0.05	0.2	NBT	С	15.8	0.16	0.6	
NB Approach	В	12.5			NB Approach	С	15.8			
SBT	В	12.5	0.05	0.2	SBT	В	14.9	0.06	0.2	
SB Approach	В	12.5			SB Approach	В	14.9			

Table 4.4 - 2024 Traffic Analysis Results (SR 752 & Business Place North)

Conditions at the unsignalized intersection of State Route 752 and Business Place North during the AM and PM peak hours were determined to operate with level-of-service C or better under the forecasted 2024 No-Build conditions. No improvements were found to be necessary to improve the levels-of-service under the 2024 No-Build conditions at the study area intersection.

The 2024 AM and PM peak hour comparison tables for the intersection of State Route 752 and Business Place North shown previously, indicate that the approach delays are not significantly impacted with the addition of the development generated traffic under the forecasted 2024 AM and PM peak hour conditions. The Build levels of service for all movements and approaches are within the acceptable range shown in *Table 1.3* as stated in the ODOT **OATS Manual**⁽⁶⁾.

Intersection #3 - State Route 752 & State Route 316/Ashville Pike

Comparison tables of the 2024 No-Build versus Build traffic analyses for the signalized intersection of State Route 752 and State Route 316/Ashville Pike are shown in the following tables:

(SK 752 & SK 3T0/ASIIVINE FIKE)												
Intersection #3	2024 Al No-Buil	M Id Condition	IS	Traffic Signal Control		Intersection #3	2024 Al Build C	M conditions		Traffic Signal Control		
SR 752 & SR 316	LOS	Delay (sec/veh)	v/c	QSR	95th %tile Queue (ft)	SR 752 & SR 316	LOS	Delay (sec/veh)	v/c	QSR	95th %tile Queue (ft)	
EBL	В	18.1	0.212	0.21	42	EBL	В	18.3	0.252	0.24	48	
EBT	С	26.8	0.749	0.00	203	EBT	С	27.7	0.828	0.00	228	
EB Approach	С	25.0	-	-	-	EB Approach	С	25.7	-	-	-	
WBL	В	19.5	0.188	0.13	26	WBL	В	19.9	0.204	0.13	0	
WBT	С	25.2	0.594	0.00	145	WBT	С	26.0	0.660	0.00	168	
WB Approach	С	24.2	-	-	-	WB Approach	С	25.0	-	-	-	
NBL	В	18.2	0.145	0.23	32	NBL	В	18.3	0.179	0.27	38	
NBT	С	26.3	0.689	0.00	180	NBT	С	26.6	0.694	0.00	183	
NB Approach	С	24.8	-	-	-	NB Approach	С	24.8	-	-	-	
SBL	С	20.4	0.579	1.05	126	SBL	С	20.8	0.586	1.07	128	
SBT	С	21.5	0.385	0.00	100	SBT	С	22.4	0.430	0.00	110	
SB Approach	С	20.9	-	-	-	SB Approach	С	21.6	-	-	-	
Intersection	С	23.6	-	-	-	Intersection	С	24.2	-	-	-	

Table 4.5 - 2024 AM Peak Hour Traffic Analysis Results (SR 752 & SR 316/Ashville Pike)

Table 4.6 - 2024 PM Peak Hour Traffic Analysis Results (SR 752 & SR 316/Ashville Pike)

Intersection #3	2024 PI No-Buil	M Id Condition	IS	Traffic Signal Control		Intersection #3	2024 PI Build C	M Conditions		Traffic Signal Control		
SR 752 & SR 316	LOS	Delay (sec/veh)	v/c	QSR	95th %tile Queue (ft)	SR 752 & SR 316	LOS	Delay (sec/veh)	v/c	QSR	95th %tile Queue (ft)	
EBL	В	19.6	0.339	0.30	60	EBL	С	21.3	0.434	0.37	74	
EBT	С	27.5	0.701	0.00	185	EBT	С	29.7	0.788	0.00	208	
EB Approach	С	25.2	-	-	-	EB Approach	С	27.2	-	-	-	
WBL	В	19.2	0.292	0.28	56	WBL	С	20.6	0.322	0.29	58	
WBT	С	26.8	0.711	0.00	195	WBT	С	30.0	0.822	0.00	228	
WB Approach	С	24.8	-	-	-	WB Approach	С	27.7	-	-	-	
NBL	В	19.9	0.225	0.22	31	NBL	В	19.7	0.289	0.27	38	
NBT	С	25.8	0.568	0.00	158	NBT	С	24.4	0.518	0.00	153	
NB Approach	С	24.7	-	-	-	NB Approach	С	23.3	-	-	-	
SBL	В	18.0	0.227	0.39	47	SBL	В	17.5	0.218	0.39	47	
SBT	С	27.5	0.865	0.00	265	SBT	С	28.6	0.898	0.00	293	
SB Approach	С	25.8	-	-	-	SB Approach	С	26.7	-	-	-	
Intersection	С	25.2	-	-	-	Intersection	С	26.4	-	-	-	

Conditions at the signalized intersection of State Route 752 and State Route 316 during the AM and PM peak hours were determined to operate with level-of-service C or better under the forecasted 2024 No-Build conditions. The comparison tables indicates that the storage length of the southbound left turn lane may be inadequate for future 2024 No-Build conditions. An analysis will be performed in a later section of this report to determine the queue length need to mitigate the effect or any other improvement that could reduce the queue storage length. No improvements were found to be necessary to improve the levels-of-service under the 2024 No-Build conditions at the study area intersection.

The 2024 AM and PM peak hour comparison tables for the intersection of State Route 752 and State Route 316 shown previously, indicate that the intersection and approach delays are not significantly impacted with the addition of the development generated traffic under the forecasted 2024 AM and PM peak hour conditions. The Build levels of service for all movements, approaches and the intersection are within the acceptable range shown in as *Table 1.3* stated in the ODOT **OATS Manual**⁽⁶⁾.

2024 Traffic Analysis - Improvements

Traffic analyses for 2024 Build conditions indicate that the development will impact the capacity at the intersection of US 23 at SR 752. The northbound right turn movement level-of-service was not found to be within the acceptable range shown in *Table 1.3* as stated in the ODOT **OATS Manual**⁽⁶⁾.

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 this intersection under the forecasted 2024 Build conditions.

The following Build improvements were determined to improve the levels-of-service at the signalized intersection of US Route 23 and SR 752.

- Construct a northbound right turn lane.
- Update signal sequence to include right turn overlap phase for eastbound right turn movement with protected left turn phase for northbound left turn movement.

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

	_				(US 23 &	SR 752)	_				
Intersection #1	2024 Al Build C	M onditions		Traffic Signal Control Improvements		Intersection #1	2024 PM Build Conditions			Traffic Signal Control Improvements	
US 23 & SR 752	LOS	Delay (sec/veh)	v/c	QSR	95th %tile Queue (ft)	US 23 & SR 752	LOS	Delay (sec/veh)	v/c	QSR	95th %tile Queue (ft)
EBT	С	31.7	0.412	0.00	113	EBT	С	31.1	0.249	0.00	90
EBR	С	23.6	0.153	0.18	50	EBR	С	25.5	0.170	0.23	64
EB Approach	С	28.9	-	-	-	EB Approach	С	28.6	-	-	-
WBT	D	35.3	0.736	0.00	240	WBT	D	38.2	0.772	0.00	290
WB Approach	D	35.3	-	-	-	WB Approach	D	38.2	-	-	-
NBL	В	12.1	0.316	0.10	45	NBL	С	22.6	0.398	0.09	41
NBT	D	38.8	0.971	0.43	688	NBT	С	20.2	0.614	0.22	352
NBR	В	15.5	0.361	0.00	163	NBR	В	15.4	0.249	0.00	120
NB Approach	С	34.0	-	-	-	NB Approach	В	19.6	-	-	-
SBL	С	21.8	0.703	0.32	70	SBL	В	13.9	0.391	0.29	64
SBT	С	20.9	0.638	0.00	320	SBT	D	46.3	0.960	0.00	765
SBR	С	21.0	0.638	0.00	315	SBR	D	47.7	0.966	0.00	770
SB Approach	С	21.0	-	-	-	SB Approach	D	44.6	-	-	-
Intersection	с	29.6	-	-	-	Intersection	С	34.4	-	-	-

Table 4.7 - 2024 Traffic Analysis Results - Improvements
(119 22 8 SP 752)

The identified 2024 Build improvements will be included in all Build analysis going forward in this report.

2044 Traffic Analysis - No-Build & Build Conditions

Traffic analyses were performed for the projected 2044 conditions under the No-Build and Build scenarios so:

- 1. any existing roadway/intersection deficiencies can be identified in the No-Build scenario which would not be attributable to the development, and;
- 2. a comparison can be made to determine the changes in the traffic operations which may be attributed to the development.

The traffic volumes used in the No-Build analyses can be seen in **Figure 3.8**, **Appendix A**. Copies of the capacity worksheets for the No-Build analyses are included in **Appendix I**.

The traffic volumes used in the Build analyses can be seen in **Figure 3.10**, **Appendix A**. Copies of the capacity worksheets for the Build analyses are included in **Appendix J**.

Intersection #1 - US Route 23 & State Route 752

Comparison tables of the 2044 No-Build versus Build traffic analyses for the signalized intersection of US Route 23 and State Route 752 are shown in the following tables:

	(US 23 & SR 752)												
Intersection #1	2044 Al No-Bui	M Id Condition	IS	Traffic Signal Control		Intersection #1	2044 Al Build C	M onditions		Traffic Signal Control			
US 23 & SR 752	LOS	Delay (sec/veh)	v/c	QSR	95th %tile Queue (ft)	US 23 & SR 752	LOS	Delay (sec/veh)	v/c	QSR	95th %tile Queue (ft)		
EBT	D	47.4	0.543	0.00	170	EBT	D	40.9	0.439	0.00	155		
EBR	D	42.8	0.254	0.30	84	EBR	С	31.8	0.154	0.25	70		
EB Approach	D	45.8	-	-	-	EB Approach	D	37.8	-	-	-		
WBT	E	65.1	0.829	0.00	343	WBT	E	72.6	0.913	0.00	465		
WB Approach	E	65.1	-	-	-	WB Approach	E	72.6	-	-	-		
NBL	В	15.9	0.409	0.13	59	NBL	С	20.4	0.460	0.15	68		
NBT	F	82.0	1.096	0.99	1584	NBT	F	83.4	1.106	0.89	1424		
NBR	F	100.7	1.143	1.10	1760	NBR	В	16.7	0.373	0.14	224		
NB Approach	F	87.9	-	-	-	NB Approach	E	71.6	-	-	-		
SBL	D	51.7	0.788	0.64	141	SBL	F	106.6	0.992	1.55	341		
SBT	С	21.8	0.721	0.00	508	SBT	С	28.3	0.785	0.00	583		
SBR	С	21.9	0.723	0.00	505	SBR	С	28.5	0.786	0.00	580		
SB Approach	С	24.1	-	-	-	SB Approach	D	36.0	-	-	-		
Intersection	E	62.4	-	-	-	Intersection	E	58.0	-	-	-		

Table 4.8 - 2044 AM Peak Hour Traffic Analysis Results (US 23 & SR 752)

Table 4.9 - 2044 PM Peak Hour Traffic Analysis Results (US 23 & SR 752)

Intersection #1	2044 Pl No-Bui	M Id Condition	IS	Traffic Signal Control		Intersection #1	2044 Pl Build C	M Conditions		Traffic Signal Control	
US 23 & SR 752	LOS	Delay (sec/veh)	v/c	QSR	95th %tile Queue (ft)	US 23 & SR 752	LOS	Delay (sec/veh)	v/c	QSR	95th %tile Queue (ft)
EBT	С	34.0	0.283	0.00	95	EBT	D	37.5	0.257	0.00	110
EBR	С	33.8	0.259	0.27	76	EBR	С	31.5	0.176	0.29	81
EB Approach	С	33.9	-	-	-	EB Approach	С	34.8	-	-	-
WBT	F	95.6	1.022	0.00	503	WBT	F	104.5	1.040	0.00	628
WB Approach	F	95.6	-	-	-	WB Approach	F	104.5	-	-	-
NBL	С	22.9	0.406	0.10	45	NBL	С	28.3	0.473	0.13	59
NBT	С	30.8	0.859	0.41	656	NBT	С	25.1	0.769	0.37	592
NBR	С	32.3	0.871	0.41	656	NBR	В	15.6	0.264	0.10	160
NB Approach	С	31.1	-	-	-	NB Approach	С	24.0	-	-	-
SBL	С	21.2	0.514	0.30	66	SBL	С	22.3	0.632	0.44	97
SBT	F	107.3	1.160	0.00	1458	SBT	F	104.1	1.142	0.00	1565
SBR	F	111.8	1.171	0.00	1493	SBR	F	108.5	1.153	0.00	1598
SB Approach	F	105.1	-	-	-	SB Approach	F	100.9	-	-	-
Intersection	Е	74.5	-	-	-	Intersection	E	70.6	-	-	-

Conditions at the signalized intersection of US Route 23 and State Route 752 during the AM and PM peak hours were determined to operate with movement and approach levels-of-service under the forecasted 2044 No-Build conditions that fail to meet the acceptable ranges as detailed in Table 1.3 as stated in the ODOT **OATS Manual** ⁽⁶⁾.

The 2044 AM and PM peak hour comparison tables for the intersection of US Route 23 and State Route 752 shown previously, indicate that the intersection and approach delays are impacted with the addition of the development generated traffic under the forecasted 2044 AM and PM peak hour conditions. An analysis will be performed in a later section of this report to determine what improvement will provide an acceptable level-of-service in the AM and PM peak periods that will adhere to the acceptable ranges shown in *Table 1.3* as stated in the ODOT **OATS Manual** ⁽⁶⁾.

Intersection #2 - State Route 752 & Business Place North

Comparison tables of the 2044 No-Build versus Build traffic analyses for the unsignalized intersection of State Route 752 and Business Place North are shown in the following tables:

Intersection #2	2044 Al No-Buil	۷ d Condition	s	Two-Way Stop Control	Intersection #2	2044 AM Build C	M onditions		Two-Way Stop Control	
SR 752 & Business Place	LOS	Delay (sec/veh)	v/c	Q ₉₅ %tile (Veh/Ln)	SR 752 & Business Place	LOS	Delay (sec/veh)	v/c	Q ₉₅ %tile (Veh/Ln)	
EBL	А	7.9	0.01	0.0	EBL	А	7.9	0.01	0.0	
EB Approach	А	0.4			EB Approach	А	0.4			
WBL	А	7.8	0.01	0.0	WBL	А	8.0	0.04	0.1	
WB Approach	А	0.4			WB Approach	А	1.4			
NBT	В	12.5	0.05	0.1	NBT	С	16.3	0.21	0.8	
NB Approach	В	12.5			NB Approach	С	16.3			
SBT	А	9.8	0.00	0.0	SBT	А	9.9	0.00	0.0	
SB Approach	А	9.8			SB Approach	А	9.9			

Table 4.10- 2044 Traffic Analysis Results (SR 752 & Business Place North)

					ess Flace NUIL	,			
Intersection #2				Two-Way Stop Control	Intersection #2	2044 PI Build C	M onditions		Two-Way Stop Control
SR 752 & Business Place	LOS	Delay (sec/veh)	v/c	Q ₉₅ %tile (Veh/Ln)	SR 752 & Business Place	LOS	Delay (sec/veh)	v/c	Q ₉₅ %tile (Veh/Ln)
EBL	А	8.0	0.00	0.0	EBL	А	8.1	0.00	0.0
EB Approach	А	0.0			EB Approach	А	0.0		
WBL	А	8.2	0.01	0.0	WBL	А	8.5	0.07	0.2
WB Approach	А	0.4			WB Approach	А	2.0		
NBT	В	14.9	0.06	0.2	NBT	С	20.3	0.21	0.8
NB Approach	В	14.9			NB Approach	С	20.3		
SBT	В	14.9	0.06	0.2	SBT	С	18.5	0.08	0.3
SB Approach	В	14.9			SB Approach	С	18.5		

Table 4.11 - 2044 Traffic Analysis Results (SR 752 & Business Place North)

Conditions at the unsignalized intersection of State Route 752 and Business Place North during the AM and PM peak hours were determined to operate with level-of-service C or better under the forecasted 2044 No-Build conditions. No improvements were found to be necessary to improve the levels-of-service under the 2044 No-Build conditions at the study area intersection.

The 2044 AM and PM peak hour comparison tables for the intersection of State Route 752 and Business Place North shown previously, indicate that the approach delays are not significantly impacted with the addition of the development generated traffic under the forecasted 2044 AM and PM peak hour conditions. The Build levels of service for all movements and approaches are within the acceptable range shown in *Table 1.3* as stated in the ODOT **OATS Manual** ⁽⁶⁾.

Intersection #3 - State Route 752 & State Route 316/Ashville Pike

Comparison tables of the 2044 No-Build versus Build traffic analyses for the signalized intersection of State Route 752 and State Route 316/Ashville Pike are shown in the following tables:

	(SK 752 & SK 310-LONG SUBERASIVILE FIKE)													
Intersection #3	2044 Al No-Buil	M Id Condition	IS	Traffic S	Signal Control Intersection 2044 AM #3 Build Conditions			Traffic Signal Control						
SR 752 & SR 316	LOS	Delay (sec/veh)	v/c	QSR	95th %tile Queue (ft)	SR 752 & SR 316	LOS	Delay (sec/veh)	v/c	QSR	95th %tile Queue (ft)			
EBL	С	24.7	0.358	0.39	78	EBL	С	25.3	0.395	0.46	92			
EBT	D	37.3	0.897	0.00	365	EBT	D	39.2	0.922	0.00	415			
EB Approach	С	34.7	-	-	-	EB Approach	D	36.3	-	-	-			
WBL	С	26.0	0.295	0.24	48	WBL	С	27.3	0.329	0.25	50			
WBT	D	37.0	0.710	0.00	285	WBT	D	38.2	0.722	0.00	318			
WB Approach	D	35.2	-	-	-	WB Approach	D	36.5	-	-	-			
NBL	С	23.4	0.227	0.52	73	NBL	С	25.1	0.265	0.64	90			
NBT	D	38.1	0.896	0.00	355	NBT	D	39.9	0.898	0.00	373			
NB Approach	D	35.1	-	-	-	NB Approach	D	36.6	-	-	-			
SBL	D	41.6	0.871	2.38	286	SBL	D	44.5	0.883	2.52	302			
SBT	С	25.3	0.435	0.00	193	SBT	С	26.9	0.458	0.00	213			
SB Approach	С	34.6	-	-	-	SB Approach	D	36.7	-	-	-			
Intersection	с	34.9	-	-	-	Intersection	D	36.5	-	-	-			

Table 4.12 - 2044 AM Peak Hour Traffic Analysis Results (SR 752 & SR 316-Long Street/Ashville Pike)

Table 4.13 - 2044 PM Peak Hour Traffic Analysis Results (SR 752 & SR 316-Long Street/Ashville Pike)

Intersection #3	2044 PI No-Buil	/I d Condition	s	Traffic Signal Control		Intersection 2044 PM #3 Build Conditions				Traffic Signal Control		
SR 752 & SR 316	LOS	Delay (sec/veh)	v/c	QSR	95th %tile Queue (ft)	SR 752 & SR 316	LOS	Delay (sec/veh)	v/c	QSR	95th %tile Queue (ft)	
EBL	С	29.9	0.549	0.66	132	EBL	С	34.3	0.630	0.85	170	
EBT	D	41.1	0.782	0.00	383	EBT	D	42.8	0.756	0.00	440	
EB Approach	D	38.0	-	-	-	EB Approach	D	40.4	-	-	-	
WBL	С	31.0	0.535	0.64	128	WBL	D	35.4	0.551	0.75	150	
WBT	D	41.2	0.838	0.00	400	WBT	D	46.8	0.857	0.00	490	
WB Approach	D	38.6	-	-	-	WB Approach	D	44.0	-	-	-	
NBL	С	27.0	0.370	0.44	62	NBL	С	32.1	0.498	0.62	87	
NBT	С	31.0	0.558	0.00	305	NBT	С	33.8	0.533	0.00	340	
NB Approach	С	30.3	-	-	-	NB Approach	С	33.4	-	-	-	
SBL	С	22.5	0.342	0.89	107	SBL	С	24.8	0.337	1.03	124	
SBT	D	36.0	0.884	0.00	528	SBT	D	40.5	0.898	0.00	638	
SB Approach	С	33.4	-	-	-	SB Approach	D	37.6	-	-	-	
Intersection	D	35.2	-	-	-	Intersection	D	39.1	-	-	-	

Conditions at the signalized intersection of State Route 752 and State Route 316 during the AM and PM peak hours were determined to operate with level-of-service D or better under the forecasted 2044 No-Build conditions. The comparison tables indicates that the storage length of the southbound left turn lane may be inadequate for future 2044 No-Build conditions. An analysis will be performed in a later section of this report to determine the queue length need to mitigate the effect or any other improvement that could reduce the queue storage length. No improvements were found to be necessary to improve the levels-of-service under the 2044 No-Build conditions at the study area intersection.

The 2044 AM and PM peak hour comparison tables for the intersection of State Route 752 and State Route 316 shown previously, indicate that the intersection and approach delays are not significantly impacted with the addition of the development generated traffic under the forecasted 2044 AM and PM peak hour conditions. The Build levels of service for all movements and approaches are within the acceptable range shown in *Table 1.3* as stated in the ODOT **OATS Manual** ⁽⁶⁾.

2044 Traffic Analysis - Improvements

Traffic analyses for 2044 No-Build conditions revealed issues at the intersection of US Route 23 and State Route 752 where levels-of-service were not found to be within the acceptable range shown in *Table 1.3* as stated in the ODOT **OATS Manual** ⁽⁶⁾.

Certain improvements were tested with further capacity analyses in order to determine what mitigation would be necessary to improve the levels-of-service at this intersection under the forecasted 2044 No-Build conditions.

The following No-Build improvement were determined to improve the levels-of-service at the signalized intersection of US Route 23 and SR 752.

- Construct a northbound right turn lane (2024 Build).
- Construct a southbound right turn lane.
- Construct a westbound right turn lane.
- Update signal sequence to include right turn overlap phases with the protected left turn phases.

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

Intersection #1		2044 AM No-Build Conditions			ignal Control nprovements	Intersection #1	2044 Pl No-Bui	M Id Condition	s	Traffic Signal Control Improvements		
US 23 & SR 752	LOS	Delay (sec/veh)	v/c	QSR	95th %tile Queue (ft)	US 23 & SR 752	LOS	Delay (sec/veh)	v/c	QSR	95th %tile Queue (ft)	
EBT	D	41.8	0.513	0.00	140	EBT	D	41.7	0.285	0.00	118	
EBR	С	32.9	0.214	0.23	64	EBR	D	35.3	0.205	0.31	87	
EB Approach	D	38.7	-	-	-	EB Approach	D	38.8	-	-	-	
WBT	D	43.1	0.609	0.00	165	WBT	E	61.5	0.808	0.00	340	
WBR	С	34.4	0.317	0.00	95	WBR	D	36.1	0.241	0.00	103	
WB Approach	D	39.6	-	-	-	WB Approach	D	54.6	-	-	-	
NBL	В	13.1	0.366	0.10	45	NBL	С	29.1	0.473	0.14	63	
NBT	F	43.9	1.014	0.60	960	NBT	С	20.3	0.713	0.33	528	
NBR	В	10.6	0.288	0.08	130	NBR	В	12.3	0.195	0.07	105	
NB Approach	D	38.7	-	-	-	NB Approach	В	19.8	-	-	-	
SBL	С	25.4	0.664	0.39	86	SBL	В	16.4	0.438	0.25	55	
SBT	В	17.2	0.734	0.00	398	SBT	F	72.7	1.085	0.00	1288	
SBR	А	8.5	0.042	0.00	15	SBR	В	10.9	0.060	0.00	30	
SB Approach	В	17.6	-	-	-	SB Approach	E	68.3	-	-	-	
Intersection	С	31.4	-	-	-	Intersection	D	48.4	-	-	-	

Table 4.14 - 2044 Traffic Analysis Results - Improvements

In order to further improve the levels-of-service at intersection of US Route 23 and State Route 752 additional through lanes would likely be necessary. Due to the existing lane use and adjacent land uses any geometric improvements would be high cost and would likely impact the adjacent intersections and land uses. These type of improvements at the intersection would likely be unfeasible and therefore no further consideration to mitigating the levels of service will be given at this location.

Traffic analyses for 2044 Build conditions indicates that the development will impact the capacity at the intersection of US Route 23 and State Route 752. Certain improvements were tested with further capacity analyses in order to determine what further mitigation would be necessary to improve the levels-of-service at the this intersection under the forecasted 2044 Build conditions.

The following Build improvement were determined to improve the levels-of-service at the signalized intersection of US Route 23 and SR 752.

- Construct a northbound right turn lane (2044 No-Build).
- Construct a southbound right turn lane (2044 No-Build).
- Construct a westbound right turn lane (2044 No-Build).
- Update signal sequence to include right turn overlap phases with the protected left turn phases (2044 No-Build).

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

	(US 23 & SR 752)													
Intersection #1	2044 AM Build Conditions			Traffic Signal Control Improvements		Intersection #1	2044 Pl Build C	M conditions		Traffic Signal Control Improvements				
US 23 & SR 752	LOS	Delay (sec/veh)	v/c	QSR	95th %tile Queue (ft)	US 23 & SR 752	LOS	Delay (sec/veh)	v/c	QSR	95th %tile Queue (ft)			
EBT	D	45.9	0.441	0.00	165	EBT	D	40.0	0.283	0.00	113			
EBR	D	37.1	0.192	0.27	76	EBR	С	33.7	0.204	0.30	84			
EB Approach	D	42.8	-	-	-	EB Approach	D	37.2	-	-	-			
WBT	D	53.6	0.720	0.00	260	WBT	E	69.1	0.876	0.00	380			
WBR	D	37.9	0.349	0.00	150	WBR	С	34.8	0.286	0.00	118			
WB Approach	D	47.3	-	-	-	WB Approach	E	59.1	-	-	-			
NBL	В	16.2	0.408	0.13	59	NBL	С	27.5	0.456	0.13	59			
NBT	F	52.4	1.028	0.73	1168	NBT	С	20.6	0.726	0.32	512			
NBR	В	13.7	0.347	0.13	205	NBR	В	13.0	0.249	0.08	135			
NB Approach	D	45.6	-	-	-	NB Approach	В	19.9	-	-	-			
SBL	D	41.8	0.857	1.06	233	SBL	В	18.1	0.567	0.37	81			
SBT	В	19.1	0.722	0.00	470	SBT	F	78.8	1.102	0.00	1303			
SBR	А	9.7	0.042	0.00	20	SBR	В	10.9	0.061	0.00	30			
SB Approach	С	21.1	-	-	-	SB Approach	E	73.2	-	-	-			
Intersection	D	37.2	-	-	-	Intersection	D	51.1	-	-	-			

Table 4.15 - 2044 Traffic Analysis Results - Improvements (US 23 & SR 752)

In order to further improve the levels-of-service at intersection of US Route 23 and State Route 752 additional through lanes would likely be necessary. Due to the existing lane use and adjacent land uses any geometric improvements would be high cost and would likely impact the adjacent intersections and land uses. These type of improvements at the intersection would likely be unfeasible and therefore no further consideration to mitigating the levels of service will be given at this location.

Comparative Analysis

A comparison was performed to show the incremental effects on the capacity at the study area intersections due to the construction of the proposed development under the opening and design year conditions.

The following tables shows a side by side comparison of the Build versus No-Build conditions including improvements for the 2024 AM and PM peak hours at the study area intersections.

	No-Bui	ld - AM	Build No Impr	- AM ovement		- AM vement
	LOS	Delay	LOS	Delay	LOS	Delay
#1 - US 23 &	SR 752					
EB	D	36.2	D	38.3	С	28.9
WB	D	38.1	D	43.8	D	35.3
NB	D	37.7	D	54.2	С	34.0
SB	В	16.2	С	20.9	С	21.0
Overall Int.	С	30.6	D	41.8	С	29.6
#2 - SR 752 8	BUSINESS	PLACE NC	ORTH			
EBL	А	7.7	А	7.8		
WBL	А	7.7	А	7.8		
NB	В	11.3	В	14.1		
SB	А	9.4	А	9.5		
Overall Int.	-		-			
#3 - SR 752 8	& SR 316					
EB	С	25.0	С	25.7		
WB	С	24.2	С	25.0		
NB	С	24.8	С	24.8		
SB	С	20.9	С	21.6		
Overall Int.	С	23.3	С	24.2		

Table 4.16 - 2024 AM Peak Hour Comparison Table

			r Feak flour companson rable						
	No-Bui	ild - PM		- PM ovement		- AM vement			
	LOS	Delay	LOS	Delay	LOS	Delay			
#1 - US 23 &	SR 752								
EB	С	30.0	С	31.0	С	28.6			
WB	D	35.4	D	38.8	D	38.2			
NB	С	21.8	С	25.3	В	19.6			
SB	D	42.4	D	44.7	D	44.6			
Overall Int.	С	33.9	D	36.6	С	34.4			
#2 - SR 752 8	BUSINESS	S PLACE NO	DRTH						
EBL	А	7.8	А	7.8					
WBL	А	7.9	А	8.2					
NB	В	12.5	С	15.8					
SB	В	12.5	В	14.9					
Overall Int.	-		-						
#3 - SR 752 8	& SR 316								
EB	С	25.2	С	27.2					
WB	С	24.8	С	27.7					
NB	С	24.7	С	23.3					
SB	С	25.8	С	26.7					
Overall Int.	С	25.2	С	26.4					

Table 4.17 - 2024 PM Peak Hour Comparison Table

The following tables shows a side by side comparison of the Build versus No-Build conditions including improvements for the 2044 AM and PM peak hours at the study area intersections.

	No-Bui	ld - AM		ild - AM /ement		- AM ovement		- AM /ement	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	
#1 - US 23 &	SR 752								
EB	D	45.8	D	38.7	D	37.8	D	42.8	
WB	E	65.1	D	39.6	E	72.6	D	47.3	
NB	F	87.9	D	38.7	E	71.6	D	45.6	
SB	С	24.1	В	17.6	D	36.0	С	21.1	
Overall Int.	E	62.4	С	31.4	E	58.0	D	37.2	
#2 - SR 752 8	SR 752 & BUSINESS PLACE NORTH								
EBL	А	7.9			А	7.9			
WBL	А	7.8			А	8.0			
NB	В	12.5			С	16.3			
SB	А	9.8			А	9.9			
Overall Int.									
#3 - SR 752	& SR 316								
EB	С	34.7			D	36.3			
WB	D	35.2			D	36.5			
NB	D	35.1			D	36.6			
SB	С	34.6			D	36.7			
Overall Int.	С	34.9			D	36.5			

 Table 4.18 - 2044 AM Peak Hour Comparison Table

	No Bui	ld - PM		ild - PM /ement		- PM ovement		- PM /ement		
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay		
#1 - US 23 &	SR 752									
EB	С	33.9	D	38.8	С	34.8	D	37.2		
WB	F	95.6	D	54.6	F	104.5	E	59.1		
NB	С	31.1	В	19.8	С	24.0	В	19.9		
SB	F	105.1	E	68.3	F	100.9	E	73.2		
Overall Int.	E	74.5	D	48.4	E	70.6	D	51.1		
#2 - SR 752 8	& BUSINESS PLACE NORTH									
EBL	А	8.0			А	8.1				
WBL	А	8.2			А	8.5				
NB	В	14.9			С	20.3				
SB	В	14.9			С	18.5				
Overall Int.	-									
#3 - SR 752	& SR 316									
EB	D	38.0			D	40.4				
WB	D	38.6			D	44.0				
NB	С	30.3			С	33.4				
SB	С	33.4			D	37.6				
Overall Int.	D	35.2			D	39.1				

 Table 4.19 - 2044 PM Peak Hour Comparison Table

4.2 **Capacity & LOS at Development Access Intersections**

Capacity analyses were performed for the proposed site access driveway on State Route752. The procedures outlined in the computerized version of the Transportation Research Board's Highway Capacity Manual 7TH Edition ⁽¹⁾, (HCS2022, Release 8.1) were utilized for stop sign controlled intersections.

Build Condition - 2024 Capacity Analysis

Analyses were performed for the projected 2024 conditions under the Build scenario to determine the future levels-of-service at the intersection where site access is available. The analysis will be based on permitting all ingress and egress movements at the proposed access location. The traffic volumes used in this analysis can be seen in Figure 3.9, Appendix A. Copies of the capacity worksheets are included in **Appendix M**. The results of the 2024 Build analyses are shown in the following table.

	(SR 752 & Proposed Access)													
Access #1	2024 AM Build Conditions			Minor Street Stop Control	Access #1	2024 PI Build C	M onditions		Minor Street Stop Control					
SR 752 & Access	LOS	Delay (sec/veh)	v/c	Q ₉₅ %tile (Veh/Ln)	SR 752 & Access	LOS	Delay (sec/veh)	v/c	Q ₉₅ %tile (Veh/Ln)					
WBL	А	8.3	0.01	0.0	EBL	А	8.2	0.02	0.0					
WB Approach	А	0.5			EB Approach	А	0.6							
NBT	В	14.8	0.16	0.6	SBR	В	14.4	0.11	0.4					
NB Approach	В	14.8			SB Approach	В	14.4							

Table 4.20 - 2024 Traffic Analysis Results

The capacity of the approaches and critical movements at the proposed access intersection along State Route 752 were found to be at a level-of-service B or better in the AM and PM peak hours.

Build Condition - 2044 Capacity Analysis

Analyses were performed for the projected 2044 conditions under the Build scenario to determine the future levels-of-service at the proposed intersection where site access is available. The analysis will be based on permitting all ingress and egress movements at the proposed access location. The traffic volumes used in this analysis can be seen in **Figure 3.10**, **Appendix A**. Copies of the capacity worksheets are included in **Appendix N**. The results of the 2044 Build analyses are shown in the following table.

	(SR 752 & Proposed Access)													
Access #1	2044 AM Build Conditions			Minor Street Stop Control	Access #1	2044 PM Build Conditions			Minor Street Stop Control					
SR 752 & Access	LOS	Delay (sec/veh)	v/c	Q ₉₅ %tile (Veh/Ln)	SR 752 & Access	LOS	Delay (sec/veh)	v/c	Q ₉₅ %tile (Veh/Ln)					
WBL	А	8.5	0.01	0.0	EBL	А	8.4	0.02	0.1					
WB Approach	А	0.4			EB Approach	А	0.5							
NBT	С	16.7	0.19	0.7	SBR	С	16.5	0.13	0.4					
NB Approach	С	16.7			SB Approach	С	16.5							

Table 4.21 - 2024 Traffic Analysis Results (SR 752 & Proposed Access)

The capacity of the approaches and critical movements at the proposed access intersection along State Route 752 were found to be at a level-of-service C or better in the AM and PM peak hours.

4.3 Auxiliary Turning Lane Warrant Analysis

It is the intent of this report to evaluate the need for exclusive deceleration and turning lanes at the proposed State Route 752 access location based on the following conditions:

- Two-lane roadway
- Posted speed limit of 55 miles per hour

The following table shows the results of the analysis of the need for exclusive deceleration and turn lanes on State Route 752 at the access driveway under the forecasted 2024 and 2044 Build conditions. Copies of the ODOT turn lane warrant graphs can be seen in **Appendix O**.

Table 4.22 Turn Lane Warrants (SD 752 8 Access Drivery)

(SR 752 & Access Driveway)

State Route 752 @	20	24	2044		
Development Access Driveway	AM	РМ	AM	РМ	
Westbound Left Turn Lane	NO	NO	NO	YES	
Eastbound Right Turn Lane	YES	YES	YES	YES	

The results of the turn lane analyses indicate an exclusive westbound left turn lane on State Route 752 at the access driveway *is* warranted under the expected 2044 PM peak hour Build conditions.

The results of the turn lane analyses indicate that an exclusive eastbound right turn lane on State Route 752 at the access driveway *is* warranted under the expected 2024 and 2044 Build conditions.

4.4 Turn Lane Length Analysis

Analyses were performed to determine the necessary turn lane storage lengths in order to accommodate the recommended turns lanes and turn lanes found deficient in length at the study area intersections.

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

The turn lane calculations will be based on the following conditions:

US Route 23 & State Route 752

- Traffic Control (Signalized)
- Design Speed > 40 Miles Per Hour
- NB & WB Right Turn Movement > 10% of Approach Volume
 - = High Turn Demand Volume
 - Condition B or C
- SB Right Turn Movement < 10% of Approach Volume
 - = Low Turn Demand Volume
 - Condition B

State Route 752 & SR 316/Ashville Pike

- Traffic Control (Signalized)
- Design Speed < 40 Miles Per Hour
- Condition A

State Route 752 & Proposed Access Driveway

- Traffic Control (Un-Signalized)
- Design Speed > 40 Miles Per Hour
- WB Left Turn Movement < 10% of Approach Volume
 - = Low Turn Demand Volume

- Condition B

- EB Right Turn Movement > 10% of Approach Volume
 - = High Turn Demand Volume
 - Condition B or C

The following tables details the results of the turn lane length analyses based upon the highest anticipated turn volumes at the intersections under the expected 2044 Build peak hour conditions.

Movement Direction			Cycles /	Average Veh/	Design Speed	Fig. 401- 10	-	01-9 lition	Backup Length	Turn Lane Length*				
			Hour	Cycle/ Lane	(mph)	Storage Length (ft)	B *	C *	(ft)	(ft)				
SB T	2067	2	30	34.45	60	1125			1125					
SB RT	55	1	30	1.83	60	100	345			800*				
NB T	1797	2	30	29.95	60	975			975					
NB RT	293	1	30	9.77	60	375	345	560		800*				
WB RT	121	2	30	2.02	60	150	345	335		375*				
WB T/LT	277	1	30	9.23	60	375			375					

Table 4.23 Turn Lane Length Analysis (US Route 23 & SR 752)

* Includes 50' Taper

Table 4.24 Turn Lane Length Analysis (SR 752 & SR 316/Ashville Pike)

Movement Direction	DHV	No. of Lanes	Cycles / Hour	Average Veh/ Cycle/ Lane	Design Speed (mph)	Fig. 401- 10	Fig. 401-9 Condition	Backup Length (ft)	Turn Lane Length* (ft)
						Storage Length (ft)	A *		
SB LT	260	1	30	8.67	35	350	400		600*
SB T/R	526	1	30	17.53	35	625		625	

* Includes 50' Taper

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		Backup Length	Turn Lane Length*
							B *	C *	(ft)	(ft)
WB LT	17	2	30	0.28	60	50	345			345*
EB RT	62	1	30	2.07	60	100	345	285		345*

Table 4.25 Turn Lane Length Analysis (SR 752 & Proposed Driveway)

* Includes 50' Taper

4.5 Improvements to Accommodate Study Area Traffic

Recommended Improvements to Serve Future Conditions without the Development

The following improvements are recommended to improve the levels-of-service under the 2024 No-Build conditions at the study area intersections.

SR 752 and SR 316/Ashville Pike (Village of Ashville)

• Extend the length of the southbound left turn lane (600').

Recommended Improvements to Mitigate the Traffic Associated with the Development

The following improvements are recommended to improve the levels-of-service under the 2024 Build conditions at the study area intersections.

US Route 23 and SR 752 (ODOT)

Construct a northbound right turn lane (800').

2024 Development Access Recommendations

The following lane use and traffic control is recommended at the intersections where access to the site is proposed.

State Route 752 & Proposed Site Access Driveway (Village of Ashville)

- Construct an exclusive eastbound right turn lane (345') for the opening year of the development.
- Construct the proposed south approach with one egress lanes and one ingress lane.
- Install stop sign control on the northbound approach.

2044 Development Access Recommendations

The following lane use and traffic control is recommended at the intersections where access to the site is proposed.

State Route 752 & Proposed Site Access Driveway (Village of Ashville)

• Construct an exclusive westbound left turn lane (345') in the opening year of the development.

The recommended lane use and traffic control for the study area to accommodate expected traffic volumes can be seen in **Figure 4.1, Appendix A**.

Chapter 5 Conclusions

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

- 5.1 This Traffic Impact Study (TIS) has been prepared at the request of Poggemeyer Design Group for a proposed DHL facility. The proposed development is located in the Village of Ashville, Pickaway County, Ohio.
- 5.2 The development is expected to consist of a single 545,200 square foot building. The proposed building is located along the south side of State Route 752 to the east of US Route 23 and to the west of Business Place North. The building and site is expected to accommodate land uses related to commerce and fulfillment operations.
- 5.3 The year 2024 was analyzed for the opening year conditions of the development based on the expected development time line.
- 5.4 The development is proposed with two access locations. The project proposes an intersection along State Route 752 that would provide full access to the site. A second access location is proposed along Business Place North.
- 5.5 A **Traffic Volume Forecast** was previously prepared for use in this Traffic Impact Study. The development and submission of the traffic volume forecasts for the proposed project are intended to follow the TIS Review Process detailed in *Section 9.32* and the TIS Flow Chart shown *Figure 9.1* of the ODOT **State Highway Access Management Manual** (7). A copy of the **July 18, 2022 Traffic Volume Forecast** report can be seen in **Appendix A**.
- 5.6 The project has significantly changed to include only one proposed building since the completion of the **July 18, 2022 Traffic Volume Forecast**. The traffic volume forecast was updated within this TIS per the procedures, guidelines, and assumptions that were made in the July 18, 2022 forecast document.

- 5.7 The weekday peak hours of traffic for the study area roadways were based on the traffic data collected for this report. The weekday AM peak hour of traffic was determined to be 7:00 AM to 8:00 AM. The weekday PM peak hour of traffic was found to be 3:45 PM to 4:45 PM. These periods were analyzed since they reflect the period of the highest volume of traffic flow for the study area roadways.
- 5.8 The proposed development is expected to generate the following hourly traffic volumes during the peak periods as shown in the table below:

	SIZE	TRIP ENDS									
OPENING YEAR		Weekday Peak Hour Between 7-9 AM						ay Peak Hour een 4-6 PM			
		ENTER		EXIT		ENTER		EXIT			
		Vehicles	Trucks	Vehicles	Trucks	Vehicles	Trucks	Vehicles	Trucks		
2024	545,200	103	15	102	15	139	10	66	10		
	SF										
TOTAL NEW TRIPS		118		117		149		76			
		235				225					

- 5.9 The year 2044 was forecasted for the twenty year design hour conditions in the July 18, 2022 forecast document. The year 2044 will continued to be used for the design year in order to provide a conservative analysis of the expected future conditions in the study area and to provide consistency with the previously prepared forecast document.
- 5.10 The following improvements are recommended to improve the levels-of-service under the 2024 No-Build conditions at the study area intersections.

SR 752 and SR 316/Ashville Pike (Village of Ashville)

- Extend the length of the southbound left turn lane (600').
- 5.11 The following improvements are recommended to improve the levels-of-service under the 2024 Build conditions at the study area intersections.

US Route 23 and SR 752 (ODOT)

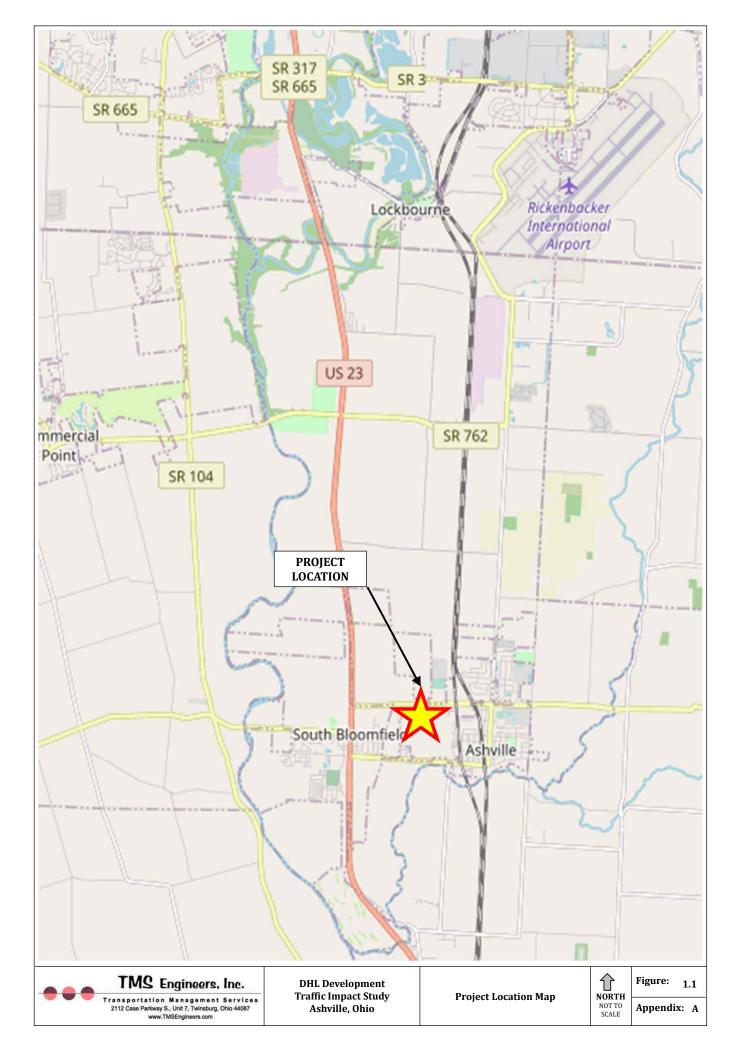
Construct a northbound right turn lane (800').

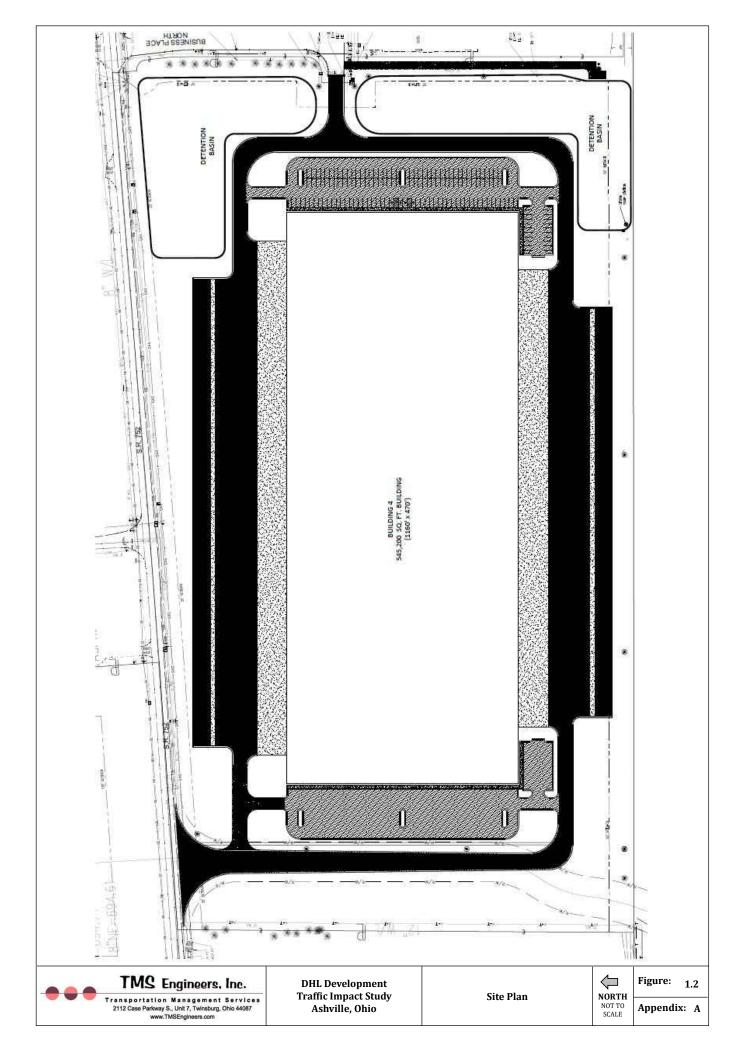
5.12 The following lane use and traffic control is recommended at the intersection where access to the site is proposed.

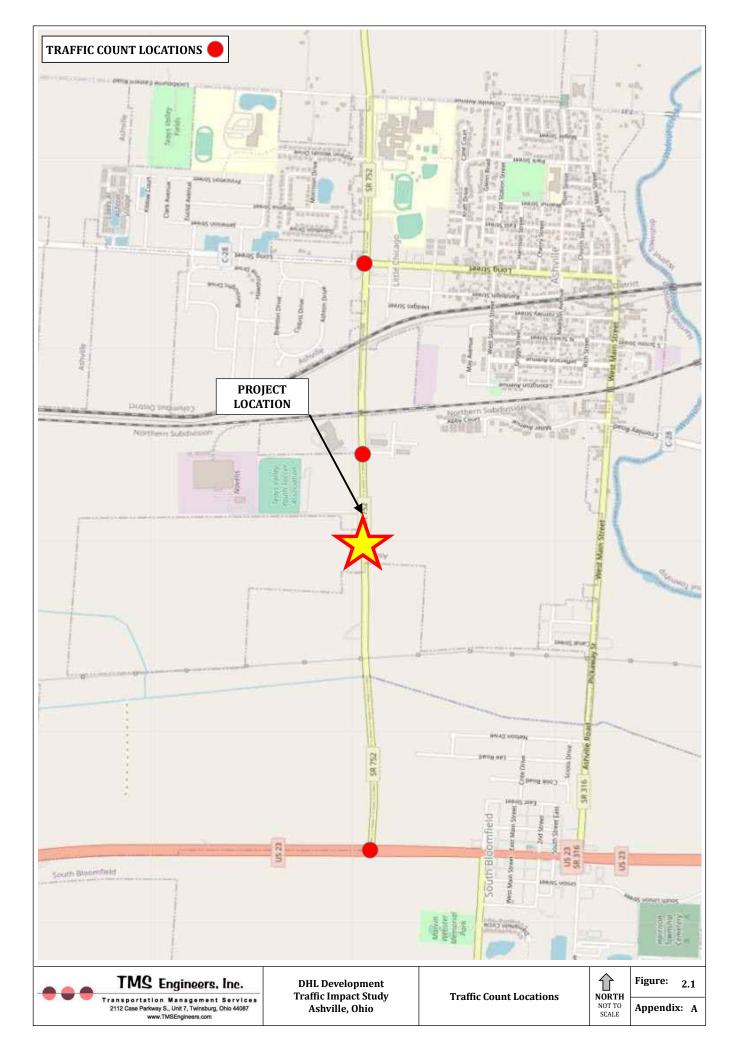
State Route 752 & Proposed Site Access Driveway (Village of Ashville)

- Construct an exclusive eastbound right turn lane (345') for the opening year of the development (2024 Build).
- Construct an exclusive westbound left turn lane (345') in the opening year of the development (2024 Build).
- Construct the proposed south approach with one egress lanes and one ingress lane (2024 Build).
- Install stop sign control on the northbound approach (2024 Build).
- 5.13 Based upon the results of the analysis in this study and the corresponding recommendations, it can be seen that the development traffic can be accommodated without adversely impacting the area roadway network.

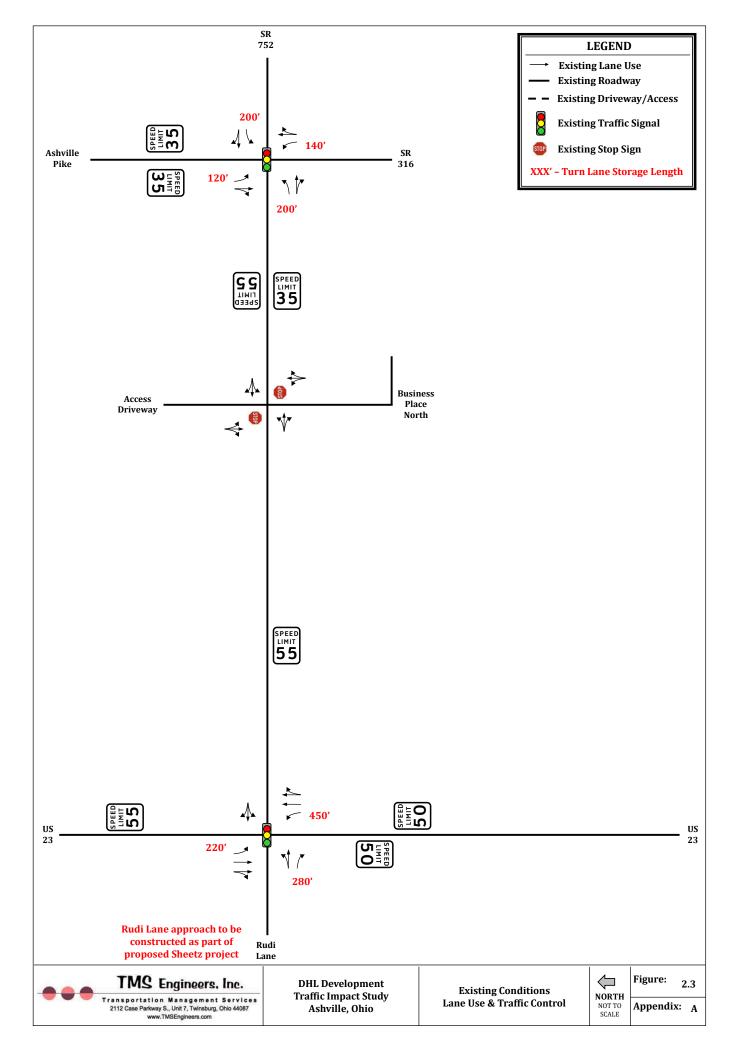
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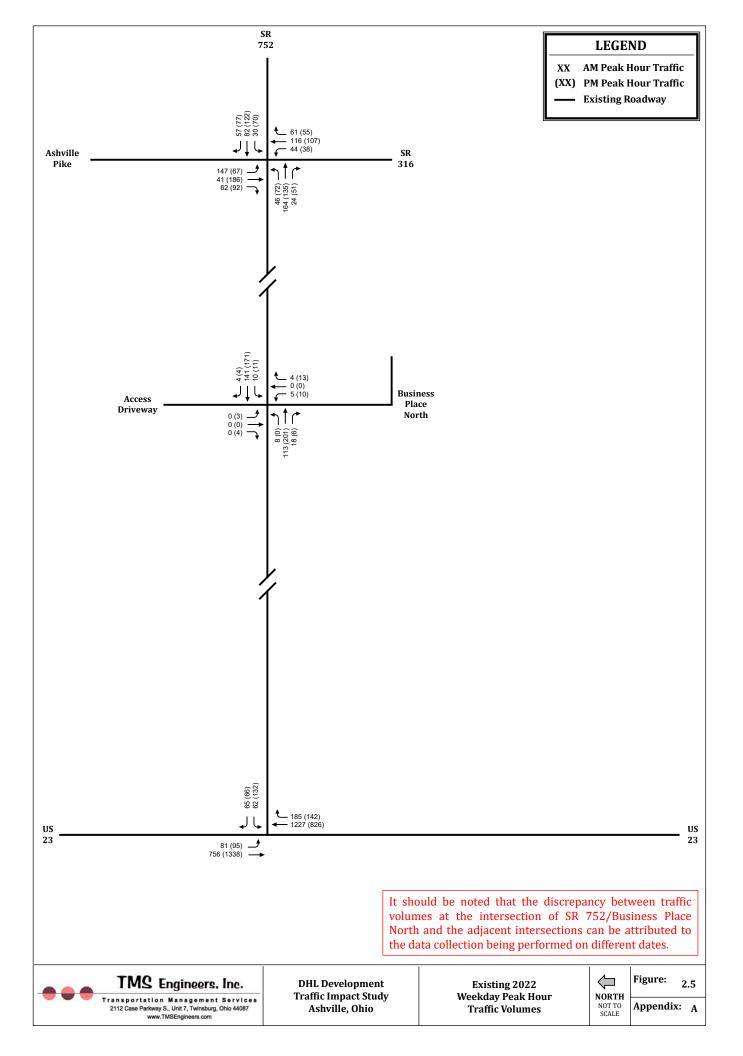


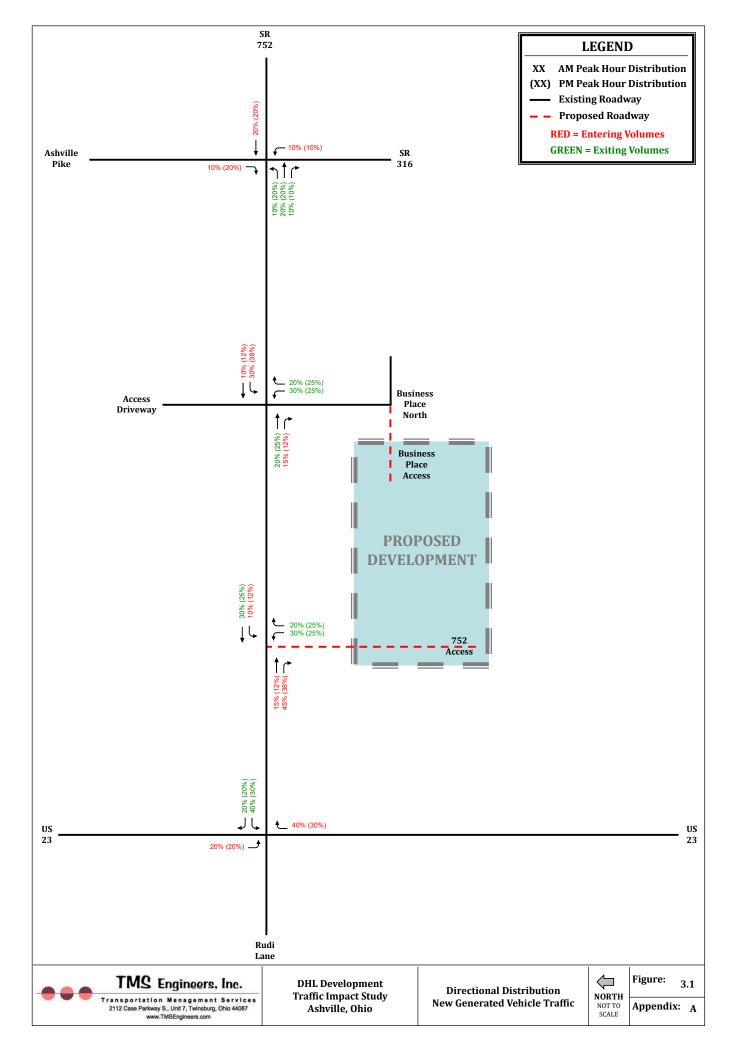


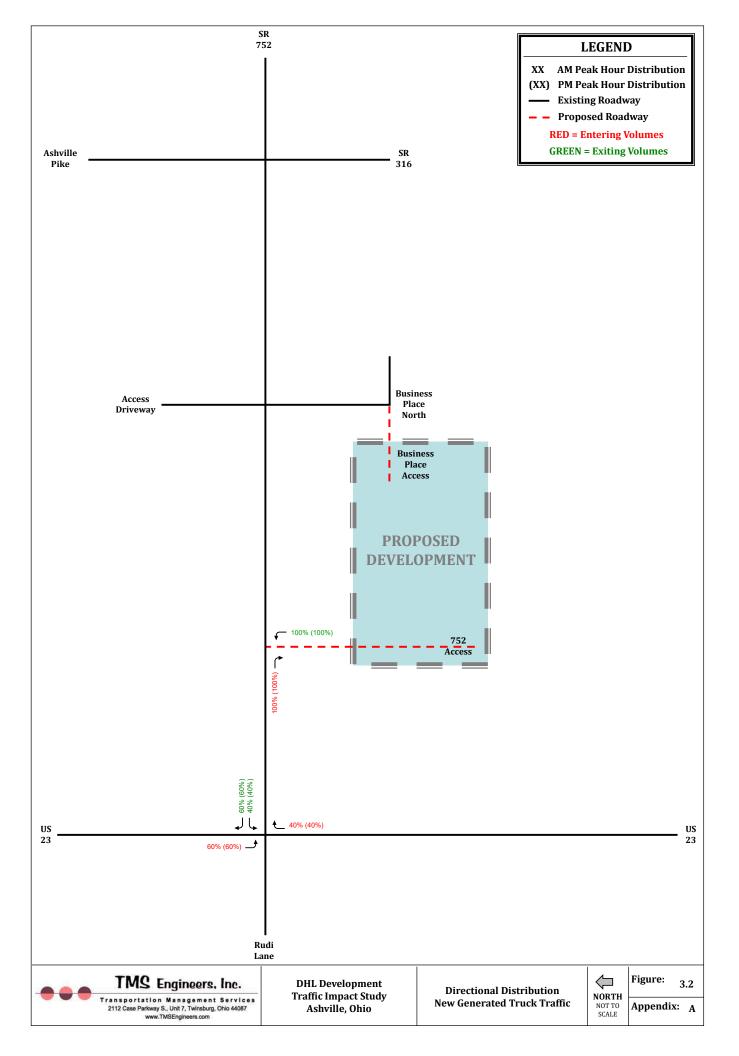


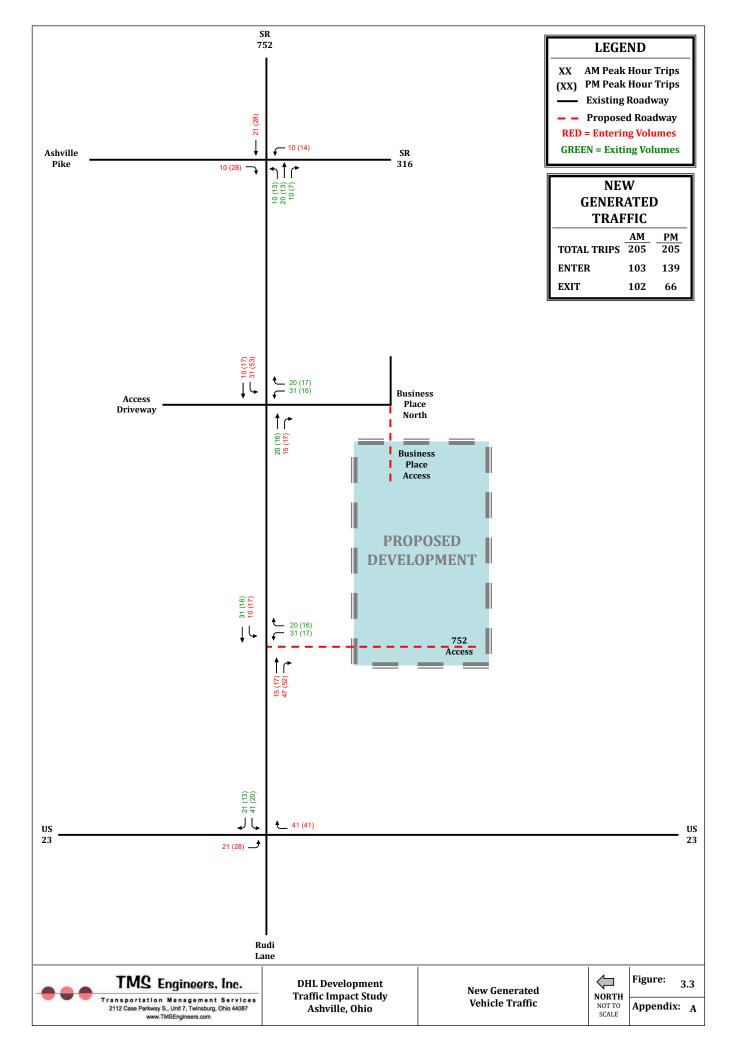


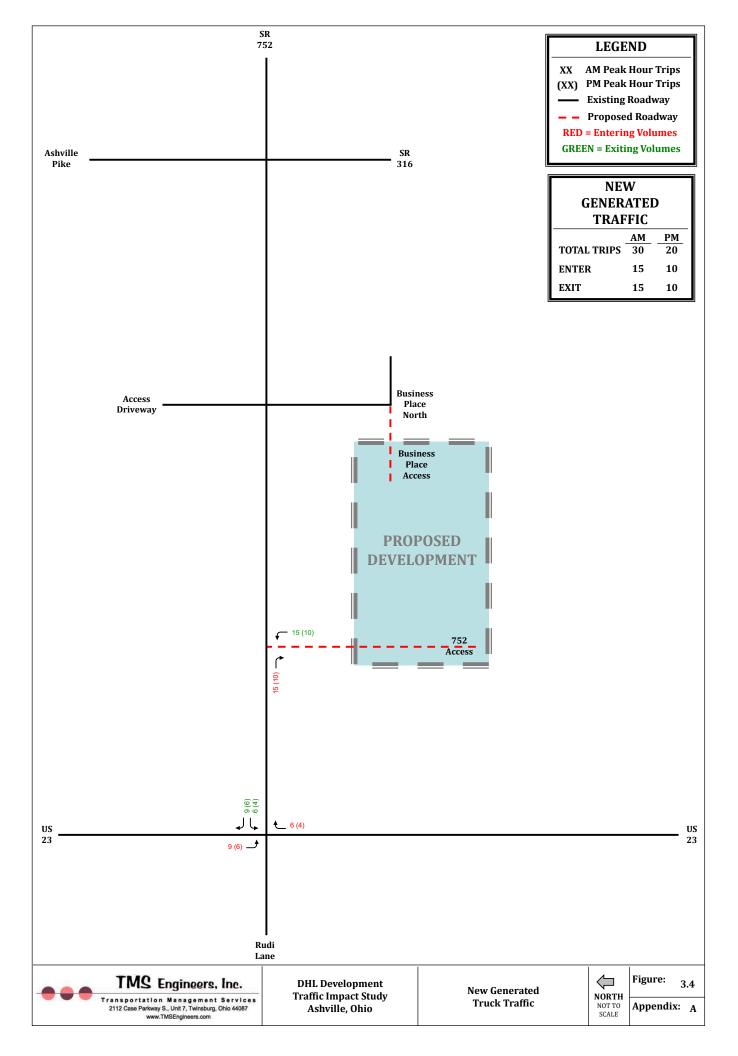


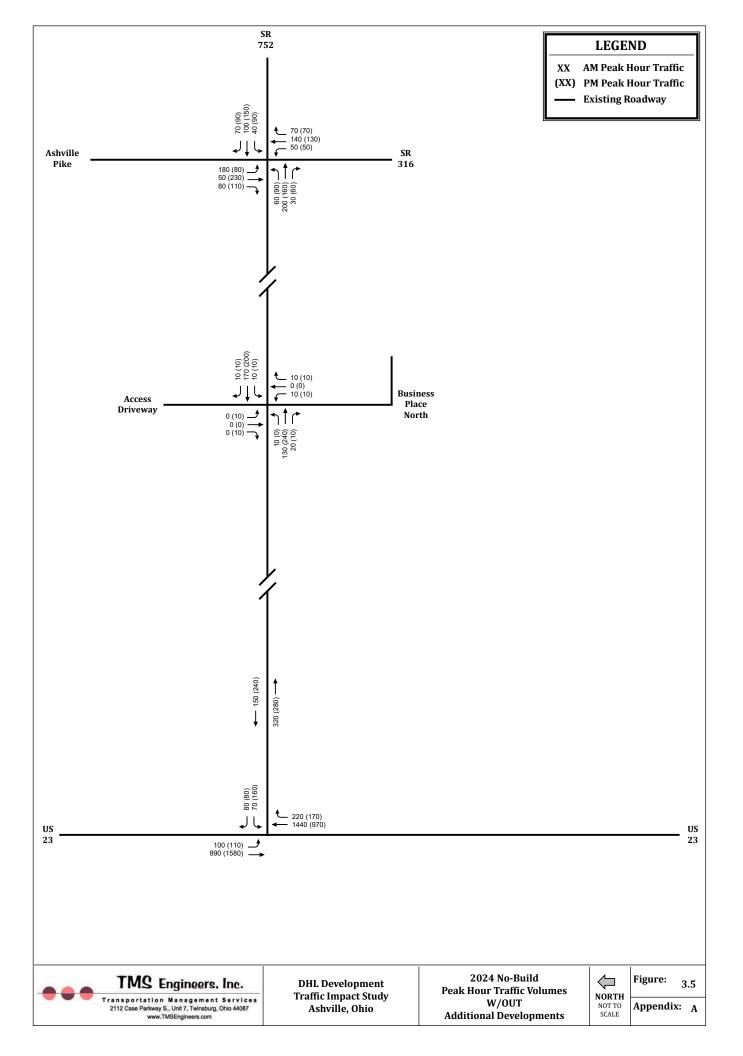


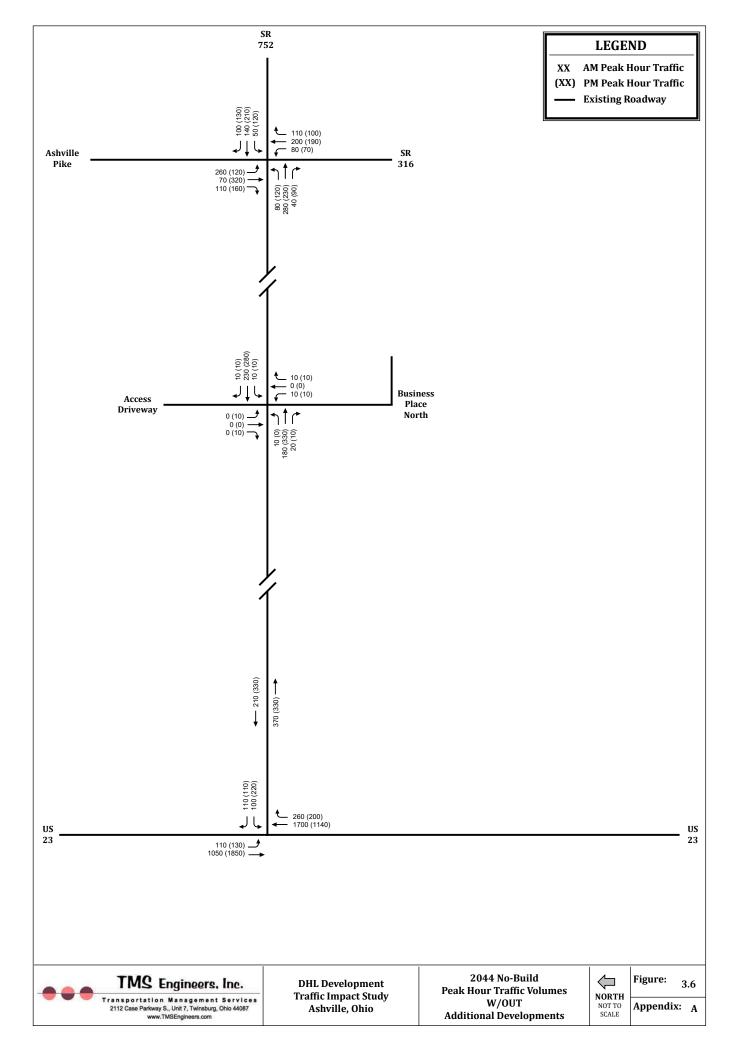


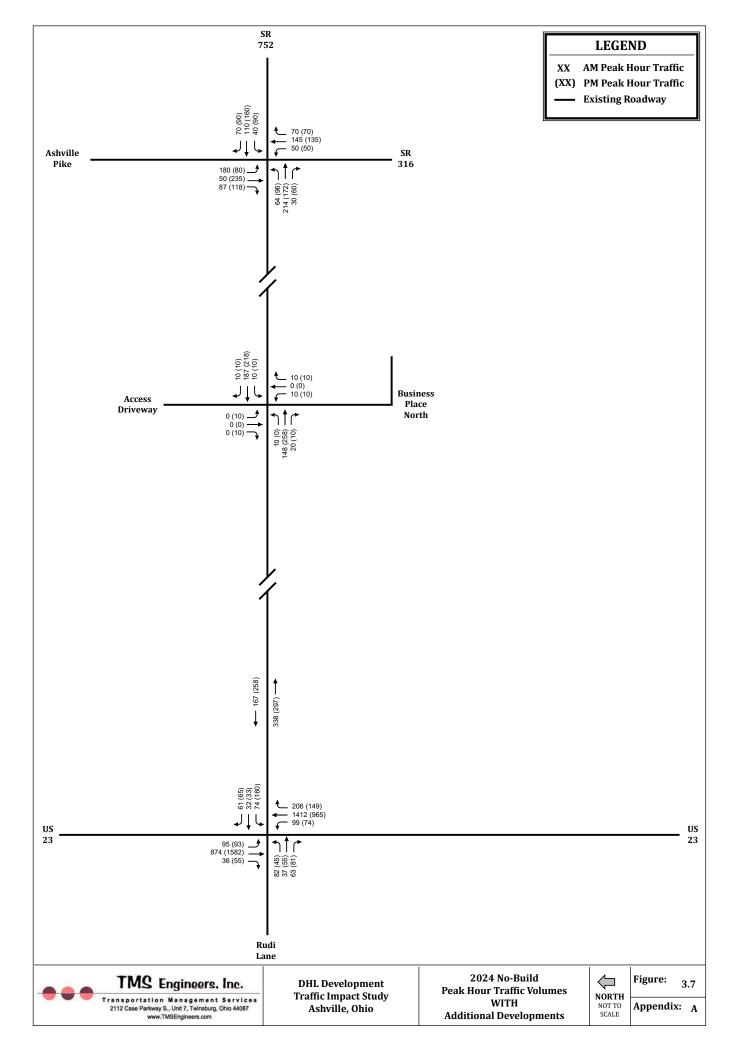


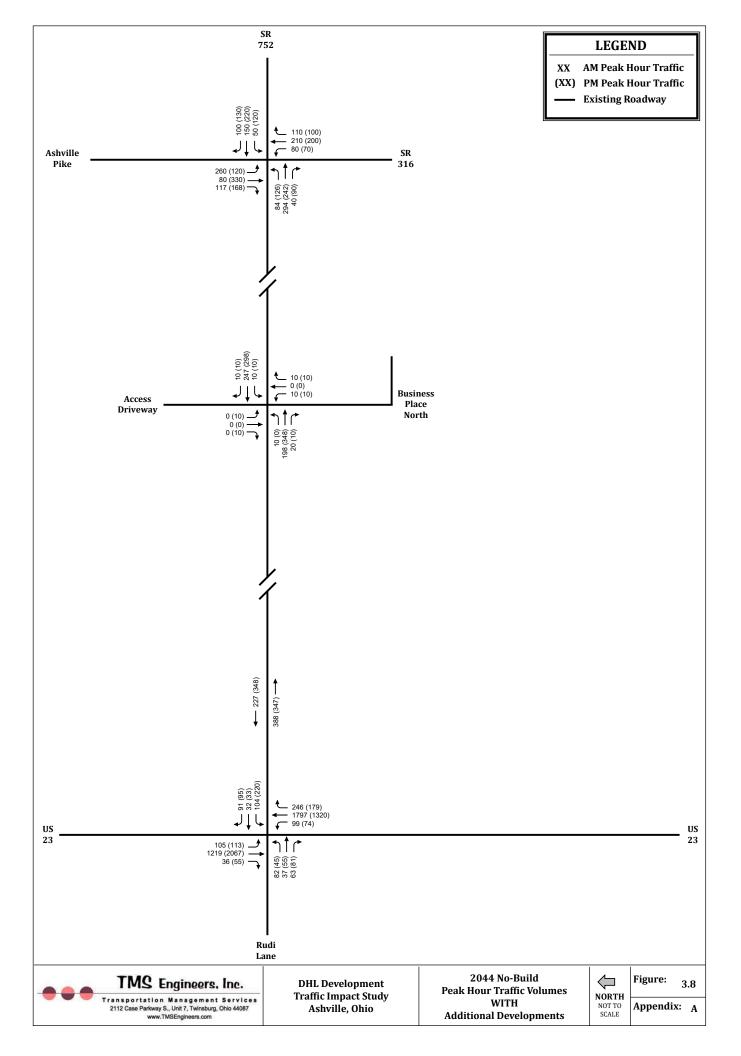


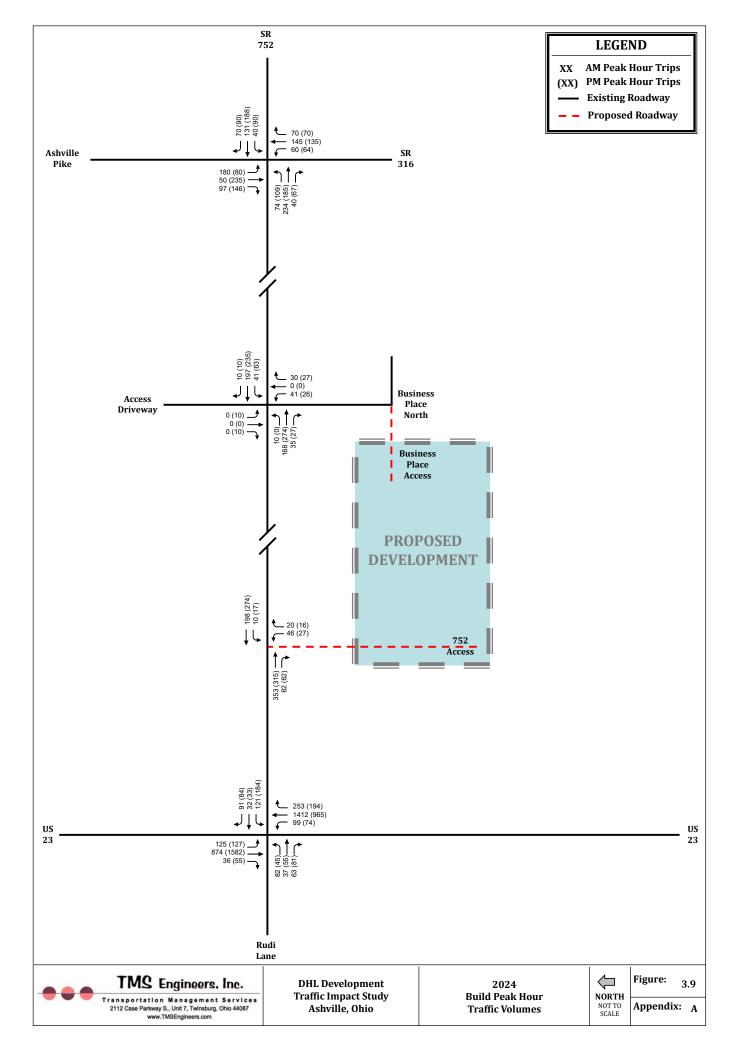


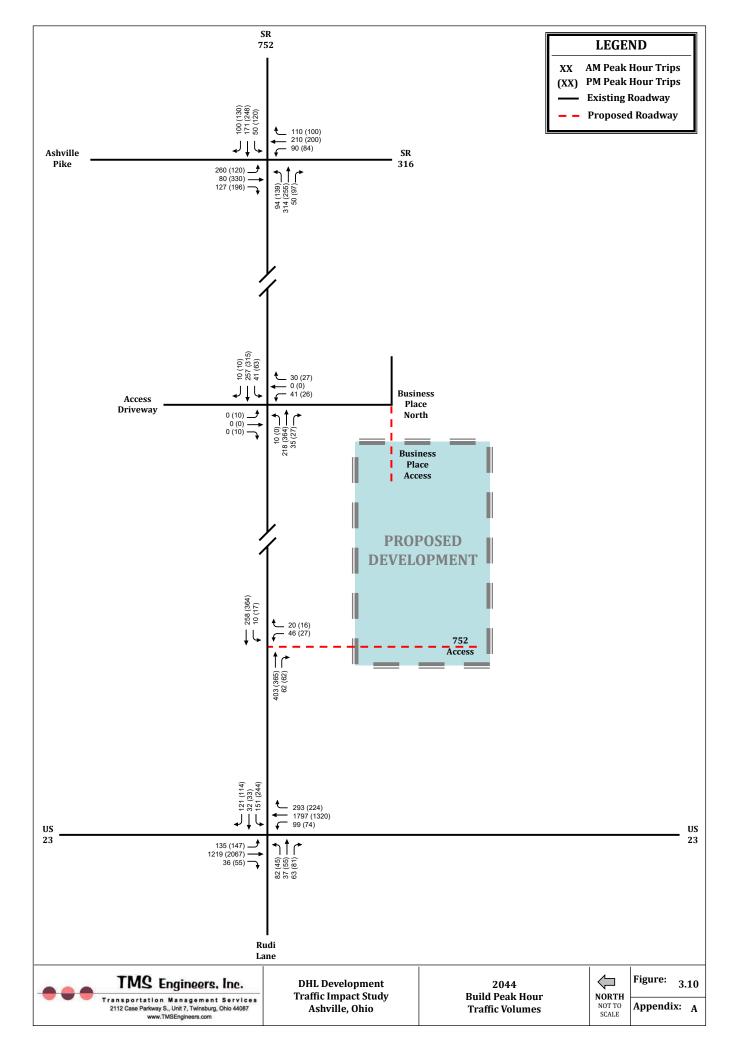


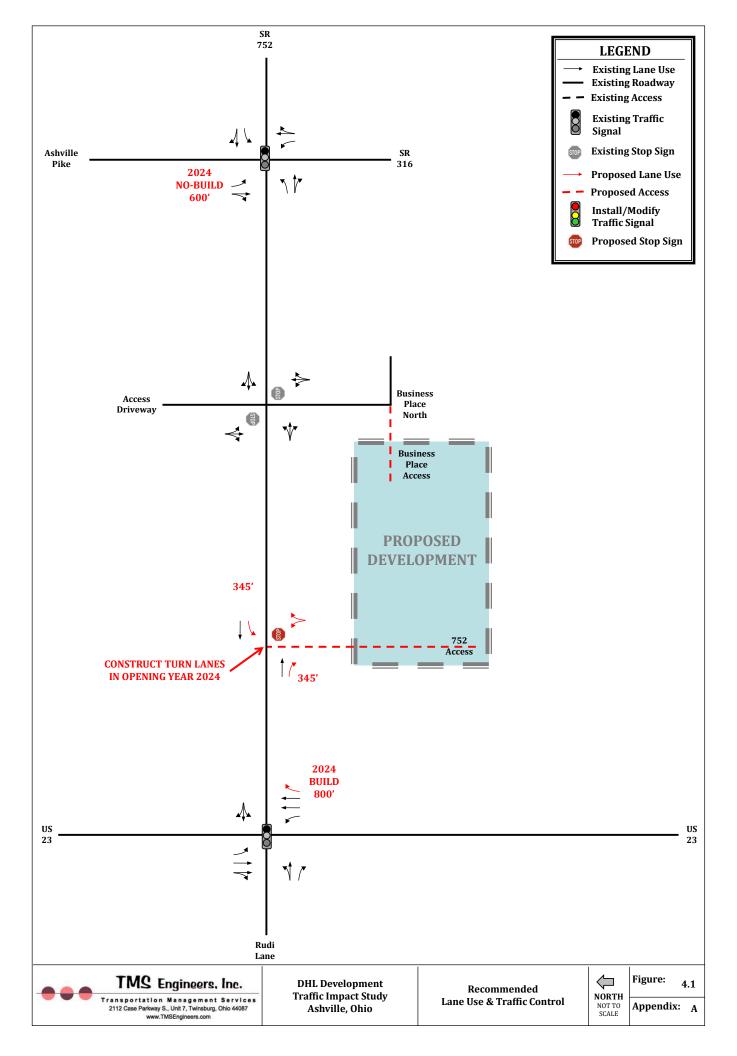












Appendix B Traffic Volume Forecast - July 18, 2022



DHL Facility

Village of Ashville, Ohio

April 1, 2022 May 4, 2022 June 30, 2022 REVISED July 18, 2002

Prepared for:

Poggemeyer Design Group, Inc. 101 Clinton Street Defiance, Ohio 43512

TRAFFIC VOLUME FORECAST

DHL Facility

Village of Ashville, Ohio

April 1, 2022 May 4, 2022 June 30, 2022 REVISED July 18, 2022

Prepared For:

Poggemeyer Design Group, Inc. 101 Clinton Street Defiance, Ohio 43512

Prepared By:

TMS Engineers, Inc. 2112 Case Parkway South Unit #7 Twinsburg, Ohio 44087



REGISTERED ENGINEER NO. E56982 CERTIFICATION NO. 2234 PROFESSIONAL TRAFFIC OPERATIONS ENGINEER BOSESSIONAL CONTINUES

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

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Chapter 1 Introduction

1.1 Purpose of Report

This traffic volume forecast has been prepared at the request of the Poggemeyer Design Group, Inc. for a Traffic Impact Study that will be prepared for a proposed DHL facility. The development and submission of the traffic volume forecasts for the proposed project are intended to follow the TIS Review Process detailed in *Section 9.32* and the TIS Flow Chart shown *Figure 9.1* of the ODOT **State Highway Access Management Manual** ⁽⁷⁾.

The proposed development is located in the Village of Ashville, Pickaway County, Ohio. **Figure 1.1**, **Appendix A** details the development location.

The development is expected to consist of an industrial park type development. The site is expected to accommodate land uses related to commerce and fulfillment operations. The following table details the proposed buildings, the development schedule, and building sizes:

BUILDING #	LOCATION	OPENING YEAR	SIZE (Square Feet)
#1	North of SR 752	2024	1,006,880
#2	North of SR 752	2025	793,440
#3	North of SR 752	2026	1,006,880
#4	South of SR 752	2027	572,460
#5	South of SR 752	2028	1,006,880
#6	South of SR 752	2029	1,006,880
#7	South of SR 752	2030	517,940
		TOTAL	5,911,360

Table 1.1 - Development Details

The year 2024 with Building #1 will be analyzed for the opening year conditions of the development based on the expected time line. The development is currently expected to reach full build out of the seven buildings in the year 2030. The year 2030 will be analyzed for the full build conditions, the build year. The design year for the proposed project will be based on the opening year and the expected volume of new site generated traffic under the full build condition of the seven buildings.

Buildings #1 - #3 are located north of State Route 752 and to the east of US Route 23. Buildings #4 - #7 are located between State Route 752 to the north and State Route 316 to the south and east of US Route 23.

The development is proposed with two access locations. The project proposes an intersection along State Route 752 that would provide full access to the portions of the development along the north and south side of State Route 752. A second full access intersection is proposed along State Route 316 and would provide direct access to the south side of the development and a connection to the proposed intersection at State Route 752. **Figure 1.2, Appendix A** shows the proposed development site plan.

It should noted that the site plan shown in **Figure 1.2** details two additional access driveways with one each along State Route 752 and State Route 316. These driveways will not provide ingress/egress to the building sites and will not be constructed as part of the proposed project.

1.2 References

The following list of references may be utilized for this report and the forecasts 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.
- Traffic Engineering Manual, October 23, 2002 Edition (Revised January 15, 2021),
 Ohio Department of Transportation, Office of Roadway Engineering, Columbus, Ohio.
- 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. *Access Management Manual*, 2ND Edition, 2014. Transportation Research Board of the National Academies, Washington, D.C.

Chapter 2 Area Conditions

2.1 Transportation Network Study Area

The study area for the proposed development includes the previously discussed development access locations as shown in **Figure 1.2**, **Appendix A** and the following intersections:

- 1. US Route 23 & State Route 752/*Rudi Lane*
- 2. US Route 23 & State Route 316/North Street
- 3. US Route 23 & Northup Avenue/State Route 316
- 4. State Route 752 & Ashville Pike
- 5. State Route 316 & Miller Avenue/County Road 28

Rudi Lane is proposed roadway that will be constructed as the west approach at the intersection of US Route 23 and State Route 752. The proposed roadway is part of the project to construct a Sheetz development at the intersection.

The Ohio Department of Transportation maintains the traffic signal control facilities at the intersections along US Route 23. The Village of Ashville maintains the traffic signal control facility at the intersection of State Route 752 and State Route 316/Ashville Pike.

A location map detailing the traffic count locations can be seen in Figure 2.1, Appendix A..

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

ROADWAY	# LANES	ORIENTATION	SPEED LIMIT (MPH)		
	LANES		POSTED	DESIGN	
US Route 23 @ SR 752	4	North-South	50	55	
US Route 23 @ SR 316 (North)	4	North-South	35	35	
US Route 23 @ SR 316 (South)	4	North-South	50	35	
Ashville Pike	2	North-South	35	35	
Miller Avenue	2	North-South	25	25	
County Road 28	2	North-South	55	60	
State Route 752 @ US 23	2	East-West	55	60	
State Route 752 @ Proposed Access	2	East-West	55	60	
State Route 752 @ Ashville Pike	2	East-West	35	35	
State Route 316 (West of US 23)	2	East-West	35	35	
State Route 316 (East of US 23)	2	East-West	35	35	
State Route 316 @ Proposed Access	2	East-West	55	60	
State Route 316 @ CR 28	2	East-West	35	35	
Rudi Lane	2	East-West	25	25	
North Street	2	East-West	25	25	
Northup Avenue	2	East-West	25	25	

 Table 2.1 Roadway Characteristics

An aerial view of the of the study area can be seen in **Figure 2.2 Appendix A**.

Figure 2.3, Appendix A shows the lane use and traffic control conditions based upon the existing conditions in the study area. 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. These 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.

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/

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

ROADWAY	AREA	FC #	CLASSIFICATION
US Route 23	Urban	3	Principal Arterial
State Route 752	Urban	5	Major Collector
State Route 316 (West of US 23)	Urban	5	Major Collector
State Route 316 (East of US 23)	Urban	5	Major Collector
State Route 316 (Long Street)	Urban	5	Major Collector
Ashville Pike	Urban	7	Local Roadway
Miller Avenue	Urban	7	Local Roadway
County Road 28	Urban	7	Local Roadway
Rudi Lane	Urban	7	Local Roadway
North Street	Urban	7	Local Roadway
Northup Avenue	Urban	7	Local Roadway

Table 2.2 Functional Class	sification
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Figure 2.4, Appendix A illustrates the section of the functional classification map for the study area.

2.3 Traffic

Weekday Peak Hours

Weekday nine hour turning movement counts were performed between Wednesday, February 16, 2022 and Thursday, March 3, 2022 at the following intersections:

- 1. US Route 23 & State Route 752 (Thursday, 2/17/2022)
- 2. US Route 23 & State Route 316/North Street (Wednesday, 3/2/2022)
- 3. US Route 23 & Northup Avenue/State Route 316 (Tuesday, 3/1/2022)
- 4. State Route 752 & Ashville Pike (Wednesday, 2/16/2022)
- 5. State Route 316 & Miller Avenue/County Road 28 (Thursday, 3/3/2022)

The weekday traffic counts were conducted in fifteen (15) minute intervals between the hours of 7 AM - 10 AM, 11 AM - 2 PM, and 3 PM - 6 PM, then hourly totals were calculated. Copies of the intersection turn movement counts are included in **Appendix B**. 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.

The AM and PM intersection peak hours are selected by reviewing data in 15-minute intervals. 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?

The use of summary tables for 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.

The following tables detail a breakdown of the hourly volumes during the AM and PM hours that were determined to experience the highest traffic volumes.

	HOUR BEGINS								
	7:00	7:15	7:30	7:45	8:00	8:15	8:30	8:45	9:00
US23 & SR752	2376	2276	2085	2018	1973	1936	1903	1826	1756
US23 & SR316 (N)	2527	2433	2278	2114	1983	1889	1843	1821	1821
US23 & SR 316 (S)	2513	2385	2340	2183	2126	2021	1887	1869	1806
SR752 & Ashville Pike	874	781	560	497	507	510	507	469	432
SR316 & CR 28	367	331	337	340	337	327	314	289	294
TOTAL	8657	8206	7600	7152	6926	6683	6454	6274	6109

Table 2.3 AM Peak Hour Traffic Volumes(Total Entering Volume - Vehicles per Hour)

Table 2.4 PM Peak Hour Traffic Volumes (Total Entering Volume - Vehicles per Hour)

	HOUR BEGINS								
	3:00	3:15	3:30	3:45	4:00	4:15	4:30	4:45	5:00
US23 & SR752	2492	2571	2597	2599	2584	2570	25941	2534	2467
US23 & SR316 (N)	2662	2772	2884	2914	2954	2892	2876	2782	2684
US23 & SR 316 (S)	2692	2822	2961	3026	2951	3018	2978	2968	2890
SR752 & Ashville Pike	825	886	990	1072	1094	1083	1000	912	853
SR316 & CR 28	502	524	531	535	537	530	533	514	501
TOTAL	9173	9575	9963	10146	10120	10093	33328	9710	9395

Based on the collected traffic data, the peak hours for the study area were determined based on the AM and PM hour experiencing the highest total volume indicated in red in the previous tables. The weekday AM peak hour of traffic was determined to be 7:00 AM to 8:00 AM. The weekday PM peak hour of traffic was found to be 3:45 PM to 4:45: 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 on a weekday.

The existing AM and PM peak hour traffic volumes are shown in **Figure 2.5**, **Appendix A**.

It should be noted that it may be necessary to adjust these volumes due to the effects of the COVID-19 pandemic. The ODOT guidance and procedures will be used to determine any necessary adjustments.

Chapter 3 Projected Traffic Conditions

3.1 Site Traffic

Trip Generation

Calculating future total driveway trips requires an estimate of the traffic generated by the proposed development. The most widely accepted method of determining the amount of traffic that the proposed development will generate is to compare the proposed land use with existing facilities of the same use. The Institute of Transportation Engineers (ITE) has prepared a manual titled "**Trip Generation Manual**" ⁽⁸⁾, which is a compilation of similar traffic generation studies to aide in making such a comparison. The most recent update of this manual is the 11TH edition and was utilized for this study.

The ITE **Trip Generation Manual** ⁽⁸⁾ will be used in conjunction with available site specific data provided by DHL in order to forecast the expected development site generated traffic. Site generated traffic will be prepared for passenger vehicle **(vehicle)** type traffic and truck **(truck)** traffic.

The following table details a breakdown of the buildings that are expected to occupy the development site:

BUILDING #	BUILDING LOCATION	OPENING YEAR	SIZE (Sq Ft)
#1	North of SR 752	2024	1,006,880
#2	North of SR 752	2025	793,440
#3	North of SR 752	2026	1,006,880
#4	South of SR 752	2027	572,460
#5	South of SR 752	2028	1,006,880
#6	South of SR 752	2029	1,006,880
#7	South of SR 752	2030	517,940
		TOTAL	5,911,360

The developer provided an overview of the their North American facility operations. The overview showed that for buildings over 400,000 square feet that the 90% are operating 2 or 3 shift operations. The overview also provided a total headcount for each of the sectors that are served at the facilities. The sectors for the AM and PM peak hour vehicle traffic were determined to be the five highest. A copy of the facilities overview can be seen in **Appendix C**.

In order to determine the volume of expected site generated **vehicle** traffic a weighted average of the total headcount for the 5 largest sectors was calculated. It was assumed for the purpose of this report that one employee was equal to one trip in the peak hour due to the shift operations. The following table details the calculation of the site generated trip rate that will be used to forecast the volume of **vehicle** generated traffic by each building in the development:

SECTOR	HEADCOUNT per 100,000 sf	WEIGHTED AVERAGE	WEIGHTED VALUE	
Automotive	24 15.00%		3.600	
Consumer	20	12.50%	2.500	
Retail	51	31.88%	16.256	
Technology	45	28.13%	12.656	
Life Science/Healthcare	20	12.50%	2.500	
TOTAL	160	100%	37.513	

Table 3.2 Vehicle Trip Rate Calculation

The weighted average should provide a conservative estimate of future traffic as the sectors being served at each building are currently unknown.

A rate of 37.5125 trips per 100,000 square foot will be applied to each building in the development in order to determine the peak hour site generated trips based on the results shown above in **Table 3.2**.

The peak hour site generated trips will be split in to entering and exiting trips based on the peak hour directional distributions provided for land use #156 - High Cube Parcel Hub Warehouse from the ITE **Trip Generation Manual**⁽⁸⁾.

The developer provided the expected facility truck volumes from the consumer and ecommerce sectors. These sectors were selected as they provide the highest peak hour volume of truck traffic at DHL facilities and should provide a conservative estimate of the expected truck volumes during the AM and PM peak hours. These truck volumes were applied to the each of the proposed buildings based on the square footage of each. A copy of the provided truck data can be seen in **Appendix C**.

Trip generation calculations for the development were performed utilizing the supplied site specific data for **vehicle and truck** trips as well as data contained in the **Trip Generation Manual**⁽⁸⁾ and the methods outlined in the (ITE) **Trip Generation Handbook**⁽⁹⁾. A spreadsheet detailing the **vehicle** trip generation calculations can be found in **Appendix C**. The following table details the site generated **vehicle** and **truck** traffic volumes for each building in the proposed development.

		SIZE	TRIP ENDS							
BUILDING	OPENING YEAR		Weekday Peak Hour Between 7-9 AM			Weekday Peak Hour Between 4-6 PM				
			ENTER EXIT		ENTER		E>	EXIT		
			Vehicles	Trucks	Vehicles	Trucks	Vehicles	Trucks	Vehicles	Trucks
1	2024	1,006,880	189	25	189	25	257	18	121	18
(North of SR 752)	2024	SF	100	20	100	20	201	10	121	10
2	2025	793,440	149	23	149	22	202	18	95	18
(North of SR 752)	2020	SF	110	23	143	22	202	.0	00	10
3	2026	1,006,880	189	25	189	25	257	18	121	18
(North of SR 752)	2020	SF	100	20	100	20	201	10	121	10
4	2027	572,460	107	15	107	15	146	10	69	10
(South of SR 752)	2027	SF								
5	2028	1,006,880	189	25	189	25	257	18	121	18
(South of SR 752)	2020	SF	100							
6	2029	1,006,880	189	25	189	25	257	18	121	18
(South of SR 752)	2023	SF	100	20	100	20	201	10	121	10
7	7 2030	517,940	97	15	97	15	132	10	62	10
(South of SR 752)	2000	SF	51	10	51	10	102	10	02	10
	TOTAL NEW TRIPS		1109	153	1109	152	1508	110	710	110
TOTAL			1262 1261		1618 820					
			2523			2438				

Table 3.3 New Trip Summary

The ODOT **State Highway Access Management Manual** ⁽⁷⁾ requires that ten year design hour traffic volumes be analyzed for a proposed development when the number of generated trips is below 500 in the peak hour and twenty year design hour traffic volumes when the number of generated trips is greater than 500 in the peak hour.

The proposed development is expected to generate a total of 2,523 driveway trips in the AM peak hour and a total of 2,438 driveway trips in the PM peak hour. The year 2044 will therefore be analyzed for the twenty year design hour conditions.

Distribution of New Site Generated Weekday Traffic

Separate directional distributions will be prepared for passenger vehicle **(vehicle)** type traffic and truck **(truck)** traffic.

The directional distribution for the new generated **vehicle** traffic is a function of the prevailing operating conditions on the existing roadways. The distribution pattern that was assumed is shown in the tables that follow and is based upon engineering judgement of the existing traffic volumes entering the study area at the five study area intersections during the AM and PM peak hours shown in **Figure 2.5**, **Appendix A**, the adjacent land uses, functional classification of the roadways, and routes to avoid known areas of congestion. The vehicle trips were assumed to be primary trips made by people leaving home for work and then returning home. The **vehicle** trips were therefore assumed to enter and exit the study using the same route.

The following tables detail the distribution of the new generated **vehicle** trips for the proposed development under the opening and design year conditions.

ORIGIN/ DESTINATION	ROUTE	ENTER % TOTAL	ENTER NEW TRIPS	EXIT % TOTAL	EXIT NEW TRIPS
North	US 23	20%	38	20%	38
South	US 23	30%	56	30%	56
East	SR 752	20%	38	20%	38
West	SR 316	10%	19	10%	19
North	Ashville Pike	10%	19	10%	19
East	SR 316	10%	19	10%	19
	TOTALS	100%	189	100%	189

Table 3.4 AM New Trip Origins and Destinations2024 Opening Year

ORIGIN/ DESTINATION	ROUTE	ENTER % TOTAL	ENTER NEW TRIPS	EXIT % TOTAL	EXIT NEW TRIPS
North	US 23	20%	51	20%	24
South	US 23	20%	52	20%	25
East	SR 752	20%	51	20%	24
West	SR 316	10%	26	10%	12
North	Ashville Pike	20%	51	20%	24
East	SR 316	10%	26	10%	12
	TOTALS	100%	257	100%	121

Table 3.5 PM New Trip Origins and Destinations2024 Opening Year

Table 3.6 AM New Trip Origins and Destinations2030/2044 Build/Design Year

ORIGIN/ DESTINATION	ROUTE	ENTER % TOTAL	ENTER NEW TRIPS	EXIT % TOTAL	EXIT NEW TRIPS
North	US 23	20%	222	20%	222
South	US 23	30%	333	30%	332
East	SR 752	20%	221	20%	222
West	SR 316	10%	111	10%	111
North	Ashville Pike	10%	111	10%	111
East	SR 316	10%	111	10%	111
	TOTALS	100%	1109	100%	1109

ORIGIN/ DESTINATION	ROUTE	ENTER % TOTAL	ENTER NEW TRIPS	EXIT % TOTAL	EXIT NEW TRIPS
North	US 23	20%	302	20%	142
South	US 23	20%	302	20%	142
East	SR 752	20%	301	20%	142
West	SR 316	10%	151	10%	71
North	Ashville Pike	20%	301	20%	142
East	SR 316	10%	151	10%	71
	TOTALS	100%	1508	100%	710

Table 3.7 PM New Trip Origins and Destinations2030/2044 Build/Design Year

All **truck** traffic will enter and exit the development at the proposed intersection along State Route 752. **Trucks** will be prohibited from using the State Route 316 access location and exiting the site to the east along State Route 752 through the use of way finding signs both on-site and off-site.

The distribution of the **truck** traffic was based on the all **trucks** using US Route 23 to travel north or south. The trucks were split with 60% originating from and destined to the north. The remaining 40% were assumed to enter from or exit to the south. The distribution was based on the existing volume patterns on US Route 23, the location of Rickenbacker International Airport, and the location of the facility to the south of the greater Columbus area.

Distribution of Site Generated Traffic - 2024 Opening Year

The directional distribution for the new AM and PM peak hour generated **vehicle** traffic is shown graphically in **Figure 3.1**, **Appendix A** for the opening year conditions.

The directional distribution for the new AM and PM peak hour generated **truck** traffic is shown graphically in **Figure 3.2, Appendix A** for the opening year conditions.

Distribution of Site Generated Traffic - 2030/2044 Design Year

The distribution of new site generated **vehicle** traffic for the portion of the development north of State Route 752 was based on the following assumptions:

- Entering traffic would take the most direct route available to either the SR 752 or SR 316 access. It was assumed that traffic would use the on-site connector road to avoid the section of US 23 between SR 752 and SR 316.
- Exiting traffic would take the most direct route exit the study area using either the SR 752 or SR 316 access. It was assumed that traffic would use the on-site connector road to avoid the section of US 23 between SR 752 and SR 316.

The build and design year conditions directional distribution for the new AM and PM peak hour generated **vehicle** traffic is shown graphically in **Figure 3.3, Appendix A** for the portion of the development located to the north of State Route 752.

The design year conditions directional distribution for the new AM and PM peak hour generated **truck** traffic is shown graphically in **Figure 3.4**, **Appendix A** for the portion of the development located to the north of State Route 752.

The distribution of new site generated **vehicle** traffic for the portion of the development south of State Route 752 was based on the following assumptions:

- Entering traffic would take the most direct route available to either the SR 752 or SR 316 access. It was assumed that traffic would use the on-site connector road to avoid the section of US 23 between SR 752 and SR 316.
- Exiting traffic would take the most direct route exit the study area using either the SR 752 or SR 316 access. It was assumed that traffic would use the on-site connector road to avoid the section of US 23 between SR 752 and SR 316.

The design year conditions directional distribution for the new AM and PM peak hour generated **vehicle** traffic is shown graphically in **Figure 3.5, Appendix A** for the portion of the development located to the south of State Route 752.

The design year conditions directional distribution for the new AM and PM peak hour generated **truck** traffic is shown graphically in **Figure 3.6, Appendix A** for the portion of the development located to the south of State Route 752.

Assignment of Site Generated Traffic - 2024 Opening Year

Based upon the distribution patterns shown in **Figure 3.1**, the new AM and PM peak site generated **vehicle** traffic was assigned to the study intersections. The assignment of the estimated site generated new **vehicle** traffic for the proposed development under the opening year conditions is shown graphically in **Figure 3.7**, **Appendix A**.

Based upon the distribution patterns shown in **Figure 3.2**, the new AM and PM peak site generated **truck** traffic was assigned to the study intersections. The assignment of the estimated site generated new **truck** traffic for the proposed development under the opening year conditions is shown graphically in **Figure 3.8**, **Appendix A**.

Assignment of Site Generated Traffic - 2030/2044 Design Year

Based upon the distribution patterns shown in **Figure 3.3**, the new AM and PM peak site generated **vehicle** traffic was assigned to the study intersections. The assignment of the estimated design year site generated new **vehicle** traffic for the portion of the development north of State Route 752 is shown graphically in **Figure 3.9**, **Appendix A**.

Based upon the distribution patterns shown in **Figure 3.4**, the new AM and PM peak site generated **truck** traffic was assigned to the study intersections. The assignment of the estimated design year site generated new **truck** traffic for the portion of the development north of State Route 752 is shown graphically in **Figure 3.10**, **Appendix A**.

Based upon the distribution patterns shown in **Figure 3.5**, the new AM and PM peak site generated **vehicle** traffic was assigned to the study intersections. The assignment of the estimated design year site generated new **vehicle** traffic for the portion of the development south of State Route 752 is shown graphically in **Figure 3.11**, **Appendix A**.

Based upon the distribution patterns shown in **Figure 3.6**, the new AM and PM peak site generated **truck** traffic was assigned to the study intersections. The assignment of the estimated design year site generated new **truck** traffic for the portion of the development south of State Route 752 is shown graphically in **Figure 3.12**, **Appendix A**.

3.2 Adjusted Traffic

The collected peak hour traffic volumes detailed in **Appendix B** and **Figure 2.5**, **Appendix A** should be reviewed to determine if they have been impacted due to the COVID-19 pandemic. The traffic volumes as they were collected may not be representative of a typical weekday under normal travel patterns and show less volume. The ODOT Modeling and Forecasting Section of the Office of Statewide Planning and Research has developed a process to calibrate counts that are artificially low due to the COVID-19 situation. An overview of the ODOT guidance and process can be seen in **Appendix D**. The development of calibration factors for the study area roadways is described in the following paragraphs.

The ODOT Traffic Monitoring Management System (TMMS) was first consulted to determine available Peak Hour and Average Daily Traffic along the study area roadways. The ODOT guidance indicates that only counts prior to March 15, 2020 are suitable for use in the calculation of adjustment factors.

Data from the following location will be used to determine if the collected data should be adjusted to account for the COVID-19 pandemic.

1. US Route 23 (North of SR 752) - Location ID 2765

Location 2765 is a continuous count station that provides daily historical traffic volumes. The location listed provides both ADT and hourly traffic data in 15 minute increments.

The corresponding peak hour data from this location will be used to determine if calibration factors are necessary for the AM and PM peak hours at the study area intersections. The traffic count data collected for this report was collected on February 20, 2022. This was the third Thursday in February. The ODOT historical ADT data from Thursday, February 20, 2022 will be compared to the Thursday, February 17, 2020 data Copies of the 2020 and 2022 historical data can be seen in **Appendix E**.

A calculated factor greater than 1.0 indicates that the 2022 volumes do not exceed the 2020 historical data, therefore a calibration factor *is* necessary to account for the impact of the COVID-19 pandemic.

A calculated factor of less than 1.0 indicates that the 2022 volumes exceed the 2020 historical data, therefore a calibration factor *is not* necessary to account for the impact of the COVID-19 pandemic.

The following table details the calculation of peak hour COVID adjustment factors for the study area roadways using the peak hour traffic volumes from the collected traffic data for this report and the 2019 historical data from the ODOT TMMS website:

LOCATION	TIME	2020	2022	ADJUSTMENT
	PERIOD	PRE-COVID	CURRENT	FACTOR
US Route 23 (North of SR 72) ID 2765	ADT	28692	29633	0.9682

 Table 3.8 - COVID Adjustment Factor

A COVID adjustment factor of 0.9682 indicates that the 2022 volumes exceed the 2020 historical data, therefore a calibration factor *is not* necessary to account for the impact of the COVID-19 pandemic on the collected traffic data.

3.3 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.

The ODOT **State Highway Access Management Manual** ⁽⁷⁾ requires that opening year and ten year design hour traffic volumes be analyzed for a proposed development when the number of generated trips is less than 500 in the peak hour.

The year 2044 (Design Year) will be analyzed for the proposed development as the peak hour site generated traffic volumes are greater than 500 trips. Therefore, it is necessary to estimate historical growth rates in order to establish the future traffic on the study area roadways due to non-site related conditions.

Roadways, like those found in the study area, 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 may increase in future years.

The Mid-Ohio Regional Planning Commision (MORPC) was contacted in order to determine appropriate growth rates for the study area roadways. MORPC provided linear annual growth rates for the approaches at the study area intersections. A copy of the email correspondence regarding growth rates for the study area can be seen in **Appendix H**.

The growth rate and factors for they study area can be seen in the following table:

	GROWTH RATE (Annual Growth)	GROWTH FACTORS			
APPROACH/LOCATION		2024	2030	2044	
SR 752 East @ US 23	2.00%	1.040	1.160	1.440	
US 23 North @ SR 752	0.90%	1.018	1.072	1.198	
US 23 South @ SR 752	0.90%	1.018	1.072	1.198	
US 23 North @ SR 316	0.90%	1.018	1.072	1.198	
SR 316 West @ US 23	1.60%	1.032	1.128	1.352	
US 23 South @ SR 316	0.90%	1.018	1.072	1.198	
SR 316 East @ US 23	2.00%	1.040	1.160	1.440	
US 23 North @ SR 316	1.00%	1.020	1.080	1.220	
Northup West @ US 23	2.00%	1.040	1.160	1.440	
US 23 South @ SR 316	0.90%	1.018	1.072	1.198	
SR 752 East @ Ashville Pike	2.00%	1.040	1.160	1.440	
Ashville Pike North @ SR 752	2.20%	1.044	1.176	1.484	
SR 752 West @ Ashville Pike	2.00%	1.040	1.160	1.440	
Long South @ SR 752	2.20%	1.044	1.176	1.484	
SR 316 East @ CR 28	2.00%	1.040	1.160	1.440	
SR 316 West @ CR 28	2.00%	1.040	1.160	1.440	

Table 3.9 - Growth Rate & Factors

The study area intersection approaches that did not have a growth rate supplied by MORPC will not have a growth factor applied to the existing traffic volumes.

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 or a methodology to determine 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** ⁽⁷⁾, 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** ^(4, 5) 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 I**.

The following table details the peak hour to design hour factors for the study area roadways.

ROADWAY	AREA	FUNCTIONAL CLASSIFICATION	MONTH	DAY	DHV FACTOR
US 23 @ SR 752	Urban	Principal Arterial	February	Thursday	1.16
SR 752 @ US 23	Urban	Major Collector	February	Thursday	1.16
US 23 @ SR 316	Urban	Principal Arterial	March	Wednesday	1.16
SR 316 @ US 23	Urban	Major Collector	March	Wednesday	1.16
North Street	Urban	Local Roadway	March	Wednesday	1.16
US 23 @ SR 316	Urban	Principal Arterial	March	Tuesday	1.16
US 316 @ US 23	Urban	Major Collector	March	Tuesday	1.16
Northup Avenue	Urban	Local Roadway	March	Tuesday	1.16
SR 752 @ Ashville Pike	Urban	Major Collector	February	Wednesday	1.17
Long Street (SR 316)	Urban	Major Collector	February	Wednesday	1.17
Ashville Pike	Urban	Local Roadway	February	Wednesday	1.17
SR 316 @ CR 28	Urban	Major Collector	March	Thursday	1.13
Miller Avenue	Urban	Local Roadway	March	Thursday	1.13
CR 28	Urban	Local Roadway	March	Thursday	1.13

Table 3.10 - Peak Hour to Design Hour Factors

Intersection 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.

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 B**. The following table shows the PHF's calculated for the study area intersections during the AM and PM peak hours:

ROADWAY/INTERSECTION	AM PHF	PM PHF
US 23 & SR 752	0.888	0.976
US 23 & SR 316/North Street	0.956	0.970
US 23 & SR 316/Northup Avenue	0.952	0.946
SR 752 & Ashville Pike	0.646*	0.882
SR 316 & CR 28/Miller Avenue	0.812	0.942

 Table 3.11 - Intersection Peak Hour Factors

* A minimum PHF of 0.80 will be used.

The peak hour factors detailed in **Table 3.11** will be used in the intersection capacity calculations for the Traffic Impact Study.

Additional Study Area Development - Sheetz

A Sheetz development is currently under construction at the intersection of US Route 23 and State Route 752. The Sheetz development was analyzed in a Traffic Impact Study dated March 17, 2021. The TIS was reviewed and approved by ODOT.

A copy of the traffic volume figures from the pages 9 and 10 of the Sheetz TIS that will be added to the background traffic volumes can be seen in **Appendix F**. The Sheetz TIS did not account for the distribution of the site generated traffic to the adjacent intersections that under study for this report.

Figure 3.13, Appendix A details the total site generated Sheetz traffic for the study area of this report and their distribution to the adjacent intersections under study. The volumes were based on Pages 9 and 10 of the March 17, 2021 Sheetz TIS. This traffic will be included in the 2024, 2030, and 2044 analysis for this report.

Additional Study Area Development - US Route 23 & SR-316 Development

A Traffic Impact Study is currently being performed for a proposed mixed-used development at the southeast quadrant of the US Route 23 and State Route 316/Northup Avenue intersection. The development is expected to consist of retail space, commercial out lot parcels, multi-family units, duplex units, and single-family lots.

A copy of the traffic volume figures from the TIS that were added to the No-Build background traffic volumes can be seen in **Appendix G**. The TIS did not account for the distribution of the site generated traffic to the adjacent intersections that under study for this report.

Figure 3.14, Appendix A details the new site generated traffic for the proposed opening year of 2022 for the mixed-used development. The volumes are based on those shown in Exhibit 5 of the July 2021 TIS. This traffic will be included in the 2024 analysis for this report.

Figure 3.15, Appendix A details the new site generated traffic for the proposed design year of 2042 for the mixed-used development. The volumes are based on those shown in Exhibit 9 of the July 2021 TIS. This traffic will be included in the 2030 and 2044 analysis for this report.

3.4 Future Traffic

No-Build Conditions w/out Sheetz & US 23/SR 316 Development

The previously discussed calculation of design hour factors and growth rates for each movement were applied to the existing 2022 traffic volumes shown in **Figure 2.5**, **Appendix A** in order to estimate the future traffic considering non-project traffic conditions without the development of the Sheetz or the proposed mixed-use development.

Spreadsheets detailing the use of the calculated growth rates and the design hour factors and the resulting expected 2024, 2030, and 2044 No-Build traffic volumes can be found in **Appendix J**. The No-Build traffic volumes detailed in **Appendix J** do not include the site generated traffic volumes from the Sheetz or the US 23/SR316 mixed-use development

Balancing traffic volumes is a process by which the differences between traffic volume data at adjacent traffic count locations is eliminated. The traffic volumes along US Route 23 were not "balanced" for the purpose of this report due to the number of driveways, intersections, and commercial retail businesses between the three US Route 23 count locations.

This traffic is the expected traffic if the proposed additional developments and the DHL facility **are not** constructed, a **"No-Build w/out Additional Developments"** condition. The estimated 2024, 2030, and 2044 No-Build w/out Additional Developments traffic volumes for the study area are shown graphically in **Figures 3.16 - 3.18**, **Appendix A**.

The No-Build w/out Additional Developments traffic volumes have been rounded to the nearest 10 to adhere to preferred ODOT practices.

No-Build Conditions w/ Sheetz & US 23/SR 316 Development

In order to estimate the 2024 opening year No-Build traffic considering the background traffic and the additional developments in the study area, the sum of the 2024 No-Build volumes, shown in **Figure 3.16**, **Appendix A**, were added to the new generated traffic (**Figures 3.13 & 3.14**). These traffic volumes are the expected volumes if the additional developments in the study area are constructed and the proposed DHL development **is not** constructed, or a "**No-Build with Additional Development**" condition.

The estimated 2024 opening year No-Build with Additional Development traffic volumes for the study area are shown graphically in **Figure 3.19**, **Appendix A** for the study area.

In order to estimate the 2030 No-Build traffic considering the background traffic and the additional developments in the study area, the sum of the 2030 No-Build volumes, shown in **Figure 3.17**, **Appendix A**, were added to the new generated traffic (**Figures 3.13 & 3.15**). These traffic volumes are the expected volumes if the additional developments in the study area are constructed and the proposed DHL development **is not** constructed, or a **"No-Build with Additional Development"** condition.

The estimated 2030 No-Build with Additional Development traffic volumes for the study area are shown graphically in **Figure 3.20**, **Appendix A** for the study area.

In order to estimate the 2044 design year No-Build traffic considering the background traffic and the additional developments in the study area, the sum of the 2044 No-Build volumes, shown in **Figure 3.18**, **Appendix A**, were added to the new generated traffic (**Figures 3.13 & 3.15**). These traffic volumes are the expected volumes if the additional developments in the study area are constructed and the proposed DHL development **is not** constructed, or a **"No-Build with Additional Development"** condition.

The estimated 2044 design year No-Build with Additional Development traffic volumes for the study area are shown graphically in **Figure 3.21**, **Appendix A** for the study area.

Project Build Conditions

In order to estimate the future opening year traffic considering project traffic conditions, the sum of the 2024 No-Build with Additional Development volumes, shown in **Figure 3.19**, **Appendix A**, were added to the new generated traffic (**Figures 3.7 & 3.8**) to equal the future 2024 Build peak hour volumes.

The estimated 2024 Build traffic volumes for the study area are shown graphically in **Figure 3.22**, **Appendix A** for the proposed development. These traffic volumes are the expected volumes if the proposed development **is** constructed, or a **"Build"** condition. These conditions represent the expected opening year conditions with the construction of Building #1.

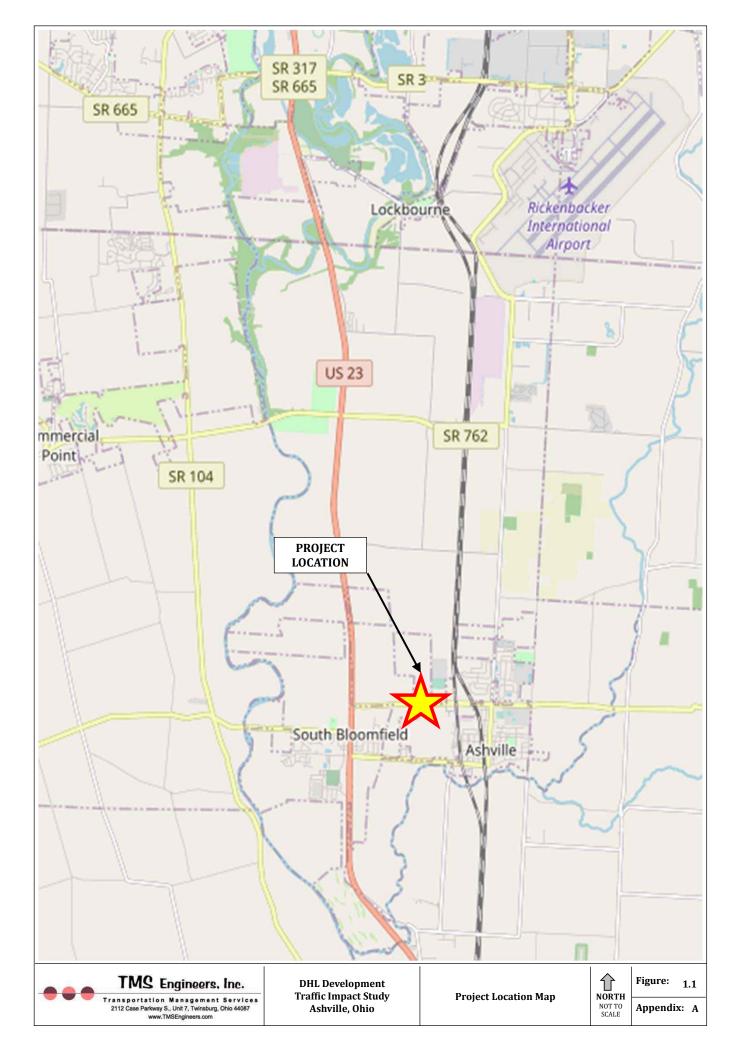
In order to estimate the build year traffic considering project traffic conditions, the sum of the 2030 No-Build with Additional Development volumes, shown in **Figure 3.20**, **Appendix A**, were added to the new generated traffic (**Figures 3.9 - 3.12**) to equal the future 2030 Build peak hour volumes.

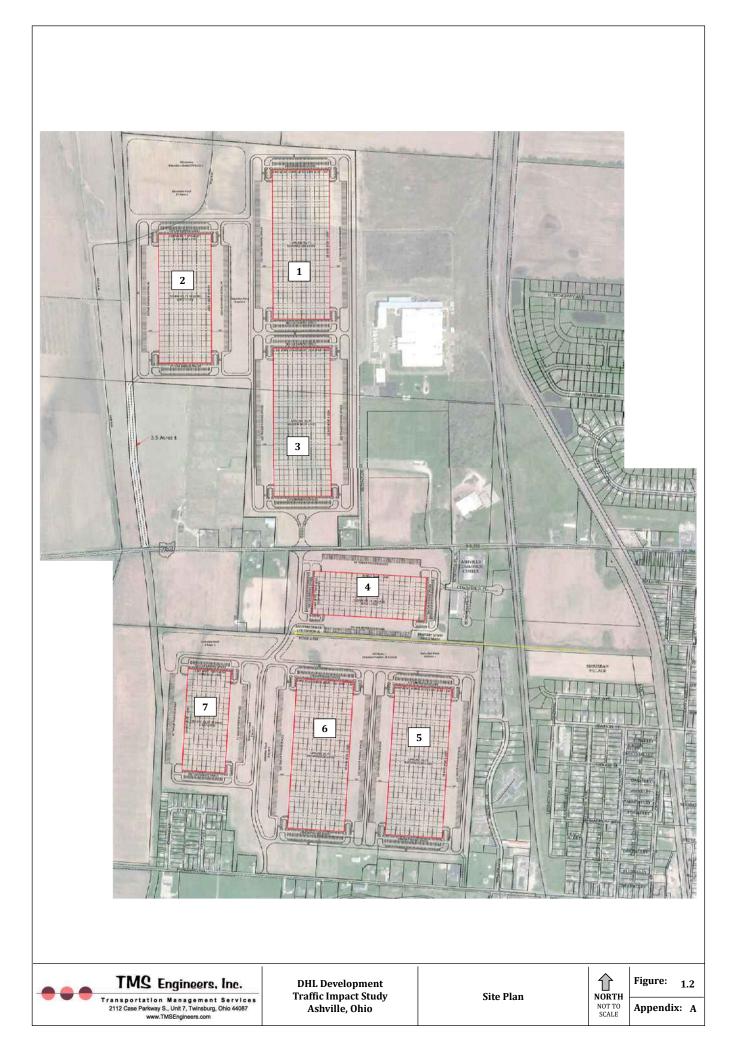
The estimated 2030 Build traffic volumes for the study area are shown graphically in **Figure 3.23**, **Appendix A** for the proposed development. These traffic volumes are the expected volumes if the proposed development **is** constructed, or a **"Build"** condition. These conditions represent the expected build year conditions with the construction of all seven buildings

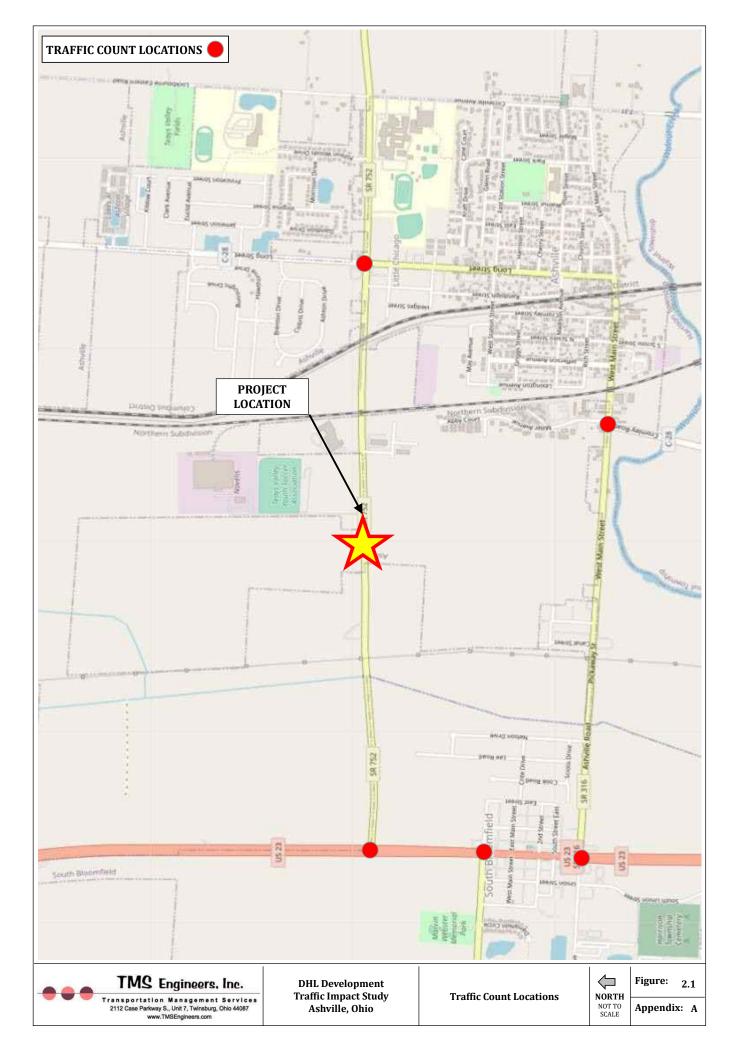
In order to estimate the future design year traffic considering project traffic conditions, the sum of the 2044 with Additional Development No-Build volumes, shown in **Figure 3.21, Appendix A**, were added to the new generated traffic (**Figures 3.9 - 3.12**) to equal the future 2044 Build peak hour volumes.

The estimated 2044 Build traffic volumes for the study area are shown graphically in **Figure 3.24**, **Appendix A** for the proposed development. These traffic volumes are the expected volumes if the proposed development **is** constructed, or a **"Build"** condition. These conditions represent the expected design year conditions with the construction of all seven buildings.

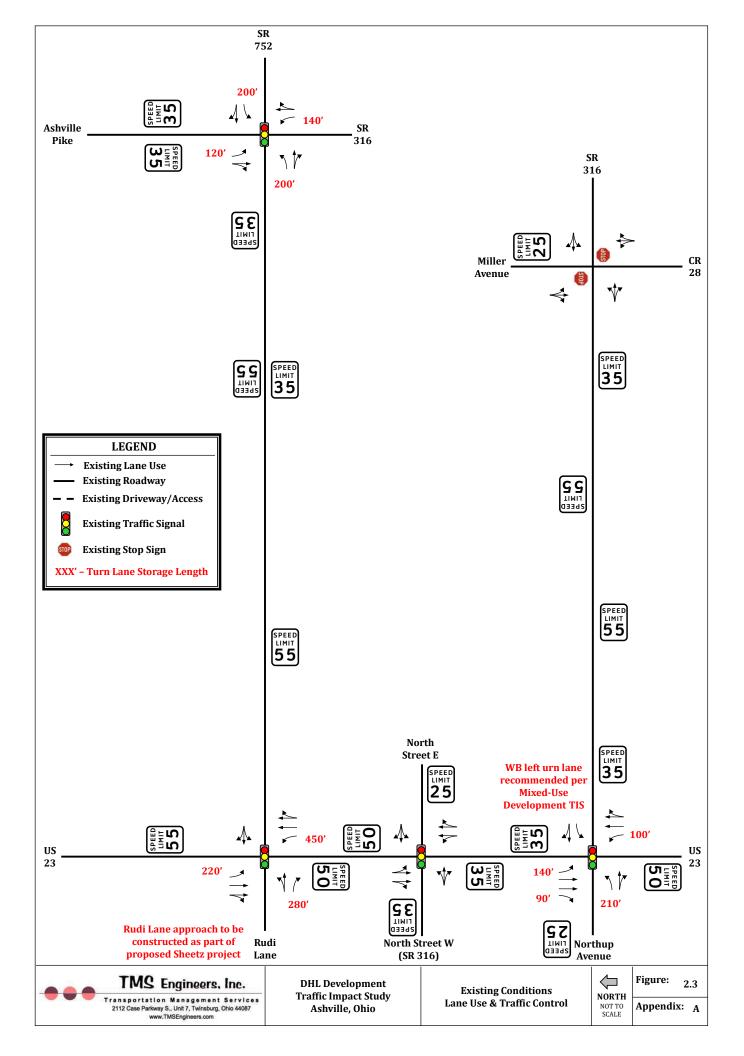
Appendix A Traffic Volume Figures



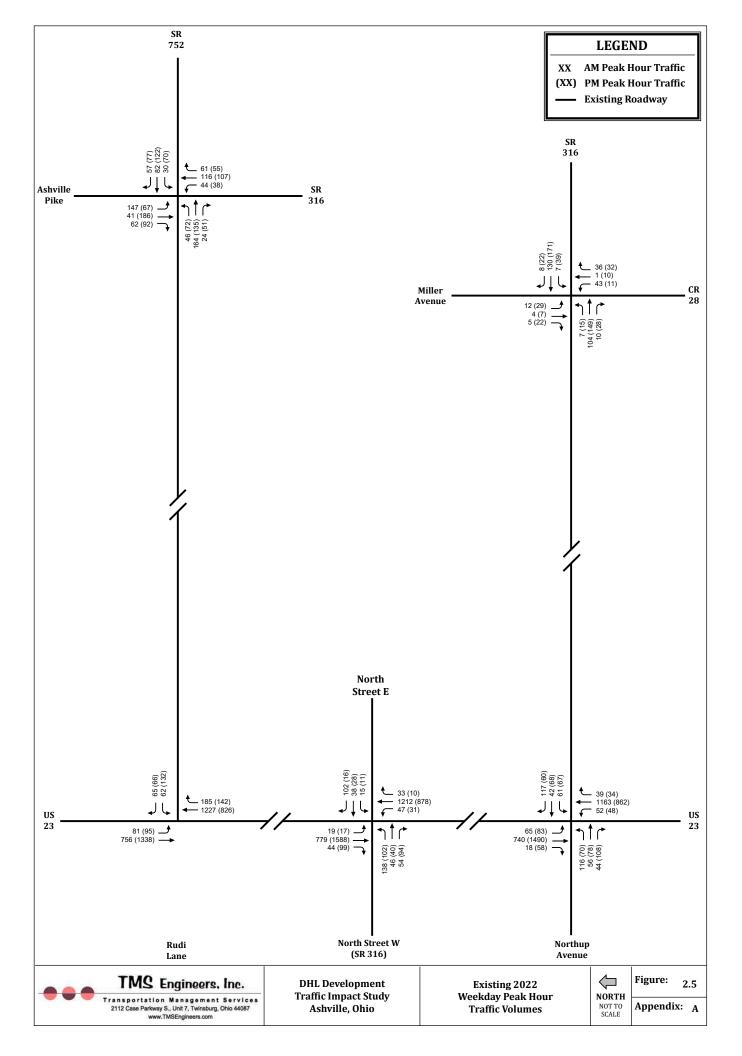


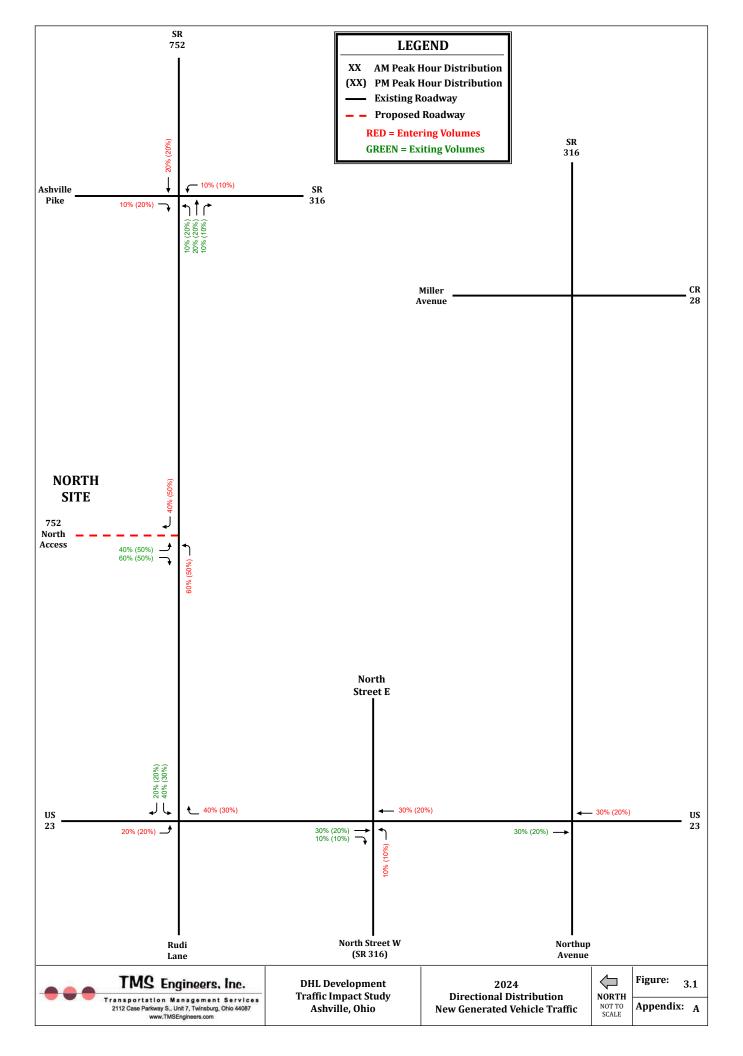


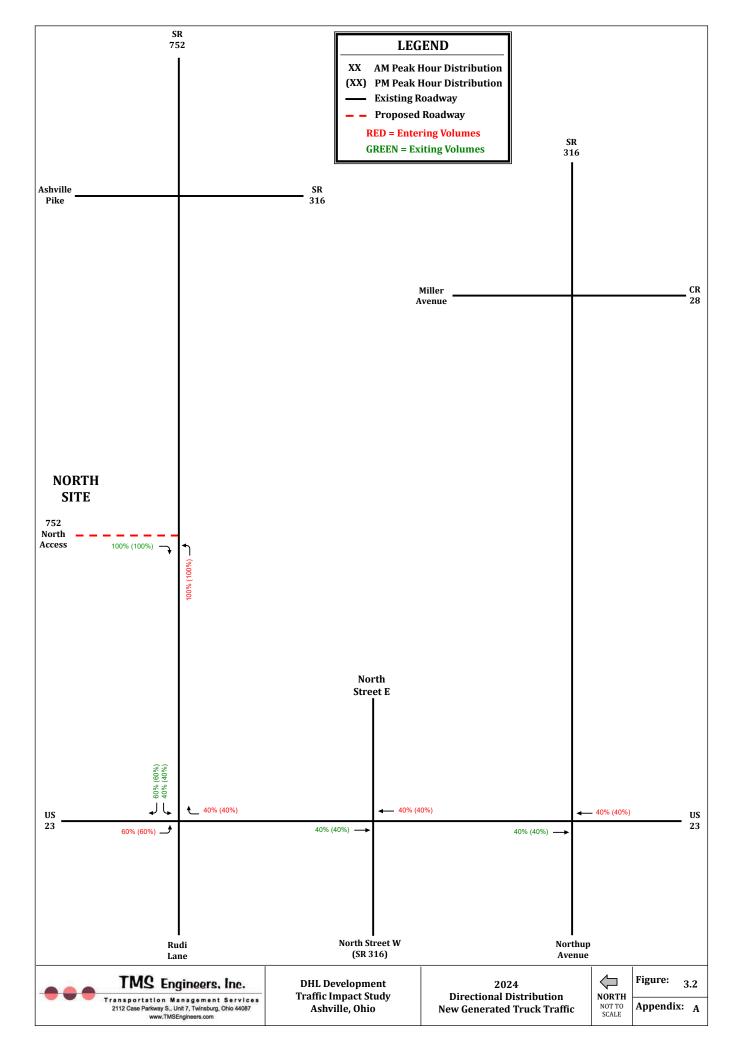


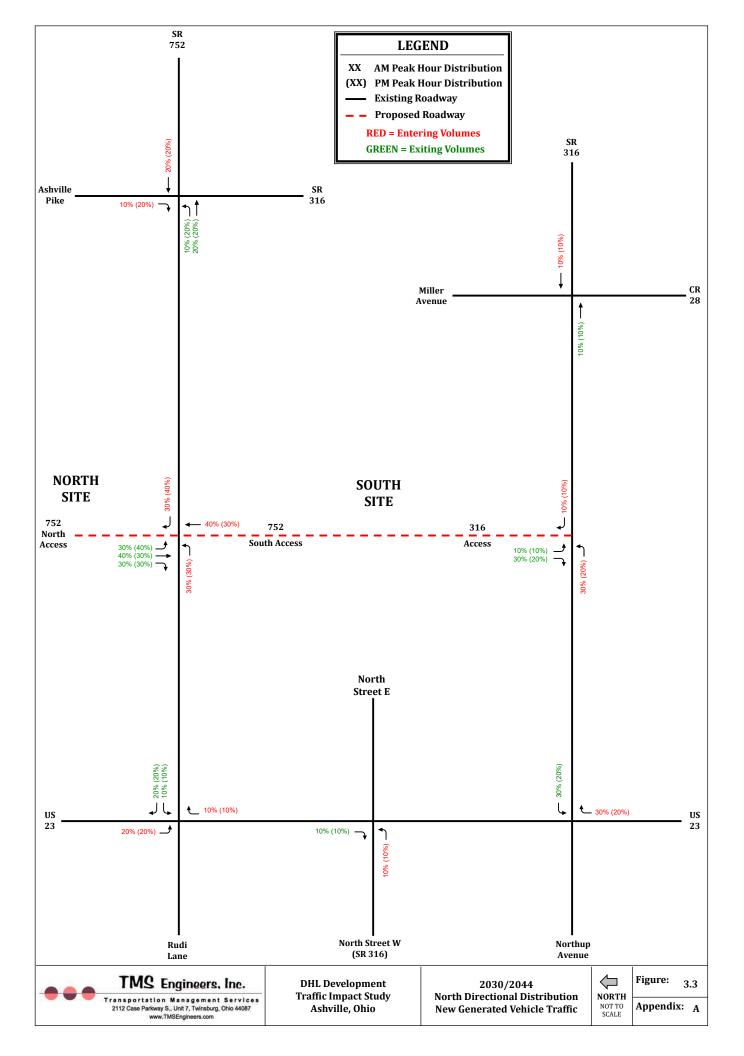


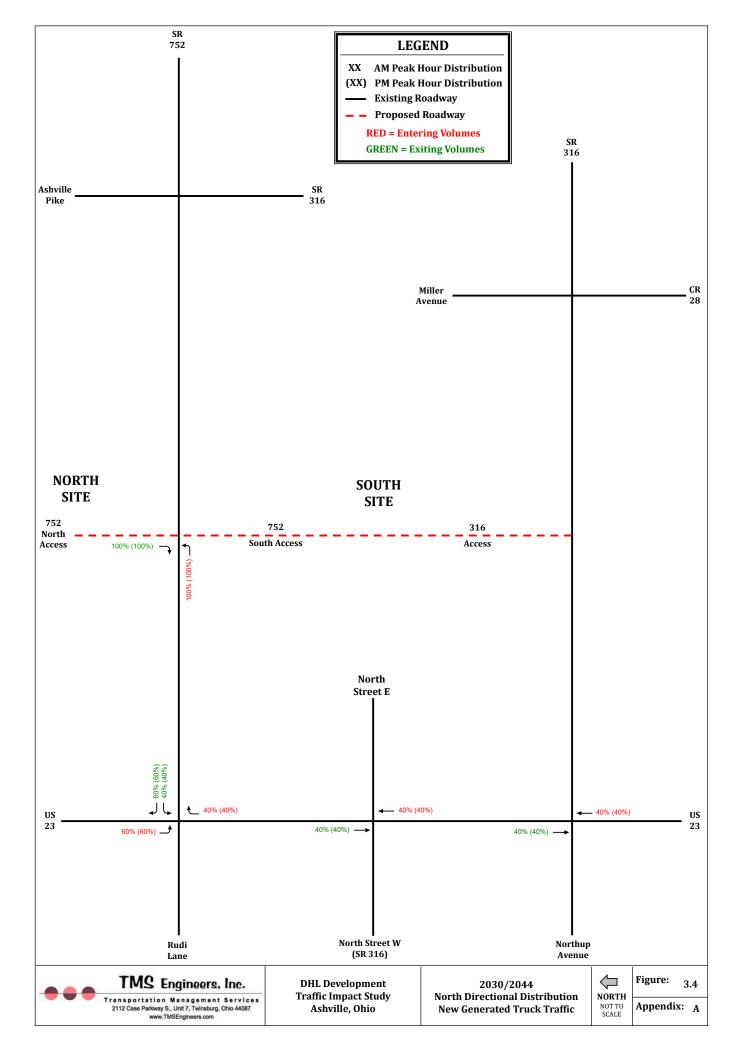


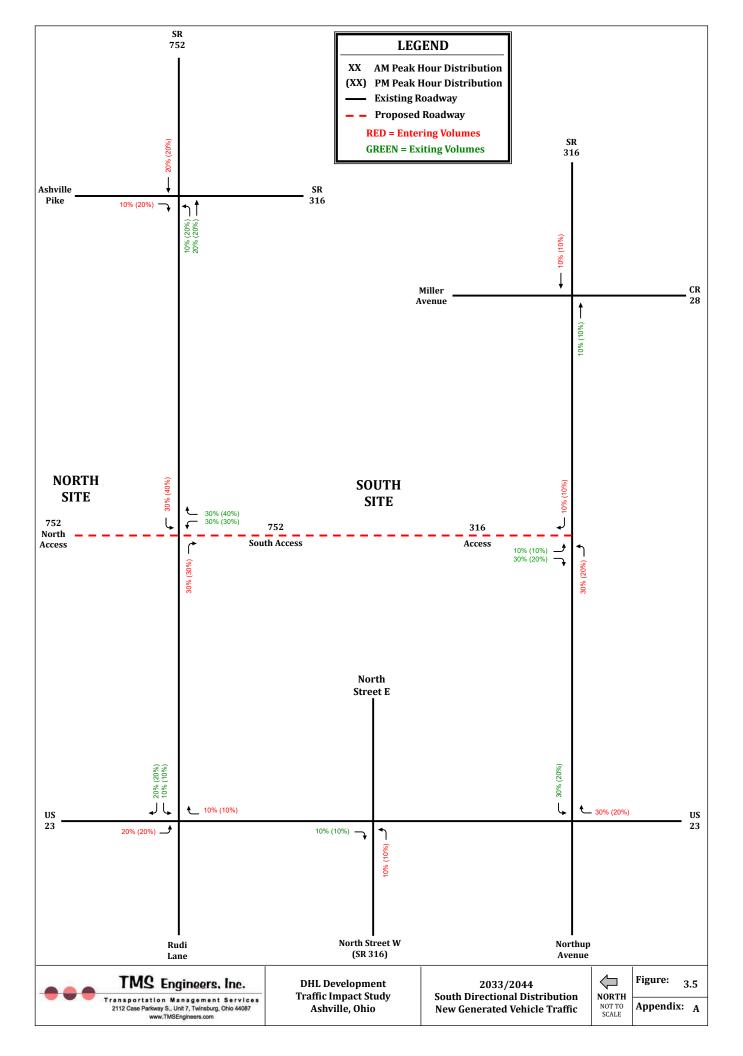


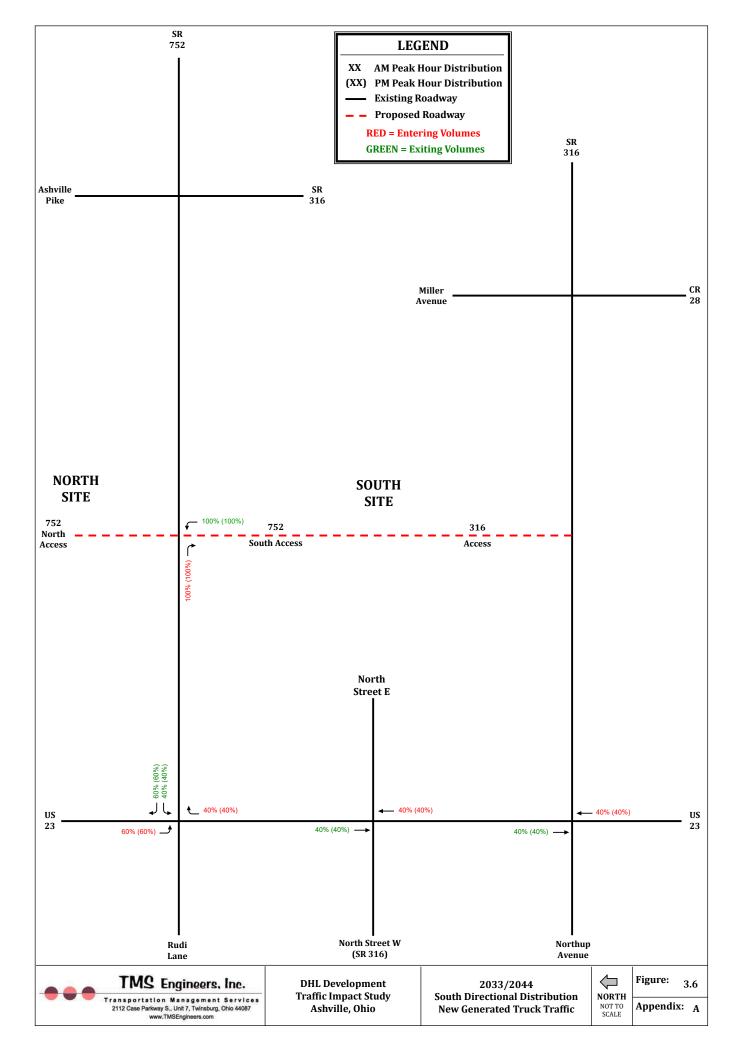


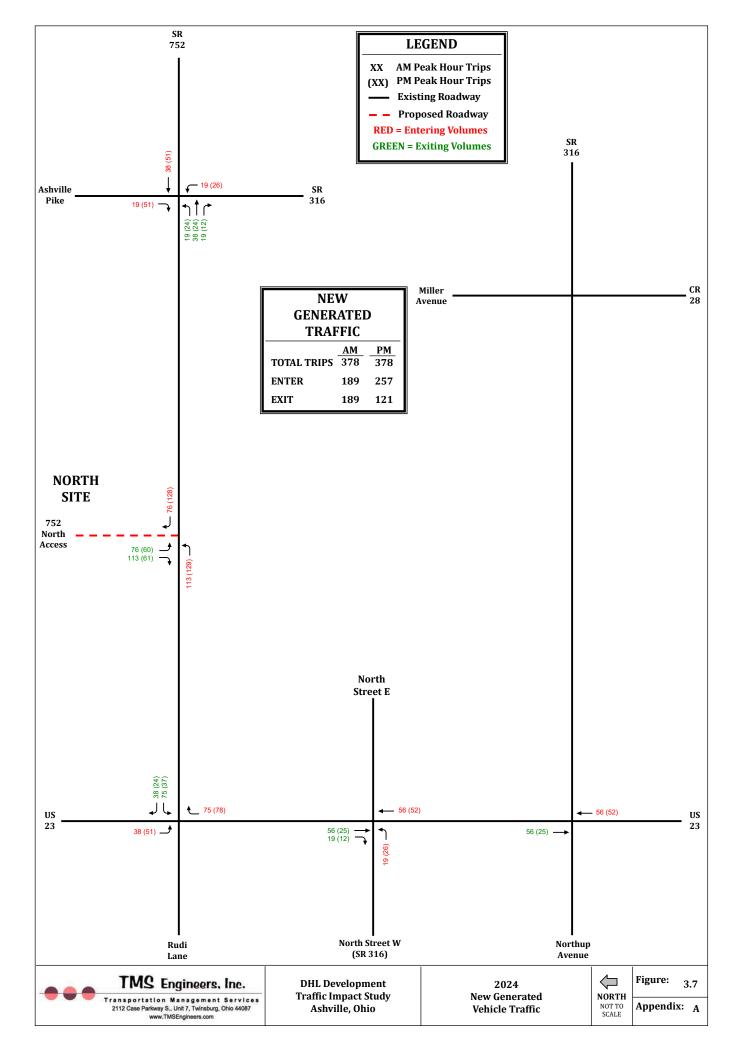


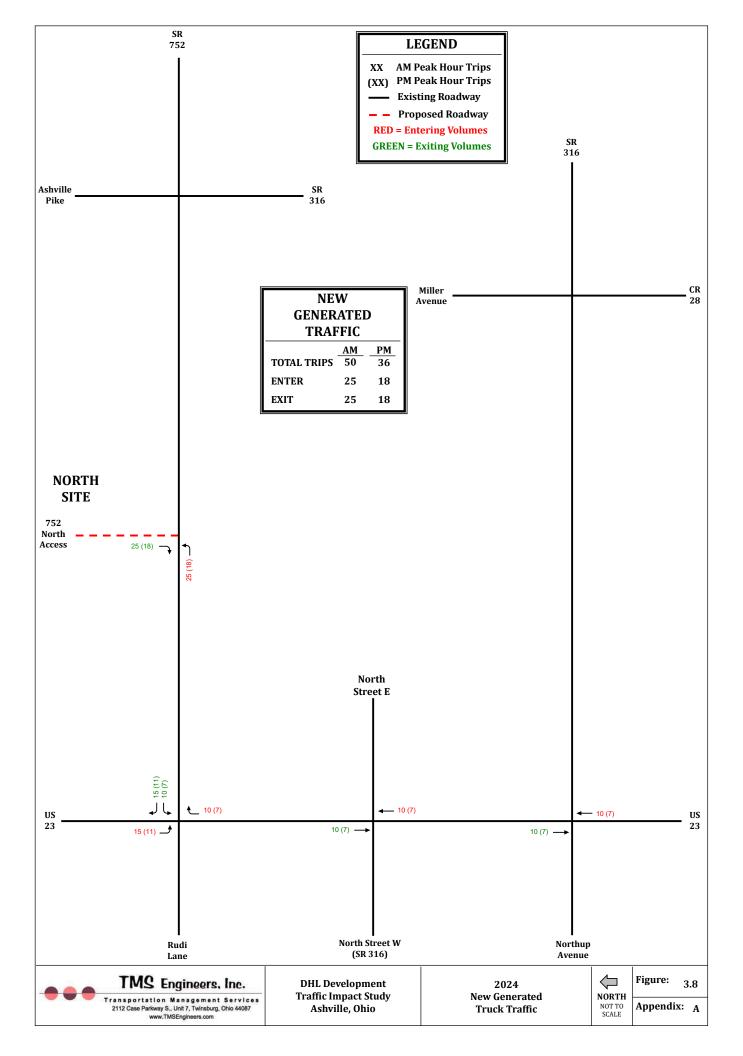


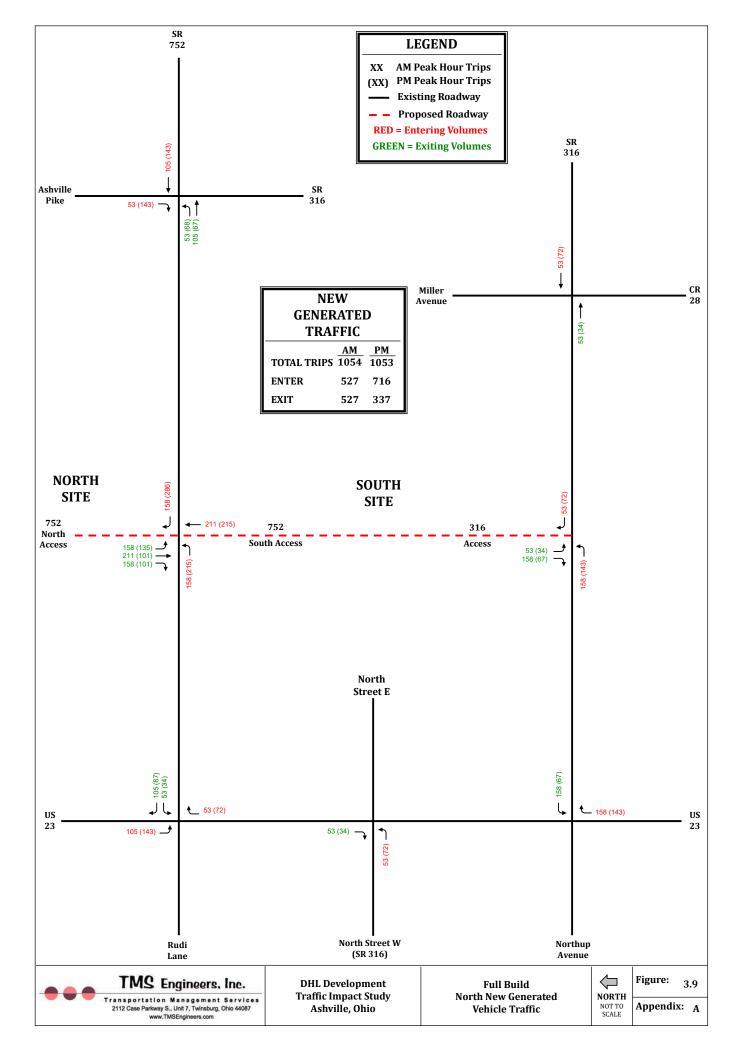


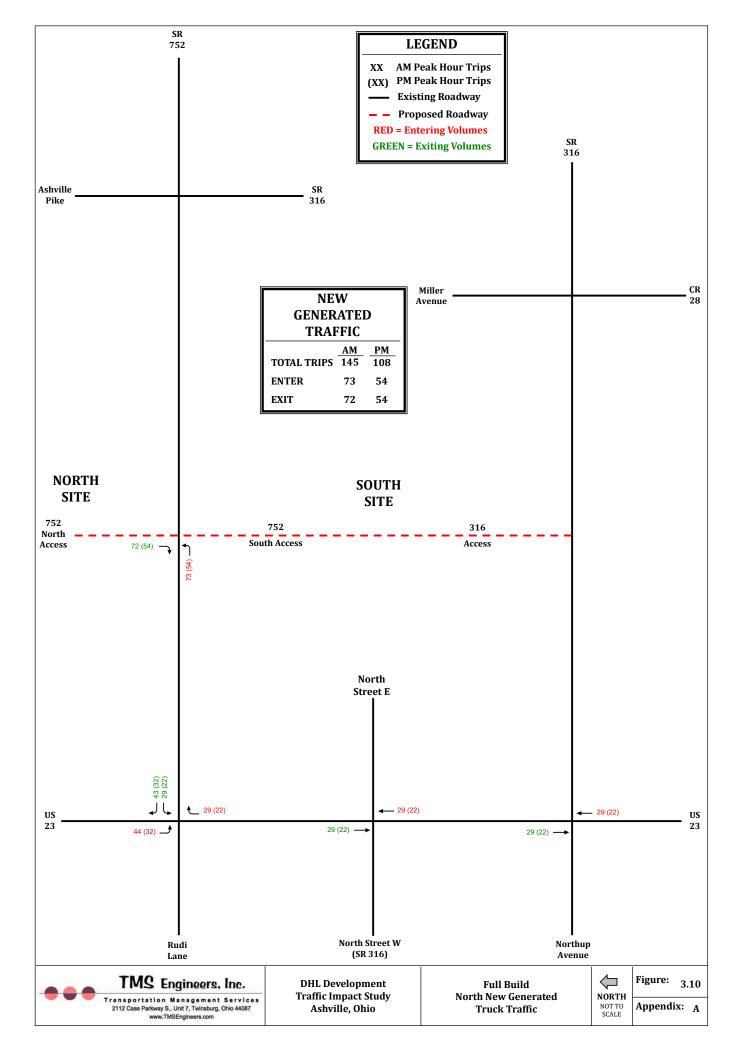


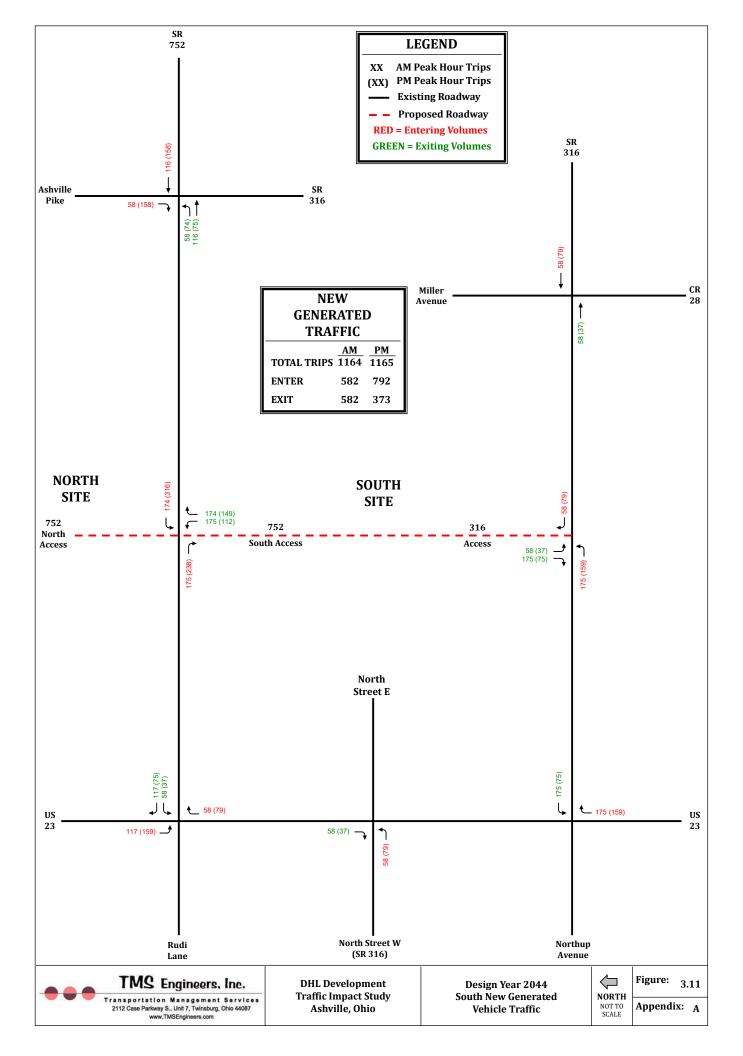


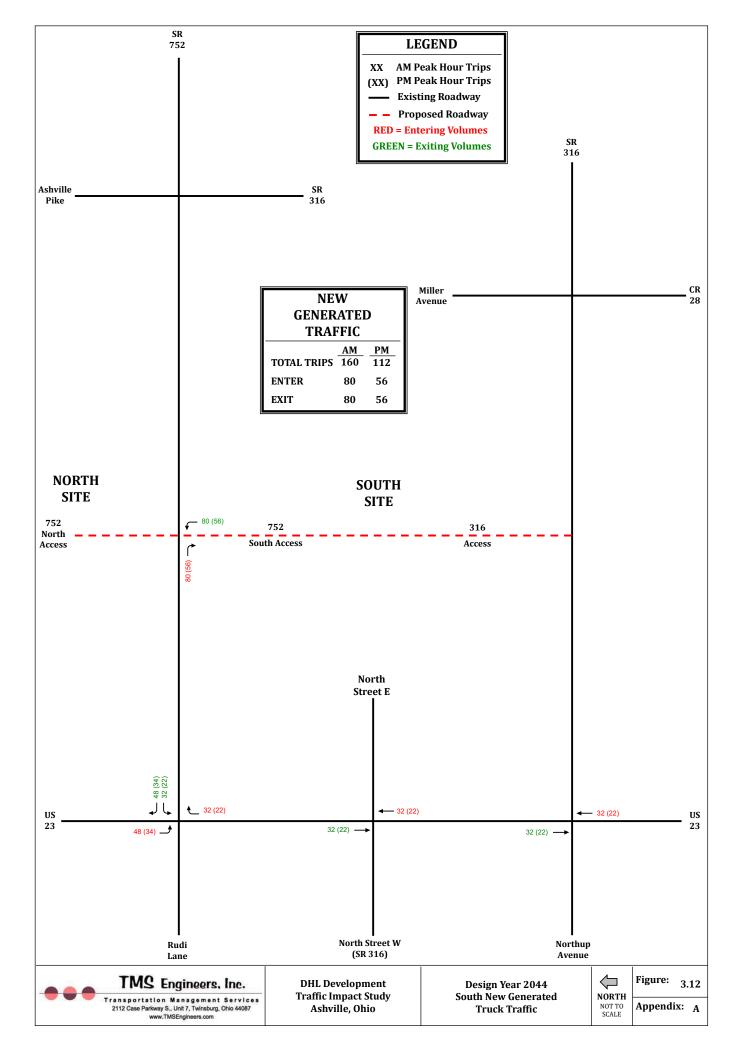


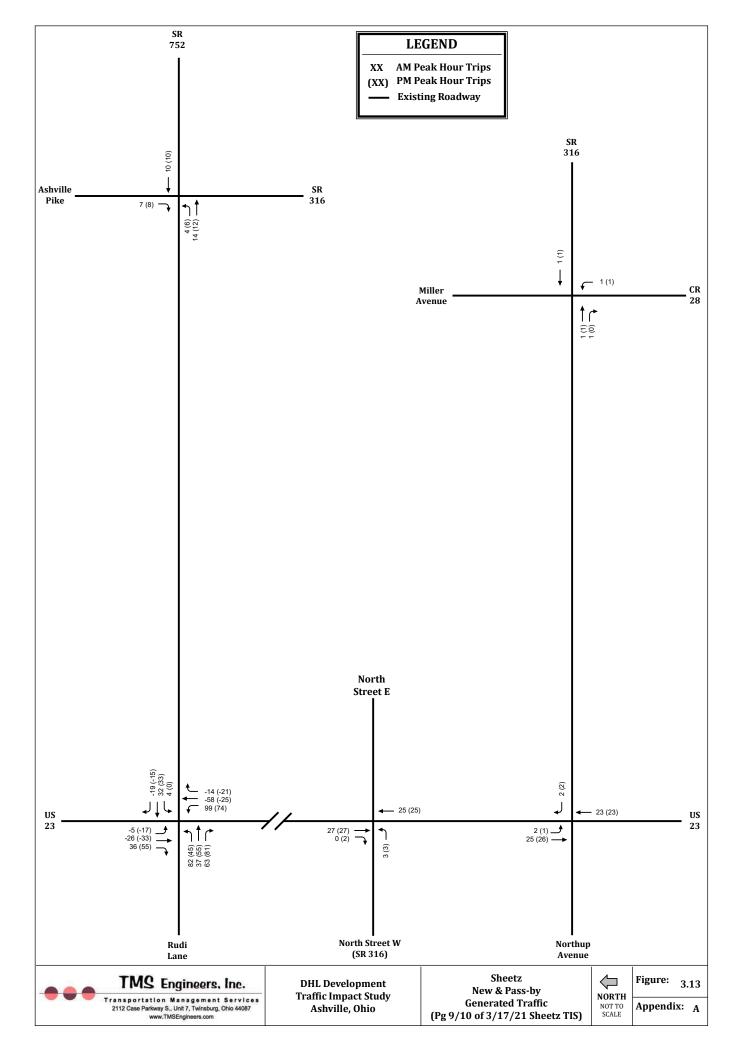


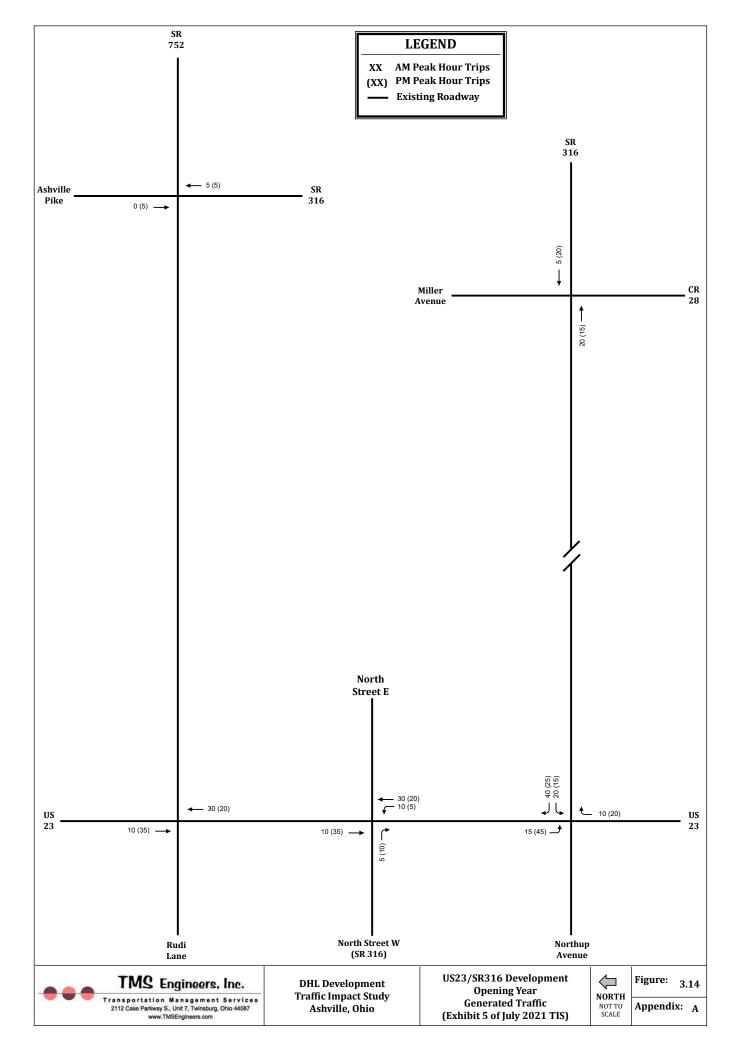


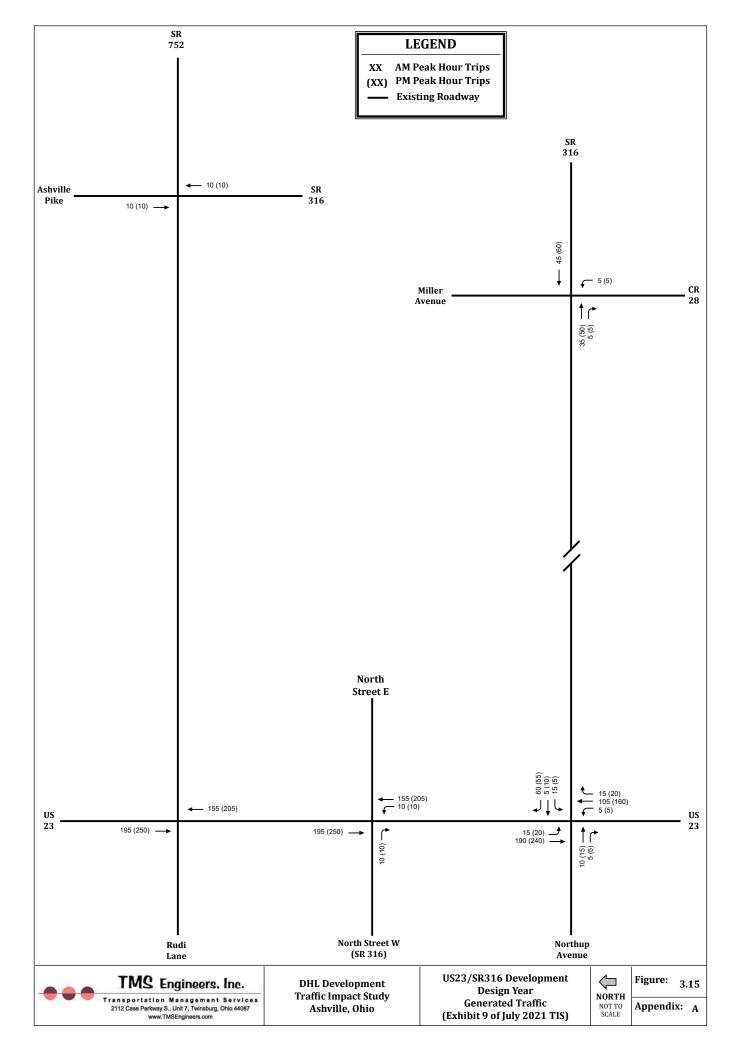


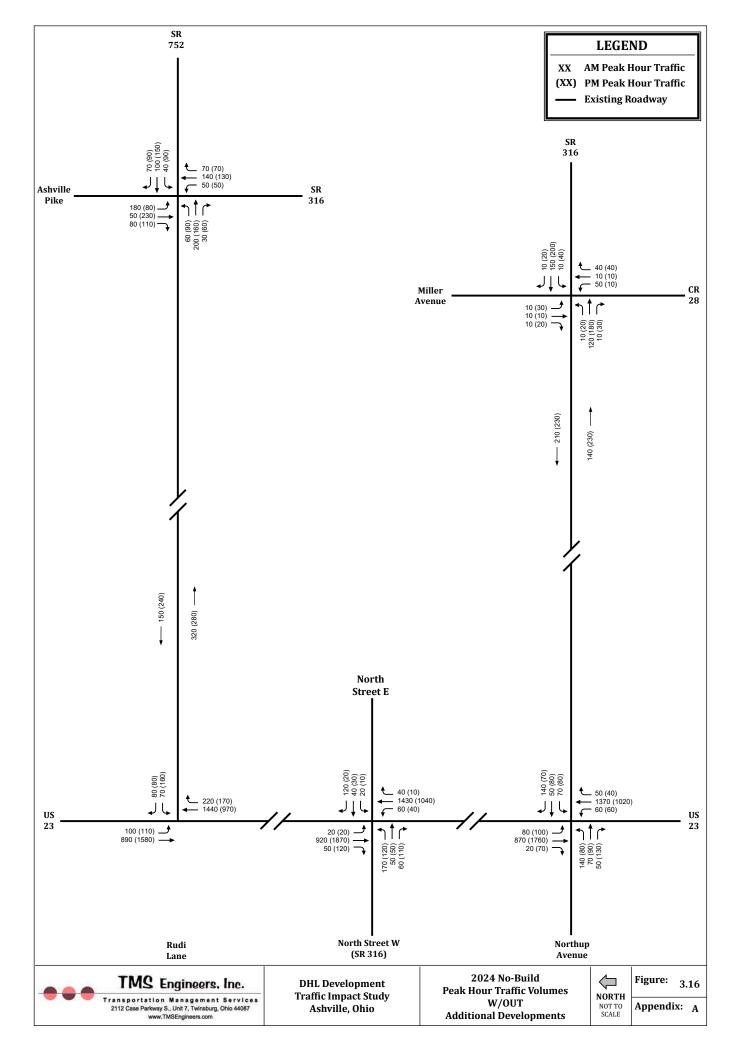


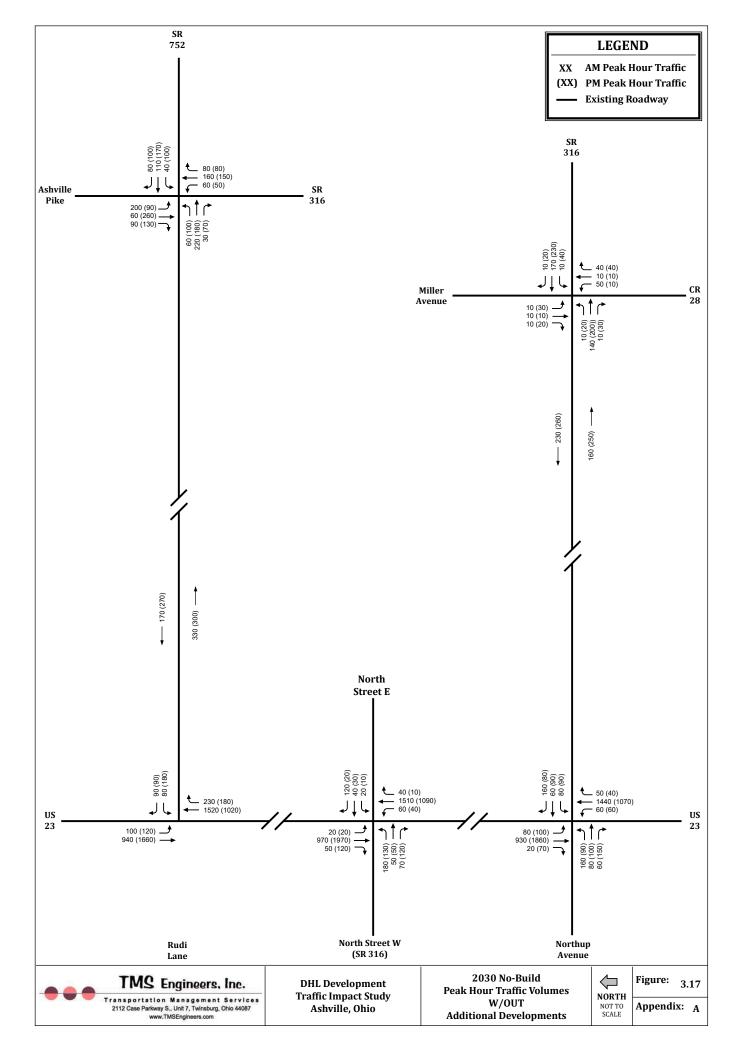


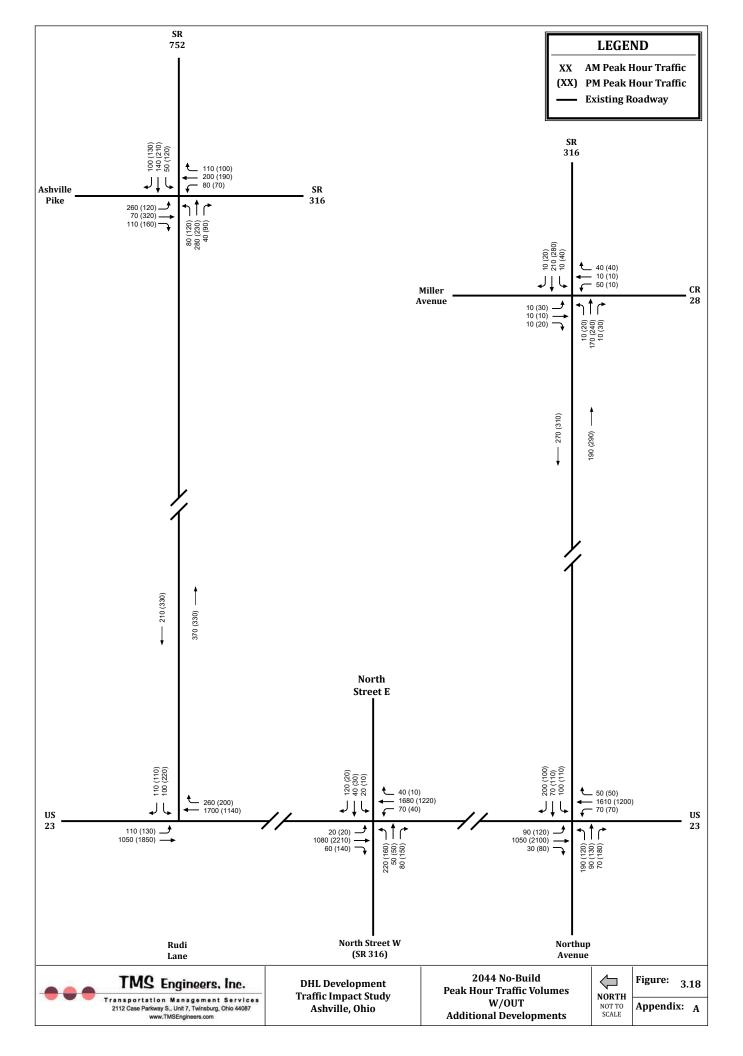


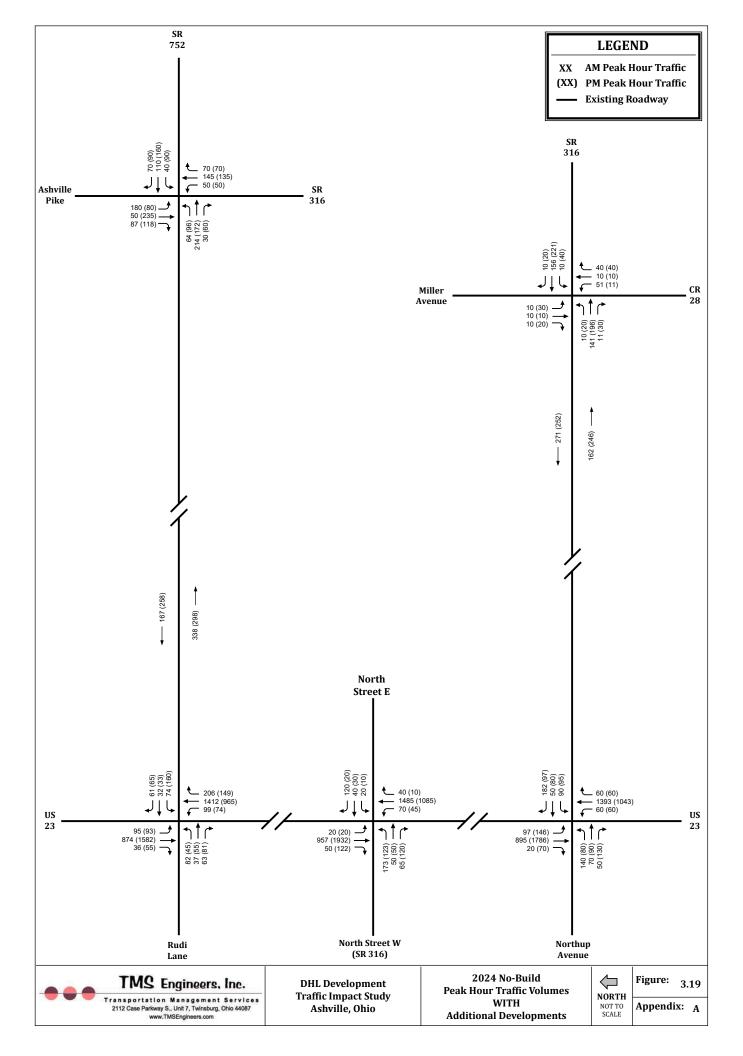


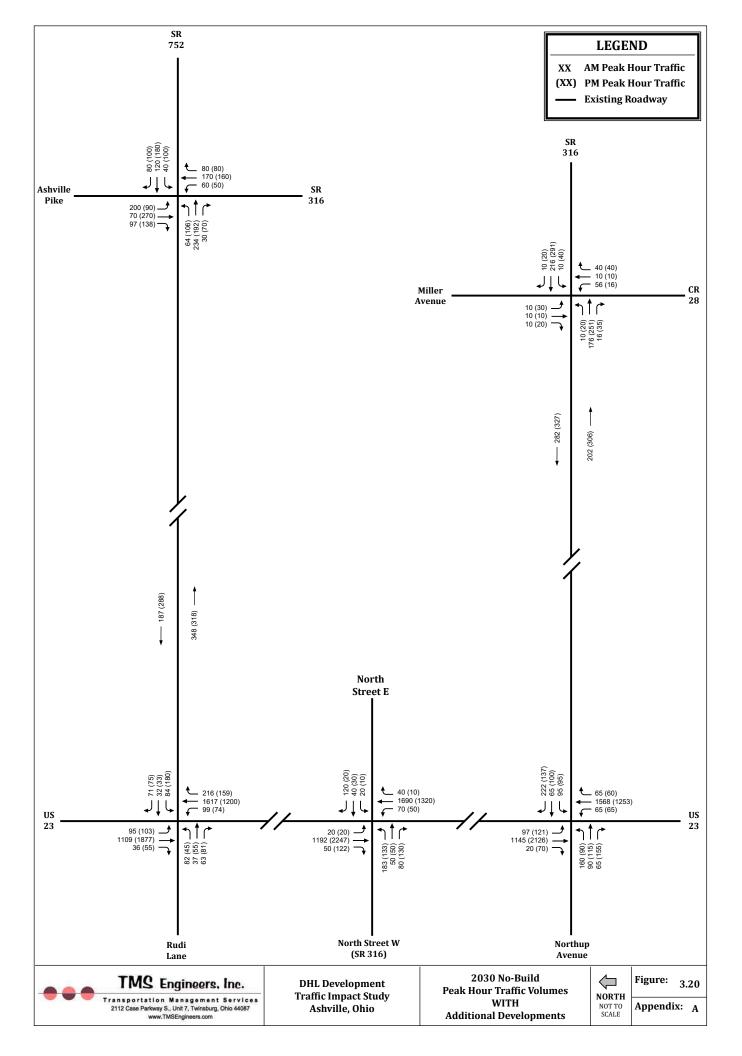


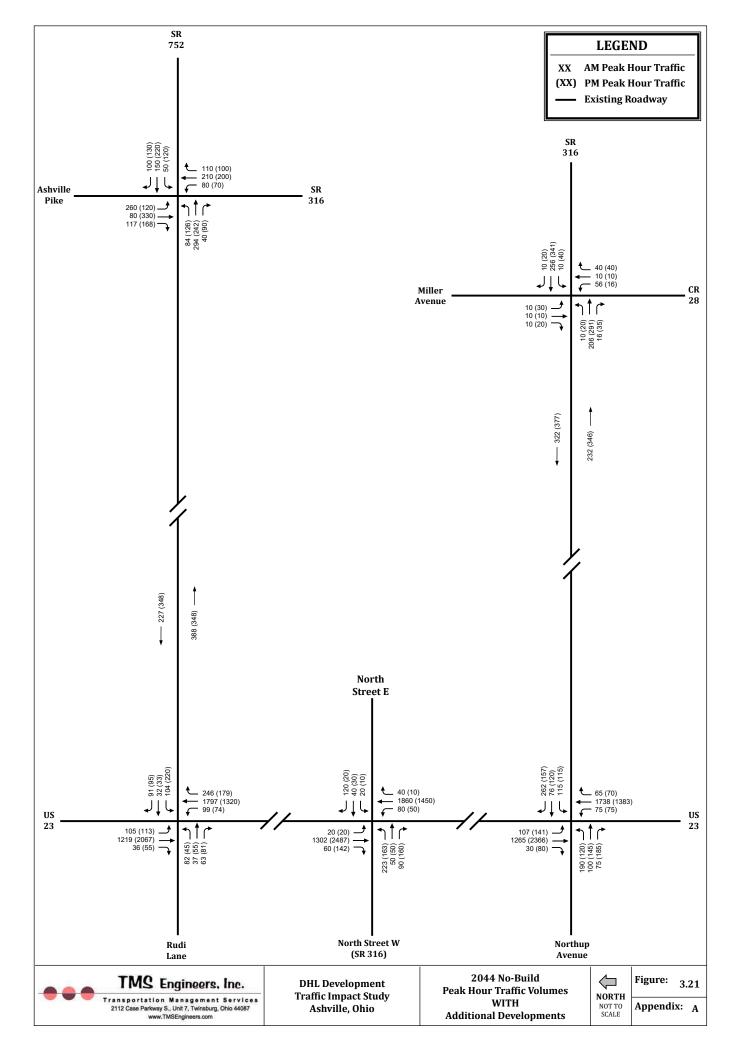


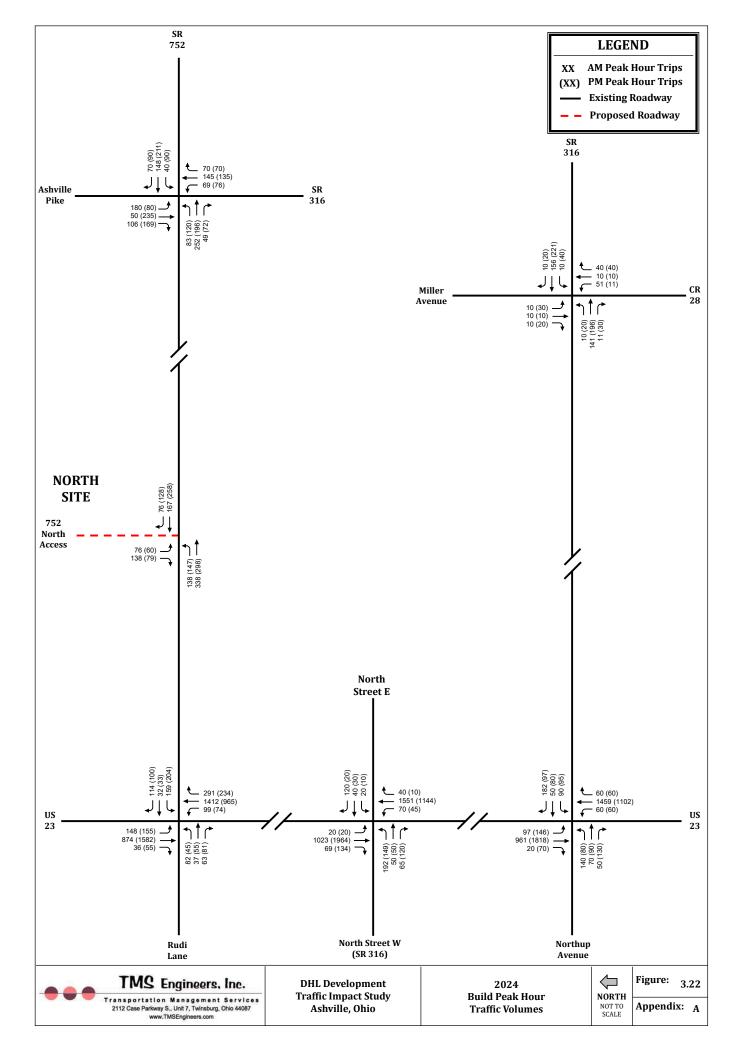


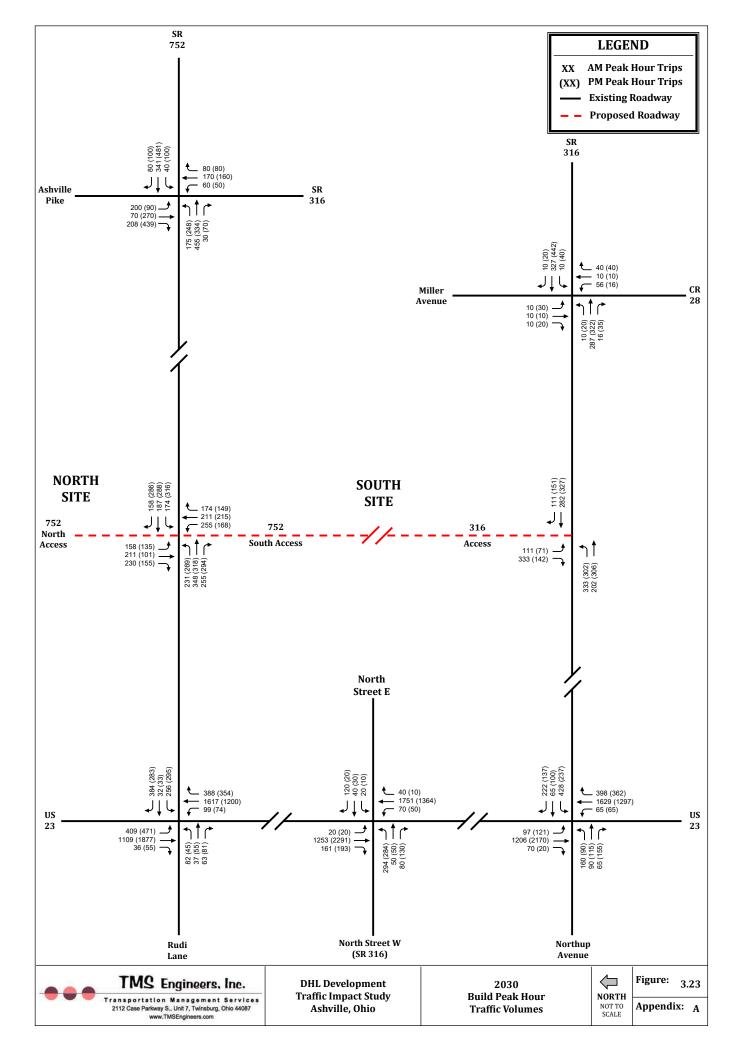


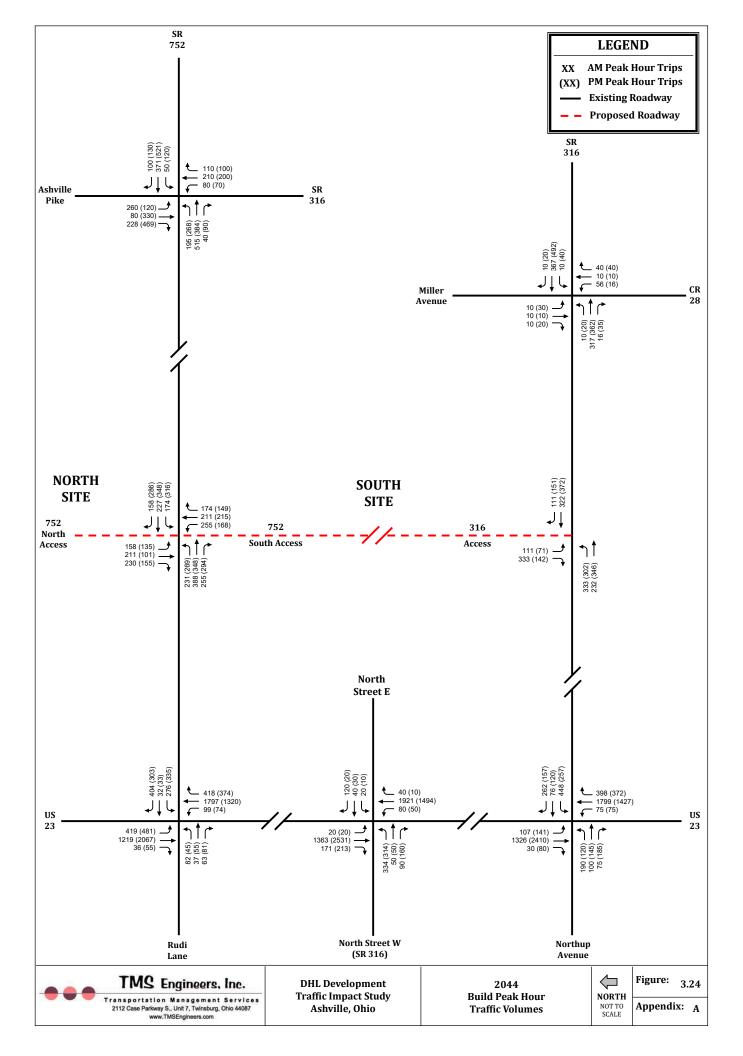












Appendix B Collected Traffic Count Data

								VEHICULAR	IICI	JL,	AR		AF]	FIC	CO	NN	E	TRAFFIC COUNT SUMMARY	ARY	L							
Municipality:	y:			Ashville	ville											At Intersection of:	section		State Route 752	752	and		South Walnut Street (US 23)	ut Stree	t (US 2	(3)	
Date:	2/17/2022	1	Day:	Thu.	l	Comments:	ents:														H	Project:		22-029	67		
Weather:	Clear	är	1	Recorder(s):	er(s):		Sfq						Data	Data entry by:	:	Off		Date entered:	red:	Feb. 18, 2022	, 2022	I	SR	752 & US	752 & US 23 021722		
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00:90																											
07:00	81	756 0	0 8:	837 1	139 5	0	1227	27 185	5 1412	2 132	4	2249	62	0	65	127	4	4				127	2376	0.930	0.851	0.722	0.000
08:00	45	722 0	0 20	767 1	144 0	0	866	8 81	1079	9 186	9	1846	69	0	58	127	4	4				127	1973	0.954	0.921	0.858	0.000
00:60	38	767 0	0 8(805 1	187 3	0	810	0 54	864	196	4	1669	48	0	39	87	4	0				87	1756	0.923	0.927	0.725	0.000
10:00																											
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2:00																											
3:00	69	1362 0	0 14	1431 1	136 2	0	792	2 87	879	128	4	2310	120	0	62	182	13	1				182	2492	0.877	0.939	0.948	0.000
4:00	88	1314 0	0 14	1402 1	139 3	0	847	7 141	1 988	8 134	7	2390	127	0	67	194	5	0				194	2584	0.930	0.943	0.851	0.000
5:00	70	1337 0	0 14	1407 1	138 0	0	LTT	7 98	875	93	0	2282	121	0	64	185	9	0				185	2467	0.936	0.879	0.797	0.000
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										ML	211 211 330) 68(TMS ENGINEERS, 2112 Case Parkway South #7 Twinsburg, Ohio 44087 (330) 686-6402 FAX: (330) 686-	NE1 arkway g, Ohio FAX: (IS ENGINEERS, IN 2112 Case Parkway South #7 Twinsburg, Ohio 44087 (330) 686-6402 FAX: (330) 686-6417	INC.	T •									Figure #: Page #:		

Intersection: SR 752 & US 23 Counter: DJS Day of the Week: Thursday City: Ashville

File Name :TC 1 SR 752 and USR 23 021722 DJS Site Code :00000000 Start Date :2/17/2022 Page No :1

	SOUT	'H WAL	NUT ST	TREET	SOUTH WALNUT STREET (US 23)						SOU	SOUTH WALNUT STREET (US 23)	NUT ST	REET (U	IS 23)		SR 752	52			
1		Ē	From North	lth	-		ш.	From East	st			ш-	From South	ļ		-	ш-	From West	st		
Start Time	Right	Thru	Left	Peds	S App. Total	Right	Thru	Left	Peds /	App. Total	Right	Thru	Left	Peds A	App. Total	Right	Thru	Left	Peds Ap	App. Total	Int. Total
07:00 AM	0	185	28	0	0 213	14	0	12	0	26	47	306	0	0	353	0	0	0	0	0	592
07:15 AM	0	199	26	J	0 225	15	0	14	0	29	71	344	0	0	415	0	0	0	0	0	699
07:30 AM	0	178	14	J	0 192	25	0	19	0	44	33	324	0	0	357	0	0	0	0	0	593
07:45 AM	0	194	13	J	0 207	-	0	17	0	28	34	253	0	0	287	0	0	0	0	0	522
Total	0	756	81		0 837	65	0	62	0	127	185	1227	0	0	1412	0	0	0	0	0	2376
08:00 AM	0	175	17	0	0 192	12	0	15	0	27	20	253	0	0	273	0	0	0	0	0	492
08:15 AM	0	174	8	0	0 182	17	0	20	0	37	17	242	0	0	259	0	0	0	0	0	478
08:30 AM	0	188	13		0 201	14	0	18	0	32	22	271	0	0	293	0	0	0	0	0	526
08:45 AM	0	185	7	U	0 192	15	0	16	0	31	22	232	0	0	254	0	0	0	0	0	477
Total	0	722	45		0 767	58	0	69	0	127	81	966	0	0	1079	0	0	0	0	0	1973
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09:30 AM	0	205	13	0	0 218	10	0	16	~	27	10	195	0	0	205	0	0	0	0	0	450
09:45 AM	0	191	5	U	0 196	7	0	7	0	14	18	179	0	0	197	0	0	0	0	0	407
Total	0	767	38		0 805	39	0	48	-	88	54	810	0	0	864	0	0	0	0	0	1757
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	U	0 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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TMS Engineers, Inc. 2112 Case Parkway South #7 Twinsburg, Ohio 44087

Transportation Manangement Services

File Name : TC 1 SR 752 and USR 23 021722 DJS Site Code : 00000000 Start Date : 2/17/2022 Page No : 2

													Sta	Start Date	••••	2/17/2022 2	2				
								Grou	Groups Printed- Cars		- Trucks - Buses	- Buses	-								
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Start Time	Right	Thru	Left	eds	App. Total	Right	Thru	Left	Peds App.	p. Total	Right	Thru	Left	eds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
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	189	Ø	0	198	20	0	15	0	35	14	118	0	0	132	0	0	0	0	0	365
11:15 AM	0	187	-	0	198	22	0	15	0	37	15	169	0	0	184	0	0	0	0	0	419
11:30 AM	0	207	12	0	219	7	0	19	0	26	6	156	0	0	165	0	0	0	0	0	410
11:45 AM	0	166	4	0	170	25	0	16	0	41	25	170	0	0	195	0	0	0	0	0	406
Total	0	749	36	0	785	74	0	65	0	139	63	613	0	0	676	0	0	0	0	0	1600
12:00 PM	0	198	6	0	207	16	0	25	0	41	20	288	0	0	308	0	0	0	0	0	556
12:15 PM	0	200	14	0	214	13	0	26	0	39	16	218	0	0	234	0	0	0	0	0	487
12:30 PM	0	214	8	0	222	15	0	23	0	38	20	198	0	0	218	0	0	0	0	0	478
12:45 PM	0	215	1	0	226	12	0	29	0	41	27	181	0	0	208	0	0	0	0	0	475
Total	0	827	42	0	869	56	0	103	0	159	83	885	0	0	968	0	0	0	0	0	1996
01:00 PM	0	184	7	0	191	15	0	29	0	44	17	179	0	0	196	0	0	0	0	0	431
01:15 PM	0	215	£	0	220	14	0	13	0	27	14	218	0	0	232	0	0	0	0	0	479
01:30 PM	0	235	8	0	243	16	0	17	0	33	21	174	0	0	195	0	0	0	0	0	471
01:45 PM	0	223	9	0	229	12	0	26	0	38	23	184	0	0	207	0	0	0	0	0	474
Total	0	857	26	0	883	57	0	85	0	142	75	755	0	0	830	0	0	0	0	0	1855
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
	_				•																

File Name :TC 1 SR 752 and USR 23 021722 DJS Site Code :00000000 Start Date ~2/17/2022

		[Int. Total	558	621	665	649	2493	 637	647	0 666	0 634	0 2584		623	671	0 606	0 567	0 2467	0 19101		0	0 16105	84.3	0 2935	0 15.4	61	0 0.3
			App. Total	0	0	0	0	0	0	0	0	0			0	0	0	0		0		0	0	U	U	0		U
		est	Peds	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		752 From West	Left	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0		0	0	0
)22		SR	Thru	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0		0		0			0	0	
: 2/17/2022 · 3			Right	0	•	•	0	0	 0	0	0	0	0		0	0	0	0	0		0	0	0			0		0
		JS 23)	App. Total	230	214	234	201	879	262	250	255	221	988		210	249	219	197	875	8571		44.9	7129	83.2	1412	16.5	30	0.4
Start Date	L age NO	REET (I	Peds	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0
n S S S S S		SOUTH WALNUT STREET (US From South	Left	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Trucks - Buses	TH WAL	Thru	205	201	217	169	792	221	222	214	190	847		196	221	188	172	177	7704	89.9	40.3	6319	82	1377	17.9	∞	0.1
	- Truck		Right	25	13	17	32	87	 41	28	41	31	141	_	14	28	31	25	98	867	10.1	4.5	810	93.4	35	4	22	2.5
	Groups Printed- Cars		App. Total	48	48	47	40	183	51	50	57	36	194		58	46	42	39	185	1344		7	1256	93.5	74	5.5	14	-
	ups Print		Peds	0	0	~	0	-	0	0	0	0	0		0	0	0	0	0	7	0.1	0	2	100	0	0	0	0
	Gro	From East	Left	32	35	26	27	120	37	31	37	22	127		39	25	30	27	121	800	59.5	4.2	754	94.2	38	4.8	∞	-
			Thru	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Right	16	13	20	13	62	14	19	20	14	67		19	21	12	12	64	542	40.3	2.8	500	92.3	36	6.6	9	
		S 23)	App. Total	280	359	384	408	1431	 324	347	354	377	1402	-	355	376	345	331	1407	9186		48.1	7720	84	1449	15.8	17	0.2
		REET (U	Peds A	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		SOUTH WALNUT STREET (US 23) From North	Left	12	12	22	23	69	19	27	26	16	88		17	12	24	17	70	495	5.4	2.6	447	90.3	41	8.3	7	1.4
		H WALN	Thru	268	347	362	385	1362	305	320	328	361	1314		338	364	321	314	1337	8691	94.6	45.5	7273	83.7	1408	16.2	10	0.1
		SOUT	Right	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Start Time	03:00 PM	03:15 PM	03:30 PM	03:45 PM	Total	 04:00 PM	04:15 PM	04:30 PM	04:45 PM	Total	-	05:00 PM	05:15 PM	05:30 PM	05:45 PM	Total	Grand Total	Apprch %	Total %	Cars	% Cars	Trucks	% Trucks	Buses	% Buses

I winsburg, Ohio 44087 Transportation Manangement Services File Name : TC 1 SR 752 and USR 23 021722 DJS Site Code : 00000000 Start Date : 2/17/2022 Page No : 4

SOU	TH WALI	NUT STF	SOUTH WALNUT STREET (US 23)	\$ 23)						SOUT	'H WAL	SOUTH WALNUT STREET (US 23)	REET (U	S 23)		SR 752	52			
	ш	From North	÷			Ē	From East	t			ш	From South	Ļ			Ē	From West	st		
Right	Thru	Left	Peds A	App. Total	Right	Thru	Left	Peds A	App. Total	Right	Thru	Left	Peds A	App. Total	Right	Thru	Left	Peds A	App. Total	Int. Total
/sis Fror	n 07:00 i	AM to 09	Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1	Peak 1 c	of 1	-	-		-		-	-						-		
intire Inte	rsection	Begins	Peak Hour for Entire Intersection Begins at 07:00 AM	M																
0	185	28	0	213	14	0	12	0	26	47	306	0	0	353	0	0	0	0	0	592
0	199	26	0	225	15	0	14	0	29	71	344	0	0	415	0	0	0	0	0	699
0	178	14	0	192	25	0	19	0	44	33	324	0	0	357	0	0	0	0	0	593
0	194	13	0	207	1	0	17	0	28	34	253	0	0	287	0	0	0	0	0	522
Total Volume 0	756	81	0	837	65	0	62	0	127	185	1227	0	0	1412	0	0	0	0	0	2376
% App. Total 0	90.3	9.7	0		51.2	0	48.8	0		13.1	86.9	0	0		0	0	0	0		
PHF .000	.950	.723	000.	.930	.650	000	.816	000	.722	.651	.892	000	000.	.851	000.	000.	000.	000.	000.	.888
Cars 0	617	76	0	693	60	0	59	0	119	181	1095	0	0	1276	0	0	0	0	0	2088
% Cars 0	81.6	93.8	0	82.8	92.3	0	95.2	0	93.7	97.8	89.2	0	0	90.4	0	0	0	0	0	87.9
Trucks 0	138	~	0	139	2	0	0	0	4	-	131	0	0	132	0	0	0	0	0	275
% Trucks 0	18.3	1.2	0	16.6	3.1	0	3.2	0	3.1	0.5	10.7	0	0	9.3	0	0	0	0	0	11.6
Buses 0	-	4	0	5	С	0	-	0	4	e	-	0	0	4	0	0	0	0	0	13
% Buses 0	0.1	4.9	0	0.6	4.6	0	1.6	0	3.1	1.6	0.1	0	0	0.3	0	0	0	0	0	0.5
Peak Hour Analvsis From 03:45 PM to 04:30 PM - Peak 1 of 1	n 03·45	PM to 04	- MG 051	Peak 1 c	l 1															
Peak Hour for Entire Intersection Begins at 03:45 PM	rsection	Begins	at 03:45 F	Σ																
03:45 PM 0	385	23	0	408	13	0	27	0	40	32	169	0	0	201	0	0	0	0	0	649
04:00 PM 0	305	19	0	324	14	0	37	0	51	41	221	0	0	262	0	0	0	0	0	637
04:15 PM 0	320	27	0	347	19	0	31	0	50	28	222	0	0	250	0	0	0	0	0	647
04:30 PM 0	328	26	0	354	20	0	37	0	57	41	214	0	0	255	0	0	0	0	0	666
Total Volume	1338	95	С	1433	99	C	132	С	198	142	826	C	c	968	c	c	c	6	c	2500

	649	637	647	666	2599		.976	2322	89.3	266	10.2	5	0.4
	0	0	0	0	0		000.	0	0	0	0	0	0
	0	0	0	0	0	0	000	0	0	0	0	0	0
	0	0	0	0	0	0	000.	0	0	0	0	0	0
	0	0	0	0	0	0	000.	0	0	0	0	0	0
	0	0	0	0	0	0	000.	0	0	0	0	0	0
	201	262	250	255	968		.924	840	86.8	121	12.5	7	0.7
	0	0	0	0	0	0	000.	0	0	0	0	0	0
	0	0	0	0	0	0	000	0	0	0	0	0	0
	169	221	222	214	826	85.3	.930	712	86.2	113	13.7	~	0.1
	32	41	28	41	142	14.7	.866	128	90.1	8	5.6	9	4.2
	40	51	50	57	198		.868	190	96.0	8	4.0	0	0
	0	0	0	0	0	0	000.	0	0	0	0	0	0
	27	37	31	37	132	66.7	.892	128	97.0	4	3.0	0	0
	0	0	0	0	0	0	000	0	0	0	0	0	0
	13	14	19	20	99	33.3	.825	62	93.9	4	6.1	0	0
Σ	408	324	347	354	1433		.878	1292	90.2	137	9.6	4	0.3
ar 00.40	0	0	0	0	0	0	000.	0	0	0	0	0	0
sillbad	23	19	27	26	95	6.6	.880	91	95.8	2	2.1	7	2.1
ופברווחו	385	305	320	328	1338	93.4	.869	1201	89.8	135	10.1	7	0.1
	0	0	0	0	0	0	000.	0	0	0	0	0	0
Lean Fruit IUI Etitite IIItelseutiuti pegilis at 03.43 FIVI	03:45 PM	04:00 PM	04:15 PM	04:30 PM	Total Volume	% App. Total	HH	Cars	% Cars	Trucks	% Trucks	Buses	% Buses

							F	VEHICULAR	HIC	ĴU	ΥΥ Υ		RA]	FFI	CC	TRAFFIC COUNT SUMMARY	NT	SI	M	MA	RY	ĸ								
Municipality:	y:			Asł	Ashville											At Iı	At Intersection of:	on of:		Nooi	Noorth Street	set		and	South Walnut Street (US 23)	Valnut S	street (US 23)		
Date:	3/2/2022	ĺ	Day:	Wed.		Com	Comments:	ļ						l										Project:	÷		22-029		I	
Weather:	Clear	ar		Recorder(s):	ler(s):		SfQ						-	Data entry by:	try by:	Off	I		Date	Date entered:	ا <u></u>	Mar	Mar. 4, 2022		•1	S. Walnut St & North St 030222	št & North	1 St 03022	2	
TIME		S. Walı FRC	S. Walnut St. (US 23) FROM NORTH	(US 23) rth		\vdash		S. Walt FRG	S. Walnut St. (US 23) FROM SOUTH	US 23) TH		TO NOI	TOTAL NORTH		N0 FRO	North St. FROM FAST					North St. FROM WEST	St. FST		ΞΞ	TOTAL TO EAST	TOTAL	PEAK I	PEAK HOUR FACTOR	ACTO	¥
BEGINS	Left	Thru R	Right	_	Trk B	Bus L	Left T	Thru Ri	Right T	_	Trk Bı	Bus SOI	SOUTH Left		Thru Right	ht Total	Trk	Bus	Left	Thru	Right	Total	Trk	Bus		_	North Sc	South E	East W	West
00:90								_	_	_		_	_			_	-			1				_						
07:00	19	_	44	842		_			_			_	_	_			ŝ	5	138	46	54	238	~				-		-	0.826
08:00	16	706	41	763	155	2	42 9	928	10	980 1	158 4		1743 17	_	28 51	96		1	61	32	51	144	4	-	240 1	1983 0	0.921 0.	0.914 0.7	0.727 0.9	0.923
00:60	12	687	30	729	168	1 2	26 8	848	15 8	889 1	175 5	5 16	1618 9		24 32	65	2	0	44	21	73	138	17	5	203 1	1821 0	0.889 0.	0.979 0.7	0.774 0.8	0.841
10:00																														
11:00	21	764	16	801	175 (0 3	30 7	771	9 6	810 1	181 2	2 16	1611 10		10 23	43	1	1	42	17	72	131	10	0	174 1	1785 0	0.936 0.	0.888 0.7	0.717 0.8	0.885
12:00	12	784	53	849	181	2 6	88 89	824	3 2	899 1	0 161	0 17	1748 9		23 15	47	0	0	54	19	76	149	6	1	196 1	1944 0	0.842 0.	0.917 0.0	0.653 0.8	0.847
1:00	5	819 4	49	873	172	2 4	41 8	800	8	849 1	187 0		1722 5		16 15	36	0	0	59	14	63	136	6	0	172 1	1894 0	0.856 0.	0.969 0.0	0.600 0.9	0.919
2:00																							<u> </u>							
3:00	12	1424 8	83	1519	158	3 4	40 8	853	5 6	900 1	165 1	1 24	2419 13		24 11	48	1	1	69	34	92	195	6	4	243 2	2662 0	0.915 0.	0.900 0.9	0.800 0.8	0.886
4:00	16	1594 1	103	1713	181	4	27 9	902	10 9	939 1	131 2		2652 14		26 17	57	1	2	101	41	103	245	7	9	302 2	2954 0	0.952 0.	0.921 0.7	0.750 0.8	0.863
5:00	6	1306 1	100	1415	134 (0 4	46 9	905	2 2	958 1	132 0	0 23	2373 11		24 19	54	0	0	114	30	113	257	8	0	311 2	2684 0	0.876 0.	0.947 0.8	0.844 0.8	0.824
6:00																														
7:00																														
8:00																														
9:00					\neg	-	\neg	-			-	_	-	_	_									-	-				_	
TOTALS	122	8863 5	519	9504	1460 1	18 3	367 8	8043 1	106 8	8516 1	1485 17		18020 103		213 285	5 601	6	٢	682	254	697	1633	81	15	2234 21	20254				
ADT	200	14497.85 8	849 1	15546	15.6%		600 13	13157 1	173 13	13930	17.6%		29477 158		326 436	6 919	2.	2.7%	1043	389	1066	2498	5.9%		3418 3.	32894				
	N Leg Hc S Leg Ho N Leg M S Leg Mo	N Leg Hourly Factor: S Leg Hourly Factor: N Leg Monthly Factor: S Leg Monthly Factor:		1.63 1.63 1.01 1.01	E La E La W La	eg Hourl ig Hourl ig Montl eg Mont	E Leg Hourly Factor: W leg Hourly Factor: E Leg Monthly Factor: W Leg Monthly Factor:		1.56 1.56 0.98 0.98										N Leg Co	N Leg Combined Factor: S Leg Combined Factor:	actor: actor:		1.64	EL WI	E Leg Combined Factor: W Leg Combined Factor:	ed Factor: ied Factor		1.53		
											MS	EN(2112 Cs Twin	TMS ENGINEERS, 2112 Case Parkway South #7 Twinsburg, Ohio 44087	E.E.R ay Sout hio 4408	• ►	INC.											Fig	Figure #:		
											(330)	686-641	(330) 686-6402 FAX: (330) 686-6417	: (330)	686-641	٢											Pag	Page #:		<u> </u>

Intersection: US 23 & North St Counter: DJS Day of the Week: Wednesday City: Ashville

File Name : TC 5 USR 23 and North St 030222 DJS Site Code : 00000000 Start Date : 3/2/2022 Page No : 1

Right Thru F 6 180 7 203 19 203 203 203						ти стрггт	L L		LICS	N IN W H	SOUTH WAINIT STREET // 12 23/	THET (I)	15 23)		aON	NOPTH STREET	ПП		
ru 30 33	From North	From North	(67 60		Fre	From East			Inne	Er WALL	From South	ר) נומם	(07 0)		NON FI	From West			
180 203 203	Left	Peds	App. Total	Right	Thru	Left F	Peds Ap	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds A	App. Total	Int. Total
203 203	5	0	191	33	10	5	0	48	5	317	14	0	336	11	10	36	0	57	632
203	б	0	213	25	10	5	0	40	6	320	L	0	336	∞	11	53	0	72	661
	4	0	226	21	6	З	0	33	8	317	18	0	343	14	13	25	0	52	654
193	L	0	212	23	6	2	0	34	11	258	8	0	277	21	12	24	0	57	580
677	19	0	842	102	38	15	0	155	33	1212	47	0	1292	54	46	138	0	238	2527
190	4	0	207	16	9	9	0	28	ŝ	257	8	0	268	11	9	18	0	35	538
187	7	0	203	19	10	4	0	33	0	224	10	0	234	12	10	14	0	36	506
178	7	0	185	5	L	S	1	18	5	236	13	0	254	11	8	15	0	34	491
151	33	1	169	11	5	2	0	18	2	211	11	0	224	17	8	14	0	39	450
706	16	-	764	51	28	17	-	76	10	928	42	0	980	51	32	61	0	144	1985
157	ŝ	0	168	L	12	6	0	21	Ś	199	10	0	214	20	9	15	0	41	444
170	-	0	182	Ξ	S	6	0	18	4	217	9	0	227	16	S	12	0	33	460
195	7	0	205	9	7	2	0	10	5	218	б	0	226	16	2	6	0	27	468
165	4	0	174	8	5	б	0	16	1	214	L	0	222	21	8	8	0	37	449
30 687	12	0	729	32	24	6	0	65	15	848	26	0	889	73	21	44	0	138	1821
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TMS Engineers, Inc. 2112 Case Parkway South #7 Twinsburg, Ohio 44087

Transportation Manangement Services

File Name : TC 5 USR 23 and North St 030222 DJS Site Code : 00000000 Start Date : 3/2/2022

													Star	Start Date	••••	3/2/2022 2					
	LUOS	SOUTH WALNUT STREET (US 23)	NUT STF	REET (U	S 23)		NORT	Groups F	Groups Printed- Cars STREET	<u> 1- Cars - 1</u>	- Trucks - Buses SOUTH W.	A		EET (US	• • •			NORTH STREET	3ET		
Ctout Timo	Diaht	Thui Fi	From North	Dade	Ann Totol	Diaht	Thru	rom East	Dade	Ann Total	Diaht	Thui Fro	From South	Dade	Ann Total	Diaht	Thru Fr	From West	Dade	A nn Total	Int Total
10:45 AM			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	5	174	7	0	181	L	9	6	0	15	4	186	×	0	198	18	4	10	0	32	426
11:15 AM	5	184	ю	0	192	5	0	1	0	9	0	161	10	0	171	19	4	14	0	37	406
11:30 AM	33	197	14	0	214	4	2	3	0	6	2	221	5	0	228	20	5	6	0	34	485
11:45 AM	3	209	2	0	214	7	2	4	0	13	ю	203	L	0	213	15	4	6	0	28	468
Total	16	764	21	0	801	23	10	10	0	43	6	771	30	0	810	72	17	42	0	131	1785
12:00 PM	13	179	9	0	198	ω	Ś	-	0	6	4	192	19	0	215	23	Ś	12	0	40	462
12:15 PM	19	231	7	0	252	6	4	5	0	18	ю	216	24	0	243	13	4	13	0	30	543
12:30 PM	10	176	1	0	187	1	6	1	0	11	0	231	14	0	245	24	5	15	0	44	487
12:45 PM	11	198	ю	0	212	7	5	7	0	6	0	185	11	0	196	16	5	14	0	35	452
Total	53	784	12	0	849	15	23	6	0	47	٢	824	68	0	899	76	19	54	0	149	1944
01:00 PM	19	179	0	0	198	"	4	0	0	2		184	51	0	200	81	ŝ	41	-	38	443
01:15 PM	L	203	1	0	211	9	S	4	0	15	S	207	L	1	220	22	ŝ	11	0	36	482
01:30 PM	11	196	7	0	209	1	5	1	0	7	1	208	×	0	217	6	7	19	0	30	463
01:45 PM	12	241	7	0	255	5	7	0	0	7	1	201	11	0	213	14	4	15	0	33	508
Total	49	819	S	0	873	15	16	S	0	36	∞	800	41	-	850	63	14	59	-	137	1896
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

File Name : TC 5 USR 23 and North St 030222 DJS Site Code : 00000000

			Int. Total	641	623	714	685	2663	751	735	744	725	2955	069	719	650	627	2686		70707		17170	84.7	3035	15	57	0.3
			App. Total	42	52	47	55	196	59	71	52	64	246	61	46	74	78	259		8c01	8.1	1542	94.1	81	4.9	15	0.9
		EET t	Peds	1	0	0	0	-	1	0	0	0	-	7	0	0	0	2	ı	c 0	0	5	100	0	0	0	0
		NORTH STREET From West	Left	17	15	15	22	69	26	35	19	21	101	25	21	29	39	114		082 41 6	3.4	641	94	32	4.7	6	1.3
		NOI	Thru	5	Γ	13	6	34	10	8	13	10	41	5	5	8	12	30		407 7 7 1	1.3	248	97.6	2	0.8	4	1.6
3/2/2022 3			Right	19	30	19	24	92	22	28	20	33	103	29	20	37	27	113		17 6 17 6	3.4	648	93	47	6.7	2	0.3
••••		S 23)	App. Total	220	226	250	204	006	229	255	231	224	939	242	253	227	236	958		/102	42	7015	82.4	1485	17.4	17	0.2
Start Date Page No		SOUTH WALNUT STREET (US From South	Peds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		- 0	0	1	100	0	0	0	0
Sta Pa <u></u>		NUT STR From South	Left	16	6	S	10	40	3	8	10	9	27	9	23	8	6	46	Į,	700 43	1.8	331	90.2	35	9.5	1	0.3
	Buses	TH WAI	Thru	203	215	243	192	853	225	243	218	216	902	234	229	218	224	905	0,00	04 2 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	39.7	6279	81.8	1448	18	16	0.2
	- Trucks - Buses	SOL	Right	1	7	7	7	2		4	ŝ	7	10	7	1	1	ŝ	2	_	1 2		104	98.1	5	1.9	0	0
	ed- Cars -		App. Total	6	13	15	11	48	13	12	19	13	57	15	16	7	16	54		200	ŝ	586	97.3	6	1.5	L	1.2
	Groups Printed- Cars	keeT st	Peds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	•	102	0	1	100	0	0	0	0
	Gre	NORTH STREET From East	Left	3	Э	5	2	13	ю	1	5	5	14	33	Э	1	4	11		cui 171	0.5	102	66	0	0	1	1
		NC	Thru	5		~	. 5	24	9	9	11	ŝ	26	5	~	4	7	24		212		204	95.8	4	1.9	5	2.3
	_		Right	1	4	5	4	11	4	5		S	17	-		5	s.	19	_	C07		279	97.9	5	1.8	1	0.4
		JS 23)	App. Total	370	332	402	415	1519	450	397	442	424	1713	372	404	342	297	1415		cnc6	46.9	8027	84.5	1460	15.4	18	0.2
		REET (U	Peds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	•	- 0	0	1	100	0	0	0	0
		SOUTH WALNUT STREET (US 23) From North	Left	2	3	Э	4	12	9	2	5	Э	16	5	1	0	33	6		13	0.6	119	97.5	З	2.5	0	0
		TH WAL	Thru	347	308	382	387	1424	422	371	408	393	1594	337	377	320	272	1306	0000	5000 7 7 7		7441	84	1410	15.9	12	0.1
		sou	Right	21	21	17	24	83	22	24	29	28	103	30	26	22	22	100		910 7.7	2.6	466	89.8	47	9.1		1.2
			Start Time	03:00 PM	03:15 PM	03:30 PM	03:45 PM	Total	04:00 PM	04:15 PM	04:30 PM	04:45 PM	Total	05:00 PM	05:15 PM	05:30 PM	05:45 PM	Total	E	Annrch %	Total %	Cars	% Cars	Trucks	% Trucks	Buses	% Buses

nc.	th #7	
ingineers,	2112 Case Parkway South	nsburg, Ohio 44087
TMS E	2112 C	Twi

Transportation Manangement Services

File Name : TC 5 USR 23 and North St 030222 DJS Site Code : 00000000 Start Date : 3/2/2022 Page No : 4

		SOUT	TH WALI	NUT STR	SOUTH WALNUT STREET (US 23)	23)		NORJ	NORTH STREET	ET		SOUTI	H WALN	LNUT STRI	SOUTH WALNUT STREET (US 23)	23)		NOR	NORTH STREET	BET .			
App. Total Right Thru Left Pecks App. Total Right Thru Left Pecks App. Total App. Total Right Thru Left Pecks State State State State State			I.	From North	u			L	om East				ΓĽ	om South			-	I.	om west				
resk hoft i 1 33 10 36 31 11 35 3 <th col<="" th=""><th>Start Time</th><th></th><th>Thru</th><th>Left</th><th></th><th>pp. Total</th><th>Right</th><th>Thru</th><th></th><th></th><th>p. Total</th><th>Right</th><th>Thru</th><th></th><th>-</th><th>pp. Total</th><th>Right</th><th>Thru</th><th></th><th>_</th><th></th><th>Int. Total</th></th>	<th>Start Time</th> <th></th> <th>Thru</th> <th>Left</th> <th></th> <th>pp. Total</th> <th>Right</th> <th>Thru</th> <th></th> <th></th> <th>p. Total</th> <th>Right</th> <th>Thru</th> <th></th> <th>-</th> <th>pp. Total</th> <th>Right</th> <th>Thru</th> <th></th> <th>_</th> <th></th> <th>Int. Total</th>	Start Time		Thru	Left		pp. Total	Right	Thru			p. Total	Right	Thru		-	pp. Total	Right	Thru		_		Int. Total
I 13 3 10 5 0 4 10 5 0 5 1 <th 1"1<="" <="" colspa="12" td=""><td>Peak Hour Analys</td><td>sis From C</td><td>77:00 AN</td><td>1 to 09:45</td><td>AM - Pe</td><td>ak 1 of 1</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th>	<td>Peak Hour Analys</td> <td>sis From C</td> <td>77:00 AN</td> <td>1 to 09:45</td> <td>AM - Pe</td> <td>ak 1 of 1</td> <td></td>	Peak Hour Analys	sis From C	77:00 AN	1 to 09:45	AM - Pe	ak 1 of 1																
	Peak Hour for Ent	tire Inters	ection Be	gins at 0	7:00 AM																		
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	07:00 AM	9	180	5	0	191	33	10	Ś	0	48	5	317	14	0	336	11	10	36	0	57	632	
	07:15 AM	7	203	ю	0	213	25	10	5	0	40	6	320	Ζ	0	336	8	11	53	0	72	661	
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	07:30 AM	19	203	4	0	226	21	6	ю	0	33	8	317	18	0	343	14	13	25	0	52	654	
842 102 38 15 0 155 33 1212 47 0 1292 54 46 138 0 238 1 931 773 550 750 000 807 750 947 653 000 807 750 931 955 643 856 61 907 900 824 907 900 824 90 901 907 900 824 96 963 907 900 824 96 907 900 903 900 903 903 90 90 90 96 90 96 90 96	07:45 AM	12	193	7	0	212	23	6	2	0	34	11	258	8	0	277	21	12	24	0	57	580	
	Total Volume	44	<i>6LL</i>	19	0	842	102	38	15	0	155	33	1212	47	0	1292	54	46	138	0	238	2527	
331 773 550 750 307 550 730 307 550 551 000 826 132 250 136 25 15 0 124 46 134 0 229 25 1 0 971 971 971 0 971 0 971 0 971 0 962 250 250 23 0 23 0 22 0 230 0 240 0 124 49 46 0 128 32 0 23 0 23 0 23 0 23 0 0 1 0 240 0 128 0 0.2 0 0.2 0 0.2 0 0.2 0 0.2 0 0.2 0 0.2 0 0.2 0 0.2 0 0.2 0 0.2	% App. Total	5.2	92.5	2.3	0		65.8	24.5	9.7	0		2.6	93.8	3.6	0		22.7	19.3	58	0			
	PHF	.579	.959	679.	.000	.931	.773	.950	.750	.000	.807	.750	.947	.653	.000	.942	.643	.885	.651	.000	.826	.956	
	Cars	40	643	19	0	702	66	36	15	0	150	33	1045	46	0	1124	49	46	134	0	229	2205	
	% Cars	90.9	82.5	100	0	83.4	97.1	94.7	100	0	96.8	100	86.2	97.9	0	87.0	90.7	100	97.1	0	96.2	87.3	
	Trucks	2	134	0	0	136	2	1	0	0	ю	0	164	1	0	165	5	0	б	0	8	312	
	% Trucks	4.5	17.2	0	0	16.2	2.0	2.6	0	0	1.9	0	13.5	2.1	0	12.8	9.3	0	2.2	0	3.4	12.3	
0.5 1.0 2.6 0 0 1.3 0 0.2 0 0.2 0 0.7 0 0.4 415 4 5 2 0 11 2 192 10 229 22 0 71 450 4 5 6 1 0 12 243 8 0 229 25 10 26 1 59 397 5 6 1 0 12 243 8 0 231 20 13 19 26 1 59 440 16 28 11 0 55 337 50 13 20 13 23 1 233 1 59 33 1 53 1 53 1 53 1 53 1 53 1 53 1 53 1 53 1 53 1 53 1 53 1	Buses	7	7	0	0	4	1	1	0	0	7	0	с	0	0	ŝ	0	0	1	0	1	10	
ak 1 of 1 415 4 5 2 0 11 2 192 10 0 204 24 9 22 0 55 450 4 6 3 0 11 22 3 0 229 22 0 71 59 450 5 0 12 4 243 8 0 255 28 8 35 0 71 59 397 16 28 11 0 55 10 878 31 0 231 20 13 20 769 43 04 237 59 1704 16 28 11 0 55 10 878 31 0 231 20 13 237 13 237 13 237 13 237 14 237 23 13 237 14 237 237 14 237 137	% Buses	4.5	0.3	0	0	0.5	1.0	2.6	0	0	1.3	0	0.2	0	0	0.2	0	0	0.7	0	0.4	0.4	
ak 1 of 1 415 4 5 2 0 11 2 192 10 0 204 24 9 22 0 55 450 4 6 3 0 13 1 225 3 0 229 22 10 26 1 59 397 5 6 1 0 12 44 243 8 0 225 28 8 35 0 71 397 55 0 19 0 55 10 878 31 0 91 0 57 1704 16 28 10 878 31 0 20 1 237 10 555 337 10 57 10 57 10 57 10 537 10 537 10 537 10 537 10 537 10 537 10 537 53																							
415452011219210020424922055450461013122530239221026159377561012424380255288350713715019055108783109199440102123759371509200007119553.40231201319055947800 636 550.000774 625 .903.775.000.901 839 769729250 835 15201527100553.4071189389812361521100553.407118938769729250 835 26152015271007352607118938981226251520110131101415014440122623152110100233260711893898122625105063014150<	Peak Hour Analys	sis From ()3:45 PM	(to 04:30	PM - Pea	k 1 of 1																	
24 387 4 0 415 4 5 2 0 11 2 92 10 21 9 22 0 55 0 56 1 55 0 12 2 0 12 2 0 22 0 25 0 25 0 21 50 1 50 1 50 1 50 1 50 1 50 22 1 50 22 1 50 22 1 50 22 1 50 22 1 50 22 1 50 22 1 50 50 10 10 10 23 11 10 10 11 50 22 10 10 23 10 23 10 23 10 23 10 23 10 23 10 23 <	Peak Hour for Ent	ire Inters	ection Be	gins at 0.	3:45 PM																		
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	03:45 PM	24	387	4	0	415	4	5	7	0	11	7	192	10	0	204	24	6	22	0	55	685	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	04:00 PM	22	422	9	0	450	4	9	б	0	13	1	225	б	0	229	22	10	26	1	59	751	
29 408 5 0 412 3 11 5 0 12 1 5 0 422 3 11 5 1 5 1 5 11 5 11 5 10 12 10 5 11 5 31 0 12 1 237 10 10 237 10 10 237 237 237 237 237 237 237 237 237 237 237 239 17 237 237 239 237 239 237 239 237 239 239 239 239 239 239 239 239 239 239 239 239 239 239 239 239 239 239 239 $$	04:15 PM	24	371	7	0	397	S	9	1	0	12	4	243	8	0	255	28	8	35	0	71	735	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	04:30 PM	29	408	5	0	442	3	11	5	0	19	3	218	10	0	231	20	13	19	0	52	744	
5.8 93.2 1 0 29.1 50.9 20 0 1.1 95.5 3.4 0 39.7 16.9 43 0.4 835 0.4 9.3 $.411$ 16 0 $.520$ $.000$ $.724$ $.625$ $.903$ $.775$ $.000$ $.901$ $.839$ $.79$ $.250$ $.835$ 9.3 1411 16 0 152 27 10 0 724 $.625$ $.903$ $.775$ $.000$ $.901$ $.839$ $.78$ $.29$ $.250$ $.835$ 93.9 88.9 94.1 0 83.7 83.9 0 771 89 38 98 1 226 2 93.9 88.9 94.1 0 181 1 0 0 0 141 5 0 146 4 0 1 0 554 6.1 11.0 5.9 0 181 1 0 0 141 5 0 146 4 0 1 0 554 6.1 11.0 5.9 0 106 0 141 5 0 146 4 0 10 0 554 0 0 0 0 10 10 0 10 10 0 10 0 10 0 10 0 10 10 0 10 0 10 0 10 0 0 10 10 10 10 0	Total Volume	66	1588	17	0	1704	16	28	11	0	55	10	878	31	0	919	94	40	102	1	237	2915	
.853 $.941$ $.708$ $.000$ $.947$ $.800$ $.636$ $.550$ $.000$ $.715$ $.000$ $.916$ $.729$ $.250$ $.835$ $.331$ $.339$ $.769$ $.729$ $.250$ $.835$ $.331$ $.339$ $.769$ $.729$ $.250$ $.335$ $.331$ $.339$ $.361$ $.326$ $.337$ $.339$ $.38$ $.38$ $.1$ $.226$ $.266$ $.261$ $.100$ $.351$ $.39$ $.38$ $.1$ $.226$ $.266$ $.261$ $.1$ $.26$ $.27$ $.20$ $.261$ $.206$ $.266$ $.261$ $.266$ $.276$ $.286$ $.266$ $.276$ $.266$	% App. Total	5.8	93.2	1	0		29.1	50.9	20	0		1.1	95.5	3.4	0		39.7	16.9	43	0.4			
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	PHF	.853	.941	.708	.000	.947	.800	.636	.550	.000	.724	.625	.903	.775	.000	.901	.839	.769	.729	.250	.835	970.	
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Cars	93	1411	16	0	1520	15	27	10	0	52	10	735	26	0	771	89	38	98	1	226	2569	
	% Cars	93.9	88.9	94.1	0	89.2	93.8	96.4	90.9	0	94.5	100	83.7	83.9	0	83.9	94.7	95.0	96.1	100	95.4	88.1	
	Trucks	9	174	1	0	181	1	0	0	0	1	0	141	5	0	146	4	0	1	0	5	333	
0 3 0 1 1 0 2 0 2 0 2 1 2 3 0 6 0 0.2 0 0.2 0 3.6 9.1 0 3.6 0.2 0 0.2 1 2 3 0 6	% Trucks	6.1	11.0	5.9	0	10.6	6.3	0	0	0	1.8	0	16.1	16.1	0	15.9	4.3	0	1.0	0	2.1	11.4	
0 0.2 0 0 0.2 0 0.3.6 9.1 0 3.6 0.2 0 0.2 0 0.2 1.1 5.0 2.9 0 2.5	Buses	0	ю	0	0	ю	0	1	1	0	2	0	7	0	0	2	1	7	ю	0	9	13	
	% Buses	0	0.2	0	0	0.2	0	3.6	9.1	0	3.6	0	0.2	0	0	0.2	1.1	5.0	2.9	0	2.5	0.4	

								VEHICULAR	JIH	IUC	[V]		RA	ΕF	TRAFFIC COUNT SUMMARY		LNI	N	N	M	R	Ż								
Municipality:	ty:			Asł	Ashville											Ati	Intersect	tion of:	ville R	oad (Sl	X 316)	At Intersection of: <i>i</i> lle Road (SR 316) / Northrup I and	hrup I	and	South	South Walnut Street (US 23)	t Stree	t (US 2	(3)	
Date:	3/1/	3/1/2022 D	Day:	Tue.		Com	Comments:	ļ																Project:	ect:		22-029	6		
Weather:	Ū	Clear		Recor	Recorder(s):]	DJS & SLC	SLC						Data eı	Data entry by:	Off			Dai	Date entered:	;p	W	Mar. 4, 2022	~		alnut St & Ashville Rd + Northrup Dr 0:	shville Rd	+ Northr	up Dr 05	
TIME		S. Wal FR(Valnut St. (US FROM NORTH	S. Walnut St. (US 23) FROM NORTH		╞		S. Wal FR	S. Walnut St. (US 23) FROM SOUTH	(US 23) TTH		0 TO	TOTAL NORTH		Ashville FRC	Ashville Rd. (SR 316) FROM EAST	316)				Northrup Dr FROM WEST	up Dr. WEST		F	TOTAL	TOTAL	PEAI	PEAK HOUR FACTOR	R FACT	OR
BEGINS	Left	Thru R	Right		Trk B	Bus I	Left	Thru R	Right	-	Trk B	Bus SO		Left T	Thru Right	ght Total	al Trk	Bus	Left	Thru	Right	Total	Trk	Bus		DIREC.	North	South	East	West
00:00	65	740	18	823	126	-	52	1163	39	1254	159 5	5 20	2077 6	61	42 11	117 220	6	0	116	56	4	216	15	2	436	2513	0.854	0.919	0.873	0.659
08:00	83	695	27	805	142	-	21	920	38	679	183	-	-	59	43 8	88 190	0 3	4	65	33	54	152	6	9	342	2126	0.821	-	0.896	0.731
00:60	64	649	24	737	160	5	24	738	27	789	161	1	1526 4	42	42 7.	72 156	8	-	46	38	40	124	8	3	280	1806	0.931	0.861	0.796	0.838
10:00							-																							
11:00	87	699	34	790	162	2	44	689	31	764	193 (0 1:	1554 4	46	63 91	90 199	9 11	0	36	40	51	127	6	1	326	1880	0.963	0.946	0.921	0.794
12:00	94	727	49	870	167	0	31	709	41	781	175 (0 10	1651 5	56 1	165 7	77 298	6 8	1	55	104	54	213	12	1	511	2162	0.906	0.939	0.637	0.807
1:00	67	742	28	837	176	3	44	724	37	805	148	1 10	1642 5	59	54 7	78 191	1 5	0	40	89	63	171	6	2	362	2004	0.894	0.940	0.884	0.807
2:00				L			ļ																							
3:00	80	1335	49	1464	159	2	50	710	31	791	140 2	2 23	2255 7	72	80 7/	70 222	2 2	1	52	74	89	215	12	2	437	2692	0.806	0.860	0.854	0.747
4:00	82	1429	55	1566	140	2	46	861	36	943	106 (0 25	2509 6	69	73 6	60 202	2 7	1	67	62	111	240	11	1	442	2951	0.896	0.886	0.856	0.822
5:00	129	1314	85	1528	133	1	43	857	43	943	102 2	2 24	2471 7	71	75 6	67 213	3 3	0	44	64	98	206	10	0	419	2890	0.907	0.880	0.934	0.831
90:9				L			ļ																							
7:00																														
8:00																														
9:00																														
TOTALS	751	8300	369	9420	1365	14 3	355	7371	323	8049 1	1367 1	12 17	17469 5.	535 (637 71	719 1891	11 57	∞	521	539	604	1664	95	18	3555	21024				
ADT	1324	14629.59	650	16604	14.6%		626	12992	569 1	14187	17.1%		30791 8	877 1	1045 11	1179 3101		3.4%	853	883	686	2725	6.8	6.8%	5826	36617				
	N Leg H S Leg H N Leg N S Leg M	N Leg Hourly Factor: S Leg Hourly Factor: N Leg Monthly Factor: S Leg Monthly Factor:		1.63 1.63 1.08 1.08	EL WI	eg Hour eg Hour eg Mont Leg Mon	E Leg Hourly Factor: W leg Hourly Factor: E Leg Monthly Factor: W Leg Monthly Factor:	· · · · · · · · ·	1.56 1.56 1.05 1.05										N Leg C S Leg C	N Leg Combined Factor: S Leg Combined Factor:	Factor: ?actor:		1.76 1.76		E Leg Combined Factor: W Leg Combined Factor:	ined Facto bined Fact		1.64		
										[MS (330)	EN 2112 C Twi 686-64	TMS ENGINEERS, 2112 Case Parkway South #7 Twinsburg, Ohio 44087 (330) 686-6402 FAX: (330) 686-	EEI way Sou)hio 440 X: (330	• ► J	INC.												Figure #: Page #:		

City: Ashville Intersection: S. Walnut St & Ashville Rd + Northrup Dr Counter: SLC & DJS Day of the Week: Tuesday

File Name : Ashville Rd & S. Walnut St 030122 Site Code : 00000000 Start Date : 3/1/2022 Page No : 1

		App. Total Int. Total	82 660	53 643	42 646	39 564	216 2513	 36 532	36 598	28 489	52 507	152 2126	37 427	29 464	34 471	24 444	124 1806	_	0	0	0
	DRIVE st	Peds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0
	NORTHRUP DRIVE From West	Left	41	29	26	20	116	-	24	8	22	65	14	5	15	9	46		0	0	0
	NOR ⁻	Thru	26	14	œ	8	56	6	с	6	12	33	0	6	7	13	38		0	0	0
		Right	15	10	œ	5	44	 16	6	5	18	54	14	6	12	5	40	_	0	0	0
	JS 23)	App. Total	334	341	304	275	1254	256	272	240	211	679	155	200	229	205	789		0	0	0
	SOUTH WALNUT STREET (US 23) From South	eds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0
S	LNUT STRE From South	Left	5	14	12	5	52	4	5	7	5	21	7	4	თ	G	24		0	0	0
s - Buse	JTH WAL F	Thru	300	318	283	262	1163	244	257	221	198	920	151	184	214	189	738		0	0	0
s - Truck	Sol	Right	13	6	6	ø	39	 8	10	12	8	38	7	12	9	7	27	_	0	0	0
Groups Printed- Cars - Trucks - Buses	(9	App. Total	63	47	59	51	220	49	45	43	53	190	49	37	39	31	156		0	0	0
ups Prin	ROAD (SR 316) om East	Peds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0
	ш,ё	Left	16	20	6	16	61	1	16	17	15	59	5	6	13	6	42		0	0	0
	ASHVILL	Thru	12	9	16	8	42	1	0	6	14	43	15	13	4	10	42		0	0	0
		Right	35	21	34	27	117	 27	20	17	24	88	23	15	22	12	72	_	0	0	0
	JS 23)	Peds App. Total	181	202	241	199	823	191	245	178	191	805	186	198	169	184	737		0	0	0
	SOUTH WALNUT STREET (US 23) From North	Peds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0
	LNUT STRE From North	Left	2	19	20	19	65	20	29	13	21	83	1	21	13	19	64		0	0	0
	TH WAL	Thru	168	182	214	176	740	164	207	161	163	695	168	170	151	160	649		0	0	0
	nos	Right	9	~	7	4	18	 7	6	4	7	27	7	7	5	5	24	_	0	0	0
		Start Time	07:00 AM	07:15 AM	07:30 AM	07:45 AM	Total	08:00 AM	08:15 AM	08:30 AM	08:45 AM	Total	00:00 AM	09:15 AM	09:30 AM	09:45 AM	Total		10:00 AM	10:15 AM	10:30 AM

File Name : Ashville Rd & S. Walnut St 030122 Site Code : 00000000 Start Date : 3/1/2022

														Dare No Pare No	No	: 3/1/202	2022				
								Group	Groups Printed- Cars	d- Cars -	- Trucks - Buses	- Buses		2000	2						
	SoU	SOUTH WALNUT STREET (US 23) From North	LNUT STRE From North	REET (L h	JS 23)	A	ASHVILLE	E ROAD (SR 316) From East	(SR 316)		SOUT	SOUTH WALNUT From (LNUT STRE From South	STREET (US 23) South	\$ 23)		NORTI	NORTHRUP DRIVE From West)RIVE xt		
Start Time	Right	Thru	Left	eds	App. Total	Right	Thru	Left	Peds App.	pp. Total	Right	Thru	Left	eds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	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	8	168	22	0	198	19	17	13	0	49	Ŋ	187	10	0	202	თ	10	ო	0	22	471
11:15 AM	10	162	20	0	192	23	15	12	0	50	9	170	0	0	185	15	1	14	0	40	467
11:30 AM	10	161	24	0	195	21	18	7	0	46	5	156	16	0	183	13	10	5	0	28	452
11:45 AM	9	178	21	0	205	27	13	14	0	54	6	176	6	0	194	14	6	14	0	37	490
Total	34	669	87	0	790	06	63	46	0	199	31	689	44	0	764	51	40	36	0	127	1880
12:00 PM	22	155	29	0	206	26	29	19	0	74	o	160	7	0	176	ω	16	1 4	0	38	494
12:15 PM	10	195	16	0	221	14	95	8	0	117	13	183	10	0	206	17	17	5	0	45	589
12:30 PM	12	198	30	0	240	21	18	19	0	58	12	190	9	0	208	10	43	13	0	99	572
12:45 PM	5	179	19	0	203	16	23	10	0	49	7	176	8	0	191	19	28	17	0	64	507
Total	49	727	94	0	870	11	165	56	0	298	41	209	31	0	781	54	104	55	0	213	2162
01:00 PM	9	171	29	0	206	23	18	13	0	54	10	172	15	0	197	8	14	7	0	90 30	496
01:15 PM	10	205	19	0	234	14	12	19	0	45	1	192	1	0	214	16	15	7	0	38	531
01:30 PM	8	162	7	0	177	18	5	12	0	41	9	185	5	0	196	15	15	5	0	41	455
01:45 PM	4	204	12	0	220	23	13	15	0	51	10	175	13	0	198	14	24	15	0	53	522
Total	28	742	67	0	837	78	54	59	0	191	37	724	44	0	805	63	68	40	0	171	2004
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

File Name : Ashville Rd & S. Walnut St 030122 Site Code : 00000000 Start Date : 3/1/2022

		Int. Total	588	607	698	800	2693	718	745		763	727	2953		785	705	753	647	2890	21027			18091	86	2884	13.7	52	0.2
			41	52	50	72	215	30	C4	71	73	56	240		48	57	62	39	206	1664		7.9	1551	93.2	95	5.7	18	1.1
	DRIVE	Peds App. Total	0	0	0	0	0	C	Ċ	>	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NORTHRUP DRIVE From West	Left	0	13	15	15	52	t.	20	7	17	12	67		4	21	12	7	44	521	31.3	2.5	481	92.3	29	5.6	1	2.1
77071	NOR	Thru	4	12	18	30	74	10	, (2	25	14	62		12	15	26	5	64	539	32.4	2.6	519	96.3	13	2.4	7	1.3
ະ ກິຕ		Right	18	27	17	27	89	16	Č	5	31	30	111		32	21	24	21	88	604	36.3	2.9	551	91.2	53	8.8	0	0
e No	IS 23)	App. Total	175	164	230	222	791	757	766	2002	204	221	943		268	233	222	220	943	8049		38.3	6670	82.9	1367	17	12	0.1
Page No	SOUTH WALNUT STREET (US 23) From South	eds	0	0	0	0	0	C	Ċ	>	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ű	LNUT STRE From South	Left	-	19	12	12	50	0	4	2	1	10	46		13	6	12	6	43	355	4.4	1.7	332	93.5	20	5.6	e	0.8
- Trirchs - Russe	<u>e buue - c</u> TH WAL	Thru		137	208	202	710	236	700	107	187	201	861		244	215	201	197	857	7371	91.6	35.1	6025	81.7	1337	18.1	6	0.1
401.nT		Right	2	8	10	8	31	<u>ب</u>		_	9	10	36		5	6	0	14	43	323	4	1.5	313	96.9	10	3.1		0
ad- Care	6)	App. Total	51	55	65	52	223	48	16	5	49	61	204		56	52	48	57	213	1894		о	1829	96.6	57	3	8	0.4
Groune Drinted. Care	ROAD (SR 316)	Peds	0	~	0	0	-	C		>	0	7	2		0	0	0	0	0	ო	0.2	0	З	100	0	0	0	0
c. U	E R	Left	20	5	25	16	72	۲ د	÷	2	20	18	69		21	10	16	24	7	535	28.2	2.5	513	95.9	19	3.6	e	0.6
	ASHVILL	Thru	15	20	24	21	80	00	c	ס	18	26	73		16	25	20	14	75	637	33.6	с	621	97.5	14	2.2	7	0.3
		Right	16	23	16	15	20	<u>к</u>		0	5	15	60	-	19	17	12	19	67	719	38	3.4	692	96.2	24	3.3		0.4
	JS 23)	App. Total	321	336	353	454	1464	370	264	200	437	389	1566		413	363	421	331	1528	9420		44.8	8041	85.4	1365	14.5	14	0.1
	SOUTH WALNUT STREET (US 23) From North	eds	0	0	0	0	0	C		>	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LNUT STRE From North	Left	15	17	25	23	80	<i>~~</i>	.	-	27	22	82		29	26	37	37	129	751	8	3.6	730	97.2	20	2.7	-	0.1
	TH WAL	Thru	299	308	317	411	1335	345	000	000	396	350	1429		360	321	349	284	1314	8300	88.1	39.5	0969	83.9	1328	16	12	0.1
	nos	Right	2	5	5	20	49			1	14	17	55		24	16	35	10	85	369	3.9	1.8	351	95.1	17	4.6	-	0.3
		Start Time	03:00 PM	03:15 PM	03:30 PM	03:45 PM	Total		DA:15 DM		04:30 PM	04:45 PM	Total		05:00 PM	05:15 PM	05:30 PM	05:45 PM	Total	Grand Total	Apprch %	Total %	Cars	% Cars	Trucks	% Trucks	Buses	% Buses

File Name : Ashville Rd & S. Walnut St 030122 Site Code : 00000000 Start Date : 3/1/2022

Page No : 4

Image: from North From North From North From North From North From West Image: from North From West Image: from North From West North From West North From West North From West North Image: from North North </th <th></th> <th>SOUT</th> <th>TH WAL</th> <th>NUT ST</th> <th>SOUTH WALNUT STREET (US 23)</th> <th>: 23)</th> <th>96 AS</th> <th>SHVILLE</th> <th>E ROAD</th> <th>ASHVILLE ROAD (SR 316)</th> <th></th> <th>SOUT</th> <th>H WALN</th> <th>IUT STR</th> <th>SOUTH WALNUT STREET (US 23)</th> <th>5 23)</th> <th></th> <th>NOR</th> <th>NORTHRUP DRIVE</th> <th>DRIVE</th> <th></th> <th></th>		SOUT	TH WAL	NUT ST	SOUTH WALNUT STREET (US 23)	: 23)	96 AS	SHVILLE	E ROAD	ASHVILLE ROAD (SR 316)		SOUT	H WALN	IUT STR	SOUTH WALNUT STREET (US 23)	5 23)		NOR	NORTHRUP DRIVE	DRIVE		
Ight Thru Left Peds App. Total Right Thru Left Peds App. Total Int. 35 12 16 0 63 13 300 21 0 334 15 26 41 0 82 21 6 20 0 47 9 318 14 0 341 10 14 29 0 53 27 8 16 0 51 8 26 0 14 29 0 53 17 42 61 0 51 8 26 0 42 29 0 53 311 321 92.7 4.1 0 35 54 110 0 216 2 315 300 .81 .619 .000 .914 .619 .000 .659 .77 .000 .795 .77 .000 .795 .795 .77			ш	rom Nor	th			ш	rom Eas	t			ч	om Sout	ے			ш	rom We	st		
35 12 16 0 63 13 300 21 0 334 15 26 41 0 82 21 6 20 0 47 9 318 14 0 334 15 26 41 0 82 32 16 0 53 9 283 12 0 334 16 29 0 53 27 8 16 0 53 12 0 341 8 8 26 0 42 8 16 339 163 52 0 174 29 0 216 2 2 11 8 20 0 42 8 16 0 39 316 31 92.7 41 6 116 0 216 2 2 16 2 16 2 16 2 16 2 16 2 16 2 16 2 16 2 16 2 16 2 16 2 16 2 <th>Start Time</th> <th></th> <th>Thru</th> <th></th> <th>Peds</th> <th></th> <th>Right</th> <th>Thru</th> <th></th> <th></th> <th>Total</th> <th>Right</th> <th>Thru</th> <th></th> <th></th> <th>op. Total</th> <th>Right</th> <th>Thru</th> <th>Left</th> <th>Peds</th> <th>App. Total</th> <th>Int. Total</th>	Start Time		Thru		Peds		Right	Thru			Total	Right	Thru			op. Total	Right	Thru	Left	Peds	App. Total	Int. Total
	eak Hour Anal	ysis Fron	00:70 r	AM to 05	9:45 AM - I	Peak 1 o	f -															
	Peak Hour for E	Intire Inte	rsection	ו Begins	at 07:00 A	M																
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	07:00 AM	9	168	7	0	181	35	12	16	0	63	13	300	21	0	334	15	26	41	0	82	
	07:15 AM	-	182	19	0	202	21	9	20	0	47	6	318	14	0	341	10	4	29	0	53	
	07:30 AM	7	214	20	0	241	34	16	6	0	59	6	283	12	0	304	8	8	26	0	42	
18740650823117426102203911635201254445611602162.289.97.9053.219.1 27.7 0 3.1 92.7 4.1 0 20.4 55.9 53.7 0 643 864 813 $.000$ $.854$ $.836$ $.566$ $.763$ $.000$ $.873$ $.750$ $.914$ $.619$ $.000$ $.919$ $.733$ $.538$ $.707$ $.000$ $.659$ 17 617 62 0 696 115 39 57 0 211 38 1005 47 0 1090 $.35$ 54 110 0 129 94.4 83.4 95.4 0 86.6 97.4 86.4 90.4 0 86.9 79.5 96.4 94.8 0 0 0 123 3 0 126 2 3 4 0 97.4 86.4 90.4 0 86.4 90.4 0 96.4 94.8 0 0 0 123 3 0 126 2 3 4 0 97.4 86.4 90.4 0 16 0 0 0 0 123 3 0 126 0 0 1 155 36.4 94.8 0 0 16 1 0 0 0 0 1 155 3 0 <t< td=""><td>07:45 AM</td><td>4</td><td>176</td><td>19</td><td>0</td><td>199</td><td>27</td><td>8</td><td>16</td><td>0</td><td>51</td><td>ω</td><td>262</td><td>5</td><td>0</td><td>275</td><td>1</td><td>8</td><td>20</td><td>0</td><td>39</td><td></td></t<>	07:45 AM	4	176	19	0	199	27	8	16	0	51	ω	262	5	0	275	1	8	20	0	39	
2.2 89.9 7.9 0 53.2 19.1 27.7 0 31 92.7 4.1 0 20.4 25.9 53.7 0 643 864 813 000 854 836 656 763 000 873 750 914 619 733 538 707 000 659 17 617 62 0 211 38 1005 47 0 199 733 538 707 000 659 94.4 83.4 95.4 0 211 38 1005 47 0 199 795 66.4 94.8 0 199 94.4 83.4 95.4 0 86.4 90.4 0 0 199 0 0 0 0 0 0 0 0 0 0 0 0 0 0 </td <td>Total Volume</td> <td>18</td> <td>740</td> <td>65</td> <td>0</td> <td>823</td> <td>117</td> <td>42</td> <td>61</td> <td>0</td> <td>220</td> <td>39</td> <td>1163</td> <td>52</td> <td>0</td> <td>1254</td> <td>44</td> <td>56</td> <td>116</td> <td>0</td> <td>216</td> <td></td>	Total Volume	18	740	65	0	823	117	42	61	0	220	39	1163	52	0	1254	44	56	116	0	216	
.643 $.864$ $.813$ $.000$ $.854$ $.836$ $.563$ $.700$ $.659$ $.707$ $.000$ $.659$ $.707$ $.000$ $.659$ $.717$ $.619$ $.733$ $.538$ $.707$ $.000$ $.659$ $.659$ $.654$ $.619$ $.000$ $.659$ $.659$ $.659$ $.737$ $.538$ $.707$ $.000$ $.659$ $.659$ $.654$ $.906$ $.659$ $.916$ $.913$ $.923$ $.923$ $.923$ $.923$ $.923$ $.923$ $.924$ $.924$ $.924$ $.926$ $.948$ $.926$ $.924$ $.923$ $.923$ $.923$ $.923$ $.923$ $.924$ $.924$ $.924$ $.926$ $.924$ $.926$ $.924$ $.926$ $.924$ $.926$ $.924$ $.926$ $.924$ $.924$ $.924$ $.924$ $.926$ $.924$ $.924$ $.926$ $.924$ $.924$ $.926$ $.924$ $.926$ $.924$ $.926$	% App. Total	2.2	89.9	7.9	0		53.2	19.1	27.7	0		3.1	92.7	4.1	0		20.4	25.9	53.7	0		
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	ΗF		.864	.813	000.	.854	.836	.656	.763	000	.873	.750	.914	.619	000	.919	.733	.538	707.	000	.659	
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Cars		617	62	0	696	115	39	57	0	211	38	1005	47	0	1090	35	54	110	0	199	
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	% Cars	94.4	83.4	95.4	0	84.6	98.3	92.9	93.4	0	95.9	97.4	86.4	90.4	0	86.9	79.5	96.4	94.8	0	92.1	87.4
0 16.6 4.6 0 15.3 1.7 7.1 6.6 0 4.1 2.6 13.3 5.8 0 12.7 20.5 3.6 3.4 0 6.9 1 0 0 0 0 0 0 3 2 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 2 0 2 5 0 0 2 0	Trucks	0	123	ო	0	126	2	ო	4	0	o	~	155	ო	0	159	6	0	4	0	15	
1 0 0 0 0 0 2 0 0 2 0 0 2 0 0 2 0 0 2 0 0 2 0 0 2 0 0 2 0 0 2 0	% Trucks	0	16.6	4.6	0	15.3	1.7	7.1	6.6	0	4.1	2.6	13.3	5.8	0	12.7	20.5	3.6	3.4	0	6.9	
5.6 0	Buses	~	0	0	0	~	0	0	0	0	0	0	ი	2	0	5	0	0	2	0	2	
	% Buses	5.6	0	0	0	0.1	0	0	0	0	0	0	0.3	3.8	0	0.4	0	0	1.7	0	0.9	
	eak Hour tor E	Intire Inte	rsection	n Begins	at 03:45 P	Σ																
Peak Hour for Entire Intersection Begins at 03:45 PM	03:45 PM	20	411	23	0	454	15	21	16	0	52	ω	202	12	0	222	27	30	15	0	72	
454 15 21 16 0 52 8 202 12 0 222 27 30 15 0 72	04:00 PM	12	345	22	0	379	15	20	13	0	48	9	236	10	0	252	16	10	13	0	39	
454 15 21 16 0 52 8 202 12 0 222 27 30 15 379 15 20 13 0 48 6 236 10 0 252 16 10 13	04-15 PM	10	338	Ę	0	361	19	о	18	0	46	14	720	<u>1</u>	0	266	77	13	25	0	72	

Ashville Day: Wed. Comments: Bay: Wed. Comments: Recorder(s): DJS Ashville Pike Isom SourtH Recorder(s): DJS Ashville Pike Isom SourtH Right Total Trk Bus S Stop 4 3 44 116 61 221 4 1			•	,			č	ç				-	-		č		
omments: DJS Long Street FROM SOUTH Left Thru Right Total Trk Bus 44 116 61 221 4 1			A	At Intersection of:	ction of		State	State Route 752	: 752		and	Ashvi	Ashville Pike / Long Street	/ Lon	g Stree		
DJS Left Thru Right Total Trk Bus 44 116 61 221 4 1											Project:	ect:		22-029			
Long Street FROM SOUTH Left Thru Right Total Trk Bus 44 116 61 221 4 1	Dat	Data entry by:	I	Off		Õ	Date entered:	;pç	Fe	Feb. 18, 2022		м	R 752 & Ashville Pike + Long St 02162	ville Pike	+ Long St	02162	
Left Thru Right Total Trk Bus 44 116 61 221 4 1	TOTAL NORTH	- E	SR 752 FROM EAST	ь				SR 752 FROM WEST	752 WEST			TOTAL 5	TOTAL ALL	PEAK	PEAK HOUR FACTOR	FACTO	ĸ
44 116 61 221 4	SOUTH Left	Thru	Right T	tal	Trk Bus	Left	Thru	Right	Total	Trk	Bus			North	South 1	East W	West
	471 30	82	57 1	169 6	9	46	164	24	234	9	6	403	874	0.601	0.708 0	0.782 0.	0.557
6 30 75 24 129 2 2	276 21	64	22 1	107 7	9	40	58	26	124	7	1	231	507	0.735	0.806 0	0.836 0.	0.939
6 31 63 28 122 2 2	219 19	70	24 1	113 4	0	27	54	19	100	11	7	213	432	0.836	0.782 0	0.724 0.	0.926
2 31 73 21 125 2 1	234 52	63	32 1	147 8	2	30	45	28	103	6	0	250	484	0.879	0.801 0	0.919 0.	0.858
1 37 83 5 125 4 0	292 3	17	42	62 2	0	53	7	45	105	7	1	167	459	0.888	0.893 0	0.534 0.	0.772
0 26 60 31 117 1 0	257 36	63	51 1	150 3	8	32	32	36	100	3	0	250	507	0.875	0.750 0	0.647 0.	0.833
3 39 110 27 176 3 5	452 45	96	50 1	191 3	2	50	91	41	182	9	3	373	825	0.812	0.846 0	0.823 0.	0.892
6 7 33 117 55 205 5 1	554 71	119	75 2	265 9	2	83	129	63	275	9	6	540	1094	0.899	0.884 0	0.728 0.	0.893
6 0 32 120 38 190 3 0	455 54	78	35 1	167 6	0	<i>LL</i>	103	51	231	3	1	398	853	0.839	0.913 0	0.852 0.	0.862
	_		-	_	_											_	
28 303 817 290 1410 26 12	3210 331	652	388 1.	1371 48	3 26	438	683	333	1454	58	28	2825	6035				
4.4% 413 1114 395 1922 2.7%	4372 451	889	529 1:	1869	5.4%	597	931	454	1982	5.9	5.9%	3851	8222				
E Leg Hourly Factor: 1.56 W leg Hourly Factor: 1.56 E Leg Monthly Factor: 0.87 W Leg Monthly Factor: 0.87						N Leg (S Leg (N Leg Combined Factor: S Leg Combined Factor:	Factor: Factor:		1.36 1.36	ΞĂ	E Leg Combined Factor: W Leg Combined Factor:	ined Factor		1.36 1.36		
TMS ENGINEERS, 2112 Case Parkway South #7 Trainehumer Ohio Alloc7	ENGINEERS, 2112 Case Parkway South #7		INC.											ц	Figure #:		
	(330) 686-6402 FAX: (330) 686-6417	330) 686-6⁄	417											d	Page #:		Τ

Intersection: SR 752 & Long St / Ashville Pike Counter: DJS Day of the Week: Wednesday City: Ashville

File Name : TC 2 SR 752 and Long St Ashville 021622 DJS Site Code : 00000000 Start Date : 2/16/2022 Page No : 1

			Int. Total	218	338	203	115	874		125	117	140	125	507		129	115	102	88	434	0	0	0
			App. Total It	63	105	44	22	234		30	33	31	30	124		27	27	22	24	100	0	0	0
	E 752	st	Peds /	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0
	STATE ROUTE 752	From West	Left	8	14	15	6	46	,	ω	5	10	5	40		8	9	9	7	27	0	0	0
	STATI	Ē	Thru	49	85	23	7	164		16	14	15	13	58		12	18	13	5	54	0	0	0
			Right	9	9	9	9	24	,	9	8	9	9	26		7	с	e	9	19	0	0	0
			App. Total	57	78	51	35	221		40	22	31	36	129		39	26	24	33	122	0	0	0
	ET		Peds A	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0
	LONG STREET	From South	Left	8	15	5	10	44		ω	9	9	10	30		ი	5	9	5	31	0	0	0
- Buses	LON	Ľ	Thru	31	41	25	19	116		21	5	21	22	75		23	6	16	15	63	0	0	0
Trucks		-	Right	18	22	15	9	61		-	5	4	4	24		7	12	7	7	28	0	0	0
Groups Printed- Cars - Trucks - Buses			App. Total	39	51	54	25	169		32	29	28	18	107	-	39	32	28	14	113	0	0	0
s Printe	752	-	Peds Ap	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0
Group	ROUTE 752	From East	Left	7	ø	10	5	30		4	4	9	7	21		9	5	4	4	19	0	0	0
	STATE	Ľ.	Thru	19	26	25	12	82		23	16	15	10	64		25	20	17	ø	70	0	0	0
		-	Right	13	17	19	8	57		S	ი	7	-	22		8	7	7	2	24	0	0	0
			App. Total	59	104	54	33	250		23	33	50	41	147		24	30	28	17	66	0	0	0
	Ĥ	-	Peds Ap	0	0	0	0	0	,	0	0	0	0	0		~	~	0	0	2	0	0	0
	ASHVILLE PIKE	From North	Left F	42	76	21	8	147		ო	0	8	7	27		8	4	7	с	22	0	0	0
	ASHV	Fro	Thru	5	12	12	12	4			15	31	24	81		5	16	6	7	43	0	0	0
			Right	12	16	21	13	62		ი	o	1	10	39		4	o	12	7	32	0	0	0
			Start Time	07:00 AM	07:15 AM	07:30 AM	07:45 AM	Total		08:00 AM	08:15 AM	08:30 AM	08:45 AM	Total		09:00 AM	09:15 AM	09:30 AM	09:45 AM	Total	10:00 AM	10:15 AM	10:30 AM

File Name : TC 2 SR 752 and Long St Ashville 021622 DJS Site Code : 00000000 Start Date : 2/16/2022

App. Total Right
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File Name : TC 2 SR 752 and Long St Ashville 021622 DJS Site Code : 00000000 Start Date : 2/16/2022 Page No : 3

			Int. Total	185	190	227	230	832	010	240	295	306	249	1098		239	222	220	192	873	6074			5796	95.4	184	ю	94	1.5
			App. Total In	51	47	40	44	182	1	4	65	77	61	277	- ·	69	62	58	47	236	1465		24.1	1379	94.1	58	4	28	1.9
	E 752	, t	Peds Ap	0	0	0	0	0	c	V	0	0	0	2		2	ю	0	0	വ	1	0.8	0.2	5	100	0	0	0	0
	STATE ROUTE 752	From West	Left	14	13	5	12	50	C	77	20	18	23	83		26	22	14	15	77	438	29.9	7.2	415	94.7	22	5	-	0.2
	STAT	L	Thru	25	21	22	23	91	ç	ŝ	31	43	17	129		29	26	28	20	103	683	46.6	11.2	629	92.1	28	4.1	26	3.8
			Right	12	13	7	б	4	, ,	4	14	16	21	63		12	1	16	12	51	333	22.7	5.5	324	97.3	8	2.4	~	0.3
			App. Total	31	48	52	45	176		4 2	58	48	50	205		48	50	49	52	199	1419		23.4	1381	97.3	26	1.8	12	0.8
ლ 	EET	Ith	Peds /	0	0	0	0	0	c	D	0	0	0	0		0	6	0	0	6	6	0.6	0.1	თ	100	0	0	0	0
No ″	LONG STREET	From South	Left	7	80	6	15	39	(,	N	2	9	10	33		6	9	80	6	32	303	21.4	5	292	96.4	1	3.6	0	0
Page No	5	L	Thru	16	32	41	21	110	L C	07	36	25	31	117		29	29	33	29	120	817	57.6	13.5	801	98	8	~	ω	~
- Trucks			Right	8	80	2	6	27	, ,	4	17	17	6	55	_	10	9	80	14	38	290	20.4	4.8	279	96.2	7	2.4	4	1.4
ed- Cars	E ROUTE 752		App. Total	35	45	58	53	191	Ĺ	70	73	91	49	265		42	44	50	33	169	1373		22.6	1299	94.6	48	3.5	26	1.9
ins Print	E 752	st	Peds	0	0	0	0	0	c	D	0	0	0	0		-	0	~	0	7	2	0.1	0	7	100	0	0	0	0
Gro		-rom East	Left	Ω	16	10	14	45	2	0	19	19	15	71		10	16	18	10	54	331	24.1	5.4	323	97.6	7	2.1	-	0.3
	STAT	_	Thru	15	23	30	28	96	Ċ	07	23	45	25	119		21	18	25	14	78	652	47.5	10.7	605	92.8	33	5.1	14	2.1
			Right	15	9	18	1	50	c	0	31	27	6	75	_	10	10	9	6	35	388	28.3	6.4	369	95.1	8	2.1	-	2.8
			App. Total	68	50	17	88	283	0 1	S	66	06	89	351		80	99	63	60	269	1817		29.9	1737	95.6	52	2.9	28	1.5
	ЫKE		Peds	0	~	ო	ო	7	c	0	7	0	0	2		-	0	~	2	4	17	0.9	0.3	17	100	0	0	0	0
	ASHVILLE PIKE	From North	Left	13	8	19	10	50	2	<u>0</u>	20	24	15	72		14	6	6	12	44	420	23.1	6.9	401	95.5	4	~	15	3.6
	ASF	L	Thru	39	28	38	48	153		4	58	39	53	191		42	39	33	35	149	883	48.6	14.5	858	97.2	14	1.6	1	1.2
			Right	16	13	17	27	73	2	מ	19	27	21	86		23	18	20	5	72	497	27.4	8.2	461	92.8	34	6.8	7	0.4
			Start Time	03:00 PM	03:15 PM	03:30 PM	03:45 PM	Total		04:00 FM	04:15 PM	04:30 PM	04:45 PM	Total		05:00 PM	05:15 PM	05:30 PM	05:45 PM	Total	Grand Total	Apprch %	Total %	Cars	% Cars	Trucks	% Trucks	Buses	% Buses

TMS Engineers, Inc. 2112 Case Parkway South #7 Twinsburg, Ohio 44087

Transportation Manangement Services

File Name : TC 2 SR 752 and Long St Ashville 021622 DJS Site Code : 00000000 Start Date : 2/16/2022 Page No : 4

		ASH	ASHVILLE PIKE	IKE			STATE	E ROUTE 752	: 752			LON	LONG STREET	ET			STATE	STATE ROUTE 752	E 752		
		ц	From North	Ч			Ľ	⁻ rom East				Ъг	From South	ч			ц	From West	st		
Start Time	Right	Thru	Left	Peds Ap	App. Total	Right	Thru	Left	Peds Ap	App. Total	Right	Thru	Left	Peds Ap	App. Total	Right	Thru	Left	Peds A	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of	vsis Fron	1 07:00 A	AM to 09	45 AM -	Peak 1	of 1															
Peak Hour for Entire Intersection Begins at 07:00 AM	ntire Inte	rsection	Begins a	at 07:00 /	M																
07:00 AM	12	5	42	0	59	13	19	7	0	39	18	31	8	0	57	9	49	8	0	63	218
07:15 AM	16	12	76	0	104	17	26	8	0	51	22	41	15	0	78	9	85	14	0	105	338
07:30 AM	21	12	21	0	54	19	25	10	0	54	15	25	1	0	51	9	23	15	0	44	203
07:45 AM	13	12	8	0	33	8	12	5	0	25	9	19	10	0	35	9	7	6	0	22	115
Total Volume	62	41	147	0	250	57	82	30	0	169	61	116	44	0	221	24	164	46	0	234	874
% App. Total	24.8	16.4	58.8	0		33.7	48.5	17.8	0		27.6	52.5	19.9	0		10.3	70.1	19.7	0		
ЪНF	.738	.854	.484	000.	.601	.750	.788	.750	000.	.782	.693	707.	.733	000.	.708	1.00	.482	.767	000.	.557	.646
Cars	57	39	147	0	243	53	74	30	0	157	61	114	41	0	216	21	154	44	0	219	835
% Cars	91.9	95.1	100	0	97.2	93.0	90.2	100	0	92.9	100	98.3	93.2	0	97.7	87.5	93.9	95.7	0	93.6	95.5
Trucks	ო	-	0	0	4	2	4	0	0	9	0	~	ი	0	4	ო	2	~	0	9	20
% Trucks	4.8	2.4	0	0	1.6	3.5	4.9	0	0	3.6	0	0.9	6.8	0	1.8	12.5	1.2	2.2	0	2.6	2.3
Buses	2	-	0	0	ო	2	4	0	0	9	0	~	0	0	~	0	8	~	0	6	19
% Buses	3.2	2.4	0	0	1.2	3.5	4.9	0	0	3.6	0	0.9	0	0	0.5	0	4.9	2.2	0	3.8	2.2
Peak Hour Analysis From 03:45 PM to 04:30 PM - Peak 1 of 1	vsis Fron	ח 03:45 F	PM to 04	:30 PM -	Peak 1	of 1															
Peak Hour for Entire Intersection Begins at 03:45 PM	ntire Inte	rsection	Begins ¿	at 03:45 F	M																
03:45 PM	27	48	10	e	88	1	28	14	0	53	6	21	15	0	45	6	23	12	0	44	230
04:00 PM	19	41	13	0	73	8	26	18	0	52	12	25	12	0	49	12	38	22	7	74	248
04:15 PM	19	58	20	7	66	31	23	19	0	73	17	36	£	0	58	4	31	20	0	65	295
04:30 PM	27	39	24	0	06	27	45	19	0	91	17	25	9	0	48	16	43	18	0	77	306
Total Volume	92	186	67	5	350	77	122	70	0	269	55	107	38	0	200	51	135	72	2	260	1079
% App. Total	26.3	53.1	19.1	1.4		28.6	45.4	26	0		27.5	53.5	19	0		19.6	51.9	27.7	0.8		
PHF	.852	.802	.698	.417	.884	.621	.678	.921	000.	.739	809.	.743	.633	000	.862	797.	.785	.818	.250	.844	.882
Cars	88	184	58	5	335	73	117	69	0	259	51	105	36	0	192	51	122	68	2	243	1029
% Cars	95.7	98.9	86.6	100	95.7	94.8	95.9	98.6	0	96.3	92.7	98.1	94.7	0	96.0	100	90.4	94.4	100	93.5	95.4
Trucks	4	-	2	0	7	4	4	~	0	6	ო	0	0	0	7	0	9	4	0	10	33
% Trucks	4.3	0.5	3.0	0	2.0	5.2	3.3	1.4	0	3.3	5.5	1.9	5.3	0	3.5	0	4.4	5.6	0	3.8	3.1
Buses	0	-	7	0	ω	0	~	0	0	-	-	0	0	0	~	0	7	0	0	7	17
% Buses	0	0.5	10.4	0	2.3	0	0.8	0	0	0.4	1.8	0	0	0	0.5	0	5.2	0	0	2.7	1.6

MARY	West Main Street (SR 316) and Miller Avenue / Cromley Road	Project: 22-029		Date entered: Mar. 4, 2022 Vain St & Miller Ave + Cromley Rd 03(W. Main St. (SR 316) TOTAL TOTAL PEAK HOUR FACTOR FROM WEST EAST ALL	tal Trk Bus WEST D		t 10 121 6 2 266 367 0.583 0.800 0.863	7 106 7 2 252 337 0.571 0.697 0.890	84 9 105 6 3 232 294 0.600 0.722 0.836 0.875		85 3 95 6 0 235 303 0.708 0.972 0.742	103 19 147 6 0 313 388 0.672 0.889 0.902 0.875	102 4 112 5 1 230 297 0.694 0.700 0.843 0.800		137 29 183 8 2 390 502 0.682 0.692 0.803	145 23 185 10 0 436 537 0.734 0.900 0.860 0.907	176 33 225 6 0 430 501 0.844 0.786 0.840 0.953					1020 137 1279 60 10 2784 3526	1539 207 1930 5.5% 4200 5318 201	N Leg Combined Factor: 1.51 E Leg Combined Factor: 1.51 S Leg Combined Factor: 1.51 W Leg Combined Factor: 1.51	Figure #:	Page #:
TRAFFIC COUNT SUMMARY	At Intersection of: West			JJO Date	K 316)	tal Trk Bus Left		6 1	10 6	127 7 0 12		140 6 0 7	166 5 0 25	118 4 0 6		207 4 1 17	251 8 1 17	205 2 0 16					1505 52 9 122	2270 4.1% 184	N Leg Con S Leg Con		
FFIC COU	A			Data entry by: J.	W. Main St. (SR 316) FROM EAST	Left Thru Right To		130 8	112 17	16 101 10 I		26 100 14 1.	18 130 18 1	21 85 12 1		29 153 25 2	46 187 18 2	28 152 25 2					208 1150 147 15	314 1735 222 22		EERS, INC. way South #7 hito 44087	K: (330) 686-6417
					TOTAL NORTH	Bus SOUTH L		101	85	0 62		0 68 2	0 75 1	1 67 2		3 112 2	1 101 4	0 71 2					6 742 2	3.1% 1118 3		TMS ENGINEERS, 2112 Case Parkway South #7 Twinsburg, Ohio 44087	(330) 686-6402 FAX: (330) 686-6417
VEHICULAR					Cromley Rd. FROM SOUTH	Right Total Trk		80	53	12 26 0		22 34 1	24 32 1	25 42 1		38 52 1	34 54 1	25 44 0					236 417 7	355 628 3.	1.56 1.56 0.96 0.96	TM	
VE		Comments:	Comments.	Off		Bus Left Thru		43	30	0 8 6		0 8 4	0 6 2	0 13 4		3 8 6	0 10 10	0 14 5					7 140 41	6 211 62	E Leg Hourly Factor: W leg Hourly Factor: E Leg Monthly Factor: W Leg Monthly Factor:		
	Ashville	iv: Thu.		Recorder(s):	Miller Ave. From north	ll Trk		21	32	1 36 0		0 34 0	8 43 3	, 25 0		4 60 2	1 47 0	0 27 0					5 325 5	8 490 3.7%	1.56 1.56 0.96 0.96		
	y:	3/3/2022 Dav:	Ĩ	Clear	Mil	Left Thru Right		4	5 5	12 3 21		11 3 20	21 4 18	15 3 7		30 6 24	21 5 21	13 5 9					145 35 145	218 52.72212 218	N Leg Hourly Factor: S Leg Hourly Factor: N Leg Monthly Factor: S Leg Monthly Factor:		
	Municipality:	Date:	Date.	Weather:	TIME	BEGINS	00:90	07:00	08:00	00:60	10:00	11:00	12:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	TOTALS	ADT			

Intersection: W. Main St & Miller Ave + Cromley Rd Day of the Week: Thursday Counter: JJO City: Ashville

File Name : W. Main St & Miller Ave + Cromley Rd 030322 JJO Site Code : 00000000 Start Date : 3/3/2022 Page No : 1

			tal Int. Total	37 113	27 88	28 90	29 76	121 367		24 11	27 94	33 95	22 73	106 339		23 67	26 82	30 68	27 80	106 297	0	0	0
	(SR 316)		Peds App. Total	0	0	0	0	0		0	0	0	0	0		0	0	0	~	-	0	0	C
		From West	Left Pe	7	-	2	7	7	c	v	0	2	-	15		2	с	с	4	12	0	0	C
	ST MAIN		Thru	33	25	24	22	104	ő	۶U	18	28	18	84		18	20	26	20	84	0	0	C
	ΝE		Right	N	-	0	5	9	_	. <u> </u>	0	ო	С	2		3	ю	-	2	6	0	0	C
			App. Total	25	24	20	1	80	7	0	19	10	8	53		9	8	e	10	27	0	0	C
	ROAD	outh	Peds	0	0	0	0	0	c	D	0	0	0	0		0	0	0	-	~	0	0	C
ses	CROMLEY ROAD	ē	u Left	0 16	0 12	1	0 5	1 43		0	1	1 7	0 6	3 30		-	2	2 0	1	8	0	0	0
cks - Bus	IJ		ht Thru	о 0	5	, б	9	36	c	ת	. 2		5	20		4	4		ັ ຕ	12	0	0	0
Groups Printed- Cars - Trucks - Buses		_	Total Right	42	31 1	39	33	145 3	_	45 7	41	36	35	146 2	-	34	39	27	28	128	0	0	0
rinted- C	iR 316)		App.	0	0	0	0	0		0	0	0	0	0		0	~	0	0	-	0	0	0
Groups F	STREET (SR 316)	ଞ⊦	Left Peds	4	2	-	0	7	c	V	5	5	5	17		e	5	с	5	16	0	0	0
	ပ်	ī.	Thru	36	28	36	30	130	0	30	30	26	26	112		30	29	22	20	101	0	0	0
	WEST MAIN		Right T	7	-	7	с	ω	c	V	9	5	4	17		-	4	7	С	10	0	0	0
			App. Total F	o	9	e	e	21		r	7	16	80	34		4	o	80	15	36	0	0	0
	JUE		Peds Apr	0	0	0	0	0	c	D	0	2	0	7		0	0	0	0	0	0	0	0
	MILLER AVENUE	티	Left	7	2	7	~	12	c	D	~	9	e	10		0	с	4	с	12	0	0	0
	MILLI	-	Thru	~	7	~	0	4	•		~	0	0	2		0	0	~	7	ю	0	0	0
			Right	-	7	0	2	S	c	V	5	8	5	20		0	9	n	10	21	0	0	0
			Start Time	07:00 AM	07:15 AM	07:30 AM	07:45 AM	Total		U8:00 AIM	08:15 AM	08:30 AM	08:45 AM	Total	-	09:00 AM	09:15 AM	09:30 AM	09:45 AM	Total	10:00 AM	10:15 AM	10:30 AM

TMS Engineers, Inc. 2112 Case Parkway South #7 Twinsburg, Ohio 44087

Transportation Manangement Services

File Name : W. Main St & Miller Ave + Cromley Rd 030322 JJO Site Code : 00000000 Start Date : 3/3/2022

											Stan	Start Date	••	3/3/2022							
								Grout	ups Printed- Cars	d- Cars -	- Trucks - E	e No - Buses	N 								
		MILLI	MILLER AVENUE From North	h NUE		WES	WEST MAIN Fr	STRE om Ea	STREET (SR 316) om East	16)			CROMLEY ROAD From South	DAD h		WE	WEST MAIN STREET (SR 316) From West	STREE om Wes	T (SR 31 t	6)	
Start Time	Right	Thru	Left	eds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	eds	App. Total	Right	Thru	Left	Peds Ap	Total	Int. Total
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	9	0	2	0	8	ы	25	ø	0	36	4	~		0	9	0	13	~	0	14	64
11:15 AM	9	2	4	0	12	~	28	5	0	34	ы	0	4	0	7	7	20	7	0	24	17
11:30 AM	4	0	7	0	9	9	28	2	0	36	8	0	~	0	6	~	28	ю	0	32	83
11:45 AM	4	~	ო	0	8	4	19	1	0	34	7	с	2	0	12	0	24	-	0	25	79
Total	20	e	-	0	34	4	100	26	0	140	22	4	ω	0	34	e	85	7	0	95	303
12:00 PM	8	~	7	0	16	9	34	7	0	42	9	7	~	0	თ	9	24	12	0	42	109
12:15 PM	5 2	7	4	0	5	9	39	~	0	46	7	0	-	0	8	4	32	9	0	42	107
12:30 PM	0	~	9	0	თ	5	28	7	0	40	Ω	0	С	0	œ	С	21	С	0	27	84
12:45 PM	ю	0	4	0	7	-	29	80	0	38	9	0	~	0	7	9	26	4	0	36	88
Total	18	4	21	0	43	18	130	18	0	166	24	2	9	0	32	19	103	25	0	147	388
01:00 PM	2	0	9	0	80	4	16	ъ	0	25	ю	0	7	0	5 L	~	22	7	0	25	63
01:15 PM	0	0	2	0	2	0	25	9	0	31	7	0	2	0	ი	~	34	0	0	35	77
01:30 PM	7	0	2	0	9	4	22	6	0	35	9	2	S	0	13	~	30	с	0	34	88
01:45 PM	ю	~	5	0	6	4	22	~	0	27	ი	7	4	0	15	~	16	~	0	18	69
Total	2	ო	15	0	25	12	85	21	0	118	25	4	13	0	42	4	102	9	0	112	297
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

File Name : W. Main St & Miller Ave + Cromley Rd 030322 JJO Site Code : 00000000 Start Date : 3/3/2022

Groups NILLER AVENUE From North From North MILLER AVENUE WEST MAIN STREET From North From North MILLER AVENUE MILLER AVENUE 5 3 6 0 14 7 36 8 6 1 6 1 7 36 8 7 7 0 4 0 111 6 47 5 6 1 4 0 111 6 47 5 8 1 7 0 4 31 9 7 24 6 0 11 3 45 12 21 5 0 6 11 3 45 14 21 5 0 11 3 45 14 21 5 14 18 18 45 14 21 5 1 2 2 4													Dear Uale	• •	2/2/2/2/2							
Right Thru Left Peds App. Total Right Thru L $\overline{From North}$ $From$									Grout	ss Printe		- Trucks	Trucks - Buses	о								
Right Thru Left Pecks App. Total Right Thru Left Pecks App. 6 1 6 0 14 7 36 8 0 7 0 4 0 11 6 47 5 0 7 0 4 0 11 6 47 5 0 6 1 6 2 14 0 25 153 29 0 8 1 7 0 16 8 39 7 0 6 1 4 0 25 153 29 0 0 7 0 25 13 0 11 3 45 11 0 7 0 11 3 45 12 0 0 8 1 1 4 187 46 10 0 1 2 <			MILLE	ER AVE	NUE h		WES	ST MAIN Fr	S S	T (SR 31	(9)	5	CRON	CROMLEY ROAD From South	дАD h		WES	WEST MAIN STREET From West	N STREET From West	T (SR 316) t	(9	
5 3 6 0 14 7 36 8 0 6 1 6 0 13 4 31 9 0 7 0 4 0 11 6 47 5 0 6 2 14 0 22 8 39 7 0 8 1 7 0 22 8 39 7 0 8 1 7 0 16 15 12 0 12 1 4 1 3 45 12 0 14 1 3 4 18 14 0 0 12 3 0 6 37 7 0 0 14 1 3 0 5 44 10 0 14 1 18 18 43 7 0 14 1 <t< th=""><th></th><th></th><th>Thru</th><th>Left</th><th>beds</th><th>\pp. Total</th><th>Right</th><th>Thru</th><th></th><th></th><th>p. Total</th><th>Right</th><th>Thru</th><th>Left</th><th>Peds App.</th><th>p. Total</th><th>Right</th><th>Thru</th><th>Left</th><th>beds</th><th>App. Total It</th><th>Int. Total</th></t<>			Thru	Left	beds	\pp. Total	Right	Thru			p. Total	Right	Thru	Left	Peds App.	p. Total	Right	Thru	Left	beds	App. Total It	Int. Total
	03:00 PM	5	с С	9	0	14	7	36	8	0	51	റ	0	7	0	13	5	24	5	0	34	112
	03:15 PM	9	-	9	0	13	4	31	6	0	44	15	S	2	0	20	œ	27	9	0	41	118
	03:30 PM	7	0	4	0	1	9	47	5	0	58	ი	0	~	0	10	7	41	с	0	51	130
	03:45 PM	9	2	14	0	22	ø	39	7	0	54	5	-	с	0	6	6	45	e	0	57	142
	Total	24	9	30	0	60	25	153	29	0	207	38	9	ω	0	52	29	137	17	0	183	502
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	04:00 PM	ω	~	7	0	16	9	38	ი	0	53	ω	4	2	0	14	9	42	ო	0	51	134
	04:15 PM	9	~	4	0	11	ю	45	12	0	60	7	ი	5	0	15	5	30	4	0	39	125
	04:30 PM	2	ო	4	0	თ	5	49	5	0	65	12	7	~	0	15	8	32	5	0	45	134
	04:45 PM	S	0	9	0	5	4	55	14	0	73	7	~	7	0	10	4	41	5	0	50	144
	Total	21	S	21	0	47	18	187	46	0	251	34	10	10	0	54	23	145	17	0	185	537
	05:00 PM	4	~	ю	0	8	9	37	7	0	50	ო	~	9	0	10	13	43	с	0	59	127
	05:15 PM	-	7	с	0	9	80	43	7	0	58	ი	~	4	0	14	с	42	5	0	50	128
	05:30 PM	7	-	с	0	9	7	25	4	0	36	10	7	7	0	14	5	46	7	0	59	115
	05:45 PM	7	-	4	0	7	4	47	10	0	61	с	~	2	0	9	9	45	9	0	57	131
	Total	6	5	13	0	27	25	152	28	0	205	25	5	14	0	44	33	176	16	0	225	501
44.3 10.7 44.3 0.6 9.8 76.4 13.8 0.1 4.1 1 4.1 0.1 9.3 4.2 32.6 5.9 0 139 35 139 1 314 143 1097 204 0 95.9 100 95.9 50 96 97.3 95.4 98.1 0 2 0 3 0 5 2 46 4 0 1.4 0 2.1 0 1.5 1.4 4 1.9 0 4 0 2.1 0 1.5 1.4 4 1.9 0	Grand Total	145	35	145	0	327	147	1150	208	~	1506	236	41	140	~	418	137	1020	122	~	1280	3531
4.1 1 4.1 0.1 9.3 4.2 32.6 5.9 0 139 35 139 1 314 143 1097 204 0 95.9 100 95.9 50 96 97.3 95.4 98.1 0 2 0 3 0 5 2 46 4 0 1.4 0 2.1 0 1.5 1.4 4 1.9 0 4 0 3 1 8 2 7 0 1	Apprch %	44.3	10.7	44.3	0.6		9.8	76.4	13.8	0.1		56.5	9.8	33.5	0.2		10.7	79.7	9.5	0.1		
139 35 139 1 314 143 1097 204 0 95.9 100 95.9 50 96 97.3 95.4 98.1 0 2 0 3 0 5 2 46 4 0 1.4 0 2.1 0 1.5 1.4 4 1.9 0 4 0 3 1 8 2 7 0 1	Total %	4.1	-	4.1	0.1	9.3	4.2	32.6	5.9	0	42.7	6.7	1.2	4	0	11.8	3.9	28.9	3.5	0	36.3	
95.9 100 95.9 50 96 97.3 95.4 98.1 0 2 0 3 0 5 2 46 4 0 1.4 0 2.1 0 1.5 1.4 4 1.9 0 4 0 3 1 8 2 7 0 1	Cars	139	35	139	-	314	143	1097	204	0	1444	230	39	135	-	405	130	963	116	-	1210	3373
2 0 3 0 5 2 46 4 0 1.4 0 2.1 0 1.5 1.4 4 1.9 0 4 0 3 1 8 2 7 0 1	% Cars	95.9	100	95.9	50	96	97.3	95.4	98.1	0	95.9	97.5	95.1	96.4	100	96.9	94.9	94.4	95.1	100	94.5	95.5
1.4 0 2.1 0 1.5 1.4 4 1.9 0 4 0 3 1 8 2 7 0 1	Trucks	7	0	e	0	5	2	46	4	0	52	ო	0	4	0	7	9	51	ო	0	60	124
4 0 3 1 8 2 7 0 1	% Trucks	1.4	0	2.1	0	1.5	1.4	4	1.9	0	3.5	1.3	0	2.9	0	1.7	4.4	5	2.5	0	4.7	3.5
	Buses	4	0	з	.	8	2	7	0	~	10	3	2	~	0	9	-	9	З	0	10	34
2.8 0 2.1 50 2.4 1.4 0.6 0 100	% Buses	2.8	0	2.1	50	2.4	1.4	0.6	0	100	0.7	1.3	4.9	0.7	0	1.4	0.7	0.6	2.5	0	0.8	~

File Name : W. Main St & Miller Ave + Cromley Rd 030322 JJO Site Code : 00000000 Start Date : 3/3/2022 Page No : 4

		MILL	MILLER AVENUE	ENUE		WES	WEST MAIN		STREET (SR 316)	6)		CROV	CROMLEY ROAD	OAD		WE	ST MAIN	N STREE	WEST MAIN STREET (SR 316)	16)	
		ш	From North	rth			Ľ	rom East	t			Εr	From South	Ļ			Ш	From West	st		
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds Api	App. Total	Right	Thru	Left	Peds App	App. Total	Right	Thru	Left	Peds /	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of	ysis Fron	n 07:00	AM to 0	9:45 AM -	Peak 1 c	ќ1			-		_	-		-				-			
Peak Hour for Entire Intersection Begins at 07:00 AM	Intire Inte	rsection	ו Begins	at 07:00 /	١																
07:00 AM	-	~	7	0	6	2	36	4	0	42	6	0	16	0	25	2	33	7	0	37	113
07:15 AM	7	7	2	0	9	-	28	2	0	31	12	0	12	0	24	~	25	~	0	27	88
07:30 AM	0	-	0	0	ო	0	36	~	0	39	6	-	10	0	20	0	24	0	0	28	06
07:45 AM	2	0	-	0	e	ę	30	0	0	33	9	0	5	0	-	5	22	0	0	29	76
Total Volume	5	4	12	0	21	8	130	7	0	145	36	-	43	0	80	10	104	7	0	121	367
% App. Total	23.8	19	57.1	0		5.5	89.7	4.8	0		45	1.2	53.8	0		8.3	86	5.8	0		
ЪНF	.625	.500	.429	000.	.583	.667	.903	.438	000.	.863	.750	.250	.672	000	.800	.500	.788	.875	000	.818	.812
Cars	5	4	11	0	20	ω	123	7	0	138	35	-	42	0	78	10	97	9	0	113	349
% Cars	100	100	91.7	0	95.2	100	94.6	100	0	95.2	97.2	100	97.7	0	97.5	100	93.3	85.7	0	93.4	95.1
Trucks	0	0	0	0	0	0	9	0	0	9	0	0	~	0	~	0	9	0	0	9	13
% Trucks	0	0	0	0	0	0	4.6	0	0	4.1	0	0	2.3	0	1.3	0	5.8	0	0	5.0	3.5
Buses	0	0	~	0	~	0	-	0	0	~	-	0	0	0	~	0	-	~	0	2	5
% Buses	0	0	8.3	0	4.8	0	0.8	0	0	0.7	2.8	0	0	0	1.3	0	1.0	14.3	0	1.7	1.4
	L																				
Peak Hour Analysis From 03:45 PM to 04:30 PM - Peak 1 of 1	IVSIS F ron	n 03:45	PINI to U	4:30 PM -	Peak 1 C	11 1															
Peak Hour for Entire Intersection Begins at 03:45 PM	Intire Inte	rsectior	n Begins	at 03:45 F	M																
03:45 PM	9	2	14	0	22	8	39	7	0	54	5	~	ო	0	о	6	45	ო	0	57	142
04:00 PM	α	-	7	0	16	9	38	6	0	53	œ	۲	2	0	14	9	42	c	0	5	134

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	2	14	0	22	8	39	7	0	54	2	-	ო	0	ი	6	45	ო	0	57	142
	-	7	0	16	9	38	о	0	53	8	4	7	0	14	9	42	ო	0	51	134
	-	4	0	;	ო	45	12	0	60	7	ო	5	0	15	5	30	4	0	39	125
	e	4	0	o	5	49	1	0	65	12	2	~	0	15	8	32	5	0	45	134
22	7	29	0	58	22	171	39	0	232	32	10	11	0	53	28	149	15	0	192	535
37.9	12.1	50	0		9.5	73.7	16.8	0		60.4	18.9	20.8	0		14.6	77.6	7.8	0		
688.	.583	.518	.000	.659	.688	.872	.813	000.	.892	.667	.625	.550	000	.883	.778	.828	.750	000	.842	.942
5	7	28	0	56	22	165	38	0	225	31	10	10	0	51	25	140	15	0	180	512
95.5	100	96.6	0	96.6	100	96.5	97.4	0	97.0	96.9	100	90.9	0	96.2	89.3	94.0	100	0	93.8	95.7
0	0	~	0	~	0	5	-	0	9	0	0	~	0	~	ი	8	0	0	5	19
0	0	3.4	0	1.7	0	2.9	2.6	0	2.6	0	0	9.1	0	1.9	10.7	5.4	0	0	5.7	3.6
_	0	0	0	~	0	-	0	0	~	~	0	0	0	~	0	~	0	0	~	4
ю	0	0	0	1.7	0	0.6	0	0	0.4	3.1	0	0	0	1.9	0	0.7	0	0	0.5	0.7

Appendix C Development Trip Generation Data

FOR INTERNAL USE

DHL TRAFFIC PROFILES

Westerville, OH, 17 February 2022

DHL Real Estate Development- Excellence. Simply delivered.



DHL NorAm Location Information - PowerBl

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D Search	ц о о п	♀ Filters	D Search	Filters on this page	Filter ~ ~	Lowest Level MU? V does not contain 'archive'	Status is Active or Active MU	Filters on all pages	Futer is (AII)	DHL Regions V &	DHL Country Business 🗸 🖉 is (All)	Cost Center is (AU)	DHL Activity is (AII)	Value is (AII)	DHL Subregion is (AII)
ď	5 U C			-DHC	North America	Summary Dashboard	438 UDGPCS Operation IDs	352	Unique Eddresses	145,088,383 Square Footage (Dpenations Only)	75,707,226 Tatal Hourt Worked (Last 12 Montha)	87,996,389	Total Milles Driven (Last 12 Monthy)	42,107 DSC Associate Headcount (Last Month)	
				Activity S		Sum				çân	Total		Tatal	DSC As	
				HR Area	pis Carnes	3M Mechanoborg - Tim Rogan. 3M Mequars Memphis - D.C. 3M Mequars Memphis - Packaging.	tt Stack. sid Scoffels bon Center. DDS.	1736 - Waashuuraa		đ	oum seman. A. A. Whee.	Warehouse		nte Nataging Counts	
2/16/22 ~				Safety Manager	Bite Lint (a) SM E Pass - Sergis Carnico.	 BM Mechanictoria - Tim Rogan. BM Mequars Memphis - DC. BM Mequars Memphis - Packag 	 M Ontano: Sett Back. M Reender Devid Stoffeld. A Assos - Distribution Center. Aby Southeast DDS. 	 AD3 - Southeast W34. AD5 New Missel - Wase AD5 Ohio Shuttle And shuttle 	 ALD KING AD Factors Altorrates 		 Autorizationeus mount remun Autor SAIC - Dallins Ausnos Las Vegas Avanos Southaiven White 	58/0 Cincimulat - Ware 84H - Vancere 5ayer - Las Vegas	 Bayer Mccenough Bayer Northeast Bayer Northeast 	 BLS Memphis Whee BLS Memphis Whee Beam Franker - Pickaping Beam Franker - Science 	
NorAm Locations Information Data updated 2/16/22: V	ssettbe			Vice President Saf						and a second	2 j	Andrew Contraction	And the second s	DSC headcount. DSC Associate de seasonal or temp agenry information.	
NorAm Locations Info	🖓 Get insights 🖾 Subscribe			Country All Country	S. and	CANADA					and the second	2		i overnight. Circle sizes indicate (each month, and does not includ access 'Definitions' tab for more	
NorAm Locations Information	🚯 Chat in leams			Sector	1			20,	ð	,			I	ed from LOGKCS, and is refreshed des in HRMS, updates after WD1 des temporary associates. Please	
	🗋 File 🗸 🖂 Equat 🗸			Location	Antonio de la constante da la	comment has por est an estimation account for property for the Science (A (20 C) M 000)	Healer Convertine (1921) Trade (2014) Healer Convertine (1921) Healer Convertine (1921) Healer Convertine (1921) Healer Convertine (1921) Healer Convertine (1921)	Please note: For addresses with	murphe operation, hover over dot to get a site count for that address, or click on dot for firt of sites.			View: Operation		Thi information on this past is obtained into IDOGCS, and is retended oraxights. Criter statistare DS Charlosum LSK sescitate Headcount with industed SSC searcitates in HSRK signation after WDT sech month, and does not invulne associate of sescidares. Total Noury Worled Includes temporary associates. Prices access "Definibions" tab for more information.	
Deutsche Post 🗶 Power BI	2		cations		NorAm Locations Information ~ Sea			Pie	194 194 194 196	hip <		> 10		All	
eutsche Post			NorAm Locations	Information	n Locations	Summary	Master LISI HR Area and Activity	Irends	Definitions	Operation Leadership					← Go back

Information updated daily LOGICS

FOR INTERNAL USE

DHL NorAm Location Information – Headcount per x sq/ft

Summary below is sorted by sector with the highest amount of square footage

Sectors with the highest concentration of headcount per sq/ft are darker red

Retail leads with 51 heads per 100k sq/ft of space

Chem / engineering & manufacturing are last with 13-14 heads per 100k sq/ft of space

Sector					Ť	Heads per x sq/ft (Daily)	q/ft (Daily)	
Row Labels	Sum of Square	Sum of Total FTE		sa/ft per	100k	1,000k	650k	570k
F	Footage	(Last 12 Months)	Sq/Ft					
Automotive	162,381,638	39,189	56%	4,143	24	241	157	138
Consumer	73,690,269	14,841	25%	4,965	20	201	131	115
Retail	20,511,676	10,472	7%	1,959	51	511	332	291
Technology	4,855,146	2,171	2%	2,236	45	447	291	255
Life Science & Healthcare	10,708,508	2,103	4%	5,092	20	196	128	112
Engineering & Manufacturing	13,327,534	1,870	5%	7,127	14	140	91	80
Chemicals	3,606,638	480	1%	7,513	13	133	87	76
Energy	1,095,359	253	%0	4,330	23	231	150	132

m

DHL NorAm Location Information – ITE Results Corrections

ITE provided results on various building sizes on FTE and truck movement over two shifts

Errors were discovered replicating the math (in red)

The summary for 'Enter' and 'Exit' between 7-9 AM left out the final row for 570k sg/ft

The final total between 4-6 PM (bottom right) was not totaling the entire headcount

			Ĩ				
	Week	Weekday Peak Hour	lour		Week	Weekday Peak Hour	our
	Bev	Beween 7-9 AM	Z		Bev	Beween 4-6 PM	M
Size	Enter	Exit	Trucks		Enter	Exit	Trucks
1000k	576	576	06	1152	786	370	60
570k	281	281	51	562	374	176	34
1000k	576	576	06	1152	786	370	60
650k	336	336	59	672	450	212	39
1000k	576	576	06	1152	786	370	60
1000k	576	576	06	1152	786	370	60
570k	281	281	51	562	374	176	34
	3202	3202	E01		4342	2044	LVC
	6404	14	170		6386	9	1+0

FOR INTERNAL USE

DHL NorAm Location Information – DHL Results

The results below are based on actual DHL operations for FTE and truck movement over two shifts The left table 'DHL Operations (All Sectors) are a weighted average of all ops. The right is our max FTE/Truck sector All sectors are significantly less for FTE than the ITE output

Retail is ~40% of the ITE results while trucks is the same

DHL is speculating that the ITE numbers are theoretical max headcount for given sq/ft

	DH	DHL Operations (All Sectors)	ns (All Secto	irs)					D	DHL Operations (Retail)	ons (Retail	(
		(as of 2/	(as of 2/15/2022)							(as of 2/15/2022)	5/2022)			
We	Weekday Peak Hour	(Hour		Weel	Weekday Peak Hour	Hour		Week	Weekday Peak Hour	our		Weel	Weekday Peak Hour	Hour
8	Beween 7-9 AM	AM		Bei	Beween 4-6 P	PM		Bev	Beween 7-9 AM	5		Ber	Beween 4-6 PM	M
Enter	Exit	Trucks		Enter	Exit	Trucks	Size	Enter	Exit	Trucks		Enter	Exit	Trucks
123	3 123	3 62	246	167	79	41	1000k	255	255	96	511	347	163	64
70	0 70	0 35	140	95	45	23	570k	70	70	54	140	95	45	36
123	3 123	3 62	246	167	62	41	1000k	255	255	96	511	347	163	64
80	0 80	0 62	160	109	51	41	650k	166	166	40	332	226	106	27
123	3 123	3 62	246	167	29	41	1000k	255	255	96	511	347	163	64
123	3 123	3 62	246	167	79	41	1000k	255	255	96	511	347	163	64
70	0 70	0 35	140	95	45	23	570k	70	70	54	140	95	45	36
712	2 712			696	456	75.7		1327	1327	101		1805	849	75.4
-	1424	000		1424	24	662		2654	4	TCC		2654	54	5 7

FOR INTERNAL USE

DHL TRAFFIC PROFILES

Westerville, OH, 2 May 2022

DHL Real Estate Development- Excellence. Simply delivered.



DHL NorAm Location Information – Consumer and Ecommerce

Data is representative of actual DHL operations for the noted sector verticles

DHI	DHL Operations (Consumer / Ecommerce)	er / Ecommerce)
	(as of 4/29/2022)	122)
	Weekday Peak Hour	Weekday Peak Hour
	Beween 7-9 AM	Beween 4-6 PM
Size	Trucks	Trucks
1000k	50	36
800k	45	36
575k	30	20
400k	25	16

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TOTAL SITE GENERATED TRIPS - ITE #156

				70	TOTAL AM TRIPS	Š	ā	PM TOTAL TRIPS	s	
		SIZE	OPENING	TOTAL	ENTER*	EXIT*	LOTOT	ENTER*	EXIT*	
BUILDING	SITE	(Sq Ft)	YEAR	IUIAL	50%	50%	IUIAL	68%	32%	
1	North	1,006,880	2024	1161	580	581	1166	263	373	373
2	North	793,440	2025	869	434	435	865	588	277	277
ε	North	1,006,880	2026	1161	580	581	1166	793	373	373
4	South	572,460	2027	566	283	283	553	376	177	177
S	South	1,006,880	2028	1161	580	581	1166	793	373	373
9	South	1,006,880	2029	1161	580	581	1166	793	373	373
7	South	517,940	2030	491	245	246	476	324	152	152
	TOTALS:	TOTALS: 5,911,360		6570	3282	3288	6558	4460	2098	2098
VEHICLE & TRUCK GENERATED TRIPS - ITE #156	ERATED TRIPS -	- ITE #156								
					A VEHICLE TOILD	5		ANA TOLICY TOLIC		

VEHICLE & TRUCK GENERATED TRIPS - ITE #156	ERATED TRIPS -	- ITE #156													
				AN	AM VEHICLE TRIPS	PS	٩	M TRUCK TRIPS	S	РА	PM VEHICLE TRIPS	IPS	PN	M TRUCK TRIF	Š
		SIZE	OPENING	(Total Ti	rip minus Truc	(Total Trip minus Truck Trips)		ENTER*	EXIT*	(Total T	rip minus Tru	ick Trips)		ENTER*	EXIT*
BUILDING	SITE	(Sq Ft)	YEAR	TOTAL	ENTER	EXIT	-	50%	50%	TOTAL	ENTER	EXIT	TOTAL	48%	52%
1	North	1,006,880	2024	1070	535	535		45	46	1106	764	342	09	29	31
2	North	793,440	2025	798	399	399	71	35	36	817	565	252	48	23	25
m	North	1,006,880	2026	1070	535	535		45	46	1106	764	342	60	29	31
4	South	572,460	2027	514	257	257		26	26	519	360	159	34	16	18
S	South	1,006,880	2028	1070	535	535		45	46	1106	764	342	60	29	31
9	South	1,006,880	2029	1070	535	535	91	45	46	1106	1106 764 342	342	60	29	31
7	South	517,940	2030	444	222	222		23	24	445	309	136	31	15	16
	TOTALS:	FOTALS: 5,911,360		6036	3018	3018		264	270	6205	4290	1915	353	170	183

* Truck splits not available for Land Use #156. Enter & Exit splits are based on AVERAGE directional distribution for ITE Land Uses 150/154/155

VEHICLE & TRUCK GENERATED TRIPS - PER AVAILABLE DHL DATA

				AM	AM VEHICLE TRIPS	PS	4	AM TRUCK TRIPS		PM VEHICLE TRIPS	1 VEHICLE TR	Sal	ď	M TRUCK TRI	PS
				AM TRIPS -	PS - 37.52 TRIPS/100,000 SF	100,000 SF		Per DHL Data		PM TRIPS -	37.52 TRIPS,	/100,000 SF		Per DHL Data	-
		SIZE	OPENING		ENTER*	EXIT*		ENTER**			ENTER*	EXIT*		ENTER**	
BUILDING	SITE	(Sq Ft)	YEAR	TOTAL	50%	50%	TOTAL	50%	50%	TOTAL	68%	32%		48%	52%
1	North	1,006,880	2024	378	189	189	50	25		378	257	121	36	18	
2	North	793,440	2025	298	149	149	45	23		298	202	95		18	
ε	North	1,006,880	2026	378	189	189	50	25	25	378	257	121		18	18
4	South	572,460	2027	215	107	107	30	15	15	215	146	69	20	10	
ъ	South	1,006,880	2028	378	189	189	50	25		378	257	121	36	18	18
9	South	1,006,880	2029	378	189	189	50	25	25	378	257	121	36	18	18
7	South	517,940	2030	194	97	97	30	15		194	132	62	20	10	10
	TOTALS:	S: 5,911,360		2218	1109	1109	305	153		2218	1508	710	220	110	110

* Enter & Exit splits are based on directional distribution for ITE Land Use 156 - High-Cube Parcel Hub Warehouse ** Truck splits not available for Land Use #156. Enter & Exit splits are based on AVERAGE directional distribution for ITE Land Uses 150/154/155

TOTAL SITE GENERATED TRIPS - PER AVAILABLE DHL DATA

	OPENING	2	TOTAL AM TRIPS		a.	PM TOTAL TRIPS	S
	YEAR	TOTAL	ENTER	EXIT	TOTAL	ENTER	EXIT
		428	214	214	414	275	139
		343	172	171	334	220	113
	2026	428	214	214	414	275	139
		245	122	122	235	156	79
		428	214	214	414	275	139
1,006,880	2029	428	214	214	414	275	139
		224	112	112	214	142	72
		2523	1262	1261	2438	1618	820

Appendix D ODOT COVID-19 Calibration Guidelines



Decreased traffic as a result of the COVID19 pandemic requires additional consideration in the collection and processing of traffic counts for design traffic forecasts. The Office of Technical Services is continuously reporting the statewide decrease in traffic as registered by our permanent traffic recorders at:

https://www.transportation.ohio.gov/wps/portal/gov/odot/programs/technical-services/resources/regionaltraffic-analysis

Currently about a 15% decrease in traffic is occurring. While this is similar to the decrease experienced from May to August, September and early October decreases were closer to 10%. It's too early to tell whether this represents a new trend due to increasing COVID19 trends or additional suppression related to pre-holiday travel, however regardless, the values reported here are averages based solely on the location of the permanent traffic recorders which are heavily biased towards freeways and therefore may not represent local conditions.

For establishing base line traffic conditions for forecasting projects, the following procedure is therefore provided. Note, this method is an expedient to keep projects moving, if possible the project sponsor might want to defer collecting new traffic counts for projects until traffic conditions return to normal (at a minimum normal is defined as within 15% of pre-pandemic values, even better would be to wait until post-pandemic volumes can be measured). Additionally, any projects whose forecasts are based upon counts collected during the pandemic will require new traffic counts if they are subsequently resubmitted for certification once ODOT determines traffic levels have returned to normal, note this does not necessarily mean the forecasts must be redone as long as the new counts are in reasonable agreement (usually within 15%) with the counts used for the forecasts. Since some locations may currently be close to normal, the factoring procedure is optional. However, any forecast submitted for certification must follow Steps 1 and 2 and:

- A. Contain count plates showing the prior existing counts and original raw project counts and if the factoring procedure is used the factored values with factor stations and the new counts to which they applied clearly indicated.
- B. Forecast plates must contain the following additional uncertainty note (the italicized part only included if factoring is conducted): "Counts collected during COVID19 Pandemic *and factored per ODOT Modeling and Forecasting guidance*".

Step 1 Get Existing Counts

Utilize the ODOT Traffic Monitoring Management System at:

https://odot.ms2soft.com/tcds/tsearch.asp?loc=odot

to obtain as many prior existing counts as possible. ODOT coverage counts are conducted every 3 years, the latest count that is no more than 3 years old should be used, however, only counts conducted prior to March 15, 2020 should be included. Efforts should be made to include counts on the primary project routes even if those counts are outside of the project study area.

Step 2 Conduct New Counts

Conduct new counts as normal, both machine and turning movement. New machine counts must also be conducted at the locations obtained in step 1 to establish "factor stations". Counts should be conducted following all previously published guidance:



<u>https://www.transportation.ohio.gov/static/Programs/StatewidePlanning/Modeling-</u> Forecasting/GuidelinesTCTFRoadwayDesign.pdf

Step 3 Create Project Specific Factors

In lieu of the normal seasonal adjustment factor process to develop AADT, the counts collected at the factor stations will be compared to the counts from step 1 to develop factors. Both daily (AADT) and peak hour factors will be calculated separately as it is anticipated that time of day patterns have been changed drastically (and thus the peak hour selected for analysis should be determined by the existing counts from step 1). Note, at the daily level the raw new count is compared to the seasonally adjusted prior count, thus the factor developed is a replacement for the seasonal adjustment factoring process. If other project counts are conducted on different days from the factor stations, additional seasonal factors could be applied to reconcile to the factor day, however, so long as all project counts are conducted on Monday-Thursday within a month of one another this should be unnecessary. This does not replace or change other processes such as the application of design hour volume factors.

Step 4 Apply Factors

The factors from Step 3 will be applied to the other counts collected in Step 2. The analyst needs to determine which factors to apply to each count. Generally, factors should be selected from the same road as close to the subject count as possible. If this isn't possible, a factor station with similar characteristics (functional class, development density, lanes, speed limit, access type etc.) and geographic proximity should be chosen. Average factors from multiple locations might also be used.

Step 5 Additional Turn Movement Count Considerations

As ODOT's Traffic Monitoring Management System does not contain extensive turning movement counts and turning movement counts aren't conducted for an entire day there are additional considerations. If a count does exist in TMC (the turning movement portion of TMMS) and it is within 3 years old it can be used in lieu of a new count. A new count could also be conducted for the purpose of creating factors from this count in Step 2, however, since TM counts are not done for the full day, this would only result in peak hour factors which would thus require alternate factor station locations for developing the AADT factors. Therefore, in general, factor station locations are recommended for machine count locations only.

In addition, it is possible that the turning movement proportions have been skewed as a result of the traffic decrease. Therefore, for important intersections, it is recommended that StreetLight Data be queried at the intersection using average week day for one full month of weekdays. Both a pre and post COVID19 month should be queried. The pre-C month should either be February 2020 or the month in 2019 matching the post-C month selected below. The former should be used if the analyst believes changing development patterns are most important while the latter is used if the analyst believes seasonal effects are most important. The post-C month will be the latest month available in StreetLight. The comparisons should be made in terms of the turning movement percentages, not absolute volume. If the StreetLight comparisons indicate the turn movement percentages have changed by more than 10 percentage points, the turn movement count percentages can be adjusted to reflect this. Any such adjustment must be clearly indicated with the submitted count information.

Note: Check back to the web site for any updates.

Simple Corridor Project Factor Example (Blue Dots are TMMS- MS2 Count Locations)



Step 1: Get the most recent hourly, 24-hour count.

Use TMMS (<u>https://odot.ms2soft.com/tcds/tsearch.asp?loc=Odot&mod=</u>) to obtain "Old" pre-COVID date count.
Use the most recent 24 hour-hourly count for AADT, AM.PM

21:00-22:00 24 26 29 21 100 22:00-23:00 19 20 20 19 76 23:00-24:00 15 14 20 9 58 Total 5:216 5:216 This example assumed the entire corridor peaks at 3:15-4:15 PM. This may not be the case. Look at all the counts in the corridor to establish											
2019 5,106 ³ 8 53 3,842 (75%) 1,264 (25%) Grown from 2018 2018 5,050 407 8 53 3,800 (75%) 1,250 (25%) Image: Constraint of the co	AADT (0									
2019 5,106 ³ 407 8 53 3,842 (75%) 1,264 (25%) from 2018 We cannot use 2019 AADT 2018 5,050 407 8 53 3,800 (75%) 1,250 (25%) Image: Constrained Stress of the case in the constrained Stress of the case. We cannot use 2019 AADT 2017 6,234 ³ 9 52 4,706 (75%) 1,530 (25%) Grown from 2016 Because it is estimated from 2018. 2016 6,029 ³ 9 52 4,551 (75%) 1,477 (24%) Grown from 2015 There is no hourly data. Most Recent Hourly Count Summary from MS2-TMMS Note: Total 5.216 Add to the case Add to the case Most Recent Hourly Count Summary from MS2-TMMS Note: This example assumed the entire corridor peaks at 3:15-4:15 PM. This may not be the case. Look at all the counts in the corridor to establish			AADT	DHV-30		κ%	D %	PA	BC	Src	Nucle
2018 5,050 407 8 53 3,800 (15%) 1,250 (25%) Grown from 2016 2017 6,234 ³ 9 52 4,706 (75%) 1,530 (25%) Grown from 2016 because it is estimated from 2018. 2016 6,029 ³ 9 52 4,551 (75%) 1,477 (24%) Grown from 2015 There is no hourly data. Most Recent Hourly Count Summary from MS2-TMMS Note: This example assumed the entire corridor peaks at 3:15-4:15 PM. This may not be the case. Look at all the counts in the corridor to establish		2019	5,106 ³		-	8	53	3,842 (75%	6) 1,264 (25%)		
2010 0,234 3 32 4,00 (130) 1,300 (230) from 2016 2016 6,0293 9 52 4,551 (75%) 1,477 (24%) Grown from 2015 There is no hourly data. Most Recent Hourly Count Summary from MS2-TMMS Note: 72:00 23:00 24 26 29 24 100 Note: This example assumed the entire corridor peaks at 3:15-4:15 PM. This may not be the case. Look at all the counts in the corridor to establish		2018	5,050	407		8	53	3,800 (75%	6) 1,250 (25%)		We calllot use 2019 AADT
2018 6,029 3 52 4,951 (13%) 1,477 (24%) from 2015 Most Recent Hourly Count Summary from MS2-TMMS 2100 24 25 29 21 100 2200 24 25 29 21 100 2300 15 20 20 19 70 2300 24 20 9 58 Total 5 5216 This example assumed the entire corridor peaks at 3:15-4:15 PM. This may not be the case. Look at all the counts in the corridor to establish		2017	6,234 ³			9	52	4,706 (75%	6) 1,530 (25%)		
Most Recent Hourly Count Summary from MS2-TMMS 21:00-22:00 24 25 29 21 100 22:00-23:00 19 20 19 70 23:00-24:00 15 14 20 9 58 Total 5:215 This example assumed the entire corridor peaks at 3:15-4:15 PM. This may not be the case. Look at all the counts in the corridor to establish		2016	6,029 ³			9	52	4,551 (75%	6) 1,477 (24%)		There is no hourly data.
23:00.24:00 15 14 20 9 58 Total 5:216 This example assumed the entire corridor peaks at 3:15-4:15 PM. This may not be the case. Look at all the counts in the corridor to establish	viost	t Rece	ent Hoi	urlv Co	ount	t Sun	nmarv	' from M	S2-TMMS	μ	
23:00.24:00 15 14 20 9 58 Total 5,216 This example assumed the entire corridor peaks at 3:15-4:15 PM. This may not be the case. Look at all the counts in the corridor to establish	viost	t Rece	ent Hou	urly Co	ount	t Sun	nmary	from M	S2-TMMS	L	
Total 5.216 AADT 5.050 AM Peak 67.00-05.00 407 15.15-16.15	21:00	22:00	24	26	29	21	10	0			
Total5.216AADT5.050AM Peak07.00-08.0040715.15-16.15Counts in the corridor to establish	21:00	22:00	24	26	29	21	10	0		L	
AM Peak 07 00-05 00 may not be the case. Look at all the counts in the corridor to establish	21:00- 22:00	22:00 23:00	24 19	25 20	29 20	21 19	10	0 8 No	te:	assumer	the entire
207 Counts in the corridor to establish	21:00 22:00 23:00	22:00 23:00 24:00	24 19	25 20	29 20	21 19	10	0 8 8 Thi	te: s example		
PM Peak 15.15-15.15	21:00 22:00 23:00 To	22:00 23:00 24:00 tai	24 19	25 20	29 20	21 19	10 7 5 5 210	No No Thi	te: s example		
the peak that will be used	21:00 22:00 23:00 To AA	22:00 23:00 24:00 tai	24 19	25 20	29 20	21 19 9	10 7 5 5 211 5 05	0 No 8 Thi 0 cor	te: s example ridor peak	s at 3:15	-4:15 PM. This
415. the peak that will be used.	21:00 22:00 23:00 To AA AM F	22:00 23:00 24:00 tai DT Peak	24 19	25 20	29 20	21 19 9	10 7 5 210 5 05 00-08 0 40 15-16 1	No Thi cor ma	te: s example ridor peak y not be th unts in the	s at 3:15 ne case. corridor	-4:15 PM. This Look at all the to establish

Step 2: Get the new count

Note: The r	new count	: is takeı	n at the
same locati	on as Loc	ation ID	: 472 as a
24-hour co	unt. (prob	ably tub	pe count)
NEW Raw Co	unt 4/15/20)20 (COV	/ID Best)
	EB	WB	Tot
7-8 AM	101	91	192
3:15-4 :15 PM	106	144	250
24 Hrs			2190

Step 3: Calculate factors: (Pre-COVID count) / (new count)

5050 / 2190 =	2.306 AADT COVID FACTOR
407 / 192 =	2.120 AM COVID FACTOR
416 / 250 =	1.664 PM COVID FACTOR

<u>Repeat</u> this calculation for as many MS2 counts are in the project area within the same year and average them. In this example, the two on US 6 shown may be enough.

Appendix E ODOT Historical Traffic Data

Volume Count Report

COUNT DATA INFO

Count Status Accepted

Direction

Speed Limit Description

Latitude,Longitude

Sensor Type ATR

Start Date Thu 2/17/2022 End Date Fri 2/18/2022 Start Time 12:00:00 AM End Time 12:00:00 AM

LOCATION INF	0
Location ID	2765
Туре	SPOT
Fnct'l Class	3
Located On	US-23
Loc On Alias	N310
BETWEEN	SR-752 AND DUVALL RD (SR-762)
Direction	2-WAY
County	Pickaway
Community	HARRISON
MPO ID	
HPMS ID	
Agency	ODOT

)N INF(D		INTERVAL:15-M	IN				
on ID 2	2765			1	5-min	Interv	al	Hourly
Туре 🕄	SPOT		Time	1st	2nd	3rd	4th	Count
Class 3	3		(b) 0:00-1:00	82	68	60	68	278
ed On l	JS-23		1:00-2:00	60	54	62	48	224
Alias	N310		2:00-3:00	47	50	59	48	204
VEEN S	SR-752 AND DUVALL RD (SR-762)		3:00-4:00	59	68	61	90	278
ection 2	2-WAY		4:00-5:00	96	134	168	174	572
ounty P	Pickaway		5:00-6:00	230	322	329	345	1,226
unity H	HARRISON		6:00-7:00	484	581	541	466	2,072
POID			7:00-8:00	494	540	528	449	2,011
MS ID			8:00-9:00	435	414	438	418	1,705
gency (DDOT		9:00-10:00	388	408	407	350	1,553
			10:00-11:00	374	361	397	340	1,472
			11:00-12:00	318	340	375	332	1,365
DATA II	NFO		12:00-13:00	482	421	417	395	1,715
nt Statu	s Accepted		13:00-14:00	363	413	396	406	1,578
tart Dat	e Thu 2/17/2022		14:00-15:00	414	487	490	485	1,876
End Dat	e Fri 2/18/2022		15:00-16:00	484	551	559	573	2,167
tart Tim	e 12:00:00 AM		16:00-17:00	523	570	580	545	2,218
End Tim	e 12:00:00 AM		17:00-18:00	538	619	502	495	2,154
Directio	n		18:00-19:00	472	383	382	334	1,571
Note	8		19:00-20:00	242	265	254	224	985
Statio	n		20:00-21:00	241	211	186	180	818
Stud	у		21:00-22:00	201	191	184	158	734
ed Lim	it		22:00-23:00	145	115	129	103	492
scriptio	n		23:00-24:00 🔳	88	95	100	82	365
sor Typ	e ATR		Total					29,633
Sourc	e TCDS_COUNT_IMPORT_COMBI	NE	AM Peak				06	:15-07:15
ongitud	e							2,082
		_	PM Peak				16	:30-17:30 2,282
								2,202

Count Navig	ation:	<<	<	>	>>
Directions:	2-WAY	N	B 2	SB	2

Count Type: VOLUME 🗸

Volume Count Report

COUNT DATA INFO

Count Status Accepted

LOCATION INF	0
Location ID	2765
Туре	SPOT
Fnct'l Class	3
Located On	US-23
Loc On Alias	N310
BETWEEN	SR-752 AND DUVALL RD (SR-762)
Direction	2-WAY
County	Pickaway
Community	HARRISON
MPO ID	
HPMS ID	
Agency	ODOT

Horizon Hieron			INTERVAL:15-M	IN				
Inno Inno <thinno< th=""> Inno Inno <thi< th=""><th></th><th></th><th></th><th>1!</th><th>5-min</th><th>Interv</th><th>al</th><th>Hourly</th></thi<></thinno<>				1!	5-min	Interv	al	Hourly
I:00-2:00 53 48 44 53 198 2:00-3:00 39 43 44 51 177 3:00-4:00 42 52 61 81 236 4:00-5:00 76 146 141 167 530 5:00-6:00 252 313 392 458 1,415 6:00-7:00 536 570 608 539 2,253 7:00-8:00 544 554 577 506 2,181 8:00-9:00 467 500 429 406 1,802 9:00-10:00 419 389 402 353 1,563 10:00-11:00 360 381 377 394 1,512 11:00-12:00 373 333 376 399 1,481 12:00-13:00 384 412 424 377 1,597 13:00-14:00 408 417 436 396 1,657 14:00-15:00 527		Time	1st	2nd	3rd	4th	Count	
2:00-3:00 39 43 44 51 177 762) 3:00-4:00 42 52 61 81 236 4:00-5:00 76 146 141 167 530 5:00-6:00 252 313 392 458 1,415 6:00-7:00 536 570 608 539 2,253 7:00-8:00 544 554 577 506 2,181 8:00-9:00 467 500 429 406 1,802 9:00-10:00 419 389 402 353 1,563 10:00-11:00 360 381 377 394 1,512 11:00-12:00 373 333 376 399 1,481 12:00-13:00 384 412 424 377 1,597 13:00-14:00 408 417 436 396 1,657 14:00-15:00 407 471 480 499 1,857 15:00-16:00			0:00-1:00	65	67	60	57	249
762) 3:00-4:00 42 52 61 81 236 4:00-5:00 76 146 141 167 530 5:00-6:00 252 313 392 458 1,415 6:00-7:00 536 570 608 539 2,253 7:00-8:00 544 554 577 506 2,181 8:00-9:00 467 500 429 406 1,802 9:00-10:00 419 389 402 353 1,563 10:00-11:00 360 381 377 394 1,512 11:00-12:00 373 333 376 399 1,481 12:00-13:00 384 412 424 377 1,597 13:00-14:00 408 417 436 396 1,657 14:00-15:00 407 471 480 499 1,857 15:00-16:00 527 548 440 301 1,816 16:00-1		1:00-2:00	53	48	44	53	198	
1 0.00 1.2 0.2 0.1 0.1 0.00 4:00-5:00 76 146 141 167 530 5:00-6:00 252 313 392 458 1,415 6:00-7:00 536 570 608 539 2,253 7:00-8:00 544 554 577 506 2,181 8:00-9:00 467 500 429 406 1,802 9:00-10:00 419 389 402 353 1,563 10:00-11:00 360 381 377 394 1,512 11:00-12:00 373 333 376 399 1,481 12:00-13:00 384 412 424 377 1,597 13:00-14:00 408 417 436 396 1,657 14:00-15:00 407 471 480 499 1,857 15:00-16:00 527 548 440 301 1,816 16:00-17:00			2:00-3:00	39	43	44	51	177
5:00-6:00 252 313 392 458 1,415 6:00-7:00 536 570 608 539 2,253 7:00-8:00 544 554 577 506 2,181 8:00-9:00 467 500 429 406 1,802 9:00-10:00 419 389 402 353 1,563 10:00-11:00 360 381 377 394 1,512 11:00-12:00 373 333 376 399 1,481 12:00-13:00 384 412 424 377 1,597 13:00-14:00 408 417 436 396 1,657 14:00-15:00 407 471 480 499 1,816 16:00-17:00 367 342 360 362 1,431 17:00-18:00 322 526 544 518 1,910 18:00-19:00 455 396 284 318 1,453 19:00-20:00		3:00-4:00	42	52	61	81	236	
6:00-7:00 536 570 608 539 2,253 7:00-8:00 544 554 577 506 2,181 8:00-9:00 467 500 429 406 1,802 9:00-10:00 419 389 402 353 1,563 10:00-11:00 360 381 377 394 1,512 11:00-12:00 373 333 376 399 1,481 12:00-13:00 384 412 424 377 1,597 13:00-14:00 408 417 436 396 1,657 14:00-15:00 407 471 480 499 1,857 15:00-16:00 527 548 440 301 1,816 16:00-17:00 367 342 360 362 1,431 17:00-18:00 322 526 544 518 1,910 18:00-19:00 212 190 190 171 763 21:00-22:00			4:00-5:00	76	146	141	167	530
7:00-8:00 544 577 506 2,181 8:00-9:00 467 500 429 406 1,802 9:00-10:00 419 389 402 353 1,563 10:00-11:00 360 381 377 394 1,512 11:00-12:00 373 333 376 399 1,481 12:00-13:00 384 412 424 377 1,597 13:00-14:00 408 417 436 396 1,657 14:00-15:00 407 471 480 499 1,857 15:00-16:00 527 548 440 301 1,816 16:00-17:00 367 342 360 362 1,431 17:00-18:00 322 526 544 518 1,910 18:00-19:00 455 396 284 318 1,453 19:00-20:00 271 272 233 255 1,031 20:00-21:00 212 </th <th></th> <th>5:00-6:00</th> <th>252</th> <th>313</th> <th>392</th> <th>458</th> <th>1,415</th>		5:00-6:00	252	313	392	458	1,415	
8:00-9:00 467 500 429 406 1,802 9:00-10:00 419 389 402 353 1,563 10:00-11:00 360 381 377 394 1,512 11:00-12:00 373 333 376 399 1,481 12:00-13:00 384 412 424 377 1,597 13:00-14:00 408 417 436 396 1,657 14:00-15:00 407 471 480 499 1,816 16:00-17:00 367 342 360 362 1,431 17:00-18:00 322 526 544 518 1,910 18:00-19:00 455 396 284 318 1,453 19:00-20:00 271 272 233 255 1,031 20:00-21:00 212 190 190 171 763 21:00-22:00 179 181 156 134 650 22:00-23:00 <th></th> <th></th> <th>6:00-7:00</th> <th>536</th> <th>570</th> <th>608</th> <th>539</th> <th>2,253</th>			6:00-7:00	536	570	608	539	2,253
9:00-10:00 419 389 402 353 1,563 10:00-11:00 360 381 377 394 1,512 11:00-12:00 373 333 376 399 1,481 12:00-13:00 384 412 424 377 1,597 13:00-14:00 408 417 436 396 1,657 14:00-15:00 407 471 480 499 1,857 15:00-16:00 527 548 440 301 1,816 16:00-17:00 367 342 360 362 1,431 17:00-18:00 322 526 544 518 1,910 18:00-19:00 455 396 284 318 1,453 19:00-20:00 271 272 233 255 1,031 20:00-21:00 212 190 190 171 763 21:00-22:00 179 181 156 134 650 22:00-23:00 </th <th></th> <th></th> <th>7:00-8:00</th> <th>544</th> <th>554</th> <th>577</th> <th>506</th> <th>2,181</th>			7:00-8:00	544	554	577	506	2,181
10:00-11:00 360 381 377 394 1,512 11:00-12:00 373 333 376 399 1,481 12:00-13:00 384 412 424 377 1,597 13:00-14:00 408 417 436 396 1,657 14:00-15:00 407 471 480 499 1,857 15:00-16:00 527 548 440 301 1,816 16:00-17:00 367 342 360 362 1,431 17:00-18:00 322 526 544 518 1,910 18:00-19:00 455 396 284 318 1,453 19:00-20:00 271 272 233 255 1,031 20:00-21:00 212 190 190 171 763 21:00-22:00 179 181 156 134 650 22:00-23:00 147 130 175 113 565 23:00-24:00 <th></th> <th>8:00-9:00</th> <th>467</th> <th>500</th> <th>429</th> <th>406</th> <th>1,802</th>		8:00-9:00	467	500	429	406	1,802	
11:00-12:00 373 333 376 399 1,481 12:00-13:00 384 412 424 377 1,597 13:00-14:00 408 417 436 396 1,657 14:00-15:00 407 471 480 499 1,857 15:00-16:00 527 548 440 301 1,816 16:00-17:00 367 342 360 362 1,431 17:00-18:00 322 526 544 518 1,910 18:00-19:00 455 396 284 318 1,453 19:00-20:00 271 272 233 255 1,031 20:00-21:00 212 190 190 171 763 21:00-22:00 179 181 156 134 650 22:00-23:00 147 130 175 113 565 23:00-24:00<()		9:00-10:00	419	389	402	353	1,563	
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PM Peak 14:30-15:30 2,054			PM Peak				14	:30-15:30 2,054

Start Date	Thu 2/20/2020
End Date	Fri 2/21/2020
Start Time	12:00:00 AM
End Time	12:00:00 AM
Direction	
Notes	
Station	
Study	
Speed Limit	
Description	
Sensor Type	ATR
Source	TCDS_COUNT_IMPORT_COMBINE
Latitude,Longitude	

Count Type: VOLUME 🗸

Directions: 2-WAY NB

Count Navigation: <

NB SB 🕗

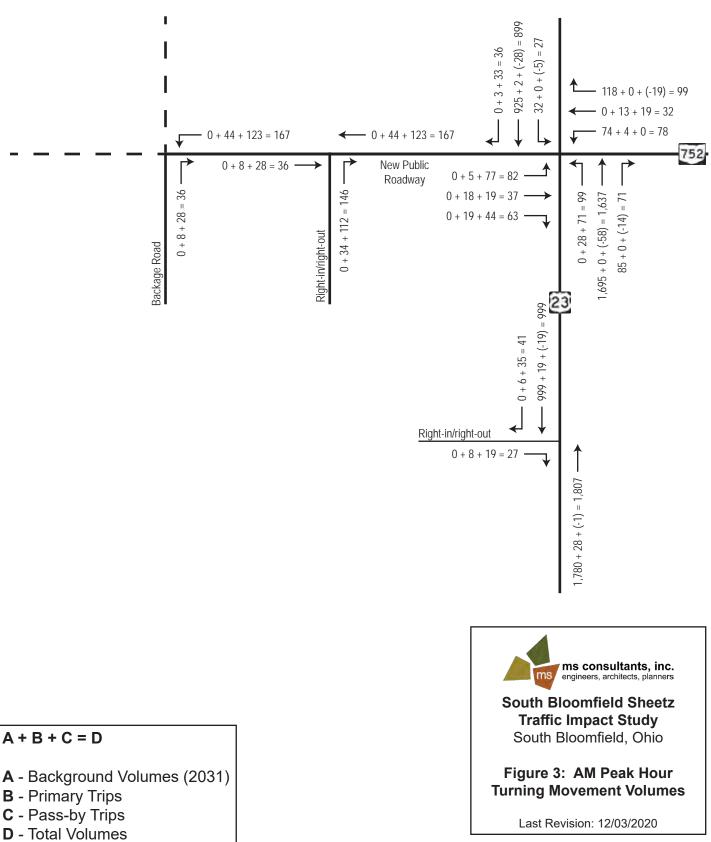
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Appendix F Sheetz TIS Trip Generation Figures

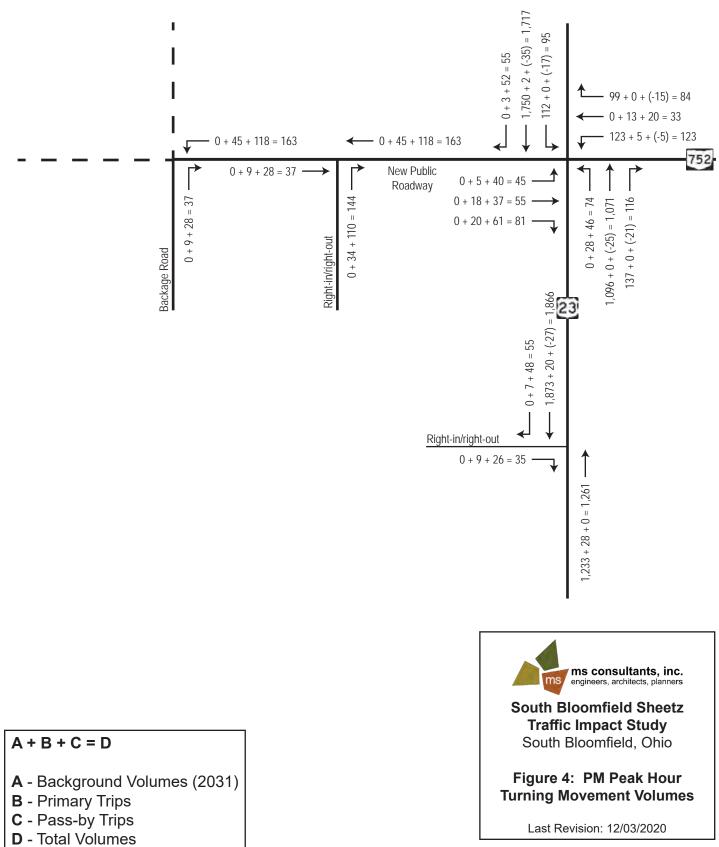












Appendix G US23/SR316 Development TIS Trip Generation Figures



Kimley»**Horn**

OPENING YEAR (2022) TOTAL TRIP ASSIGNMENT



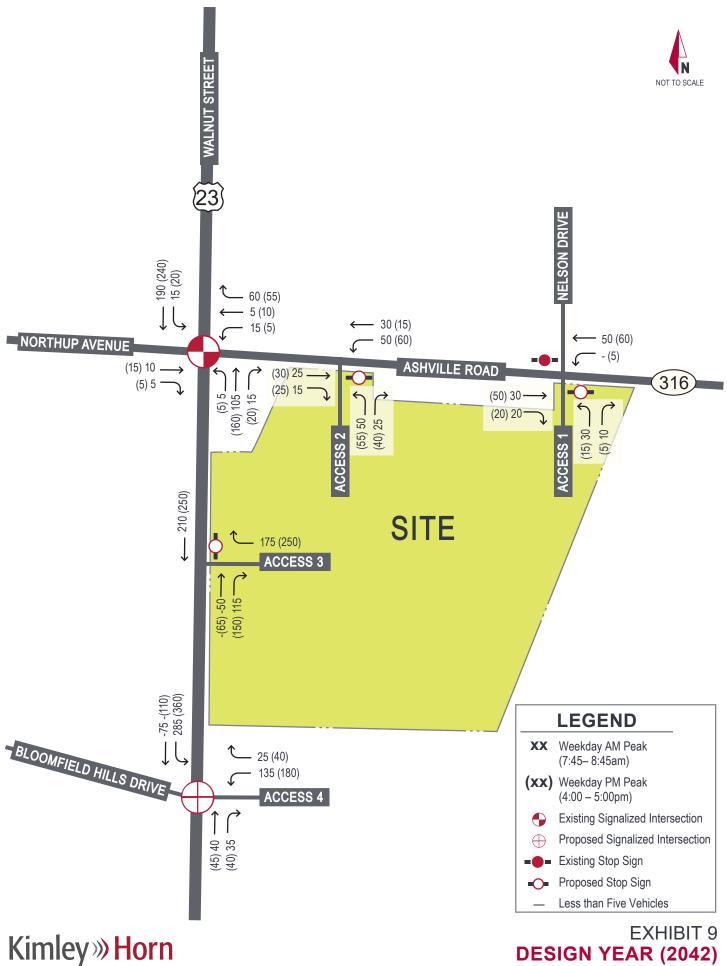
RESIDENTIAL TRIP ASSIGNMENT



COMMERCIAL PRIMARY TRIP ASSIGMENT



COMMERCIAL PASS-BY TRIP ASSIGNMENT



TOTAL TRIP ASSIGMENT

Appendix H MORPC Growth Rate Correspondence

Andy Comer

From:	Hwashik Jang <hjang@morpc.org></hjang@morpc.org>
Sent:	Tuesday, March 29, 2022 2:43 PM
То:	Andy Comer
Cc:	Nick Gill
Subject:	RE: Proposed DHL Facility TIS - Ashville, Pickaway County, Ohio

Andy,

We have completed processing growth rates for your Ashville traffic study area.

Location	Linear Annual Growth Rate
SR 752 e/o US 23	2.00%
US 23 n/o SR 752	0.90%
US 23 s/o SR 752	0.90%
US 23 n/o SR 316	0.90%
SR 316 w/o US 23	1.60%
US 23 s/o SR 316	0.90%
SR 316 e/o US 23	2.00%
US 23 n/o SR 316	1.00%
SR 316 w/o US 23	2.00%
US 23 s/o SR 316	0.90%
SR 752 e/o Long St	2.00%
Long St n/o SR 752	2.20%
SR 752 w/o Long St	2.00%
Long St s/o SR 752	2.20%
W Main St e/o Cromley Rd	2.00%
SR 316 w/o Cromley Rd	2.00%

Please use linear annual growth rates as summarized below.

Note: The above rate was derived based on planning level analysis by using MORPC's regional travel demand model.

If you have any questions, please let me know.

Thanks,

HWASHIK JANG

Senior Planner, **Mid-Ohio Regional Planning Commission** T: 614.233.4145 | <u>hjang@morpc.org</u> 111 Liberty Street, Suite 100 | Columbus, OH 43215



Given continued concerns and rapidly changing conditions due to COVID-19, MORPC offices are currently open to the public, but on a limited basis for preplanned meetings. In taking such steps, we are protecting the health and safety of our staff, members, and the general public. During this time, MORPC will continue to provide services to our members and community partners remotely. For updates and other information visit our website at <u>www.morpc.org/covid19</u>. Thank you for your patience and understanding as we navigate through these unique challenges.

From: Andy Comer <Andy@tmsengineers.com>
Sent: Friday, March 4, 2022 1:16 PM
To: Hwashik Jang <hjang@morpc.org>
Subject: Proposed DHL Facility TIS - Ashville, Pickaway County, Ohio

Hwashik,

We have been contracted to prepare a Traffic Impact Study for a proposed DHL facility in Ashville, Pickaway County, Ohio. The project is expected to consist of 7 warehouse/spec buildings. The development is proposed with access along SR 752 and SR 316 east of US 23. The SR 752 access is proposed for both car and truck traffic. The SR 316 access will be a car access only. Attached please find a "Project Location Map" detailing the development location. We are providing the following information in order to request a traffic growth rate for the study area roadways (US 23/SR 752/SR 316):

1. <u>Traffic Data</u> – We collected traffic data at five locations as determined with ODOT, Asheville, and South Bloomfield. See attached "Traffic Count Data". Included with the traffic data please find a map detailing the count locations and summary of the peak hour data.

2. <u>Open Year & Design Year</u> – Opening Year 2023 & Design Year 2043

3. <u>Roadway Network Assumptions</u> – The TIS will determine traffic and lane use at the proposed access locations and if any additional improvements are needed at the existing intersections.

4. <u>Land Use Assumptions</u> – The attached "Project Site Plan" includes a breakdown of each development building and the site plans for the development. The trip generation for the development will be based on site specific data.

5. <u>Project Review Contact Person</u> – The project will be reviewed by ODOT, District 6. We had a project scoping meeting with ODOT, District 6 on February 9, 2022. Our contact at ODOT District 6 is currently Andrew Hurst. We have also been in contact with the Village of Ashville engineer – Christopher Tebbe.

Please let me know if you have any questions or if there is any additional information you require to determine a traffic growth rate for the project study area.

Thank you, Andy

Andrew B. Comer, P.E.

TMS Engineers, Inc.

2112 Case Parkway South #7 Twinsburg, Ohio 44087 T: (330) 686-6402 F: (330) 686-6417

Appendix I ODOT Peak Hour to Design Hour Chart

PEAK HOUR to DESIGN HOUR FACTORS FUNCTIONAL CLASSIFICATION = 03, 04, 05u

	Day			Mon	thly Average	e by Day-of-V	Veek		
Month		WEEKDAY MON-THUR	Sun	Mon	Tue	Wed	Thu	Fri	Sat
		0	1	2	3	4	5	6	7
January	1	1.20	1.72	1.22	1.21	1.20	1.17	1.15	1.56
February	2	1.17	1.63	1.19	1.16	1.17	1.16	1.11	1.48
March	3	1.15	1.57	1.16	1.16	1.16	1.13	1.11	1.45
April	4	1.11	1.52	1.13	1.12	1.09	1.09	1.06	1.41
Мау	5	1.08	1.44	1.10	1.09	1.08	1.06	1.04	1.35
June	6	1.14	1.51	1.16	1.15	1.14	1.11	1.09	1.39
July	7	1.16	1.54	1.19	1.17	1.15	1.15	1.13	1.44
August	8	1.13	1.51	1.15	1.14	1.13	1.11	1.08	1.40
September	9	1.12	1.53	1.15	1.11	1.12	1.09	1.04	1.40
October	10	1.10	1.53	1.13	1.10	1.10	1.08	1.05	1.40
November	11	1.13	1.56	1.16	1.12	1.13	1.11	1.06	1.48
December	12	1.13	1.58	1.14	1.13	1.12	1.12	1.09	1.44

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

peak hour volume * factor = design hour volume

source: year 2016, 2017, & 2018 Automatic Traffic Recorders (ATR) Data

ATR Stations: 2018: 21, 28, 123, 131, 134, 166, 169, 517, 523, 543, 544, 550, 565, 605, 765 2017: 21, 123, 523, 538, 543, 544, 550, 565, 605, 725, 765, 28, 134, 169, 517, 131, 166 Ohio Department of Transportation Modeling & Forecasting Section June 2019

NOTE: These are NOT seasonal adjustment factors!!!

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

Appendix J Background Traffic Volume Forecast Calculations

SR 752 & US 23 021722

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2044	Adi +Growth+DHV	112	1047	0	1160		0	1700	256	1956		(,)	3116 1	103	0 108	8 211			0	0	0	0		211	3327
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2024	Adj+Growth+DHV	112	1575	0	1687		0	972	167	1140		~	2827 1	159	0 79	9 238			0	0	0			#######################################	#######################################
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TM<u>S</u> Engineers, Inc. 2112 Case Parkway S. Unit #7 Twinsburg, Ohio 44087

S. Walnut St & North St 030222

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TMS Engineers, Inc. 2112 Gase Parkway S. Unit #7 Twinsburg. Ohio 44057

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TMS Engineers, Inc. 2112 Case Parkway S. Unit #7 Twinsburg, Ohio 44087

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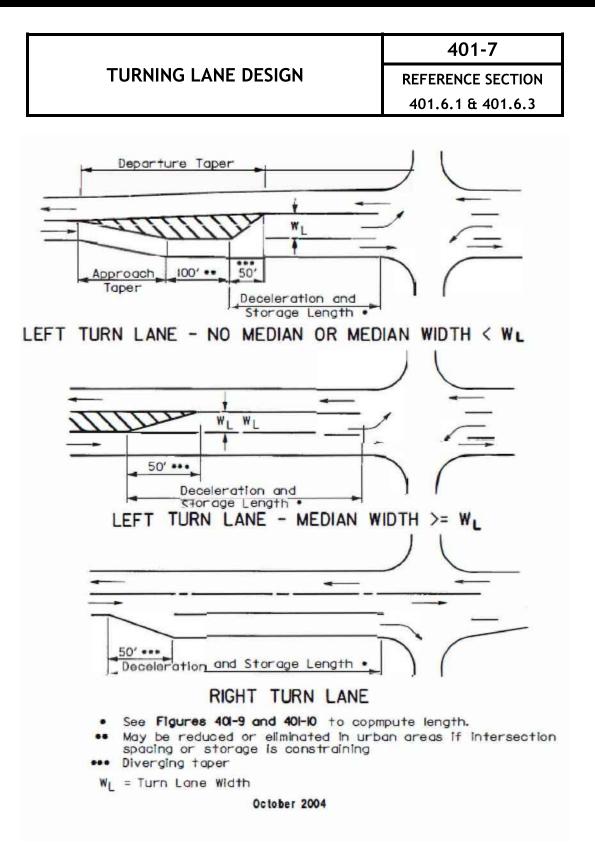
TM<u>S</u> Engineers, Inc. 2112 Case Parkway S. Unit #7 Twinsburg, Ohio 44087

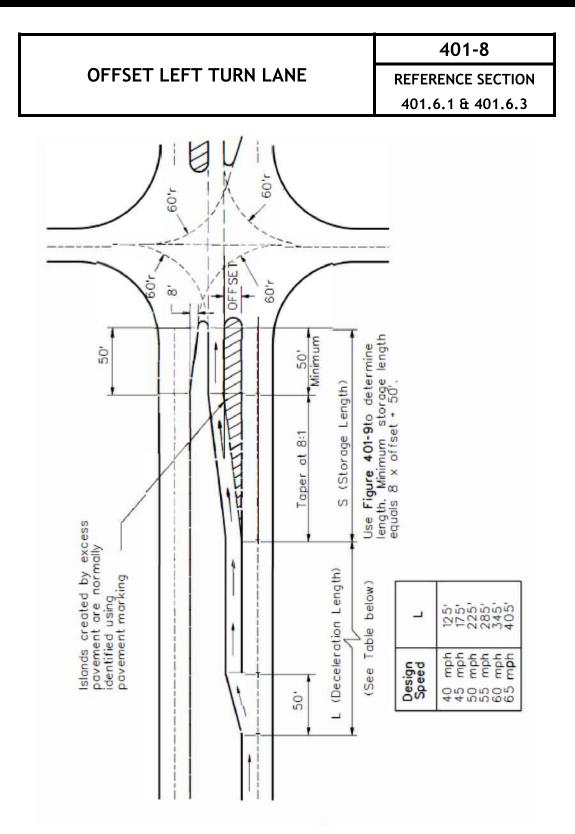
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Appendix C ODOT Turn Lane Design Criteria





BASIS FOR COMPUTING LENGTH OF TURN LANES

401-9

REFERENCE SECTION

401.6.1 & 401.6.3

_		Design Speed	d
Type of Traffic	30-35	40-	65
Control		Turn Demand Vo	lume
	All	Low*	High
Signalized	А	** B or C	** B or C
Unsignalized Stopped Crossroad	А	А	А
Unsignalized Through Road	А	В	** B or C

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

** Whichever is greater

CONDITION A	STORAGE ONLY
Length = 50' (d	iverging 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		D DECELERATION AND ORAGE
Design Speed	Length (including	g 50' Diverging Taper)
40	115 + Storage Le	ength (Figure 401-10)
45	125	п
50	145	п
55	165	п
60	185	п
65	205	п

For explanation, see Turn Lane Design Example

	401-10
STORAGE LENGTH AT INTERSECTIONS	REFERENCE SECTION
	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

* AVERAGE VEHICLES PER CYCLE =

DHV (TURNING LANE CYCLES/HOUR

IF CYCLES ARE UNKNOWN ASSUME:

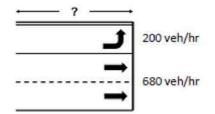
UNSIGNALIZED OR 2 PHASE = 60 CYCLES/HOUR 3 PHASE = 40 CYCLES/HOUR 4 PHASE = 30 CYCLES/HOUR

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

<u>Problem</u>

Calculate the length of an exclusive left turn lane.

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



315' - Method C Storage

235' - Method B Storage 200' - Left Turn Storage

8

350' - Thru Queue

200

250

30

20

0

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).

<u>Method C</u> - For 55 mph, 165' + calculated storage length in Figure 401-10.

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

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 =
$$\frac{\left(340\frac{veh}{hr}\right)*(90\frac{sec}{cyc})}{3600 \ sec/hr}$$
 = 9 veh/cyc/ln \rightarrow 350 ft/ln

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

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

Appendix D SR 752 & Business Place Traffic Data

Municipality:				As	Ashville				VEF			IR.	VEHICULAR TRAFFIC COUNT SUMMARY	AFF	10 (COL	JNT SU			MAI	2Y 0H 752	52		and		North Commerce Street	nmerce	2 Stree	-		
Date: Weather:	8/9, C	8/9/2022 Clear	Day:	Tue. Record	Tue. Recorder(s):	50 20	Comments: DJS							Data (Data entry by:	I	OLL			Date entered:	ired:		Aug. 10, 2022		Project:	0H 752	22-029 0H 752 & N.Commerce St 080922	29 Jerce St C	80922		
TIME		Ň	N.Commerce St. FROM NORTH	co St. RTH				N.C F	N.Commerce St FROM SOUTH	e St.		ΪĬ	TOTAL North			OH 752 From Eact					ER 0	OH 752 Rom west			TOTAL East		ld	AK HOU	PEAK HOUR FACTOR	OR .	-
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00:00	0	0	2	2	0	0	2	0	14	21	4	0	23	14	96	2	112	4	0 2	77	6	88	6	0	200	223	0.500	0.656	0.848	0.733	r
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5:00	9	0	10	16	1	0	5	0	15	20	0	0	36	15	177	2	194	5 (0 1	261	3	265	5 4	0	459	495	0.444	0.714	0.735	0.818	
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TMS Engineers, Inc. Transportation Manangement Services 2112 Case Parkway South #7 Twinsburg, Ohio 44087

> Intersection: OH 752 & N. Commerce St Counter: DJS Day of the Week: Tuesday City: Ashville

File Name : TC OH 752 and N. Commerce St. 080922 DJS Site Code : 00000000 Start Date : 8/9/2022 Page No : 1

	Î N	RTH CC	NORTH COMMERCE STREET From North	CE STR th	RET		L	OH 752 From East			Q	NORTH COMMERCE From South	OMMERCE From South	JE STREET th	ËT		Ē	OH 752 From West	ž		
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07:15 AM	0	0	0	0	0	0	38	-	0	39	0	0	0	0	0	e	33	0	0	36	75
07:30 AM	0	0	0	0	0	2	41	4	0	47	7	0	~	0	ю	С	33	4	0	40	06
07:45 AM	0	0	0	0	0	2	29	ю	0	34	7	0	7	0	4	5	21	~	0	33	71
Total	0	0	0	0	0	4	141	10	0	155	4	0	£	0	ი	18	113	ω	0	139	303
08:00 AM	~	0	0	0	-	0	32	~	0	33	0	0	~	0	~	7	31	7	0	35	70
08:15 AM	0	0	0	0	0	2	21	4	0	27	4	0	~	0	5	7	28	с	0	33	65
08:30 AM	0	0	0	0	0	0	29	-	0	30	e	0	~	0	4	0	20	S	0	23	57
08:45 AM	0	0	0	0	0	0	24	ო	0	27	~	0	~	0	2	4	24	~	0	29	58
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09:30 AM	0	0	0	0	0	-	17	7	~	26	5	0	~	0	9	4	16	0	0	20	52
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TMS Engineers, Inc. 2112 Case Parkway South #7 Twinsburg, Ohio 44087 Transportation Manangement Services

File Name : TC OH 752 and N. Commerce St. 080922 DJS Site Code : 00000000 Start Date : 8/9/2022

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11:15 AM	0	0	0	0	0	0	37	-	0	38	9	0	2	0	8	5	25	0	0	30	76
11:30 AM	~	0	~	0	0	~	29	£	0	35	7	0	7	0	4	4	28	0	0	32	73
11:45 AM	0	0	0	0	0	0	36	4	0	40	9	0	2	0	8	9	33	0	0	39	87
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12:15 PM	7	0	0	0	7	-	34	9	0	41	e	0	S	0	9	9	29	~	0	36	85
12:30 PM	7	0	0	0	0	0	40	0	0	40	с	0	ß	0	8	5	22	0	0	27	77
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01:00 PM	0	0	0	0	0	0	34	4	0	38	7	0	0	0	7	7	30	2	0	39	84
01:15 PM	0	0	-	0	~	0	24	7	0	26	~	-	7	0	4	7	38	~	0	41	72
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02:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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TMS Engineers, Inc. 2112 Case Parkway South #7 Twinsburg, Ohio 44087 Transportation Manangement Services

File Name : TC OH 752 and N. Commerce St. 080922 DJS Site Code : 00000000 Start Date : 8/9/2022

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03:15 PM	0	~	0	0	~	0	29	7	0	31	~	~	~	~	4	7	30	0	0	32	68
03:30 PM	~	0	0	0	-	~	42	5	0	48	4	0	4	0	80	7	41	0	0	43	100
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04:15 PM	~	0	7	0	Ю	~	54	4	0	59	9	0	7	0	80	~	56	0	0	57	127
04:30 PM	~	0	-	0	0	0	41	7	0	43	0	0	4	0	9	-	57	0	0	58	109
04:45 PM	0	0	0	0	0	0	48	4	0	52	7	0	4	0	5	7	57	0	0	59	122
Total	2	0	e	0	5	-	174	12	0	187	17	0	13	0	30	9	226	0	0	232	454
05:00 PM	7	0	7	0	6	0	62	4	0	99	S	0	2	0	7	0	56	0	0	56	138
05:15 PM	7	0	-	0	с	~	48	С	0	52	7	0	~	0	с	~	61	~	0	63	121
05:30 PM	~	0	2	0	S	0	38	7	0	45	4	0	2	0	9	~	80	0	0	81	135
05:45 PM	0	0	-	0	-	~	29	~	0	31	4	0	0	0	4	~	64	0	0	65	101
Total	10	0	9	0	16	2	177	15	0	194	15	0	5	0	20	З	261	.	0	265	495
Grand Total	24	~	12	0	37	21	1235	113	~	1370	111	7	72	~	186	103	1281	27	0	1411	3004
Apprch %	64.9	2.7	32.4	0		1.5	90.1	8.2	0.1		59.7	1.1	38.7	0.5		7.3	90.8	1.9	0		
Total %	0.8	0	0.4	0	1.2	0.7	41.1	3.8	0	45.6	3.7	0.1	2.4	0	6.2	3.4	42.6	0.9	0	47	
Cars	22	~	.	0	34	17	1186	110	~	1314	102	7	66	-	171	89	1233	26	0	1348	2867
% Cars	91.7	100	91.7	0	91.9	81	96	97.3	100	95.9	91.9	100	91.7	100	91.9	86.4	96.3	96.3	0	95.5	95.4
Trucks	7	0	-	0	e	4	49	e	0	56	6	0	9	0	15	14	47	~	0	62	136
% Trucks	8.3	0	8.3	0	8.1	19	4	2.7	0	4.1	8.1	0	8.3	0	8.1	13.6	3.7	3.7	0	4.4	4.5
Buses	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	0.1	0	0	0.1	0

TMS Engineers, Inc. 2112 Case Parkway South #7 Twinsburg, Ohio 44087 Transportation Manangement Services

File Name : TC OH 752 and N. Commerce St. 080922 DJS Site Code : 00000000 Start Date : 8/9/2022 Page No : 4

From East From South From West ght Thru Left Peets App. Total Right Thru Left Peets App. Total Int. Total App. Total Int.		0N	RTH CC	MMERC	NORTH COMMERCE STREET	E E			OH 752			NOF	RTH COL	MMERC	NORTH COMMERCE STREET	F.			OH 752			
Right Thrut Left Peets Ager Thrut Left Age Ag			ш	rom Nori	th			Ĺ	rom East				Ч	om Sout.	Ļ			Ē	rom Wes	st		
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Start Time	Right	Thru	Left	Peds Ar	op. Total	Right	Thru			p. Total	Right	Thru		Peds Ap	pp. Total	Right	Thru				nt. Total
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	^{ceak} Hour Anal	ysis Fron	1 07:00 r	AM to 07	7:45 AM -	Peak 1	of 1															
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Peak Hour for E	ntire Inte	rsection	Begins (at 07:00 /	MF																
	07:00 AM	0	0	0	0	0	0	33	2	0	35	0	0	7	0	2	~	26	ო	0	30	67
	07:15 AM	0	0	0	0	0	0	38	-	0	39	0	0	0	0	0	e	33	0	0	36	75
	07:30 AM	0	0	0	0	0	7	41	4	0	47	7	0	~	0	ო	с	33	4	0	40	06
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	07:45 AM	0	0	0	0	0	0	29	С	0	34	0	0	2	0	4	1	21	-	0	33	71
	Total Volume	0	0	0	0	0	4	141	10	0	155	4	0	5	0	ი	18	113	8	0	139	303
00 860 $c25$ 000 824 500 000 525 000 326 100 326 000 326 0 55 100 058 100 068 100 095 00 137 0 55 0 0 2 0 2 0 2 0 137 0 55 0 0 0 0 0 0 14 0 082 100 086 0 0 0 0 0 0 0 0 0 14 0	% App. Total	0	0	0	0		2.6	91	6.5	0		44.4	0	55.6	0		12.9	81.3	5.8	0		
	HΗ	000	000.	000	000.	000.	.500	.860	.625	000	.824	.500	000.	.625	000.	.563	.409	.856	.500	000	.869	.842
	Cars	0	0	0	0	0	4	136	10	0	150	4	0	с	0	7	18	111	8	0	137	294
	% Cars	0	0	0	0	0	100	96.5	100	0	96.8	100	0	60.09	0	77.8	100	98.2	100	0	98.6	97.0
	Trucks	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	0	0	0	0	0	6
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	% Trucks	0	0	0	0	0	0	3.5	0	0	3.2	0	0	40.0	0	22.2	0	1.8	0	0	1.4	3.0
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3 45 3 0 51 3 0 1 2 32 0 51 3 0 31 2 0 31 2 0 3 0 31 2 0 31 2 0 3 0 4 2 32 0 0 31 1 54 4 0 59 6 0 2 0 8 1 56 0 0 57 1 11 10 186 13 0 10 0 23 6 21 0 56 0 0 56 0 0 56 0 0 0 0 57 0 0 56 5 0 0 10 <t< td=""><td>% Buses</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></t<>	% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3 45 3 0 51 3 0 1 0 34 2 32 0 34	-	1				- - (
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	eak Hour Analy	ysis Fron	1 03:45	PM to 04	1:30 PM -	Peak 1	of 1															
	eak mour for E	ntire inte	rsection	pegins	at 03:45 F						-					-					-	
	03:45 PM	7	0	0	0	7	e	45	ო	0	51	ო	0	~	0	4	2	32	0	0	34	91
	04:00 PM	0	0	0	0	0	0	31	7	0	33	7	0	ო	0	£	7	56	0	0	58	96
	04:15 PM	-	0	7	0	e	-	54	4	0	59	9	0	2	0	80	-	56	0	0	57	127
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	04:30 PM	-	0	-	0	2	0	41	2	0	43	2	0	4	0	9	-	57	0	0	58	109
	Total Volume	4	0	e	0	7	4	171	5	0	186	13	0	10	0	23	9	201	0	0	207	423
.500 $.375$ $.000$ $.583$ $.333$ $.722$ $.688$ $.000$ $.78$ $.542$ $.000$ $.719$ $.750$ $.882$ $.000$ $.892$ $.000$ $.992$ $.902$ <	% App. Total	57.1	0	42.9	0		2.2	91.9	5.9	0		56.5	0	43.5	0		2.9	97.1	0	0		
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	PHF	.500	000	.375	000.	.583	.333	.792	.688	000	.788	.542	000.	.625	000.	.719	.750	.882	000.	000.	.892	.833
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Cars	ო	0	ო	0	9	ო	168	5	0	182	12	0	6	0	21	5	197	0	0	202	411
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	% Cars	75.0	0	100	0	85.7	75.0	98.2	100	0	97.8	92.3	0	0.06	0	91.3	83.3	98.0	0	0	97.6	97.2
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Trucks	~	0	0	0	~	-	ო	0	0	4	~	0	~	0	0	-	4	0	0	5	12
	% Trucks	25.0	0	0	0	14.3	25.0	1.8	0	0	2.2	7.7	0	10.0	0	8.7	16.7	2.0	0	0	2.4	2.8
	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

WORKSHEET FOR NO BUILD VEHICULAR TRAFFIC VOLUME CALCULATIONS

OH 752 & N.Commerce St 080922

			FROM NORTH	FROM NORTH				-	FROM COLITY	Ē		NORTH	F		FEON	FROM EACT		-			FROM WEQT	EGT		EACT	ALL
		4			Tetel Tel		4		2		14	-			F	<u>ا</u> ۵	Ť	d	4-1	į		ā F	1 d 1 t	-	DIDE
		5		mgix		ang V	5		E		_	_	-		n		Ě			-	Light	1 0131	_	_	VINEL
2022	Raw	0	0	0	0		5	0	4	6		6	10	141	4	155	\square		8	113	18	139		294	303
		000	_	000			000	_	000										000		000				
CONID	Factor	1.000	5	1.000			1.000	5	1.000				-		1.000				1.000	-	1.000		_		
2022	Adjusted	0	0	0	0		5	0	4	6		6	10	141	4	155			8	113	18	139		294	303
		101 1	-	101			107 7	107 7	101				107 7	_	101 1		Ţ		101	101	107				
AHO	Factor	1.13/		1.13/	,		1.13/	1.13/	1.13/	2	+	!			-				1.13/	1.13/	1.13/	1			
2022	No Build	0	0	0	0		9	0	5	10		10	11	160	0	176			6	128	20	158		334	344
			T	1										+						T					
			_					-						_	_				T	_					
Growth	Factor	0.000	0.000	0.000			0.000	0.000	0.000				0.000	0.020	0000				0.000	0.020	0.000				
2024	Adj +Growth+DHV	0	0	0	0		9	0	5	10		10	11	167	7 5	183			6	134	20	163		346	356
Phase 1	Round	0	0	0	0		10	0	10	20		20	10	170	10	190			10	130	20	160		350	370
														_											
2024	Adj +Growth+DHV	0	0	0	0		9	0	5	10		10	11	167	7 5	183			6	134	20	163		346	356
Opening Year	Round	0	0	0	0		10	0	10	20		20	10	170	0 10	190			10	130	20	160		350	370
	_																								
2044	Adj +Growth+DHV	0	0	0	0		9	0	5	10		10	11	231	1 5	247			6	185	20	215		461	472
Design Year	Round	0	0	0	0		10	0	10	20		20	10	230	10	250			10	180	20	210		460	480
2022	Raw	3	0	4	7		10	0	13	23	+	30	11	171	4	186			0	201	9	207		393	423
CTANING.		000 1	1 000	000	+	1	000	1000	000 1	+	+	+	1000	1 000	1 000		Ţ		000	1 000	000				
	A Is		_		1				0001	ç	+	Ċ		_	_	100			000-	_		100		000	
7707	Derzulpe	o	0	4	~		2	5	2	S		ñ	-		+	00			5	701	D	201		080	440
NHQ	Factor	1.137	1.137	1.137			1.137	1.137	1.137				1.137	37 1.137	37 1.137	2			1.137	1.137	1.137				
2022	No Build	3	0	5	8		11	0	15	26		34	1 13	194	4 5	211			0	229	7	235		447	481
Crueth	Fanhr	0000					0000											Ţ	0000	0000	0000				
	-	0.000		000.0			_	-	0000				0.0		_				0.000	_	0000				
2024	Adj+Growth+DHV	3	0	5	8		11	0	15	26		34	1 13	\$ 202	2 5	219			0	238	7	244		464	498
Phase 1	Round	10	0	10	20		10	0	10	20		40	10	200	0 10	220			0	240	9	250		470	510
2024	Adj+Growth+DHV	в	0	5	8		11	0	15	26		34		_	_	_			0	238	7	244		464	498
Opening Year	Round	10	•	10	20		10	•	10	20		40	10	200	9	220			•	240	9	250		470	510
2044	Adj+Growth+DHV	e	0	5	œ		11	0	15	26	+	34	1 13	5 280	5	297			0	329	7	336		633	667
Preto Ver																									

TM<u>S</u> Engineers, Inc. 2112 Case Parkway S. Unit #7 Twinsburg, Ohio 44087

Appendix E Trip Generation Calculation Worksheet

		PM TOTAL TRIPS	TOTAL ENTER* EXIT* 68% 32%
22)		TOTAL AM TRIPS	TOTAL ENTER* EXIT* 50% 50%
IL SITE GENERATED TRAFFIC CALCULATIONS (10/24/2022)			SIZE OPENING (Sq Ft) YEAR
<u> TRAFFIC CALC</u>	(IPS - ITE #156		SIZE OPENING BUILDING SITE (Sq.Ft) YEAR
DHL SITE GENERATEL	TOTAL SITE GENERATED TRIPS - ITE #156		BUILDING

			s	EXIT*	52%	24	24
			PM TRUCK TRIPS	ENTER*	48%	24	24
			A		TOTAL	48	48
				Trips)	EXIT	141	141
			PM VEHICLE TRIPS	(Total Trip minus Truck Trips)	ENTER EXIT	326	326
			M	(Total Trip	TOTAL	467	467
165	165			EXIT*	50%	36	36
515 350 165	350		AM TRUCK TRIPS	ENTER* EXIT*	50%	35	35
515	515		AM		TOTAL	71	71
265	265		Š	(Trips)	EXIT	229	229
529 264 265	264 265		AM VEHICLE TRIPS	(Total Trip minus Truck Trips)	TOTAL ENTER EXIT	229 229	229
529	529		AM	(Total Tri	TOTAL	458	458
2024				SIZE OPENING	YEAR	2024	
545,200	545,200	TE #156		SIZE	(Sq Ft)	545,200	545,200
1 Leatherwood 545,200 2024	TOTALS: 545,200	VEHICLE & TRUCK GENERATED TRIPS - ITE #156				1 Leatherwood 545,200 2024	TOTALS: 545,200
1		E & TRUCK GENE			BUILDING SITE	1	
		VEHICLI					

* Truck splits not available for Land Use #156. Enter & Exit splits are based on AVERAGE directional distribution for ITE Land Uses 150/154/155

VEHICLE & TRUCK GENERATED TRIPS - PER AVAILABLE DHL DATA

PM TRUCK TRIPS	Per DHL Data	ENTER** EXIT**	TOTAL 48% 52%	20 10 10	20 10 10
PM VEHICLE TRIPS	PM TRIPS - 37.52 TRIPS/100,000 SF	ENTER* EXIT*	32%	139 65	139 65
IN Md	PM TRIPS - 37		TOTAL 68%	205	205
AM TRUCK TRIPS	Per DHL Data	ENTER** EXIT**	TOTAL 50% 50%	30 15 15	30 15 15
AM VEHICLE TRIPS	AM TRIPS - 37.52 TRIPS/100,000 SF	ENTER* EXIT*	TOTAL 50% 50%	205 102 102	205 102 102
		SIZE OPENING	(Sq Ft)	1 Leatherwood 545,200 2024	TOTALS: 545,200
			BUILDING SITE	1	

Enter & Exits pilts are based on directional distribution for ITE Land Use 156 - High-Cube Parel Hub Warehouse
 ** Truck splits not available for Land Use #156. Enter & Exit splits are based on AVERAGE directional distribution for ITE Land Uses 150/154/155

JTAL SITE GENERATED TRIPS - PER AVAILABLE DHL DATA	
TOTAL SIT	

S	EXIT	75	75
A TOTAL TRIP	ENTER	149	149
Ч	TOTAL	225	225
PS	EXIT	117	117
FOTAL AM TRIPS	TOTAL ENTER	117	117
Ĩ	TOTAL	235	235
OPENING	YEAR	2024	
SIZE	(Sq Ft)	545,200	545,200
	SITE	Leatherwood 545,200	TOTALS: 545,200
	BUILDING SITE	1	

Appendix F No-Build Capacity Analysis Worksheets - 2024

		HUS	s Sigr	alize	a inte	rsect	ion R	esui	ts Su	mmary	/				
General Informa	- t l e m								Interes	ation Inf			1 1	1 팩 학 학	b. I.
	ation									ction Inf	1			444	** 154
Agency		TMS Engineers, Inc). 						Duratio		0.250				×.
Analyst		ABC				Aug 9			Area Ty	/pe	Other				2
Jurisdiction		Ashville, OH		Time F		AM Pe	eak		PHF		0.89			W + E 8	∳ ◆ ◆
Urban Street		US 23			is Year					s Period	1> 7:(00			¥ 7
Intersection		@ SR 752		File Na	ame	1_AM	24NB 2	23-752	2.xus					<u> </u>	
Project Descripti	on	No-Build Conditions	6										9	ነ ጎ ጎ ቀነሳ	te r
Demand Inform	ation				EB			W	B		NB			SB	
Approach Mover	nent			L	Т	R	L	Т	R	L	Т	R	L	Т	R
Demand (v), ve	h/h			82	37	63	74	32	2 61	99	1412	206	95	874	36
	-														<u></u>
Signal Informat	1			-	5		14	3	2		l		-+-		-
	90.0	Reference Phase	2		5	517	2 5 1	<mark>∧</mark> ₿	E			1		3	€ ₄
Offset, s	0	Reference Point	End	Green	6.5	0.3	49.7	13	.2 0.0	0.0					Ā
Uncoordinated	No	Simult. Gap E/W	On	Yellow		0.0	5.2	3.9				$\langle 4$			Z
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.9	0.0	1.0	3.0) 0.0	0.0		5	6	7	8
Timer Results				EBL		EDT			WBT			NRT	SBI		CDT
Assigned Phase				EBL		EBT 4	WB		8	NB 5		NBT 2	5BI	-	SBT 6
Case Number						4 7.0			8.0	1.1		2 4.0	1.1		4.0
Phase Duration,				<u> </u>		20.1			20.1	14.0		4.0 56.2	13.7	7	4.0 55.9
				<u> </u>			<u> </u>	\rightarrow		6.5		6.2	7.2		6.2
Change Period, Max Allow Head		,				6.9 3.2		\rightarrow	6.9 3.2	3.1		0.2	3.1		0.2
Queue Clearance		,				3.z 11.2		+	12.5	4.3		0.0	4.5		0.0
Green Extension		1 = 1				0.7		-	0.7	0.2		0.0	0.2		0.0
Phase Call Proba		(ge), s				1.00	<u> </u>	-	1.00	0.94		0.0	0.93		0.0
Max Out Probab	-					0.00		-	0.00	0.0			0.00		
max out robab	inty					0.00			0.00	0.0	5		0.00		
Movement Grou	up Res	ults			EB			WE	}		NB			SB	
Approach Mover	nent			L	Т	R	L	Т	R	L	Т	R	L	Т	R
Assigned Moven	nent			7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow R	ate (v), veh/h			134	71		188	;	111	914	904	107	515	508
Adjusted Saturat	tion Flo	w Rate (<i>s</i>), veh/h/l	n		1285	1585		154	5	1668	1752	1675	1570	1648	1625
Queue Service T	īme (g	g s), S			0.0	3.6		1.3		2.3	43.7	46.9	2.5	18.3	18.3
Cycle Queue Cle	earance	e Time (<i>g c</i>), s			9.2	3.6		10.5	5	2.3	43.7	46.9	2.5	18.3	18.3
Green Ratio (g/0	C)				0.15	0.15		0.15	5	0.64	0.56	0.56	0.62	0.55	0.55
Capacity (c), ve	eh/h				256	233		285		399	973	930	196	910	897
Volume-to-Capa	-	. ,			0.522	0.304		0.65	9	0.279	0.940	0.972	0.544	0.566	0.566
		/In (95 th percentile													
	-	eh/In (95 th percenti			5.0	2.5		7.1		1.3	27.4	29.5	2.1	11.0	10.8
		RQ) (95 th percent	tile)		0.00	0.22		0.00)	0.08	0.46	0.50	0.28	0.00	0.00
Uniform Delay (d 1), s/	/veh			36.5	34.3		37.1		8.8	18.6	19.3	20.5	13.1	13.1
Incremental Dela	ay (d 2), s/veh			0.6	0.3		1.0		0.1	17.5	23.5	0.9	2.5	2.6
Initial Queue Del	ay (<i>d</i> .	₃), s/veh			0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (a	/), s/ve	eh			37.1	34.6		38.1		8.9	36.1	42.8	21.4	15.7	15.7
Level of Service	(LOS)				D	С		D		Α	D	D	С	В	В
Approach Delay,	s/veh	/LOS		36.2		D	38.1	1	D	37.	7	D	16.2	2	В
Intersection Dela	ay, s/ve	h / LOS				30).6						С		
Multimodal Res					EB			WE	}		NB			SB	
Pedestrian LOS										-					
Bicycle LOS Sco	ore / LC)S													

	HCS Two-Way Stop	-Control Report	
General Information		Site Information	
Analyst	ABC	Intersection	SR 752 & Business Place
Agency/Co.	TMS Engineers, Inc.	Jurisdiction	Ashville, OH
Date Performed	8/9/2022	East/West Street	State Route 752
Analysis Year	2024	North/South Street	Business Place North
Time Analyzed	AM Peak	Peak Hour Factor	0.84
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	No-Build Conditions		
Lanes			
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Major St	reet: East-W	lest	

Vehicle Volumes and Adjustments

Approach		Eastb	ound			West	bound			North	bound			South	bound	
Movement	U	L	Т	R	U	L	Т	R	U	L	Т	R	U	L	Т	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		10	148	20		10	187	10		10	0	10		0	0	1
Percent Heavy Vehicles (%)		2				3				22	22	22		0	0	0
Proportion Time Blocked																
Percent Grade (%)										(0				0	
Right Turn Channelized																
Median Type Storage				Undi	vided											
Critical and Follow-up He	adwa	ys														
Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.12				4.13				7.32	6.72	6.42		7.10	6.50	6.20
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.22				2.23				3.70	4.20	3.50		3.50	4.00	3.30
Delay, Queue Length, and	l Leve	l of Se	ervice													
Flow Rate, v (veh/h)		12				12					24				1	
Capacity, c (veh/h)		1333				1366					594				816	
v/c Ratio		0.01				0.01					0.04				0.00	
95% Queue Length, Q ₉₅ (veh)		0.0				0.0					0.1				0.0	
Control Delay (s/veh)		7.7	0.1	0.1		7.7	0.1	0.1			11.3				9.4	
Level of Service (LOS)		Α	A	A		Α	А	А			В				А	
Approach Delay (s/veh)		0	.5			0	.4			11	1.3			9	.4	
Approach LOS		/	4				4			E	В				4	

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		HCS	s Sigr	ialize	a int	ersect	ion R	esu	Its	Sum	imary	,				
	4!								Inte						비행학	N.T.
General Inform	hation										tion Inf	1			ų Ļ	1 N
Agency		TMS Engineers, Inc	C.						<u> </u>	ration,		0.250				R_
Analyst		ABC				e Apr 7			<u></u>	ea Typ	е	Other		×		م ج
Jurisdiction		Ashville, OH		Time F		AM P	eak		PH			0.80		¥	W + E 8	√
Urban Street		SR 752				r 2024			1		Period	1> 7:0	00			4
Intersection		@ SR 316/Ashville		File Na	ame	3_AM	I 24NB 7	752-3	16.x	us					<u>ጎ ዮ</u>	
Project Descrip	tion	No-Build Conditions	\$												1414Y	h r
Demand Inform	nation				EB			M	/B			NB			SB	
Approach Move				L	Т	R	L		T	R	L	T	R	L	T	R
Demand (v), v				64	214	30	40	1	10	70	50	145	70	180	50	87
																l
Signal Informa	tion		<i>v</i>		1		3 6	<u> </u>	7	214	120	J L	_		F	X
Cycle, s	71.1	Reference Phase	2		F'	ſ₩.		3	2		5.	tz 🖌		4		х†я –
Offset, s	0	Reference Point	End	Green	5.0	0.3	17.0	5.	7	3.3	16.7			× ×		~
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow		0.0	3.5	3.		0.0	3.5		~	\mathbf{r}	$\mathbf{\nabla}$	572
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	0.0	2.0	2.	0	0.0	2.0		5	6	7	8
Timer Results				EBI	-	EBT	WB	L		'BT	NBI	-	NBT	SBI	-	SBT
Assigned Phase	e			5		2	1			6	3		8	7		4
Case Number				1.1		4.0	1.1		4.		1.1		4.0	1.1		4.0
Phase Duration				11.9		22.8	11.5			2.5	11.2		22.2	14.5		25.5
Change Period,		•		5.5	_	6.5	6.5		6.		5.5		6.5	6.5		6.5
Max Allow Head		,		3.1		3.1	3.1		3.		3.1		3.2	3.1		3.2
Queue Clearan		, = ,		4.4		13.4	3.5).5	3.8		11.9	8.9		8.0
Green Extensio		(ge),s		0.1		0.8	0.0			.0	0.0		0.5	0.0		0.6
Phase Call Prol				0.79		1.00	0.63	_		00	0.71		1.00	0.99		1.00
Max Out Proba	bility			0.00)	0.01	0.10)	0.0	00	0.19)	0.00	1.00)	0.04
Movement Gro	un Res	sults			EB			W	3			NB			SB	
Approach Move	-			1	Т	R	L	Т		R	L	T	R	1	T	R
Assigned Move				5	2	12	1	6		16	3	8	18	7	4	14
Adjusted Flow F) veh/h		80	305		50	22	5		63	269		225	171	
•		,	n	1725	1772		1711	167		_	1781	1767		1767	1665	
	usted Saturation Flow Rate (<i>s</i>), veh/h/ln eue Service Time (<i>g</i> _s), s				11.4		1.5	8.5	_	_	1.8	9.9		6.9	6.0	<u> </u>
Cycle Queue C		- ,		2.4 2.4	11.4		1.5	8.5			1.8	9.9		6.9	6.0	
Green Ratio (g		- ····· (9 °), 0		0.32	0.23		0.30	0.2			0.30	0.22		0.33	0.27	
Capacity (c), v				377	407		265	379	_		431	390		389	445	
Volume-to-Capa		atio (X)		0.212			0.188	0.59			0.145	0.689		0.579	0.385	
· ·		t/In (95 th percentile	:)	0.212	0.1770			0.00			0.710	2.300		0.010	0.000	
	<u>, , , , , , , , , , , , , , , , , , , </u>	eh/In (95 th percenti	•	1.6	8.1		1.0	5.8	3		1.3	7.2		4.9	4.0	
		RQ) (95 th percent	-	0.21	0.00		0.13	0.0			0.23	0.00		1.05	0.00	
Uniform Delay (, , ,	,	18.0	25.5		19.4	24.	_		18.2	25.5		19.0	21.3	
Incremental De	· ,			0.1	1.3		0.1	0.6	_		0.1	0.8		1.4	0.2	
Initial Queue De				0.0	0.0		0.0	0.0	_		0.0	0.0		0.0	0.0	
Control Delay (18.1	26.8		19.5	25.			18.2	26.3		20.4	21.5	
Level of Service				В	C		В	C			B	C		C	C	
Approach Delay	. ,			25.0		С	24.2		(0	24.8		С	20.9		С
Intersection Del							3.6							C		-
		, _ 												- -		
Multimodal Re	sults				EB			W	3			NB			SB	
Pedestrian LOS		/ LOS														
Bicycle LOS Sc	ore / LC	DS														

		HCS	s Sigr	nalize	d Inte	ersect	ion R	esul	ts Sun	nmary	/				_
General Inform	nation								Intersec	tion Inf	ormotic		l i	4,4,4,4	la L
	lation										V		- 1	444	
Agency		TMS Engineers, Inc).	Australia	:- D-+-	A 0	0000		Duration		0.250				1
Analyst		ABC				Aug 9			Area Typ	be	Other			N w∔e	
Jurisdiction		Ashville, OH		Time F		PM Pe	еак		PHF	D : 1	0.98			8	**
Urban Street		US 23			is Year				Analysis	Period	1> 7:0	00			
Intersection		@ SR 752		File Na	ame	_4_PM	24NB 2	23-752	2.xus					<u> 117</u>	
Project Descrip	otion	No-Build Conditions	5											14144	21
Demand Inform	mation				EB			W	B		NB			SB	
Approach Move	ement			L	Т	R	L	Т	R	L	Т	R	L	Т	R
Demand (v), v	/eh/h			45	55	81	160	33	3 65	74	965	149	93	1582	55
Signal Informa	1	1	r	-		216		3	2		l		-+-		_
Cycle, s	90.0	Reference Phase	2		5		51	r	e			>	\mathbf{Y}_{2}	3	-€ ₄
Offset, s	0	Reference Point	End	Green	6.8	0.3	44.7	18.	7 0.0	0.0					ĸ
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.5	0.0	5.2	3.9	0.0	0.0		$\langle \langle \langle \rangle \rangle$			7
Force Mode	Fixed	Simult. Gap N/S	On	Red	3.0	0.0	1.0	3.0	0.0	0.0		5	6	7	8
Timer Results				EBL		EBT	WB	1	WBT	NB		NBT	SBI		SBT
Assigned Phas	0			EDI	-	4			8	5	-	2	1	-	6
Case Number	e					7.0	<u> </u>		8.0	1.1		4.0	1.1		4.0
Phase Duration						25.6	<u> </u>	\rightarrow	25.6	13.3		4.0 50.9	13.5		4.0 51.1
				<u> </u>		6.9	<u> </u>	+	6.9	6.5		6.2	7.2		6.2
Change Period Max Allow Hea		,				3.2		-	3.2	3.1		0.2	3.1		0.2
Queue Clearan	2 1	·				6.6		+	17.8	3.9		0.0	4.4		0.0
Green Extensio		1 = 7				0.9	<u> </u>	-	0.9	0.0		0.0	0.1		0.0
Phase Call Pro		(90),0				1.00		+	1.00	0.85		0.0	0.91		0.0
Max Out Proba	-					0.00			0.00	0.00			0.00		
Movement Gro	-	sults			EB			WB	1i		NB			SB	
Approach Move				L	Т	R	L	T	R	L	T	R	L	Т	R
Assigned Move		<u> </u>		7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow					102	83		263		76	582	555	95	838	833
-	sted Saturation Flow Rate (s), veh/h/ln ue Service Time (g_s), s				1550	1585		1449		1626	1707	1627	1668	1752	1731
		- ,			0.0	3.9		11.2		1.9	23.4	23.5	2.4	41.3	41.8
Cycle Queue C		e lime (<i>g c</i>), s			4.6	3.9	<u> </u>	15.8		1.9	23.4	23.5	2.4	41.3	41.8
Green Ratio (g					0.21	0.21	<u> </u>	0.21	_	0.57	0.50	0.50	0.57	0.50	0.50
Capacity (c), v		4:- (X)			380	329	<u> </u>	365		206	848	808	307	875	864
Volume-to-Cap		tio(X) t/In(95 th percentile)		0.269	0.251		0.72	0	0.366	0.686	0.687	0.309	0.958	0.964
	, ,	eh/In (95 th percentie			3.3	2.6		9.3	-	1.3	14.5	14.0	1.4	27.8	28.1
		RQ) (95 th percent			0.00	0.24		0.00		0.08	0.25	0.24	0.17	0.00	0.00
Uniform Delay		,, ,	uic)		30.0	29.8		34.4		19.7	17.3	17.3	12.8	21.6	21.7
Incremental De	. ,				0.1	29.8		34.4 1.0		0.4	4.5	4.7	0.2	21.6	21.7
Initial Queue D	• •				0.1	0.1		0.0	-	0.4	4.5 0.0	4.7 0.0	0.2	0.0	0.0
Control Delay (• •	•			30.1	30.0		35.4		20.1	21.8	22.1	13.0	43.4	44.7
Level of Service					30.1 C	30.0 C		- 35.4 D		20.1 C	21.0 C	22.1 C	B	43.4 D	44.7 D
Approach Dela	, ,			30.0		C	35.4	<u> </u>	D	21.8		C	42.4		D
				30.0				+	U	21.0	,				
Intersection De	iay, s/ve					33	3.9						С		
Multimodal Re	sults				EB			WB			NB			SB	
Pedestrian LOS		/LOS													
Bicycle LOS So															
										8					

		ŀ	ICS 1	Гwo-'	Way	Stop	-Cor	ntrol	Repo	ort						
General Information							Site	Inforr	natio	n						
Analyst	ABC						Inters	ection			SR 75	2 & Busi	ness Pla	ce		
Agency/Co.	TMS	Engineer	s, Inc.				Jurisd	liction			Ashvi	lle, OH				
Date Performed	8/9/2	022					East/\	West Stre	eet		State	Route 7	52			
Analysis Year	2024						North	n/South S	Street		Busin	ess Place	e North			
Time Analyzed	PM Pe	eak					Peak	Hour Fac	tor		0.83					
Intersection Orientation	East-\	Nest					Analy	sis Time	Period (hrs)	0.25					
Project Description	No-B	uild Con	ditions													
anes																
				2 4 1 X 4 4 7 U		↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓		1 4 1 X 4 F U								
Vehicle Volumes and Ac	ljustme		ound			West	oound			North	bound			South	bound	
Movement	U	L	T	R	U	L	T	R	U	L	Т	R	U	L	Т	R
Priority	10	- 1	2	3	4U	4	5	6	-	7	8	9		10	11	12

Proportion Time Blocked												
Percent Grade (%)									(D		
Right Turn Channelized												
Median Type Storage				Undi	vided							
Critical and Follow-up H	eadwa	ys										
Base Critical Headway (sec)		4.1				4.1			7.1	6.5	6.2	
Critical Headway (sec)		4.12				4.12			7.19	6.59	6.29	
Base Follow-Up Headway (sec)		2.2				2.2			3.5	4.0	3.3	
Follow-Up Headway (sec)		2.22				2.22			3.58	4.08	3.38	
Delay, Queue Length, an	d Leve	l of Se	ervice									
Flow Rate, v (veh/h)		0				12				24		
Capacity, c (veh/h)		1288				1237				502		
v/c Ratio		0.00				0.01				0.05		
95% Queue Length, Q ₉₅ (veh)		0.0				0.0				0.2		
Control Delay (s/veh)		7.8	0.0	0.0		7.9	0.1	0.1		12.5		

0

10

0

0

10

2

0

10

1

LTR

218

0

10

9

1

LTR

0

9

В

12.5

В

0

10

9

0

10

14

6.2

6.34

3.3

3.43

0

10

14

7.1

7.24 3.5

3.63

1

LTR

0

14

6.5 6.64

4.0

4.13

24 505 0.05 0.2 12.5

В

0

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0

0

0

2

А

0.0

А

А

А

1

LTR

258

Number of Lanes

Percent Heavy Vehicles (%)

Level of Service (LOS)

Approach Delay (s/veh)

Approach LOS

Configuration Volume (veh/h)

0.4

А

А

А

А

12.5

		HUS	s Sigr	nalize	a int	ersec	tic	on Re	esu	ts	Sum	imary					
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General Inform	nation												ormatic			4 (£≊ 14
Agency		TMS Engineers, Inc).								ration,		0.250				
Analyst		ABC				te Aug					а Тур	e	Other		××		×
Jurisdiction		Ashville, OH		Time F				ak		PHI			0.88			w + e 8	ن ام کار
Urban Street		SR 752				ar 2024						Period	1> 7:0	00			작 고
Intersection		@ SR 316/Ashville		File Na	ame	6_PI	M 2	24NB 7	′52-3´	16.xı	us					ኘፑ	
Project Descrip	tion	No-Build Conditions	8												5	14 1 4 Y	ħŕ
Demand Inform	nation				EB	;			W	B			NB			SB	
Approach Move	ement			L	Т	R		L	Т	-	R	L	Т	R	L	Т	R
Demand (v), v	eh/h			96	172	2 60)	90	16	0	90	50	135	70	80	235	118
																	_
Signal Informa	r			_	1		\geq	a È	4	2	1216	- 20.	2		_	ĸ	\mathbf{k}
Cycle, s	73.0	Reference Phase	2				6	Ë'		ŝ		5	17 1	1	€₂	3	▲↓
Offset, s	0	Reference Point	End	Green	7.2	0.9		16.0	5.5	5	2.3	18.2			<u> </u>		
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow	3.5	0.0		4.5	3.5		0.0	3.5		▶	7		~ V
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	0.0		2.0	2.0)	0.0	2.0		5	6	7	8
Times Desults						ГРТ				10/1	DT	ND		NDT			CDT
Timer Results				EBI	-	EBT	╋	WBL			BT	NBI	-	NBT	SBL		SBT
Assigned Phase	e			5	\rightarrow	2	╋	1	\rightarrow	6	-	3		8	7		4
Case Number				1.1	7	4.0	╋	1.1	-+-	4.		1.1		4.0	1.1		4.0
Phase Duration	•)		12.7 5.5		22.5	╋	13.5	<u>}</u>	23		11.0		23.7	13.3		26.0
-	ange Period, (Y+ <i>R</i> c), s ax Allow Headway (<i>MAH</i>), s					6.5	╋	6.5	\rightarrow	6.		5.5		6.5	6.5	_	6.5
	2 1		3.1	\rightarrow	3.1	╋	3.1	\rightarrow	3.		3.1	_	3.1	3.1	\rightarrow	3.1	
Queue Clearan		, = ,		5.4		12.4	╋	5.1	\rightarrow	13		3.7		10.7	4.7		18.1
Green Extensio		(ge), s		0.2		0.9	╇	0.0	\rightarrow	1.		0.0		0.8	0.2		1.2
Phase Call Pro				0.89		1.00	+	0.88	_	1.0		0.69		1.00	0.84		1.00
Max Out Proba	bility			0.00)	0.03		1.00		0.0	00	0.15		0.21	0.00)	0.00
Movement Gro	oup Res	sults			EB	_	Т	_	WE	3			NB			SB	
Approach Move	ement			L	Т	R	Т	L	Т	Т	R	L	Т	R	L	Т	R
Assigned Move	ment			5	2	12	T	1	6	+	16	3	8	18	7	4	14
Adjusted Flow I	Rate (v), veh/h		109	264		Т	102	284			57	233		91	401	
-	· ·	w Rate (<i>s</i>), veh/h/l	n	1711	1716	_		1753	172	_		1753	1734		1753	1736	
Queue Service				3.4	10.4		Т	3.1	11.1			1.7	8.7		2.7	16.1	
		e Time (<i>g</i> c), s		3.4	10.4			3.1	11.1			1.7	8.7		2.7	16.1	
Green Ratio (g				0.32	0.22		Т	0.32	0.23			0.31	0.24		0.33	0.27	
Capacity (c), v				321	376			350	400			253	410		400	464	
Volume-to-Cap		itio(X)		0.339	0.70	1		0.292	0.71	1		0.225	0.568		0.227	0.865	
· · ·	· ·	t/In (95 th percentile)				╈			+							
	. ,	eh/In (95 th percenti		2.3	7.4		T	2.1	7.8			1.2	6.3		1.8	10.6	
		RQ) (95 th percent		0.30	0.00			0.28	0.00			0.22	0.00		0.39	0.00	
Uniform Delay		, , ,	,	19.4	26.4			19.1	25.9			19.7	24.7		17.9	25.6	
Incremental De	. ,		0.2	1.1		1	0.2	0.9			0.2	1.2		0.1	1.9		
Initial Queue De	2 ,		0.0	0.0		T	0.0	0.0			0.0	0.0		0.0	0.0		
Control Delay (•		19.6	27.5	,		19.2	26.8			19.9	25.8		18.0	27.5	
Level of Service				В	С		T	B	С			В	С		В	С	
Approach Delay	. ,			25.2		С		24.8		C	2	24.7		С	25.8		С
Intersection De							25.2								С		
	,,					-											
Multimodal Re	sults				EB		T		WE	3			NB			SB	
Pedestrian LOS	edestrian LOS Score / LOS						Т										
Bicycle LOS Sc	icycle LOS Score / LOS						T										

Appendix G Build Capacity Analysis Worksheets - 2024

		HUS	s Sigr	alize	a inte	ersect	ION R	esur	ts Sun	nmary	/				
a															
General Inform	nation								Intersec		v		_		£≊ 1 <u>4</u>
Agency		TMS Engineers, Inc	D.	1					Duration		0.250				<u></u>
Analyst		ABC				e Aug 9			Area Typ	e	Other				▲ 2-
Jurisdiction		Ashville, OH		Time F		AM Pe	eak		PHF		0.89			w ‡ E 8	∳ ◆
Urban Street		US 23		Analys	sis Year	· 2024			Analysis	Period	1> 7:(00	7		7 7
Intersection		@ SR 752		File Na	ame	1_AM	24 23-7	752.xu	s					517	
Project Descrip	tion	Build Conditions												1414Y	ት ሸ
Demand Inform	nation				EB			W	3		NB			SB	
Approach Move				L	T	R	L	Т		L	T	R	L	T	R
Demand (v), v				82	37	63	121	32		99	1412		125	874	36
Signal Informa	tion	v	<i>v</i>		6	215	245	1	2						_
Cycle, s	110.0	Reference Phase	2		8		51	r HR	è				\mathbf{Y}	-	÷
Offset, s	0	Reference Point	End	Green	7.7	0.2	59.9	22.	6 0.0	0.0	_			5	<u> </u>
Uncoordinated	No	Simult. Gap E/W	On	Yellow		0.0	5.2	3.9		0.0					\rightarrow
Force Mode	Fixed	Simult. Gap N/S	On	Red	3.0	0.0	1.0	3.0	0.0	0.0		5	6	7	8
Timer Results				EBI		EBT	WB		WBT	NB	-	NBT	SBI		SBT
Assigned Phase	9					4			8	5		2	1	_	6
Case Number						7.0			8.0	1.1		4.0	1.1		4.0
Phase Duration				<u> </u>		29.5			29.5	14.2		66.1	14.4		66.3
Change Period,	•	,				6.9			6.9	6.5		6.2	7.2		6.2
Max Allow Head	- 1	·				3.2		_	3.2	3.1		0.0	3.1		0.0
Queue Clearan		, = ,		<u> </u>		13.1		_	21.7	5.0			7.1		
Green Extensio		(ge), S			_	1.0		_	0.9	0.2		0.0	0.2		0.0
Phase Call Prol	-					1.00			1.00	0.97			0.99		
Max Out Proba	bility					0.00			0.00	0.00)		0.00)	
Movement Gro	oup Res	ults			EB			WB			NB			SB	
Approach Move	ement			L	Т	R	L	Т	R	L	Т	R	L	Т	R
Assigned Move	ment			7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow F	Rate (v), veh/h			134	71		274		111	939	932	140	515	508
Adjusted Satura	ation Flo	w Rate (<i>s</i>), veh/h/l	n		1190	1585		1485	5	1668	1752	1661	1570	1648	1625
Queue Service	Time (g	g s), s			0.0	4.1		8.6		3.0	57.9	59.9	5.1	22.7	22.7
Cycle Queue C	learance	e Time (<i>g c</i>), s			11.1	4.1		19.7		3.0	57.9	59.9	5.1	22.7	22.7
Green Ratio (g		i			0.21	0.21		0.21	1	0.61	0.54	0.54	0.61	0.55	0.55
Capacity (c), v	/eh/h				300	326		354		349	954	904	168	900	887
Volume-to-Capa	acity Ra	tio (X)			0.446	0.217		0.774	4	0.319	0.985	1.030	0.835	0.572	0.572
Back of Queue	(Q), ft	I/In (95 th percentile	:)												
Back of Queue	(Q), ve	eh/In (95 th percenti	ile)		5.8	2.8		11.6		1.9	37.5	41.2	3.8	13.6	13.4
	· ,	RQ) (95 th percent			0.00	0.26		0.00		0.11	0.63	0.69	0.49	0.00	0.00
Uniform Delay ((d1), s	/veh			38.9	36.3		42.4		12.2	24.6	25.1	29.2	16.5	16.5
Incremental De	· ,				0.4	0.1		1.4		0.2	25.7	38.0	4.1	2.6	2.7
Initial Queue De	2 1	•			0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (,			39.3	36.5		43.8		12.4	50.3	63.0	33.3	19.1	19.2
Level of Service					D	D		D		В	D	F	С	В	В
Approach Delay				38.3	3	D	43.8	3	D	54.2		D	20.9		С
Intersection De						41	1.8						D		
Multimodal Re	sults				EB			WB			NB			SB	
Pedestrian LOS	Score	/LOS													
Bicycle LOS Sc	ore / LC	DS													

		ŀ	ICS 1	Гwo-'	Way	Stop	-Cor	ntrol	Repo	ort						
General Information							Site	Inforr	natio	n						
Analyst	ABC						Inters	ection			SR 75	2 & Bus	iness Pla	ce		
Agency/Co.	TMS	Engineer	s, Inc.				Jurisc	liction			Ashvi	lle, OH				
Date Performed	8/9/2	022					East/	Nest Stre	eet		State	Route 7	52			
Analysis Year	2024						North	/South S	Street		Busin	ess Place	e North			
Time Analyzed	AM P	eak					Peak	Hour Fac	tor		0.84					
Intersection Orientation	East-\	Nest					Analy	sis Time	Period (hrs)	0.25					
Project Description	Build	Conditio	ons													
anes																
						بل ب من Street: Ea		レート 1 A A A A A A A A A A A A A A A A A A								
Vehicle Volumes and Adju	istme	nts														
Approach		Eastb	ound			West	oound			North	bound			South	bound	
Movement	U	L	Т	R	U	L	Т	R	U	L	Т	R	U	L	Т	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12

Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12			
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0			
Configuration			LTR				LTR				LTR				LTR				
Volume (veh/h)		10	168	35		41	197	10		41	0	30		0	0	1			
Percent Heavy Vehicles (%)		2				3				22	22	22		0	0	0			
Proportion Time Blocked																			
Percent Grade (%)										()			()				
Right Turn Channelized																			
Median Type Storage				Undi	vided														
Critical and Follow-up He																			
Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2			
Critical Headway (sec)		4.12				4.13				7.32	6.72	6.42		7.10	6.50	6.20			
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3			
Follow-Up Headway (sec)		2.22				2.23				3.70	4.20	3.50		3.50	4.00	3.30			
Delay, Queue Length, and	l Leve	l of Se	ervice																
Flow Rate, v (veh/h)		12				49					85				1				
Capacity, c (veh/h)		1320				1319					481				803				
v/c Ratio		0.01				0.04					0.18				0.00				
95% Queue Length, Q ₉₅ (veh)		0.0				0.1					0.6				0.0				
Control Delay (s/veh)		7.8	0.1	0.1		7.8	0.3	0.3			14.1				9.5				
Level of Service (LOS)		А	А	А		А	А	А			В				А				
Approach Delay (s/veh)		0	.4			1	.6			14	l.1			9	.5				
Approach LOS		/	4			1	4			E	3		A						

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Concerct Inform									Inter	4	ion Inf				I at shape t	b I.
General Inform	ation											ormatio			ΨĻ	
Agency		TMS Engineers, Inc			·	A 7	0000		Durat			0.250				K_
Analyst		ABC				e Apr 7			Area	Туре	e	Other		- <u>↑</u> *	w∔e	* *
Jurisdiction		Ashville, OH		Time F		AM P	eak		PHF		.	0.80		→	W + E 8	
Urban Street		SR 752				r 2024				/SIS	Period	1> 7:(00			T T
Intersection		@ SR 316/Ashville	Pike	File Na	ame	3_AM	24 752	-316.:	xus					- 1	17	
Project Descrip	tion	Build Conditions													ነሳ ተቀነግ	P ſ
Demand Inform	nation				EB			W	′B			NB			SB	
Approach Move	ement			L	Т	R	L			R	L	Т	R	L	Т	R
Demand (v), v	eh/h			74	234	40	40	13	31	70	60	145	70	180	50	97
					1											
Signal Informa					2		3 4	4	5 6	Ж	20.	۵		_	ĸ	
Cycle, s	71.5	Reference Phase	2			R		́Г,	s I		5	12 4	1	€₂	3	4
Offset, s	0	Reference Point	End	Green	5.1	0.7	17.1	6.2	2 2	2.8	16.7			5		
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow	4.5	0.0	3.5	3.5	5 (0.0	3.5			7		√
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	0.0	2.0	2.0) (0.0	2.0		5	6	7	8
Timer Dr. I						EDT	14/5			T	NID		NDT	0.51		ODT
Timer Results				EBI		EBT	WB		WB	<u> </u>	NBI		NBT	SBI		SBT
Assigned Phase	e			5	\rightarrow	2	1	\rightarrow	6	_	3	+	8	7	\rightarrow	4
Case Number				1.1		4.0	1.1		4.0	_	1.1		4.0	1.1		4.0
Phase Duration	•	`		12.3		23.2	11.6		22.6		11.7		22.2	14.5		24.9
Change Period,		,		5.5		6.5	6.5	_	6.5	_	5.5		6.5	6.5	+	6.5
Max Allow Head	2 1	·		3.1 4.8		3.1 15.2	3.1 3.5		3.1 11.7	,	3.1 4.2		3.2 12.0	3.1 9.0	\rightarrow	3.2 8.6
		, = ,														
Green Extensio Phase Call Prol		(<i>g</i> e), s		0.2		1.0	0.0 0.63		1.1		0.1 0.77		0.5 1.00	0.0		0.7 1.00
Max Out Proba				0.02		0.01	0.0		0.00		0.00		0.00	1.00		0.04
Max Out Floba	Dinty			0.00	,	0.01	0.10	,	0.00	,	0.00)	0.00	1.00		0.04
Movement Gro	oup Res	ults			EB			WE	3			NB			SB	
Approach Move	ement			L	Т	R	L	Т	F	र	L	Т	R	L	Т	R
Assigned Move	ment			5	2	12	1	6	1	6	3	8	18	7	4	14
Adjusted Flow F	Rate (v), veh/h		93	343		50	251			75	269		225	184	
Adjusted Satura	ation Flo	w Rate (<i>s</i>), veh/h/l	n	1725	1765		1711	169	0		1781	1767		1767	1659	
Queue Service	Time (g	g s), S		2.8	13.2		1.5	9.7			2.2	10.0		7.0	6.6	
Cycle Queue C	learance	e Time (g c), s		2.8	13.2		1.5	9.7			2.2	10.0		7.0	6.6	
Green Ratio (g				0.32	0.23		0.30	0.2	2		0.31	0.22		0.33	0.26	
Capacity (c), v	/eh/h			367	413		245	380)		419	387		384	427	
Volume-to-Capa	acity Ra	itio (X)		0.252	0.828	3	0.204	0.66	0		0.179	0.694		0.586	0.430	
Back of Queue	(Q), ft	t/In (95 th percentile)													
Back of Queue	(Q), ve	eh/In (95 th percenti	ile)	1.9	9.1		1.0	6.7			1.5	7.3		5.0	4.4	
Queue Storage	Ratio (RQ) (95 th percent	tile)	0.24	0.00		0.13	0.0	0		0.27	0.00		1.07	0.00	
Uniform Delay ((d 1), s	/veh		18.2	26.0		19.8	25.	2		18.2	25.7		19.3	22.2	
Incremental De	lay (<i>d</i> 2), s/veh		0.1	1.7		0.2	0.7			0.1	0.8		1.6	0.3	
Initial Queue De		,		0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0	
Control Delay (18.3	27.7		19.9	26.0	0		18.3	26.6		20.8	22.4	
Level of Service				В	С		В	С			В	С		С	С	
Approach Delay	-			25.7	7	С	25.0	0	С		24.8	3	С	21.6	j	С
Intersection De	lay, s/ve	h / LOS				2	4.2							С		
Navita:								1.4./-				NID			0.5	
Multimodal Re		11.02		<u> </u>	EB			WE	5			NB			SB	
Pedestrian LOS																
Bicycle LOS Sc	JUIE / LC															

		HCS	s Sigr	nalize	d Inte	ersect	ion R	esul	ts Sun	nmary	/				
General Inform	ation								Intersec	tion Inf	o reno oti d		1 1	4444	b. L.
	ation											-	- 1	444	
Agency		TMS Engineers, Inc).		·	1	0000		Duration		0.250				R.
Analyst		ABC				Aug 9			Area Typ	be	Other	-			
Jurisdiction		Ashville, OH		Time F		PM Pe	eak		PHF	<u> </u>	0.98			W + E 8	
Urban Street		US 23			sis Year			1	Analysis	Period	1> 7:0	00			۲۲ ۲
Intersection		@ SR 752		File Na	ame	_4_PM	24 23-7	752.xu	s					<u> </u>	
Project Descrip	tion	Build Conditions												ነ ጎ ጎ ቀ ነሳ	21
Demand Inform	nation				EB			WE	3		NB			SB	
Approach Move	ement			L	Т	R	L	Т	R	L	Т	R	L	Т	R
Demand (v), v				45	55	81	184	33	84	74	965	194	127	1582	55
				1											
Signal Informa						216			5						_
Cycle, s	100.0	Reference Phase	2		5		51	R	ē.				\mathbf{Y}	3	- € ,
Offset, s	0	Reference Point	End	Green	7.0	0.5	49.3	23.	5 0.0	0.0	_		-		~ K
Uncoordinated	No	Simult. Gap E/W	On	Yellow		0.0	5.2	3.9	0.0	0.0	_	< 4			\rightarrow
Force Mode	Fixed	Simult. Gap N/S	On	Red	3.0	0.0	1.0	3.0	0.0	0.0		5	6	7	8
T ' D K				EDI		EDT			MOT			NDT	0.01		ODT
Timer Results				EBI	-	EBT	WB		WBT	NB	-	NBT	SBI	-	SBT
Assigned Phase	e				_	4			8	5		2	1		6
Case Number						7.0			8.0	1.1		4.0	1.1		4.0
Phase Duration	•					30.4			30.4	13.5		55.5	14.0		56.0
	nange Period, (Y+R c), s ax Allow Headway (<i>MAH</i>), s					6.9			6.9	6.5		6.2	7.2		6.2
	ax Allow Headway (<i>MAH</i>), s					3.2			3.2	3.1		0.0	3.1		0.0
	ueue Clearance Time (g_s), s					7.0			22.6	4.1			5.7		
Green Extensio		(g _e), s				1.0			0.9	0.1		0.0	0.2		0.0
Phase Call Prol						1.00			1.00	0.88			0.97		
Max Out Proba	bility					0.00			0.00	0.00)		0.00)	
Movement Gro	oup Res	ults			EB			WB			NB			SB	
Approach Move	-			L	Т	R	L	Т	R	L	Т	R	L	Т	R
Assigned Move				7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow F), veh/h			102	83		307		76	608	574	130	838	833
-		w Rate (<i>s</i>), veh/h/l	n		1514	1585		1443		1626	1707	1608	1668	1752	1731
Queue Service					0.0	4.2		15.6		2.1	28.0	28.2	3.7	46.0	46.5
Cycle Queue C		- ,			5.0	4.2		20.6	_	2.1	28.0	28.2	3.7	46.0	46.5
Green Ratio (g		· ····· (3·), ·			0.24	0.24		0.24		0.56	0.49	0.49	0.56	0.50	0.50
Capacity (c), v					409	373		398		190	842	793	280	873	863
Volume-to-Capa		tio (X)			0.250	0.221		0.772	2	0.398	0.722		0.464	0.960	0.965
		t/In (95 th percentile)												
	. ,	eh/In (95 th percenti			3.6	2.9		11.6		1.5	17.2	16.5	2.3	30.6	30.8
		RQ) (95 th percent			0.00	0.26		0.00		0.09	0.30	0.28	0.29	0.00	0.00
Uniform Delay (,, ,	,		31.0	30.8		37.0		22.1	19.9	20.0	16.0	24.1	24.3
Incremental De	. ,				0.1	0.1		1.7		0.5	5.3	5.7	0.4	22.1	23.3
Initial Queue De		·			0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (· ·			31.1	30.9		38.8		22.6	25.3	25.7	16.5	46.2	47.6
Level of Service					C	C		D		C	C	C	B	D	D
Approach Delay				31.0		C	38.8	<u> </u>	D	25.3		C	44.7	<u> </u>	D
Intersection Del		01.0			6.6			20.0			D		5		
	.ay, 3/vC					50									
Multimodal Re	Multimodal Results							WB			NB			SB	
	Pedestrian LOS Score / LOS														
Bicycle LOS Sc	cycle LOS Score / LOS														
				-											

				F ure 1		Ctop	Cor		Doine	. et						
Consul Information	_	-	105	WO-	vvay	Stop		_		_	_	_	_			
General Information									natio	n						
Analyst	ABC							ection					iness Pla	ce		
Agency/Co.		Engineer	s, Inc.				Jurisc					lle, OH				
Date Performed	8/9/2	022					East/	West Stre	eet		State	Route 7	52			
Analysis Year	2024						North	n/South S	Street		Busin	ess Place	e North			
Time Analyzed	PM P	eak					Peak	Hour Fac	tor		0.83					
Intersection Orientation	East-\	West					Analy	sis Time	Period (hrs)	0.25					
Project Description	Build	Conditio	ons													
Lanes																
V. L. I. V. I	-			74	ר ה Majı	ヤ ・ or Street: Ea	st-West	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 7 8 7 8 7								
Vehicle Volumes and Adju	Istme															
Approach			ound	_		1	oound	_			bound				bound	_
Movement	U	L	Т	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	10	1	2	3	4U	4	5	6	<u> </u>	7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		0	274	27		63	235	10		26	0	27		10	0	10
Percent Heavy Vehicles (%)		2				2				9	9	9		14	14	14
Proportion Time Blocked																
Percent Grade (%)											0				0	
Right Turn Channelized																
Median Type Storage				Undi	vided											

Critical and Follow-up Headways

Critical and Follow-up He	adwa	ys														
Base Critical Headway (sec)		4.1			4.1			7.1	6.5	6.2		7.1	6.5	6.2		
Critical Headway (sec)		4.12			4.12			7.19	6.59	6.29		7.24	6.64	6.34		
Base Follow-Up Headway (sec)		2.2			2.2			3.5	4.0	3.3		3.5	4.0	3.3		
Follow-Up Headway (sec)		2.22			2.22			3.58	4.08	3.38		3.63	4.13	3.43		
Delay, Queue Length, and	Leve	l of Se	ervice													
Flow Rate, v (veh/h)		0			76				64				24			
Capacity, c (veh/h)		1266			1196				396				389			
v/c Ratio		0.00			0.06				0.16				0.06			
95% Queue Length, Q ₉₅ (veh)		0.0			0.2				0.6				0.2			
Control Delay (s/veh)		7.8	0.0	0.0	8.2	0.6	0.6		15.8				14.9			
Level of Service (LOS)		А	А	А	А	А	A		С				В			
Approach Delay (s/veh)		0	.0		2	.2		15	5.8			14	4.9			
Approach LOS		A	4		/	4		(C	В						

		HUS	s Sigr	alize	a int	ersect		esu	its a	Sum	imary	/				
General Inform	ation								Into	raad	ion Inf	ormatio			I 팩 학 약 수 수	bs L.
	ation	TMC Engineers Inc									-	0.250		- 1	44	
Agency		TMS Engineers, Inc	<i>.</i>	Analyz	in Det	a A				ation,		_				۲. بر
Analyst		ABC				e Aug 9				а Тур -	e	Other		- <u>-</u>	N W1=	
Jurisdiction		Ashville, OH		Time F		PM P	еак		PHF		D	0.88	20	- -	8	
Urban Street		SR 752	D ''			r 2024		0.1.0		iysis	Period	1> 7:0	00			
Intersection		@ SR 316/Ashville	Pike	File Na	ame	6_PN	1 24 752	-316.)	kus						ጎዮ	
Project Descrip	tion	Build Conditions													1 ጎ ጎ ቍ ነጎ	Ρſ
Demand Inform	nation				EB			W	Β			NB			SB	
Approach Move	ement			L	Т	R	L	T	-	R	L	Т	R	L	Т	R
Demand (v), v				109	185	67	90	18	38	90	64	135	70	80	235	146
				1										<u> </u>	· .	_
Signal Informa				-	2		🛓 🛓 🛓	4	5	211	20.	2	_	_	ĸ	Υ
Cycle, s	75.4	Reference Phase	2		F '	1 "	TR '		s		5	17 4		€₂		∠↓ ■
Offset, s	0	Reference Point	End	Green	7.4	0.7	16.0	6.3	3	1.6	20.6			K		
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow	3.5	0.0	4.5	3.5	5	0.0	3.5		>			×12
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	0.0	2.0	2.0)	0.0	2.0		5	6	7	8
Timer Dev. 1						EDT				T			NDT	0.51		ODT
Timer Results	-			EBI		EBT	WB		WB	_	NBI		NBT	SBL		SBT
Assigned Phase	J			5		2	1		6		3		8	7		4
Case Number	-			1.1		4.0	1.1		4.0		1.1		4.0	1.1		4.0
Phase Duration)		12.9 5.5		22.5	13.6		23.		11.8		26.1	13.3		27.6
-	hange Period, (Y+R c), s ax Allow Headway (<i>MAH</i>), s					6.5	6.5	_	6.5		5.5		6.5	6.5	_	6.5
	ax Allow Headway (<i>MAH</i>), s ueue Clearance Time (<i>g</i> s), s					3.1	3.1		3.1		3.1	_	3.2	3.1	\rightarrow	3.2
				6.1		13.9	5.2		15.		4.1		10.7	4.7		20.2
Green Extensio		(ge), s		0.0		1.0	0.0		1.0		0.0		0.8	0.0		0.9
Phase Call Prol	-			0.93		1.00	0.88	_	1.0		0.78		1.00	0.85		1.00
Max Out Proba	bility			1.00)	0.02	1.00)	0.0)1	0.34	•	0.36	0.76	5	0.00
Movement Gro	oup Res	sults			EB			WE	3			NB			SB	
Approach Move	-			L	Т	R	L	Т		R	L	Т	R	L	Т	R
Assigned Move				5	2	12	1	6		16	3	8	18	7	4	14
Adjusted Flow F), veh/h		124	286		102	316			73	233		91	433	
-		w Rate (<i>s</i>), veh/h/l	n	1711	1714	+	1753	173	_		1753	1734		1753	1722	
Queue Service				4.1	11.9		3.2	13.0	_	_	2.1	8.7		2.7	18.2	
Cycle Queue C		- ,		4.1	11.9	-	3.2	13.0	_		2.1	8.7		2.7	18.2	
Green Ratio (g		• · · · · · (9 •), •		0.31	0.21		0.31	0.22		_	0.34	0.26		0.35	0.28	
Capacity (<i>c</i>), v				285	364		318	384			252	450		417	482	
Volume-to-Capa		itio (X)		0.434		;	0.322	0.82			0.289	0.518		0.218	0.898	
· · ·	-	t/In (95 th percentile)					5.02	-							
	<u>, ,</u>	eh/In (95 th percenti		2.8	8.3		2.3	9.1			1.5	6.1		1.8	11.7	
		RQ) (95 th percent		0.37	0.00		0.29	0.00			0.27	0.00		0.39	0.00	
Uniform Delay (,, ,	,	20.9	28.1		20.4	28.0	_		19.5	23.9		17.4	26.1	
Incremental De				0.4	1.6		0.2	2.0	_		0.2	0.5		0.1	2.5	
Initial Queue De	2 1	,		0.0	0.0		0.0	0.0	_		0.0	0.0		0.0	0.0	
Control Delay (21.3	29.7		20.6	30.0	_		19.7	24.4		17.5	28.6	
Level of Service				C	C		C	C			B	C		B	C	
Approach Delay				27.2		С	27.7		С		23.3		С	26.7		С
Intersection Del		21.2	-		6.4				20.0			20.7 C				
						2	•. ·							5		
Multimodal Re	sults				EB			WE	3			NB			SB	
Pedestrian LOS		/ LOS														
	cycle LOS Score / LOS															

Appendix H Build Capacity Analysis Worksheets - 2024 w/ Improvements

			s sigr	ialize	a inte	ersect	ION R	esu	115 3	um	mary	·				
General Inform	nation								Inter	soct	ion Inf	ormatic	20		I ad ada da da da da	te L
	ation	TMC Engineero Inc									-	0.250	-	- 1	414	
Agency		TMS Engineers, Inc	<i>.</i>	Analys	ia Data	A	2022		Durat			_				r.
Analyst		ABC				Aug 9			Area	туре	e	Other	-	→ →	N WÎE	
Jurisdiction		Ashville, OH		Time F		AM Pe	зак		PHF		Devited	0.89	20			¥ ¥ ←
Urban Street		US 23				2024	04.00	750	1		Period	1> 7:(0			<u> </u>
Intersection		@ SR 752		File Na	ame	1_AM	24 23-7	(52 -	IMP.xu	JS				_	<u>ነተተረ</u>	
Project Descrip	tion	BC - NB RTL & EBI	R Overla	ар											14141	e n
Demand Inform	nation				EB			W	/B			NB			SB	
Approach Move	ement			L	Т	R	L	1 -	г	R	L	Т	R	L	Т	R
Demand (v), v	eh/h			82	37	63	121	3	2	91	99	1412	253	125	874	36
Signal Informa	tion						3 6	<u> </u>								_
Cycle, s	90.0	Reference Phase	2		20		• R °							\mathbf{Y}	3	- + +
Offset, s	0	Reference Point	End	Green	6.8	44.1	18.8	0.0	0 0	0.0	0.0			-		K
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.3	5.2	3.9	0.0	0 0	0.0	0.0		$\langle \langle \langle \rangle \rangle$			*
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.9	1.0	3.0	0.0	0 (0.0	0.0		5	6	7	8
Timer Results				EBL	-	EBT	WB	L	WB	Г	NBL	-	NBT	SBL	-	SBT
Assigned Phase	e					4		\rightarrow	8	_	5		2	1	_	6
Case Number						7.0		\rightarrow	8.0		1.1		3.0	1.1		4.0
Phase Duration						25.7		\rightarrow	25.7		14.0		50.3	14.0		50.3
-	nange Period, (Y+R c), s ax Allow Headway (<i>MAH</i>), s					6.9		\rightarrow	6.9		6.5		6.2	7.2		6.2
	ax Allow Headway (<i>MAH</i>), s					3.2		\rightarrow	3.2		3.1		0.0	3.1		0.0
	ueue Clearance Time (g s), s					10.7		_	17.9)	4.7			5.8		
Green Extensio		(g _e), s				1.0		\rightarrow	1.0	_	0.2		0.0	0.2		0.0
Phase Call Pro						1.00		\rightarrow	1.00	_	0.94			0.97		
Max Out Proba	bility					0.00			0.00)	0.00)		0.00)	
Movement Gro	oup Res	aults			EB			WE	3			NB			SB	_
Approach Move	-			L	T	R	L	Т	11	र	L	T	R	L	T	R
Assigned Move				7	4	14	3	8	1	_	5	2	12	1	6	16
Adjusted Flow I), veh/h		<u> </u>	134	71	-	274		-	111	1587	284	140	515	508
-	•	ow Rate (<i>s</i>), veh/h/l	n		1227	1585		149	_		1668	1668	1610	1570	1648	1625
Queue Service		(<i>)</i> ,			0.0	3.0		7.2			2.7	41.7	9.8	3.8	20.9	20.9
Cycle Queue C		- /			8.7	3.0		15.9	_		2.7	41.7	9.8	3.8	20.9	20.9
Green Ratio (g		· ······ (y •), •			0.21	0.29		0.2			0.57	0.49	0.49	0.56	0.49	0.49
Capacity (c), v	· ·				324	464		373			352	1633	788	200	807	795
Volume-to-Cap		tio (X)			0.412	0.153		0.73	_		0.316	0.971	0.361	0.703	0.638	0.638
	-	t/In (95 th percentile	:)						-							
		eh/In (95 th percenti	,		4.5	2.0		9.6	3		1.6	25.4	6.5	2.5	12.8	12.6
					0.00	0.18		0.0	_		0.10	0.43	0.00	0.32	0.00	0.00
	Queue Storage Ratio (RQ) (95 th percentile) Jniform Delay ($d 1$), s/veh					23.6		34.	_		11.9	22.4	14.2	20.1	17.1	17.1
	ncremental Delay (d_2), s/veh					0.1		1.1	_		0.2	16.5	1.3	1.7	3.8	3.9
	nitial Queue Delay (d 3), s/veh					0.0		0.0			0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (• •	,			0.0 31.7	23.6		35.	_		12.1	38.8	15.5	21.8	20.9	21.0
Level of Service					C	C		D			В	D	B	C	C	C
Approach Delay	· /			28.9	1	C	35.3		D		34.0		C	21.0		C
Intersection De							9.6							C		
							-									
Multimodal Re	sults				EB			WE	3			NB			SB	
Pedestrian LOS	edestrian LOS Score / LOS															
Bicycle LOS Sc	icycle LOS Score / LOS															
	cycle LOS Score / LOS															

		HCS	s Sigr	nalize	a inte	ersect	ION R	esui	ts Sun	nmary	/				_
Gonoral Inform						Intersed	tion Inf		4,4,4,4	be la					
General Information Agency TMS Engineers, Inc.											- 1	444			
Agency			Analysis Date Aug 9, 2022					Duration		0.250				r.	
Analyst Jurisdiction		ABC Ashville, OH							· · · · · · · · · · · · · · · · · · ·			→ →	, w1 =	÷	
						PM Pe	зак		PHF	Deviad	0.98	00			
Urban Street US 23						· 2024			Analysis	Period 1> 7:00					۲. ۲
Intersection @ SR 752					File Name 4_PM 24 23-752 - IMP.xus								- 1	<u>1117</u>	
Project Descrip	tion	BC - NB RTL & EBF	R Overla	ар										14 î 4 Y	λ.C
Demand Information					EB			W	B		NB			SB	
Approach Movement			L	Т	R	L	Т	R	L	Т	R	L	Т	R	
Demand (v), veh/h			45	55	81	184	33	3 84	74	965	194	127	1582	55	
				1				i, i						<u> </u>	Í.
Signal Informa		1			6	216	- Nor	1 7	2						_
Cycle, s	100.0	Reference Phase	2		20		51	<mark>∙</mark> ₩	é.			\mathbf{Y}_{2}	-	-€ ₄	
Offset, s	0	Reference Point	End	Green	7.0	0.5	49.3	23.	.6 0.0	0.0			-		<u> </u>
Uncoordinated	No	Simult. Gap E/W	On	Yellow		0.0	5.2	3.9	0.0	0.0		$\langle \langle \langle \rangle \rangle$			7
Force Mode	Fixed	Simult. Gap N/S	On	Red	3.0	0.0	1.0	3.0	0.0	0.0		5	6	7	8
Timer Drevit				- EPI		CDT				NID		NDT	0.51		ODT
Timer Results				EBL	-	EBT	WB		WBT	NB		NBT	SBI	-	SBT
Assigned Phase	e					4			8	5	_	2	1	6	
Case Number						7.0		_	8.0	1.1		3.0	1.1		4.0
Phase Duration						30.5	30.5			13.5		55.5	14.0		56.0
Change Period	· ·	,				6.9		6.9		6.5				7.2 6.2	
Max Allow Head						3.2		3.2		3.1			3.1		0.0
Queue Clearan						7.0			22.6	4.1		0.0	5.7		
Green Extensio		(ge), s				1.0		_	0.9	0.1		0.0	0.2		0.0
Phase Call Pro						1.00			1.00	0.88		0.9			
Max Out Proba	DIIITY					0.00			0.00	0.00)		0.00)	
Movement Gro	oup Res	ults			EB			WB	;		NB			SB	
Approach Move	-			L	Т	R	L	Т	R	L	Т	R	L	Т	R
Assigned Move				7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow I	Rate (v), veh/h			102	83		307		76	985	198	130	838	833
-		w Rate (<i>s</i>), veh/h/l	n		1514	1585		1443	_	1626	1625	1610	1668	1752	1731
Queue Service					0.0	3.8		15.6	_	2.1	22.0	7.1	3.7	46.0	46.5
Cycle Queue C		- ,			5.0	3.8		20.6		2.1	22.0	7.1	3.7	46.0	46.5
Green Ratio (g					0.24	0.31		0.24		0.56	0.49	0.49	0.56	0.50	0.50
Capacity (c), v					409	485		398		190	1603	794	332	873	862
Volume-to-Cap		tio (X)			0.249	0.170		0.77		0.398	<u> </u>		0.391	0.960	0.966
	-	t/In (95 th percentile)												
	. ,	eh/In (95 th percenti			3.6	2.6		11.6	;	1.5	12.8	4.8	2.3	30.6	30.8
	, ,	RQ) (95 th percent	,		0.00	0.23		0.00		0.09	0.22	0.00	0.29	0.00	0.00
Uniform Delay (,, ,			31.0	25.4		37.0	_	22.1	18.4	14.6	13.6	24.1	24.3
Incremental Delay ($d \ge 1$), s/veh				0.1	0.1		1.2		0.5	1.8	0.8	0.3	22.2	23.4	
Initial Queue Delay (<i>d</i> ₃), s/veh					0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (<i>d</i>), s/veh				31.1	25.5		38.2	_	22.6	20.2	15.4	13.9	46.3	47.7	
Level of Service (LOS)				С	C		D		С	С	В	В	D	D	
Approach Delay, s/veh / LOS				28.6	5	С	38.2		D	19.6		В	44.6	6	D
Intersection Delay, s/veh / LOS							1.4								
	,					1									
Multimodal Re	sults				EB			WB	3		NB			SB	
Pedestrian LOS Score / LOS															
Bicycle LOS Sc	ore / LC	DS													

Appendix I No-Build Capacity Analysis Worksheets - 2044

		HCS	s sigr	nalize	a inte	ersect	ION R	esui	ts Sun	nmary	/				
Concrol Inform	otion							Intersed	tion Inf		4 사하 1	h L			
General Information															
Agency TMS Engineers, Inc. Analyst ABC					·	1	0000		Duration		0.250				R.
					Analysis Date Aug 9						Other				4 -↓ -↓
Jurisdiction		Ashville, OH		Time F	AM Pe	eak		PHF		0.89			W + E 8		
Urban Street US 23					Analysis Year 2044				Analysis	Period	1> 7:(00			The second se
Intersection @ SR 752					ame	1_AM	44NB 2	23-752	<u> </u>						
Project Descrip	tion	No-Build Conditions	5											1 1 ቀ ነ	۲ r
Demand Information					EB WB			3		SB					
Approach Movement				L	Т	R	L	Т	R	L	Т	R	L	Т	R
Demand (<i>v</i>), veh/h			82	37	63	104	32	2 91	99	1797	246	105	1219	36	
0	<i></i>								-						
Signal Informa			0	-	6		- Atta		<u> </u>		ļ		KŤ2		
Cycle, s	120.0	Reference Phase	2		5	- Sti	2 51	r HR	E				2	3	
Offset, s	0	Reference Point	End	Green		0.2	71.5	21.		0.0					5
Uncoordinated	No	Simult. Gap E/W	On	Yellow		0.0	5.2	3.9		0.0					
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.9	0.0	1.0	3.0	0.0	0.0		5	6	7	8
Timer Results				EBL		EBT	WB	WBL WBT		NB		NBT	SBL		SBT
Assigned Phase	e					4			8	5		2	1		6
Case Number						7.0			8.0	1.1		4.0	1.1		4.0
Phase Duration	, S					28.0			28.0	14.3	3				77.7
Change Period, (Y+R c), s						6.9	6.9		6.5		6.2 7.3		7.2 6.2		
Max Allow Head	dway (<i>N</i>	ИАН), s				3.2	3.2		3.2	3.1		0.0 3.1		0.0	
Queue Clearan	ce Time	e (g s), s		1		15.4			22.2	4.9			6.2		
Green Extensio	n Time	(ge),s		(0.6	0.0		0.0	0.2	0.2 0.0		0.0		0.0
Phase Call Prol	bability			1.00		1.00	1.00		0.98	0.98		0.98	}		
Max Out Proba	bility					0.23	1.00		0.00).00		1.00			
Movement Gro	oup Res	ults		EB WB				NB				SB			
Approach Move	-			L	Т	R	L	Т	R	L	Т	R	L	Т	R
Assigned Move	ment			7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow F), veh/h			134	71		255	1	111	1148	1148	118	708	702
		w Rate (<i>s</i>), veh/h/l	n		1112	1585		1501		1668	1752	1679	1570	1648	1631
Queue Service					0.0	4.6		6.8	-	2.9	71.7	71.7	4.2	36.5	36.7
Cycle Queue C		- ,			13.4	4.6		20.2		2.9	71.7	71.7	4.2	36.5	36.7
Green Ratio (g					0.18	0.18		0.18		0.66	0.60	0.60	0.65	0.60	0.60
Capacity (c), v					246	279		308		272	1047	1004	150	982	972
Volume-to-Capa	acity Ra	itio (X)			0.543	0.254		0.829	9	0.409	1.096	1.143	0.788	0.721	0.723
	, ,	t/In (95 th percentile													
Back of Queue	(Q), ve	eh/In (95 th percenti	ile)		6.8	3.3		13.7		2.1	58.8	65.0	5.0	20.3	20.2
		RQ) (95 th percent	tile)		0.00	0.30		0.00		0.13	0.99	1.10	0.64	0.00	0.00
Uniform Delay (46.0	42.7		49.0		15.5	24.1	24.1	33.1	17.2	17.2
Incremental Delay (d 2), s/veh				1.4	0.2		16.1		0.4	57.8	76.6	18.7	4.6	4.6	
Initial Queue De		· ·			0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh					47.4	42.8		65.1		15.9	82.0	100.7	51.7	21.8	21.9
Level of Service (LOS)					D	D		E		В	F	F	D	С	С
Approach Delay, s/veh / LOS				45.8	5	D	65.1		E	87.9)	F	24.1		С
Intersection De	lay, s/ve	eh / LOS				62	2.4						E		
Multimodal Ba	eulte				EP						ND			QP	
Multimodal Results Pedestrian LOS Score / LOS					EB			WB			NB			SB	
Bicycle LOS Score / LOS															

HCS Two-Way Stop-Control Report												
General Information		Site Information										
Analyst	ABC	Intersection	SR 752 & Business Place									
Agency/Co.	TMS Engineers, Inc.	Jurisdiction	Ashville, OH									
Date Performed	8/9/2022	East/West Street	State Route 752									
Analysis Year	2044	North/South Street	Business Place North									
Time Analyzed	AM Peak	Peak Hour Factor	0.84									
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25									
Project Description	No-Build Conditions											
Lanes												
		× ₩ U V 4 4 V 4 4 V 4 V 4 V 4 V 4 V 4 V 4 V 4										

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																_	
Vehicle Volumes and Adj	ustme	nts															
Approach		Eastb	ound		Westbound				Northbound				Southbound				
Movement	U	L	Т	R	U	L	Т	R	U	L	Т	R	U	L	Т	R	
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12	
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0	
Configuration			LTR				LTR				LTR				LTR		
Volume (veh/h)		10	198	20		10	247	10		10	0	10		0	0	1	
Percent Heavy Vehicles (%)		2				3				22	22	22		0	0	0	
Proportion Time Blocked																	
Percent Grade (%)											0		0				
Right Turn Channelized																	
Median Type Storage		Undivided															
Critical and Follow-up H	eadwa	ys															
Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2	
Critical Headway (sec)		4.12				4.13				7.32	6.72	6.42		7.10	6.50	6.20	
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3	
Follow-Up Headway (sec)		2.22				2.23				3.70	4.20	3.50		3.50	4.00	3.30	
Delay, Queue Length, an	d Leve	l of Se	ervice		<u>.</u>	<u>.</u>					<u>.</u>		<u>.</u>				
Flow Rate, v (veh/h)	T	12				12					24				1		
Capacity, c (veh/h)		1255				1299					505				744		
v/c Ratio		0.01				0.01					0.05				0.00		
95% Queue Length, Q ₉₅ (veh)		0.0				0.0					0.1				0.0		
Control Delay (s/veh)		7.9	0.1	0.1		7.8	0.1	0.1			12.5				9.8		
Level of Service (LOS)		A	A	A		A	A	A			В				A		
Approach Delay (s/veh)	0.4				0.4			12.5				9.8					
Approach LOS		A			A					В		Α					

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General Information															
														1 팩 가 뉵 ㅣ	L. I.
Agency											ormatio			با ل	4- <u>-</u>
	TMS Engineers, Inc	C.							uration,		0.250				R.
Analyst	ABC		-		te Aug				rea Typ	e	Other			w‡e	م ج
Jurisdiction	Ashville, OH		Time F						HF		0.80		¥	w + e 8	
Urban Street	SR 752				ar 2044				nalysis	Period	1> 7:(00			T T
Intersection	@ SR 316/Ashville		File Na	ame	3_AN	/I 44NB	752-3	316.:	xus					ግዮ	
Project Description	No-Build Conditions	3												ነላ በቀጥ	14 C
Demand Information				EB			V	VB			NB			SB	
Approach Movement			L	Т	R		i	Т	R	L	Т	R	L	Т	R
Demand (v), veh/h			84	294	4 40	50	1	50	100	80	210	110	260	80	117
			1												<u>i an </u>
Signal Information		r			3	님 !	. 2	Ш	120.			_	_	ĸ	
Cycle, s 97.6	Reference Phase	2		F	TR '	8. 8			- M	2			€₂	3	×↓ 3
Offset, s 0	Reference Point	End	Green	6.5	25.6	7.5	1.	7	25.7				ĸ		
Uncoordinated Yes	Simult. Gap E/W	On	Yellow	4.5	4.5	3.5	4.	5	3.5	0.0		>	7	$\mathbf{\mathbf{V}}$	- N
Force Mode Fixed	Simult. Gap N/S	On	Red	2.0	2.0	2.0	2.	0	2.0	0.0		5	6	7	8
Times Description					CD7	1.04				NE		NDT	0.51		ODT
Timer Results			EBI	-	EBT	W		V	VBT	NBI	-	NBT	SBI		SBT
Assigned Phase			5		2	1			6	3		8	7		4
Case Number			1.1		4.0	1.			4.0	1.1		4.0	1.1	+	4.0
Phase Duration, s			13.0		32.1	13			32.1	13.0		31.2	21.2		39.5
Change Period, (Y+R			5.5		6.5	6.			6.5	5.5		6.5	6.5		6.5
Max Allow Headway (3.1		3.1	3.			3.1	3.1		3.2	3.1		3.2
Queue Clearance Time	, , ,		6.2	_	24.2	4.			8.5	5.9		23.4	14.7		13.1
Green Extension Time	, = ,		0.0		1.4	0.			1.1	0.0		1.3	0.0		1.3
Phase Call Probability			0.94		1.00	0.8			.00	0.93		1.00	1.00		1.00
Max Out Probability			1.00)	0.00	0.5	94	0).14	1.00)	0.00	1.00	,	0.00
Movement Group Re	sults			EB			W	В			NB			SB	
Approach Movement			L	Т	R	L	Т	·	R	L	Т	R	L	Т	R
Assigned Movement			5	2	12	1	6		16	3	8	18	7	4	14
Adjusted Flow Rate ()	/), veh/h		105	418		63	31	3		100	400		325	246	
Adjusted Saturation FI	,	n	1725	1773	_	1711		-		1781	1761		1767	1676	
Queue Service Time (. ,		4.2	22.2		2.5	16.	.5		3.9	21.4		12.7	11.1	<u> </u>
Cycle Queue Clearand	- ,		4.2	22.2		2.5	16.	.5		3.9	21.4		12.7	11.1	
Green Ratio (g/C)			0.34	0.26		0.33	0.2	6		0.33	0.25		0.42	0.34	1
Capacity (<i>c</i>), veh/h			293	466		212	44	0		441	446		373	566	
Volume-to-Capacity R	atio(X)		0.358	<u> </u>		0.29		-		0.227	0.896		0.871	0.435	
Back of Queue (Q),	. ,	:)													
Back of Queue (Q), v	, .		3.0	14.6		1.8	11.	4		2.9	14.2		11.2	7.7	
Queue Storage Ratio	· ·		0.39	0.00	_	0.24	0.0			0.52	0.00		2.38	0.00	
Uniform Delay (<i>d</i> 1), s	, ,, .	_	24.4	34.7		25.7	32.			23.3	35.2		23.3	25.1	1
Incremental Delay (d			0.3	2.6		0.3	4.4	-		0.1	2.9		18.3	0.2	
Initial Queue Delay (d	,		0.0	0.0		0.0	0.0	-		0.0	0.0		0.0	0.0	
Control Delay (d), s/v	•		24.7	37.3	_	26.0	37.	-		23.4	38.1		41.6	25.3	
Level of Service (LOS			С	D		С	D			С	D		D	С	1
Approach Delay, s/veh	•		34.7		С	35	_		D	35.1		D	34.6		С
Intersection Delay, s/v						4.9	1						С		
Multimodal Results				EB			W	В			NB			SB	
Pedestrian LOS Score	/ LOS														
Bicycle LOS Score / L	OS														

		HCS	s Sigr	nalize	a inte	ersect	ION R	esui	ts Sun	nmary	/				
Concretinform	ation							T	Intersec	tion Inf	ormotic		1.	l at stada t .	h L
General Inform	ation											-	- 1	444	
Agency		TMS Engineers, Inc).		·				Duration		0.250				×
Analyst		ABC				e Aug 9			Area Typ	be	Other				
Jurisdiction		Ashville, OH		Time F		PM Pe	eak		PHF		0.98			w + e 8	÷ →
Urban Street		US 23				· 2044			Analysis	Period	1> 7:(00			4
Intersection		@ SR 752		File Na	ame	4_PM	44NB 2	23-752	.xus					517	
Project Descrip	tion	No-Build Conditions	5										9	14 1 4 Y	۲ŕ
Demand Inform	nation				EB			W	3		NB			SB	
Approach Move				L	T	R	L	Т	-	L	T	R	L	T	R
Demand (v), v				45	55	81	220		_	74	1320	_	113	2067	55
Signal Informa	tion				5	215	11		5						
Cycle, s	100.0	Reference Phase	2		2		51	r 🛱 s	è				Ψ.	-	-
Offset, s	0	Reference Point	End	Green	7.0	0.4	52.9	20.	1 0.0	0.0	_	1	2	3	
Uncoordinated	No	Simult. Gap E/W	On	Yellow		0.4	5.2	3.9		0.0					\rightarrow
Force Mode	Fixed	Simult. Gap N/S	On	Red	3.0	0.0	1.0	3.0		0.0		5	6	7	8
Timer Results				EBI	-	EBT	WB	L	WBT	NB	L	NBT	SBI	-	SBT
Assigned Phase	e					4			8	5		2	1		6
Case Number						7.0			8.0	1.1		4.0	1.1		4.0
Phase Duration	•					27.0			27.0	13.5	5	59.1	13.9	•	59.5
Change Period,						6.9			6.9	6.5		6.2	7.2		6.2
Max Allow Head		,				3.2			3.2	3.1		0.0	3.1		0.0
Queue Clearan	ce Time	e (g s), s				7.2			22.1	4.0			5.0		
Green Extensio	n Time	(g _e), s				1.0			0.0	0.0		0.0	0.2		0.0
Phase Call Prol	bability					1.00			1.00	0.88	3		0.96	3	
Max Out Proba	bility					0.01			1.00	0.12	2		0.00)	
Movement Gro	oup Res	sults			EB			WB			NB			SB	
Approach Move	-			L	T	R	L	T	R	L	T	R	L	T	R
Assigned Move				7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow F), veh/h			102	83	-	355		76	776	754	115	1083	1083
		ow Rate (<i>s</i>), veh/h/l	n		1535	1585		1437		1626	1707	1636	1668	1752	1736
Queue Service			••		0.0	4.4		14.9		2.0	39.2	40.3	3.0	53.3	53.3
Cycle Queue C		- ,			5.2	4.4		20.1	_	2.0	39.2	40.3	3.0	53.3	53.3
Green Ratio (g		5 mile (9 c), c			0.20	0.20		0.20	_	0.60	0.53	0.53	0.60	0.53	0.53
Capacity (c), v					361	319		347		186	903	865	224	933	925
Volume-to-Capa		tio (X)			0.283	0.259		1.02		0.406			0.514	1.160	1.171
	-	/In (95 th percentile	:)		0.200	0.200				0.100	0.000	0.071	0.017		
	. ,	eh/In (95 th percentie	•		3.8	3.0		20.1		1.6	23.6	23.5	2.5	58.3	59.7
		RQ) (95 th percent			0.00	0.27		0.00		0.10	0.41	0.41	0.30	0.00	0.00
Uniform Delay (,, ,			33.9	33.7	_	41.6	_	22.4	20.3	20.6	20.6	23.4	23.4
Incremental De	. ,				0.2	0.2		54.0		0.5	10.5	11.7	0.7	83.9	88.4
Initial Queue De		·			0.2	0.2		0.0		0.0	0.0	0.0	0.7	0.0	00.4
Control Delay (· ·			34.0	33.8		95.6	-	22.9	30.8	32.3	21.2	107.3	111.8
Level of Service					34.0 C	55.0 C		95.6 F	-	22.9 C	30.8 C	32.3 C	21.2 C	107.3 F	F
Approach Delay				33.9		C	95.6	<u> </u>	F	31.1		C	105.	<u> </u>	F
				33.8	7				Г	31.				1	Г
Intersection De	iay, s/ve	an / LUS 				/4	1.5						E		
Multimodal Re	sults				EB			WB			NB			SB	
Pedestrian LOS		/LOS													
Bicycle LOS Sc															
,			_												

	HCS Two-Y	Way Stop-Control	Report	
General Information		Site Infor	mation	
Analyst	ABC	Intersection	SR 752 & Bus	siness Place
Agency/Co.	TMS Engineers, Inc.	Jurisdiction	Ashville, OH	
Date Performed	8/9/2022	East/West St	reet State Route 7	752
Analysis Year	2044	North/South	Street Business Plac	ce North
Time Analyzed	PM Peak	Peak Hour Fa	octor 0.83	
Intersection Orientation	East-West	Analysis Tim	e Period (hrs) 0.25	
Project Description	No-Build Conditions			
Lanes				
	17447777777777777777777777777777777777	A A A A A A A A A A A A A A A A A A A A		
Vehicle Volumes and Adju	istments			
Approach	Eastbound	Westbound	Northbound	Southbound

Approach		Eastb	ound			West	oound			North	bound			South	bound	
Movement	U	L	Т	R	U	L	Т	R	U	L	Т	R	U	L	Т	R
Priority	10	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		0	348	10		10	298	10		10	0	10		10	0	10
Percent Heavy Vehicles (%)		2				2				9	9	9		14	14	14
Proportion Time Blocked																
Percent Grade (%)										()			(C	
Right Turn Channelized																
Median Type Storage				Undi	vided											
Critical and Follow-up H	eadwa	ys														
Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.12				4.12				7.19	6.59	6.29		7.24	6.64	6.34
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.22				2.22				3.58	4.08	3.38		3.63	4.13	3.43
Delay, Queue Length, an	d Leve	l of Se	ervice													
Flow Rate, v (veh/h)		0				12					24				24	
Capacity, c (veh/h)		1187				1128					386				388	
v/c Ratio		0.00				0.01					0.06				0.06	
95% Queue Length, Q ₉₅ (veh)		0.0				0.0					0.2				0.2	
Control Delay (s/veh)		8.0	0.0	0.0		8.2	0.1	0.1			14.9				14.9	
Level of Service (LOS)		Α	А	А		A	А	A			В				В	
Approach Delay (s/veh)		0	.0			0	.4			14	1.9			14	1.9	
Approach LOS			4				Δ				3				3	

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		HCS	s Sigr	nalize	a int	ersect	ion R	esu	its S	sum	imary	/				
O a manual las farma	4!								linter		:				비행학	N.T.
General Inform	hation										-	ormatio	-	- 1	ų Ļ	1 N N
Agency		TMS Engineers, Inc	C.							ation,		0.250				R.
Analyst		ABC				e Apr 7				а Тур	e	Other		×		م ج
Jurisdiction		Ashville, OH		Time F		PM P	eak		PHF			0.88		₹	W + E 8	√
Urban Street		SR 752		-		r 2044					Period	1> 7:(00			4
Intersection	-	@ SR 316/Ashville		File Na	ame	6_PN	1 44NB 7	752-3	16.xu	s					11	
Project Descrip	tion	No-Build Conditions	\$												1414Y	h r
Demand Inform	nation				EB			W	/B		1	NB			SB	
Approach Move				L	T	R	L	-	r	R	L	T	R	L	T	R
Demand (v), v				126	242		120	22	20	130	70	200	100	120	330	168
					1							1				
Signal Informa	tion							<u>. </u>	5	215	- 20.	ù l	_		-	
Cycle, s	112.0	Reference Phase	2		F'	ſ₩.		311	2		5			A		хtх Г
Offset, s	0	Reference Point	End	Green	8.0	0.4	31.4	7.	5	1.7	40.0		1			4
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow		0.4	3.5	3.		0.0	3.5			\rightarrow		512
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	0.0	2.0	2.		0.0	2.0		5	6	7	8
Timer Results				EBI	-	EBT	WB	L	WB	ВТ	NBL	-	NBT	SBI	-	SBT
Assigned Phase	Э			5		2	1		6		3		8	7		4
Case Number				1.1		4.0	1.1	_	4.0		1.1		4.0	1.1		4.0
Phase Duration				14.9		37.3	14.		36.		13.0		45.5	14.7	7	47.3
Change Period,	•	,		5.5		6.5	6.5		6.5		5.5		6.5	6.5		6.5
Max Allow Head		,		3.1		3.1	3.1		3.1		3.1		3.1	3.1		3.1
Queue Clearan	ce Time	e (g s), s		8.8		25.6	8.4		27.	2	5.2		20.4	7.6		37.5
Green Extensio	n Time	(g _e), s		0.3		1.5	0.0		1.6	3	0.1		0.0	0.2		1.2
Phase Call Pro	bability			0.99)	1.00	0.99	9	1.0	0	0.92	2	1.00	0.99)	1.00
Max Out Proba	bility			0.00)	0.00	1.00	5	0.0	0	0.00)	1.00	0.00)	0.00
Movement Gro	un Boo	ulto			EB			W	5			NB			SB	
Approach Move	-	Suits			T	R	L	T	1	R	1	T	R		T	R
Assigned Move				5	2	12	1	6	_	16	L 3	8	18	7	4	14
Adjusted Flow F) voh/h		143	377	12	136	398		10	80	341	10	136	566	14
-		ow Rate (s), veh/h/l	n	1711	1713		1753	172		_	1753	1737		1753	1735	
Queue Service			11	6.8	23.6		6.4	25.		-	3.2	18.4		5.6	35.5	
Cycle Queue C		- /		6.8	23.6	-	6.4	25.			3.2	18.4		5.6	35.5	
		e fille (<i>g c</i>), s			0.27			0.2		_	0.43				0.36	
Green Ratio (<i>g</i> . Capacity (<i>c</i>), v				0.37 261	483		0.36 255	0.2 474			215	0.35 611		0.44	640	
Volume-to-Capa		tio (X)			<u> </u>	,	255 0.535	0.83	_					0.342	0.884	
		tio(X) /In(95 th percentile	.)	0.549	U.1 Ö2	·	0.535	0.83	00		0.370	0.558		0.342	U.004	
	<u>, ,</u>	eh/ln (95 th percentie	•	5.0	15.3		4.9	16.			2.4	12.2		4.1	21.1	
		RQ) (95 th percent	-	0.66	0.00		0.64	0.0			0.44	0.00		0.89	0.00	
Uniform Delay (, , ,		29.2	38.4		29.9	39.			26.7	30.4		22.3	34.3	
Incremental Delay	· ,			0.7	2.7		1.2	1.5			0.4	0.7		0.2	1.7	
Initial Queue De	2 1	•		0.7	0.0		0.0	0.0			0.4	0.7		0.2	0.0	
Control Delay (29.9	41.1		31.0	41.	_		27.0	31.0		22.5	36.0	
Level of Service				29.9 C	41.1 D		51.0 C	41. D	-		27.0 C	C 31.0		22.5 C	D	
Approach Delay				38.0		D	38.6		D		30.3		С	33.4		С
				30.0	,			5	D		30.3	,				0
Intersection Del	ay, s/ve	an / LUS 				ۍ 	5.2							D		
Multimodal Re	sults				EB			W	3			NB			SB	
Pedestrian LOS		/105							-							
Bicycle LOS Sc																
210,010 200 00																

Appendix J Build Capacity Analysis Worksheets - 2044

	пса	s əiyi	Idlize		ersect		esu	is Su	mmary	/				
General Information							1	Intorco	ction Inf	ormatic			백학학	ba lu
	TMS Engineers, Inc	<u>~</u>						Duratio		0.250			444	
Agency	ABC	J.	Apolyc	ie Det	e Aug 9	2022	_	Area Ty		Other		 		۲. ۲.
Analyst Jurisdiction	ABC Ashville, OH		Time F		AM P			PHF	pe	0.89		*	N w‡e	÷
Urban Street	US 23		Analys		_	eak			s Period	1> 7:0	0			÷
						44 00 7	750 14	-	s Period	127.0	0			
Intersection	@ SR 752		File Na	ame		44 23-7	'52.XI	ls						t= 17
Project Description	Build Conditions													rı
Demand Information				EB			W	В		NB			SB	
Approach Movement			L	Т	R	L	٦	R	L	Т	R	L	Т	R
Demand (v), veh/h			82	37	63	151	3	2 12	1 99	1797	293	135	1219	36
			1											
Signal Information		r	-	6		3 6	4					-+-		_
Cycle, s 120.0	Reference Phase	2	-	20	51	¤₿ °					1	\mathbf{Y}_{2}	3	-€ ₄
Offset, s 0	Reference Point	End	Green	7.1	65.7	26.9	0.0	0.0	0.0					K
Uncoordinated No	Simult. Gap E/W	On	Yellow	-	5.2	3.9	0.0				$\langle 2 \rangle$			
Force Mode Fixed	Simult. Gap N/S	On	Red	2.9	1.0	3.0	0.0	0.0	0.0	†	5	6	7	8
Timer Deculto			ГРІ		ГРТ	\\/D			ND		NDT	CDI		ODT
Timer Results Assigned Phase			EBI		EBT 4	WBI		WBT 8	NB 5		NBT 2	SBI 1		SBT 6
Case Number			<u> </u>		7.0		-		1.1		2	1.1	-	4.0
Phase Duration, s			<u> </u>		33.8		-	8.0 33.8	14.3		3.0 71.9	14.3		4.0 71.9
Change Period, (Y+R	-) -		<u> </u>		6.9		-	6.9	6.5		6.2	7.2		6.2
<u> </u>	,		<u> </u>			<u> </u>	_							
Max Allow Headway (/	· ·		<u> </u>		3.3 14.1		-	3.3 28.9	3.1		0.0	3.1		0.0
Queue Clearance Time	, _ ,					<u> </u>	_		5.3		0.0	9.0		0.0
Green Extension Time	(ge), s				1.0	<u> </u>	-	0.0	0.2		0.0	0.0		0.0
Phase Call Probability					1.00 0.01		_	1.00	0.9			0.99		
Max Out Probability					0.01			1.00	0.00	J		1.00	,	
Movement Group Res	sults			EB			WE	3		NB			SB	
Approach Movement			L	Т	R	L	Т	R	L	Т	R	L	Т	R
Assigned Movement			7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v	′), veh/h			134	71		342	2	111	2019	329	152	708	702
Adjusted Saturation Flo	ow Rate (<i>s</i>), veh/h/l	In		1133	1585		146	8	1668	1668	1610	1570	1648	1631
Queue Service Time (g s), s			0.0	4.0		14.8	3	3.3	65.7	14.0	7.0	40.9	41.0
Cycle Queue Clearanc	e Time (<i>g c</i>), s			12.1	4.0		26.9)	3.3	65.7	14.0	7.0	40.9	41.0
Green Ratio (g/C)				0.22	0.29		0.22	2	0.61	0.55	0.55	0.61	0.55	0.55
Capacity (c), veh/h				305	458		374	-	242	1826	882	153	902	893
Volume-to-Capacity Ra	atio (X)			0.439	0.154		0.91	3	0.460	1.106	0.373	0.992	0.785	0.786
Back of Queue (Q), f	t/ln (95 th percentile	*)		158.5	69.9		488	5	66.8	1422. 8	225.6	341.1	660.9	579.1
Back of Queue (Q), v	eh/In (95 th percenti	ile)		6.2	2.8		18.6	6	2.5	52.7	9.0	12.0	23.3	23.2
Queue Storage Ratio (RQ) (95 th percent	tile)		0.00	0.25		0.00)	0.15	0.89	0.14	1.55	0.00	0.00
Uniform Delay (d 1), s	/veh			40.6	31.7		46.9)	19.9	27.2	15.4	36.3	21.5	21.6
Incremental Delay (d a	2), s/veh			0.4	0.1		25.7	7	0.5	56.3	1.2	70.3	6.8	6.9
Initial Queue Delay (d	з), s/veh			0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/v	eh			40.9	31.8		72.6	6	20.4	83.4	16.7	106.6	28.3	28.5
Level of Service (LOS)				D	С		E		С	F	В	F	С	С
Approach Delay, s/veh	/LOS		37.8	;	D	72.6	6	E	71.0	3	E	36.0)	D
Intersection Delay, s/ve					58	3.0						E		
Multimodal Results				EB			WE	3		NB			SB	
Pedestrian LOS Score	/LOS													
Bicycle LOS Score / LO	DS													

	HCS Two-'	Way Stop-Control I	Report	
General Information		Site Inform	nation	
Analyst	ABC	Intersection	SR 752 & Bus	iness Place
Agency/Co.	TMS Engineers, Inc.	Jurisdiction	Ashville, OH	
Date Performed	8/9/2022	East/West Stre	et State Route 7	52
Analysis Year	2044	North/South S	treet Business Place	e North
Time Analyzed	AM Peak	Peak Hour Fac	tor 0.84	
Intersection Orientation	East-West	Analysis Time	Period (hrs) 0.25	
Project Description	Build Conditions			
Lanes				
	J 4 4 7 4 4 7 4	A A A A A A A A A A A A A A A A A A A		
Vehicle Volumes and A	djustments			
Approach	Factbound)M/asthound	Northbound	Couthbound

venicle volumes and Auj	ustine	iits														
Approach		Eastb	ound			West	bound			North	bound			South	bound	
Movement	U	L	Т	R	U	L	Т	R	U	L	Т	R	U	L	Т	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		10	218	35		41	257	10		41	0	30		0	0	1
Percent Heavy Vehicles (%)		2				3				22	22	22		0	0	0
Proportion Time Blocked																
Percent Grade (%)										(0				0	
Right Turn Channelized																
Median Type Storage				Undi	vided											
Critical and Follow-up He	eadwa	ys														
Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.12				4.13				7.32	6.72	6.42		7.10	6.50	6.20
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.22				2.23				3.70	4.20	3.50		3.50	4.00	3.30
Delay, Queue Length, and	d Leve	l of Se	ervice													
Flow Rate, v (veh/h)		12				49					85				1	
Capacity, c (veh/h)		1242				1254					403				733	
v/c Ratio		0.01				0.04					0.21				0.00	
95% Queue Length, Q ₉₅ (veh)		0.0				0.1					0.8				0.0	
Control Delay (s/veh)		7.9	0.1	0.1		8.0	0.4	0.4			16.3				9.9	
Level of Service (LOS)		A	A	A		A	A	A			С				A	
Approach Delay (s/veh)		. 0	.4			1	.4			16	6.3			9	.9	
Approach LOS			4				A			(С				4	

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		HUS	s Sigr	ialize	a int	erseci		esu	its Su	mmar	У				
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General Inform	hation									ction In	v		- 1	_ با ل	44 M
Agency		TMS Engineers, Inc	C						Duratio		0.250				K_
Analyst		ABC		1		e Aug 9			Area Ty	ре	Other	-	×		
Jurisdiction		Ashville, OH		Time F		AM P	eak		PHF	<u> </u>	0.80		→	8	v - ¥ ←
Urban Street		SR 752				r 2044				s Period	1> 7:(00			۳ ۲
Intersection		@ SR 316/Ashville	Pike	File Na	ame	3_AM	1 44 752	-316.:	kus					<u> </u>	
Project Descrip	tion	Build Conditions												ነላ በቀጥ	ትሮ
Demand Inform	nation				EB			W	'B		NB			SB	
Approach Move	ement			L	Т	R	L	1 7	R	L	Т	R	L	Т	R
Demand (v), v				94	314	50	50	17	'1 10	0 90	210	110	260	80	127
				li-										<u> </u>	<u> </u>
Signal Informa		1	·	_		्र ह	<u> </u>	신	지 시	5a			_	ĸ	
Cycle, s	102.7	Reference Phase	2		F '	TË '	۲ I''			M2 -			€₂	3	* J *
Offset, s	0	Reference Point	End	Green	6.7	28.7	7.7	2.3					ĸ		
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow	4.5	4.5	3.5	4.	5 3.5	5 0.0				$\mathbf{\mathbf{V}}$	N 2
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	2.0	2.0	2.0) 2.0	0.0		5	6	7	8
						FFT			14/5-			NET			0.5.7
Timer Results				EBI	-	EBT	WB	L	WBT	NE		NBT	SBI	-	SBT
Assigned Phase	e			5	\rightarrow	2	1	\rightarrow	6	3		8	7	_	4
Case Number				1.1		4.0	1.1		4.0	1.		4.0	1.1		4.0
Phase Duration	•			13.2		35.2	13.2		35.1	13.		32.5	22.0		41.2
Change Period				5.5	\rightarrow	6.5	6.5		6.5	5.		6.5	6.5		6.5
Max Allow Head	2 1	·		3.1	\rightarrow	3.1	3.1		3.1	3.		3.2	3.1		3.2
Queue Clearan		1 = 7		6.9		27.7	4.6		20.7	6.		24.6	15.4		14.5
Green Extensio		(ge), s		0.0		0.9	0.0		0.0	0.0		1.3	0.1		1.3
Phase Call Pro				0.97		1.00	0.83	_	1.00	0.9		1.00	1.00		1.00
Max Out Proba	bility			1.00)	0.00	0.6	1	1.00	1.0	0	0.00	1.00)	0.00
Movement Gro	oup Res	sults			EB			WE	3		NB			SB	
Approach Move	-			L	Т	R	L	Т	R	L	Т	R	L	Т	R
Assigned Move				5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow I), veh/h		118	455		63	339)	113	400		325	259	
-		ow Rate (<i>s</i>), veh/h/l	n	1725	1767		1711	168		1781	1761		1767	1671	
Queue Service		, ,		4.9	25.7		2.6	18.		4.7	22.6		13.4	12.5	
Cycle Queue C		- ,		4.9	25.7		2.6	18.		4.7	22.6		13.4	12.5	
Green Ratio (g		(3-,,-		0.35	0.28		0.34	0.2		0.33	0.25		0.42	0.34	
Capacity (c), v				297	493		190	469		425	445		368	565	
Volume-to-Cap		ntio (X)		0.395	<u> </u>	2	0.329	0.72		0.265			0.883	0.458	
· · · ·		t/In (95 th percentile)						1						
	. ,	eh/In (95 th percenti		3.5	16.6		1.9	12.	7	3.5	14.9		11.8	8.5	
		RQ) (95 th percent		0.46	0.00		0.25	0.0		0.64	0.00		2.52	0.00	
Uniform Delay		, , ,	,	25.0	36.0		26.9	33.		25.0	37.1		24.6	26.6	
Incremental De	· ,			0.3	3.2		0.4	4.7	_	0.1	2.7		19.9	0.2	
Initial Queue De		,		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Control Delay (•		25.3	39.2		27.3	38.		25.1	39.9		44.5	26.9	
Level of Service				C	D		C	D		C	D		D	C	
Approach Delay				36.3		D	36.5		D	36.	_	D	36.7		D
Intersection De							6.5						D		
Multimodal Re	sults				EB			WE	3		NB			SB	
Pedestrian LOS	Score	/LOS													
Bicycle LOS Sc	ore / LC	DS													

		HCS	s Sigr	nalize	d Inte	ersect	ion R	esu	ts Su	mmar	/				
														4241	b. T
General Inform	nation									ction In	1		- 1	444	ta r∡
Agency		TMS Engineers, Inc).						Duratio		0.250				<u>k</u> _
Analyst		ABC				e Aug 9			Area Ty	/pe	Other	-			4- 2-
Jurisdiction		Ashville, OH		Time F		PM Pe	eak		PHF		0.98			w + e 8	<u>∳</u> ←
Urban Street		US 23				r 2044				s Period	1> 7:(00	_ F		* •
Intersection		@ SR 752		File Na	ame	4_PM	44 23-7	752.xı	IS					<u>1117</u>	
Project Descrip	tion	Build Conditions											,	ነሳ ተቀነግ	h r
Demand Inform	nation				EB			W	B		NB			SB	
Approach Move				L	T	R	L	T	1		T	R	L	T	R
Demand (v), v				45	55	81	244	3			1320	_	147	2067	55
Signal Informa	tion					215	11		2						
Cycle, s	120.0	Reference Phase	2		20		51	rĦ	è.				$\mathbf{\Psi}$	-	÷
Offset, s	0	Reference Point	End	Green	7.4	0.3	64.6	28	.1 0.0	0.0	_			5	<u>ч</u> к
Uncoordinated	No	Simult. Gap E/W	On	Yellow		0.0	5.2	3.9) 0.0	0.0		\leq			$\mathbf{\mathbf{b}}$
Force Mode	Fixed	Simult. Gap N/S	On	Red	3.0	0.0	1.0	3.0) 0.0	0.0		5	6	7	8
						EDT	14/5		MOT			NDT	0.00		0.5.7
Timer Results				EBI	-	EBT	WB		WBT	NB		NBT	SB		SBT
Assigned Phase	e			<u> </u>		4	<u> </u>	_	8	5	_	2	1	_	6
Case Number				<u> </u>		7.0	<u> </u>	_	8.0	1.1		3.0	1.1		4.0
Phase Duration		```		<u> </u>		35.0	<u> </u>	_	35.0	13.		70.8	14.2		71.1
Change Period		•				6.9		_	6.9	6.5		6.2	7.2		6.2
Max Allow Head				<u> </u>	-+	3.2	<u> </u>	\rightarrow	3.2	3.1		0.0	3.1		0.0
Queue Clearan		, = ,		<u> </u>		8.1	<u> </u>	_	30.1	4.3		0.0	6.8		0.0
Green Extensio		(ge), s		<u> </u>		1.2	<u> </u>	_	0.0	0.0		0.0	0.2		0.0
Phase Call Pro				<u> </u>	_	1.00	<u> </u>	\rightarrow	1.00	0.9			0.99		
Max Out Proba	DIIILY					0.00			1.00	0.2	2		0.00)	
Movement Gro	oup Res	ults			EB			WE	}		NB			SB	
Approach Move	ement			L	Т	R	L	Т	R	L	Т	R	L	Т	R
Assigned Move	ment			7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow I	Rate (v), veh/h			102	83		399	,	76	1347	229	150	1083	1083
		w Rate (<i>s</i>), veh/h/l	n		1507	1585		143	_	1626	1625	1610	1668	1752	1736
Queue Service					0.0	4.7		22.0)	2.3	39.2	9.2	4.8	64.9	64.9
Cycle Queue C	learance	e Time (<i>g</i> _c), s			6.1	4.7		28.1	1	2.3	39.2	9.2	4.8	64.9	64.9
Green Ratio (g					0.23	0.30		0.23	3	0.60	0.54	0.54	0.60	0.54	0.54
Capacity (c), v	/eh/h				396	468		384		160	1751	867	237	948	939
Volume-to-Cap	acity Ra	tio(X)			0.257	0.176		1.04	0	0.473	0.769	0.264	0.632	1.142	1.153
		/In (95 th percentile)		112	81.5		647.	4	57.5	586.4	155.2	96.9	1689.6	1596.9
		eh/In (95 th percenti			4.4	3.2		25.1		2.1	21.2	6.2	3.6	62.6	63.9
		RQ) (95 th percent			0.00	0.29		0.00	_	0.13	0.37	0.10	0.44	0.00	0.00
Uniform Delay		,,,			37.4	31.4		47.7	_	27.5	21.8	14.9	21.3	27.5	27.5
Incremental De	· ,				0.1	0.1		56.8	_	0.8	3.3	0.7	1.0	76.6	80.9
Initial Queue De		,			0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (,			37.5	31.5		104.		28.3	25.1	15.6	22.3	104.1	108.5
Level of Service	,				D	С		F		С	С	В	С	F	F
Approach Dela	. ,	/ LOS		34.8	3	С	104.	5	F	24.		С	100.	9	F
Intersection De						70).6						E		
Multimodal Re					EB			WE	3		NB			SB	
Pedestrian LOS															
Bicycle LOS Sc	ore / LC	DS													

		ŀ	ICS 1	ſwo-'	Way	Stop	o-Cor	ntrol	Repo	ort						
General Information							Site	Inforr	natio	n						
Analyst	ABC						Inters	ection			SR 75	2 & Bus	iness Pla	ce		
Agency/Co.	TMS	Enginee	rs, Inc.				Jurisd	liction			Ashvi	lle, OH				
Date Performed	8/9/2	022					East/\	West Stre	eet		State	Route 7	52			
Analysis Year	2044						North	n/South S	Street		Busin	ess Place	e North			
Time Analyzed	PM P	eak					Peak	Hour Fac	ctor		0.83					
Intersection Orientation	East-\	West					Analy	sis Time	Period (hrs)	0.25					
Project Description	Build	Conditio	ons													
Project Description Build Conditions																
				<u>ر</u> الج		م م Street: Ea		ት								
Vehicle Volumes and Ad	justme	nts														
Approach		Eastb	ound			West	bound			North	bound			South	bound	
Movement	U	L	Т	R	U	L	Т	R	U	L	Т	R	U	L	Т	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		0	364	27		63	315	10		26	0	27		10	0	10
Percent Heavy Vehicles (%)		2				2				9	9	9		14	14	14
Proportion Time Blocked																
Percent Grade (%)											0				0	

Undivided

4.1

4.12

2.2

2.22

76

1091

0.07

0.2

8.5

А

7.1

7.19

3.5

3.58

6.5

6.59

4.0

4.08

64

298

0.21

0.8

20.3

С

20.3

С

6.2

6.29

3.3

3.38

4.1

4.12

2.2

2.22

0

1167

0.00

0.0

8.1

А

0.0

А

0.0

А

0.0

А

Delay, Queue Length, and Level of Service

Right Turn Channelized Median Type | Storage

Base Critical Headway (sec)

Base Follow-Up Headway (sec)

95% Queue Length, Q₉₅ (veh) Control Delay (s/veh)

Follow-Up Headway (sec)

Flow Rate, v (veh/h)

Capacity, c (veh/h)

Level of Service (LOS)

Approach LOS

Approach Delay (s/veh)

v/c Ratio

Critical Headway (sec)

Critical and Follow-up Headways

2.0

А

0.8

А

0.8

А

18.5

7.1

7.24

3.5

3.63

6.5

6.64

4.0

4.13

24

291

0.08

0.3

18.5

С

6.2

6.34

3.3

3.43

		пса	s sigi	ialize		erseci	ION R	esu	ns 5	Sum	imary	,				
Conorol Inform									Inter		ion Inf				4	Ь.П.
General Inform	hation											ormatio			_ ل	
Agency		TMS Engineers, Inc			·	A 7	0000		Dura			0.250				
Analyst		ABC				e Apr 7			Area		e	Other		-	w∔e	*
Jurisdiction		Ashville, OH		Time F		PM P	eak		PHF		D · 1	0.88		₹ ₹	W + E 8	
Urban Street		SR 752				r 2044				ysis	Period	1> 7:(00			۲ ۲
Intersection		@ SR 316/Ashville	Pike	File Na	ame	6_PM	44 752	-316.:	xus					- 1	<u>1</u> †	
Project Descrip	tion	Build Conditions													ነላ ተቀነግ	P ſ
Demand Inform	nation				EB			W	/B			NB			SB	
Approach Move	ement			L	Т	R	L		Γ	R	L	Т	R	L	Т	R
Demand (v), v	eh/h			139	255	97	120	24	18	130	84	200	100	120	330	196
				li-												<u>i andre andre</u>
Signal Informa		1	r				3	4	5	Ж	- 20.	a 🛛	_	_	ĸ	\mathbf{A}
Cycle, s	129.4	Reference Phase	2		E '	R			s I		5	12 4		€₂	3	4
Offset, s	0	Reference Point	End	Green	8.0	2.2	38.0	7.8	3	2.1	48.3			<u> </u>		
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow	4.5	0.0	3.5	3.5	5	0.0	3.5		>	7		×
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	0.0	2.0	2.0)	0.0	2.0		5	6	7	8
Timer Results						EPT			WB	т	ND					CDT
				EBI 5	-	EBT 2	WB 1		<u>vvв</u> 6		NBI 3	-	NBT 8	SBI 7		SBT
Assigned Phase Case Number	5			5		4.0	1.1		6 4.0		3 1.1		8	1.1		4
Phase Duration						4.0		_				,				4.0 55.9
	•			16.7			14.5		43.5		13.3		53.8	15.4		
Change Period		,		5.5 3.1		6.5 3.1	6.5 3.1		6.5 3.1		5.5 3.1		6.5 3.1	6.5 3.1		6.5 3.1
Max Allow Head	2 1	·		3.1 10.5		30.3	9.4	_	33.4		6.4		3.1 22.7	8.4	_	3.1 45.7
		, = ,								_						
Green Extension		(<i>g</i> e), s		0.3		1.7 1.00	0.0		1.7		0.2 0.97		0.0	0.2		1.3 1.00
				0.00		0.00	1.00		0.00		0.97					
Max Out Proba	DIIILY			0.00	,	0.00	1.00	,	0.00	0	0.00)	1.00	0.00	,	0.00
Movement Gro	oup Res	ults			EB			WE	3			NB			SB	
Approach Move	ement			L	Т	R	L	Т		R	L	Т	R	L	Т	R
Assigned Move	ment			5	2	12	1	6	1	16	3	8	18	7	4	14
Adjusted Flow I	Rate (v), veh/h		158	400		136	430)		95	341		136	598	
Adjusted Satura	ation Flo	w Rate (<i>s</i>), veh/h/l	n	1711	1711	1	1753	173	3		1753	1737		1753	1725	
Queue Service	Time (g	g s), S		8.5	28.3		7.4	31.4	4		4.4	20.7		6.4	43.7	
Cycle Queue C	learance	e Time (<i>g c</i>), s		8.5	28.3		7.4	31.4	4		4.4	20.7		6.4	43.7	
Green Ratio (g				0.39	0.30		0.36	0.2	9		0.44	0.37		0.45	0.38	
Capacity (c), v	/eh/h			251	529		248	501	1		192	639		405	666	
Volume-to-Cap	acity Ra	tio (X)		0.630	0.756		0.551	0.85	7		0.498	0.533		0.337	0.898	
Back of Queue	(Q), ft	t/In (95 th percentile	:)													
Back of Queue	(Q), ve	eh/In (95 th percenti	ile)	6.4	17.6		5.8	19.0	6		3.4	13.6		4.8	25.5	
Queue Storage	Ratio (RQ) (95 th percent	tile)	0.85	0.00		0.75	0.0	D		0.62	0.00		1.03	0.00	
Uniform Delay	(d1), s	/veh		33.3	41.8		33.9	45.	1		31.3	33.3		24.6	38.7	
Incremental De	· ,			1.0	1.0		1.5	1.7	·		0.7	0.5		0.2	1.8	
Initial Queue De		•		0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0	
Control Delay (d), s/ve	eh		34.3	42.8		35.4	46.8	8		32.1	33.8		24.8	40.5	
Level of Service	e (LOS)			С	D		D	D			С	С		С	D	
Approach Dela	y, s/veh	/LOS		40.4	1	D	44.()	D		33.4		С	37.6	3	D
Intersection De	-					3	9.1							D		
Multimodal Re					EB			WE	3			NB			SB	
Pedestrian LOS																
Bicycle LOS So	ore / LC	DS														

Appendix K No-Build Capacity Analysis Worksheets - 2044 w/ Improvements

		HCS	s Sigr	nalize	d Inte	ersect	ion R	esul	ts Sun	nmary	/				
	1													. 4	5.11
General Inform	nation								Intersec		V		- 1	JIII	Street Constraints
Agency		TMS Engineers, Inc).						Duration	-	0.250				
Analyst		ABC				e Aug 9			Area Typ	e	Other			w∔e	<u>₹</u>
Jurisdiction		Ashville, OH		Time F		AM Pe	eak		PHF		0.89			W + E 8	∳ ←
Urban Street		US 23				2044 ⁻			Analysis		1> 7:(00			7 7
Intersection		@ SR 752		File Na	ame	1_AM	44NB 2	23-752	2 - IMP.xu	s				<u>1</u> 117	
Project Descrip	tion	NBC - w/ Improvem	ents											14 1 4 M	e r
Demand Inform	nation				EB			W	B		NB			SB	
Approach Move				L	T	R	1	Т	1		T	R	L	T	R
Demand (v), v				82	37	63	104	32		99	1797	_	105	1219	36
				02	01	00	101			00	1101	210	100	1210	
Signal Informa	ation				L	R.			5			1			
Cycle, s	100.0	Reference Phase	2	1	20	1 Sec		<mark>r</mark> ₩	è"			~	$\mathbf{\Psi}$	_	-
Offset, s	0	Reference Point	End	Green	67	0.2	7 1	13	.3 0.0	0.0	_	1	2	3	4
Uncoordinated	No	Simult. Gap E/W	On	Yellow		0.2	5.2	3.9		0.0					\rightarrow
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.9	0.0	1.0	3.0		0.0	7	5	6	7	8
Timer Results	e			EBL	-	EBT	WB	L	WBT	NB	L	NBT	SBI	-	SBT
Assigned Phas	e					4			8	5		2	1		6
Case Number		9				7.0			7.0	1.1		3.0	1.1		3.0
Phase Duration	tion, s					20.2			20.2	14.1	1	65.9	13.9)	65.7
Change Period	, (Y+ R	c), S				6.9			6.9	6.5		6.2	7.2		6.2
Max Allow Hea	dway(<i>I</i>	<i>MAH</i>), s				3.2			3.2	3.1		0.0	3.1		0.0
Queue Clearan	ce Time	e (g s), s				10.4			12.5	4.3			4.7		
Green Extensio	on Time	(ge),s				0.8			0.8	0.2		0.0	0.2		0.0
Phase Call Pro	bability					1.00			1.00	0.95	5		0.96	3	
Max Out Proba	bility					0.00			0.01	0.00)		0.00)	
May amont Car									•	_	ND			0.0	
Movement Gro	-	Suits			EB T	R		WE	R		NB T	R		SB T	
Approach Move				L 7		к 14	L 3	Т 8	18	L E		к 12		<u> </u>	R
) I. //-		/	4		3			5	2		1	6	16
Adjusted Flow					134	71		153	_	111	2019	276	118	1370	40
		w Rate (<i>s</i>), veh/h/l	n		1506	1585		1412	_	1668	1668	1610	1570	1569	1610
Queue Service		- ,			0.0	3.7	<u> </u>	2.1		2.3	59.7	8.4	2.7	31.4	1.0
Cycle Queue C		e Time (<i>g c</i>), s			8.4	3.7		10.5		2.3	59.7	8.4	2.7	31.4	1.0
Green Ratio (g Capacity (c), v					0.13	0.21		0.13	_	0.67	0.60	0.60	0.66	0.59	0.59
Volume-to-Cap		tio (X)			261 0.513	332 0.214		251 0.60		304 0.366	1991 1.014	961 0.288	178 0.664	1867 0.734	958 0.042
· ·		t/In(又) t/In(95 th percentile)		142.7	64.2		172.		44.5	957.8	130.7	84.9	452.2	16.2
	. ,	eh/ln (95 th percentie			142.7 5.6	2.5		6.6		1.6	35.5	5.2	3.0	452.2	0.6
		RQ) (95 th percent			0.00	0.23		0.0		0.10	0.60	0.08	0.39	0.00	0.00
Uniform Delay		,, ,	e)		41.2	32.7		42.2	_	12.8	20.2	9.8	23.9	14.6	8.4
	• •														
Incremental De					0.6	0.1		0.9		0.3	23.8	0.8	1.6	2.6	0.1
Initial Queue D		•			0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (41.8	32.9		43.1		13.1 B	43.9	10.6	25.4	17.2	8.5
Level of Service	. ,				D	C	20.0		C	B	F	В	C	B	A
Approach Dela	-			38.7		D	39.6		D	38.7		D	17.6		В
Intersection De	iay, s/ve	en / LOS 				31	.4						С		
Multimodal Re	sults				EB			WE			NB			SB	
Pedestrian LOS		/LOS													
Bicycle LOS So															
, 200 00															

		HCS	s Sigr	nalize	a inte	ersect	ION R	esu	Its Sur	nmary	/				
Concret Inform	otion								Interco	tion Inf	o renotic		1 1		b.L.
General Inforn	nation								Intersec		V		- 1	J I I I I	
Agency		TMS Engineers, Inc). 						Duration		0.250				
Analyst		ABC				e Aug 9			Area Ty	be	Other				<u> </u>
Jurisdiction		Ashville, OH		Time F		PM Pe	eak		PHF		0.98			W 🗍 E 8	*
Urban Street		US 23				· 2044			Analysis		1> 7:(00			¥ •
Intersection		@ SR 752		File Na	ame	4_PM	44NB 2	23-752	2 - IMP.xu	IS				<u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u></u>	
Project Descrip	tion	NBC - w/ Improvem	ents										7	1414Y1	۶r
Demand Inform	nation				EB			W	′B		NB			SB	
Approach Move				L	T	R	L	1		L	Т	R	L	T	R
Demand (v), v				45	55	81	220	3		74	1320	_	113	2067	55
Signal Informa	ation				L.	215	R 244		2			Ĺ	•		
Cycle, s	120.0	Reference Phase	2		20		51	r₩	è				Ψ.	_	\mathbf{A}
Offset, s	0	Reference Point	End	Green	7 /	0.2	69.7	23	.1 0.0	0.0	_	1	2	3	
Uncoordinated	No	Simult. Gap E/W	On	Yellow		0.0	5.2	3.9		0.0	-				\rightarrow
Force Mode	Fixed	Simult. Gap N/S	On	Red	3.0	0.0	1.0	3.0	0.0	0.0		5	6	7	8
	lts			1						1	_				
Timer Results	Phase			EBL	-	EBT	WB	L	WBT	NB		NBT	SBI	-	SBT
Assigned Phase	l Phase					4		_	8	5		2	1		6
Case Number	Imber					7.0		_	7.0	1.1		3.0	1.1		3.0
Phase Duration	Duration, s					30.0			30.0	13.9		75.9	14.1		76.1
Change Period	•					6.9			6.9	6.5		6.2	7.2	_	6.2
Max Allow Hea		,				3.2		_	3.2	3.1		0.0	3.1		0.0
Queue Clearan						8.1			24.5	4.1			5.2		
Green Extensio		(ge),s				1.0		_	0.0	0.0		0.0	0.2		0.0
Phase Call Pro						1.00			1.00	0.92			0.98		
Max Out Proba	bility					0.00			1.00	0.15	5		0.00)	
Movement Gro	oup Res	sults			EB			WE	3		NB			SB	í
Approach Move	-		_	L	T	R	L	Т	R	L	Т	R	L	Т	R
Assigned Move				7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow I) veh/h			102	83	-	258		76	1347	183	115	2109	56
		ow Rate (<i>s</i>), veh/h/l	n		1637	1585		136		1626	1625	1610	1668	1668	1610
Queue Service					0.0	4.9		16.4	_	2.1	35.6	6.4	3.2	69.9	1.8
Cycle Queue C		_ ,			6.1	4.9		22.5		2.1	35.6	6.4	3.2	69.9	1.8
Green Ratio (g		o nino (g c), o			0.19	0.25		0.19	_	0.64	0.58	0.58	0.64	0.58	0.58
Capacity (c), v					359	402		320		160	1889	936	263	1944	939
Volume-to-Cap		tio (X)			0.285	0.205		0.80		0.473	0.713		0.438	1.085	
		t/In (95 th percentile)		118.7	87.2		349.	_	62.8	525	106.1	56	1390.9	29.7
	. ,	eh/In (95 th percenti			4.7	3.4		13.6		2.3	19.0	4.2	2.1	51.5	1.2
	. ,	RQ) (95 th percent	,		0.00	0.31		0.00		0.14	0.33	0.07	0.25	0.00	0.00
Uniform Delay		,, .	,		41.5	35.2		48.3		28.3	18.0	11.9	16.0	25.0	10.8
Incremental De	. ,				0.2	0.1		13.3		0.8	2.3	0.5	0.4	47.7	0.1
Initial Queue D		•			0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (•			41.7	35.3		61.5		29.1	20.3	12.3	16.4	72.7	10.9
Level of Service					D	D		E	D	C	C	B	B	F	B
Approach Dela	. ,			38.8		D	54.6		D	19.8	L	B	68.3		E
Intersection De	-						3.4		_				D		_
						~							-		
Multimodal Re	sults				EB			WE	3		NB			SB	
Pedestrian LOS	S Score	/ LOS													
Bicycle LOS Sc	ore / LC	DS													

Appendix L Build Capacity Analysis Worksheets - 2044 w/ Improvements

		Jugi	lalize	u mie	ersect		esu	ns e	Sum	imary	,				
								Inter		lan Inf				I ad ada da da da da da	h. I.
General Information								<u> </u>			ormatic			JJJJ	
Agency	TMS Engineers, Inc	D.							ation,		0.250				R.
Analyst	ABC				e Aug 9				а Тур	e	Other				₹_
Jurisdiction	Ashville, OH		Time F		AM Pe	eak		PHF			0.89			W + E 8	***
Urban Street	US 23				2044			L	•	Period	1> 7:0	00			T T
Intersection	@ SR 752		File Na	ame	1_AM	44 23-7	752 -	IMP.x	us					<u> 1117</u>	
Project Description	BC w/ Improvemen	ts											5	14 1 4 1	۲ r
Demand Information	า			EB			W	/B			NB			SB	
Approach Movement			L	T	R	L		_ Г	R	L	T	R	L	T	R
Demand (v), veh/h			82	37	63	151	3	2	121	99	1797	293	135	1219	36
· · ·													<u> </u>		i and
Signal Information		1	_	5	21L	< 24 s		\geq				Ĺ			_
Cycle, s 120.		2		20		51	rĦ	6				1	\mathbf{Y}_{2}	3	-€ ₄
Offset, s 0	Reference Point	End	Green	7.8	1.8	70.7	20		0.0	0.0					K
Uncoordinated No	Simult. Gap E/W	On	Yellow	3.5	0.0	5.2	3.9	9	0.0	0.0		$\langle \langle \langle \rangle \rangle$			7
Force Mode Fixe	d Simult. Gap N/S	On	Red	3.0	0.0	1.0	3.0	0	0.0	0.0		5	6	7	8
Timer Desult			EBL		EDT)T	NIDI		NDT	0.51		ODT
Timer Results	hase			-	EBT	WB	L	WB	_	NBL		NBT	SBL		SBT
Assigned Phase	Phase				4			8	_	5		2	1		6
Case Number	per				7.0	<u> </u>	_	7.0	_	1.1		3.0	1.1		3.0
Phase Duration, s			<u> </u>		27.0		_	27.	_	14.3		76.9	16.1		78.7
Change Period, (Y+			<u> </u>		6.9	<u> </u>	\rightarrow	6.9	_	6.5		6.2	7.2		6.2
Max Allow Headway Queue Clearance Tin	、		<u> </u>		3.2 11.6		-	3.2 19.	_	3.1 5.0		0.0	3.1 8.8		0.0
	, = ,		<u> </u>		0.9		-		_	0.2		0.0	0.0		0.0
Green Extension Tim Phase Call Probabilit	, = ,		<u> </u>		1.00	<u> </u>	-	0.6		0.2		0.0			0.0
Max Out Probability	у		<u> </u>		0.01		-	1.0 0.4	_	0.90			0.99		
Max Out Probability					0.01			0.4	0	0.00	,		0.00	,	
Movement Group R	esults			EB			WE	3			NB			SB	
Approach Movement			L	Т	R	L	Т		R	L	Т	R	L	Т	R
Assigned Movement			7	4	14	3	8	· ·	18	5	2	12	1	6	16
Adjusted Flow Rate (<i>v</i>), veh/h			134	71		206	3 1	36	111	2019	329	152	1370	40
Adjusted Saturation F	Flow Rate (<i>s</i>), veh/h/l	n		1511	1585		138	1 16	610	1668	1668	1610	1570	1569	1610
Queue Service Time	(gs),s			0.0	4.3		7.9) 8	3.4	3.0	70.7	12.7	6.8	36.8	1.2
Cycle Queue Clearar	nce Time (<i>g c</i>), s			9.6	4.3		17.	5 8	3.4	3.0	70.7	12.7	6.8	36.8	1.2
Green Ratio (g/C)				0.17	0.23		0.1	7 0.	.24	0.65	0.59	0.59	0.66	0.60	0.60
Capacity (<i>c</i>), veh/h				304	368		286	3 3	89	273	1964	948	177	1896	973
Volume-to-Capacity F				0.441	0.192		0.72		349	0.408	1.028		0.857	0.722	0.042
	ft/In (95 th percentile	,		166.5			273	_	18.9	56.6	1170.3		233.3	533.3	19.8
	veh/In (95 th percenti			6.6	3.0		10.4		5.0	2.1	43.3	8.2	8.2	18.8	0.8
Queue Storage Ratio	(RQ)(95 th percent	tile)		0.00	0.27		0.0		.00	0.13	0.73	0.13	1.06	0.00	0.00
Uniform Delay (<i>d</i> 1),				45.5	37.0		48.	_	7.7	15.8	24.7	12.7	37.2	16.7	9.6
Incremental Delay (d	,			0.4	0.1		4.7	' C).2	0.4	27.8	1.0	4.6	2.4	0.1
Initial Queue Delay (,			0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s				45.9	37.1		53.	6 3	7.9	16.2	52.4	13.7	41.8	19.1	9.7
Level of Service (LOS	·			D	D		D		D	В	F	В	D	В	A
Approach Delay, s/ve	h / LOS		42.8	3	D	47.3	3	D		45.6	3	D	21.1		С
Intersection Delay, s/	veh / LOS				37	7.2							D		
				_											
Multimodal Results	(1.00			EB			WE	3			NB			SB	
Pedestrian LOS Scor															
Bicycle LOS Score /	105														

HCS	s əigr	alize	u inte	ersect	ION R	esu	its Sl	um	mary							
							Intere		ion Infi					h. I.		
										V		- 1	$\downarrow\downarrow\downarrow\downarrow\downarrow$	200 200		
-	C.									_				R.		
								Гуре	;					k _ ^A		
				_	eak								W + E 8	*		
									Period	1> 7:0	00			4		
1		File Na	ame	4_PM	44 23-7	752 -	IMP.xu	s					ה t t r			
BC w/ Improvemen	ts					_	_	_	_			9	141411	יין יי		
			EB			W	/B			NB			SB			
		L	T	R	L	1	11	R	L	T	R	L	T	R		
		45	55	81	244	3	3 1	14	74	1320	224	147	2067	55		
		10				<u>مرغ</u>	ي في			<u>i na s</u>			i and			
		-	5	4216			2				Ĺ			_		
	2		20		5.1	₽₩	è"					\mathbf{Y}_{1}	-	÷		
Reference Point	End	Green	7.3	0.4				.0	0.0	_				<u> </u>		
Simult. Gap E/W	On		3.5	0.0	5.2	3.9	90	0.0	0.0		$\langle \langle \rangle$					
Simult. Gap N/S	On	Red	3.0	0.0	1.0	3.0) 0	.0	0.0		5	6	7	8		
				FDT	14/5						NIDT	0.51		OPT		
ts ase			-		WB	└──		4						SBT		
nase					<u> </u>	\rightarrow	-	\rightarrow		\rightarrow			\rightarrow	6		
per						\rightarrow		\rightarrow						3.0		
nber ıration, s						\rightarrow		4						72.2		
,						\rightarrow		4						6.2		
, .		<u> </u>				\rightarrow		\rightarrow			0.0			0.0		
(=)						\rightarrow		+			0.0			0.0		
, = ,						\rightarrow		\rightarrow			0.0			0.0		
		<u> </u>			<u> </u>	\rightarrow		_								
				0.00		and a	1.00		0.00			0.00	,			
sults			EB			WE	3	Т		NB			SB	_		
		L	Т	R	L	Т	R	T	L	Т	R	L	Т	R		
		7	4	14	3	8	18	3	5	2	12	1	6	16		
v), veh/h			102	83		283	3 11	6	76	1347	229	150	2109	56		
,	In						_		1626					1610		
· · · ·								7	2.0					1.8		
• /			5.9	4.7				7	2.0	34.9	8.2	4.2	66.0	1.8		
			0.19	0.26		0.19	9 0.2	25	0.63	0.57	0.57	0.63	0.57	0.57		
			360	405		322	2 40	7	166	1856	919	265	1915	924		
atio(X)			0.283	0.204		0.87	6 0.2	86	0.456	0.726	0.249	0.567	1.102	0.061		
ft/In (95 th percentile	e)		113.1	82.8		391.	.7 117	.9	58.5	516.8	134.6	82.1	1405.9	28.9		
/eh/ln (95 th percent	ile)		4.5	3.3		15.2	2 4.7	7	2.1	18.7	5.4	3.0	52.1	1.2		
(RQ) (95 th percent	tile)		0.00	0.30		0.0) 0.0	0	0.13	0.32	0.08	0.37	0.00	0.00		
s/veh			39.8	33.6		47.3	2 34.	.6	26.8	18.1	12.3	17.4	24.5	10.8		
2), s/veh			0.2	0.1		21.9	9 0. ⁻	1	0.7	2.5	0.6	0.7	54.3	0.1		
1 3), s/veh			0.0	0.0		0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0		
/eh			40.0	33.7		69.	1 34.	.8	27.5	20.6	13.0	18.1	78.8	10.9		
			D	С		E	С		С	С	В	В	F	В		
n / LOS		37.2	2	D	59.1		E	Ť	19.9	,	В	73.2	2	E		
				51	.1							D				
			EB			WE	3			NB			SB			
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Appendix M Access Capacity Analysis Worksheets - 2024

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Jurisdiction Ashvi 8/9/2022 East/West Street SR 75 2024 North/South Street Propo AM Peak Peak Hour Factor 0.92 East-West Analysis Time Period (hrs) 0.25 Build Conditions U V V VINCH North Street Propo Major Street Last-West North/South Street Mainter Street Last-West VINCH Northbound U L T R U L T 1U 1 2 3 4U 4 5 6 7 8 0 0 1 0 0 1 0 1 0 1</td> <td>Site Information ABC Intersection SR 752 & Acc TMS Engineers, Inc. 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Jurisdiction Ashville, OH 8/9/2022 East/West Street SR 752 2024 North/South Street Proposed Access AM Peak Peak Hour Factor 0.92 East-West Analysis Time Period (hrs) 0.25 Build Conditions Street East-West North/South Street Street Street Street Street Street Street 0.92 Street Street 0.92 East-West Analysis Time Period (hrs) 0.25 Street Street Street Street Street Stree</td> <td>Site Information ABC Intersection SR 752 & Access TMS Engineers, Inc. Jurisdiction Ashville, OH 8/9/2022 East/West Street SR 752 U U SR 752 2024 North/South Street Proposed Access U U SR 752 U U U U North/South Street O.92 U U U U U U U U U U U T R U U T R OU U U T R U U T <t< td=""></t<></td>	Site Information ABC Intersection SR 75 TMS Engineers, Inc. Jurisdiction Ashvi 8/9/2022 East/West Street SR 75 2024 North/South Street Propo AM Peak Peak Hour Factor 0.92 East-West Analysis Time Period (hrs) 0.25 Build Conditions U V V VINCH North Street Propo Major Street Last-West North/South Street Mainter Street Last-West VINCH Northbound U L T R U L T 1U 1 2 3 4U 4 5 6 7 8 0 0 1 0 0 1 0 1 0 1	Site Information ABC Intersection SR 752 & Acc TMS Engineers, Inc. Jurisdiction Ashville, OH 8/9/2022 East/West Street SR 752 2024 North/South Street Proposed Acc AM Peak Peak Hour Factor 0.92 East-West Analysis Time Period (hrs) 0.25 Build Conditions Street East-West North/South Street North/South Street Street East-West North Street North/South Street North/South Street Street East-West Street East-West North/South Street Street East-West Street East-West Street East-West Northbound U Northbound U Intersection of the street Street East-West Northbound U Interst Inter	Site Information ABC Intersection SR 752 & Access TMS Engineers, Inc. Jurisdiction Ashville, OH 8/9/2022 East/West Street SR 752 2024 North/South Street Proposed Access AM Peak Peak Hour Factor 0.92 East-West Analysis Time Period (hrs) 0.25 Build Conditions Vertice Vertice	Site Information ABC Intersection SR 752 & Access TMS Engineers, Inc. Jurisdiction Ashville, OH 8/9/2022 East/West Street SR 752 2024 North/South Street Proposed Access AM Peak Peak Hour Factor 0.92 East-West Analysis Time Period (hrs) 0.25 Build Conditions Street East-West North/South Street Street Street Street Street Street Street 0.92 Street Street 0.92 East-West Analysis Time Period (hrs) 0.25 Street Street Street Street Street Stree	Site Information ABC Intersection SR 752 & Access TMS Engineers, Inc. Jurisdiction Ashville, OH 8/9/2022 East/West Street SR 752 U U SR 752 2024 North/South Street Proposed Access U U SR 752 U U U U North/South Street O.92 U U U U U U U U U U U T R U U T R OU U U T R U U T <t< td=""></t<>

Flow Rate, v (veh/h)			11				72			
Capacity, c (veh/h)			1104				440			
v/c Ratio			0.01				0.16			
95% Queue Length, Q ₉₅ (veh)			0.0				0.6			
Control Delay (s/veh)			8.3	0.1			14.8			
Level of Service (LOS)			А	А			В			
Approach Delay (s/veh)			0	.5		14	.8			
Approach LOS			A	4		E	3			

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		ł	HCS ⁻	Гwo-'	Way	Stop	-Cor	ntrol	Repo	ort						
General Information							Site	Inforr	natio	n						
Analyst	ABC						Inters	ection			SR 75	2 & Acc	ess			
Agency/Co.	TMS	Enginee	rs, Inc.				Jurisd	liction			Ashvi	lle, OH				
Date Performed	8/9/2	022					East/	West Stre	eet		SR 75	2				
Analysis Year	2024						North	n/South S	Street		Propo	osed Acc	ess			
Time Analyzed	PM P	eak					Peak	Hour Fac	ctor		0.92					
Intersection Orientation	East-	West					Analy	sis Time	Period (hrs)	0.25					
Project Description	Build	Conditi	ons													
Lanes	1															
					7 4	۲ ۲ or Street: Ea	t 🎓 🏲 st-West	4 1 74 th 7 1 th								
Vehicle Volumes and Ad	justme													<u> </u>		
Approach			oound	D		1	bound	D			bound	D		1	bound	
Movement	U	L	T	R	U	L	Т 5	R 6	U	L 7	T	R	U	L 10	T	R 12
Priority Number of Lanes	1U 0	1	2	3 0	4U 0	4	5	0		0	8	9		10 0	11 0	12 0
Configuration	0	0		TR	0	LT		0		0	LR	0		0	0	0
Volume (veh/h)			315	62		17	274			27		16				
Percent Heavy Vehicles (%)			515	02		3	214			27		23				
Proportion Time Blocked						5				25		25				
Percent Grade (%)											0					
Right Turn Channelized																
Median Type Storage				Undi	vided											
Critical and Follow-up H	eadwa	vs														
Base Critical Headway (sec)		5 	1			4.1				7.1		6.2				-
Critical Headway (sec)						4.13				6.63		6.43				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.23				3.71		3.51				
Delay, Queue Length, an	d Leve	l of S	ervice					<u> </u>								
Flow Rate, v (veh/h)						18					47					
Capacity, c (veh/h)						1144					430					
v/c Ratio						0.02					0.11					
95% Queue Length, Q ₉₅ (veh)						0.0					0.4					
Control Delay (s/veh)						8.2	0.2				14.4					
Level of Service (LOS)	-										-					

Level of Service (LOS)

Approach Delay (s/veh)

Approach LOS

0.6

А

A A

В

14.4

В

Appendix N Access Capacity Analysis Worksheets - 2044

		ŀ	ICS 1	ſwo-'	Way	Stop	-Cor	ntrol	Repo	ort						
General Information		_	_	_	_	_	Site	Inforr	natio	า	_	_	_	_	_	_
Analyst	ABC						Inters	ection			SR 75	2 & Acc	ess			
Agency/Co.	TMS	Engineer	rs, Inc.				Jurisd	liction			Ashvi	lle, OH				
Date Performed	8/9/2	022					East/	West Stre	eet		SR 75	2				
Analysis Year	2044						North	n/South S	Street		Propo	sed Acc	ess			
Time Analyzed	AM P	eak					Peak	Hour Fac	tor		0.92					
Intersection Orientation	East-	West					Analy	sis Time	Period (hrs)	0.25					
Project Description	Build	Conditio	ons													
Lanes																
				L L		Y		G.								
Vehicle Volumes and Ad	justme	nts			ר ז ל Majo	or Street: Ea	st-West									
Vehicle Volumes and Ad Approach	justme		ound		ካ ተ Majo	or Street: Ea	st-West			North	bound			South	bound	
	justme		oound T	R	U	or Street: Ea		R	U	North	bound T	R	U	South	bound T	R
Approach		Eastb		R 3		or Street: Ea Westl	bound	R 6	U			R 9	U	1		
Approach Movement	U	Eastb	Т		U	Westl	bound T		U	L	Т		U	L	Т	12
Approach Movement Priority	U 1U	Eastb L 1	T 2	3	U 4U	Westl	bound T 5	6	U	L 7	Т 8	9	U	L 10	T 11	
Approach Movement Priority Number of Lanes	U 1U	Eastb L 1	T 2	3 0	U 4U	Westl L 4 0	bound T 5	6	U	L 7	T 8 1	9	U	L 10	T 11	12
Approach Movement Priority Number of Lanes Configuration	U 1U	Eastb L 1	T 2 1	3 0 TR	U 4U	Westl L 4 0 LT	T 5 1	6		L 7 0	T 8 1	9 0		L 10	T 11	12
Approach Movement Priority Number of Lanes Configuration Volume (veh/h)	U 1U	Eastb L 1	T 2 1	3 0 TR	U 4U	Westl L 4 0 LT 10	T 5 1	6		L 7 0 46	T 8 1	9 0 20	U	L 10	T 11	12
Approach Movement Priority Number of Lanes Configuration Volume (veh/h) Percent Heavy Vehicles (%) Proportion Time Blocked Percent Grade (%)	U 1U	Eastb L 1	T 2 1	3 0 TR	U 4U	Westl L 4 0 LT 10	T 5 1	6		L 7 0 46 23	T 8 1	9 0 20		L 10	T 11	12
Approach Movement Priority Number of Lanes Configuration Volume (veh/h) Percent Heavy Vehicles (%) Proportion Time Blocked Percent Grade (%) Right Turn Channelized	U 1U	Eastb L 1	T 2 1	3 0 TR 62	U 4U 0	Westl L 4 0 LT 10	T 5 1	6		L 7 0 46 23	T 8 1 LR	9 0 20		L 10	T 11	12
Approach Movement Priority Number of Lanes Configuration Volume (veh/h) Percent Heavy Vehicles (%) Proportion Time Blocked Percent Grade (%)	U 1U	Eastb L 1	T 2 1	3 0 TR 62	U 4U	Westl L 4 0 LT 10	T 5 1	6		L 7 0 46 23	T 8 1 LR	9 0 20		L 10	T 11	12
Approach Movement Priority Number of Lanes Configuration Volume (veh/h) Percent Heavy Vehicles (%) Proportion Time Blocked Percent Grade (%) Right Turn Channelized Median Type Storage		Eastb L 1 0	T 2 1	3 0 TR 62	U 4U 0	Westl L 4 0 LT 10	T 5 1	6		L 7 0 46 23	T 8 1 LR	9 0 20		L 10	T 11	12
Approach Movement Priority Number of Lanes Configuration Volume (veh/h) Percent Heavy Vehicles (%) Proportion Time Blocked Percent Grade (%) Right Turn Channelized Median Type Storage		Eastb L 1 0	T 2 1	3 0 TR 62	U 4U 0	Westl L 4 0 LT 10	T 5 1	6		L 7 0 46 23	T 8 1 LR	9 0 20		L 10	T 11	12
Approach Movement Priority Number of Lanes Configuration Volume (veh/h) Percent Heavy Vehicles (%) Proportion Time Blocked Percent Grade (%) Right Turn Channelized Median Type Storage Critical and Follow-up H Base Critical Headway (sec) Critical Headway (sec)		Eastb L 1 0	T 2 1	3 0 TR 62	U 4U 0	Westl L 4 0 LT 10 3 4.1 4.13	T 5 1	6		L 7 0 46 23 7.1 6.63	T 8 1 LR	9 0 20 23 6.2 6.43		L 10	T 11	12
Approach Movement Priority Number of Lanes Configuration Volume (veh/h) Percent Heavy Vehicles (%) Proportion Time Blocked Percent Grade (%) Right Turn Channelized Median Type Storage Critical and Follow-up H Base Critical Headway (sec) Critical Headway (sec) Base Follow-Up Headway (sec)		Eastb L 1 0	T 2 1	3 0 TR 62	U 4U 0	Westl L 4 0 LT 10 3	T 5 1	6		L 7 0 46 23 7.1 6.63 3.5	T 8 1 LR	9 0 20 23 6.2 6.43 3.3		L 10	T 11	12
Approach Movement Priority Number of Lanes Configuration Volume (veh/h) Percent Heavy Vehicles (%) Proportion Time Blocked Percent Grade (%) Right Turn Channelized Median Type Storage Critical and Follow-up H Base Critical Headway (sec) Critical Headway (sec)		Eastb L 1 0	T 2 1	3 0 TR 62	U 4U 0	Westl L 4 0 LT 10 3 4.1 4.13	T 5 1	6		L 7 0 46 23 7.1 6.63	T 8 1 LR	9 0 20 23 6.2 6.43		L 10	T 11	12
Approach Movement Priority Number of Lanes Configuration Volume (veh/h) Percent Heavy Vehicles (%) Proportion Time Blocked Percent Grade (%) Right Turn Channelized Median Type Storage Critical and Follow-up H Base Critical Headway (sec) Critical Headway (sec) Base Follow-Up Headway (sec)		Eastb L 1 0	T 2 1 403	3 0 TR 62 Undi	U 4U 0	Westl L 4 0 LT 10 3	T 5 1	6		L 7 0 46 23 7.1 6.63 3.5	T 8 1 LR	9 0 20 23 6.2 6.43 3.3		L 10	T 11	12
Approach Movement Priority Number of Lanes Configuration Volume (veh/h) Percent Heavy Vehicles (%) Proportion Time Blocked Percent Grade (%) Right Turn Channelized Median Type Storage Critical and Follow-up H Base Critical Headway (sec) Critical Headway (sec) Base Follow-Up Headway (sec)		Eastb L 1 0	T 2 1 403	3 0 TR 62 Undi	U 4U 0	Westl L 4 0 LT 10 3	T 5 1	6		L 7 0 46 23 7.1 6.63 3.5	T 8 1 LR	9 0 20 23 6.2 6.43 3.3		L 10	T 11	12

Flow Rate, v (veh/h)			11				72			
Capacity, c (veh/h)			1054				380			
v/c Ratio			0.01				0.19			
95% Queue Length, Q_{95} (veh)			0.0				0.7			
Control Delay (s/veh)			8.5	0.1			16.7			
Level of Service (LOS)			А	А			С			
Approach Delay (s/veh)			0	.4		16	.7			
Approach LOS			ļ	4		(2			

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			HCS 1	100-	vvay	Stop		шог	керс	אנ						
General Information							Site	Inforn	natio	n						_
Analyst	ABC						Inters	ection			SR 75	2 & Acc	ess			
Agency/Co.	TMS	Enginee	rs, Inc.				Jurisd	liction			Ashvi	lle, OH				
Date Performed	8/9/2	022					East/\	West Stre	eet		SR 75	2				
Analysis Year	2044						North	n/South S	Street		Propo	osed Acc	ess			
Time Analyzed	PM P	eak					Peak	Hour Fac	tor		0.92					
Intersection Orientation	East-	West					Analy	sis Time	Period (hrs)	0.25					
Project Description	Build	Conditio	ons													
Lanes																
				J 4 4 7 4 4 6 0	7 4	Ŷ or Street: Ea	st-West	4 174 tr								
Vehicle Volumes and Ad	justme	nts														
Approach		Eastb	bound			West	bound			North	bound			South	bound	
Movement	U	L	Т	R	U	L	Т	R	U	L	Т	R	U	L	Т	R
Priority	10	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)	_		365	62		17	364			27		16				
Percent Heavy Vehicles (%)						3				23		23				
Proportion Time Blocked	_										0					
Percent Grade (%) Right Turn Channelized	_										0					
Median Type Storage				Undi	vided											
Critical and Follow-up H	leadwa	vs		ondi					<u> </u>							
		J -										-	1	1		-
Base Critical Headway (sec)						<u>4</u> 1				71	1	62				
Base Critical Headway (sec)						4.1 4.13				7.1 6.63		6.2				
Critical Headway (sec)						4.13				6.63		6.43				
Critical Headway (sec) Base Follow-Up Headway (sec)						4.13 2.2				6.63 3.5		6.43 3.3				
Critical Headway (sec) Base Follow-Up Headway (sec) Follow-Up Headway (sec)	nd Leve	l of Se	ervice			4.13				6.63		6.43				
Critical Headway (sec) Base Follow-Up Headway (sec)	nd Leve	l of Se	ervice			4.13 2.2				6.63 3.5	47	6.43 3.3				
Critical Headway (sec) Base Follow-Up Headway (sec) Follow-Up Headway (sec) Delay, Queue Length, ar	nd Leve	l of Se	ervice			4.13 2.2 2.23				6.63 3.5	47	6.43 3.3				
Critical Headway (sec) Base Follow-Up Headway (sec) Follow-Up Headway (sec) Delay, Queue Length, ar Flow Rate, v (veh/h)	nd Leve	l of Se	ervice			4.13 2.2 2.23 18				6.63 3.5		6.43 3.3				
Critical Headway (sec) Base Follow-Up Headway (sec) Follow-Up Headway (sec) Delay, Queue Length, ar Flow Rate, v (veh/h) Capacity, c (veh/h)	nd Leve	l of Se	ervice			4.13 2.2 2.23 18 1092				6.63 3.5	359	6.43 3.3				
Critical Headway (sec) Base Follow-Up Headway (sec) Follow-Up Headway (sec) Delay, Queue Length, ar Flow Rate, v (veh/h) Capacity, c (veh/h) v/c Ratio	nd Leve	l of Se	ervice			4.13 2.2 2.23 18 1092 0.02	0.2			6.63 3.5	359 0.13	6.43 3.3				

Approach Delay (s/veh)

Approach LOS

0.5

А

16.5

С

Appendix O ODOT Turn Lane Warrant Graphs

AUXILLIAR PRO	Y TURN			TS			
1. Client	POG	GEMEYER DE	SIGN GROUI	þ			
2. Job Number		22-02	9				
3. Jurisdiction		Ashville,	OH				
4. Name of roadway where turn lanes are to be analyzed	SR 7	752 @ PROPC	SED ACCESS	5			
5. Roadway speed limit		55					
6. Number of Lanes		2					
7. Analysis Condition (Year / Build)	2024 E	BUILD					
8. Direction of Roadway		EB/WB					
9. Direction of Side Street Approach		NB					
10. Is the Roadway Divided or Undivided		Undivided					
11. Enter Volume Data for Intersection							
Dight Turn	Diaht	EASTBOU Thru		ina			
- Right Turn AM	Right 62	353	Advano 415	-			
PM	62	315	377				
		0.000					
- Left Turn	WESTB Left	OUND Thru	EASTBO Thru		Advancing	Opposing	LT%
- Left Turn AM	10	198	353	Right 62	Advancing 208	Opposing 415	4.8%
PM	10	274	315	62	200	377	4.8% 5.8%
	17	2/4	515	52	251	511	5.070

Notes:

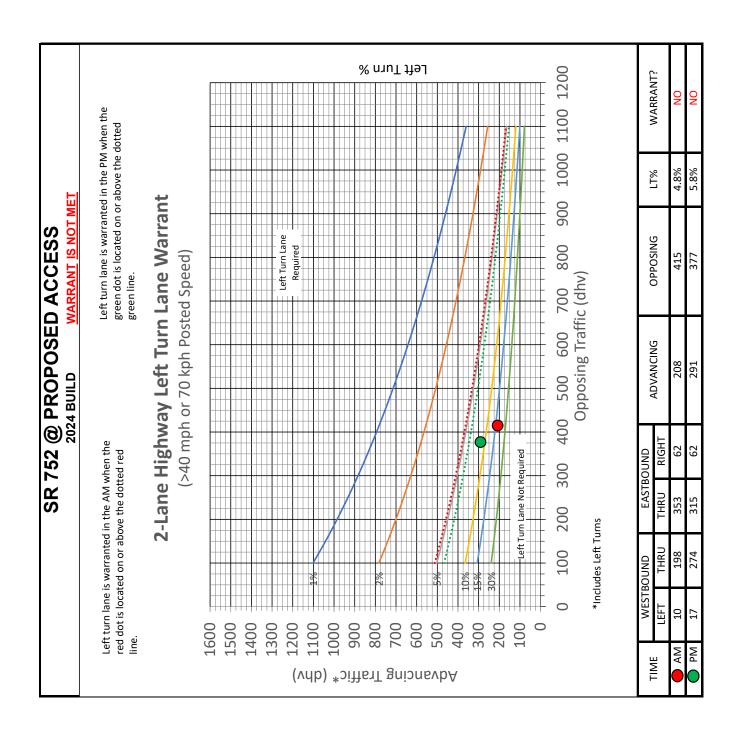
1. Analyst to fill in all blue areas.

2. Green areas are calculated for the analyst

2-LANE LEFT TURN LANE WARRANT (HIGHSPEED)

REFERENCE SECTION 401.6.1

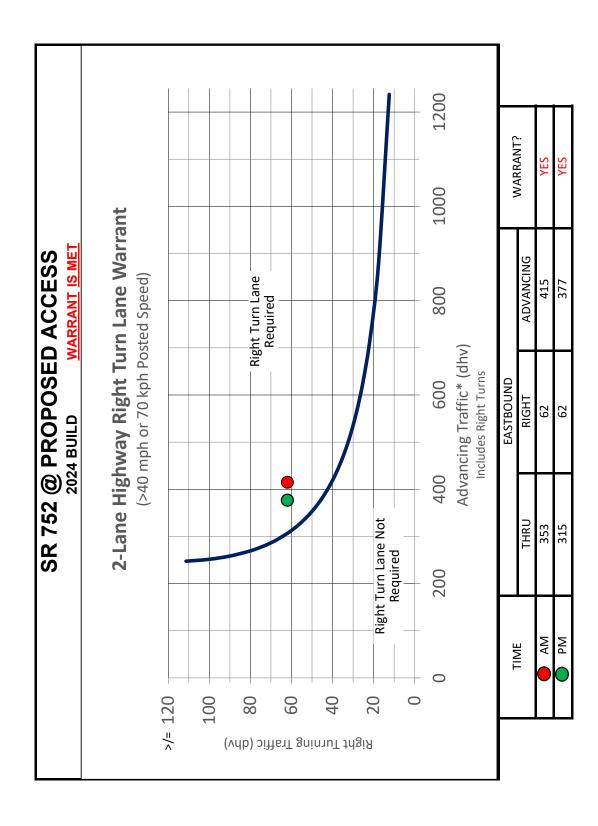
401-5bM



2-LANE RIGHT TURN LANE WARRANT (HIGH SPEED)

401-6bM REFERENCE SECTION

401.6.3



		ORMATIC)N	TS			
1. Client	POG	GEMEYER DES	SIGN GROUP				
2. Job Number		22-02	9				
3. Jurisdiction		Ashville,	ОН				
4. Name of roadway where turn lanes are to be analyzed	SR 7	'52 @ PROPO	SED ACCESS				
5. Roadway speed limit		55					
6. Number of Lanes		2					
7. Analysis Condition (Year / Build)	2044 B	UILD					
8. Direction of Roadway		EB/WB					
9. Direction of Side Street Approach		NB					
10. Is the Roadway Divided or Undivided		Undivided					
11. Enter Volume Data for Intersection							
- Right Turn	Right	EASTBOL Thru	Advanci	inσ			
AM	62	403	465	0			
PM	62	365	427				
	WESTBO	סואדוכ	EASTBOL				
- Left Turn	Left	Thru		Right	Advancing	Opposing	LT%
AM	10	258	403	62	268	465	3.7%
PM	17	364	365	62	381	427	4.5%

Notes:

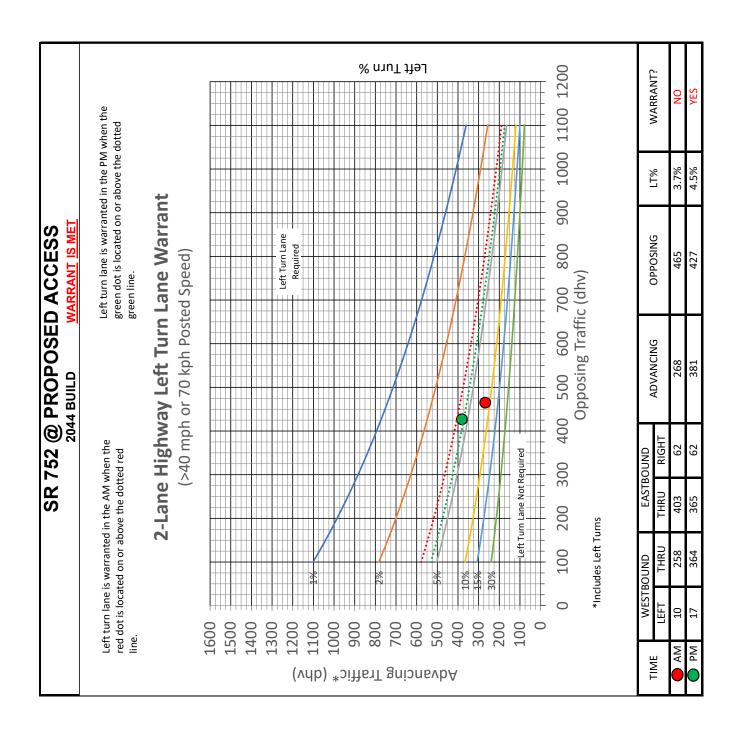
1. Analyst to fill in all blue areas.

2. Green areas are calculated for the analyst

2-LANE LEFT TURN LANE WARRANT (HIGHSPEED)

REFERENCE SECTION 401.6.1

401-5bM



2-LANE RIGHT TURN LANE WARRANT (HIGH SPEED)

401-6bM REFERENCE SECTION

401.6.3

