Mid-Ohio Regional Planning Commission

State Route 161 Traffic Study

Technical Memorandum

Prepared for:
City of Columbus
City of Worthington
Perry Township

October 2014

Mid-Ohio Regional Planning Commission

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Contents

Executive Summary iv
Introduction 1
Background & History 1
Land Use 2
Existing Traffic Conditions 19
Future Alternatives Analysis 26
Conclusion 51

Appendix A: SR 161 Traffic Study Committee Meeting Notes
Appendix B: 2013 Population & Employment Estimates and 2035 Population & Employment Forecasts TAZ Summary Table
Appendix C: Synchro Reports

List of Figures

Figure 1: Land Use Review Area 3
Figure 2: Updated Traffic Analysis Zone Structure 4
Figure 3: Sub-Areas 7
Figure 4: 2013 Existing Households 9
Figure 5: 2013 Existing Employment 10
Figure 6: Summary of Forecasted Population & Employment Growth 12
Figure 7: 2035 Forecasted Households 13
Figure 8: 2035 Forecast Employment 14
Figure 9: 2013-2035 Added Households 15
Figure 10: 2013-2035 Employment Growth 16
Figure 11: OSU Assumptions 18
Figure 12: Base Roadway Network 20
Figure 13: 2013 Existing Volumes 21
Figure 14: 2013 Existing Level of Service 25
Figure 15: 2035 Future Base (Alternative 00) Forecast Volumes 28
Figure 16: 2035 Alternative 01 (3 lanes) Forecast Volumes 29
Figure 17: 2035 Alternative 02 (5 lanes) Forecast Volumes 30
Figure 18: 2035 Alternative 03 (5/3 lanes) Forecast Volumes 31
Figure 19: 2035 Alternative 04 (Godown ext) Forecast Volumes 32
Figure 20: 2035 Alternative 05 (New parallel route) Forecast Volumes 33
Figure 21: 2035 Future Base (Alternative 00) LOS 39
Figure 22: 2035 Alternative 01 (3 lanes) LOS 40
Figure 23: 2035 Alternative 02 (5 lanes) LOS 41
Figure 24: 2035 Alternative 03 (5/3 lanes) LOS 42
Figure 25: 2035 Alternative 04 (Godown ext) LOS 43

List of Tables

Table 1a: 2013 Existing Delay and Level of Service without Train Blockage 22
Table 1b: 2013 Existing Delay and Level of Service with 5 Minute Train Blockage....23
Table 1c: 2013 Existing Delay and Level of Service with 10 Minute Train Blockage....24
Table 2: 2035 Forecast Volumes....27
Table 3a: 2035 Base (Alt 00) Delay and Level of Service without Train Blockage 35
Table 3b: 2035 Base (Alt 00) Delay and Level of Service with 5 Minute Train Blockage....36
Table 3c: 2035 Base (Alt 00) Delay and Level of Service with 10 Minute Train Blockage....36
Table 4: 2035 Alt 01 (3 lanes) Delay and Level of Service....37
Table 5: 2035 Alt 02 (5 lanes) Delay and Level of Service....37
Table 6: 2035 Alt 03 (5/3 lanes) Delay and Level of Service....38
Table 7: 2035 Alt 04 (Godown ext) Delay and Level of Service....38
Table 8a: Alt 01 (3 lanes) Intersection Configurations (PM Peak Hour) 45
Table 8b: Alt 01 (3 lanes) Intersection Configurations (PM Peak Hour) 46
Table 9a: Alt 02 (5 lanes) Intersection Configurations (PM Peak Hour) 47
Table 9b: Alt 02 (5 lanes) Intersection Configurations (PM Peak Hour) 48
Table 10a: Alt 03 (5/3 lanes) Intersection Configurations (PM Peak Hour)....49
Table 10b: Alt 03 (5/3 lanes) Intersection Configurations (PM Peak Hour)....50

Executive Summary

Study Purpose

The purpose of this study is to provide the Study Committee[1] the up-to-date data it needs to better understand the existing and projected traffic conditions in the State Rt. 161 corridor between State Rt. 315 and Sawmill Road (see map). This traffic data provides a starting point for discussions among the study as they decide whether to program and fund future multi-modal transportation improvements in the State Rt. 161 corridor. The traffic study does not explore alternative solutions in detail, address specifics related to the CSX railroad crossing, or make decisions regarding what types of improvements should proceed. Detailed study results are summarized in the *State Route 161 Traffic Study Technical Memorandum*, which can be accessed on MORPC's website at www.morpc.org. The conclusions of the study are summarized in this executive summary.

Existing Conditions

Using the most current data available, including traffic counts and existing land use, MORPC analyzed the existing conditions of the study corridor. The effect of a train using the at-grade railroad crossing west of Linworth Road was also examined. The analysis revealed:

- 3 out of 7 intersections operate at congested levels during peak hours, between 7:30 and 8:30 a.m. and 5:00 and 6:00 p.m.
- When a train crosses, vehicle back-ups can become as long as 5,600 ft.--more than a mile, during peak hours.
- Current traffic volumes are approaching the maximum capacity of the corridor.

Future Scenarios and Results

To gather as much information as possible, the Study Committee agreed to test the following future "what if" scenarios listed below, using a travel demand modeling software to forecast peak hour conditions based on expected population and employment growth in the area:

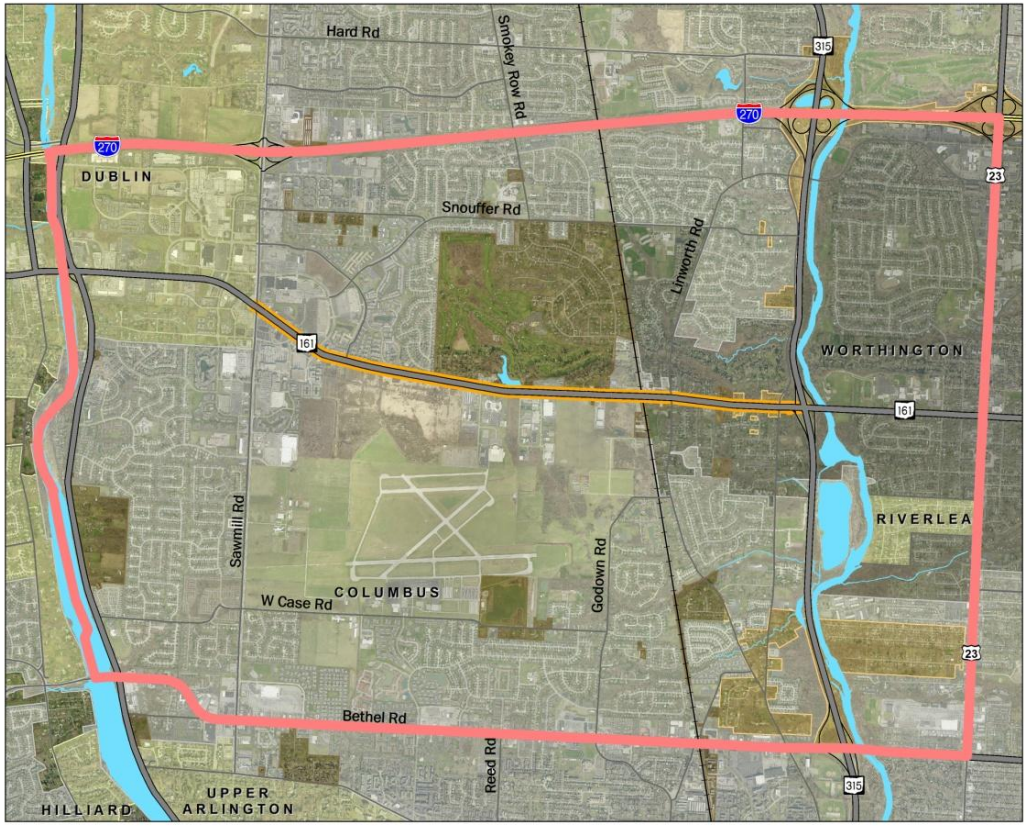
- *WHAT IF no improvements were made to the study corridor?* Volumes increase and exceed the maximum roadway capacity due to population and employment growth, and the delay at all but one intersection increases significantly.
- *WHAT IF the entire State Rt. 161 study corridor had 3 lanes?* The volumes increase slightly from the no improvement scenario and approach the maximum capacity of a 3-lane roadway. Associated intersection improvements could improve the operation of the entire corridor, however, these would likely include additional through lanes, making portions of the corridor five lanes instead of three.
- *WHAT IF the entire State Rt. 161 study corridor had 5 lanes?* This scenario generates higher volumes due to the increased attraction of the added capacity, though the volumes do not exceed the maximum capacity of a 5-lane roadway and the intersections can operate acceptably.
- *WHAT IF State Rt. 161 had 5 lanes between Sawmill and Linworth Roads and 3 lanes between Linworth Road and State Rt. 315?* Volumes are similar to the 3- and 5- lane scenarios and, like in the 3-lane scenario, improving the intersections along the corridor may help improve the overall traffic conditions.

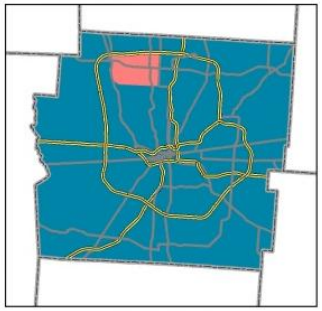
[1] Members of the MORPC State Route 161 Traffic Study include the Cities of Worthington and Columbus, Perry Township, Franklin County, Ohio State University, and Ohio Department of Transportation.

- *WHAT IF the entire State Rt. 161 study corridor had 3 lanes and Godown Road was extended to State Rt. 161?* The extension did not divert enough traffic to other routes to significantly improve the traffic conditions along the State Rt. 161 study corridor.
- *WHAT IF the entire State Rt. 161 study corridor had 3 lanes and a new, parallel road existed just north of Don Scott (OSU) Airport from Sawmill Road to Godown Road?* The new road did not provide an adequate alternate route and did not attract enough traffic to significantly improve the traffic conditions along the study corridor.

Key Findings:

- The State Rt. 161/Linworth Road intersection is the most congested, and should be considered a bottle neck of the entire corridor.
- Intersection improvements alone would reduce delay and improve traffic flow at the Linworth and Olentangy River Road intersections, but could potentially move the bottleneck to other parts of the corridor.
- No matter what improvements are made to the study corridor, the at-grade railroad crossing will continue to cause long back-ups and disrupt the function of the McVey Blvd, Linworth Road, and Olentangy River Road intersections when a train passes.





Franklin County

Roadways
- Interstate
- US or State Route
- Ramp
- County Road
- Active Railroad
- Study Corridor
- Land Use Review Area

Jurisdiction
- Columbus
- Worthington
- Other Municipalities
- Perry Township
- Sharon Township

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Introduction

The State Route (SR) 161 Traffic Study is a planning level traffic study that assesses the growth and traffic conditions along the corridor. To quantify current and forecasted traffic volumes and congestion levels, a traffic demand model was used to estimate future traffic conditions based on existing land use and projected growth in population and employment in the area. This technical memorandum summarizes the methodology and process used to develop the data variables required as inputs to the traffic demand model, and the resulting forecast traffic volumes and travel conditions for several network alternatives along the SR 161 corridor.

The SR 161 Traffic Study was a collaborative effort among the following stakeholders:

- City of Columbus
- City of Worthington
- Franklin County
- Mid-Ohio Regional Planning Commission (MORPC)
- Ohio Department of Transportation (ODOT)
- Perry Township
- The Ohio State University

Technical staff from each of these stakeholders formed a project steering committee, referred to as the SR 161 Traffic Study Committee. The Study Committee met four times throughout the development of the study to provide quality assurance and to build consensus at key decision points. The notes from these meetings are included in **Appendix A.**

The purpose of this study is to analyze how different infrastructure improvements will impact traffic throughout the corridor, and to provide the Study Committee with an idea of the order of magnitude of the transportation improvements that might be needed. This study does not explore alternative solutions in detail or make recommendations regarding what types of improvements should proceed. Should it be determined that additional study is appropriate, and extensive public engagement effort would be conducted as part of any future corridor and/or preliminary engineering study to seek timely input on the identification and selection of alternative solutions.

Background & History

SR 161 is an east-west corridor that runs parallel to I-270 North Outerbelt, just south of the outerbelt, within central Ohio. The section being studied connects the City of Dublin to the City of Worthington. Because this area experienced significant development growth in the 1990's, this section of the corridor was studied in 1994. The certified traffic data from that study showed the 1998 traffic volume estimates to be higher than the current estimated traffic volumes on the corridor. This is likely due to the congestion on I-270, which had not yet been widened. This would encourage more travel on the SR 161 corridor as an alternate route. Since then, capacity has been added to I-270 North, making it a more desirable route again, and taking traffic off of the SR 161 corridor, resulting in the lower estimated traffic volumes.

Land Use

To quantify current and forecasted traffic volumes and congestion levels, a traffic demand model was used to simulate future conditions based on projected growth in population and employment in the area. This section summarizes the methodology and process used to develop the land use data variables required as inputs to the traffic demand model.

Land Use Review Area

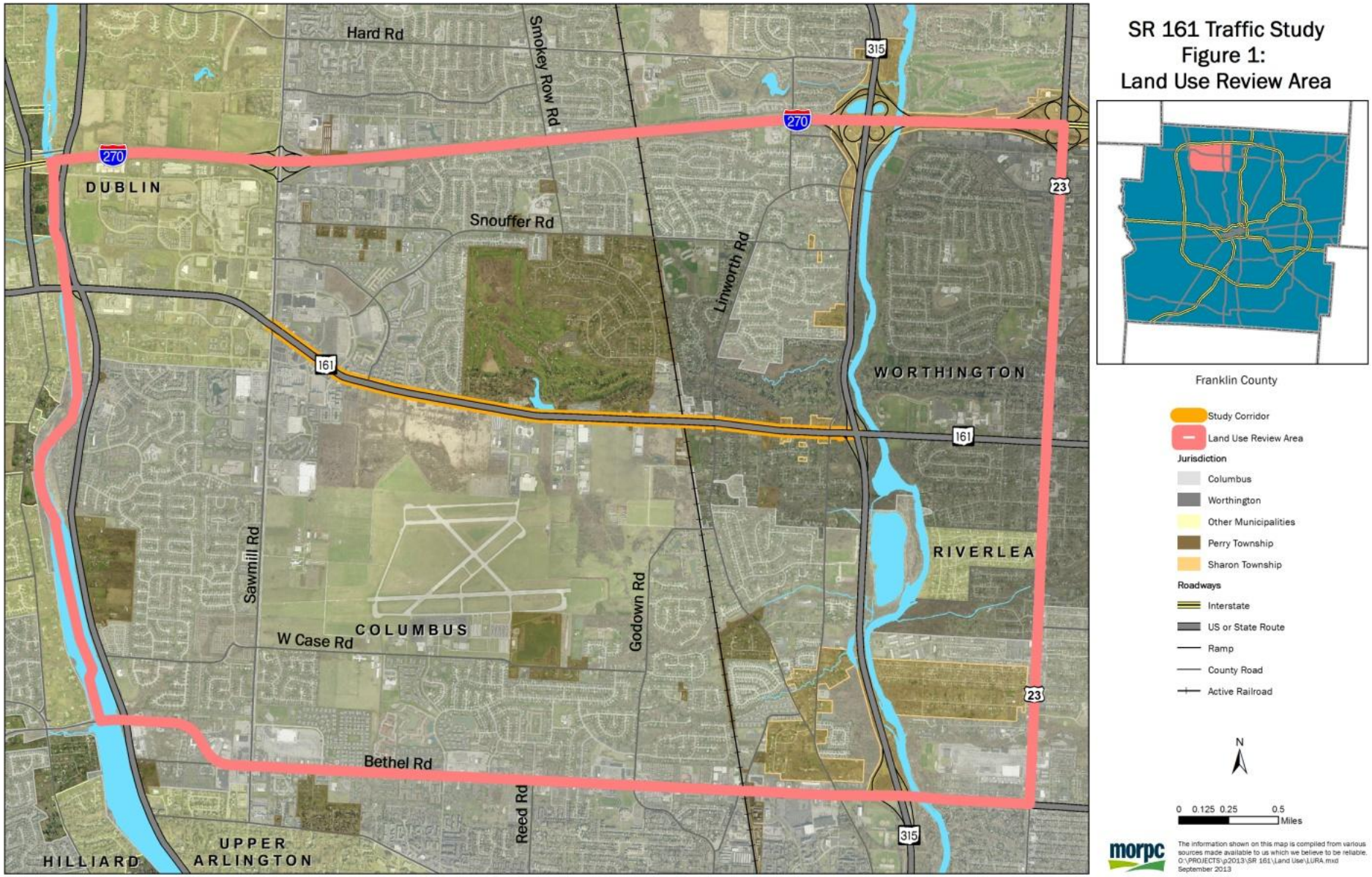
The Land Use Review Area (LURA) for this study is the area bounded on the north by I-270, on the east by US 23, on the south by Bethel Road, and on the west by the Scioto River. It is within this geographic area that population and employment data were developed. This area includes parts of the Cities of Columbus, Dublin, and Worthington, Perry and Sharon Townships, and the Village of Riverlea.

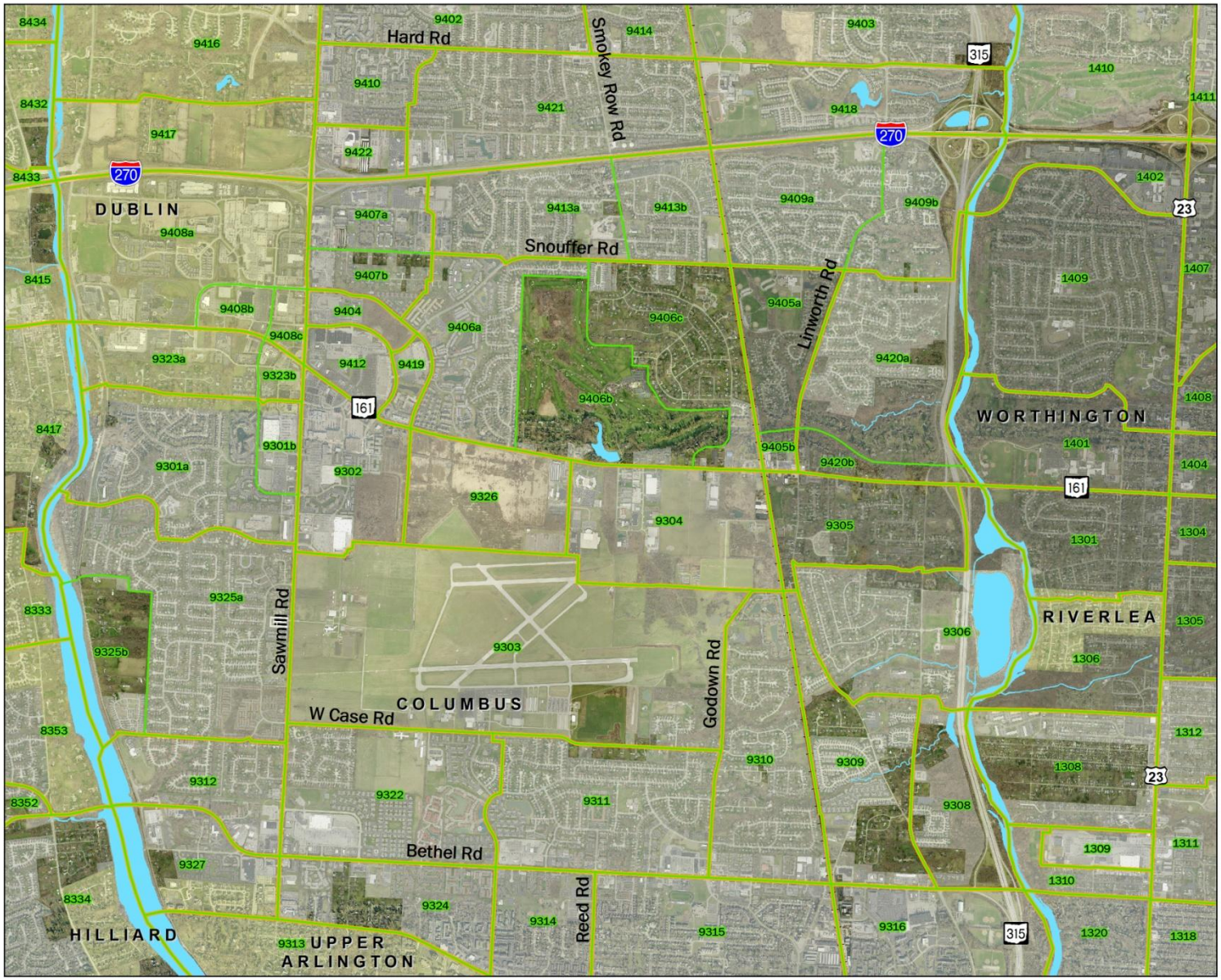
Traffic Analysis Zone Splits

A Traffic Analysis Zone (TAZ) is the geographic area used by the travel demand model. TAZs are usually bound by major roadways and other significant land barriers such as railroads or rivers. The model uses the demographic data within each zone to calculate the number of trips made from one zone to each of the other zones.

Generally, the more zones a study area has, the more useful the model may be for various planning related purposes. MORPC's regional model includes 33 TAZs in the SR 161 LURA. Because this is a study of a smaller geographic area, the zone structure was reviewed by MORPC and eight TAZ splits were made, for a total of 45 TAZs in the LURA, to provide better traffic volume projections.

Figure 1 shows the LURA boundary and **Figure 2** shows the TAZ boundaries used to develop the land use data variables.


SR 161 Traffic Study
Figure 1:
Land Use Review Area
Hard Rd
Smokey Row Rd
Snouffer Rd
Linworth Rd
DUBLIN
WORTHINGTON
RIVERLEA
COLUMBUS
Sawmill Rd
W Case Rd
Godown Rd
Bethel Rd
Reed Rd
HILLIARD
UPPER ARLINGTON
270
161
315
23
Franklin County
Study Corridor
Land Use Review Area
Jurisdiction
Columbus
Worthington
Other Municipalities
Perry Township
Sharon Township
Roadways
Interstate
US or State Route
Ramp
County Road
Active Railroad
N
0 0.125 0.25 0.5 Miles
morpc
The information shown on this map is compiled from various sources made available to us which we believe to be reliable.
O:\PROJECTS\p2013\SR 161\Land Use\LURA.mxd
September 2013



SR 161 Traffic Study
Figure 2:
Updated TAZ Structure

Jurisdiction
- Columbus
- Worthington
- Other Municipalities
- Revised TAZ Structure
- Original TAZ Structure

N

0 0.125 0.25 0.5 Miles

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September 2013

Figure 3 shows the sub areas described here.

A. Sub area A is located entirely within the City of Dublin. The existing land use here is mostly comprised of auto-oriented commercial development known as Dublin Village Center. The commercial development here is currently experiencing high vacancy rates. There are also several medium density, suburban style multi-family developments within this sub area.

   Future plans for this sub area include a mixed use development along Riverside Drive that will include 325 multi-family residential units. This sub area is also adjacent to Dublin's Bridge Street District. The Bridge Street District is where Dublin has been focusing its efforts to develop a much denser, mixed use urban environment. The development efforts focused in the Bridge Street District and along the Scioto River will likely spur redevelopment and infill in the existing commercial areas.

B. Sub area B is located in the City of Columbus and is predominantly comprised of single family residential units, with a few medium density, suburban style multi-family developments as well.

   Future development in this sub area will consist of medium-high density residential infill. 180 multi-family units are expected on a 15 acres site, and there is a proposal to develop an 11 acre site at 12-14 units per acre.

C. Sub area C is also located within the City of Columbus and is predominantly auto-oriented commercial development and multi-family residential. There are also two large tracts of protected land in this sub area. The Sawmill State Education area is 18 acres of woods and wetlands. There is also a site, approximately 35 acres, just north of Don Scott Airport that is a preserved area.

   A trend that has recently developed is the conversion of hotels into extended-stay hotel units. These function more as residential dwelling units in terms of trip generation, so an increase in residential use is assumed, as well as some redevelopment and infill of commercial uses.

D. Sub area D is the Don Scott Airport, which is owned and operated by The Ohio State University. The airport provides educational and research opportunities to the university's students and faculty, and aircraft services to central Ohio's pilots and businesses.

   The airport is assumed to remain as is in the future, with no additional development.

E. Sub area E consists mostly of medium density single- and multi-family residential, with auto-oriented commercial development along Bethel Road. Gables Elementary School is located within this sub area. There is also an undeveloped 57 acre site owned by OSU.

   For the OSU-owned parcel located in this sub area, it was assumed that it will develop at a similar density as the residential parcel adjacent to the west, with single-family

residential units. It was also assumed that employment growth would occur through intensification of the existing commercial development.

F. The majority of Sub area F is single-family residential development. Worthington's Phoenix Middle School and Bluffsview Elementary school are located in this sub area, as well as commercial development along SR 161 near Linworth Road.

   The UDF at SR 161 and Linworth Road. has plans to expand.

G. Sub area G is comprised mostly of Brookside Estates and Country Club. This is a medium-low single-family residential development surrounding a golf course. The sub area also includes some medium-density multi-family residential development along Federated Blvd.

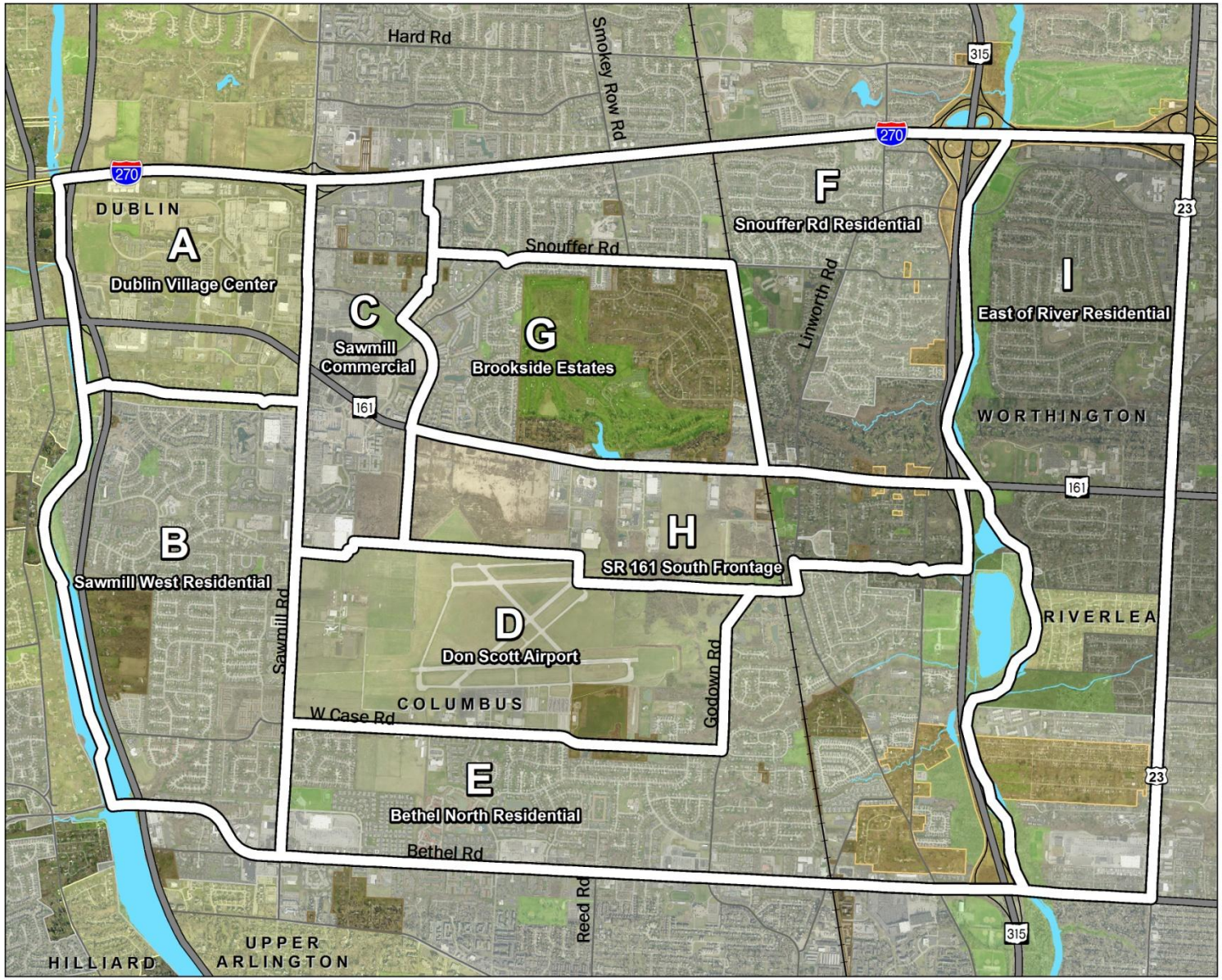
   Brookside Estates is not forecasted to grow, but a small amount of residential and commercial infill is assumed to occur to the east along Federated Blvd.

H. Sub area H contains mostly commercial and office uses fronting SR 161 to the south and medium-low density single-family residential east of the railroad tracks. A 326-unit apartment building is currently under construction. There are two vacant lots owned by OSU.

   The smaller of OSU's two vacant properties will likely develop similarly to the parcel adjacent to the west, with light industrial and service uses. On the larger of OSU's two parcels, the most likely use is development supporting industrial-aviation/aerospace employment related to OSU, the airport, and other office uses nearby. To the east of the railroad tracks, two new commercial/retail developments have been approved, as well as two new residential subdivisions.

I. Sub area I is almost all single-family residential development, except for the auto-oriented commercial development along High Street, including Graceland Shopping Center to the south and Worthington Mall to the north, and the office uses between Wilson Bridge Road. and I-270. Thomas Worthington High School, Worthingway Middle School, and the old United Methodist Children's Home are also located within this sub area.

   There is a mixed use development planned north of Wilson Bridge Road. that will include 202 residential units and 23,000 square feet of office space. Worthington Industries has bought office space north of Wilson Bridge Road, which will drive employment growth. Worthington Mall is assumed to get back to full capacity and expand slightly in the future. There are also redevelopment plans for the United Methodist Children's Home, which include a mix of residential and office uses.



SR 161 Traffic Study
Figure 3:
Sub-Areas

Jurisdiction
- Columbus
- Worthington
- Other Municipalities
- Perry Township
- Sharon Township
- Parks, Green Space, Cemeteries

Roadways
- Interstate
- US or State Route
- Ramp
- County Road
- Active Railroad

N

0 0.125 0.25 0.5 Miles

morpc

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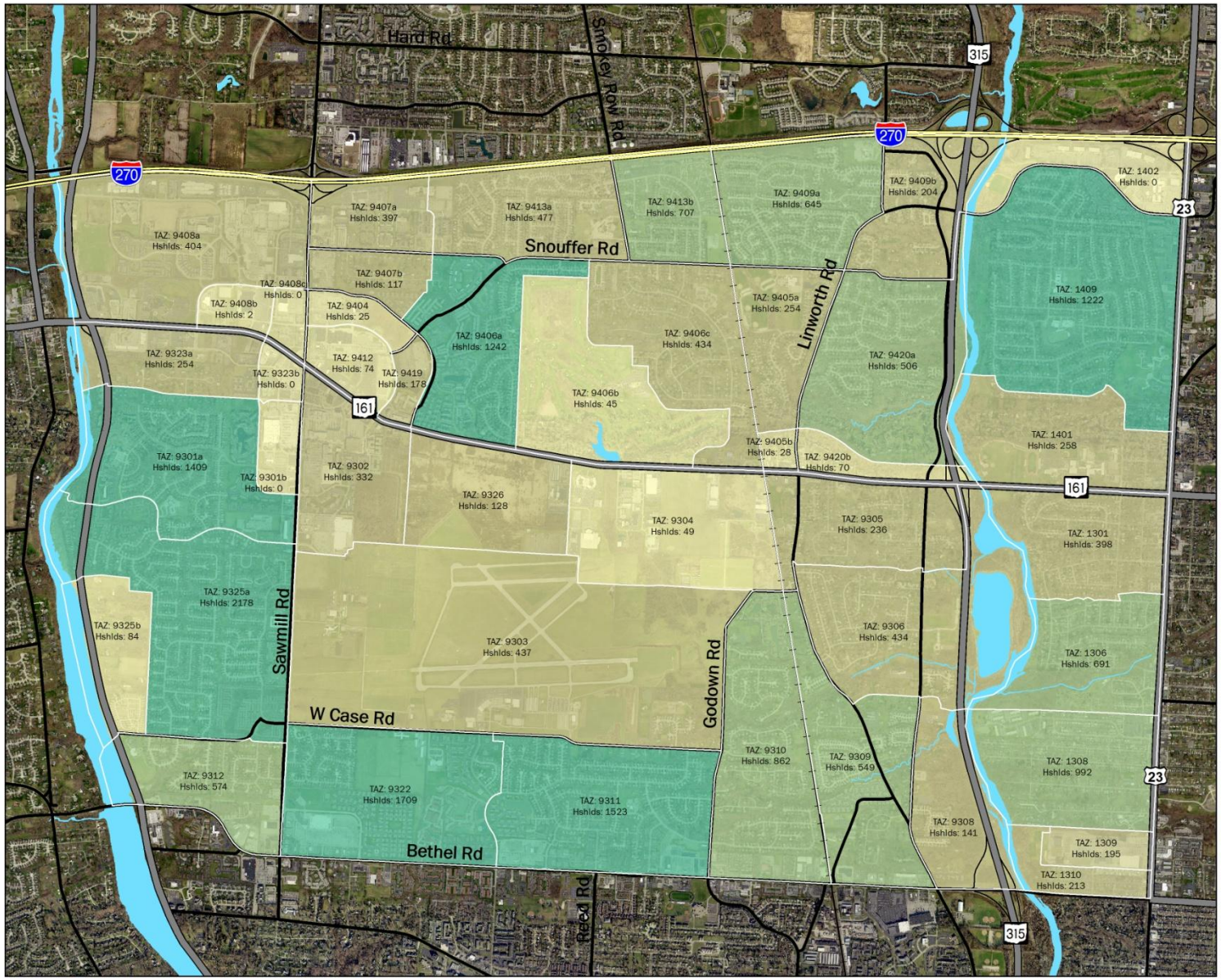
September 2013

Base Year (2013) Estimates

MORPC used the 2010 land use inventory, developed by MORPC as part of the 2012-2035 Metropolitan Transportation Plan (MTP), as a starting point for the 2013 estimates. (Refer to http://morpc.org/pdf/2012MTP_LoResVersion_May2013.pdf for documentation on how the 2010 land use inventory was developed.)

During meetings with each jurisdiction, technical staff in each community identified the location, type, and quantity of new development that had occurred between 2010 and 2013. These changes were incorporated to create 2013 TAZ level estimates. **Figure 4 and Figure 5** show the location of the existing 2013 households and employment in the LURA.



SR 161 Traffic Study
Figure 4:
2013 Existing Households

Total Households by TAZ

- 0 - 100
- 101 - 500
- 501 - 1,000
- 1,001

Roadways

- Interstate
- US or State Route
- Ramp
- County Road
- Active Railroad

N

0 0.125 0.25 0.5 Miles

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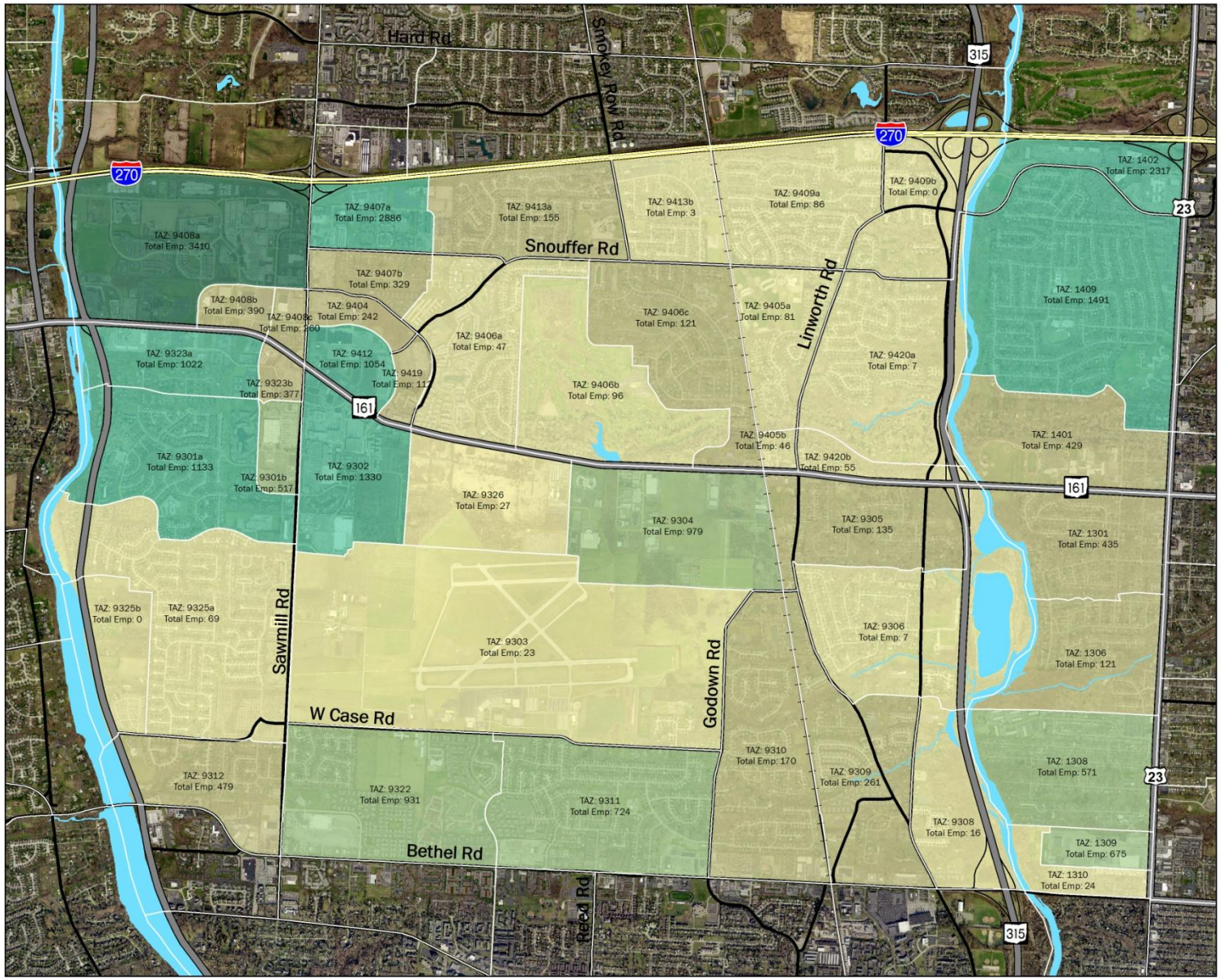
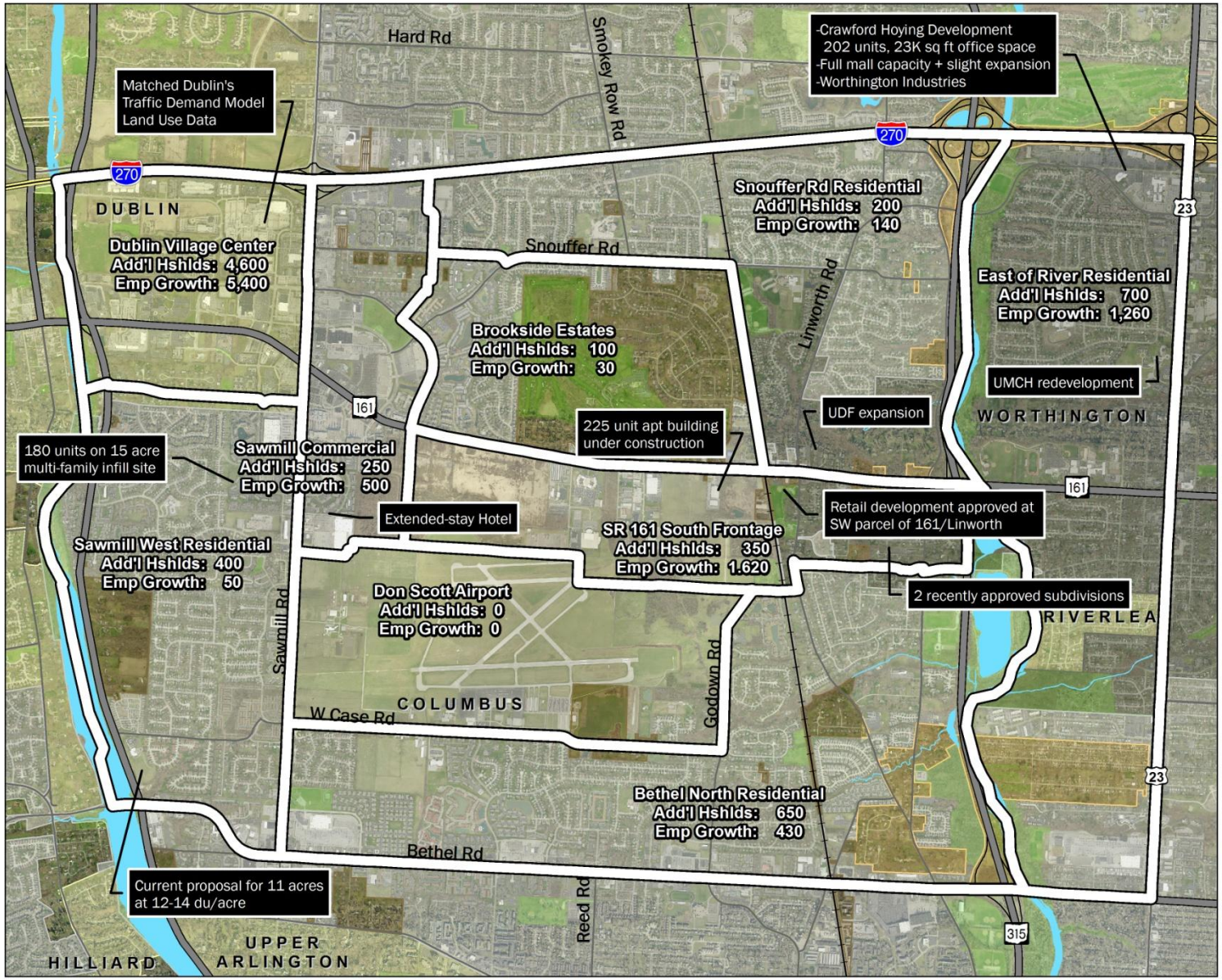


SR 161 Traffic Study
Figure 5:
2013 Existing Employment

Horizon Year (2035) Forecasts

Also as part of the 2012-2035 MTP, MORPC prepared 2035 land use forecasts for the entire region and made them available to the local communities for their review and approval. (Refer to http://morpc.org/pdf/2012MTP_LoResVersion_May2013.pdf for documentation on how the 2035 land use forecasts were developed.) MORPC convened the jurisdictions in the study area to review and provide updates to the future forecasts to reflect their current vision for development within the SR 161 corridor and the entire LURA. **Figure 6** provides a summary of the information and planned development MORPC learned about during the meetings with each of the jurisdictions that were used to prepare the 2035 forecasts for this study. Nearly half of the forecasted population and employment growth in the LURA is expected to occur in Dublin. The OSU-owned properties fronting the study corridor on the south are also expected to have significant employment growth.

Figures 7 and 8 show the resulting total 2035 households and employment forecasts by TAZ, and **Figures 9 and 10** show the increment of growth between 2013 and 2035 for households and employment by TAZ. **Appendix B** contains a TAZ level summary of each of the data variables developed as part of this effort, and to be used in the SR 161 Traffic Study.



SR 161 Traffic Study Land Use Review Area

Figure 6:
Summary of Forecasted Population & Employment Growth

Jurisdiction

- Columbus
- Worthington
- Other Municipalities
- Perry Township
- Sharon Township
- Parks, Green Space, Cemeteries

Roadways

- Interstate
- US or State Route
- Ramp
- County Road
- Active Railroad

N

0 0.125 0.25 0.5 Miles

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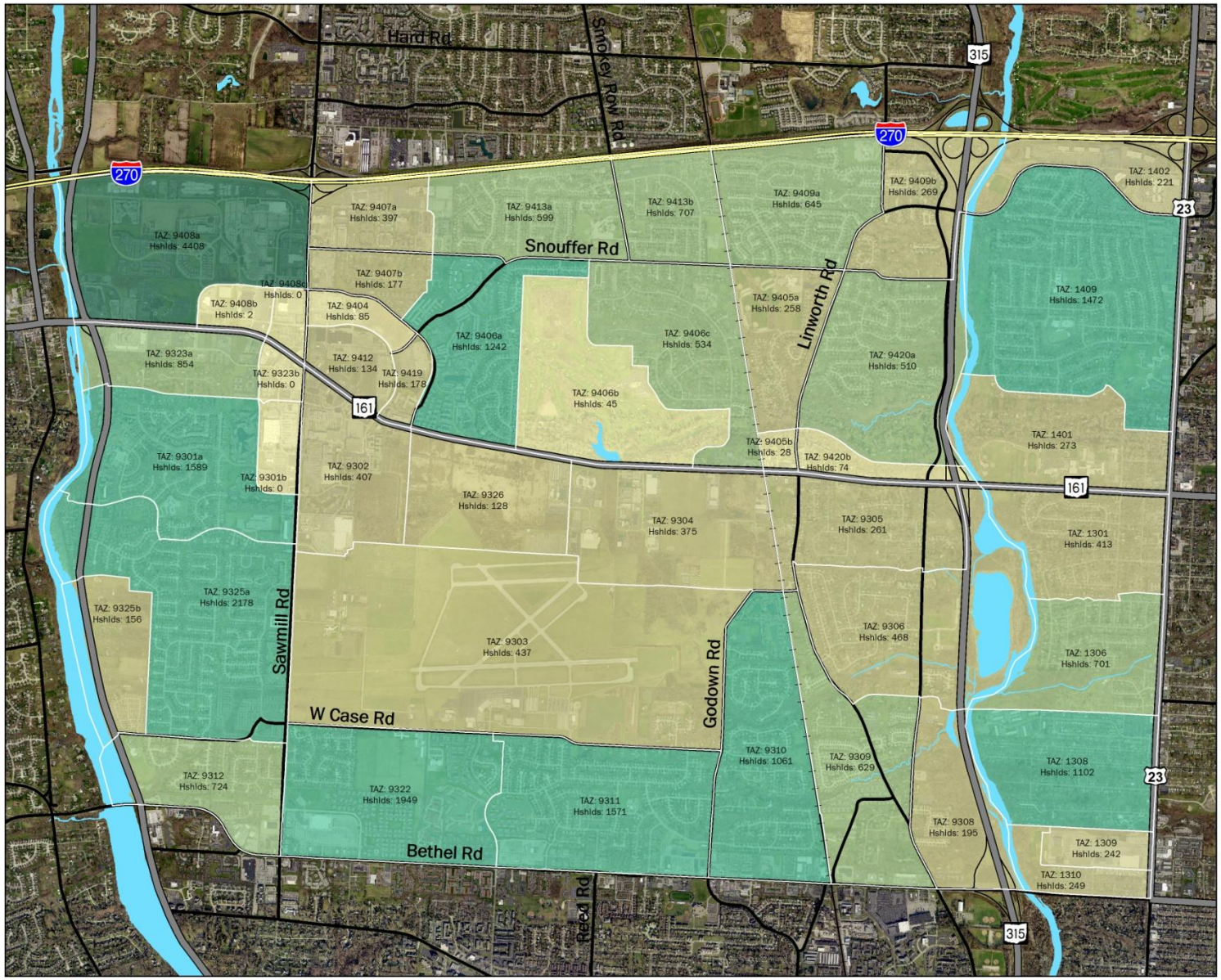

SR 161 Traffic Study
Figure 7:
2035 Forecasted Households

Total Households by TAZ

- 0 - 100
- 101 - 500
- 501 - 1,000
- 1,001 - 3,000
- 3,001 +

Roadways

- Interstate
- US or State Route
- Ramp
- County Road
- Active Railroad

N

0 0.125 0.25 0.5 Miles

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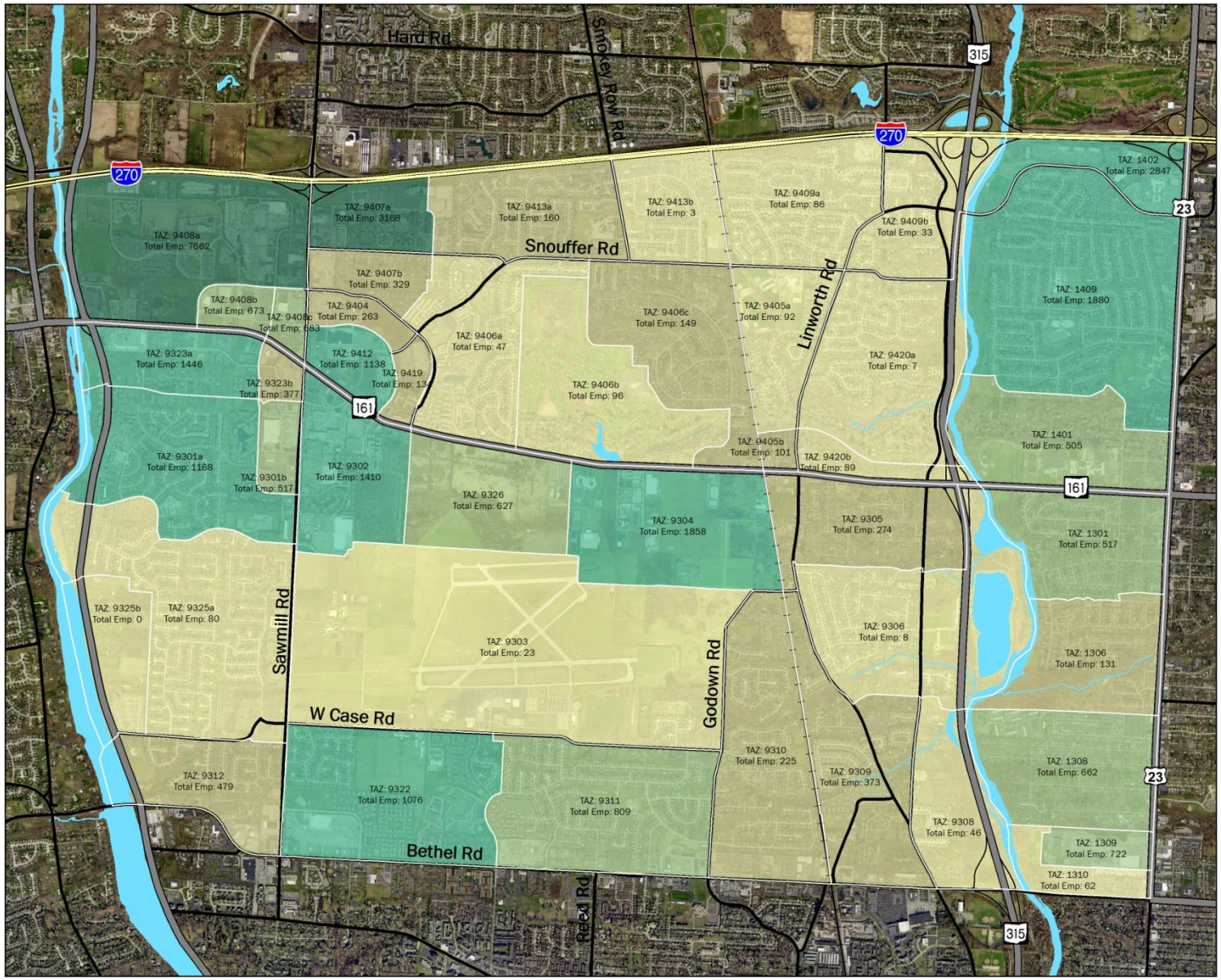


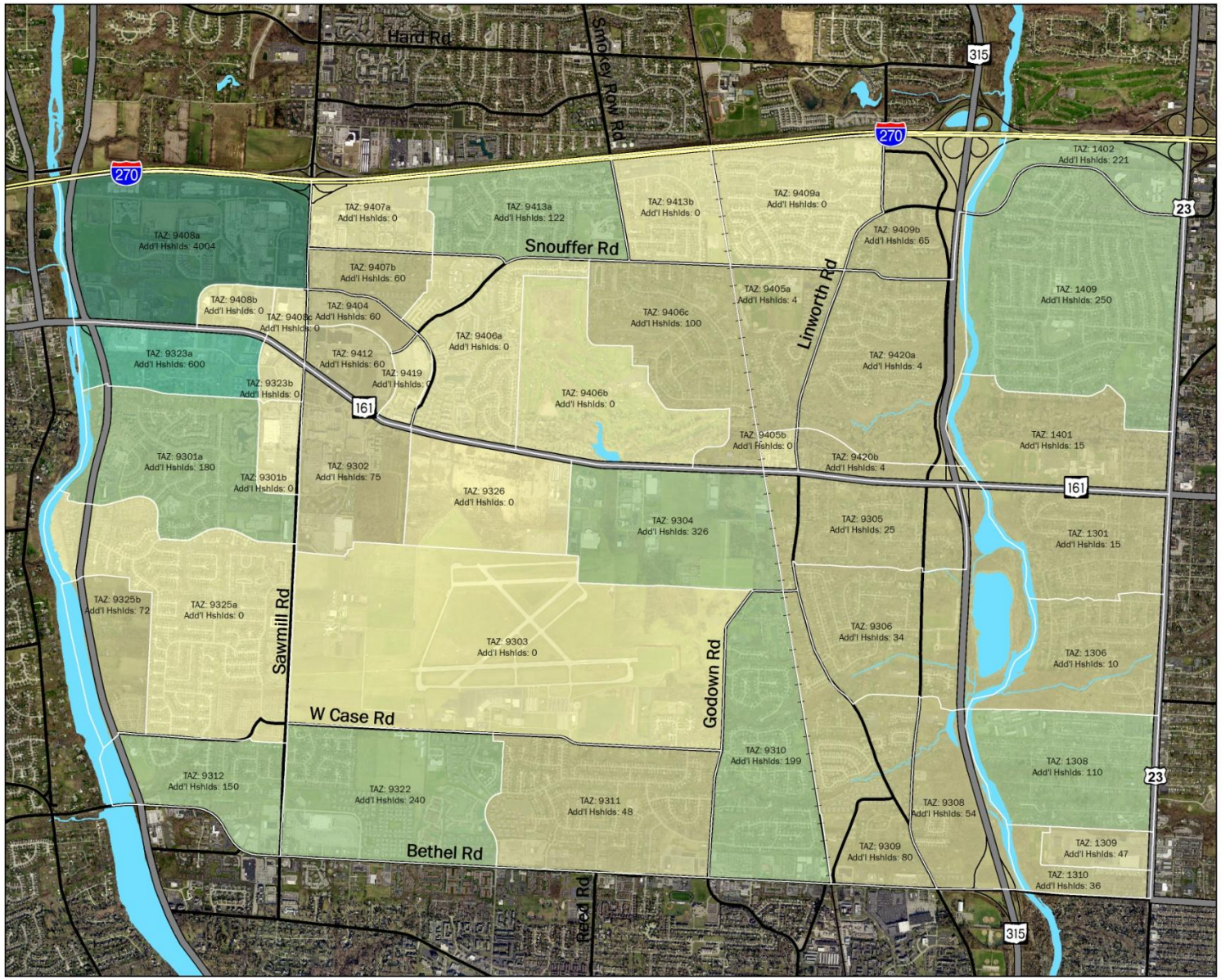
SR 161 Traffic Study
Figure 8:
2035 Forecast Employment

Total Employment by TAZ

- 0 - 100
- 101 - 500
- 501 - 1,000
- 1,001 - 3,000
- 3,001 +

Roadways

- Interstate
- US or State Route
- Ramp
- County Road
- Active Railroad



SR 161 Traffic Study
Figure 9: 2013-2035 Added Households

Additional Households by TAZ

- 0
- 1 - 100
- 101 - 500
- 501 - 1,000
- 1,001 +

Roadways

- Interstate
- US or State Route
- Ramp
- County Road
- Active Railroad

N

0 0.125 0.25 0.5 Miles

morpc

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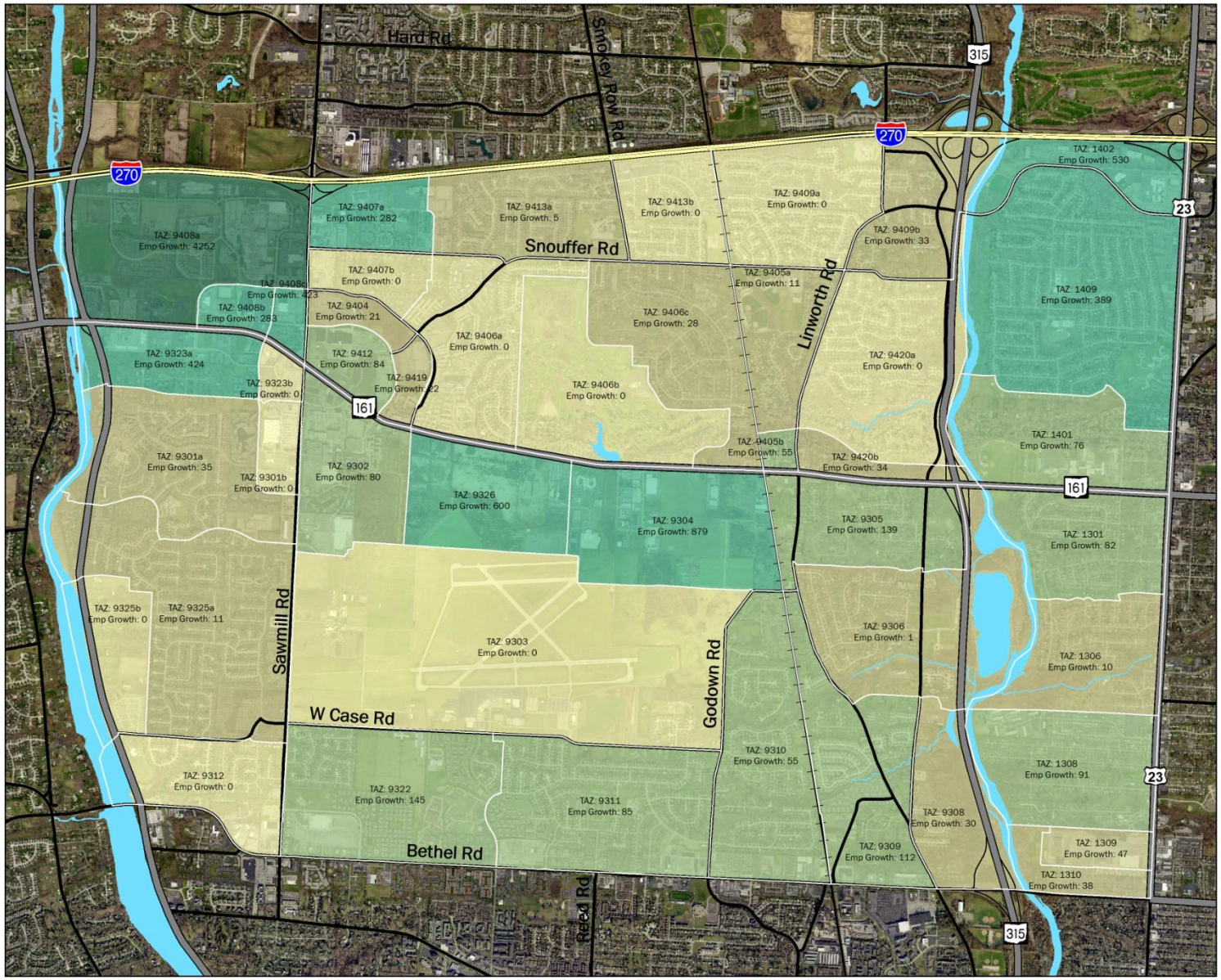

SR 161 Traffic Study
Figure 10: 2013-2035 Employment Growth

Total Employment Growth by TAZ

- 0
- 1 - 50
- 51 - 150
- 151 - 1,000
- 1,001 +

Roadways

- Interstate
- US or State Route
- Ramp
- County Road
- Active Railroad

N

0 0.125 0.25 0.5 Miles

morpc

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Ohio State University Don Scott Airport Area Development Assumptions

The Ohio State University Department of Academic Affairs & Administration has a land use study of their own underway, which includes the task of developing a conceptual future land use scenario for the Don Scott Airport and surrounding OSU-owned properties. MORPC staff consulted with OSU faculty involved in the study to develop a set of reasonable assumptions for the OSU-owned properties to be included in the study. These assumptions are summarized in **Figure 11.**

Using the Data

The 2013 population and employment estimates and 2035 population and employment forecasts resulting from the process and methodology described above were used as input data to the travel demand model. The model uses the data to project future traffic volumes on the SR 161 corridor. The resulting base year and forecasted volumes are summarized in the following sections of this document.

SR 161 Traffic Study
Figure 11:
OSU Assumptions

Jurisdiction

- Columbus
- Worthington
- Other Municipalities
- Perry Township
- Sharon Township
- Parks, Green Space, Cemeteries

Roadways

- Interstate
- US or State Route
- Ramp
- County Road
- Active Railroad

N

0 0.075 0.15 0.3 Miles

morpc

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September 2013

Existing Traffic Conditions

The study corridor--SR 161 between Sawmill Road and SR 315--is mostly a two-lane, undivided roadway. There are left turn lanes at the west end of the corridor for a 0.4 mile stretch between Sawmill Road and Federated Blvd. At the east end of the study corridor, the small section between Olentangy River Road and SR 315 has 4 lanes, plus a left turn lane. An active CSX rail line crosses the corridor at-grade, just west of the Linworth Road intersection. Approximately three daytime trains and five nighttime trains cross the study corridor daily. **Figure 12** shows the existing roadway network surrounding the study corridor as well as committed and planned improvements in the area. **Figure 13** shows the existing volumes along the study corridor.

The existing traffic conditions on the SR 161 corridor were developed using traffic counts and turning moving counts collected by the various jurisdictions within the study area. AM and PM peak hour turning movement counts (TMCs) were collected for critical intersections along the SR 161 corridor in the study area in 2013. AM and PM peak hours were identified based on the collected TMCs:

- AM peak period - 7:30 AM to 8:30 AM
- PM peak period - 5:00 PM to 6:00 PM

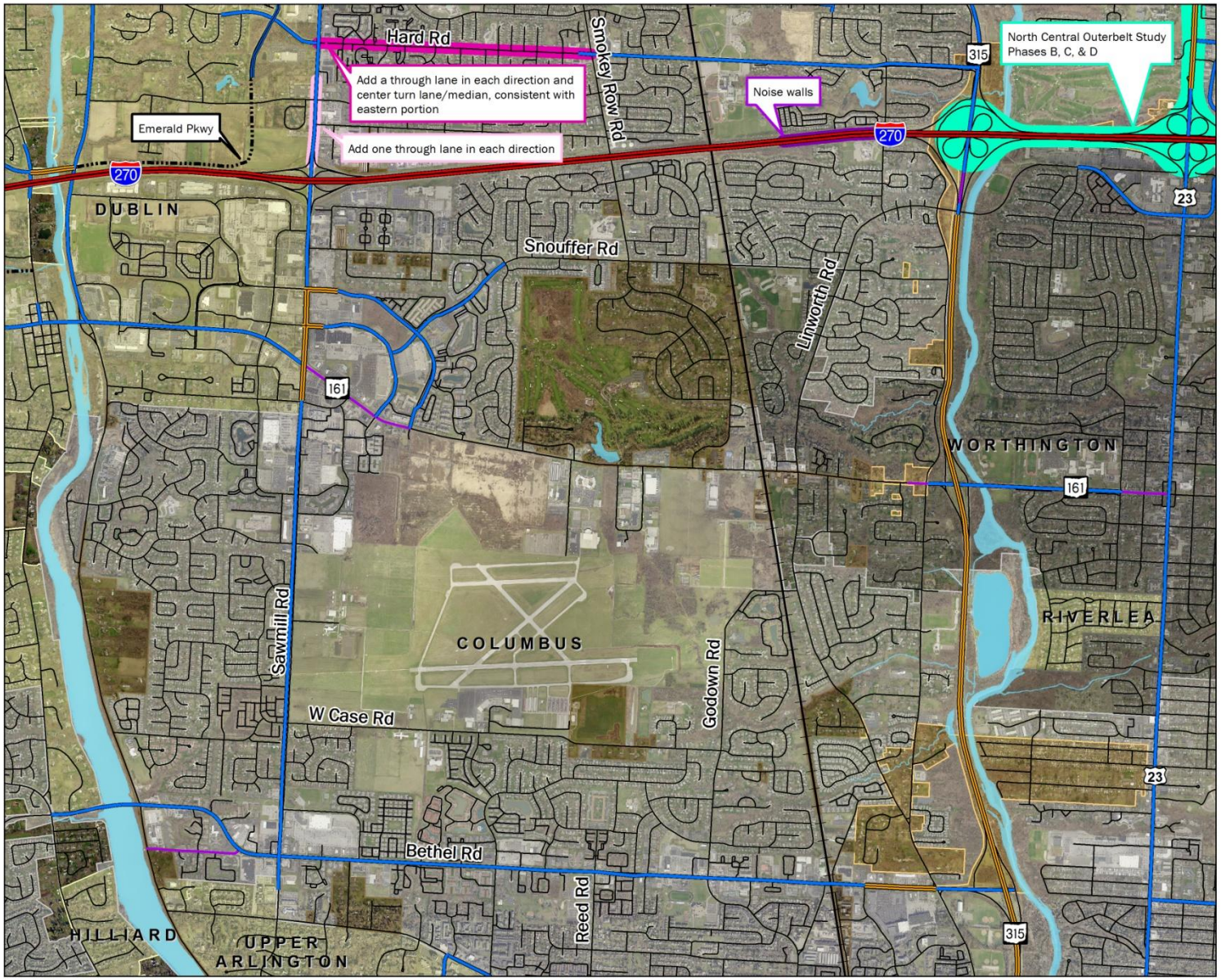
Signal timing data were obtained from ODOT and local jurisdictions along the corridor.

The traffic analysis software program Synchro and SimTraffic (version 7.0) was used for the LOS analysis. Synchro is a macroscopic model used to analyze level of services at signalized and un-signalized intersections. Detailed LOS analysis on the corridor was performed for AM and PM peak hours.

There is an at-grade railroad crossing (CSX Corporation) on SR 161, about 800 feet west of the Linworth Road intersection. Approximately three to four trains pass this railroad crossing every day, sometimes during peak hours, which significantly increases the congestion level along the corridor, especially at nearby intersections. In addition to a standard intersection analysis without train impacts, to capture the traffic effects of the railroad crossing, Sychro SimTraffic was applied to simulate the traffic conditions for the following two “train” scenarios:

- 5 minute train blockage scenario: one train passes the crossing during the analyzed peak hour and blocks SR 161 for five minutes
- 10 minute train blockage scenario: one train passes the crossing during the analyzed peak hour and blocks the SR 161 for 10 minutes

A brief summary of the analysis results is presented in the following sections. **Figure 14** maps the level of service results of the intersection analysis. Detailed Synchro reports can be found in **Appendix C**.



SR 161 Traffic Study
Figure 12:
Base Roadway Network

Number of Lanes and Roadway Type

- 8 Lanes, Freeway
- 6 Lanes
- 4 or 5 Lanes
- 3 Lanes
- 2 Lanes
- Active Railroad

Committed Improvements (14-17 TIP)

- Minor Widening/Safety Study
- Major Widening
- Noise Barrier/Streetscape/Study
- New Road
- Major Freeway Project

Jurisdiction

- Columbus
- Worthington
- Other Municipalities
- Perry Township
- Sharon Township

N

0 0.125 0.25 0.5 Miles

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The information shown on this map is compiled from various sources made available to us which we believe to be reliable.
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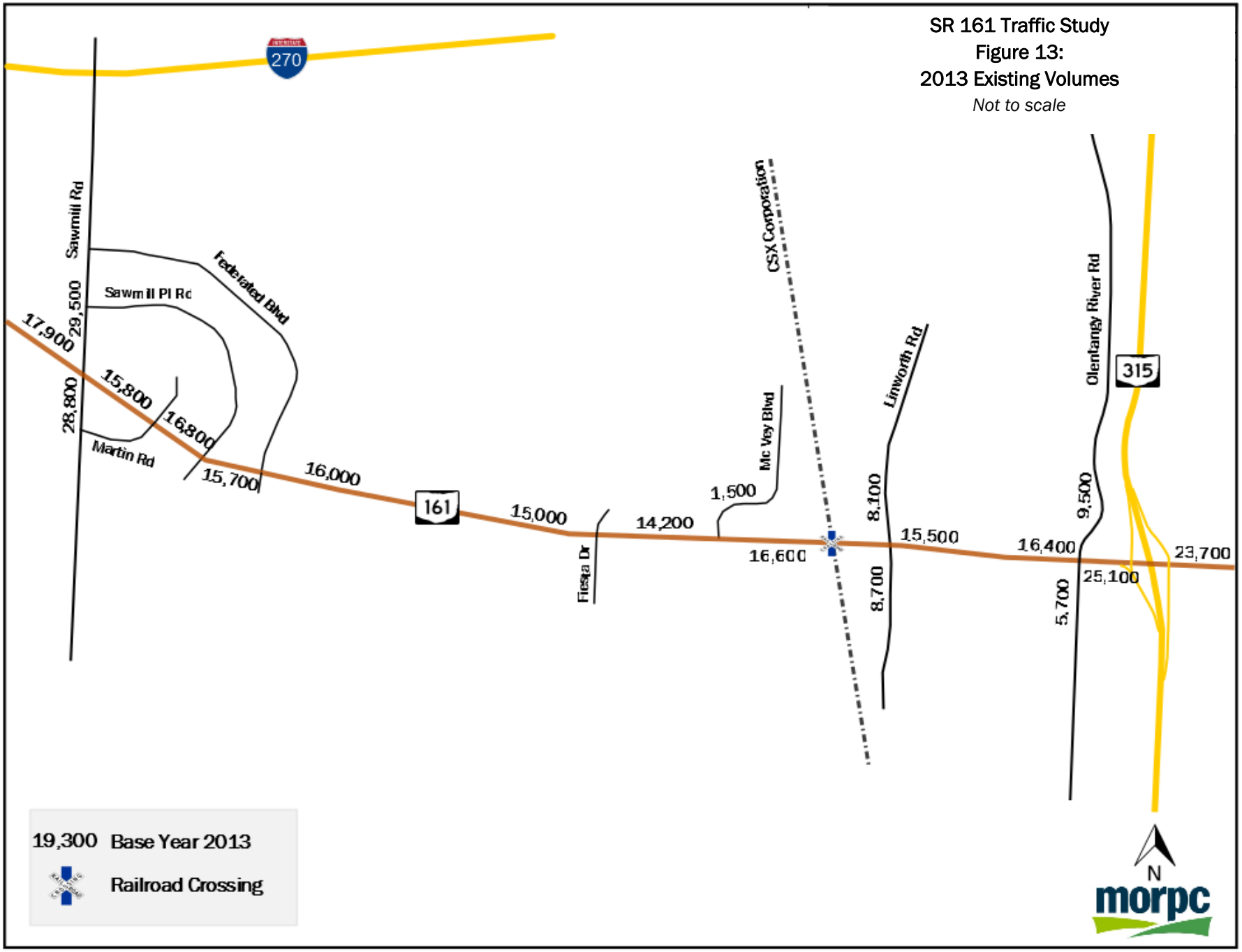
September 2013


SR 161 Traffic Study
Figure 13:
2013 Existing Volumes
Not to scale
270
Sawmill Rd
Sawmill Pl Rd
Federated Blvd
Martin Rd
29,500
28,800
17,900
15,800
16,800
15,700
16,000
161
15,000
Fiesta Dr
14,200
1,500
Mc Vey Blvd
CSX Corporation
16,600
8,100
8,700
Linworth Rd
15,500
16,400
9,500
5,700
Olentangy River Rd
315
25,100
23,700
19,300 Base Year 2013
Railroad Crossing
N
morpc

Existing Condition without Train Blockage Scenario

A summary of the intersection analysis is tabulated in **Table 1a,** below. It presents the level of service (LOS) and delays at each intersection analyzed for the scenario without train blockage (i.e., no gate down time during the analyzed hour).

Along the corridor, the intersections of SR 161 and Sawmill Road and SR 161 and Olentangy River Road are operating at LOS D in both AM and PM peak hours. The SR 161/Linworth Road intersection performs poorly in both AM and PM peak hours as well. A vehicle would experience an average delay of one minute passing through this intersection. This intersection is the most congested, and should be considered a bottleneck of the entire corridor.

Table 1a: 2013 Existing Delay and Level of Service without Train Blockage

#	Intersection	Control	AM		PM	
			Delay	LOS	Delay	LOS
1	SR 161 & Sawmill Rd	Signal	37	D	49	D
2	SR 161 & Martin Rd	Signal	11	B	15	B
3	SR 161 & Sawmill Pl Blvd	Signal	11	B	14	B
4	SR 161 & Federated Blvd	Side-street Stop Control	4	A	4	A
5	SR 161 & McVey Blvd	Side-street Stop Control	3	A	1	A
6	SR 161 & Linworth Rd	Signal	50	D	59	E
7	SR 161 & Olentangy River Rd	Signal	50	D	39	D

NOTE: Delay - delay per vehicle in seconds

Existing Condition with 5 and 10 Minute Train Blockage Scenario

A summary of the intersection analysis is tabulated in **Table 1b,** below, which includes intersection delay and level of service (LOS) with a 5 minute train blockage scenario. When a train blocks the street for five minutes, the longest delays would occur at the intersection of SR 161 and Linworth Road for both AM and PM peak hours, with average delays of 1.5 minutes and 3 minutes per vehicle, respectively.

Based on the simulation results of SimTraffic on the 5 minute train blockage scenario, the effect of the blockage would increase the total delay in the upstream intersections. When a train blocks the street for 5 minutes in the PM peak period, the queue length could be as long as 2,300 feet on SR 161. It was shown in the simulation that it would take 13 minutes after the train leaves the railroad crossing before the traffic signals return to normal function.

Table 1b: 2013 Existing Delay and Level of Service with 5 Minute Train Blockage

#	Intersection	Control	AM		PM	
			Delay	LOS	Delay	LOS
1	SR 161 & Sawmill Rd	Signal	34	C	53	D
2	SR 161 & Martin Rd	Signal	13	B	24	C
3	SR 161 & Sawmill Pl Blvd	Signal	11	B	21	C
4	SR 161 & Federated Blvd	Side-street Stop Control	7	A	9	A
5	SR 161 & McVey Blvd	Side-street Stop Control	6	A	11	B
6	SR 161 & Linworth Rd	Signal	88	F	186	F
7	SR 161 & Olentangy River Rd	Signal	78	E	42	D

NOTE: Delay - delay per vehicle in seconds
The effect of the railroad tracks was simulated using SimTraffic. Delay calculation method within Synchro and SimTraffic are completely different.

The results of the 10 minutes train blockage simulation were similar to the 5 minutes train blockage simulation, although the average delay per vehicle at the Linworth Road intersection increased to 3.5 minutes at AM peak and 4.5 minutes at PM peak. Existing Delay and LOS with 10 Minute Train Blockage Scenario is displayed in **Table 1c.**

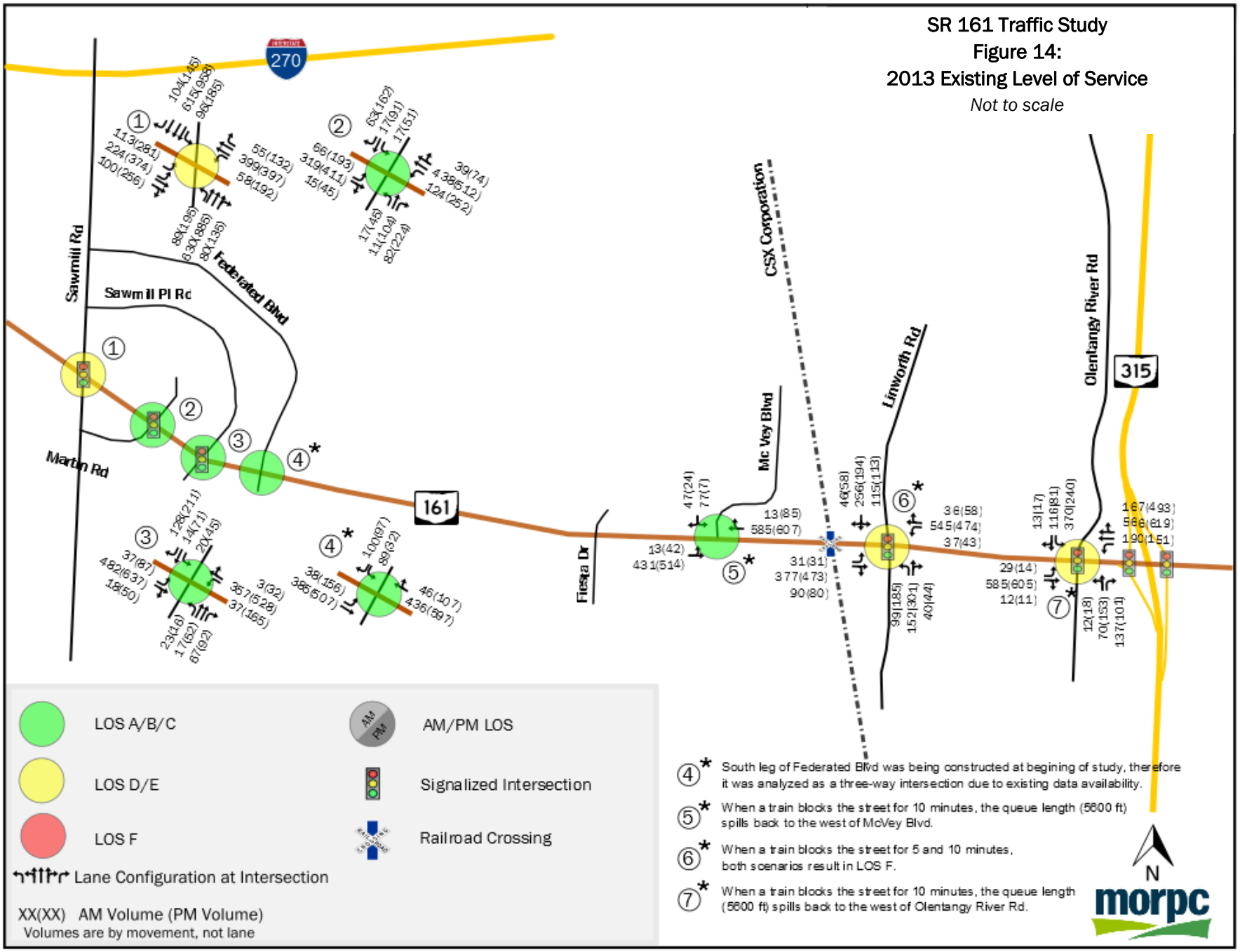
Based on the impacts of the 10 minutes train blockage scenario west of the Linworth Road intersection, the effect from the blockage would also increase the intersection total delay in the upstream intersections. The queue length does stretch into the upstream intersections in the Synchro simulation. When a train blocks the street for 10 minutes in the PM peak period, the eastbound queue length could extend west of McVey Blvd and the westbound queue length could extend of east of Olentangy River Road. The queue length could be as long as 5,600 feet on SR 161. It was shown in the simulation that it would take 25 to 30 minutes after the train leaves the railroad crossing before the traffic signals return to normal function.

Figure 14 illustrates the existing condition LOS analysis results described above.

Table 1c: 2013 Existing Delay and Level of Service with 10 Minute Train Blockage

#	Intersection	Control	AM		PM	
			Delay	LOS	Delay	LOS
1	SR 161 & Sawmill Rd	Signal	35	D	49	D
2	SR 161 & Martin Rd	Signal	13	B	22	C
3	SR 161 & Sawmill Pl Blvd	Signal	11	B	23	C
4	SR 161 & Federated Blvd	Side-street Stop Control	6	A	9	A
5	SR 161 & McVey Blvd	Side-street Stop Control	10	B	19	C
6	SR 161 & Linworth Rd	Signal	213	F	276	F
7	SR 161 & Olentangy River Rd	Signal	61	E	50	D

NOTE: Delay - delay per vehicle in seconds
The effect of the railroad tracks was simulated using SimTraffic. Delay calculation method within Synchro and SimTraffic are completely different.


SR 161 Traffic Study
Figure 14:
2013 Existing Level of Service
Not to scale
270
Sawmill Rd
Sawmill Pl Rd
Federated Blvd
Martin Rd
161
Fiesta Dr
CSX Corporation
Mc Vey Blvd
Linworth Rd
Olentangy River Rd
315
LOS A/B/C
LOS D/E
LOS F
AM/PM LOS
Signalized Intersection
Railroad Crossing
Lane Configuration at Intersection
XX(XX) AM Volume (PM Volume)
Volumes are by movement, not lane
④* South leg of Federated Blvd was being constructed at begining of study, therefore it was analyzed as a three-way intersection due to existing data availability.
⑤* When a train blocks the street for 10 minutes, the queue length (5600 ft) spills back to the west of McVey Blvd.
⑥* When a train blocks the street for 5 and 10 minutes, both scenarios result in LOS F.
⑦* When a train blocks the street for 10 minutes, the queue length (5600 ft) spills back to the west of Olentangy River Rd.
N
morpc

Future Alternatives Analysis

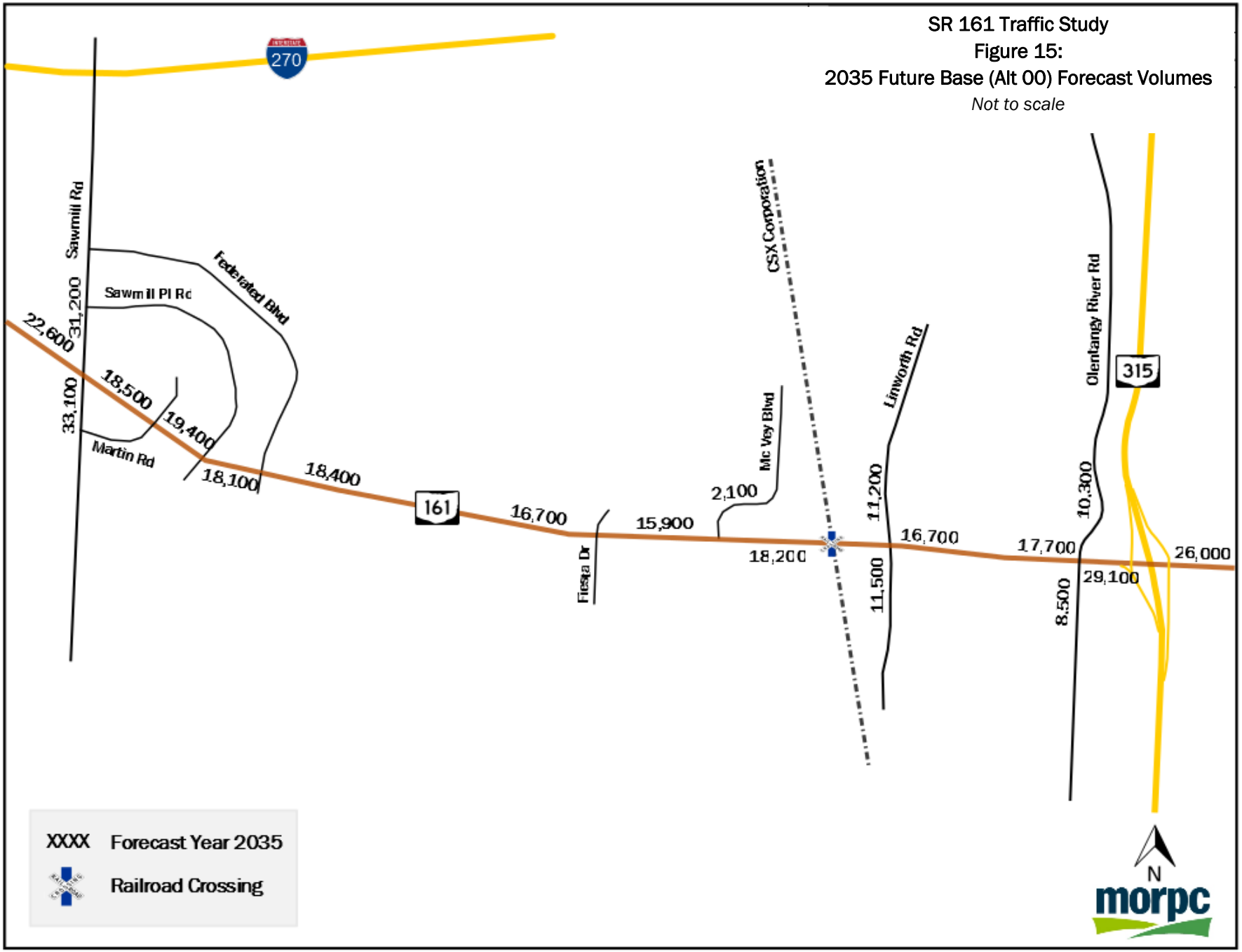
The 2013 population and employment estimates and 2035 population and employment forecasts resulting from the process and methodology described in previous sections was used as input data to the travel demand model. The model uses the data to project future traffic volumes on the SR 161 corridor, based on where people live and work. The Study Committee worked to together to develop five alternative scenarios to be tested in the travel demand model:

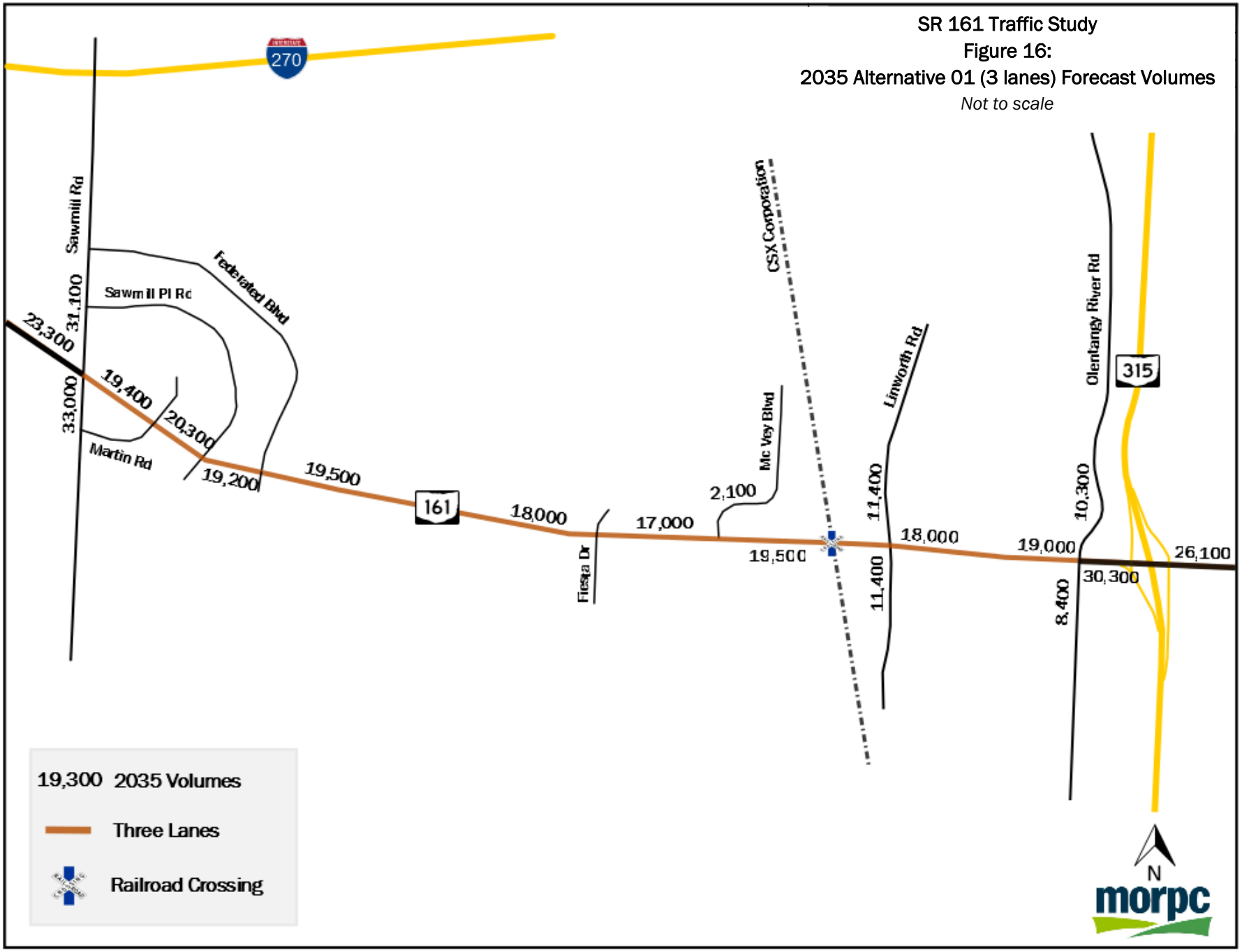
- Alt 00: What if no improvements are made to the SR 161 study corridor? (Also, referred to as the "no-build" or "future base" scenario)
- Alt 01: What if the entire SR 161 study corridor had 3 lanes (one travel lane in each direction, and a center left turn lane)?
- Alt 02: What if the entire SR 161 study corridor had 5 lanes (two travel lanes in each direction, and a center left turn lane)?
- Alt 03: What if SR 161 had 5 lanes between Sawmill and Linworth Roads and 3 lanes between Linworth Road and SR 315?
- Alt 04: What if the entire SR 161 study corridor had 3 lanes and Godown Road was extended to SR 161?
- Alt 05: What if the entire SR 161 study corridor had 3 lanes, Godown Road was extended to SR 161, and a new, parallel road existed just north of Don Scott (OSU) Airport from Sawmill Road to Godown Road?

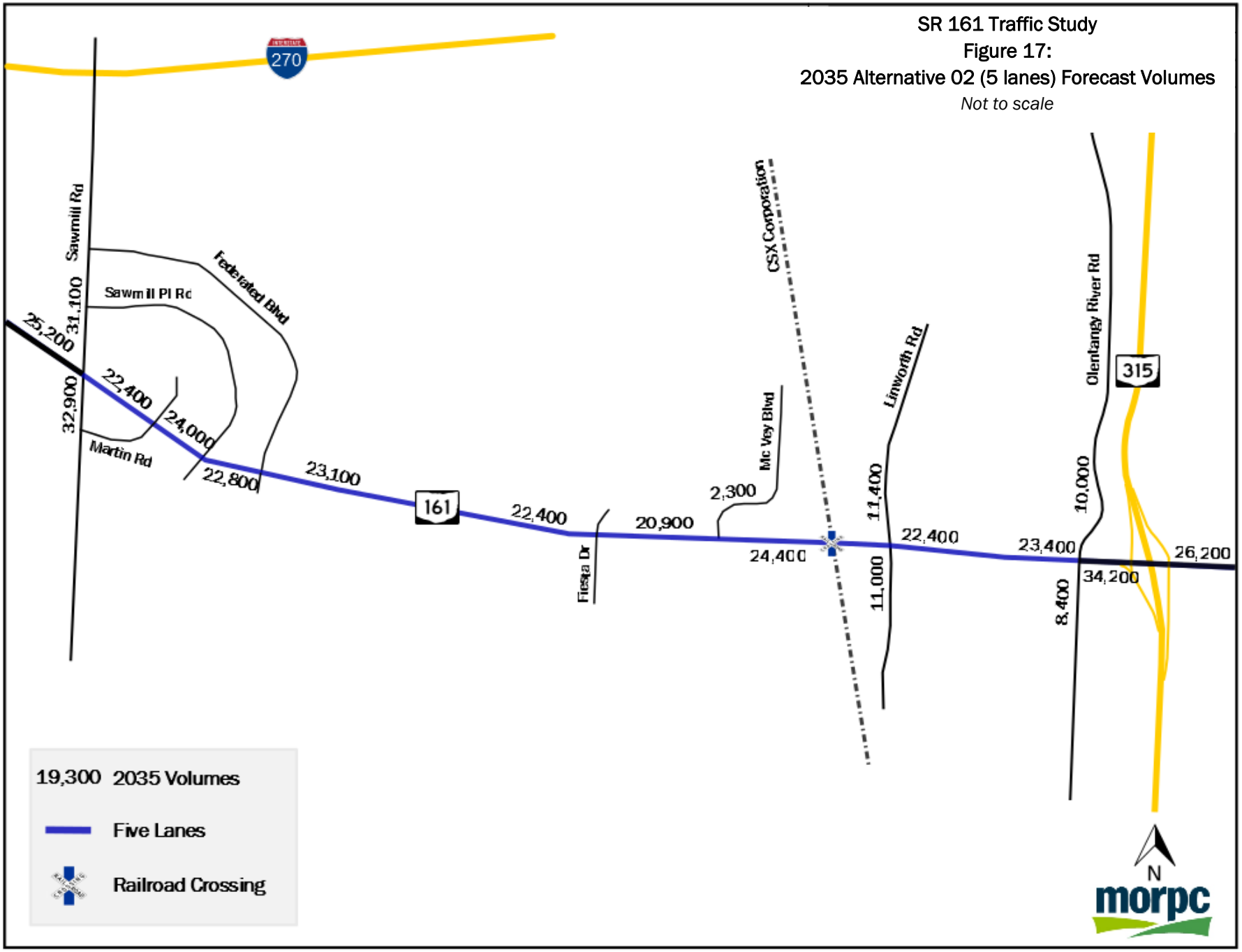
The resulting forecast volumes for each of these scenarios are summarized in **Table 2** and displayed in **Figures 15, 16, 17, 18, 19, and 20.**

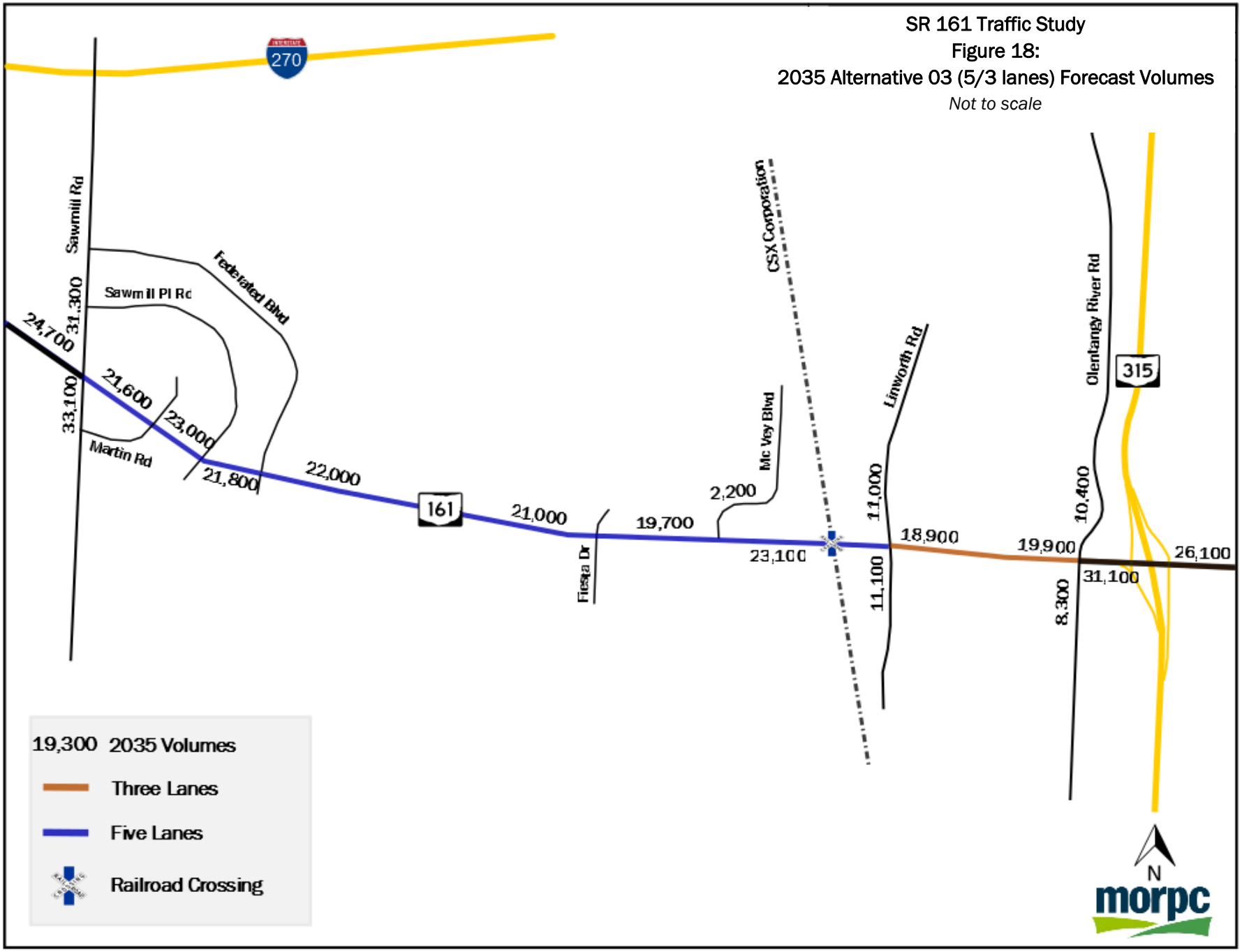
Table 2: 2035 Forecast Volumes

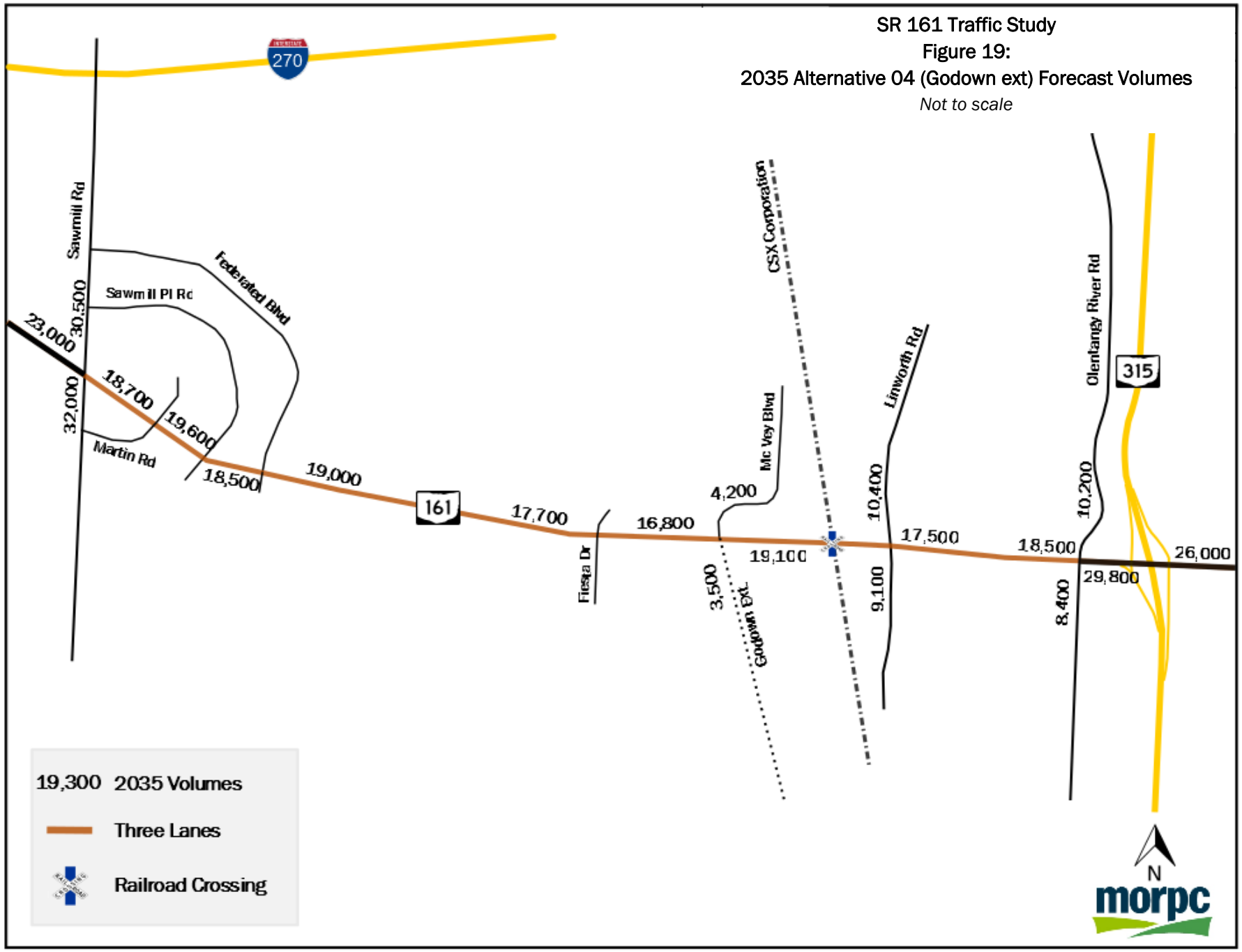
Location	2013 Base	2035 Base (Alt 00)	Alt 01 (3 lanes)	Alt 02 (5 lanes)	Alt 03 (5/3 lanes)	Alt 04 (Gowdown ext)	Alt 05 (New parallel route)
SR 161							
w/o Sawmill Rd	17,900	22,600	23,300	25,200	24,700	23,000	23,000
e/o Sawmill Rd	15,800	18,500	19,400	22,400	21,600	18,700	18,500
w/o Sawmill Place Blvd	16,800	19,400	20,300	24,000	23,000	19,600	19,200
e/o Sawmill Place Blvd	15,700	18,100	19,200	22,800	21,800	18,500	18,100
e/o Federated Blvd	16,000	18,400	19,500	23,100	22,000	19,000	18,600
w/o Fiesta Dr	15,000	16,700	18,000	22,400	21,000	17,700	17,400
w/o McVey Dr	14,200	15,900	17,000	20,900	19,700	16,800	16,500
e/o McVey Dr	16,600	18,200	19,500	24,400	23,100	19,100	19,100
e/o Linworth Rd	15,500	16,700	18,000	22,400	18,900	17,500	17,500
w/o Olentangy River Rd	16,400	17,700	19,000	23,400	19,900	18,500	18,500
e/o Olentangy River Rd	25,100	29,100	30,300	34,200	31,100	29,800	29,700
e/o SR 315 & Ramps	23,700	26,000	26,100	26,200	26,100	26,000	26,000
Cross Road							
Sawmill Rd, n/o SR 161	29,500	31,200	31,100	31,100	31,300	30,500	30,400
Sawmill Rd, s/o SR 161	28,800	33,100	33,000	32,900	33,100	32,000	31,700
McVey Blvd, n/o SR 161	1,500	2,100	2,100	2,300	2,200	4,200	4,200
Godown Ext, s/o SR 161						3,500	3,600
Linworth Rd, n/o SR 161	8,100	11,200	11,400	11,400	11,000	10,400	10,400
Linworth Rd, s/o SR 161	8,700	11,500	11,400	11,000	11,100	9,100	9,000
Olentangy River Rd, n/o SR 161	9,500	10,300	10,300	10,000	10,400	10,200	10,200
Olentangy River Rd, s/o SR 161	5,700	8,500	8,400	8,400	8,300	8,400	8,400

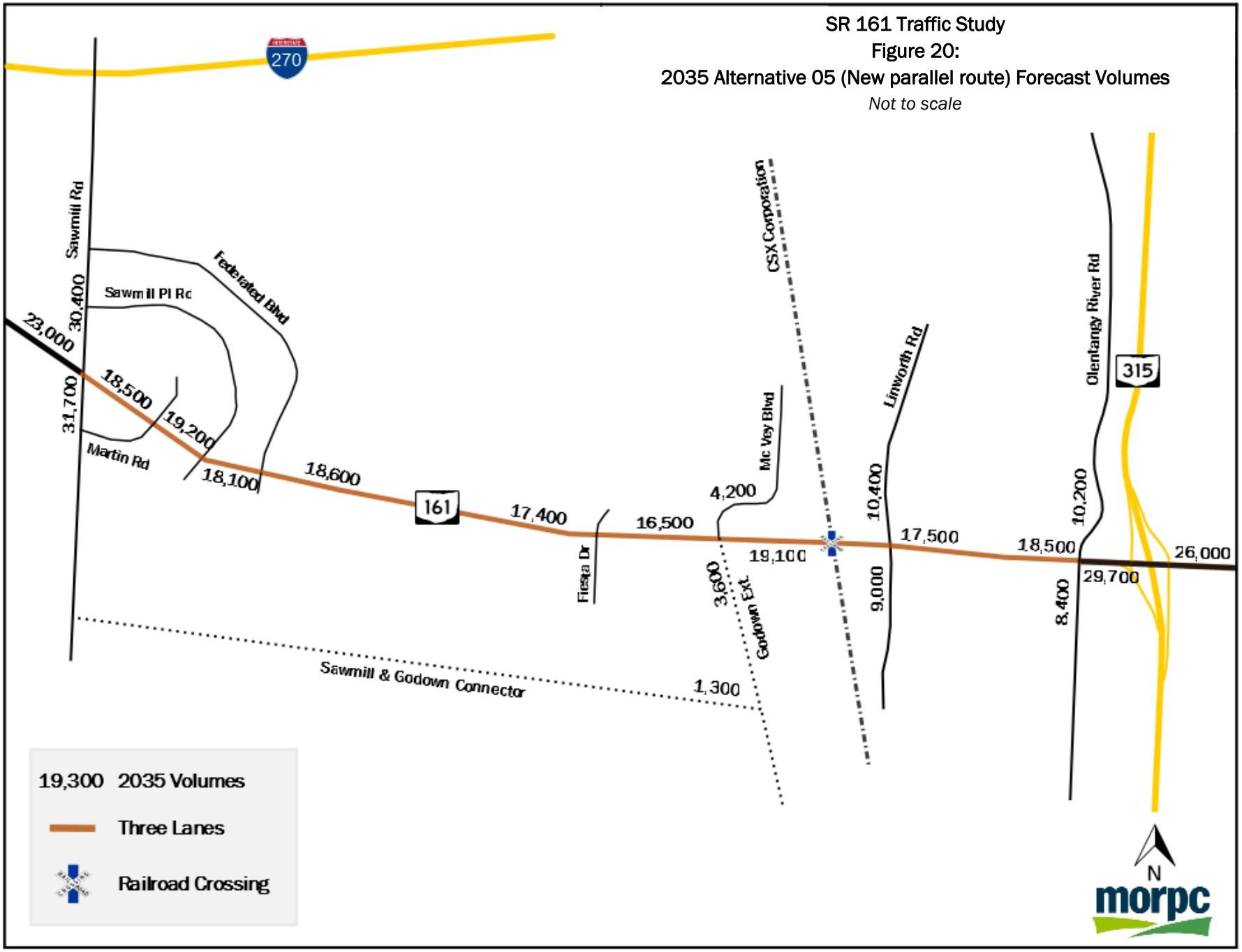

SR 161 Traffic Study
Figure 15:
2035 Future Base (Alt 00) Forecast Volumes
Not to scale
270
Sawmill Rd
Sawmill Pl Rd
Federated Blvd
Martin Rd
31,200
22,600
33,100
18,500
19,400
18,100
18,400
161
16,700
Fiesta Dr
15,900
2,100
Mc Vey Blvd
CSX Corporation
18,200
11,200
11,500
Linworth Rd
16,700
17,700
10,300
8,500
29,100
Olentangy River Rd
315
26,000
XXXX Forecast Year 2035
Railroad Crossing
N
morpc


SR 161 Traffic Study
Figure 16:
2035 Alternative 01 (3 lanes) Forecast Volumes
Not to scale
270
Sawmill Rd
Sawmill Pl Rd
Federated Blvd
Martin Rd
23,300
31,100
33,000
19,400
20,300
19,200
19,500
161
18,000
Fiesta Dr
17,000
2,100
Mc Vey Blvd
CSX Corporation
19,500
11,400
11,400
Linworth Rd
18,000
19,000
10,300
8,400
30,300
Olentangy River Rd
315
26,100
19,300 2035 Volumes
Three Lanes
Railroad Crossing
N
morpc


SR 161 Traffic Study
Figure 17:
2035 Alternative 02 (5 lanes) Forecast Volumes
Not to scale
270
Sawmill Rd
Sawmill Pl Rd
Federated Blvd
Martin Rd
25,200
31,100
32,900
22,400
24,000
22,800
23,100
161
22,400
Fiesta Dr
20,900
2,300
Mc Vey Blvd
CSX Corporation
24,400
11,400
11,000
Linworth Rd
22,400
23,400
10,000
8,400
Olentangy River Rd
315
34,200
26,200
19,300 2035 Volumes
Five Lanes
Railroad Crossing
N
morpc


SR 161 Traffic Study
Figure 18:
2035 Alternative 03 (5/3 lanes) Forecast Volumes
Not to scale
270
Sawmill Rd
Sawmill Pl Rd
Federated Blvd
Martin Rd
24,700
31,300
33,100
21,600
23,000
21,800
22,000
161
21,000
Fiesta Dr
19,700
2,200
Mc Vey Blvd
CSX Corporation
23,100
11,000
11,100
Linworth Rd
18,900
19,900
10,400
8,300
31,100
Olentangy River Rd
315
26,100
19,300 2035 Volumes
Three Lanes
Five Lanes
Railroad Crossing
N
morpc


SR 161 Traffic Study
Figure 19:
2035 Alternative 04 (Godown ext) Forecast Volumes
Not to scale
270
Sawmill Rd
Sawmill Pl Rd
Federated Blvd
Martin Rd
23,000
30,500
32,000
18,700
19,600
18,500
19,000
161
17,700
Fiesta Dr
16,800
4,200
Mc Vey Blvd
3,500
Godown Ext.
CSX Corporation
19,100
10,400
9,100
Linworth Rd
17,500
18,500
10,200
8,400
29,800
Olentangy River Rd
315
26,000
19,300 2035 Volumes
Three Lanes
Railroad Crossing
N
morpc


SR 161 Traffic Study
Figure 20:
2035 Alternative 05 (New parallel route) Forecast Volumes
Not to scale
270
Sawmill Rd
Sawmill Pl Rd
Federated Blvd
Martin Rd
23,000
30,400
31,700
18,500
19,200
18,100
18,600
161
17,400
Fiesta Dr
16,500
4,200
Mc Vey Blvd
CSX Corporation
19,100
3,600
Godown Ext.
Sawmill & Godown Connector
1,300
10,400
9,000
Linworth Rd
17,500
18,500
10,200
8,400
Olentangy River Rd
315
29,700
26,000
19,300 2035 Volumes
Three Lanes
Railroad Crossing
N
morpc

Due to the forecasted population and employment growth in the area, traffic volumes on the study corridor grow in some degree in all of the future scenarios. The additional capacity assumed in each alternative scenario also makes the corridor more attractive to users, which causes volumes to increase at various levels, depending on the additional capacity assumed in each scenario.

In the future base scenario that assumes no improvements are made, the increased volumes exceed the design capacity of the existing roadway.

In Alternative 01, or the three-lane scenario, the increased volumes approach the maximum capacity of a three-lane roadway.

Alternative 02, or the five-lane scenario, generates the highest volumes due to the increased attraction of the added capacity, though the volumes do not exceed the maximum capacity of a five-lane roadway.

While the volumes increases in the five- and three-lane scenario, or Alternative 03, are consistent with the respective segments of Alternative 01 and 02, the traffic conditions in this scenario largely depend on the configuration and performance of the SR 161/Linworth Road intersection. This is because this intersection is the existing bottleneck of the corridor, and is also the point of the capacity change. The number of turn lanes and through lanes at each approach will impact the function of the intersection and the entire corridor. Alternative intersection configurations at this location were analyzed and are summarized later in this section of the report.

The extension of Godown Road to SR 161 in Alternative 04 did not divert enough traffic to other routes to significantly impact the traffic conditions along the study corridor.

Alternative 05 also does not significantly divert traffic from the SR 161 corridor and onto the parallel route, which was the intention of the alternative. Because the alternative parallel route would terminate at the hypothetical Godown Road extension, traffic using the parallel route would still be required to travel back up to the SR 161 corridor to access SR 315 and other areas to the north and east of the study corridor. For this reason, Alternative 05 was not carried forward, and was not included in the intersection LOS analyses.

Each intersection along the SR 161 study corridor was analyzed for each alternative scenario to determine the Level of Service (LOS) and the amount of delay a traveler would experience. This detailed LOS analysis was done for AM and PM peak hours, consistent with the Existing Conditions Analysis. Future turning movements were estimated based on future year ADTs, existing and model-projected turning movement patterns. Specifically, the "NCHRP 255" procedure adopted by ODOT for certified traffic was used to estimate the future turning movement volumes at each intersection. Next, traffic volumes at consecutive intersections along the corridor were balanced out to reduce large variations in upstream and downstream traffic caused by the "NCHRP 255" procedure. More details about the "NCHRP 255" procedure can be found in the Ohio Certified Traffic Manual.

Consistent with the existing condition, Synchro and SimTraffic were used to conduct LOS analyses for the future scenarios. In the analysis, the timing plan for each signalized intersection was optimized along the study corridor for both existing (2013) and future (2035) conditions. The reason to use the optimization is to make sure that the comparison between the existing and future conditions is built upon the same base since the future operating timing plan is not available at this planning stage.

Tables 3a-3c summarize the delay and level of service at each intersection along the study corridor for the 2035 base scenario (Alt 00) without train blockage, with 5 minutes of train blockage, and with 10 minutes of train blockage. The 5-minute and 10-minute train scenarios were only analyzed for the base future alternative (Alt 00). The results of the future alternatives analyses (Alt 01, 02, 03, 04) reflect the traffic conditions without taking into account the delays caused by a crossing train. The Study Committee concluded that the Existing and Future Base SimTraffic analyses demonstrate the impacts of the at-grade crossing, and for this study, the analysis did not need repeated for each alternative.

Tables 4, 5 , 6, and 7 summarize the delay and level of service for each intersection along the study corridor for each of the future alternatives carried forward for LOS analysis (Alt 01, 02, 03, 04). **Figures 21, 22, 23, 24, and 25** map the LOS along the study corridor for the 2035 future base and four alternatives.

Table 3a: 2035 Base (Alt 00) Delay and Level of Service without Train Blockage

#	Intersection	Control	AM		PM	
			Delay	LOS	Delay	LOS
1	SR 161 & Sawmill Rd	Signal	39	D	73	E
2	SR 161 & Martin Rd	Signal	9	A	14	B
3	SR 161 & Sawmill Pl Blvd	Signal	12	B	22	C
4	SR 161 & Federated Blvd	Side-street Stop Control	19	C	23	C
5	SR 161 & McVey Blvd	Side-street Stop Control	33	D	2	A
6	SR 161 & Linworth Rd	Signal	106	F	139	F
7	SR 161 & Olentangy River Rd	Signal	113	F	116	F

NOTE: Delay - delay per vehicle in seconds

Table 3b: 2035 Base (Alt 00) Delay and Level of Service with 5 Minute Train Blockage

#	Intersection	Control	AM		PM	
			Delay	LOS	Delay	LOS
1	SR 161 & Sawmill Rd	Signal	37	D	183	F
2	SR 161 & Martin Rd	Signal	12	B	22	C
3	SR 161 & Sawmill Pl Blvd	Signal	11	B	24	C
4	SR 161 & Federated Blvd	Side-street Stop Control	9	A	10	B
5	SR 161 & McVey Blvd	Side-street Stop Control	11	B	73	F
6	SR 161 & Linworth Rd	Signal	276	F	488	F
7	SR 161 & Olentangy River Rd	Signal	533	F	349	F

NOTE: Delay - delay per vehicle in seconds
The effect of the railroad tracks was simulated using SimTraffic. Delay calculation method within Synchro and SimTraffic are completely different.

Table 3c: 2035 Base (Alt 00) Delay and Level of Service with 10 Minute Train Blockage

#	Intersection	Control	AM		PM	
			Delay	LOS	Delay	LOS
1	SR 161 & Sawmill Rd	Signal	36	D	190	F
2	SR 161 & Martin Rd	Signal	13	B	24	C
3	SR 161 & Sawmill Pl Blvd	Signal	10	B	23	C
4	SR 161 & Federated Blvd	Side-street Stop Control	10	B	13	B
5	SR 161 & McVey Blvd	Side-street Stop Control	52	F	75	F
6	SR 161 & Linworth Rd	Signal	459	F	520	F
7	SR 161 & Olentangy River Rd	Signal	540	F	364	F

NOTE: Delay - delay per vehicle in seconds
The effect of the railroad tracks was simulated using SimTraffic. Delay calculation method within Synchro and SimTraffic are completely different.

Table 4: 2035 Alt 01 (3 lanes) Delay and Level of Service

#	Intersection	Control	AM		PM	
			Delay	LOS	Delay	LOS
1	SR 161 & Sawmill Rd	Signal	39	D	76	E
2	SR 161 & Martin Rd	Signal	8	A	14	B
3	SR 161 & Sawmill Pl Blvd	Signal	12	B	23	C
4	SR 161 & Federated Blvd	Side-street Stop Control	3	A	3	A
5	SR 161 & McVey Blvd	Side-street Stop Control	3	A	1	A
6	SR 161 & Linworth Rd	Signal	121	F	155	F
7	SR 161 & Olentangy River Rd	Signal	119	F	122	F

NOTE: Delay - delay per vehicle in seconds

Table 5: 2035 Alt 02 (5 lanes) Delay and Level of Service

#	Intersection	Control	AM		PM	
			Delay	LOS	Delay	LOS
1	SR 161 & Sawmill Rd	Signal	39	D	87	F
2	SR 161 & Martin Rd	Signal	10	A	19	B
3	SR 161 & Sawmill Pl Blvd	Signal	13	B	19	B
4	SR 161 & Federated Blvd	Side-street Stop Control	3	A	2	A
5	SR 161 & McVey Blvd	Side-street Stop Control	6	A	1	A
6	SR 161 & Linworth Rd	Signal	69	E	91	F
7	SR 161 & Olentangy River Rd	Signal	75	E	105	F

NOTE: Delay - delay per vehicle in seconds

Table 6: 2035 Alt 03 (5/3 lanes) Delay and Level of Service

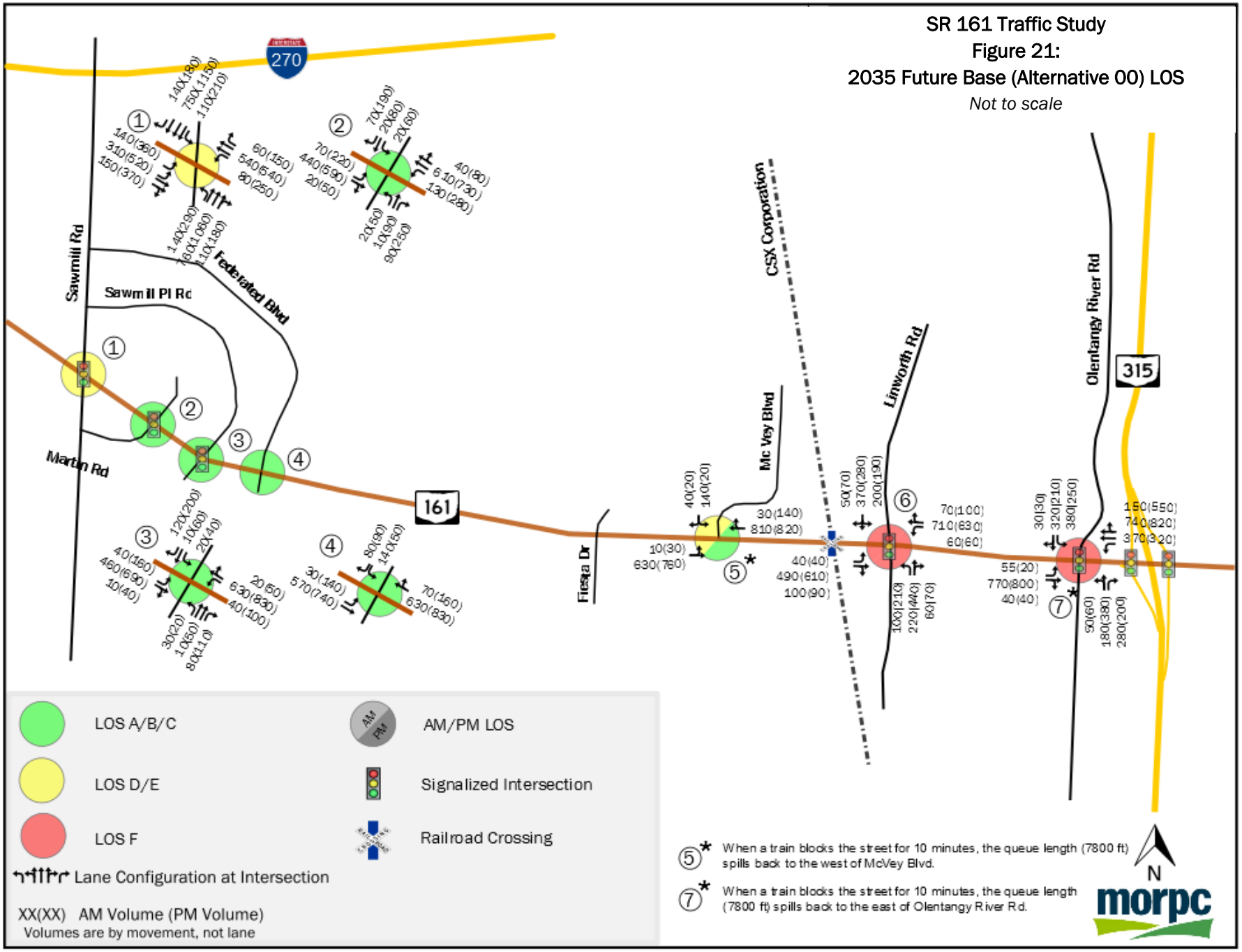
#	Intersection	Control	AM		PM	
			Delay	LOS	Delay	LOS
1	SR 161 & Sawmill Rd	Signal	39	D	84	F
2	SR 161 & Martin Rd	Signal	9	A	18	B
3	SR 161 & Sawmill Pl Blvd	Signal	13	B	19	B
4	SR 161 & Federated Blvd	Side-street Stop Control	3	A	2	A
5	SR 161 & McVey Blvd	Side-street Stop Control	5	A	1	A
6	SR 161 & Linworth Rd	Signal	124	F	147	F
7	SR 161 & Olentangy River Rd	Signal	125	F	128	F

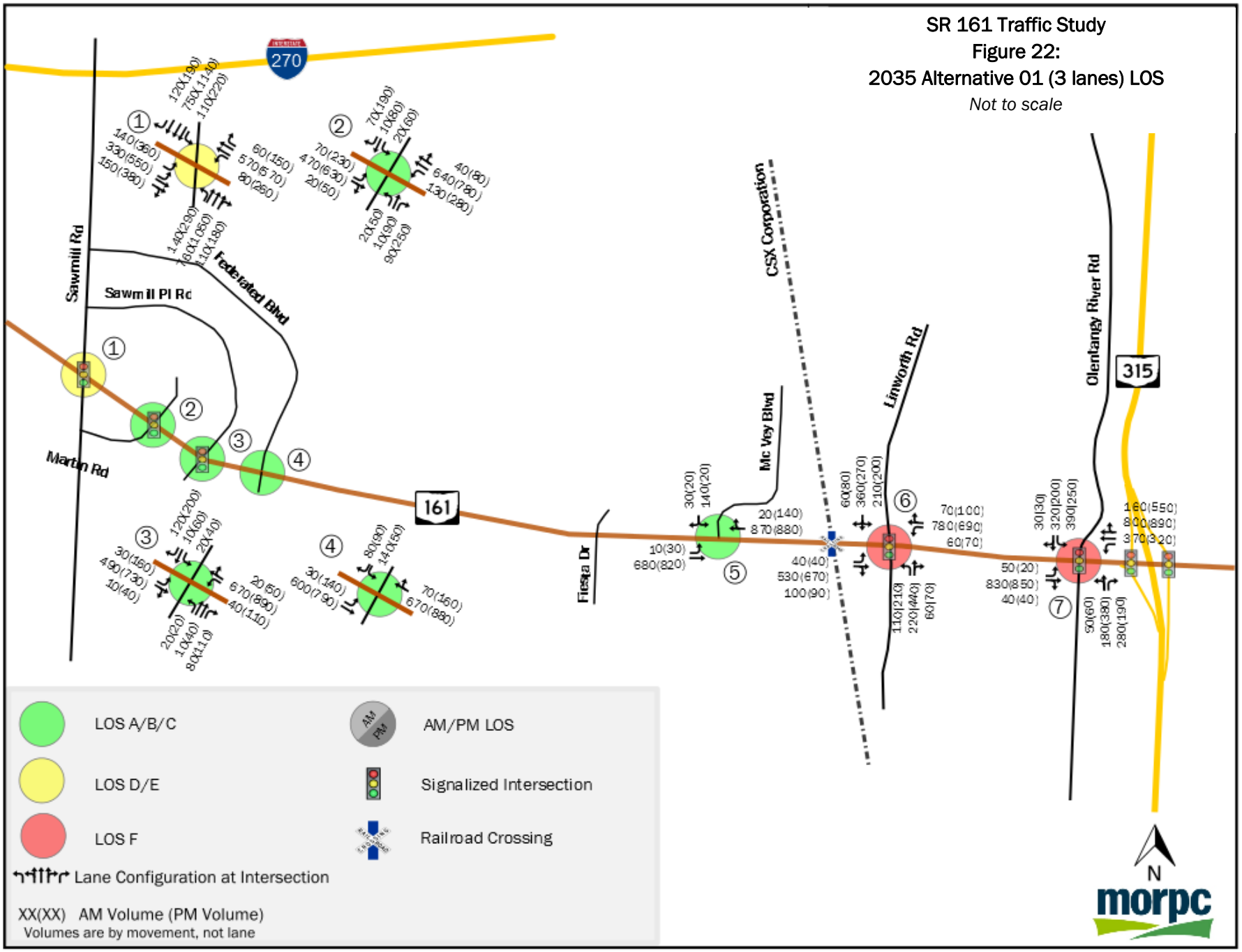
NOTE: Delay - delay per vehicle in seconds

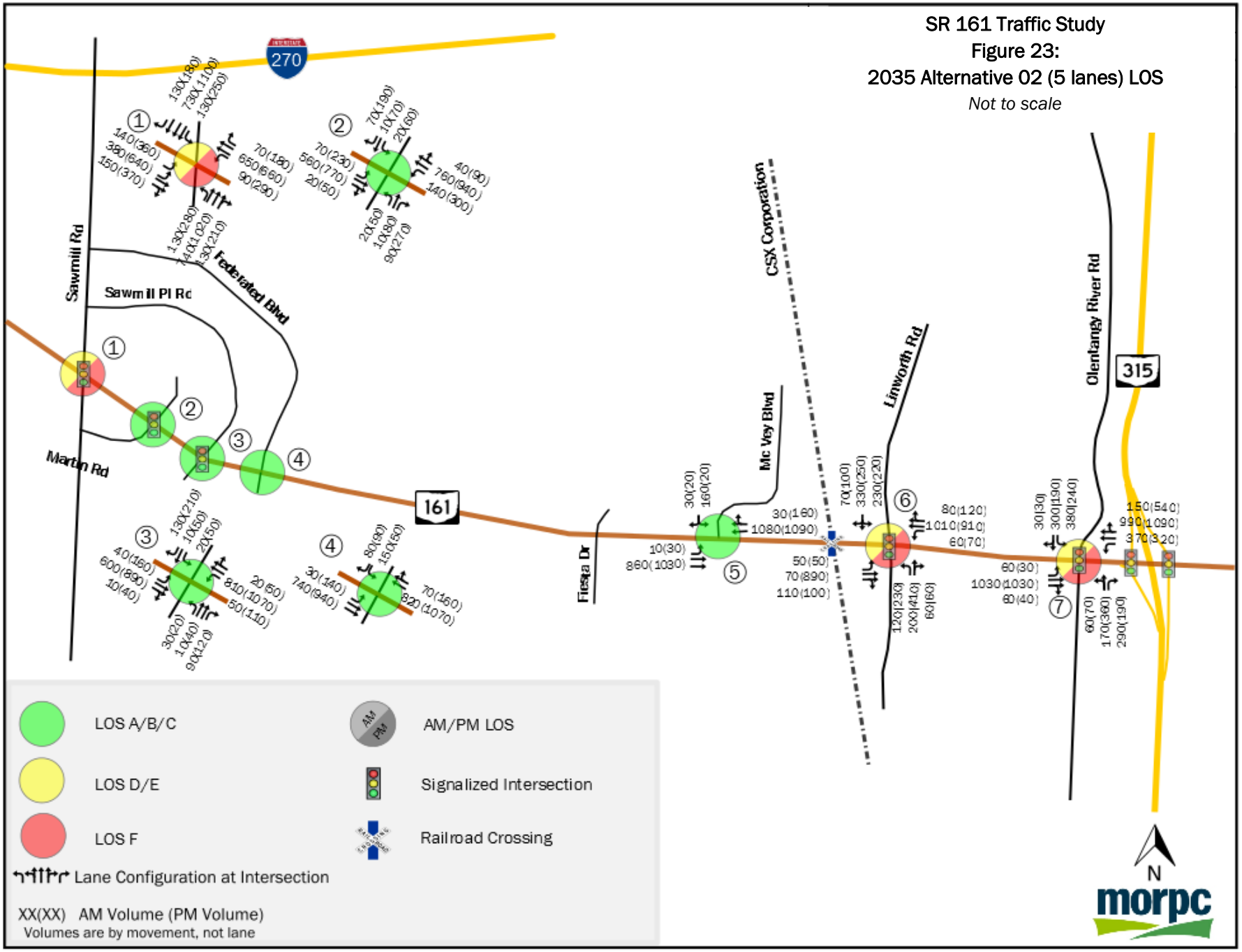
Table 7: 2035 Alt 04 (Godown ext) Delay and Level of Service

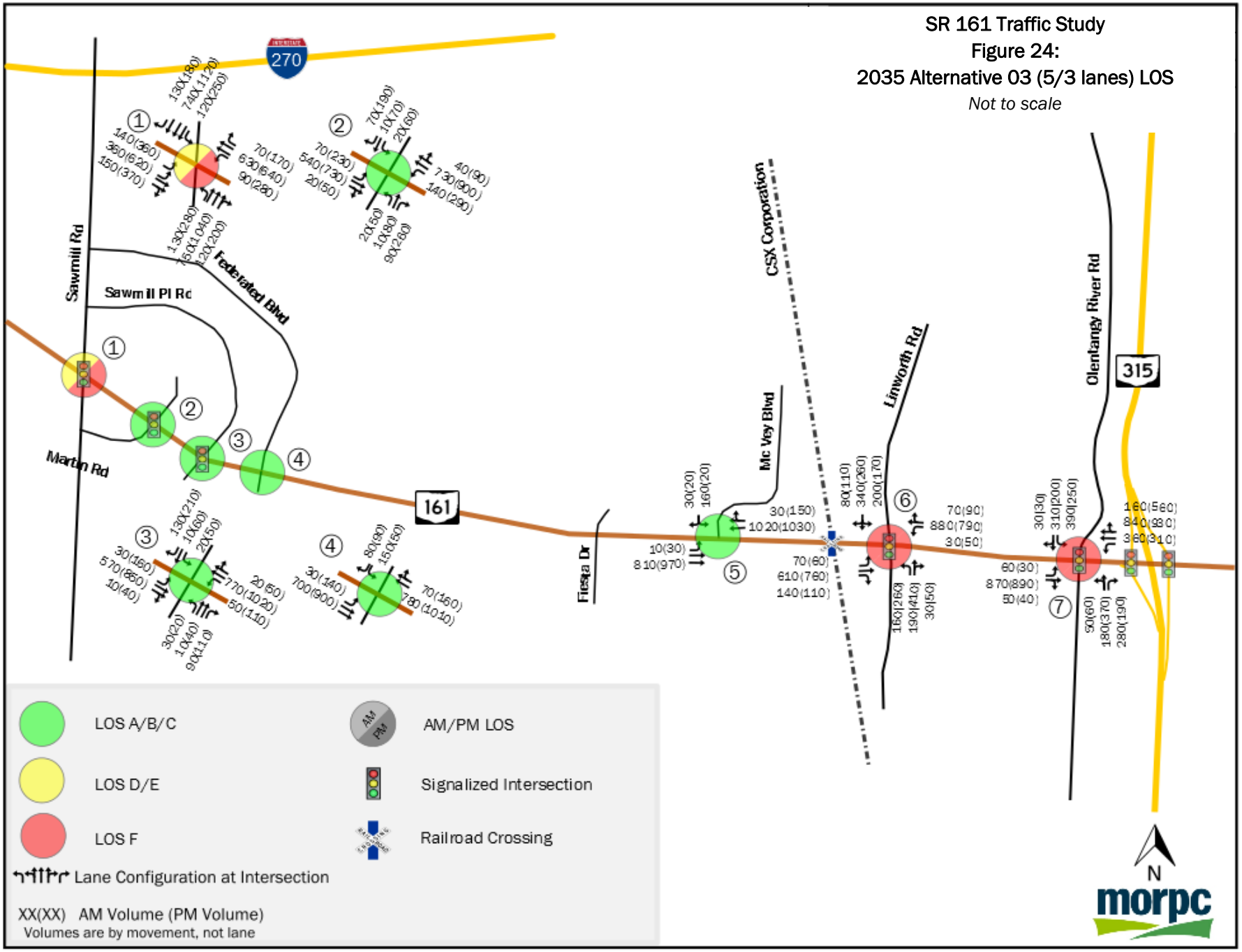
#	Intersection	Control	AM		PM	
			Delay	LOS	Delay	LOS
1	SR 161 & Sawmill Rd	Signal	39	D	70	E
2	SR 161 & Martin Rd	Signal	8	A	14	B
3	SR 161 & Sawmill Pl Blvd	Signal	12	B	20	C
4	SR 161 & Federated Blvd	Side-street Stop Control	3	A	3	A
5	SR 161 & McVey Blvd	Side-street Stop Control	21	C	2	A
6	SR 161 & Linworth Rd	Signal	95	F	128	F
7	SR 161 & Olentangy River Rd	Signal	116	F	123	F

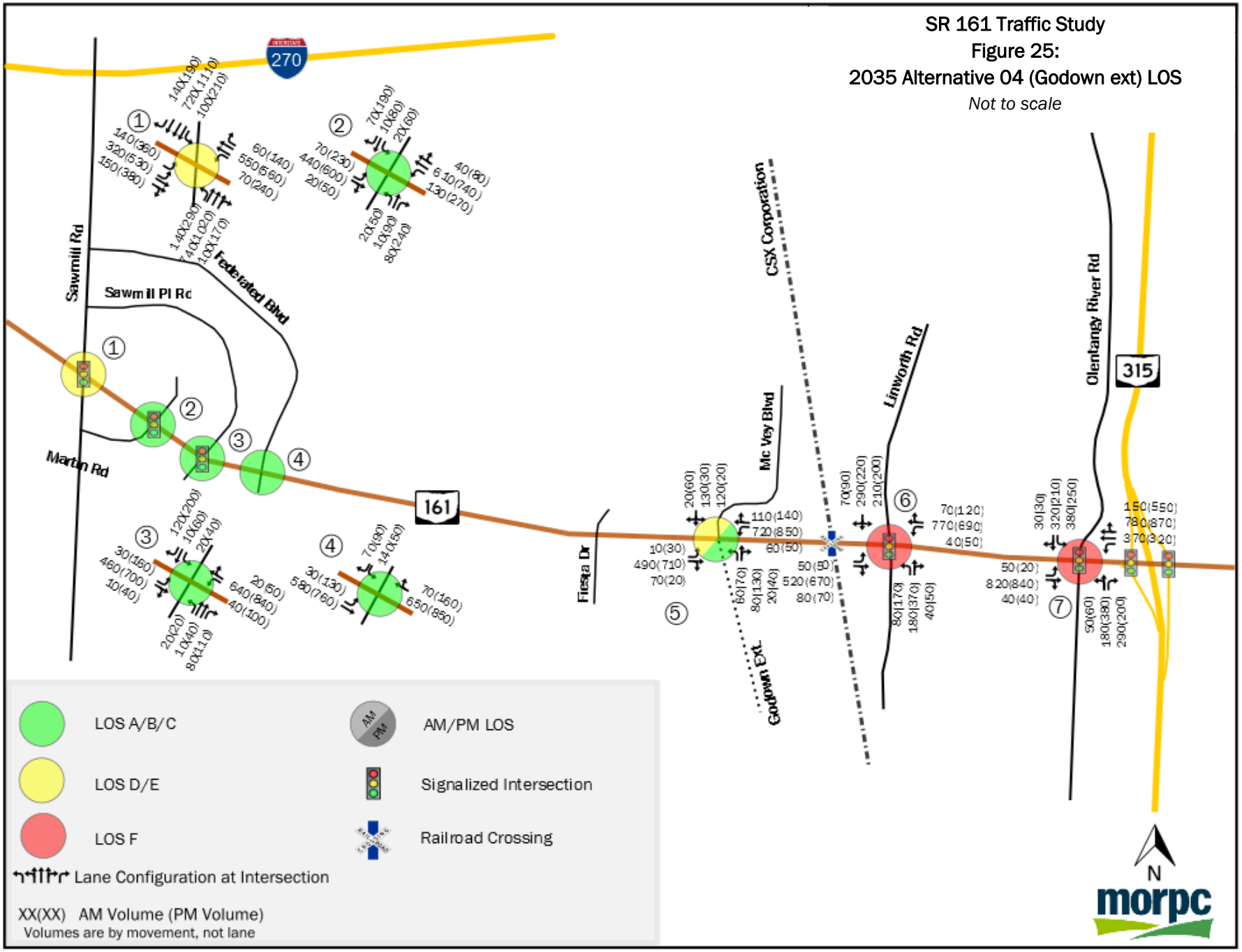
NOTE: Delay - delay per vehicle in seconds


SR 161 Traffic Study
Figure 21:
2035 Future Base (Alternative 00) LOS
Not to scale
270
161
315
Sawmill Rd
Sawmill Pl Rd
Federated Blvd
Martin Rd
Fiesta Dr
Mc Vey Blvd
CSX Corporation
Linworth Rd
Olentangy River Rd
LOS A/B/C
LOS D/E
LOS F
AM/PM LOS
Signalized Intersection
Railroad Crossing
Lane Configuration at Intersection
XX(XX) AM Volume (PM Volume)
Volumes are by movement, not lane
When a train blocks the street for 10 minutes, the queue length (7800 ft) spills back to the west of McVey Blvd.
When a train blocks the street for 10 minutes, the queue length (7800 ft) spills back to the east of Olentangy River Rd.
N
morpc


SR 161 Traffic Study
Figure 22:
2035 Alternative 01 (3 lanes) LOS
Not to scale
270
161
315
Sawmill Rd
Sawmill Pl Rd
Federated Blvd
Martin Rd
Fiesta Dr
Mc Vey Blvd
CSX Corporation
Linworth Rd
Olentangy River Rd
LOS A/B/C
LOS D/E
LOS F
AM/PM LOS
Signalized Intersection
Railroad Crossing
Lane Configuration at Intersection
XX(XX) AM Volume (PM Volume)
Volumes are by movement, not lane
N
morpc


SR 161 Traffic Study
Figure 23:
2035 Alternative 02 (5 lanes) LOS
Not to scale
270
161
315
Sawmill Rd
Sawmill Pl Rd
Federated Blvd
Martin Rd
Fiesta Dr
Mc Vey Blvd
CSX Corporation
Linworth Rd
Olentangy River Rd
LOS A/B/C
LOS D/E
LOS F
AM/PM LOS
Signalized Intersection
Railroad Crossing
Lane Configuration at Intersection
XX(XX) AM Volume (PM Volume)
Volumes are by movement, not lane
N
morpc


SR 161 Traffic Study
Figure 24:
2035 Alternative 03 (5/3 lanes) LOS
Not to scale
270
161
315
Sawmill Rd
Sawmill Pl Rd
Federated Blvd
Martin Rd
Fiesga Dr
Mc Vey Blvd
CSX Corporation
Linworth Rd
Olentangy River Rd
LOS A/B/C
LOS D/E
LOS F
AM/PM LOS
Signalized Intersection
Railroad Crossing
Lane Configuration at Intersection
XX(XX) AM Volume (PM Volume)
Volumes are by movement, not lane
N
morpc


SR 161 Traffic Study
Figure 25:
2035 Alternative 04 (Godown ext) LOS
Not to scale
270
161
315
Sawmill Rd
Sawmill Pl Rd
Federated Blvd
Martin Rd
Fiesta Dr
Mc Vey Blvd
Godown Ext.
CSX Corporation
Linworth Rd
Olentangy River Rd
LOS A/B/C
LOS D/E
LOS F
AM/PM LOS
Signalized Intersection
Railroad Crossing
Lane Configuration at Intersection
XX(XX) AM Volume (PM Volume)
Volumes are by movement, not lane
N
morpc

The intersections of SR 161 with Martin Road, Sawmill Pl Road, and Federated Blvd all operate efficiently in each future scenario. The intersection of SR 161 and Sawmill Road operates at an LOS of D or E in the Future Base and the scenarios where SR 161 is three lanes, but operates at an LOS of F in the scenarios where the study corridor is five lanes. The results of the LOS Analysis show the intersections of SR 161 and Linworth Road and SR 161 and Olentangy River Road as consistently the poorest performing intersections throughout each future alternative, operating at an LOS of F during at least one of the peak hours in each scenario.

Using Synchro (version 7), these two intersections were further studied to determine if adding turn lanes in various configurations would improve the level of service in these locations. Each intersection configuration was also tested under a split phasing signal scenario and a phasing optimization signal scenario. Two queue lengths are reported as part of this analysis. The queue represents maximum back distance where vehicles stop during a signal cycle. For each alternative and intersection analyzed, 50th percentile and 95th percentile maximum queue lengths are reported. The 50th percentile queue is the maximum back of queue on a typical cycle and the 95th percentile queue is the maximum back of queue with 95th percentile traffic volumes. If an approach to an intersection has more than one through or turn lanes in the same direction, the queue length for those lanes is combined.

This analysis was done for Alternatives 01, 02, and 03, since these alternatives each include a different number of through lanes along the study corridor. The results are shown in **Tables 8, 9, and 10.**

Table 8a: Alt 01 (3 lanes) Intersection Configurations (PM Peak Hour)

#		Split Phasing - NS				Pm=pt phasing - NS			
Linworth Road									
1	*No added lanes*	Delay: 155		LOS: F		Delay: 132		LOS: F	
	Intersection Configuration	E leg	N leg	W leg	S leg	E leg	N leg	W leg	S leg
	Queue Length (ft) 50th Percentile	LT: *102 Th: *946	*792	LT: 37 Th: *855	LT: 198 Th: *698	LT: *102 Th: *1048	*737	LT: 38 Th: *958	LT: 109 Th: 337
	Queue Length (ft) 95th Percentile	LT: *169 Th: *1205	*1033	LT: *122 Th: *1113	LT: 291 Th: *935	LT: *169 Th: *1307	*978	LT: *122 Th: *1215	LT: 160 Th: 451
2	*Added lanes*	Delay: 109		LOS: F		Delay: 72		LOS: E	
	Intersection Configuration	E leg	N leg	W leg	S leg	E leg	N leg	W leg	S leg
	Queue Length (ft) 50th Percentile	LT: *91 Th: 801	LT: 206 Th: *482	LT: 36 Th: 727	LT: 193 Th: *660	LT: *83 Th: 789	LT: 162 Th: 325	LT: 36 Th: 716	LT: 144 Th: *572
	Queue Length (ft) 95th Percentile	LT: *146 Th: *1104	LT: *343 Th: *693	LT: *122 Th: *1012	LT: 283 Th: *897	LT: *195 Th: *1091	LT: *340 Th: 450	LT: *122 Th: *999	LT: 211 Th: *809
3	*Added lanes*	Delay: 61		LOS: E		Delay: 35		LOS: C	
	Intersection Configuration	E leg	N leg	W leg	S leg	E leg	N leg	W leg	S leg
	Queue Length (ft) 50th Percentile	LT: 53 Th: 715 RT: 28	LT: 98 Th: *381	LT: 38 Th: 327	LT: 182 Th: 447 RT: 4	LT: 36 Th: 504 RT: 15	LT: 48 Th: 271	LT: 24 Th: 232	LT: 109 Th: 318 RT: 0
	Queue Length (ft) 95th Percentile	LT: 112 Th: *995 RT: 72	LT: 146 Th: *592	LT: *122 Th: 397	LT: 267 Th: *652 RT: 45	LT: 88 Th: 791 RT: 53	LT: 89 Th: 450	LT: *91 Th: 335	LT: 206 Th: 528 RT: 36

*NOTE: Delay- delay per vehicle in seconds, *indicates that volume exceeds capacity and queue could be longer.*

Table 8b: Alt 01 (3 lanes) Intersection Configurations (PM Peak Hour)

#		Split Phasing - NS				Pm=pt phasing - NS			
Olentangy River Road									
1	*No added lanes*	Delay: 122		LOS: F		Delay: 86		LOS: F	
	Intersection Configuration	E leg	N leg	W leg	S leg	E leg	N leg	W leg	S leg
	Queue Length (ft) 50th Percentile	LT: *336 Th: 634	LT: *269 Th: *212	LT: 9 Th: *1094	Th: *466 RT: 55	LT: *312 Th: 570	LT: 175 Th: 195	LT: 8 Th: *1043	Th: *364 RT: 62
	Queue Length (ft) 95th Percentile	LT: *532 Th: *816	LT: *447 Th: *392	LT: 23 Th: *1353	Th: *681 RT: 132	LT: *508 Th: 690	LT: *288 Th: 291	LT: 20 Th: *1302	Th: *644 RT: 143
2	*Added lanes*	Delay: 86		LOS: F		Delay: 49		LOS: D	
	Intersection Configuration	E leg	N leg	W leg	S leg	E leg	N leg	W leg	S leg
	Queue Length (ft) 50th Percentile	LT: *259 Th: *766	LT: *243 Th: 206	LT: 10 Th: *443	Th: 399 RT: 47	LT: 234 Th: 628	LT: 163 Th: 184	LT: 8 Th: 412	Th: 328 RT: 54
	Queue Length (ft) 95th Percentile	LT: *455 Th: *908	LT: *421 Th: *364	LT: 26 Th: *589	Th: *615 RT: 118	LT: *409 Th: *811	LT: 240 Th: 275	LT: 22 Th: *533	Th: *496 RT: 130
3	*Added lanes*	Delay: 60		LOS: E		Delay: 42		LOS: D	
	Intersection Configuration	E leg	N leg	W leg	S leg	E leg	N leg	W leg	S leg
	Queue Length (ft) 50th Percentile	LT: *259 Th: 359 RT: 45	LT: 232 Th: 205	LT: 10 Th: *470	Th: 397 RT:47	LT: 235 Th: 325 RT: 194	LT: 157 Th: 179	LT: 9 Th: 425	Th: 316 RT: 50
	Queue Length (ft) 95th Percentile	LT: *455 Th: 437 RT: 164	LT: *411 Th: *354	LT: 26 Th: *605	Th: *609 RT:117	LT: *410 Th: 397 RT: 336	LT: 231 Th: 267	LT: 23 Th: *566	Th: 435 RT: 123

*NOTE: Delay- delay per vehicle in seconds, *indicates that volume exceeds capacity and queue could be longer.*

Table 9a: Alt 02 (5 lanes) Intersection Configurations (PM Peak Hour)

#		Split Phasing - NS				Pm=pt phasing - NS			
Linworth Road									
1	*No added lanes*	Delay: 91		LOS: F		Delay: 69		LOS: E	
	Intersection Configuration	E leg	N leg	W leg	S leg	E leg	N leg	W leg	S leg
	Queue Length (ft) 50th Percentile	LT: *91 Th: 518	*752	LT: *58 Th: 490	LT: 216 Th: *585	LT: *101 Th: 531	*717	LT: *58 Th: 502	LT: 119 Th : 287
	Queue Length (ft) 95th Percentile	LT: *203 Th: 615	*995	LT: *156 Th: 583	LT: 313 Th:*816	LT: *213 Th: 629	*960	LT: *156 Th: 596	LT: 173 Th: 385
2	*Added lanes*	Delay: 64		LOS: E		Delay: 42		LOS: D	
	Intersection Configuration	E leg	N leg	W leg	S leg	E leg	N leg	W leg	S leg
	Queue Length (ft) 50th Percentile	LT: *77 Th: 494	LT: 196 Th: 331	LT: 47 Th: 467	LT: 208 Th:*555	LT: 60 Th: 455	LT: 132 Th: 293	LT: 39 Th: 430	LT: 135 Th: 443
	Queue Length (ft) 95th Percentile	LT: *193 Th: 615	LT: 285 Th: 459	LT: *146 Th: 583	LT: 313 Th:*816	LT: *162 Th: 551	LT: *271 Th: 422	LT: *117 Th: 522	LT: 205 Th: *652

*NOTE: Delay- delay per vehicle in seconds, *indicates that volume exceeds capacity and queue could be longer.*

Table 9b: Alt 02 (5 lanes) Intersection Configurations (PM Peak Hour)

#		Split Phasing - NS				Pm=pt phasing - NS			
Olentangy River Road									
1	*No added lanes*	Delay: 105		LOS: F		Delay: 63		LOS: E	
	Intersection Configuration	E leg	N leg	W leg	S leg	E leg	N leg	W leg	S leg
	Queue Length (ft) 50th Percentile	LT: *272 Th: *932	201	LT: 14 Th: *572	Th: 395 RT: 48	LT: 241 Th: *846	LT: 162 Th: 180	LT: 12 Th: 505	Th: 330 RT: 57
	Queue Length (ft) 95th Percentile	LT: *469 Th: *1073	*372	LT: 32 Th: *712	Th: *618 RT: 120	LT: *435 Th: *987	LT: 240 Th: 272	LT: 28 Th: *657	Th: *572 RT: 135
2	*Added lanes*	Delay: 61		LOS: E		Delay: 46		LOS: D	
	Intersection Configuration	E leg	N leg	W leg	S leg	E leg	N leg	W leg	S leg
	Queue Length (ft) 50th Percentile	LT: *272 Th: 446 RT: 54	LT: 108 Th: 201	LT: 14 Th: *572	Th: 395 RT: 48	LT: 241 Th: 412 RT: 183	LT: 75 Th: 178	LT: 12 Th: *517	Th: 324 RT: 53
	Queue Length (ft) 95th Percentile	LT: *469 Th: 536 RT: 167	LT: 154 Th: *372	LT: 32 Th: *712	Th: *618 RT: 120	LT: *435 Th: 495 RT: 313	LT: 107 Th: 268	LT: 29 Th: *677	Th: *257 RT: 130

*NOTE: Delay- delay per vehicle in seconds, *indicates that volume exceeds capacity and queue could be longer.*

Table 10a: Alt 03 (5/3 lanes) Intersection Configurations (PM Peak Hour)

#		Split Phasing - NS				Pm=pt phasing - NS			
Linworth Road									
1	*No added lanes*	Delay: 147		LOS: F		Delay: 122		LOS: F	
	Intersection Configuration	E leg	N leg	W leg	S leg	E leg	N leg	W leg	S leg
	Queue Length (ft) 50th Percentile	LT: *57 Th: *1145	*747	LT: *79 Th: *894 RT: 31	LT: 255 Th: *588	LT: *58 Th: *1196	*669	LT: *80 Th: *944 RT: 35	LT: 150 Th: 302
	Queue Length (ft) 95th Percentile	LT: *155 Th: *1409	*988	LT: *183 Th: *1150 RT: 74	LT: 363 Th: *817	LT: *156 Th: *1459	*911	LT: *184 Th: *1200 RT: 80	LT: 213 Th: 406
2	*Added lanes*	Delay: 59		LOS: E		Delay: 32		LOS: C	
	Intersection Configuration	E leg	N leg	W leg	S leg	E leg	N leg	W leg	S leg
	Queue Length (ft) 50th Percentile	LT: 38 Th: 363	LT: 140 Th: 300	LT: 48 Th: 362	LT: 100 Th: *477	LT: 26 Th: 268	LT: 61 Th: 209	LT: 33 Th: 268	LT: 48 Th: 284
	Queue Length (ft) 95th Percentile	LT: *123 Th: 497	LT: 255 Th: 465	LT: *151 Th: 497	LT: 170 Th: *855	LT: 88 Th: 457	LT: 144 Th: 401	LT: 108 Th: 456	LT: 103 Th: 558
3	*Added lanes*	Delay: 48		LOS: D		Delay: 34		LOS: C	
	Intersection Configuration	E leg	N leg	W leg	S leg	E leg	N leg	W leg	S leg
	Queue Length (ft) 50th Percentile	LT: 36 Th: 358	LT: 139 Th: 297	LT: 46 Th: 357	LT: 212 Th: 189	LT: 29 Th: 296	LT: 61 Th: 249	LT: 37 Th: 295	LT: 104 Th: 125
	Queue Length (ft) 95th Percentile	LT: *114 Th: 497	LT: *258 Th: 465	LT: *142 Th: 497	LT: *395 Th: 300	LT: 93 Th: 463	LT: 141 Th: 465	LT: *122 Th: 462	LT: 229 Th: 221

*NOTE: Delay- delay per vehicle in seconds, *indicates that volume exceeds capacity and queue could be longer.*

Table 10b: Alt 03 (5/3 lanes) Intersection Configurations (PM Peak Hour)

#		Split Phasing - NS				Pm=pt phasing - NS			
Olentangy River Road									
1	*No added lanes*	Delay: 131		LOS: F		Delay: 89		LOS: F	
	Intersection Configuration	E leg	N leg	W leg	S leg	E leg	N leg	W leg	S leg
	Queue Length (ft) 50th Percentile	LT: *330 Th: *731	LT: *269 Th: *212	LT: 13 Th: *1158	Th: *447 RT: 53	LT: *305 Th: 604	LT: 178 Th: 197	LT: 11 Th: *1094	Th: *366 RT: 62
	Queue Length (ft) 95th Percentile	LT: *524 Th: *873	LT: *447 Th: *392	LT: 30 Th: *1420	Th: *662 RT: 129	LT: *500 Th: *733	LT: *292 Th: *296	LT: 26 Th: *1356	Th: *443 RT: 143
2	*Added lanes*	Delay: 76		LOS: E		Delay: 51		LOS: D	
	Intersection Configuration	E leg	N leg	W leg	S leg	E leg	N leg	W leg	S leg
	Queue Length (ft) 50th Percentile	LT: *268 Th: *731	LT: *269 Th: *212	LT: 13 Th: 384	Th: *447 RT: 53	LT: 226 Th: 666	LT: 165 Th: 186	LT: 13 Th: 427	Th: 322 RT: 53
	Queue Length (ft) 95th Percentile	LT: *462 Th: *873	LT: *447 Th: *392	LT: 30 Th: 467	Th: *662 RT: 129	LT: *400 Th: *853	LT: 243 Th: 278	LT: 29 Th: *549	Th: *498 RT: 130
3	*Added lanes*	Delay: 55		LOS: E		Delay: 44		LOS: D	
	Intersection Configuration	E leg	N leg	W leg	S leg	E leg	N leg	W leg	S leg
	Queue Length (ft) 50th Percentile	LT: *268 Th: 420 RT: 0	LT: *269 Th: *212	LT: 13 Th: 384	LT: 44 Th: 227	LT: 223 Th: 430 RT: 2	LT: 168 Th: 183	LT: 13 Th: 441	LT: 34 Th: 233
	Queue Length (ft) 95th Percentile	LT: *462 Th: 512 RT: 68	LT: *447 Th: *392	LT: 30 Th: 467	LT: 86 Th: 297	LT: *388 Th: 523 RT: 74	LT: *314 Th: 273	LT: 30 Th: *583	LT: 66 Th: 304

*NOTE: Delay- delay per vehicle in seconds, *indicates that volume exceeds capacity and queue could be longer.*

Conclusion

The purpose of this study is to provide the Study Committee the up-to-date data it needs to better understand the existing and projected traffic conditions in the State Rt. 161 corridor between State Rt. 315 and Sawmill Road.

The following conclusions can be made from the data and analysis presented in this technical memorandum:

Existing Conditions

- 3 out of 7 intersections operate at congested levels during peak hours, between 7:30 and 8:30 a.m. and 5:00 and 6:00 p.m.
- When a train crosses, queue lengths (vehicle back-ups) can become as long as 5,600 ft.--more than a mile, during peak hours.
- Current traffic volumes are approaching the maximum capacity of the corridor.

Future Scenarios

- *WHAT IF* no improvements were made to the study corridor? Volumes increase and exceed the maximum roadway capacity due to population and employment growth, and the delay at all but one intersection increases significantly.
- *WHAT IF* the entire State Rt. 161 study corridor had 3 lanes? The volumes increase slightly from the no improvement scenario and approach the maximum capacity of a 3-lane roadway. Associated intersection improvements could improve the operation of the entire corridor, however, these improvements could include additional through lanes, making portions of the corridor five lanes instead of three.
- *WHAT IF* the entire State Rt. 161 study corridor had 5 lanes? This scenario generates higher volumes due to the increased attraction of the added capacity, though the volumes do not exceed the maximum capacity of a 5-lane roadway and the intersections can operate acceptably.
- *WHAT IF* State Rt. 161 had 5 lanes between Sawmill and Linworth Roads and 3 lanes between Linworth Road and State Rt. 315? Volumes are similar to the 3- and 5- lane scenarios and, like in the 3-lane scenario, improving the intersections along the corridor may help improve the overall traffic conditions.
- *WHAT IF* the entire State Rt. 161 study corridor had 3 lanes and Godown Road was extended to State Rt. 161? The extension did not divert enough traffic to other routes to significantly improve the traffic conditions along the State Rt. 161 study corridor.
- *WHAT IF* the entire State Rt. 161 study corridor had 3 lanes and a new, parallel road existed just north of Don Scott (OSU) Airport from Sawmill Road to Godown Road? The new road did not provide an adequate alternate route and did not attract enough traffic to significantly improve the traffic conditions along the study corridor.

Other Findings

- The State Rt. 161/Linworth Road intersection is the most congested, and should be considered a bottle neck of the entire corridor.
- Intersection improvements alone would reduce delay and improve traffic flow at the Linworth and Olentangy River Road intersections, but could potentially move the bottleneck to other parts of the corridor.
- No matter what improvements are made to the study corridor, the at -grade railroad crossing will continue to cause long back-ups and disrupt the function of the McVey, Linworth, and Olentangy River Road intersections when a train passes. Not grade-separating the rail has serious impacts on the function of the corridor.

Going forward, it will be the responsibility of the Traffic Study Committee to determine the next steps for identifying the appropriate infrastructure improvements along the study corridor. The SR 161 Traffic Study has provided the data and information to aid these decisions. Next steps could include:

- Public involvement activities
- Benefit/Cost Analyses
- Preliminary Engineering studies
- Further study of a railroad grade separation

Appendix A:

SR 161 Traffic Study Committee Meeting Notes

SR 161 Traffic Study Kick-off Meeting
Wednesday, October 9, 2013
8:30 AM - 10:00 AM
Mid Ohio Regional Planning Commission

Meeting Summary
(Summary items in italic)

1. Review Study Scope and Schedule
    a. *Project schedule is flexible to meet the needs of the communities. There was concern that more time might be needed at the end to review the draft document.*
    b. *Materials will be sent out for review with as much time as possible for review before scheduled meetings.*
    c. *Materials will be made available via an FTP site. When the communications strategy is worked out other methods such as a web page may be created.*
    d. *Scope should include what needs to happen to bring the facility to acceptable LOS based on current conditions.*
    e. *The project might include a couple land use scenarios with different development assumptions for certain areas.*

2. Transportation Network Assumptions and Traffic Counts
    a. Committed improvements to be included in base future network
        i. *Reviewed roadway network map*
        ii. *Patti Austin will be providing information on two additional improvements to be included:*
            1. *Additional southbound lane on Sawmill Rd. between I-270 and Hard Rd.*
            2. *The addition of turn lanes on Smokey Row*
    b. Existing traffic counts and new counts to be collected
        i. *Reviewed traffic counts map*
        ii. *Identified the following additional counts to obtain:*
            1. *Intersection of Federated Blvd. and SR 161*
            2. *Intersection of McVey Blvd. and SR 161*
            3. *City of Columbus may have additional counts on SR 161 near Fiesta Dr.*
            4. *ODOT will check on counts they have*
        iii. *MORPC will research what kind of data is available for the at-grade railroad crossing such as number of trains and times of day trains travel the route, lengths of time gates are down, etc.*

3. Land Use Data
    a. Current population and employment estimates and forecasts
        i. *Reviewed existing population/employment map*
    b. Areas with known changes/growth (high level)
        i. *City of Worthington identified known redevelopment sites*
        ii. *The possibility of analyzing more than one land use scenario was discussed*

4. Community Involvement and Information Dissemination
    a. *It was agreed upon that Community Involvement must be a unified effort among all jurisdictions*
    b. *Matt Greeson will take the lead in forming a sub-group tasked with developing a community outreach strategy*

5. Follow-up Action Items
    a. Schedule land use review meetings (MORPC)
    b. Obtain new traffic counts (MORPC)
    c. Community involvement (Traffic Study Committee)
    d. Schedule next meeting in early January (MORPC)

SR 161 Traffic Study Meeting
Monday, February 24, 2014
2:30 PM - 4:00 PM
Mid Ohio Regional Planning Commission

Meeting Summary

(Summary items in italic)

1. Land Use Assumptions
    a. *Reviewed Land Use Assumptions documentation*
    b. *The development approved on SW parcel of SR 161/Linworth Rd. intersection should be labeled as "retail" rather than "restaurants." The exact use of the site is yet to be determined.*
    c. *Land use assumptions were accepted by the committee*

2. Existing LOS Analysis
    a. *Reviewed Existing LOS Analysis documentation*
    b. *The configuration of the eastbound approach of the SR 161/Sawmill Rd. intersection was shown incorrectly on Figure 13. MORPC will make sure the analysis and graphic reflect correct configuration*
    c. *Data from the Public Utilities Commission of Ohio was used to determine the number of trains using the railroad crossing daily. Committee members thought the number of trains seemed low. MORPC will double check this data.*
    d. *MORPC will research possible future growth in the use of this rail line that crosses SR 161.*

3. Preliminary Traffic Projections
    a. *Forecasted traffic volumes for the year 2035 were presented for the "No-Build" scenario. It is noted that these are projected with no improvements along the corridor.*

4. Identify Future Network Alternatives
    a. *Network alternatives were discussed to be tested with the regional model to determine their impact on the future volumes along the corridor. It is expected that providing better operations in the corridor will cause some increase in volumes compared to the No-Build scenario. The following network alternatives were agreed upon by the Committee to test in the travel demand model as part of the analysis:*
        i. *Three lanes the entire length of the study corridor*
        ii. *Five lanes the entire length of the study corridor*
        iii. *Five lanes west of Linworth Rd, and three lanes east of Linworth Rd.*

iv. *Three lanes the entire length of the study corridor, with Godown Rd. extension to SR 161*

v. *Three lanes the entire length of the study corridor, with new east/west road north of Don Scott airport from Sawmill Rd. to Godown Rd.*

b. *Committee members suggested additional concepts that might affect how the corridor operates:*

i. *Access management on the study corridor*

ii. *Improvements to the SR 161/Linworth Rd. intersection*

iii. *Adding a signal at either the SR 161/Fiesta Dr. intersection or SR 161/Nicholas Dr. intersection to encourage the use of one or the other*

5. Follow-up Action Items

a. *MORPC will update the one-page project status sheet and provide a draft to committee members by February 28, 2014*

b. *MORPC agreed to present publicly as requested by committee members. It was felt it may be more appropriate to wait until after the next committee meeting when additional information is available.*

c. *MORPC will schedule the next committee meeting to review the results of the network alternatives analysis for a month or so out (late March/early April)*

SR 161 Traffic Study Meeting
Thursday, May 8, 2014
9:00 AM - 10:30 AM
Mid Ohio Regional Planning Commission

Meeting Summary
(Summary items in italic)

1. Review Base Future Traffic Conditions
    a. *MORPC will research the availability of the railroad schedule for the railroad tracks crossing the corridor*

    b. *It was discussed and acknowledged that the results of this study really only reflect the traffic conditions without taking into account the delays caused by a crossing train. The costs and benefits of a grade separated crossing should be analyzed separately.*

2. Review Future Network Alternatives Analysis Results
    c. Three lanes the entire length of the study corridor

        i. *It was suggested that this alternative could have negative impacts on the intersections because gaps in traffic flow will be removed, impeding turning movements.*

    d. Five lanes the entire length of the study corridor

        ii. *This scenario projects the highest volumes, but the increased volumes do not exceed the capacity of a 5-lane section. Further LOS analysis is necessary to determine how the turning movements will affect the corridor.*

        iii. *MORPC will compare these volumes to studies completed in years past.*

    e. Five lanes west of Linworth Rd, and three lanes east of Linworth Rd.

        iv. *The LOS analysis is needed to provide further information on how the intersections will function in this scenario, particularly at Linworth Blvd. where the number of through lanes is proposed to change.*

    f. Three lanes the entire length of the study corridor, with Godown Rd. extension to SR 161

        v. *The question was raised as to why this alternative does not affect the traffic volumes on Linworth. MORPC will investigate this, and report back.*

vi. *It was suggested that there are not sidewalks on McVey, and Fiesta Dr. might be a better road for the Godown extension to connect into, which provides access to the post office and country club*

g. Three lanes the entire length of the study corridor, with new east/west road north of Don Scott Airport from Sawmill Rd. to Godown Rd extension.

vii. *The committee agreed that this alternative can likely be ruled out due to it not having significant impact on the traffic volumes on the SR 161 corridor and it is logistically not feasible.*

3. Follow-up Action Items

a. Update Community Outreach Status Report

viii. *It was agreed that there is not enough new information to report at this time, and the Status Report will be updated after the next meeting when the LOS analysis is complete*

ix. *MORPC will work with the committee members to develop a presentation for councils and boards as appropriate.*

b. Schedule final meeting

x. *The next meeting will be scheduled for mid-June*

c. Final documentation

xi. *A draft of the final documentation will be available for review prior to the next meeting.*

SR 161 Traffic Study Meeting
Monday, June 16, 2014
3:30 PM - 5:00 PM
Mid Ohio Regional Planning Commission

Meeting Summary
(Summary items in italic)

1. Review Future Network Alternatives Analysis Results - Volumes and Intersection LOS
    a. Three lanes the entire length of the study corridor

    b. Five lanes the entire length of the study corridor

    c. Five lanes west of Linworth Rd, and three lanes east of Linworth Rd.

    d. Three lanes the entire length of the study corridor, with Godown Rd. extension to SR 161

    e. Three lanes the entire length of the study corridor, with new east/west road north of Don Scott Airport from Sawmill Rd. to Godown Rd extension.

    Projected volumes from a 1994 study of the same corridor were compared to the current 2013 volumes. The differences are likely due to changes in land use assumptions and because the widening of I-270 would not have been a committed improvement at the time of the 1994 study, making SR 161 a more attractive alternate corridor. The volume differences are not concerning.

    The discussion focused mainly on the intersection configuration alternatives, and how intersection improvements would impact the traffic conditions of the entire corridor. While intersection improvements alone will improve the level of service of the intersection, it could just move the bottleneck to another location on the corridor.

    It will be important to consider queue lengths and where lanes are added and removed/tapered when discussing intersection improvements. MORPC agreed to add a summary of the resulting queue lengths to the Tech Memo.

2. Follow-up Action Items
    a. Update Community Outreach Status Report (MORPC)
    MORPC will provide a draft updated status report that will also act as an Executive Summary of the Tech Memo no later than Friday, June 20.

    b. Review draft Tech Memo and provide comments (Committee)
    The Study Committee agreed to provide MORPC with comments no later than Friday, June 27.

c. Finalize Tech Memo (MORPC)

d. Identify next steps (Committee)
MORPC will schedule a meeting for the week of July 7 for leadership staff to discuss messaging and approach.

Appendix B:

2013 Population & Employment Estimates and 2035 Population & Employment Forecasts TAZ Summary Table

Appendix B: 2013 Population & Employment Estimates and 2035 Population & Employment Forecasts
TAZ Summary

	2013												2035												Growth											
	Population						Employment						Population						Employment						Population						Employment					
TAZ	Household Population	Total Population	Households	Group Quarters	Grp Qtrs Population	Labor Force	Office	Retail Goods	Retail Service	Other	Industrial	Total	Household Population	Total Population	Households	Group Quarters	Grp Qtrs Population	Labor Force	Office	Retail Goods	Retail Service	Other	Industrial	Total	Household Population	Total Population	Households	Group Quarters	Grp Qtrs Population	Labor Force	Office	Retail Goods	Retail Service	Other	Industrial	Total
1301	933	933	398	0	0	414	165	103	113	32	22	435	965	965	413	0	0	426	195	111	157	32	22	517	32	32	15	0	0	12	30	8	44	0	0	82
1306	1,445	1,445	691	0	0	769	42	9	65	5	0	121	1,464	1,464	701	0	0	772	47	9	69	6	0	131	19	19	10	0	0	3	5	0	4	1	0	10
1308	1,776	1,845	992	69	69	992	446	34	78	10	3	571	2,020	2,089	1,102	69	69	1,102	500	44	88	27	3	662	244	244	110	0	0	110	54	10	10	17	0	91
1309	322	322	195	0	0	195	20	435	220	0	0	675	326	326	242	0	0	242	53	441	226	2	0	722	4	4	47	0	0	47	33	6	6	2	0	47
1310	347	347	213	0	0	213	0	12	5	7	0	24	402	402	249	0	0	249	23	16	16	7	0	62	55	55	36	0	0	36	23	4	11	0	0	38
1401	651	651	258	0	0	282	58	11	37	283	40	429	667	667	273	0	0	292	114	20	48	283	40	505	16	16	15	0	0	10	56	9	11	0	0	76
1402	0	0	0	0	0	0	1,530	344	112	96	235	2,317	419	419	221	0	0	151	1,891	472	123	96	265	2,847	419	419	221	0	0	151	361	128	11	0	30	530
1409	3,051	3,151	1,222	100	100	1,517	1,160	31	144	144	12	1,491	3,572	3,672	1,472	100	100	1,674	1,398	111	184	175	12	1,880	521	521	250	0	0	157	238	80	40	31	0	389
9301a	3,424	3,544	1,409	120	120	2,494	714	150	150	111	8	1,133	3,881	4,001	1,589	120	120	2,628	714	167	156	123	8	1,168	457	457	180	0	0	134	0	17	6	12	0	35
9301b	0	0	0	0	0	0	0	301	216	0	0	517	0	0	0	0	0	0	0	301	216	0	0	517	0	0	0	0	0	0	0	0	0	0	0	0
9302	551	551	332	0	0	332	404	591	320	0	15	1,330	571	571	407	0	0	406	404	660	330	1	15	1,410	20	20	75	0	0	74	0	69	10	1	0	80
9303	979	979	437	0	0	487	11	0	0	7	5	23	979	979	437	0	0	487	11	0	0	7	5	23	0	0	0	0	0	0	0	0	0	0	0	0
9304	103	103	49	0	0	54	547	167	25	0	240	979	962	962	375	0	0	475	862	172	357	17	450	1,858	859	859	326	0	0	421	315	5	332	17	210	879
9305	568	568	236	0	0	312	38	39	58	0	0	135	629	629	261	0	0	339	68	47	158	1	0	274	61	61	25	0	0	27	30	8	100	1	0	139
9306	1,052	1,052	434	0	0	573	1	0	0	4	2	7	1,114	1,114	468	0	0	577	2	0	0	4	2	8	62	62	34	0	0	4	1	0	0	0	0	1
9308	258	258	141	0	0	141	16	0	0	0	0	16	359	359	195	0	0	195	29	8	8	1	0	46	101	101	54	0	0	54	13	8	8	1	0	30
9309	1,058	1,058	549	0	0	549	128	7	110	13	3	261	1,207	1,207	629	0	0	629	222	14	119	15	3	373	149	149	80	0	0	80	94	7	9	2	0	112
9310	1,840	1,840	862	0	0	1,093	25	2	127	5	11	170	2,215	2,215	1,061	0	0	1,250	62	8	138	6	11	225	375	375	199	0	0	157	37	6	11	1	0	55
9311	2,992	3,092	1,523	100	100	1,535	286	220	163	39	16	724	3,149	3,249	1,571	100	100	1,571	336	225	178	54	16	809	157	157	48	0	0	36	50	5	15	15	0	85
9312	1,183	1,183	574	0	0	667	177	43	206	44	9	479	1,511	1,511	724	0	0	845	177	43	206	44	9	479	328	328	150	0	0	178	0	0	0	0	0	0
9322	3,320	3,320	1,709	0	0	2,238	103	400	326	97	5	931	3,642	3,642	1,949	0	0	2,413	103	482	377	109	5	1,076	322	322	240	0	0	175	0	82	51	12	0	145
9323a	526	526	254	0	0	324	524	363	83	0	52	1,022	1,593	1,593	854	0	0	829	949	373	72	0	52	1,446	1,067	1,067	600	0	0	505	425	10	-11	0	0	424
9323b	0	0	0	0	0	0	0	292	73	12	0	377	0	0	0	0	0	0	0	292	73	12	0	377	0	0	0	0	0	0	0	0	0	0	0	0
9325a	5,415	5,415	2,178	0	0	3,037	53	2	3	6	5	69	5,415	5,415	2,178	0	0	3,037	53	2	8	12	5	80	0	0	0	0	0	0	0	0	5	6	0	11
9325b	209	209	84	0	0	117	0	0	0	0	0	0	294	294	156	0	0	163	0	0	0	0	0	0	85	85	72	0	0	46	0	0	0	0	0	0
9326	210	210	128	0	0	131	25	0	2	0	0	27	210	210	128	0	0	131	25	0	2	600	0	627	0	0	0	0	0	0	0	0	0	600	0	600
9404	38	38	25	0	0	25	33	111	98	0	0	242	198	198	85	0	0	97	33	131	99	0	0	263	160	160	60	0	0	72	0	20	1	0	0	21
9405a	642	642	254	0	0	367	0	0	0	81	0	81	652	652	258	0	0	371	0	0	0	92	0	92	10	10	4	0	0	4	0	0	0	11	0	11
9405b	71	71	28	0	0	41	3	0	12	0	31	46	71	71	28	0	0	41	46	6	18	0	31	101	0	0	0	0	0	0	43	6	6	0	0	55
9406a	2,612	2,612	1,242	0	0	1,619	0	0	0	10	37	47	2,612	2,612	1,242	0	0	1,619	0	0	0	10	37	47	0	0	0	0	0	0	0	0	0	0	0	0
9406b	95	95	45	0	0	59	36	0	0	60	0	96	95	95	45	0	0	59	36	0	0	60	0	96	0	0	0	0	0	0	0	0	0	0	0	0
9406c	913	913	434	0	0	566	70	4	7	40	0	121	1,151	1,151	534	0	0	665	70	5	16	58	0	149	238	238	100	0	0	99	0	1	9	18	0	28
9407a	881	881	397	0	0	548	2,011	40	783	49	3	2,886	881	881	397	0	0	548	2,065	216	825	59	3	3,168	0	0	0	0	0	0	54	176	42	10	0	282
9407b	259	259	117	0	0	161	0	269	60	0	0	329	390	390	177	0	0	232	0	269	60	0	0	329	131	131	60	0	0	71	0	0	0	0	0	0
9408a	870	870	404	0	0	461	1,179	871	1,073	40	247	3,410	9,147	9,147	4,408	0	0	4,263	4,229	1,368	1,778	40	247	7,662	8,277	8,277	4,004	0	0	3,802	3,050	497	705	0	0	4,252
9408b	4	4	2	0	0	2	0	296	94	0	0	390	4	4	2	0	0	2	151	359	163	0	0	673	0	0	0	0	0	0	151	63	69	0	0	283
9408c	0	0	0	0	0	0	103	94	63	0	0	260	0	0	0	0	0	0	131	331	221	0	0	683	0	0	0	0	0	0	28	237	158	0	0	423
9409a	1,757	1,757	645	0	0	1,011	17	0	4	65	0	86	1,757	1,757	645	0	0	1,011	17	0	4	65	0	86	0	0	0	0	0	0	0	0	0	0	0	0
9409b	556	556	204	0	0	320	0	0	0	0	0	0	710	710	269	0	0	380	13	5	7	8	0	33	154	154	65	0	0	60	13	5	7	8	0	33
9412	91	91	74	0	0	74	18	737	299	0	0	1,054	248	248	134	0	0	134	18	817	303	0	0	1,138	157	157	60	0	0	60	0	80	4	0	0	84
9413a	1,257	1,257	477	0	0	652	151	2	0	2	0	155	1,514	1,514	599	0	0	698	151	4	3	2	0	160	257	257	122	0	0	46	0	2	3	0	0	5
9413b	1,863	1,863	707	0	0	967	0	0	0	0	3	3	1,863	1,863	707	0	0	967	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0
9419	192	266	178	74	74	178	84	10	10	2	6	112	192	266	178	74	74	178	84	28	14	2	6	134	0	0	0	0	0	0	0	18	4	0	0	22
9420a	1,309	1,309	506	0	0	652	0	0	0	0	7	7	1,315	1,315	510	0	0	653	0	0	0	0	7	7	6	6	4	0	0	1	0	0	0	0	0	0
9420b	181	181	70	0	0	90	21	9	0	25	0	55	187	187	74	0	0	91	21	24	0	44	0	89	6	6	4	0	0	1	0	15	0	19	0	34
Total	***45,804***	***46,267***	***20,677***	***463***	***463***	***26,259***	***10,199***	***5,999***	***5,139***	***1,289***	***1,017***	***23,643***	***60,553***	***61,016***	***27,947***	***463***	***463***	***32,892***	***15,303***	***7,581***	***6,820***	***2,074***	***1,257***	***33,035***	***14,749***	***14,749***	***7,270***	***0***	***0***	***6,633***	***5,104***	***1,582***	***1,681***	***785***	***240***	***9,392***

Appendix C:

Synchro Reports

Sawmill Rd & SR 161

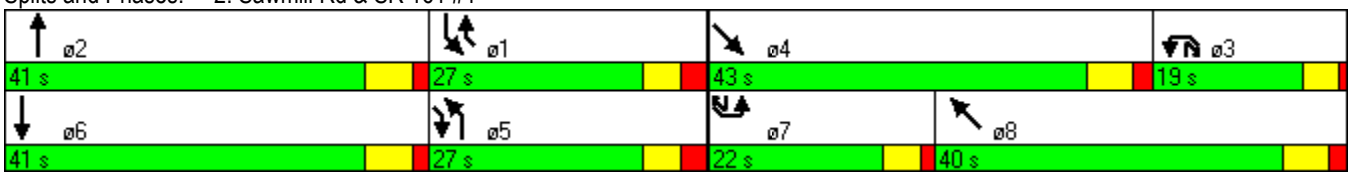
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	89	630	80	96	615	104	113	224	100	58	399	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	360		0	400		480	270		0	950		180
Storage Lanes	1		1	1		2	2		1	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	0.97	1.00	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	3433	1863	1583	1770	3539	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	5085	1583	1770	5085	1583	3433	1863	1583	1770	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			87			113			109			60
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		874			921			715			1294	
Travel Time (s)		19.9			20.9			10.8			19.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	97	685	87	104	668	113	123	243	109	63	434	60
Shared Lane Traffic (%)												
Lane Group Flow (vph)	97	685	87	104	668	113	123	243	109	63	434	60
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot		Over	Prot		Over	Prot		Over	Prot		Over
Protected Phases	5	2	3	1	6	7	7	4	5	3	8	1
Permitted Phases												
Minimum Split (s)	10.3	22.5	9.6	10.3	22.5	9.6	9.6	22.5	10.3	9.6	22.5	10.3
Total Split (s)	27.0	41.0	19.0	27.0	41.0	22.0	22.0	43.0	27.0	19.0	40.0	27.0
Total Split (%)	20.8%	31.5%	14.6%	20.8%	31.5%	16.9%	16.9%	33.1%	20.8%	14.6%	30.8%	20.8%
Maximum Green (s)	20.7	34.9	14.5	20.7	34.9	17.0	17.0	36.6	20.7	14.5	33.6	20.7
Yellow Time (s)	3.6	4.5	3.6	3.6	4.5	3.6	3.6	4.5	3.6	3.6	4.5	3.6
All-Red Time (s)	2.7	1.6	0.9	2.7	1.6	1.4	1.4	1.9	2.7	0.9	1.9	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.1	4.5	6.3	6.1	5.0	5.0	6.4	6.3	4.5	6.4	6.3
Lead/Lag	Lag	Lead	Lag	Lag	Lead	Lead	Lead	Lead	Lag	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Act Effct Green (s)	20.7	34.9	14.5	20.7	34.9	17.0	17.0	36.6	20.7	14.5	33.6	20.7
Actuated g/C Ratio	0.16	0.27	0.11	0.16	0.27	0.13	0.13	0.28	0.16	0.11	0.26	0.16
v/c Ratio	0.34	0.50	0.34	0.37	0.49	0.37	0.27	0.46	0.32	0.32	0.47	0.20
Control Delay	52.6	41.7	14.5	53.2	41.5	12.6	52.8	42.1	11.1	41.0	25.8	36.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.6	41.7	14.5	53.2	41.5	12.6	52.8	42.1	11.1	41.0	25.8	36.0
LOS	D	D	B	D	D	B	D	D	B	D	C	D

Sawmill Rd & SR 161

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Approach Delay		40.2			39.2			37.7			28.6	
Approach LOS		D			D			D			C	

Intersection Summary	
Area Type:	Other
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 71 (55%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 65	
Control Type: Pretimed	
Maximum v/c Ratio: 0.50	
Intersection Signal Delay: 37.1	Intersection LOS: D
Intersection Capacity Utilization 52.0%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 2: Sawmill Rd & SR 161 #1



Sawmill Place Blvd & SR 161

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	37	482	18	37	357	3	23	17	67	20	14	128
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	150		0	0		80	0		0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Frt		0.994			0.999				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1852	0	1770	1861	0	1770	3539	1583	1770	1863	1583
Flt Permitted	0.470			0.391			0.748			0.745		
Satd. Flow (perm)	875	1852	0	728	1861	0	1393	3539	1583	1388	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			1				73			139
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		794			358			324			467	
Travel Time (s)		12.0			5.4			7.4			10.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	40	524	20	40	388	3	25	18	73	22	15	139
Shared Lane Traffic (%)												
Lane Group Flow (vph)	40	544	0	40	391	0	25	18	73	22	15	139
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt			Perm			Perm		Perm	Perm		Perm
Protected Phases	1	6			2			4			8	
Permitted Phases	6			2			4		4	8		8
Minimum Split (s)	8.7	21.9		20.0	20.0		21.0	21.0	21.0	20.0	20.0	20.0
Total Split (s)	15.0	96.0	0.0	81.0	81.0	0.0	34.0	34.0	34.0	34.0	34.0	34.0
Total Split (%)	11.5%	73.8%	0.0%	62.3%	62.3%	0.0%	26.2%	26.2%	26.2%	26.2%	26.2%	26.2%
Maximum Green (s)	10.3	90.1		75.1	75.1		29.0	29.0	29.0	29.0	29.0	29.0
Yellow Time (s)	3.6	4.5		4.5	4.5		3.6	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	1.1	1.4		1.4	1.4		1.4	1.4	1.4	1.4	1.4	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	5.9	4.0	5.9	5.9	4.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lag			Lead	Lead							
Lead-Lag Optimize?	Yes			Yes	Yes							
Act Effct Green (s)	91.3	90.1		75.1	75.1		29.0	29.0	29.0	29.0	29.0	29.0
Actuated g/C Ratio	0.70	0.69		0.58	0.58		0.22	0.22	0.22	0.22	0.22	0.22
v/c Ratio	0.06	0.42		0.10	0.36		0.08	0.02	0.18	0.07	0.04	0.30
Control Delay	2.9	4.2		13.1	15.8		41.0	39.6	10.1	40.8	40.0	8.4
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.9	4.2		13.1	15.8		41.0	39.6	10.1	40.8	40.0	8.4
LOS	A	A		B	B		D	D	B	D	D	A

Sawmill Place Blvd & SR 161

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Approach Delay		4.1			15.6			21.3			15.1	
Approach LOS		A			B			C			B	

Intersection Summary	
Area Type:	Other
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 84 (65%), Referenced to phase 1:SEL and 5:, Start of Green	
Natural Cycle: 50	
Control Type: Pretimed	
Maximum v/c Ratio: 0.42	
Intersection Signal Delay: 10.9	Intersection LOS: B
Intersection Capacity Utilization 47.8%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 3: SR 161 #1 & Sawmill Pl Blvd

Martin Rd & SR 161

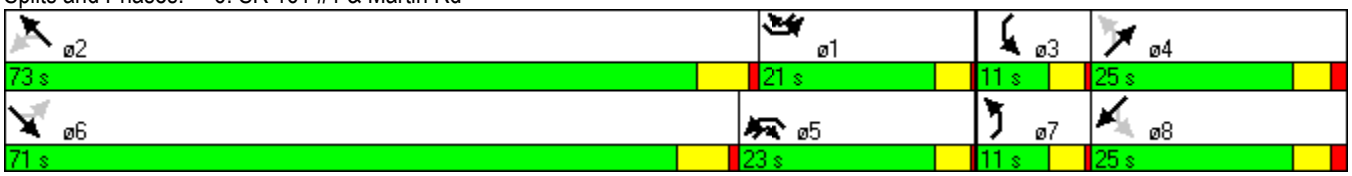
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	66	319	15	124	438	39	17	11	82	17	17	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300		0	280		380	170		0	0		0
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.993			0.988				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1850	0	1770	3497	0	1770	1863	1583	1770	1863	1583
Flt Permitted	0.423			0.460			0.746			0.750		
Satd. Flow (perm)	788	1850	0	857	3497	0	1390	1863	1583	1397	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			10				89			68
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1294			794			291			276	
Travel Time (s)		19.6			12.0			6.6			6.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	72	347	16	135	476	42	18	12	89	18	18	68
Shared Lane Traffic (%)												
Lane Group Flow (vph)	72	363	0	135	518	0	18	12	89	18	18	68
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt			pm+pt			pm+pt		Over	pm+pt		Over
Protected Phases	1	6		5	2		7	4	5	3	8	1
Permitted Phases	6			2			4			8		
Minimum Split (s)	8.0	22.0		8.0	22.0		8.0	21.4	8.0	8.0	21.4	8.0
Total Split (s)	21.0	71.0	0.0	23.0	73.0	0.0	11.0	25.0	23.0	11.0	25.0	21.0
Total Split (%)	16.2%	54.6%	0.0%	17.7%	56.2%	0.0%	8.5%	19.2%	17.7%	8.5%	19.2%	16.2%
Maximum Green (s)	17.0	65.0		19.0	67.0		7.0	19.6	19.0	7.0	19.6	17.0
Yellow Time (s)	3.5	5.0		3.5	5.0		3.5	3.6	3.5	3.5	3.6	3.5
All-Red Time (s)	0.5	1.0		0.5	1.0		0.5	1.8	0.5	0.5	1.8	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	4.0	4.0	6.0	4.0	4.0	5.4	4.0	4.0	5.4	4.0
Lead/Lag	Lag	Lead		Lag	Lead		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Act Effct Green (s)	84.0	65.0		88.0	67.0		28.0	19.6	19.0	28.0	19.6	17.0
Actuated g/C Ratio	0.65	0.50		0.68	0.52		0.22	0.15	0.15	0.22	0.15	0.13
v/c Ratio	0.11	0.39		0.19	0.29		0.06	0.04	0.29	0.06	0.06	0.26
Control Delay	1.4	6.5		4.2	12.5		38.1	47.8	12.3	38.1	48.2	14.1
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	1.4	6.5		4.2	12.5		38.1	47.8	12.3	38.1	48.2	14.1
LOS	A	A		A	B		D	D	B	D	D	B

Martin Rd & SR 161

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Approach Delay		5.7			10.8			19.8			24.1	
Approach LOS		A			B			B			C	

Intersection Summary	
Area Type:	Other
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 2 (2%), Referenced to phase 2:NWTL and 6:SETL, Start of Green	
Natural Cycle: 60	
Control Type: Pretimed	
Maximum v/c Ratio: 0.39	
Intersection Signal Delay: 11.0	Intersection LOS: B
Intersection Capacity Utilization 45.0%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: SR 161 #1 & Martin Rd



Federated Blvd & SR 161

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	38	385	436	46	89	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200			0	0	0
Storage Lanes	1			0	1	1
Taper Length (ft)	25			25	25	25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.987			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1863	1839	0	1770	1583
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1863	1839	0	1770	1583
Link Speed (mph)		45	45		30	
Link Distance (ft)		521	6835		281	
Travel Time (s)		7.9	103.6		6.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	41	418	474	50	97	109
Shared Lane Traffic (%)						
Lane Group Flow (vph)	41	418	524	0	97	109
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 43.2%	ICU Level of Service A
Analysis Period (min) 15	

Railroad Crossing & SR 161

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	498	0	0	690	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt												
Flt Protected												
Satd. Flow (prot)	0	1863	0	0	1863	0	0	950	0	0	1863	0
Flt Permitted												
Satd. Flow (perm)	0	1863	0	0	1863	0	0	950	0	0	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		1647			832			469			501	
Travel Time (s)		32.1			16.2			10.7			11.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	100%	2%	2%	2%	2%
Adj. Flow (vph)	0	541	0	0	750	0	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	541	0	0	750	0	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2			2			2			2	
Detector Template		Thru			Thru			Thru			Thru	
Leading Detector (ft)		100			100			100			100	
Trailing Detector (ft)		0			0			0			0	
Detector 1 Position(ft)		0			0			0			0	
Detector 1 Size(ft)		6			6			6			6	
Detector 1 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0			0.0			0.0			0.0	
Detector 1 Queue (s)		0.0			0.0			0.0			0.0	
Detector 1 Delay (s)		0.0			0.0			0.0			0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type												
Protected Phases		4			8			2			6	
Permitted Phases												
Detector Phase		4			8			2			6	
Switch Phase												
Minimum Initial (s)		4.0			4.0			180.0			180.0	

Railroad Crossing & SR 161

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)		20.0			20.0			184.0			184.0	
Total Split (s)	0.0	20.0	0.0	0.0	20.0	0.0	0.0	184.0	0.0	0.0	184.0	0.0
Total Split (%)	0.0%	9.8%	0.0%	0.0%	9.8%	0.0%	0.0%	90.2%	0.0%	0.0%	90.2%	0.0%
Maximum Green (s)		16.0			16.0			180.0			180.0	
Yellow Time (s)		3.5			3.5			3.5			3.5	
All-Red Time (s)		0.5			0.5			0.5			0.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Recall Mode		C-Max			C-Max			None			None	
Act Effct Green (s)		204.0			204.0							
Actuated g/C Ratio		1.00			1.00							
v/c Ratio		0.29			0.40							
Control Delay		0.4			0.6							
Queue Delay		0.0			0.0							
Total Delay		0.4			0.6							
LOS		A			A							
Approach Delay		0.4			0.6							
Approach LOS		A			A							

Intersection Summary

Area Type: Other
Cycle Length: 204
Actuated Cycle Length: 204
Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 205
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.40
Intersection Signal Delay: 0.5 Intersection LOS: A
Intersection Capacity Utilization 39.6% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 13: SR 161 #1 & RR Crossing

McVey Blvd & SR 161

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	13	431	585	13	77	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.997		0.949	
Flt Protected		0.999			0.970	
Satd. Flow (prot)	0	1861	1857	0	1715	0
Flt Permitted		0.999			0.970	
Satd. Flow (perm)	0	1861	1857	0	1715	0
Link Speed (mph)		45	35		30	
Link Distance (ft)		6835	1647		228	
Travel Time (s)		103.6	32.1		5.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	14	468	636	14	84	51
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	482	650	0	135	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 47.0%		ICU Level of Service A	
Analysis Period (min) 15			

Linworth Rd & SR 161

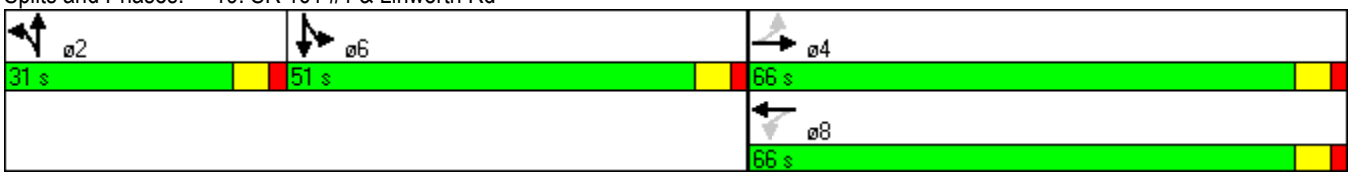
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	31	377	90	37	545	36	99	152	40	115	256	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	300		0	150		0	0		0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.971			0.991			0.969			0.985	
Flt Protected	0.950			0.950			0.950				0.986	
Satd. Flow (prot)	1770	1809	0	1770	1846	0	1770	1805	0	0	1809	0
Flt Permitted	0.130			0.252			0.950				0.986	
Satd. Flow (perm)	242	1809	0	469	1846	0	1770	1805	0	0	1809	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10			3			8			4	
Link Speed (mph)		35			20			30			30	
Link Distance (ft)		832			2636			1579			1572	
Travel Time (s)		16.2			89.9			35.9			35.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	34	410	98	40	592	39	108	165	43	125	278	50
Shared Lane Traffic (%)												
Lane Group Flow (vph)	34	508	0	40	631	0	108	208	0	0	453	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm			Perm			Split			Split		
Protected Phases		4			8		2	2		6	6	
Permitted Phases	4			8								
Detector Phase	4	4		8	8		2	2		6	6	

Linworth Rd & SR 161

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	22.0	22.0		22.0	22.0		16.0	16.0		16.0	16.0	
Total Split (s)	66.0	66.0	0.0	66.0	66.0	0.0	31.0	31.0	0.0	51.0	51.0	0.0
Total Split (%)	44.6%	44.6%	0.0%	44.6%	44.6%	0.0%	20.9%	20.9%	0.0%	34.5%	34.5%	0.0%
Maximum Green (s)	60.0	60.0		60.0	60.0		25.0	25.0		45.0	45.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Act Effct Green (s)	48.1	48.1		48.1	48.1		19.1	19.1			35.9	
Actuated g/C Ratio	0.39	0.39		0.39	0.39		0.16	0.16			0.29	
v/c Ratio	0.36	0.71		0.22	0.87		0.39	0.72			0.85	
Control Delay	42.3	37.9		31.1	48.7		55.4	65.4			57.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	42.3	37.9		31.1	48.7		55.4	65.4			57.8	
LOS	D	D		C	D		E	E			E	
Approach Delay		38.2			47.6			62.0			57.8	
Approach LOS		D			D			E			E	

Intersection Summary	
Area Type: Other	
Cycle Length: 148	
Actuated Cycle Length: 122.1	
Natural Cycle: 80	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.87	
Intersection Signal Delay: 49.7	Intersection LOS: D
Intersection Capacity Utilization 78.9%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 19: SR 161 #1 & Linworth Rd



Olentangy River Rd & SR 161

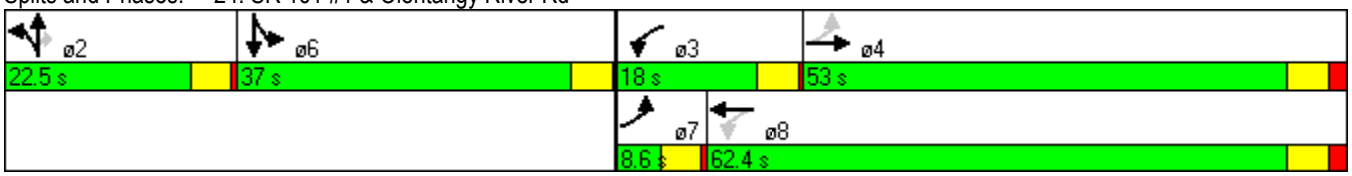
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	29	585	12	190	566	167	12	70	137	370	116	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	130		0	300		0	0		180	200		0
Storage Lanes	1		0	1		0	0		1	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.997			0.966				0.850		0.985	
Flt Protected	0.950			0.950				0.993		0.950		
Satd. Flow (prot)	1770	1857	0	1770	3419	0	0	1850	1583	1770	1835	0
Flt Permitted	0.297			0.078				0.993		0.950		
Satd. Flow (perm)	553	1857	0	145	3419	0	0	1850	1583	1770	1835	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			37				149		4	
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		438			441			925			526	
Travel Time (s)		8.5			8.6			21.0			12.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	32	636	13	207	615	182	13	76	149	402	126	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	32	649	0	207	797	0	0	89	149	402	140	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt			pm+pt			Split		Perm	Split		
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases	4			8					2			
Minimum Split (s)	8.5	22.0		8.5	22.0		20.5	20.5	20.5	20.5	20.5	
Total Split (s)	8.6	53.0	0.0	18.0	62.4	0.0	22.5	22.5	22.5	37.0	37.0	0.0
Total Split (%)	6.6%	40.6%	0.0%	13.8%	47.8%	0.0%	17.2%	17.2%	17.2%	28.4%	28.4%	0.0%
Maximum Green (s)	4.1	47.0		13.5	56.4		18.0	18.0	18.0	32.5	32.5	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	0.5	2.0		0.5	2.0		0.5	0.5	0.5	0.5	0.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	6.0	4.0	4.5	6.0	4.0	4.5	4.5	4.5	4.5	4.5	4.0
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Act Effct Green (s)	52.6	47.0		66.5	56.4			18.0	18.0	32.5	32.5	
Actuated g/C Ratio	0.40	0.36		0.51	0.43			0.14	0.14	0.25	0.25	
v/c Ratio	0.12	0.97		0.86	0.53			0.35	0.43	0.91	0.30	
Control Delay	17.9	69.5		61.7	27.5			55.3	11.8	73.6	40.8	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay	17.9	69.5		61.7	27.5			55.3	11.8	73.6	40.8	
LOS	B	E		E	C			E	B	E	D	

Olentangy River Rd 7 SR 161

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		67.1			34.5			28.1			65.1	
Approach LOS		E			C			C			E	

Intersection Summary	
Area Type: Other	
Cycle Length: 130.5	
Actuated Cycle Length: 130.5	
Offset: 0 (0%), Referenced to phase 2:NBTL, Start of Green	
Natural Cycle: 100	
Control Type: Pretimed	
Maximum v/c Ratio: 0.97	
Intersection Signal Delay: 49.6	Intersection LOS: D
Intersection Capacity Utilization 81.7%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 24: SR 161 #1 & Olentangy River Rd



Sawmill Rd & SR 161

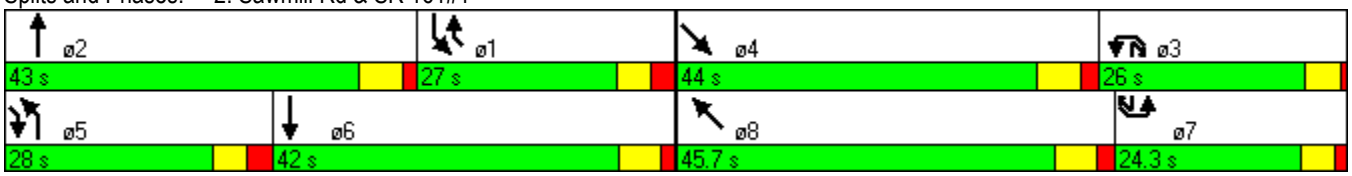
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	195	885	135	185	958	145	281	374	256	192	397	132
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	360		0	400		480	270		0	950		180
Storage Lanes	1		1	1		2	2		1	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	0.97	1.00	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	3433	1863	1583	1770	3539	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	5085	1583	1770	5085	1583	3433	1863	1583	1770	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			140			158			229			143
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		874			921			715			1294	
Travel Time (s)		19.9			20.9			10.8			19.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	212	962	147	201	1041	158	305	407	278	209	432	143
Shared Lane Traffic (%)												
Lane Group Flow (vph)	212	962	147	201	1041	158	305	407	278	209	432	143
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot		Over	Prot		Over	Prot		Over	Prot		Over
Protected Phases	5	2	3	1	6	7	7	4	5	3	8	1
Permitted Phases												
Minimum Split (s)	11.9	25.2	11.2	11.9	25.2	11.2	11.2	22.5	11.9	11.2	22.5	11.9
Total Split (s)	28.0	43.0	26.0	27.0	42.0	24.3	24.3	44.0	28.0	26.0	45.7	27.0
Total Split (%)	20.0%	30.7%	18.6%	19.3%	30.0%	17.4%	17.4%	31.4%	20.0%	18.6%	32.6%	19.3%
Maximum Green (s)	21.7	36.9	21.5	20.7	35.9	19.3	19.3	37.6	21.7	21.5	39.3	20.7
Yellow Time (s)	3.6	4.5	3.6	3.6	4.5	3.6	3.6	4.5	3.6	3.6	4.5	3.6
All-Red Time (s)	2.7	1.6	0.9	2.7	1.6	1.4	1.4	1.9	2.7	0.9	1.9	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.1	4.5	6.3	6.1	5.0	5.0	6.4	6.3	4.5	6.4	6.3
Lead/Lag	Lead	Lead	Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Act Effct Green (s)	21.7	36.9	21.5	20.7	35.9	19.3	19.3	37.6	21.7	21.5	39.3	20.7
Actuated g/C Ratio	0.16	0.26	0.15	0.15	0.26	0.14	0.14	0.27	0.16	0.15	0.28	0.15
v/c Ratio	0.77	0.72	0.41	0.77	0.80	0.45	0.64	0.81	0.63	0.77	0.44	0.40
Control Delay	76.2	50.4	12.8	76.9	54.1	12.0	64.1	62.1	18.8	64.6	30.1	33.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.2	50.4	12.8	76.9	54.1	12.0	64.1	62.1	18.8	64.6	30.1	33.5
LOS	E	D	B	E	D	B	E	E	B	E	C	C

Sawmill Rd & SR 161

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Approach Delay		50.4			52.6			50.5			39.9	
Approach LOS		D			D			D			D	

Intersection Summary	
Area Type:	Other
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 102 (73%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 90	
Control Type: Pretimed	
Maximum v/c Ratio: 0.81	
Intersection Signal Delay: 49.3	Intersection LOS: D
Intersection Capacity Utilization 79.1%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 2: Sawmill Rd & SR 161#1



Sawmill Place Blvd & SR 161

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	87	637	50	165	528	32	16	52	92	45	71	211
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	150		0	0		80	0		0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Frt		0.989			0.991				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1842	0	1770	1846	0	1770	3539	1583	1770	1863	1583
Flt Permitted	0.342			0.302			0.701			0.718		
Satd. Flow (perm)	637	1842	0	563	1846	0	1306	3539	1583	1337	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			4				100			229
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		794			358			324			467	
Travel Time (s)		12.0			5.4			7.4			10.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	95	692	54	179	574	35	17	57	100	49	77	229
Shared Lane Traffic (%)												
Lane Group Flow (vph)	95	746	0	179	609	0	17	57	100	49	77	229
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt			Perm			Perm		Perm	Perm		Perm
Protected Phases	1	6			2			4			8	
Permitted Phases	6			2			4		4	8		8
Minimum Split (s)	8.7	34.9		34.9	34.9		11.0	11.0	11.0	11.0	11.0	11.0
Total Split (s)	16.0	111.0	0.0	95.0	95.0	0.0	29.0	29.0	29.0	29.0	29.0	29.0
Total Split (%)	11.4%	79.3%	0.0%	67.9%	67.9%	0.0%	20.7%	20.7%	20.7%	20.7%	20.7%	20.7%
Maximum Green (s)	11.3	105.1		89.1	89.1		24.0	24.0	24.0	24.0	24.0	24.0
Yellow Time (s)	3.6	4.5		4.5	4.5		3.6	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	1.1	1.4		1.4	1.4		1.4	1.4	1.4	1.4	1.4	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	5.9	4.0	5.9	5.9	4.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lag			Lead	Lead							
Lead-Lag Optimize?	Yes			Yes	Yes							
Act Effct Green (s)	106.3	105.1		89.1	89.1		24.0	24.0	24.0	24.0	24.0	24.0
Actuated g/C Ratio	0.76	0.75		0.64	0.64		0.17	0.17	0.17	0.17	0.17	0.17
v/c Ratio	0.17	0.54		0.50	0.52		0.08	0.09	0.28	0.21	0.24	0.50
Control Delay	3.8	5.3		19.6	15.6		49.9	49.4	11.2	52.8	52.5	10.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.8	5.3		19.6	15.6		49.9	49.4	11.2	52.8	52.5	10.0
LOS	A	A		B	B		D	D	B	D	D	A

Sawmill Place Blvd & SR 161

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Approach Delay		5.2			16.5			27.5			25.1	
Approach LOS		A			B			C			C	

Intersection Summary	
Area Type:	Other
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 64 (46%), Referenced to phase 1:SEL and 5:, Start of Green	
Natural Cycle: 60	
Control Type: Pretimed	
Maximum v/c Ratio: 0.54	
Intersection Signal Delay: 14.4	Intersection LOS: B
Intersection Capacity Utilization 68.9%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 3: SR 161#1 & Sawmill Pl Blvd

Martin Rd & SR 161

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	193	411	45	252	512	74	45	104	224	51	91	162
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300		0	280		380	170		0	0		0
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.985			0.981				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1835	0	1770	3472	0	1770	1863	1583	1770	1863	1583
Flt Permitted	0.390			0.307			0.636			0.591		
Satd. Flow (perm)	726	1835	0	572	3472	0	1185	1863	1583	1101	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			17				243			176
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1294			794			291			276	
Travel Time (s)		19.6			12.0			6.6			6.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	210	447	49	274	557	80	49	113	243	55	99	176
Shared Lane Traffic (%)												
Lane Group Flow (vph)	210	496	0	274	637	0	49	113	243	55	99	176
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt			pm+pt			pm+pt		Over	pm+pt		Over
Protected Phases	1	6		5	2		7	4	5	3	8	1
Permitted Phases	6			2			4			8		
Minimum Split (s)	8.0	22.0		8.0	22.0		8.0	21.4	8.0	8.0	21.4	8.0
Total Split (s)	26.0	73.0	0.0	32.0	79.0	0.0	10.0	25.0	32.0	10.0	25.0	26.0
Total Split (%)	18.6%	52.1%	0.0%	22.9%	56.4%	0.0%	7.1%	17.9%	22.9%	7.1%	17.9%	18.6%
Maximum Green (s)	22.0	67.0		28.0	73.0		6.0	19.6	28.0	6.0	19.6	22.0
Yellow Time (s)	3.5	5.0		3.5	5.0		3.5	3.6	3.5	3.5	3.6	3.5
All-Red Time (s)	0.5	1.0		0.5	1.0		0.5	1.8	0.5	0.5	1.8	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	4.0	4.0	6.0	4.0	4.0	5.4	4.0	4.0	5.4	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Act Effct Green (s)	91.0	67.0		101.0	73.0		27.0	19.6	28.0	27.0	19.6	22.0
Actuated g/C Ratio	0.65	0.48		0.72	0.52		0.19	0.14	0.20	0.19	0.14	0.16
v/c Ratio	0.33	0.56		0.42	0.35		0.19	0.43	0.48	0.23	0.38	0.44
Control Delay	3.2	7.9		5.2	12.0		45.9	60.9	8.8	46.7	59.5	10.8
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.2	7.9		5.2	12.0		45.9	60.9	8.8	46.7	59.5	10.8
LOS	A	A		A	B		D	E	A	D	E	B

Martin Rd & SR 161

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Approach Delay		6.5			10.0			27.8			31.4	
Approach LOS		A			A			C			C	

Intersection Summary	
Area Type:	Other
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 138 (99%), Referenced to phase 2:NWTL and 6:SETL, Start of Green	
Natural Cycle: 70	
Control Type: Pretimed	
Maximum v/c Ratio: 0.56	
Intersection Signal Delay: 15.0	Intersection LOS: B
Intersection Capacity Utilization 60.6%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 6: SR 161#1 & Martin Rd

Federated Blvd & SR 161

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	156	507	597	107	32	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200			0	0	0
Storage Lanes	1			0	1	1
Taper Length (ft)	25			25	25	25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.980			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1863	1825	0	1770	1583
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1863	1825	0	1770	1583
Link Speed (mph)		45	45		30	
Link Distance (ft)		521	6835		281	
Travel Time (s)		7.9	103.6		6.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	170	551	649	116	35	105
Shared Lane Traffic (%)						
Lane Group Flow (vph)	170	551	765	0	35	105
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 59.9%	ICU Level of Service B
Analysis Period (min) 15	

Railroad Crossing & SR 161

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	584	0	0	717	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt												
Flt Protected												
Satd. Flow (prot)	0	1863	0	0	1863	0	0	950	0	0	1863	0
Flt Permitted												
Satd. Flow (perm)	0	1863	0	0	1863	0	0	950	0	0	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		1647			832			469			501	
Travel Time (s)		32.1			16.2			10.7			11.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	100%	2%	2%	2%	2%
Adj. Flow (vph)	0	635	0	0	779	0	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	635	0	0	779	0	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2			2			2			2	
Detector Template		Thru			Thru			Thru			Thru	
Leading Detector (ft)		100			100			100			100	
Trailing Detector (ft)		0			0			0			0	
Detector 1 Position(ft)		0			0			0			0	
Detector 1 Size(ft)		6			6			6			6	
Detector 1 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0			0.0			0.0			0.0	
Detector 1 Queue (s)		0.0			0.0			0.0			0.0	
Detector 1 Delay (s)		0.0			0.0			0.0			0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type												
Protected Phases		4			8			2			6	
Permitted Phases												
Detector Phase		4			8			2			6	
Switch Phase												
Minimum Initial (s)		4.0			4.0			180.0			180.0	

Railroad Crossing & SR 161

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)		20.0			20.0			184.0			184.0	
Total Split (s)	0.0	21.0	0.0	0.0	21.0	0.0	0.0	184.0	0.0	0.0	184.0	0.0
Total Split (%)	0.0%	10.2%	0.0%	0.0%	10.2%	0.0%	0.0%	89.8%	0.0%	0.0%	89.8%	0.0%
Maximum Green (s)		17.0			17.0			180.0			180.0	
Yellow Time (s)		3.5			3.5			3.5			3.5	
All-Red Time (s)		0.5			0.5			0.5			0.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Recall Mode		C-Max			C-Max			None			None	
Act Effct Green (s)		205.0			205.0							
Actuated g/C Ratio		1.00			1.00							
v/c Ratio		0.34			0.42							
Control Delay		0.5			0.7							
Queue Delay		0.0			0.0							
Total Delay		0.5			0.7							
LOS		A			A							
Approach Delay		0.5			0.7							
Approach LOS		A			A							

Intersection Summary	
Area Type: Other	
Cycle Length: 205	
Actuated Cycle Length: 205	
Offset: 184 (90%), Referenced to phase 4:EBT and 8:WBT, Start of Green	
Natural Cycle: 205	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.42	
Intersection Signal Delay: 0.6	Intersection LOS: A
Intersection Capacity Utilization 41.1%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 13: SR 161#1 & RR Crossing

McVey Blvd & SR 161

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	42	514	607	85	7	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.983			0.850
Flt Protected		0.996			0.950	
Satd. Flow (prot)	0	1855	1831	0	1770	1583
Flt Permitted		0.996			0.950	
Satd. Flow (perm)	0	1855	1831	0	1770	1583
Link Speed (mph)		45	35		30	
Link Distance (ft)		6835	1647		228	
Travel Time (s)		103.6	32.1		5.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	46	559	660	92	8	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	605	752	0	8	26
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 71.7%	ICU Level of Service C
Analysis Period (min) 15	

Linworth Rd & SR 161

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	31	473	80	43	474	58	185	301	44	113	194	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	300		0	150		0	0		0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.978			0.984			0.981			0.979	
Flt Protected	0.950			0.950			0.950				0.985	
Satd. Flow (prot)	1770	1822	0	1770	1833	0	1770	1827	0	0	1796	0
Flt Permitted	0.136			0.112			0.950				0.985	
Satd. Flow (perm)	253	1822	0	209	1833	0	1770	1827	0	0	1796	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7			5			5			6	
Link Speed (mph)		35			20			30			30	
Link Distance (ft)		832			2636			1571			1573	
Travel Time (s)		16.2			89.9			35.7			35.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	34	514	87	47	515	63	201	327	48	123	211	63
Shared Lane Traffic (%)												
Lane Group Flow (vph)	34	601	0	47	578	0	201	375	0	0	397	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm			Perm			Split			Split		
Protected Phases		4			8		2	2		6	6	
Permitted Phases	4			8								
Detector Phase	4	4		8	8		2	2		6	6	

Linworth Rd & SR 161

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	22.0	22.0		22.0	22.0		16.0	16.0		16.0	16.0	
Total Split (s)	61.0	61.0	0.0	61.0	61.0	0.0	44.0	44.0	0.0	43.0	43.0	0.0
Total Split (%)	41.2%	41.2%	0.0%	41.2%	41.2%	0.0%	29.7%	29.7%	0.0%	29.1%	29.1%	0.0%
Maximum Green (s)	55.0	55.0		55.0	55.0		38.0	38.0		37.0	37.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Act Effct Green (s)	47.4	47.4		47.4	47.4		31.7	31.7			32.7	
Actuated g/C Ratio	0.36	0.36		0.36	0.36		0.24	0.24			0.25	
v/c Ratio	0.37	0.90		0.62	0.86		0.47	0.84			0.87	
Control Delay	47.4	58.0		74.0	53.7		48.2	65.2			68.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	47.4	58.0		74.0	53.7		48.2	65.2			68.6	
LOS	D	E		E	D		D	E			E	
Approach Delay		57.5			55.3			59.2			68.6	
Approach LOS		E			E			E			E	

Intersection Summary	
Area Type: Other	
Cycle Length: 148	
Actuated Cycle Length: 130.5	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.90	
Intersection Signal Delay: 59.3	Intersection LOS: E
Intersection Capacity Utilization 89.2%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 19: SR 161#1 & Linworth Rd

Olentangy River Rd & SR 161

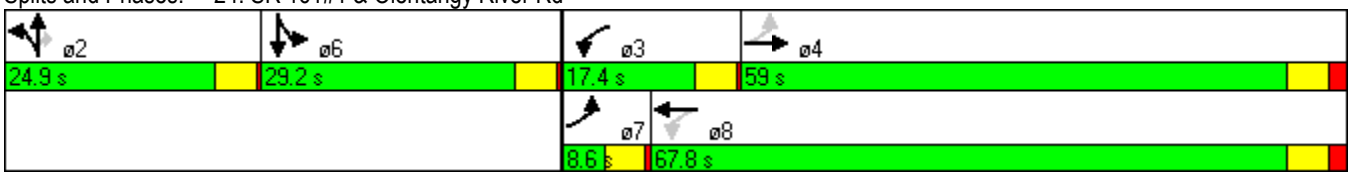
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	14	605	11	151	619	493	18	153	101	240	81	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	130		0	300		0	0		180	200		0
Storage Lanes	1		0	1		0	0		1	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.997			0.933				0.850		0.975	
Flt Protected	0.950			0.950				0.995		0.950		
Satd. Flow (prot)	1770	1857	0	1770	3302	0	0	1853	1583	1770	1816	0
Flt Permitted	0.133			0.093				0.995		0.950		
Satd. Flow (perm)	248	1857	0	173	3302	0	0	1853	1583	1770	1816	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			210				110		7	
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		438			441			925			526	
Travel Time (s)		8.5			8.6			21.0			12.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	15	658	12	164	673	536	20	166	110	261	88	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	15	670	0	164	1209	0	0	186	110	261	106	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt			pm+pt			Split		Perm	Split		
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases	4			8					2			
Minimum Split (s)	8.5	22.0		8.5	22.0		20.5	20.5	20.5	20.5	20.5	
Total Split (s)	8.6	59.0	0.0	17.4	67.8	0.0	24.9	24.9	24.9	29.2	29.2	0.0
Total Split (%)	6.6%	45.2%	0.0%	13.3%	52.0%	0.0%	19.1%	19.1%	19.1%	22.4%	22.4%	0.0%
Maximum Green (s)	4.1	53.0		12.9	61.8		20.4	20.4	20.4	24.7	24.7	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	0.5	2.0		0.5	2.0		0.5	0.5	0.5	0.5	0.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	6.0	4.0	4.5	6.0	4.0	4.5	4.5	4.5	4.5	4.5	4.0
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Act Effct Green (s)	58.6	53.0		71.9	61.8			20.4	20.4	24.7	24.7	
Actuated g/C Ratio	0.45	0.41		0.55	0.47			0.16	0.16	0.19	0.19	
v/c Ratio	0.09	0.89		0.65	0.72			0.64	0.32	0.78	0.30	
Control Delay	15.3	51.2		32.5	25.2			62.8	11.3	67.2	45.2	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay	15.3	51.2		32.5	25.2			62.8	11.3	67.2	45.2	
LOS	B	D		C	C			E	B	E	D	

Olentangy River Rd & SR 161

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		50.4			26.1			43.6			60.9	
Approach LOS		D			C			D			E	

Intersection Summary	
Area Type: Other	
Cycle Length: 130.5	
Actuated Cycle Length: 130.5	
Offset: 0 (0%), Referenced to phase 2:NBTL, Start of Green	
Natural Cycle: 90	
Control Type: Pretimed	
Maximum v/c Ratio: 0.89	
Intersection Signal Delay: 38.8	Intersection LOS: D
Intersection Capacity Utilization 79.5%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 24: SR 161#1 & Olentangy River Rd



Summary of All Intervals

Start Time	7:27
End Time	8:30
Total Time (min)	63
Time Recorded (min)	60
# of Intervals	2
# of Recorded Intvls	1
Vehs Entered	5478
Vehs Exited	5412
Starting Vehs	174
Ending Vehs	240
Denied Entry Before	4
Denied Entry After	33
Travel Distance (mi)	4521
Travel Time (hr)	278.8
Total Delay (hr)	135.9
Total Stops	7249
Fuel Used (gal)	181.7

Interval #0 Information Seeding

Start Time	7:27
End Time	7:30
Total Time (min)	3

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:30
End Time	8:30
Total Time (min)	60

Volumes adjusted by Growth Factors.

Vehs Entered	5478
Vehs Exited	5412
Starting Vehs	174
Ending Vehs	240
Denied Entry Before	4
Denied Entry After	33
Travel Distance (mi)	4521
Travel Time (hr)	278.8
Total Delay (hr)	135.9
Total Stops	7249
Fuel Used (gal)	181.7

2: Sawmill Rd & SR 161 #1 Performance by movement

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Total Delay (hr)	1.3	6.4	0.4	1.6	6.4	0.3	1.8	2.3	0.1	0.5	2.5	0.1
Delay / Veh (s)	51.9	37.8	17.7	57.4	36.5	11.7	59.4	39.0	2.6	40.1	22.8	5.3
Total Stops	81	474	47	90	451	78	101	156	64	41	129	16
Travel Dist (mi)	14.1	94.5	10.1	15.6	100.4	16.3	13.1	25.5	12.3	11.3	96.6	11.9
Travel Time (hr)	1.8	9.7	0.7	2.2	9.9	1.0	2.3	3.0	0.5	0.8	4.8	0.4
Avg Speed (mph)	8	10	14	8	10	20	6	9	26	14	20	28
Fuel Used (gal)	0.8	4.6	0.4	0.8	4.7	0.7	0.9	1.4	0.4	0.5	3.9	0.4
HC Emissions (g)	5	44	3	5	37	6	7	18	7	3	48	3
CO Emissions (g)	171	1326	107	178	1224	289	438	654	244	229	2169	224
NOx Emissions (g)	16	132	12	15	120	20	21	51	20	14	177	13
Vehicles Entered	91	614	73	98	635	106	111	210	100	47	403	49
Vehicles Exited	91	607	73	99	627	106	112	212	101	45	402	49
Hourly Exit Rate	91	607	73	99	627	106	112	212	101	45	402	49
Input Volume	89	630	80	96	615	104	113	224	100	58	405	55
% of Volume	102	96	91	103	102	102	99	95	101	78	99	89
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	1	0	0	0	0	0	0	0	0

2: Sawmill Rd & SR 161 #1 Performance by movement

Movement	All
Total Delay (hr)	23.7
Delay / Veh (s)	33.8
Total Stops	1728
Travel Dist (mi)	421.7
Travel Time (hr)	37.0
Avg Speed (mph)	12
Fuel Used (gal)	19.3
HC Emissions (g)	187
CO Emissions (g)	7253
NOx Emissions (g)	611
Vehicles Entered	2537
Vehicles Exited	2524
Hourly Exit Rate	2524
Input Volume	2569
% of Volume	98
Denied Entry Before	0
Denied Entry After	1

3: SR 161 #1 & Sawmill Pl Blvd Performance by movement

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Total Delay (hr)	0.1	1.1	0.0	0.1	1.1	0.0	0.5	0.2	0.2	0.2	0.2	0.2
Delay / Veh (s)	11.4	8.5	2.8	12.0	7.8	2.1	48.7	38.3	11.3	37.1	45.8	6.2
Total Stops	13	94	4	25	113	1	29	16	49	13	10	94
Travel Dist (mi)	3.5	58.4	2.7	2.5	28.5	0.2	1.9	1.2	3.4	1.5	1.2	10.5
Travel Time (hr)	0.2	2.5	0.1	0.2	1.7	0.0	0.5	0.3	0.4	0.3	0.2	0.7
Avg Speed (mph)	19	24	26	11	16	20	3	4	9	6	5	15
Fuel Used (gal)	0.1	2.6	0.1	0.1	1.0	0.0	0.2	0.1	0.1	0.1	0.1	0.3
HC Emissions (g)	1	42	1	0	8	0	0	0	1	0	0	3
CO Emissions (g)	54	1664	45	14	337	0	21	15	30	9	13	105
NOx Emissions (g)	4	148	3	1	35	0	2	1	3	1	1	9
Vehicles Entered	26	450	22	39	508	3	34	22	62	18	14	128
Vehicles Exited	26	447	22	37	508	3	34	22	62	19	14	127
Hourly Exit Rate	26	447	22	37	508	3	34	22	62	19	14	127
Input Volume	37	482	18	37	496	3	23	17	67	20	14	128
% of Volume	70	93	122	100	102	100	148	129	93	95	100	99
Denied Entry Before	1	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	1	0	0	0	0	0	0	0	0	0	0

3: SR 161 #1 & Sawmill Pl Blvd Performance by movement

Movement	All
Total Delay (hr)	3.9
Delay / Veh (s)	10.5
Total Stops	461
Travel Dist (mi)	115.5
Travel Time (hr)	7.2
Avg Speed (mph)	16
Fuel Used (gal)	4.8
HC Emissions (g)	57
CO Emissions (g)	2306
NOx Emissions (g)	207
Vehicles Entered	1326
Vehicles Exited	1321
Hourly Exit Rate	1321
Input Volume	1342
% of Volume	98
Denied Entry Before	1
Denied Entry After	1

6: SR 161 #1 & Martin Rd Performance by movement

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Total Delay (hr)	0.3	1.0	0.0	0.4	1.4	0.1	0.1	0.1	0.1	0.1	0.3	0.0
Delay / Veh (s)	13.6	12.5	7.3	12.9	12.1	7.5	40.0	35.2	3.1	27.2	45.1	3.3
Total Stops	51	45	3	71	117	17	10	10	52	11	18	40
Travel Dist (mi)	18.5	72.2	3.9	17.7	59.1	6.0	0.6	0.7	3.6	0.5	1.0	2.4
Travel Time (hr)	0.8	2.9	0.2	1.0	3.0	0.3	0.2	0.2	0.2	0.1	0.3	0.2
Avg Speed (mph)	22	25	26	18	20	20	4	4	15	4	3	14
Fuel Used (gal)	0.9	3.5	0.2	0.9	3.2	0.3	0.1	0.1	0.1	0.0	0.1	0.1
HC Emissions (g)	7	74	1	8	46	2	0	0	0	0	0	0
CO Emissions (g)	498	2758	99	454	2387	134	13	6	23	2	14	9
NOx Emissions (g)	29	238	6	30	160	8	1	1	2	0	1	1
Vehicles Entered	75	295	16	125	434	43	12	14	74	12	22	56
Vehicles Exited	72	291	16	124	430	43	14	14	74	13	22	55
Hourly Exit Rate	72	291	16	124	430	43	14	14	74	13	22	55
Input Volume	66	320	15	124	438	39	17	11	82	17	17	63
% of Volume	109	91	107	100	98	110	82	127	90	76	129	87
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

6: SR 161 #1 & Martin Rd Performance by movement

Movement	All
Total Delay (hr)	4.1
Delay / Veh (s)	12.5
Total Stops	445
Travel Dist (mi)	186.0
Travel Time (hr)	9.3
Avg Speed (mph)	20
Fuel Used (gal)	9.2
HC Emissions (g)	139
CO Emissions (g)	6397
NOx Emissions (g)	477
Vehicles Entered	1178
Vehicles Exited	1168
Hourly Exit Rate	1168
Input Volume	1209
% of Volume	97
Denied Entry Before	0
Denied Entry After	0

9: SR 161 #1 & Federated Blvd Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBR	All
Total Delay (hr)	0.0	0.1	1.9	0.1	0.5	0.2	2.8
Delay / Veh (s)	3.1	0.6	11.2	10.7	15.5	5.4	7.1
Total Stops	11	0	0	0	111	112	234
Travel Dist (mi)	3.1	42.4	672.6	63.8	5.2	5.3	792.4
Travel Time (hr)	0.1	1.1	17.1	1.7	0.7	0.5	21.1
Avg Speed (mph)	24	40	39	38	7	12	38
Fuel Used (gal)	0.1	1.4	17.9	1.6	0.2	0.2	21.4
HC Emissions (g)	0	22	216	21	2	1	262
CO Emissions (g)	23	804	5602	495	56	36	7016
NOx Emissions (g)	2	84	954	92	7	3	1141
Vehicles Entered	32	494	602	51	112	113	1404
Vehicles Exited	32	493	596	49	111	112	1393
Hourly Exit Rate	32	493	596	49	111	112	1393
Input Volume	38	531	586	46	89	100	1390
% of Volume	84	93	102	107	125	112	100
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

13: SR 161 #1 & RR Crossing Performance by movement

Movement	EBT	WBT	NBT	All
Total Delay (hr)	4.3	2.9	0.1	7.3
Delay / Veh (s)	31.1	14.5	224.7	21.4
Total Stops	111	33	1	145
Travel Dist (mi)	153.0	114.3	0.1	267.4
Travel Time (hr)	8.8	6.6	0.1	15.4
Avg Speed (mph)	17	17	1	17
Fuel Used (gal)	5.3	5.8	0.0	11.0
HC Emissions (g)	42	68	3	112
CO Emissions (g)	977	2172	32	3181
NOx Emissions (g)	133	252	2	388
Vehicles Entered	498	720	1	1219
Vehicles Exited	493	729	1	1223
Hourly Exit Rate	493	729	1	1223
Input Volume	508	690	1	1199
% of Volume	97	106	100	102
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

17: SR 161 #1 & McVey Blvd Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBR	All
Total Delay (hr)	0.1	1.1	0.6	0.0	0.3	0.1	2.2
Delay / Veh (s)	12.2	8.4	3.2	3.8	14.8	7.7	5.9
Total Stops	7	15	0	0	79	40	141
Travel Dist (mi)	19.4	573.0	207.1	4.0	3.3	1.7	808.5
Travel Time (hr)	0.5	14.1	6.6	0.1	0.5	0.2	22.0
Avg Speed (mph)	38	41	31	29	7	10	37
Fuel Used (gal)	0.5	14.4	5.8	0.1	0.1	0.0	21.0
HC Emissions (g)	2	171	60	0	0	0	234
CO Emissions (g)	77	4044	1072	10	9	4	5214
NOx Emissions (g)	17	782	199	2	1	0	1000
Vehicles Entered	15	458	716	13	79	40	1321
Vehicles Exited	15	462	712	13	76	40	1318
Hourly Exit Rate	15	462	712	13	76	40	1318
Input Volume	13	461	677	13	77	47	1288
% of Volume	115	100	105	100	99	85	102
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

19: SR 161 #1 & Linworth Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay (hr)	0.8	5.4	1.2	0.7	17.1	0.9	1.6	2.1	0.5	1.6	3.8	1.0
Delay / Veh (s)	119.6	52.6	45.4	114.5	107.7	94.3	61.4	57.2	39.7	51.1	58.8	62.3
Total Stops	34	288	74	38	811	48	90	119	40	102	217	55
Travel Dist (mi)	3.6	57.3	14.5	10.3	285.9	18.0	26.6	39.2	13.6	33.5	68.7	17.2
Travel Time (hr)	0.9	7.1	1.7	1.2	31.6	1.9	2.5	3.4	1.0	2.8	6.1	1.7
Avg Speed (mph)	4	8	9	9	9	10	11	11	14	12	11	10
Fuel Used (gal)	0.3	2.6	0.6	0.5	13.3	0.8	1.1	1.6	0.5	1.3	2.8	0.7
HC Emissions (g)	0	14	4	0	62	6	7	18	12	4	30	5
CO Emissions (g)	20	344	92	40	1713	137	186	360	208	130	615	119
NOx Emissions (g)	2	44	11	4	202	17	24	49	27	14	79	13
Vehicles Entered	23	372	93	20	579	34	91	135	46	115	238	59
Vehicles Exited	23	366	93	21	568	37	93	134	45	115	229	59
Hourly Exit Rate	23	366	93	21	568	37	93	134	45	115	229	59
Input Volume	31	378	90	37	545	36	99	152	40	115	256	46
% of Volume	74	97	103	57	104	103	94	88	112	100	89	128
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

19: SR 161 #1 & Linworth Rd Performance by movement

Movement	All
Total Delay (hr)	36.7
Delay / Veh (s)	73.7
Total Stops	1916
Travel Dist (mi)	588.5
Travel Time (hr)	61.7
Avg Speed (mph)	10
Fuel Used (gal)	25.9
HC Emissions (g)	164
CO Emissions (g)	3964
NOx Emissions (g)	487
Vehicles Entered	1805
Vehicles Exited	1783
Hourly Exit Rate	1783
Input Volume	1825
% of Volume	98
Denied Entry Before	0
Denied Entry After	0

24: SR 161 #1 & Olentangy River Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay (hr)	1.0	22.3	0.5	5.0	5.7	0.7	0.1	0.8	0.7	9.2	1.9	0.2
Delay / Veh (s)	175.3	148.4	204.2	82.9	35.4	14.2	49.7	46.6	22.0	88.4	70.0	45.2
Total Stops	31	437	7	283	447	117	9	58	98	406	94	17
Travel Dist (mi)	1.5	41.6	0.6	16.6	44.6	14.0	1.7	11.0	20.2	34.0	8.7	1.2
Travel Time (hr)	1.0	23.7	0.5	5.6	7.1	1.4	0.2	1.2	1.5	10.5	2.2	0.2
Avg Speed (mph)	4	4	4	3	7	12	9	9	15	4	4	6
Fuel Used (gal)	0.3	6.6	0.1	1.8	3.0	0.6	0.1	0.5	0.8	3.4	0.8	0.1
HC Emissions (g)	0	22	0	10	23	5	0	2	8	14	2	0
CO Emissions (g)	23	704	7	365	830	210	10	65	237	519	137	18
NOx Emissions (g)	1	72	0	34	80	20	1	6	22	50	11	2
Vehicles Entered	20	547	8	221	584	182	10	66	119	374	96	13
Vehicles Exited	20	533	8	215	581	182	10	63	121	376	97	13
Hourly Exit Rate	20	533	8	215	581	182	10	63	121	376	97	13
Input Volume	29	585	12	190	566	167	12	70	137	370	116	13
% of Volume	69	91	67	113	103	109	83	90	88	102	84	100
Denied Entry Before	0	0	0	0	0	0	0	0	1	1	1	0
Denied Entry After	1	27	0	2	0	0	0	0	0	1	0	0

24: SR 161 #1 & Olentangy River Rd Performance by movement

Movement	All
Total Delay (hr)	48.1
Delay / Veh (s)	77.7
Total Stops	2004
Travel Dist (mi)	195.8
Travel Time (hr)	55.1
Avg Speed (mph)	5
Fuel Used (gal)	18.1
HC Emissions (g)	86
CO Emissions (g)	3126
NOx Emissions (g)	299
Vehicles Entered	2240
Vehicles Exited	2219
Hourly Exit Rate	2219
Input Volume	2267
% of Volume	98
Denied Entry Before	3
Denied Entry After	31

Total Network Performance

Total Delay (hr)	135.9
Delay / Veh (s)	89.8
Total Stops	7249
Travel Dist (mi)	4520.6
Travel Time (hr)	278.8
Avg Speed (mph)	17
Fuel Used (gal)	181.7
HC Emissions (g)	1810
CO Emissions (g)	60441
NOx Emissions (g)	6647
Vehicles Entered	5478
Vehicles Exited	5412
Hourly Exit Rate	5412
Input Volume	20417
% of Volume	27
Denied Entry Before	4
Denied Entry After	33

Intersection: 2: Sawmill Rd & SR 161 #1

Movement	NB	NB	NB	NB	SB	SB	SB	SB	SB	SE	SE	SE
Directions Served	L	T	T	TR	L	T	T	T	R	L	L	T
Maximum Queue (ft)	188	187	221	220	148	180	168	215	75	70	63	180
Average Queue (ft)	60	106	135	171	48	88	116	134	33	18	29	92
95th Queue (ft)	136	163	214	222	110	143	165	184	57	53	63	170
Link Distance (ft)		803	803	803		812	812					595
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	360				400			480	480	270	270	
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 2: Sawmill Rd & SR 161 #1

Movement	SE	NW	NW	NW
Directions Served	R	L	T	T
Maximum Queue (ft)	20	78	108	127
Average Queue (ft)	1	24	34	42
95th Queue (ft)	9	66	80	98
Link Distance (ft)	595		1163	1163
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		950		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: SR 161 #1 & Sawmill Pl Blvd

Movement	SE	SE	NW	NW	NE	NE	SW	SW	SW
Directions Served	L	TR	L	TR	L	TR	L	T	R
Maximum Queue (ft)	26	193	174	244	96	138	51	91	68
Average Queue (ft)	8	80	26	96	30	42	16	12	36
95th Queue (ft)	26	156	96	185	73	88	42	50	60
Link Distance (ft)		702		275	289	289	430	430	430
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	250		150						
Storage Blk Time (%)				2					
Queuing Penalty (veh)				1					

Intersection: 6: SR 161 #1 & Martin Rd

Movement	SE	SE	NW	NW	NW	NE	NE	NE	SW	SW	SW
Directions Served	L	TR	L	T	TR	L	T	R	L	T	R
Maximum Queue (ft)	71	117	95	176	200	74	52	53	30	74	31
Average Queue (ft)	31	43	42	51	65	13	12	26	11	20	23
95th Queue (ft)	58	97	83	110	130	42	42	46	33	54	44
Link Distance (ft)		1163		702			257	257	228	228	228
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	300		280		380	170					
Storage Blk Time (%)											
Queuing Penalty (veh)											

Intersection: 9: SR 161 #1 & Federated Blvd

Movement	EB	SB	SB
Directions Served	L	L	R
Maximum Queue (ft)	31	136	101
Average Queue (ft)	7	52	36
95th Queue (ft)	28	102	66
Link Distance (ft)		244	244
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	200		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 13: SR 161 #1 & RR Crossing

Movement	EB	WB	NB
Directions Served	T	T	T
Maximum Queue (ft)	1343	772	49
Average Queue (ft)	165	99	4
95th Queue (ft)	774	516	24
Link Distance (ft)	1582	765	432
Upstream Blk Time (%)		5	
Queuing Penalty (veh)		34	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 17: SR 161 #1 & McVey Blvd

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	264	116
Average Queue (ft)	16	47
95th Queue (ft)	97	83
Link Distance (ft)	6764	179
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 19: SR 161 #1 & Linworth Rd

Movement	EB	EB	WB	WB	NB	NB	SB
Directions Served	L	TR	L	TR	L	TR	LTR
Maximum Queue (ft)	116	770	324	1844	174	290	572
Average Queue (ft)	31	328	39	757	93	147	327
95th Queue (ft)	78	707	168	1625	182	260	486
Link Distance (ft)		765		2571		1542	1537
Upstream Blk Time (%)		5					
Queuing Penalty (veh)		25					
Storage Bay Dist (ft)	150		300		150		
Storage Blk Time (%)		28		37	1	14	
Queuing Penalty (veh)		9		14	1	14	

Intersection: 24: SR 161 #1 & Olentangy River Rd

Movement	EB	EB	B30	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	T	L	T	TR	LT	R	L	TR
Maximum Queue (ft)	52	447	503	324	410	410	96	132	224	494
Average Queue (ft)	18	384	137	198	273	223	62	58	213	321
95th Queue (ft)	46	560	411	342	422	415	100	103	242	614
Link Distance (ft)		376	2571		394	394	891			479
Upstream Blk Time (%)		27			4	0				11
Queuing Penalty (veh)		141			0	0				0
Storage Bay Dist (ft)	130			300				180	200	
Storage Blk Time (%)		52		7	5				39	
Queuing Penalty (veh)		15		19	10				50	

Network Summary

Network wide Queuing Penalty: 333

Intersection: 13: SR 161 #1 & RR Crossing

Phase	2	4	6	8
Movement(s) Served	NBT	EBT	SBT	WBT
Maximum Green (s)	296.0	16.0	296.0	16.0
Minimum Green (s)	296.0	4.0	296.0	4.0
Recall	None	C-Max	None	C-Max
Avg. Green (s)	296.0	0.0	296.0	0.0
g/C Ratio	0.09	0.00	0.09	0.00
Cycles Skipped (%)	90	100	90	100
Cycles @ Minimum (%)	10	0	10	0
Cycles Maxed Out (%)	10	0	10	0
Cycles with Peds (%)	0	0	0	0

Controller Summary
Average Cycle Length (s): 320.0
Number of Complete Cycles : 10

Intersection: 19: SR 161 #1 & Linworth Rd

Phase	2	4	6	8
Movement(s) Served	NBTL	EBTL	SBTL	WBTL
Maximum Green (s)	25.0	60.0	45.0	60.0
Minimum Green (s)	4.0	4.0	4.0	4.0
Recall	None	None	None	None
Avg. Green (s)	20.8	56.5	37.5	56.5
g/C Ratio	0.15	0.43	0.28	0.43
Cycles Skipped (%)	4	0	0	0
Cycles @ Minimum (%)	0	0	0	0
Cycles Maxed Out (%)	32	74	41	74
Cycles with Peds (%)	0	0	0	0

Controller Summary
Average Cycle Length (s): 131.9
Number of Complete Cycles : 27

Summary of All Intervals

Start Time	4:57
End Time	6:00
Total Time (min)	63
Time Recorded (min)	60
# of Intervals	2
# of Recorded Intvls	1
Vehs Entered	8064
Vehs Exited	7855
Starting Vehs	223
Ending Vehs	432
Denied Entry Before	8
Denied Entry After	6
Travel Distance (mi)	5921
Travel Time (hr)	439.8
Total Delay (hr)	250.5
Total Stops	13315
Fuel Used (gal)	259.7

Interval #0 Information Seeding

Start Time	4:57
End Time	5:00
Total Time (min)	3

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	5:00
End Time	6:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Vehs Entered	8064
Vehs Exited	7855
Starting Vehs	223
Ending Vehs	432
Denied Entry Before	8
Denied Entry After	6
Travel Distance (mi)	5921
Travel Time (hr)	439.8
Total Delay (hr)	250.5
Total Stops	13315
Fuel Used (gal)	259.7

2: Sawmill Rd & SR 161#1 Performance by movement

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Total Delay (hr)	3.8	12.3	1.5	9.9	14.0	0.5	5.7	6.8	0.5	2.8	3.6	0.4
Delay / Veh (s)	73.1	48.3	37.4	188.4	53.9	11.7	74.2	63.0	7.7	53.9	32.4	11.2
Total Stops	183	751	126	347	805	112	280	357	157	170	222	53
Travel Dist (mi)	28.9	140.1	19.9	30.9	148.4	24.0	33.3	47.7	30.6	45.1	97.0	33.9
Travel Time (hr)	4.9	17.1	2.2	11.1	19.1	1.4	6.8	8.1	1.7	4.1	6.0	1.5
Avg Speed (mph)	6	8	9	3	8	21	5	6	19	11	16	23
Fuel Used (gal)	1.8	7.5	0.9	3.2	8.0	1.0	2.5	3.0	1.1	2.3	4.6	1.3
HC Emissions (g)	10	67	5	13	62	9	18	21	14	39	57	30
CO Emissions (g)	362	2084	185	478	1990	431	837	677	725	1528	2957	1123
NOx Emissions (g)	30	215	15	34	199	32	55	67	41	111	191	87
Vehicles Entered	186	912	143	196	947	155	281	393	250	188	400	138
Vehicles Exited	188	921	143	185	930	155	271	390	248	189	409	141
Hourly Exit Rate	188	921	143	185	930	155	271	390	248	189	409	141
Input Volume	195	885	135	185	958	145	281	374	256	192	397	132
% of Volume	96	104	106	100	97	107	96	104	97	98	103	107
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	2	1	1	0	0	0

2: Sawmill Rd & SR 161#1 Performance by movement

Movement	All
Total Delay (hr)	62.0
Delay / Veh (s)	53.4
Total Stops	3563
Travel Dist (mi)	679.8
Travel Time (hr)	84.1
Avg Speed (mph)	8
Fuel Used (gal)	37.2
HC Emissions (g)	344
CO Emissions (g)	13377
NOx Emissions (g)	1078
Vehicles Entered	4189
Vehicles Exited	4170
Hourly Exit Rate	4170
Input Volume	4135
% of Volume	101
Denied Entry Before	0
Denied Entry After	4

3: SR 161#1 & Sawmill Pl Blvd Performance by movement

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Total Delay (hr)	0.4	3.5	0.2	1.4	2.4	0.1	0.3	0.6	0.7	1.0	1.0	0.7
Delay / Veh (s)	17.1	18.8	17.5	28.3	16.1	12.6	50.3	41.8	25.2	81.3	44.4	10.9
Total Stops	51	209	28	151	199	14	16	35	88	46	65	171
Travel Dist (mi)	10.6	92.6	6.9	10.8	32.7	2.2	1.0	2.7	5.5	3.7	6.8	19.2
Travel Time (hr)	0.7	5.9	0.5	1.8	3.1	0.2	0.3	0.7	1.0	1.2	1.3	1.6
Avg Speed (mph)	15	16	15	6	11	10	3	4	6	3	5	12
Fuel Used (gal)	0.5	4.8	0.3	0.6	1.6	0.1	0.1	0.2	0.4	0.4	0.5	0.7
HC Emissions (g)	8	47	2	1	15	0	0	2	2	1	4	6
CO Emissions (g)	300	2188	137	62	460	11	10	61	78	62	136	275
NOx Emissions (g)	28	185	10	7	53	1	1	7	7	4	13	21
Vehicles Entered	79	667	49	173	527	35	18	49	100	45	83	233
Vehicles Exited	79	663	51	171	528	34	18	49	100	45	82	234
Hourly Exit Rate	79	663	51	171	528	34	18	49	100	45	82	234
Input Volume	87	637	50	165	528	32	16	52	92	45	71	211
% of Volume	91	104	102	104	100	106	112	94	109	100	115	111
Denied Entry Before	0	2	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

3: SR 161#1 & Sawmill Pl Blvd Performance by movement

Movement	All
Total Delay (hr)	12.2
Delay / Veh (s)	21.3
Total Stops	1073
Travel Dist (mi)	194.7
Travel Time (hr)	18.2
Avg Speed (mph)	11
Fuel Used (gal)	10.1
HC Emissions (g)	88
CO Emissions (g)	3782
NOx Emissions (g)	335
Vehicles Entered	2058
Vehicles Exited	2054
Hourly Exit Rate	2054
Input Volume	1986
% of Volume	103
Denied Entry Before	2
Denied Entry After	0

6: SR 161#1 & Martin Rd Performance by movement

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Total Delay (hr)	1.4	3.3	0.3	2.2	3.1	0.4	0.6	1.5	0.6	0.5	1.0	0.2
Delay / Veh (s)	27.1	24.7	21.0	29.9	21.2	18.0	46.4	48.4	9.8	38.9	44.6	4.4
Total Stops	177	161	20	207	200	30	39	86	180	38	61	122
Travel Dist (mi)	46.8	111.9	12.5	38.0	72.5	9.7	2.1	5.4	10.8	2.1	3.4	7.1
Travel Time (hr)	2.8	6.1	0.7	3.5	4.9	0.7	0.7	1.7	1.2	0.6	1.1	0.6
Avg Speed (mph)	16	18	18	11	15	14	4	3	9	3	3	12
Fuel Used (gal)	2.2	5.4	0.5	2.1	4.2	0.5	0.2	0.6	0.5	0.2	0.4	0.2
HC Emissions (g)	25	63	8	26	52	6	3	6	4	0	1	2
CO Emissions (g)	1112	2924	302	1001	2685	292	77	159	134	21	54	53
NOx Emissions (g)	92	230	26	89	185	23	7	18	14	2	5	5
Vehicles Entered	191	477	50	268	523	71	44	110	220	48	77	163
Vehicles Exited	193	476	51	267	519	71	44	110	225	49	77	162
Hourly Exit Rate	193	476	51	267	519	71	44	110	225	49	77	162
Input Volume	193	456	45	252	512	74	45	104	224	51	91	162
% of Volume	100	104	113	106	101	96	98	106	100	96	85	100
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

6: SR 161#1 & Martin Rd Performance by movement

Movement	All
Total Delay (hr)	15.0
Delay / Veh (s)	24.1
Total Stops	1321
Travel Dist (mi)	322.3
Travel Time (hr)	24.6
Avg Speed (mph)	13
Fuel Used (gal)	16.9
HC Emissions (g)	197
CO Emissions (g)	8814
NOx Emissions (g)	698
Vehicles Entered	2242
Vehicles Exited	2244
Hourly Exit Rate	2244
Input Volume	2209
% of Volume	102
Denied Entry Before	0
Denied Entry After	0

9: SR 161#1 & Federated Blvd Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBR	All
Total Delay (hr)	0.6	0.2	2.4	0.4	0.3	0.3	4.2
Delay / Veh (s)	13.1	1.4	14.2	13.1	35.6	10.6	9.2
Total Stops	115	0	1	2	27	100	245
Travel Dist (mi)	16.7	57.3	752.3	121.3	1.3	4.7	953.6
Travel Time (hr)	1.2	1.5	19.5	3.2	0.3	0.5	26.3
Avg Speed (mph)	14	37	39	38	4	9	36
Fuel Used (gal)	0.5	2.4	19.8	3.2	0.1	0.2	26.3
HC Emissions (g)	6	32	185	94	1	2	321
CO Emissions (g)	224	1637	5325	1930	24	59	9199
NOx Emissions (g)	19	125	897	311	2	6	1360
Vehicles Entered	172	634	630	103	28	100	1667
Vehicles Exited	172	634	609	99	27	99	1640
Hourly Exit Rate	172	634	609	99	27	99	1640
Input Volume	156	618	597	107	32	97	1607
% of Volume	110	103	102	93	84	102	102
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

13: SR 161#1 & RR Crossing Performance by movement

Movement	EBT	WBT	NBT	All
Total Delay (hr)	15.0	3.1	0.1	18.1
Delay / Veh (s)	91.8	14.9	303.3	49.0
Total Stops	615	34	1	650
Travel Dist (mi)	173.7	117.4	0.1	291.2
Travel Time (hr)	20.0	6.9	0.1	27.0
Avg Speed (mph)	9	17	1	11
Fuel Used (gal)	8.1	6.1	0.0	14.2
HC Emissions (g)	42	69	3	114
CO Emissions (g)	1121	2376	40	3537
NOx Emissions (g)	142	255	3	400
Vehicles Entered	587	744	1	1332
Vehicles Exited	589	745	1	1335
Hourly Exit Rate	589	745	1	1335
Input Volume	584	717	1	1302
% of Volume	101	104	100	103
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

17: SR 161#1 & McVey Blvd Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBR	All
Total Delay (hr)	0.2	2.6	0.9	0.1	0.0	0.0	4.0
Delay / Veh (s)	20.9	18.0	5.2	3.7	34.5	5.7	10.7
Total Stops	26	90	0	3	3	27	149
Travel Dist (mi)	53.8	677.3	199.7	29.5	0.1	1.1	961.5
Travel Time (hr)	1.5	17.9	6.7	1.0	0.0	0.1	27.3
Avg Speed (mph)	36	38	30	28	4	11	35
Fuel Used (gal)	1.3	16.5	5.4	0.7	0.0	0.0	23.9
HC Emissions (g)	43	168	46	7	0	0	264
CO Emissions (g)	805	3546	790	118	0	2	5262
NOx Emissions (g)	139	802	151	23	0	0	1115
Vehicles Entered	40	534	650	95	3	27	1349
Vehicles Exited	42	520	651	95	3	27	1338
Hourly Exit Rate	42	520	651	95	3	27	1338
Input Volume	42	514	632	85	7	24	1304
% of Volume	100	101	103	112	43	112	103
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

19: SR 161#1 & Linworth Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay (hr)	1.3	17.1	2.4	4.3	37.7	3.4	5.8	9.6	1.6	3.7	5.2	1.7
Delay / Veh (s)	197.7	128.1	116.3	393.0	225.3	241.2	118.4	112.4	99.8	108.8	104.3	96.1
Total Stops	51	630	93	141	1628	137	276	443	77	158	231	77
Travel Dist (mi)	3.8	75.4	11.2	19.9	284.9	25.3	51.5	89.7	16.3	36.4	53.4	19.4
Travel Time (hr)	1.4	19.3	2.7	5.3	52.2	4.6	7.6	12.6	2.1	5.0	7.1	2.4
Avg Speed (mph)	3	4	4	4	5	5	7	7	8	7	8	8
Fuel Used (gal)	0.4	6.0	0.8	1.6	18.0	1.6	2.8	4.7	0.8	1.8	2.7	0.9
HC Emissions (g)	2	22	1	11	77	26	14	29	9	11	11	7
CO Emissions (g)	47	637	57	253	2115	446	401	723	181	266	322	174
NOx Emissions (g)	5	70	6	26	240	55	44	87	24	30	33	17
Vehicles Entered	25	492	72	40	605	50	176	313	55	124	186	69
Vehicles Exited	24	468	73	38	601	50	174	299	56	122	176	62
Hourly Exit Rate	24	468	73	38	601	50	174	299	56	122	176	62
Input Volume	31	473	80	43	553	58	185	301	44	113	194	58
% of Volume	77	99	91	88	109	86	94	99	127	108	91	107
Denied Entry Before	0	0	0	0	0	0	0	1	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

19: SR 161#1 & Linworth Rd Performance by movement

Movement	All
Total Delay (hr)	93.7
Delay / Veh (s)	155.0
Total Stops	3942
Travel Dist (mi)	687.2
Travel Time (hr)	122.3
Avg Speed (mph)	6
Fuel Used (gal)	42.3
HC Emissions (g)	220
CO Emissions (g)	5621
NOx Emissions (g)	637
Vehicles Entered	2207
Vehicles Exited	2143
Hourly Exit Rate	2143
Input Volume	2133
% of Volume	100
Denied Entry Before	1
Denied Entry After	0

24: SR 161#1 & Olentangy River Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay (hr)	0.2	9.2	0.2	2.4	6.0	2.4	0.4	2.5	0.6	4.4	1.3	0.1
Delay / Veh (s)	46.8	55.9	60.8	51.8	33.0	17.7	60.9	60.1	22.2	62.5	52.2	27.2
Total Stops	18	434	6	176	483	336	19	134	86	233	77	17
Travel Dist (mi)	1.1	48.5	0.8	12.6	50.4	38.0	3.5	24.7	16.7	23.0	8.3	1.6
Travel Time (hr)	0.2	10.8	0.2	2.9	7.6	4.2	0.5	3.3	1.2	5.3	1.6	0.2
Avg Speed (mph)	5	4	4	5	7	10	7	8	15	5	5	8
Fuel Used (gal)	0.1	3.8	0.1	1.1	3.1	1.8	0.2	1.4	0.7	1.9	0.6	0.1
HC Emissions (g)	0	17	0	7	26	12	1	4	6	8	3	0
CO Emissions (g)	8	492	5	303	770	435	37	209	218	377	137	20
NOx Emissions (g)	1	63	1	28	84	44	3	19	19	33	12	1
Vehicles Entered	13	602	10	165	665	497	21	148	99	253	90	18
Vehicles Exited	13	584	10	168	654	496	21	147	98	253	94	18
Hourly Exit Rate	13	584	10	168	654	496	21	147	98	253	94	18
Input Volume	14	605	11	151	619	493	18	153	101	240	81	17
% of Volume	93	97	91	111	106	101	117	96	97	105	116	106
Denied Entry Before	0	0	0	0	1	3	0	0	1	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	1	0	1

24: SR 161#1 & Olentangy River Rd Performance by movement

Movement	All
Total Delay (hr)	29.7
Delay / Veh (s)	41.6
Total Stops	2019
Travel Dist (mi)	229.3
Travel Time (hr)	38.1
Avg Speed (mph)	6
Fuel Used (gal)	14.8
HC Emissions (g)	84
CO Emissions (g)	3012
NOx Emissions (g)	306
Vehicles Entered	2581
Vehicles Exited	2556
Hourly Exit Rate	2556
Input Volume	2503
% of Volume	102
Denied Entry Before	5
Denied Entry After	2

Total Network Performance

Total Delay (hr)	250.5
Delay / Veh (s)	113.3
Total Stops	13315
Travel Dist (mi)	5920.7
Travel Time (hr)	439.8
Avg Speed (mph)	14
Fuel Used (gal)	259.7
HC Emissions (g)	2484
CO Emissions (g)	85378
NOx Emissions (g)	8965
Vehicles Entered	8064
Vehicles Exited	7855
Hourly Exit Rate	7855
Input Volume	27693
% of Volume	28
Denied Entry Before	8
Denied Entry After	6

Intersection: 2: Sawmill Rd & SR 161#1

Movement	NB	NB	NB	NB	SB	SB	SB	SB	SB	SE	SE	SE
Directions Served	L	T	T	TR	L	T	T	T	R	L	L	T
Maximum Queue (ft)	336	339	324	352	424	308	366	347	71	158	294	574
Average Queue (ft)	153	213	249	279	275	207	219	225	34	91	109	283
95th Queue (ft)	253	287	323	349	443	297	328	323	60	158	230	489
Link Distance (ft)		803	803	803		812	812					595
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	360				400			480	480	270	270	
Storage Blk Time (%)					1							10
Queuing Penalty (veh)					2							27

Intersection: 2: Sawmill Rd & SR 161#1

Movement	SE	NW	NW	NW	NW
Directions Served	R	L	T	T	R
Maximum Queue (ft)	85	295	220	215	205
Average Queue (ft)	18	135	69	74	16
95th Queue (ft)	56	244	142	138	78
Link Distance (ft)	595		1163	1163	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		950			180
Storage Blk Time (%)				0	
Queuing Penalty (veh)				0	

Intersection: 3: SR 161#1 & Sawmill Pl Blvd

Movement	SE	SE	NW	NW	B16	NE	NE	SW	SW	SW
Directions Served	L	TR	L	TR	T	L	TR	L	T	R
Maximum Queue (ft)	274	363	174	350	337	52	185	132	177	134
Average Queue (ft)	38	195	99	217	26	17	89	47	60	67
95th Queue (ft)	117	334	192	396	151	48	161	94	124	124
Link Distance (ft)		702		275	454	289	289	430	430	430
Upstream Blk Time (%)				4						
Queuing Penalty (veh)				30						
Storage Bay Dist (ft)	250		150							
Storage Blk Time (%)	0	4	2	11						
Queuing Penalty (veh)	0	4	9	19						

Intersection: 6: SR 161#1 & Martin Rd

Movement	SE	SE	NW	NW	NW	NE	NE	NE	SW	SW	SW
Directions Served	L	TR	L	T	TR	L	T	R	L	T	R
Maximum Queue (ft)	181	1306	251	195	207	93	180	186	93	140	94
Average Queue (ft)	89	558	123	105	102	34	87	69	35	62	47
95th Queue (ft)	159	1454	220	176	171	78	159	123	72	130	78
Link Distance (ft)		1163		702			257	257	228	228	228
Upstream Blk Time (%)		0									
Queuing Penalty (veh)		2									
Storage Bay Dist (ft)	300		280		380	170					
Storage Blk Time (%)							1				
Queuing Penalty (veh)							0				

Intersection: 9: SR 161#1 & Federated Blvd

Movement	EB	WB	SB	SB
Directions Served	L	TR	L	R
Maximum Queue (ft)	157	31	69	92
Average Queue (ft)	60	2	23	41
95th Queue (ft)	132	13	56	81
Link Distance (ft)		6752	244	244
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	200			
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 13: SR 161#1 & RR Crossing

Movement	EB	WB	NB
Directions Served	T	T	T
Maximum Queue (ft)	1272	771	49
Average Queue (ft)	601	90	4
95th Queue (ft)	1211	481	24
Link Distance (ft)	1582	765	432
Upstream Blk Time (%)		6	
Queuing Penalty (veh)		41	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 17: SR 161#1 & McVey Blvd

Movement	EB	WB	SB	SB
Directions Served	LT	TR	L	R
Maximum Queue (ft)	593	22	30	50
Average Queue (ft)	106	2	3	18
95th Queue (ft)	393	13	18	44
Link Distance (ft)	6752	1582	178	178
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 19: SR 161#1 & Linworth Rd

Movement	EB	EB	WB	WB	NB	NB	SB
Directions Served	L	TR	L	TR	L	TR	LTR
Maximum Queue (ft)	174	781	324	2538	174	966	780
Average Queue (ft)	45	667	119	1716	129	605	431
95th Queue (ft)	126	1065	303	2688	209	907	735
Link Distance (ft)		765		2570		1542	1537
Upstream Blk Time (%)		40					
Queuing Penalty (veh)		235					
Storage Bay Dist (ft)	150		300		150		
Storage Blk Time (%)		53		60	9	60	
Queuing Penalty (veh)		16		26	31	112	

Intersection: 24: SR 161#1 & Olentangy River Rd

Movement	EB	EB	B30	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	T	L	T	TR	LT	R	L	TR
Maximum Queue (ft)	31	484	688	324	410	410	378	205	225	424
Average Queue (ft)	12	379	256	124	291	275	136	70	183	130
95th Queue (ft)	35	595	581	255	418	451	249	175	242	302
Link Distance (ft)		376	2570		394	394	891			479
Upstream Blk Time (%)		34			2	2				
Queuing Penalty (veh)		212			0	0				
Storage Bay Dist (ft)	130			300				180	200	
Storage Blk Time (%)		46			6		6	0	13	0
Queuing Penalty (veh)		7			9		6	0	13	0

Network Summary

Network wide Queuing Penalty: 798

Intersection: 13: SR 161#1 & RR Crossing

Phase	2	4	6	8
Movement(s) Served	NBT	EBT	SBT	WBT
Maximum Green (s)	296.0	17.0	296.0	17.0
Minimum Green (s)	296.0	4.0	296.0	4.0
Recall	None	C-Max	None	C-Max
Avg. Green (s)	296.0	0.0	296.0	0.0
g/C Ratio	0.09	0.00	0.09	0.00
Cycles Skipped (%)	90	100	90	100
Cycles @ Minimum (%)	10	0	10	0
Cycles Maxed Out (%)	10	0	10	0
Cycles with Peds (%)	0	0	0	0

Controller Summary
Average Cycle Length (s): 321.0
Number of Complete Cycles : 10

Intersection: 19: SR 161#1 & Linworth Rd

Phase	2	4	6	8
Movement(s) Served	NBTL	EBTL	SBTL	WBTL
Maximum Green (s)	38.0	55.0	37.0	55.0
Minimum Green (s)	4.0	4.0	4.0	4.0
Recall	None	None	None	None
Avg. Green (s)	37.9	53.6	34.6	53.6
g/C Ratio	0.26	0.37	0.24	0.37
Cycles Skipped (%)	0	0	0	0
Cycles @ Minimum (%)	0	0	0	0
Cycles Maxed Out (%)	96	96	72	96
Cycles with Peds (%)	0	0	0	0

Controller Summary
Average Cycle Length (s): 146.2
Number of Complete Cycles : 24

Summary of All Intervals

Start Time	7:27
End Time	8:30
Total Time (min)	63
Time Recorded (min)	60
# of Intervals	2
# of Recorded Intvls	1
Vehs Entered	5456
Vehs Exited	5251
Starting Vehs	156
Ending Vehs	361
Denied Entry Before	2
Denied Entry After	31
Travel Distance (mi)	4297
Travel Time (hr)	319.2
Total Delay (hr)	183.5
Total Stops	8235
Fuel Used (gal)	185.9

Interval #0 Information Seeding

Start Time	7:27
End Time	7:30
Total Time (min)	3

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:30
End Time	8:30
Total Time (min)	60

Volumes adjusted by Growth Factors.

Vehs Entered	5456
Vehs Exited	5251
Starting Vehs	156
Ending Vehs	361
Denied Entry Before	2
Denied Entry After	31
Travel Distance (mi)	4297
Travel Time (hr)	319.2
Total Delay (hr)	183.5
Total Stops	8235
Fuel Used (gal)	185.9

2: Sawmill Rd & SR 161 #1 Performance by movement

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Total Delay (hr)	1.2	6.3	0.5	1.4	6.0	0.3	2.5	2.9	0.1	0.4	2.2	0.1
Delay / Veh (s)	52.6	37.8	19.9	61.2	36.7	10.1	67.1	41.2	3.1	33.9	23.2	8.3
Total Stops	72	450	60	73	431	75	124	194	69	31	109	18
Travel Dist (mi)	13.0	93.2	11.8	13.1	94.2	17.3	16.1	30.6	12.7	10.0	83.6	9.7
Travel Time (hr)	1.7	9.5	0.9	1.8	9.2	1.0	3.1	3.7	0.5	0.7	4.2	0.4
Avg Speed (mph)	8	10	13	8	10	21	6	8	25	15	20	25
Fuel Used (gal)	0.7	4.4	0.4	0.7	4.3	0.7	1.2	1.7	0.3	0.4	3.5	0.4
HC Emissions (g)	3	30	5	6	39	10	6	23	5	3	51	15
CO Emissions (g)	149	1085	142	186	1186	348	501	789	204	208	2199	401
NOx Emissions (g)	10	102	15	17	119	28	23	66	16	13	172	41
Vehicles Entered	84	607	84	82	598	112	136	252	104	42	350	40
Vehicles Exited	84	594	85	79	584	112	136	256	103	39	347	40
Hourly Exit Rate	84	594	85	79	584	112	136	256	103	39	347	40
Input Volume	89	630	80	96	615	104	113	224	100	58	405	55
% of Volume	94	94	106	82	95	108	120	114	103	67	86	73
Denied Entry Before	0	0	0	0	0	0	1	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

2: Sawmill Rd & SR 161 #1 Performance by movement

Movement	All
Total Delay (hr)	23.9
Delay / Veh (s)	34.8
Total Stops	1706
Travel Dist (mi)	405.3
Travel Time (hr)	36.8
Avg Speed (mph)	11
Fuel Used (gal)	18.8
HC Emissions (g)	196
CO Emissions (g)	7397
NOx Emissions (g)	623
Vehicles Entered	2491
Vehicles Exited	2459
Hourly Exit Rate	2459
Input Volume	2569
% of Volume	96
Denied Entry Before	1
Denied Entry After	0

3: SR 161 #1 & Sawmill Pl Blvd Performance by movement

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Total Delay (hr)	0.1	1.3	0.0	0.1	0.8	0.0	0.2	0.3	0.3	0.4	0.2	0.2
Delay / Veh (s)	11.5	9.8	3.0	7.9	6.9	0.6	44.9	62.0	17.5	50.4	32.6	4.7
Total Stops	20	98	8	35	92	0	14	18	43	26	12	86
Travel Dist (mi)	5.0	64.4	3.5	2.8	24.3	0.1	1.0	1.1	2.9	2.3	1.5	9.7
Travel Time (hr)	0.3	2.9	0.1	0.2	1.4	0.0	0.3	0.4	0.4	0.5	0.2	0.6
Avg Speed (mph)	19	23	25	14	18	22	4	3	7	5	7	17
Fuel Used (gal)	0.2	3.1	0.1	0.1	0.9	0.0	0.1	0.1	0.2	0.2	0.1	0.3
HC Emissions (g)	5	63	1	0	10	0	0	0	2	0	0	5
CO Emissions (g)	166	2247	67	9	411	0	9	15	56	18	11	119
NOx Emissions (g)	15	204	5	1	38	0	1	1	6	1	1	13
Vehicles Entered	40	485	24	43	433	2	18	20	53	28	18	118
Vehicles Exited	39	482	24	43	432	2	19	20	53	29	17	117
Hourly Exit Rate	39	482	24	43	432	2	19	20	53	29	17	117
Input Volume	37	482	18	37	496	3	23	17	67	20	14	128
% of Volume	105	100	133	116	87	67	83	118	79	145	121	91
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	1	0	0	0	0	0	0	0	0	0	0

3: SR 161 #1 & Sawmill Pl Blvd Performance by movement

Movement	All
Total Delay (hr)	3.9
Delay / Veh (s)	11.0
Total Stops	452
Travel Dist (mi)	118.6
Travel Time (hr)	7.3
Avg Speed (mph)	17
Fuel Used (gal)	5.2
HC Emissions (g)	88
CO Emissions (g)	3129
NOx Emissions (g)	286
Vehicles Entered	1282
Vehicles Exited	1277
Hourly Exit Rate	1277
Input Volume	1342
% of Volume	95
Denied Entry Before	0
Denied Entry After	1

6: SR 161 #1 & Martin Rd Performance by movement

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Total Delay (hr)	0.3	1.2	0.0	0.6	1.3	0.1	0.1	0.1	0.1	0.1	0.2	0.1
Delay / Veh (s)	14.4	13.2	11.4	16.1	12.6	8.5	36.8	37.9	3.8	29.3	44.5	3.7
Total Stops	41	68	4	72	111	13	9	7	65	7	16	39
Travel Dist (mi)	16.4	83.8	3.4	16.8	49.3	6.5	0.5	0.5	4.2	0.6	0.8	2.2
Travel Time (hr)	0.8	3.3	0.1	1.1	2.6	0.3	0.1	0.1	0.3	0.1	0.3	0.2
Avg Speed (mph)	22	25	24	16	20	20	4	4	14	5	3	13
Fuel Used (gal)	0.8	4.1	0.1	0.8	2.7	0.3	0.0	0.0	0.1	0.0	0.1	0.1
HC Emissions (g)	6	95	1	9	50	2	0	0	2	0	0	0
CO Emissions (g)	438	3323	92	478	2135	153	13	3	45	3	9	10
NOx Emissions (g)	26	299	5	32	156	8	1	0	4	0	1	1
Vehicles Entered	67	340	14	128	373	48	11	10	86	13	18	50
Vehicles Exited	67	339	14	127	370	48	12	9	87	12	19	50
Hourly Exit Rate	67	339	14	127	370	48	12	9	87	12	19	50
Input Volume	66	320	15	124	438	39	17	11	82	17	17	63
% of Volume	102	106	93	102	84	123	71	82	106	71	112	79
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	1	3	2	0	0	0	0	0	0

6: SR 161 #1 & Martin Rd Performance by movement

Movement	All
Total Delay (hr)	4.2
Delay / Veh (s)	13.2
Total Stops	452
Travel Dist (mi)	185.0
Travel Time (hr)	9.4
Avg Speed (mph)	20
Fuel Used (gal)	9.0
HC Emissions (g)	166
CO Emissions (g)	6701
NOx Emissions (g)	534
Vehicles Entered	1158
Vehicles Exited	1154
Hourly Exit Rate	1154
Input Volume	1209
% of Volume	95
Denied Entry Before	0
Denied Entry After	6

9: SR 161 #1 & Federated Blvd Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBR	All
Total Delay (hr)	0.0	0.1	1.5	0.1	0.4	0.1	2.2
Delay / Veh (s)	2.8	0.6	10.0	9.1	13.5	4.4	5.9
Total Stops	10	0	0	0	97	101	208
Travel Dist (mi)	3.4	45.2	589.5	50.4	4.5	4.8	697.7
Travel Time (hr)	0.1	1.1	14.9	1.3	0.6	0.4	18.4
Avg Speed (mph)	25	41	40	39	8	13	38
Fuel Used (gal)	0.1	1.5	15.8	1.3	0.2	0.1	19.0
HC Emissions (g)	3	38	268	6	2	0	317
CO Emissions (g)	67	1157	6313	227	47	26	7837
NOx Emissions (g)	7	126	1054	43	5	2	1237
Vehicles Entered	35	529	536	39	97	102	1338
Vehicles Exited	35	530	517	39	96	101	1318
Hourly Exit Rate	35	530	517	39	96	101	1318
Input Volume	38	531	586	46	89	100	1390
% of Volume	92	100	88	85	108	101	95
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

13: SR 161 #1 & RR Crossing Performance by movement

Movement	EBT	WBT	NBT	All
Total Delay (hr)	18.3	5.6	0.2	24.1
Delay / Veh (s)	129.3	32.7	612.7	76.8
Total Stops	470	35	1	506
Travel Dist (mi)	158.4	97.4	0.1	255.9
Travel Time (hr)	22.9	8.8	0.2	31.9
Avg Speed (mph)	7	11	0	8
Fuel Used (gal)	8.6	5.6	0.0	14.2
HC Emissions (g)	77	66	0	143
CO Emissions (g)	1666	2068	0	3734
NOx Emissions (g)	207	228	0	435
Vehicles Entered	516	614	1	1131
Vehicles Exited	502	622	1	1125
Hourly Exit Rate	502	622	1	1125
Input Volume	508	690	1	1199
% of Volume	99	90	100	94
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

17: SR 161 #1 & McVey Blvd Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBR	All
Total Delay (hr)	0.0	2.3	0.6	0.0	0.4	0.2	3.4
Delay / Veh (s)	7.0	17.3	3.2	3.7	16.0	18.7	10.1
Total Stops	1	37	0	0	80	46	164
Travel Dist (mi)	7.8	587.7	178.8	2.2	3.3	1.9	781.7
Travel Time (hr)	0.2	15.5	5.7	0.1	0.5	0.3	22.4
Avg Speed (mph)	40	38	31	28	7	6	35
Fuel Used (gal)	0.2	15.0	5.0	0.1	0.1	0.1	20.4
HC Emissions (g)	1	295	59	0	0	1	355
CO Emissions (g)	20	6112	1026	4	12	14	7189
NOx Emissions (g)	6	1117	195	1	1	1	1323
Vehicles Entered	6	473	615	7	79	46	1226
Vehicles Exited	6	467	617	7	80	46	1223
Hourly Exit Rate	6	467	617	7	80	46	1223
Input Volume	13	461	677	13	77	47	1288
% of Volume	46	101	91	54	104	98	95
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

19: SR 161 #1 & Linworth Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay (hr)	0.7	7.5	1.6	2.3	26.1	1.8	3.8	4.4	0.8	7.1	18.9	3.1
Delay / Veh (s)	125.2	72.3	69.1	216.5	192.9	177.4	141.4	106.9	75.3	249.0	269.5	230.2
Total Stops	33	320	75	77	915	64	124	190	42	190	477	80
Travel Dist (mi)	3.3	58.3	12.8	18.9	244.9	18.0	28.7	43.5	11.1	30.6	72.9	14.1
Travel Time (hr)	0.8	9.2	2.0	3.2	38.5	2.7	4.8	5.8	1.2	8.2	21.4	3.6
Avg Speed (mph)	4	6	6	6	7	7	6	8	9	4	4	4
Fuel Used (gal)	0.2	3.1	0.7	1.1	13.9	1.0	1.7	2.2	0.5	2.5	6.4	1.1
HC Emissions (g)	2	29	4	3	102	0	14	6	12	14	35	1
CO Emissions (g)	39	580	94	113	2250	66	316	230	215	339	828	78
NOx Emissions (g)	5	71	12	10	256	6	35	23	29	34	83	7
Vehicles Entered	23	386	83	40	504	36	98	149	38	108	263	52
Vehicles Exited	18	360	80	37	470	36	97	146	37	98	244	47
Hourly Exit Rate	18	360	80	37	470	36	97	146	37	98	244	47
Input Volume	31	378	90	37	545	36	99	152	40	115	256	46
% of Volume	58	95	89	100	86	100	98	96	92	85	95	102
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

19: SR 161 #1 & Linworth Rd Performance by movement

Movement	All
Total Delay (hr)	78.0
Delay / Veh (s)	162.9
Total Stops	2587
Travel Dist (mi)	557.1
Travel Time (hr)	101.5
Avg Speed (mph)	6
Fuel Used (gal)	34.5
HC Emissions (g)	222
CO Emissions (g)	5148
NOx Emissions (g)	569
Vehicles Entered	1780
Vehicles Exited	1670
Hourly Exit Rate	1670
Input Volume	1825
% of Volume	92
Denied Entry Before	0
Denied Entry After	0

24: SR 161 #1 & Olentangy River Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay (hr)	0.6	15.4	0.3	2.3	5.3	0.7	0.1	0.7	1.1	7.6	1.9	0.1
Delay / Veh (s)	87.4	110.6	103.4	48.5	35.9	15.5	30.5	51.1	25.4	71.1	60.4	26.2
Total Stops	36	415	9	171	429	115	8	39	144	392	112	20
Travel Dist (mi)	2.0	37.6	0.9	12.7	41.3	12.8	1.9	8.5	27.2	34.7	10.2	1.5
Travel Time (hr)	0.7	16.7	0.4	2.7	6.7	1.3	0.2	1.0	2.2	8.9	2.2	0.2
Avg Speed (mph)	4	4	4	5	7	10	12	8	14	4	5	9
Fuel Used (gal)	0.2	4.9	0.1	1.1	2.7	0.6	0.1	0.4	1.1	3.0	0.8	0.1
HC Emissions (g)	0	33	0	6	29	6	0	1	8	17	4	0
CO Emissions (g)	22	740	8	292	856	205	13	60	258	568	172	19
NOx Emissions (g)	2	78	1	25	88	20	1	5	23	58	14	2
Vehicles Entered	26	512	11	168	543	168	11	50	161	379	111	17
Vehicles Exited	26	492	11	168	531	166	11	53	161	387	113	17
Hourly Exit Rate	26	492	11	168	531	166	11	53	161	387	113	17
Input Volume	29	585	12	190	566	167	12	70	137	370	116	13
% of Volume	90	84	92	88	94	99	92	76	118	105	97	131
Denied Entry Before	0	0	0	0	0	0	0	0	0	1	0	0
Denied Entry After	1	20	0	0	0	0	0	0	1	2	0	0

24: SR 161 #1 & Olentangy River Rd Performance by movement

Movement	All
Total Delay (hr)	36.2
Delay / Veh (s)	60.8
Total Stops	1890
Travel Dist (mi)	191.1
Travel Time (hr)	43.2
Avg Speed (mph)	6
Fuel Used (gal)	15.1
HC Emissions (g)	104
CO Emissions (g)	3213
NOx Emissions (g)	318
Vehicles Entered	2157
Vehicles Exited	2136
Hourly Exit Rate	2136
Input Volume	2267
% of Volume	94
Denied Entry Before	1
Denied Entry After	24

Total Network Performance

Total Delay (hr)	183.5
Delay / Veh (s)	123.4
Total Stops	8235
Travel Dist (mi)	4297.0
Travel Time (hr)	319.2
Avg Speed (mph)	14
Fuel Used (gal)	185.9
HC Emissions (g)	2205
CO Emissions (g)	66823
NOx Emissions (g)	7449
Vehicles Entered	5456
Vehicles Exited	5251
Hourly Exit Rate	5251
Input Volume	20417
% of Volume	26
Denied Entry Before	2
Denied Entry After	31

Intersection: 2: Sawmill Rd & SR 161 #1

Movement	NB	NB	NB	NB	SB	SB	SB	SB	SB	SE	SE	SE
Directions Served	L	T	T	TR	L	T	T	T	R	L	L	T
Maximum Queue (ft)	119	212	216	288	124	154	161	188	50	72	83	247
Average Queue (ft)	50	115	126	166	41	83	104	129	30	28	32	121
95th Queue (ft)	100	177	192	246	99	125	156	177	50	65	75	233
Link Distance (ft)		803	803	803		812	812					595
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	360				400			480	480	270	270	
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 2: Sawmill Rd & SR 161 #1

Movement	SE	NW	NW	NW	NW
Directions Served	R	L	T	T	R
Maximum Queue (ft)	14	57	152	139	15
Average Queue (ft)	0	14	21	33	1
95th Queue (ft)	5	39	75	86	8
Link Distance (ft)	595		1163	1163	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		950			180
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 3: SR 161 #1 & Sawmill Pl Blvd

Movement	SE	SE	NW	NW	NE	NE	SW	SW	SW
Directions Served	L	TR	L	TR	L	TR	L	T	R
Maximum Queue (ft)	69	290	70	282	50	119	114	50	159
Average Queue (ft)	15	82	18	85	17	48	28	12	34
95th Queue (ft)	47	167	47	201	45	100	70	38	79
Link Distance (ft)		702		275	289	289	430	430	430
Upstream Blk Time (%)				0					
Queuing Penalty (veh)				1					
Storage Bay Dist (ft)	250		150						
Storage Blk Time (%)		0		1					
Queuing Penalty (veh)		0		0					

Intersection: 6: SR 161 #1 & Martin Rd

Movement	SE	SE	NW	NW	NW	NE	NE	NE	SW	SW	SW
Directions Served	L	TR	L	T	TR	L	T	R	L	T	R
Maximum Queue (ft)	67	1332	114	96	109	31	31	74	30	74	54
Average Queue (ft)	25	180	41	51	57	11	8	31	7	19	22
95th Queue (ft)	49	793	92	83	93	34	29	60	26	50	48
Link Distance (ft)		1163		702			257	257	228	228	228
Upstream Blk Time (%)		0									
Queuing Penalty (veh)		1									
Storage Bay Dist (ft)	300		280		380	170					
Storage Blk Time (%)											
Queuing Penalty (veh)											

Intersection: 9: SR 161 #1 & Federated Blvd

Movement	EB	SB	SB
Directions Served	L	L	R
Maximum Queue (ft)	28	72	52
Average Queue (ft)	6	41	32
95th Queue (ft)	25	67	51
Link Distance (ft)		244	244
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	200		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 13: SR 161 #1 & RR Crossing

Movement	EB	WB	NB
Directions Served	T	T	T
Maximum Queue (ft)	1586	769	54
Average Queue (ft)	631	152	8
95th Queue (ft)	1726	650	37
Link Distance (ft)	1582	765	432
Upstream Blk Time (%)	6	13	
Queuing Penalty (veh)	30	89	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 17: SR 161 #1 & McVey Blvd

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	825	183
Average Queue (ft)	48	58
95th Queue (ft)	332	113
Link Distance (ft)	6764	179
Upstream Blk Time (%)		0
Queuing Penalty (veh)		0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 19: SR 161 #1 & Linworth Rd

Movement	EB	EB	WB	WB	NB	NB	SB
Directions Served	L	TR	L	TR	L	TR	LTR
Maximum Queue (ft)	78	779	324	2579	174	765	1571
Average Queue (ft)	22	369	64	1101	96	297	799
95th Queue (ft)	61	868	209	2361	172	591	1798
Link Distance (ft)		765		2571		1542	1537
Upstream Blk Time (%)		18		2			22
Queuing Penalty (veh)		87		11			0
Storage Bay Dist (ft)	150		300		150		
Storage Blk Time (%)		27	0	44	15	27	
Queuing Penalty (veh)		8	0	16	29	27	

Intersection: 24: SR 161 #1 & Olentangy River Rd

Movement	EB	EB	B30	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	T	L	T	TR	LT	R	L	TR
Maximum Queue (ft)	154	447	698	324	408	349	97	184	225	494
Average Queue (ft)	32	371	210	111	240	194	52	80	219	336
95th Queue (ft)	105	571	573	217	362	316	94	144	235	516
Link Distance (ft)		376	2571		394	394	891			479
Upstream Blk Time (%)		23			1					1
Queuing Penalty (veh)		123			0					0
Storage Bay Dist (ft)	130			300				180	200	
Storage Blk Time (%)	0	52			4			0	37	1
Queuing Penalty (veh)	0	15			8			0	48	2

Network Summary

Network wide Queuing Penalty: 497

Intersection: 13: SR 161 #1 & RR Crossing

Phase	2	4	6	8
Movement(s) Served	EBT	SBT	WBT	NBT
Maximum Green (s)	17.0	596.0	17.0	596.0
Minimum Green (s)	4.0	596.0	4.0	596.0
Recall	C-Max	None	C-Max	None
Avg. Green (s)	0.0	596.0	0.0	596.0
g/C Ratio	0.00	0.24	0.00	0.24
Cycles Skipped (%)	100	75	100	75
Cycles @ Minimum (%)	0	25	0	25
Cycles Maxed Out (%)	0	25	0	25
Cycles with Peds (%)	0	0	0	0

Controller Summary
Average Cycle Length (s): 621.0
Number of Complete Cycles : 4

Intersection: 19: SR 161 #1 & Linworth Rd

Phase	2	4	6	8
Movement(s) Served	NBTL	EBTL	SBTL	WBTL
Maximum Green (s)	25.0	60.0	45.0	60.0
Minimum Green (s)	4.0	4.0	4.0	4.0
Recall	None	None	None	None
Avg. Green (s)	21.5	55.7	39.8	55.7
g/C Ratio	0.16	0.41	0.30	0.41
Cycles Skipped (%)	0	0	0	0
Cycles @ Minimum (%)	0	0	0	0
Cycles Maxed Out (%)	67	69	59	69
Cycles with Peds (%)	0	0	0	0

Controller Summary
Average Cycle Length (s): 134.6
Number of Complete Cycles : 26

Summary of All Intervals

Start Time	4:57
End Time	6:00
Total Time (min)	63
Time Recorded (min)	60
# of Intervals	2
# of Recorded Intvls	1
Vehs Entered	7824
Vehs Exited	7540
Starting Vehs	214
Ending Vehs	498
Denied Entry Before	12
Denied Entry After	52
Travel Distance (mi)	5521
Travel Time (hr)	459.9
Total Delay (hr)	284.3
Total Stops	12379
Fuel Used (gal)	253.2

Interval #0 Information Seeding

Start Time	4:57
End Time	5:00
Total Time (min)	3

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	5:00
End Time	6:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Vehs Entered	7824
Vehs Exited	7540
Starting Vehs	214
Ending Vehs	498
Denied Entry Before	12
Denied Entry After	52
Travel Distance (mi)	5521
Travel Time (hr)	459.9
Total Delay (hr)	284.3
Total Stops	12379
Fuel Used (gal)	253.2

2: Sawmill Rd & SR 161#1 Performance by movement

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Total Delay (hr)	3.4	12.8	1.4	5.8	12.9	0.5	5.4	6.3	0.7	2.5	3.8	0.5
Delay / Veh (s)	59.9	51.0	38.4	113.3	49.9	11.9	67.3	63.7	9.6	46.6	35.4	14.4
Total Stops	184	757	109	250	775	95	290	323	158	172	187	71
Travel Dist (mi)	31.4	137.5	18.0	30.0	147.4	21.9	33.8	43.3	29.9	45.8	92.6	31.3
Travel Time (hr)	4.6	17.5	2.0	6.9	18.0	1.3	6.5	7.4	1.8	3.8	6.0	1.5
Avg Speed (mph)	7	8	9	5	8	20	6	6	18	12	15	20
Fuel Used (gal)	1.7	7.6	0.8	2.2	7.8	0.9	2.5	2.8	1.1	2.3	4.6	1.4
HC Emissions (g)	17	73	9	17	50	17	26	14	20	29	60	30
CO Emissions (g)	479	2188	238	461	1780	560	971	621	805	1367	2990	1198
NOx Emissions (g)	43	221	26	41	172	49	74	51	54	93	202	87
Vehicles Entered	201	890	130	189	939	141	286	358	242	193	384	130
Vehicles Exited	206	911	131	180	930	142	287	352	244	191	380	130
Hourly Exit Rate	206	911	131	180	930	142	287	352	244	191	380	130
Input Volume	195	885	135	185	958	145	281	374	256	192	397	132
% of Volume	106	103	97	97	97	98	102	94	95	99	96	98
Denied Entry Before	0	1	0	0	0	0	1	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	2	2	1	0	0	0

2: Sawmill Rd & SR 161#1 Performance by movement

Movement	All
Total Delay (hr)	55.8
Delay / Veh (s)	49.2
Total Stops	3371
Travel Dist (mi)	663.0
Travel Time (hr)	77.3
Avg Speed (mph)	9
Fuel Used (gal)	35.8
HC Emissions (g)	362
CO Emissions (g)	13659
NOx Emissions (g)	1114
Vehicles Entered	4083
Vehicles Exited	4084
Hourly Exit Rate	4084
Input Volume	4135
% of Volume	99
Denied Entry Before	2
Denied Entry After	5

3: SR 161#1 & Sawmill Pl Blvd Performance by movement

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Total Delay (hr)	0.4	3.5	0.2	1.6	2.4	0.1	0.1	0.8	0.6	0.7	1.1	0.8
Delay / Veh (s)	19.1	19.9	11.1	42.6	17.3	8.2	46.8	56.4	24.7	61.7	53.6	11.9
Total Stops	34	195	19	148	209	10	9	44	82	37	57	198
Travel Dist (mi)	10.3	87.0	7.3	8.5	30.6	1.6	0.5	2.7	5.2	3.4	5.9	20.3
Travel Time (hr)	0.8	5.8	0.4	2.0	3.1	0.1	0.2	0.9	0.9	0.9	1.3	1.7
Avg Speed (mph)	15	16	18	4	10	12	4	3	6	4	5	12
Fuel Used (gal)	0.5	4.3	0.4	0.6	1.6	0.0	0.0	0.3	0.3	0.3	0.5	0.8
HC Emissions (g)	5	52	3	2	14	1	0	1	3	2	3	9
CO Emissions (g)	254	2216	184	72	409	16	2	42	86	59	109	301
NOx Emissions (g)	19	185	11	8	53	2	0	4	9	5	8	28
Vehicles Entered	76	625	51	140	501	28	10	49	94	42	73	246
Vehicles Exited	77	623	50	137	496	27	10	48	94	42	74	243
Hourly Exit Rate	77	623	50	137	496	27	10	48	94	42	74	243
Input Volume	87	637	50	165	528	32	16	52	92	45	71	211
% of Volume	89	98	100	83	94	84	62	92	102	93	104	115
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	1	0	0	0	0	0	0	0

3: SR 161#1 & Sawmill Pl Blvd Performance by movement

Movement	All
Total Delay (hr)	12.3
Delay / Veh (s)	22.9
Total Stops	1042
Travel Dist (mi)	183.3
Travel Time (hr)	18.0
Avg Speed (mph)	10
Fuel Used (gal)	9.6
HC Emissions (g)	94
CO Emissions (g)	3750
NOx Emissions (g)	332
Vehicles Entered	1935
Vehicles Exited	1921
Hourly Exit Rate	1921
Input Volume	1986
% of Volume	97
Denied Entry Before	0
Denied Entry After	1

6: SR 161#1 & Martin Rd Performance by movement

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Total Delay (hr)	1.4	2.3	0.1	2.2	2.4	0.2	0.6	1.3	0.7	0.4	1.3	0.3
Delay / Veh (s)	27.5	18.9	12.1	30.8	17.6	11.5	55.9	46.2	10.5	34.0	46.5	5.3
Total Stops	142	116	12	205	153	31	38	86	179	33	83	134
Travel Dist (mi)	45.2	104.0	9.6	36.1	68.3	10.5	1.9	5.1	11.0	1.7	4.4	7.8
Travel Time (hr)	2.7	5.0	0.4	3.4	4.2	0.6	0.7	1.6	1.2	0.5	1.5	0.7
Avg Speed (mph)	16	21	22	11	17	17	3	3	9	4	3	11
Fuel Used (gal)	2.1	5.0	0.4	2.0	3.9	0.5	0.2	0.5	0.5	0.1	0.5	0.3
HC Emissions (g)	34	56	12	22	53	12	2	5	3	1	1	2
CO Emissions (g)	1218	2885	355	899	2545	390	68	117	122	32	67	72
NOx Emissions (g)	113	212	34	76	184	35	6	13	12	4	7	8
Vehicles Entered	183	441	39	260	489	79	39	104	225	40	101	179
Vehicles Exited	186	442	39	259	486	76	41	105	226	41	100	179
Hourly Exit Rate	186	442	39	259	486	76	41	105	226	41	100	179
Input Volume	193	456	45	252	512	74	45	104	224	51	91	162
% of Volume	96	97	87	103	95	103	91	101	101	80	110	110
Denied Entry Before	0	0	0	1	0	0	0	0	1	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

6: SR 161#1 & Martin Rd Performance by movement

Movement	All
Total Delay (hr)	13.3
Delay / Veh (s)	21.9
Total Stops	1212
Travel Dist (mi)	305.6
Travel Time (hr)	22.5
Avg Speed (mph)	14
Fuel Used (gal)	16.1
HC Emissions (g)	203
CO Emissions (g)	8770
NOx Emissions (g)	704
Vehicles Entered	2179
Vehicles Exited	2180
Hourly Exit Rate	2180
Input Volume	2209
% of Volume	99
Denied Entry Before	2
Denied Entry After	0

9: SR 161#1 & Federated Blvd Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBR	All
Total Delay (hr)	0.5	0.2	2.5	0.3	0.2	0.2	4.0
Delay / Veh (s)	13.3	1.1	16.0	13.5	22.8	10.8	9.4
Total Stops	75	0	0	0	30	82	187
Travel Dist (mi)	13.9	55.4	675.1	111.1	1.4	3.9	860.8
Travel Time (hr)	1.0	1.4	17.6	3.0	0.3	0.5	23.8
Avg Speed (mph)	14	38	38	38	6	9	36
Fuel Used (gal)	0.4	2.2	17.5	2.9	0.1	0.2	23.3
HC Emissions (g)	4	39	196	33	0	2	273
CO Emissions (g)	148	1724	5357	836	8	45	8118
NOx Emissions (g)	13	135	872	143	1	4	1168
Vehicles Entered	143	619	565	95	30	82	1534
Vehicles Exited	144	619	547	92	30	82	1514
Hourly Exit Rate	144	619	547	92	30	82	1514
Input Volume	156	618	597	107	32	97	1607
% of Volume	92	100	92	86	94	85	94
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

13: SR 161#1 & RR Crossing Performance by movement

Movement	EBT	WBT	NBT	All
Total Delay (hr)	29.6	5.8	0.1	35.5
Delay / Veh (s)	197.1	32.9	219.1	108.3
Total Stops	605	34	1	640
Travel Dist (mi)	165.5	100.9	0.2	266.6
Travel Time (hr)	34.4	9.1	0.1	43.6
Avg Speed (mph)	6	11	1	7
Fuel Used (gal)	11.3	5.8	0.0	17.1
HC Emissions (g)	79	56	5	140
CO Emissions (g)	1677	2040	69	3786
NOx Emissions (g)	184	216	7	407
Vehicles Entered	557	639	2	1198
Vehicles Exited	523	640	2	1165
Hourly Exit Rate	523	640	2	1165
Input Volume	584	717	1	1302
% of Volume	90	89	200	89
Denied Entry Before	0	0	0	0
Denied Entry After	23	0	0	23

17: SR 161#1 & McVey Blvd Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBR	All
Total Delay (hr)	0.4	5.1	0.9	0.1	0.1	0.1	6.6
Delay / Veh (s)	34.7	35.4	5.5	3.7	50.3	10.7	19.3
Total Stops	26	159	0	2	7	28	222
Travel Dist (mi)	48.5	653.3	175.7	20.0	0.3	1.2	899.0
Travel Time (hr)	1.5	19.9	5.9	0.7	0.1	0.1	28.2
Avg Speed (mph)	32	33	30	29	3	8	32
Fuel Used (gal)	1.2	16.5	4.6	0.5	0.0	0.0	22.8
HC Emissions (g)	5	184	44	4	0	0	237
CO Emissions (g)	131	3863	754	69	1	3	4822
NOx Emissions (g)	39	856	148	14	0	0	1057
Vehicles Entered	38	525	576	64	7	28	1238
Vehicles Exited	38	513	574	65	7	28	1225
Hourly Exit Rate	38	513	574	65	7	28	1225
Input Volume	42	514	632	85	7	24	1304
% of Volume	90	100	91	76	100	117	94
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

19: SR 161#1 & Linworth Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay (hr)	0.8	11.2	1.8	3.7	35.8	3.5	14.5	22.0	2.4	6.1	10.0	1.9
Delay / Veh (s)	124.2	100.8	82.7	332.3	236.7	260.5	316.0	264.6	256.5	208.6	191.9	144.3
Total Stops	45	476	88	113	1108	114	395	623	74	182	315	69
Travel Dist (mi)	3.7	62.9	12.6	20.3	255.8	25.0	48.2	87.5	10.0	31.0	54.7	13.9
Travel Time (hr)	1.0	13.0	2.3	4.7	48.7	4.7	16.2	25.0	2.8	7.2	11.8	2.4
Avg Speed (mph)	4	5	5	4	5	5	4	4	4	4	5	6
Fuel Used (gal)	0.3	4.1	0.7	1.5	16.5	1.6	4.7	7.6	0.8	2.3	3.9	0.8
HC Emissions (g)	0	20	4	9	38	5	30	34	5	4	12	5
CO Emissions (g)	23	500	89	216	1504	167	701	919	109	200	438	128
NOx Emissions (g)	2	56	11	23	149	18	73	95	12	17	40	14
Vehicles Entered	24	418	81	44	572	50	176	312	35	107	190	48
Vehicles Exited	24	385	79	36	516	47	155	288	33	105	185	47
Hourly Exit Rate	24	385	79	36	516	47	155	288	33	105	185	47
Input Volume	31	473	80	43	553	58	185	301	44	113	194	58
% of Volume	77	81	99	84	93	81	84	96	75	93	95	81
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	8	9	2	0	0	0

19: SR 161#1 & Linworth Rd Performance by movement

Movement	All
Total Delay (hr)	113.8
Delay / Veh (s)	207.1
Total Stops	3602
Travel Dist (mi)	625.6
Travel Time (hr)	139.8
Avg Speed (mph)	5
Fuel Used (gal)	44.8
HC Emissions (g)	166
CO Emissions (g)	4995
NOx Emissions (g)	509
Vehicles Entered	2057
Vehicles Exited	1900
Hourly Exit Rate	1900
Input Volume	2133
% of Volume	89
Denied Entry Before	0
Denied Entry After	19

24: SR 161#1 & Olentangy River Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay (hr)	0.1	5.4	0.1	2.5	9.4	5.2	0.4	2.3	0.4	5.3	1.4	0.3
Delay / Veh (s)	51.1	39.8	33.0	55.4	53.7	37.6	70.8	58.9	18.3	83.4	54.8	60.7
Total Stops	14	352	8	165	465	338	18	120	67	235	78	15
Travel Dist (mi)	0.8	39.9	0.9	12.5	48.4	38.0	3.1	23.3	13.7	20.7	8.5	1.4
Travel Time (hr)	0.2	6.7	0.1	3.0	11.0	7.0	0.5	3.1	0.9	6.1	1.7	0.3
Avg Speed (mph)	5	6	7	6	6	8	6	8	16	4	5	5
Fuel Used (gal)	0.1	2.7	0.1	1.1	3.8	2.4	0.2	1.2	0.5	2.0	0.6	0.1
HC Emissions (g)	0	15	0	13	17	15	1	10	10	14	6	0
CO Emissions (g)	10	482	7	385	652	493	40	273	262	434	191	17
NOx Emissions (g)	1	60	1	36	64	50	3	28	28	39	19	1
Vehicles Entered	10	494	12	166	634	498	18	139	83	228	95	15
Vehicles Exited	10	480	11	165	630	494	19	139	79	230	93	15
Hourly Exit Rate	10	480	11	165	630	494	19	139	79	230	93	15
Input Volume	14	605	11	151	619	493	18	153	101	240	81	17
% of Volume	71	79	100	109	102	100	106	91	78	96	115	88
Denied Entry Before	0	0	0	1	4	2	0	0	0	1	0	0
Denied Entry After	0	0	0	0	1	3	0	0	0	0	0	0

24: SR 161#1 & Olentangy River Rd Performance by movement

Movement	All
Total Delay (hr)	32.8
Delay / Veh (s)	49.7
Total Stops	1875
Travel Dist (mi)	211.1
Travel Time (hr)	40.6
Avg Speed (mph)	6
Fuel Used (gal)	14.8
HC Emissions (g)	100
CO Emissions (g)	3245
NOx Emissions (g)	330
Vehicles Entered	2392
Vehicles Exited	2365
Hourly Exit Rate	2365
Input Volume	2503
% of Volume	94
Denied Entry Before	8
Denied Entry After	4

Total Network Performance

Total Delay (hr)	284.3
Delay / Veh (s)	133.2
Total Stops	12379
Travel Dist (mi)	5521.0
Travel Time (hr)	459.9
Avg Speed (mph)	13
Fuel Used (gal)	253.2
HC Emissions (g)	2440
CO Emissions (g)	82978
NOx Emissions (g)	8638
Vehicles Entered	7824
Vehicles Exited	7540
Hourly Exit Rate	7540
Input Volume	27693
% of Volume	27
Denied Entry Before	12
Denied Entry After	52

Intersection: 2: Sawmill Rd & SR 161#1

Movement	NB	NB	NB	NB	SB	SB	SB	SB	SB	SE	SE	SE
Directions Served	L	T	T	TR	L	T	T	T	R	L	L	T
Maximum Queue (ft)	329	380	373	419	365	332	320	318	67	156	293	610
Average Queue (ft)	153	227	255	291	177	196	206	223	32	88	106	260
95th Queue (ft)	268	338	366	394	298	291	299	305	54	141	201	528
Link Distance (ft)		803	803	803		812	812					595
Upstream Blk Time (%)												1
Queuing Penalty (veh)												0
Storage Bay Dist (ft)	360				400			480	480	270	270	
Storage Blk Time (%)		0										10
Queuing Penalty (veh)		0										29

Intersection: 2: Sawmill Rd & SR 161#1

Movement	SE	NW	NW	NW	NW
Directions Served	R	L	T	T	R
Maximum Queue (ft)	110	257	157	148	78
Average Queue (ft)	22	133	58	64	14
95th Queue (ft)	73	241	120	127	44
Link Distance (ft)	595		1163	1163	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		950			180
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 3: SR 161#1 & Sawmill Pl Blvd

Movement	SE	SE	NW	NW	B16	NE	NE	SW	SW	SW
Directions Served	L	TR	L	TR	T	L	TR	L	T	R
Maximum Queue (ft)	274	387	174	368	328	30	202	117	135	160
Average Queue (ft)	31	179	74	219	48	11	91	42	58	80
95th Queue (ft)	111	340	160	438	194	33	169	89	114	152
Link Distance (ft)		702		275	454	289	289	430	430	430
Upstream Blk Time (%)				6						
Queuing Penalty (veh)				42						
Storage Bay Dist (ft)	250		150							
Storage Blk Time (%)		6	4	10						
Queuing Penalty (veh)		5	20	16						

Intersection: 6: SR 161#1 & Martin Rd

Movement	SE	SE	NW	NW	NW	NE	NE	NE	SW	SW	SW
Directions Served	L	TR	L	T	TR	L	T	R	L	T	R
Maximum Queue (ft)	263	1301	289	158	197	116	230	161	98	139	116
Average Queue (ft)	72	262	117	82	81	41	92	73	30	76	48
95th Queue (ft)	144	935	228	147	160	86	173	125	72	131	80
Link Distance (ft)		1163		702			257	257	228	228	228
Upstream Blk Time (%)		0									
Queuing Penalty (veh)		1									
Storage Bay Dist (ft)	300		280		380	170					
Storage Blk Time (%)		0	1				1				
Queuing Penalty (veh)		0	3				0				

Intersection: 9: SR 161#1 & Federated Blvd

Movement	EB	SB	SB
Directions Served	L	L	R
Maximum Queue (ft)	196	72	91
Average Queue (ft)	47	25	42
95th Queue (ft)	124	55	75
Link Distance (ft)		244	244
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	200		
Storage Blk Time (%)	0		
Queuing Penalty (veh)	1		

Intersection: 13: SR 161#1 & RR Crossing

Movement	EB	WB	NB
Directions Served	T	T	T
Maximum Queue (ft)	1595	778	50
Average Queue (ft)	721	146	6
95th Queue (ft)	1921	632	30
Link Distance (ft)	1582	767	434
Upstream Blk Time (%)	12	14	
Queuing Penalty (veh)	64	101	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 17: SR 161#1 & McVey Blvd

Movement	EB	WB	SB	SB
Directions Served	LT	TR	L	R
Maximum Queue (ft)	1278	22	30	52
Average Queue (ft)	199	1	8	17
95th Queue (ft)	747	10	28	43
Link Distance (ft)	6752	1582	178	178
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 19: SR 161#1 & Linworth Rd

Movement	EB	EB	WB	WB	B30	NB	NB	SB
Directions Served	L	TR	L	TR	T	L	TR	LTR
Maximum Queue (ft)	174	784	324	2642	391	174	1556	1430
Average Queue (ft)	26	518	85	1415	116	127	966	601
95th Queue (ft)	82	944	251	3076	390	212	1789	1267
Link Distance (ft)		767		2570	376		1541	1537
Upstream Blk Time (%)		20		18	5		26	
Queuing Penalty (veh)		118		116	16		0	
Storage Bay Dist (ft)	150		300			150		
Storage Blk Time (%)		47	0	51		19	56	
Queuing Penalty (veh)		14	0	22		67	103	

Intersection: 24: SR 161#1 & Olentangy River Rd

Movement	EB	EB	B30	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	T	L	T	TR	LT	R	L	TR
Maximum Queue (ft)	153	452	234	324	410	410	285	199	225	494
Average Queue (ft)	15	303	46	102	285	285	138	46	175	152
95th Queue (ft)	63	547	171	233	434	454	232	106	263	396
Link Distance (ft)		376	2570		394	394	891			479
Upstream Blk Time (%)		10			9	7				5
Queuing Penalty (veh)		60			0	0				0
Storage Bay Dist (ft)	130			300				180	200	
Storage Blk Time (%)		32		0	12		4	0	19	0
Queuing Penalty (veh)		4		0	18		4	0	18	1

Network Summary

Network wide Queuing Penalty: 847

Intersection: 13: SR 161#1 & RR Crossing

Phase	2	4	6	8
Movement(s) Served	EBT	SBT	WBT	NBT
Maximum Green (s)	17.0	596.0	17.0	596.0
Minimum Green (s)	4.0	596.0	4.0	596.0
Recall	C-Max	None	C-Max	None
Avg. Green (s)	0.0	596.0	0.0	596.0
g/C Ratio	0.00	0.19	0.00	0.19
Cycles Skipped (%)	100	80	100	80
Cycles @ Minimum (%)	0	20	0	20
Cycles Maxed Out (%)	0	20	0	20
Cycles with Peds (%)	0	0	0	0

Controller Summary
Average Cycle Length (s): 621.0
Number of Complete Cycles : 5

Intersection: 19: SR 161#1 & Linworth Rd

Phase	2	4	6	8
Movement(s) Served	NBTL	EBTL	SBTL	WBTL
Maximum Green (s)	38.0	55.0	37.0	55.0
Minimum Green (s)	4.0	4.0	4.0	4.0
Recall	None	None	None	None
Avg. Green (s)	37.1	55.0	34.7	55.0
g/C Ratio	0.26	0.38	0.24	0.38
Cycles Skipped (%)	0	0	0	0
Cycles @ Minimum (%)	0	0	0	0
Cycles Maxed Out (%)	88	100	76	100
Cycles with Peds (%)	0	0	0	0

Controller Summary
Average Cycle Length (s): 145.3
Number of Complete Cycles : 24

Sawmill Rd & SR 161

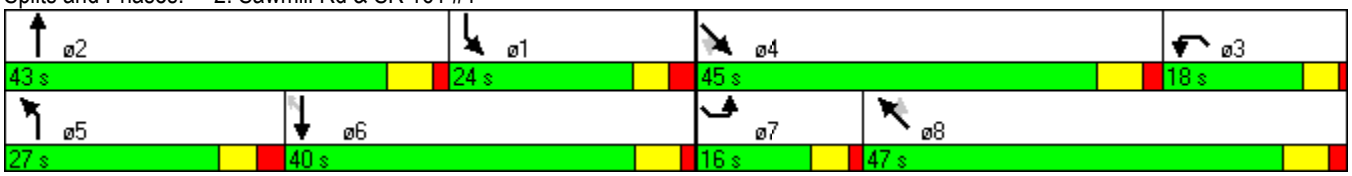
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	140	760	110	110	750	140	140	310	150	80	540	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	360		0	400		480	270		0	950		180
Storage Lanes	1		0	1		2	2		1	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	1.00	0.97	1.00	1.00	1.00	0.95	1.00
Frt		0.981				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	4989	0	1770	5085	1583	3433	1863	1583	1770	3539	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	4989	0	1770	5085	1583	3433	1863	1583	1770	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		20				152			163			65
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		874			921			715			1294	
Travel Time (s)		19.9			20.9			10.8			19.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	152	826	120	120	815	152	152	337	163	87	587	65
Shared Lane Traffic (%)												
Lane Group Flow (vph)	152	946	0	120	815	152	152	337	163	87	587	65
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases						6			4			8
Minimum Split (s)	10.3	22.5		10.3	22.5	22.5	9.6	22.5	22.5	9.6	22.5	22.5
Total Split (s)	27.0	43.0	0.0	24.0	40.0	40.0	16.0	45.0	45.0	18.0	47.0	47.0
Total Split (%)	20.8%	33.1%	0.0%	18.5%	30.8%	30.8%	12.3%	34.6%	34.6%	13.8%	36.2%	36.2%
Maximum Green (s)	20.7	36.9		17.7	33.9	33.9	11.0	38.6	38.6	13.5	40.6	40.6
Yellow Time (s)	3.6	4.5		3.6	4.5	4.5	3.6	4.5	4.5	3.6	4.5	4.5
All-Red Time (s)	2.7	1.6		2.7	1.6	1.6	1.4	1.9	1.9	0.9	1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.1	4.0	6.3	6.1	6.1	5.0	6.4	6.4	4.5	6.4	6.4
Lead/Lag	Lead	Lead		Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Act Effct Green (s)	20.7	36.9		17.7	33.9	33.9	11.0	38.6	38.6	13.5	40.6	40.6
Actuated g/C Ratio	0.16	0.28		0.14	0.26	0.26	0.08	0.30	0.30	0.10	0.31	0.31
v/c Ratio	0.54	0.66		0.50	0.61	0.29	0.52	0.61	0.28	0.47	0.53	0.12
Control Delay	58.2	42.8		59.9	44.7	7.1	64.0	44.8	6.2	48.7	24.2	1.9
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.2	42.8		59.9	44.7	7.1	64.0	44.8	6.2	48.7	24.2	1.9
LOS	E	D		E	D	A	E	D	A	D	C	A

Sawmill Rd & SR 161

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Approach Delay		44.9			41.1			39.6			25.1	
Approach LOS		D			D			D			C	

Intersection Summary	
Area Type:	Other
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 109 (84%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 70	
Control Type: Pretimed	
Maximum v/c Ratio: 0.66	
Intersection Signal Delay: 38.7	Intersection LOS: D
Intersection Capacity Utilization 63.4%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 2: Sawmill Rd & SR 161 #1



Sawmill Place Blvd & SR 161

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	40	460	10	40	630	20	30	10	80	20	10	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	150		0	0		0	0		0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.997			0.995			0.867				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1857	0	1770	1853	0	1770	1615	0	1770	1863	1583
Flt Permitted	0.284			0.406			0.750			0.647		
Satd. Flow (perm)	529	1857	0	756	1853	0	1397	1615	0	1205	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			3			87				130
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		794			358			324			467	
Travel Time (s)		12.0			5.4			7.4			10.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	43	500	11	43	685	22	33	11	87	22	11	130
Shared Lane Traffic (%)												
Lane Group Flow (vph)	43	511	0	43	707	0	33	98	0	22	11	130
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt			pm+pt			Perm			Perm		Perm
Protected Phases	1	6		5	2			4			8	
Permitted Phases	6			2			4			8		8
Minimum Split (s)	8.7	21.9		8.7	20.0		21.0	21.0		20.0	20.0	20.0
Total Split (s)	15.0	90.0	0.0	15.0	90.0	0.0	25.0	25.0	0.0	25.0	25.0	25.0
Total Split (%)	11.5%	69.2%	0.0%	11.5%	69.2%	0.0%	19.2%	19.2%	0.0%	19.2%	19.2%	19.2%
Maximum Green (s)	10.3	84.1		10.3	84.1		20.0	20.0		20.0	20.0	20.0
Yellow Time (s)	3.6	4.5		3.6	4.5		3.6	3.6		3.6	3.6	3.6
All-Red Time (s)	1.1	1.4		1.1	1.4		1.4	1.4		1.4	1.4	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	5.9	4.0	4.7	5.9	4.0	5.0	5.0	4.0	5.0	5.0	5.0
Lead/Lag	Lag	Lead		Lag	Lead							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Act Effct Green (s)	95.6	84.1		95.6	84.1		20.0	20.0		20.0	20.0	20.0
Actuated g/C Ratio	0.74	0.65		0.74	0.65		0.15	0.15		0.15	0.15	0.15
v/c Ratio	0.09	0.43		0.07	0.59		0.15	0.30		0.12	0.04	0.37
Control Delay	1.6	3.8		4.0	15.5		49.8	15.0		49.4	47.4	11.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	1.6	3.8		4.0	15.5		49.8	15.0		49.4	47.4	11.0
LOS	A	A		A	B		D	B		D	D	B

Sawmill Place Blvd & SR 161

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Approach Delay		3.6			14.9			23.8			18.6	
Approach LOS		A			B			C			B	

Intersection Summary	
Area Type:	Other
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 90 (69%), Referenced to phase 1:SEL and 5:NWL, Start of Green	
Natural Cycle: 60	
Control Type: Pretimed	
Maximum v/c Ratio: 0.59	
Intersection Signal Delay: 12.1	Intersection LOS: B
Intersection Capacity Utilization 58.4%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 3: SR 161 #1 & Sawmill Pl Blvd

Martin Rd & SR 161

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	70	440	20	130	610	40	20	10	90	20	20	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300		0	280		380	170		0	0		0
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.993			0.991				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1850	0	1770	3507	0	1770	1863	1583	1770	1863	1583
Flt Permitted	0.337			0.368			0.743			0.750		
Satd. Flow (perm)	628	1850	0	685	3507	0	1384	1863	1583	1397	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			9				98			76
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1294			794			291			276	
Travel Time (s)		19.6			12.0			6.6			6.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	76	478	22	141	663	43	22	11	98	22	22	76
Shared Lane Traffic (%)												
Lane Group Flow (vph)	76	500	0	141	706	0	22	11	98	22	22	76
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6			2			4		4	8		8
Minimum Split (s)	8.0	22.0		8.0	22.0		8.0	21.4	21.4	8.0	21.4	21.4
Total Split (s)	11.0	75.0	0.0	17.0	81.0	0.0	10.0	28.0	28.0	10.0	28.0	28.0
Total Split (%)	8.5%	57.7%	0.0%	13.1%	62.3%	0.0%	7.7%	21.5%	21.5%	7.7%	21.5%	21.5%
Maximum Green (s)	7.0	69.0		13.0	75.0		6.0	22.6	22.6	6.0	22.6	22.6
Yellow Time (s)	3.5	5.0		3.5	5.0		3.5	3.6	3.6	3.5	3.6	3.6
All-Red Time (s)	0.5	1.0		0.5	1.0		0.5	1.8	1.8	0.5	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	4.0	4.0	6.0	4.0	4.0	5.4	5.4	4.0	5.4	5.4
Lead/Lag	Lag	Lead		Lag	Lead		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Act Effct Green (s)	78.0	69.0		88.0	75.0		30.0	22.6	22.6	30.0	22.6	22.6
Actuated g/C Ratio	0.60	0.53		0.68	0.58		0.23	0.17	0.17	0.23	0.17	0.17
v/c Ratio	0.17	0.51		0.25	0.35		0.07	0.03	0.28	0.06	0.07	0.22
Control Delay	5.8	7.1		3.1	7.3		36.6	45.1	10.7	36.6	45.7	11.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.8	7.1		3.1	7.3		36.6	45.1	10.7	36.6	45.7	11.5
LOS	A	A		A	A		D	D	B	D	D	B

Martin Rd & SR 161

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Approach Delay		6.9			6.6			18.0			22.4	
Approach LOS		A			A			B			C	

Intersection Summary	
Area Type:	Other
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 8 (6%), Referenced to phase 2:NWTL and 6:SETL, Start of Green	
Natural Cycle: 60	
Control Type: Pretimed	
Maximum v/c Ratio: 0.51	
Intersection Signal Delay: 8.8	Intersection LOS: A
Intersection Capacity Utilization 52.2%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: SR 161 #1 & Martin Rd

Federated Blvd & SR 161

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	30	570	630	70	140	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200			0	0	0
Storage Lanes	1			0	1	1
Taper Length (ft)	25			25	25	25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.987			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1863	1839	0	1770	1583
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1863	1839	0	1770	1583
Link Speed (mph)		45	45		30	
Link Distance (ft)		521	6835		281	
Travel Time (s)		7.9	103.6		6.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	620	685	76	152	87
Shared Lane Traffic (%)						
Lane Group Flow (vph)	33	620	761	0	152	87
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 51.8%	ICU Level of Service A
Analysis Period (min) 15	

Railroad Crossing & SR 161

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	630	0	0	860	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt												
Flt Protected												
Satd. Flow (prot)	0	1863	0	0	1863	0	0	950	0	0	1863	0
Flt Permitted												
Satd. Flow (perm)	0	1863	0	0	1863	0	0	950	0	0	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		1647			832			469			501	
Travel Time (s)		32.1			16.2			10.7			11.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	100%	2%	2%	2%	2%
Adj. Flow (vph)	0	685	0	0	935	0	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	685	0	0	935	0	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2			2			2			2	
Detector Template		Thru			Thru			Thru			Thru	
Leading Detector (ft)		100			100			100			100	
Trailing Detector (ft)		0			0			0			0	
Detector 1 Position(ft)		0			0			0			0	
Detector 1 Size(ft)		6			6			6			6	
Detector 1 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0			0.0			0.0			0.0	
Detector 1 Queue (s)		0.0			0.0			0.0			0.0	
Detector 1 Delay (s)		0.0			0.0			0.0			0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type												
Protected Phases		4			8			2			6	
Permitted Phases												
Detector Phase		4			8			2			6	
Switch Phase												
Minimum Initial (s)		4.0			4.0			180.0			180.0	

Railroad Crossing & SR 161

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)		20.0			20.0			184.0			184.0	
Total Split (s)	0.0	20.0	0.0	0.0	20.0	0.0	0.0	184.0	0.0	0.0	184.0	0.0
Total Split (%)	0.0%	9.8%	0.0%	0.0%	9.8%	0.0%	0.0%	90.2%	0.0%	0.0%	90.2%	0.0%
Maximum Green (s)		16.0			16.0			180.0			180.0	
Yellow Time (s)		3.5			3.5			3.5			3.5	
All-Red Time (s)		0.5			0.5			0.5			0.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Recall Mode		C-Max			C-Max			None			None	
Act Effct Green (s)		204.0			204.0							
Actuated g/C Ratio		1.00			1.00							
v/c Ratio		0.37			0.50							
Control Delay		0.6			1.0							
Queue Delay		0.0			0.0							
Total Delay		0.6			1.0							
LOS		A			A							
Approach Delay		0.6			1.0							
Approach LOS		A			A							

Intersection Summary

Area Type: Other
Cycle Length: 204
Actuated Cycle Length: 204
Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 205
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.50
Intersection Signal Delay: 0.8 Intersection LOS: A
Intersection Capacity Utilization 48.6% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 13: SR 161 #1 & RR Crossing

McVey Blvd & SR 161

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	10	630	810	30	140	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.995		0.970	
Flt Protected		0.999			0.962	
Satd. Flow (prot)	0	1861	1853	0	1738	0
Flt Permitted		0.999			0.962	
Satd. Flow (perm)	0	1861	1853	0	1738	0
Link Speed (mph)		45	35		30	
Link Distance (ft)		6835	1647		228	
Travel Time (s)		103.6	32.1		5.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	685	880	33	152	43
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	696	913	0	195	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 61.3%	ICU Level of Service B
Analysis Period (min) 15	

Linworth Rd & SR 161

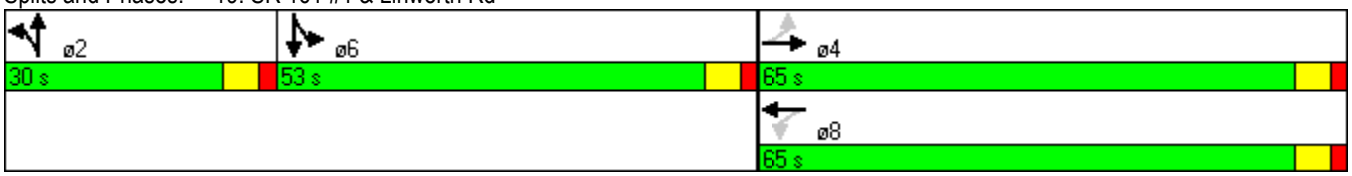
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	490	100	60	710	70	100	220	60	200	370	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	300		0	150		0	0		0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.975			0.987			0.968			0.989	
Flt Protected	0.950			0.950			0.950				0.984	
Satd. Flow (prot)	1770	1816	0	1770	1839	0	1770	1803	0	0	1813	0
Flt Permitted	0.068			0.112			0.950				0.984	
Satd. Flow (perm)	127	1816	0	209	1839	0	1770	1803	0	0	1813	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			4			8			3	
Link Speed (mph)		35			20			30			30	
Link Distance (ft)		832			2636			1579			1572	
Travel Time (s)		16.2			89.9			35.9			35.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	43	533	109	65	772	76	109	239	65	217	402	54
Shared Lane Traffic (%)												
Lane Group Flow (vph)	43	642	0	65	848	0	109	304	0	0	673	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm			Perm			Split			Split		
Protected Phases		4			8		2	2		6	6	
Permitted Phases	4			8								
Detector Phase	4	4		8	8		2	2		6	6	

Linworth Rd & SR 161

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	22.0	22.0		22.0	22.0		16.0	16.0		16.0	16.0	
Total Split (s)	65.0	65.0	0.0	65.0	65.0	0.0	30.0	30.0	0.0	53.0	53.0	0.0
Total Split (%)	43.9%	43.9%	0.0%	43.9%	43.9%	0.0%	20.3%	20.3%	0.0%	35.8%	35.8%	0.0%
Maximum Green (s)	59.0	59.0		59.0	59.0		24.0	24.0		47.0	47.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Act Effct Green (s)	59.0	59.0		59.0	59.0		24.0	24.0			47.0	
Actuated g/C Ratio	0.40	0.40		0.40	0.40		0.16	0.16			0.32	
v/c Ratio	0.84	0.88		0.78	1.15		0.38	1.02			1.16	
Control Delay	131.0	55.6		94.2	123.7		59.8	114.8			135.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	131.0	55.6		94.2	123.7		59.8	114.8			135.9	
LOS	F	E		F	F		E	F			F	
Approach Delay		60.4			121.6			100.3			135.9	
Approach LOS		E			F			F			F	

Intersection Summary	
Area Type: Other	
Cycle Length: 148	
Actuated Cycle Length: 148	
Natural Cycle: 140	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.16	
Intersection Signal Delay: 106.3	Intersection LOS: F
Intersection Capacity Utilization 113.7%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 19: SR 161 #1 & Linworth Rd



Olentangy River Rd & SR 161

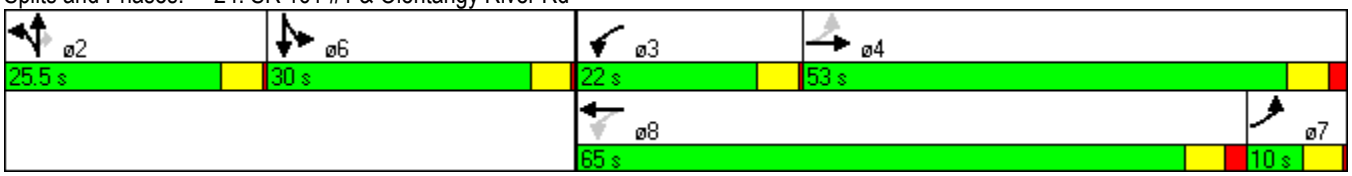
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	770	40	370	740	150	50	180	280	380	320	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	130		0	300		0	0		180	200		0
Storage Lanes	1		0	1		0	0		1	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.993			0.975				0.850		0.987	
Flt Protected	0.950			0.950				0.989		0.950		
Satd. Flow (prot)	1770	1850	0	1770	3451	0	0	1842	1583	1770	1839	0
Flt Permitted	0.295			0.096				0.989		0.950		
Satd. Flow (perm)	550	1850	0	179	3451	0	0	1842	1583	1770	1839	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			24				270		3	
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		438			441			925			526	
Travel Time (s)		8.5			8.6			21.0			12.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	837	43	402	804	163	54	196	304	413	348	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	54	880	0	402	967	0	0	250	304	413	381	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt			pm+pt			Split		Perm	Split		
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases	4			8					2			
Minimum Split (s)	8.5	22.0		8.5	22.0		20.5	20.5	20.5	20.5	20.5	
Total Split (s)	10.0	53.0	0.0	22.0	65.0	0.0	25.5	25.5	25.5	30.0	30.0	0.0
Total Split (%)	7.7%	40.6%	0.0%	16.9%	49.8%	0.0%	19.5%	19.5%	19.5%	23.0%	23.0%	0.0%
Maximum Green (s)	5.5	47.0		17.5	59.0		21.0	21.0	21.0	25.5	25.5	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	0.5	2.0		0.5	2.0		0.5	0.5	0.5	0.5	0.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	6.0	4.0	4.5	6.0	4.0	4.5	4.5	4.5	4.5	4.5	4.0
Lead/Lag	Lag	Lag		Lead	Lead							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Act Effct Green (s)	48.5	47.0		60.5	59.0			21.0	21.0	25.5	25.5	
Actuated g/C Ratio	0.37	0.36		0.46	0.45			0.16	0.16	0.20	0.20	
v/c Ratio	0.21	1.32		1.36	0.61			0.84	0.63	1.19	1.05	
Control Delay	31.8	188.2		213.0	28.5			78.0	15.0	157.0	111.5	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay	31.8	188.2		213.0	28.5			78.0	15.0	157.0	111.5	
LOS	C	F		F	C			E	B	F	F	

Olentangy River Rd & SR 161

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		179.2			82.7			43.5			135.2	
Approach LOS		F			F			D			F	

Intersection Summary	
Area Type: Other	
Cycle Length: 130.5	
Actuated Cycle Length: 130.5	
Offset: 0 (0%), Referenced to phase 2:NBTL, Start of Green	
Natural Cycle: 150	
Control Type: Pretimed	
Maximum v/c Ratio: 1.36	
Intersection Signal Delay: 112.8	Intersection LOS: F
Intersection Capacity Utilization 113.0%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 24: SR 161 #1 & Olentangy River Rd



Sawmill Rd & SR 161

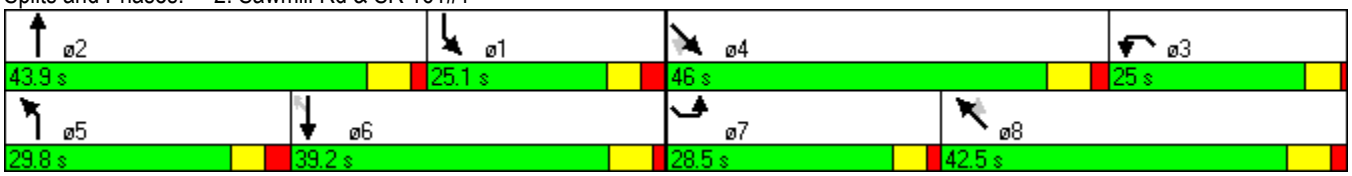
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	290	1060	180	210	1150	180	360	520	370	250	540	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	360		0	400		480	270		0	950		180
Storage Lanes	1		0	1		2	2		1	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	1.00	0.97	1.00	1.00	1.00	0.95	1.00
Frt		0.978				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	4973	0	1770	5085	1583	3433	1863	1583	1770	3539	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	4973	0	1770	5085	1583	3433	1863	1583	1770	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		23				196			281			150
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		874			921			715			1294	
Travel Time (s)		19.9			20.9			10.8			19.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	315	1152	196	228	1250	196	391	565	402	272	587	163
Shared Lane Traffic (%)												
Lane Group Flow (vph)	315	1348	0	228	1250	196	391	565	402	272	587	163
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases						6			4			8
Minimum Split (s)	11.9	25.2		11.9	25.2	25.2	11.2	22.5	22.5	11.2	22.5	22.5
Total Split (s)	29.8	43.9	0.0	25.1	39.2	39.2	28.5	46.0	46.0	25.0	42.5	42.5
Total Split (%)	21.3%	31.4%	0.0%	17.9%	28.0%	28.0%	20.4%	32.9%	32.9%	17.9%	30.4%	30.4%
Maximum Green (s)	23.5	37.8		18.8	33.1	33.1	23.5	39.6	39.6	20.5	36.1	36.1
Yellow Time (s)	3.6	4.5		3.6	4.5	4.5	3.6	4.5	4.5	3.6	4.5	4.5
All-Red Time (s)	2.7	1.6		2.7	1.6	1.6	1.4	1.9	1.9	0.9	1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.1	4.0	6.3	6.1	6.1	5.0	6.4	6.4	4.5	6.4	6.4
Lead/Lag	Lead	Lead		Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Act Effct Green (s)	23.5	37.8		18.8	33.1	33.1	23.5	39.6	39.6	20.5	36.1	36.1
Actuated g/C Ratio	0.17	0.27		0.13	0.24	0.24	0.17	0.28	0.28	0.15	0.26	0.26
v/c Ratio	1.06	0.99		0.96	1.04	0.37	0.68	1.07	0.62	1.05	0.64	0.31
Control Delay	123.6	72.2		108.1	88.3	7.7	61.4	107.1	17.2	113.3	37.5	7.3
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	123.6	72.2		108.1	88.3	7.7	61.4	107.1	17.2	113.3	37.5	7.3
LOS	F	E		F	F	A	E	F	B	F	D	A

Sawmill Rd & SR 161

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Approach Delay		81.9			81.6			67.4			52.9	
Approach LOS		F			F			E			D	

Intersection Summary	
Area Type:	Other
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 112 (80%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 110	
Control Type: Pretimed	
Maximum v/c Ratio: 1.07	
Intersection Signal Delay: 73.2	Intersection LOS: E
Intersection Capacity Utilization 98.9%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 2: Sawmill Rd & SR 161#1



Sawmill Place Blvd & SR 161

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	160	690	40	100	830	50	20	50	110	40	60	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	150		0	0		0	0		0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992			0.992			0.897				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1848	0	1770	1848	0	1770	1671	0	1770	1863	1583
Flt Permitted	0.157			0.201			0.715			0.377		
Satd. Flow (perm)	292	1848	0	374	1848	0	1332	1671	0	702	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			4			66				217
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		794			358			324			467	
Travel Time (s)		12.0			5.4			7.4			10.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	174	750	43	109	902	54	22	54	120	43	65	217
Shared Lane Traffic (%)												
Lane Group Flow (vph)	174	793	0	109	956	0	22	174	0	43	65	217
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt			pm+pt			Perm			Perm		Perm
Protected Phases	1	6		5	2			4			8	
Permitted Phases	6			2			4			8		8
Minimum Split (s)	8.7	21.9		8.7	20.0		21.0	21.0		20.0	20.0	20.0
Total Split (s)	23.0	100.7	0.0	15.3	93.0	0.0	24.0	24.0	0.0	24.0	24.0	24.0
Total Split (%)	16.4%	71.9%	0.0%	10.9%	66.4%	0.0%	17.1%	17.1%	0.0%	17.1%	17.1%	17.1%
Maximum Green (s)	18.3	94.8		10.6	87.1		19.0	19.0		19.0	19.0	19.0
Yellow Time (s)	3.6	4.5		3.6	4.5		3.6	3.6		3.6	3.6	3.6
All-Red Time (s)	1.1	1.4		1.1	1.4		1.4	1.4		1.4	1.4	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	5.9	4.0	4.7	5.9	4.0	5.0	5.0	4.0	5.0	5.0	5.0
Lead/Lag	Lag	Lag		Lead	Lead							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Act Effct Green (s)	96.0	94.8		88.3	87.1		19.0	19.0		19.0	19.0	19.0
Actuated g/C Ratio	0.69	0.68		0.63	0.62		0.14	0.14		0.14	0.14	0.14
v/c Ratio	0.44	0.63		0.32	0.83		0.12	0.61		0.45	0.26	0.54
Control Delay	11.5	7.4		12.7	28.6		55.2	45.1		72.2	57.2	12.0
Queue Delay	0.0	0.2		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	11.5	7.7		12.7	28.6		55.2	45.1		72.2	57.2	12.0
LOS	B	A		B	C		E	D		E	E	B

Sawmill Place Blvd & SR 161

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Approach Delay		8.3			26.9			46.2			29.0	
Approach LOS		A			C			D			C	

Intersection Summary	
Area Type:	Other
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 65 (46%), Referenced to phase 1:SEL and 5:NWL, Start of Green	
Natural Cycle: 90	
Control Type: Pretimed	
Maximum v/c Ratio: 0.83	
Intersection Signal Delay: 21.6	Intersection LOS: C
Intersection Capacity Utilization 85.5%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 3: SR 161#1 & Sawmill Pl Blvd

Martin Rd & SR 161

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	220	590	50	280	730	80	50	90	250	60	80	190
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300		0	280		380	170		0	0		0
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.988			0.985				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1840	0	1770	3486	0	1770	1863	1583	1770	1863	1583
Flt Permitted	0.288			0.173			0.681			0.648		
Satd. Flow (perm)	536	1840	0	322	3486	0	1269	1863	1583	1207	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			13				272			207
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1294			794			291			276	
Travel Time (s)		19.6			12.0			6.6			6.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	239	641	54	304	793	87	54	98	272	65	87	207
Shared Lane Traffic (%)												
Lane Group Flow (vph)	239	695	0	304	880	0	54	98	272	65	87	207
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6			2			4		4	8		8
Minimum Split (s)	8.0	22.0		8.0	22.0		8.0	21.4	21.4	8.0	21.4	21.4
Total Split (s)	21.0	76.0	0.0	29.0	84.0	0.0	8.0	27.0	27.0	8.0	27.0	27.0
Total Split (%)	15.0%	54.3%	0.0%	20.7%	60.0%	0.0%	5.7%	19.3%	19.3%	5.7%	19.3%	19.3%
Maximum Green (s)	17.0	70.0		25.0	78.0		4.0	21.6	21.6	4.0	21.6	21.6
Yellow Time (s)	3.5	5.0		3.5	5.0		3.5	3.6	3.6	3.5	3.6	3.6
All-Red Time (s)	0.5	1.0		0.5	1.0		0.5	1.8	1.8	0.5	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	4.0	4.0	6.0	4.0	4.0	5.4	5.4	4.0	5.4	5.4
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Act Effct Green (s)	89.0	70.0		101.0	78.0		27.0	21.6	21.6	27.0	21.6	21.6
Actuated g/C Ratio	0.64	0.50		0.72	0.56		0.19	0.15	0.15	0.19	0.15	0.15
v/c Ratio	0.49	0.75		0.62	0.45		0.21	0.34	0.57	0.26	0.30	0.49
Control Delay	3.2	7.4		22.6	6.6		46.9	56.7	10.9	48.2	55.8	10.9
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.2	7.4		22.6	6.6		46.9	56.7	10.9	48.2	55.8	10.9
LOS	A	A		C	A		D	E	B	D	E	B

Martin Rd & SR 161

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Approach Delay		6.3			10.7			26.1			28.5	
Approach LOS		A			B			C			C	

Intersection Summary	
Area Type:	Other
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 3 (2%), Referenced to phase 2:NWTL and 6:SETL, Start of Green	
Natural Cycle: 90	
Control Type: Pretimed	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay: 13.7	Intersection LOS: B
Intersection Capacity Utilization 72.4%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 6: SR 161#1 & Martin Rd

Federated Blvd & SR 161

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	140	740	830	160	50	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200			0	0	0
Storage Lanes	1			0	1	1
Taper Length (ft)	25			25	25	25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.978			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1863	1822	0	1770	1583
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1863	1822	0	1770	1583
Link Speed (mph)		45	45		30	
Link Distance (ft)		521	6835		281	
Travel Time (s)		7.9	103.6		6.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	152	804	902	174	54	98
Shared Lane Traffic (%)						
Lane Group Flow (vph)	152	804	1076	0	54	98
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 74.5%	ICU Level of Service D
Analysis Period (min) 15	

Railroad Crossing & SR 161

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	740	0	0	910	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt												
Flt Protected												
Satd. Flow (prot)	0	1863	0	0	1863	0	0	950	0	0	1863	0
Flt Permitted												
Satd. Flow (perm)	0	1863	0	0	1863	0	0	950	0	0	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		1647			832			469			501	
Travel Time (s)		32.1			16.2			10.7			11.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	100%	2%	2%	2%	2%
Adj. Flow (vph)	0	804	0	0	989	0	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	804	0	0	989	0	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2			2			2			2	
Detector Template		Thru			Thru			Thru			Thru	
Leading Detector (ft)		100			100			100			100	
Trailing Detector (ft)		0			0			0			0	
Detector 1 Position(ft)		0			0			0			0	
Detector 1 Size(ft)		6			6			6			6	
Detector 1 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0			0.0			0.0			0.0	
Detector 1 Queue (s)		0.0			0.0			0.0			0.0	
Detector 1 Delay (s)		0.0			0.0			0.0			0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type												
Protected Phases		4			8			2			6	
Permitted Phases												
Detector Phase		4			8			2			6	
Switch Phase												
Minimum Initial (s)		4.0			4.0			180.0			180.0	

Railroad Crossing & SR 161

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)		20.0			20.0			184.0			184.0	
Total Split (s)	0.0	21.0	0.0	0.0	21.0	0.0	0.0	184.0	0.0	0.0	184.0	0.0
Total Split (%)	0.0%	10.2%	0.0%	0.0%	10.2%	0.0%	0.0%	89.8%	0.0%	0.0%	89.8%	0.0%
Maximum Green (s)		17.0			17.0			180.0			180.0	
Yellow Time (s)		3.5			3.5			3.5			3.5	
All-Red Time (s)		0.5			0.5			0.5			0.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Recall Mode		C-Max			C-Max			None			None	
Act Effct Green (s)		205.0			205.0							
Actuated g/C Ratio		1.00			1.00							
v/c Ratio		0.43			0.53							
Control Delay		0.7			1.1							
Queue Delay		0.0			0.0							
Total Delay		0.7			1.1							
LOS		A			A							
Approach Delay		0.7			1.1							
Approach LOS		A			A							

Intersection Summary	
Area Type:	Other
Cycle Length: 205	
Actuated Cycle Length: 205	
Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green	
Natural Cycle: 205	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.53	
Intersection Signal Delay: 0.9	Intersection LOS: A
Intersection Capacity Utilization 51.2%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 13: SR 161#1 & RR Crossing

McVey Blvd & SR 161

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	30	760	820	140	20	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.980			0.850
Flt Protected		0.998			0.950	
Satd. Flow (prot)	0	1859	1825	0	1770	1583
Flt Permitted		0.998			0.950	
Satd. Flow (perm)	0	1859	1825	0	1770	1583
Link Speed (mph)		45	35		30	
Link Distance (ft)		6835	1647		228	
Travel Time (s)		103.6	32.1		5.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	826	891	152	22	22
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	859	1043	0	22	22
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 74.3%	ICU Level of Service D
Analysis Period (min) 15	

Linworth Rd & SR 161

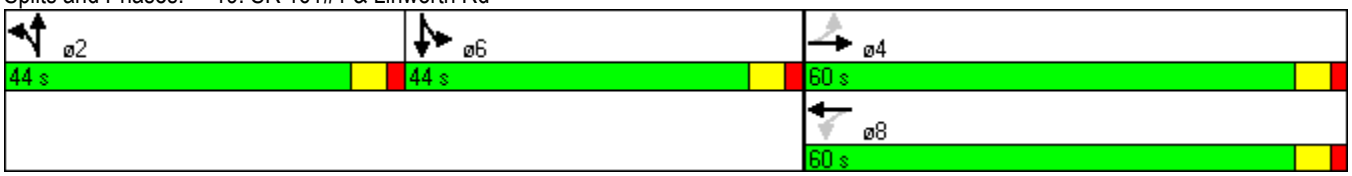
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	610	90	60	630	100	210	440	70	190	280	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	300		0	150		0	0		0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.981			0.979			0.979			0.983	
Flt Protected	0.950			0.950			0.950				0.983	
Satd. Flow (prot)	1770	1827	0	1770	1824	0	1770	1824	0	0	1800	0
Flt Permitted	0.074			0.074			0.950				0.983	
Satd. Flow (perm)	138	1827	0	138	1824	0	1770	1824	0	0	1800	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			6			5			5	
Link Speed (mph)		35			20			30			30	
Link Distance (ft)		832			2636			1571			1573	
Travel Time (s)		16.2			89.9			35.7			35.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	43	663	98	65	685	109	228	478	76	207	304	76
Shared Lane Traffic (%)												
Lane Group Flow (vph)	43	761	0	65	794	0	228	554	0	0	587	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm			Perm			Split			Split		
Protected Phases		4			8		2	2		6	6	
Permitted Phases	4			8								
Detector Phase	4	4		8	8		2	2		6	6	

Linworth Rd & SR 161

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	22.0	22.0		22.0	22.0		16.0	16.0		16.0	16.0	
Total Split (s)	60.0	60.0	0.0	60.0	60.0	0.0	44.0	44.0	0.0	44.0	44.0	0.0
Total Split (%)	40.5%	40.5%	0.0%	40.5%	40.5%	0.0%	29.7%	29.7%	0.0%	29.7%	29.7%	0.0%
Maximum Green (s)	54.0	54.0		54.0	54.0		38.0	38.0		38.0	38.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Act Effct Green (s)	54.0	54.0		54.0	54.0		38.0	38.0			38.0	
Actuated g/C Ratio	0.36	0.36		0.36	0.36		0.26	0.26			0.26	
v/c Ratio	0.86	1.14		1.30	1.19		0.50	1.17			1.26	
Control Delay	138.1	120.8		266.4	139.5		51.5	145.4			177.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	138.1	120.8		266.4	139.5		51.5	145.4			177.3	
LOS	F	F		F	F		D	F			F	
Approach Delay		121.7			149.1			118.0			177.3	
Approach LOS		F			F			F			F	

Intersection Summary	
Area Type: Other	
Cycle Length: 148	
Actuated Cycle Length: 148	
Natural Cycle: 150	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.30	
Intersection Signal Delay: 139.3	Intersection LOS: F
Intersection Capacity Utilization 119.5%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 19: SR 161#1 & Linworth Rd



Olentangy River Rd & SR 161

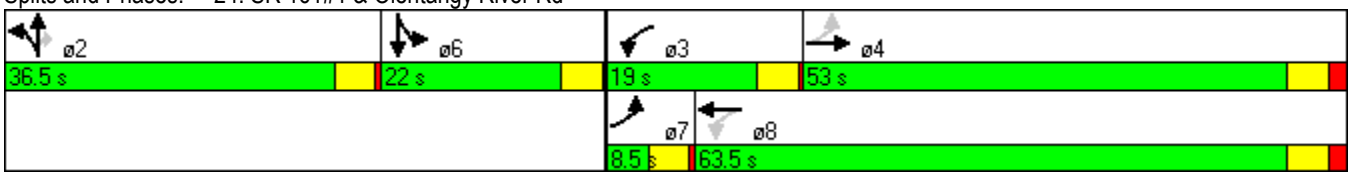
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	800	40	320	820	550	60	380	200	250	210	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	130		0	300		0	0		180	200		0
Storage Lanes	1		0	1		0	0		1	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.993			0.940				0.850		0.981	
Flt Protected	0.950			0.950				0.993		0.950		
Satd. Flow (prot)	1770	1850	0	1770	3327	0	0	1850	1583	1770	1827	0
Flt Permitted	0.085			0.078				0.993		0.950		
Satd. Flow (perm)	158	1850	0	145	3327	0	0	1850	1583	1770	1827	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			159				136		5	
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		438			441			925			526	
Travel Time (s)		8.5			8.6			21.0			12.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	870	43	348	891	598	65	413	217	272	228	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	913	0	348	1489	0	0	478	217	272	261	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt			pm+pt			Split		Perm	Split		
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases	4			8					2			
Minimum Split (s)	8.5	22.0		8.5	22.0		20.5	20.5	20.5	20.5	20.5	
Total Split (s)	8.5	53.0	0.0	19.0	63.5	0.0	36.5	36.5	36.5	22.0	22.0	0.0
Total Split (%)	6.5%	40.6%	0.0%	14.6%	48.7%	0.0%	28.0%	28.0%	28.0%	16.9%	16.9%	0.0%
Maximum Green (s)	4.0	47.0		14.5	57.5		32.0	32.0	32.0	17.5	17.5	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	0.5	2.0		0.5	2.0		0.5	0.5	0.5	0.5	0.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	6.0	4.0	4.5	6.0	4.0	4.5	4.5	4.5	4.5	4.5	4.0
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Act Effct Green (s)	52.5	47.0		67.5	57.5			32.0	32.0	17.5	17.5	
Actuated g/C Ratio	0.40	0.36		0.52	0.44			0.25	0.25	0.13	0.13	
v/c Ratio	0.19	1.37		1.36	0.96			1.05	0.44	1.15	1.05	
Control Delay	20.5	208.6		215.9	46.5			104.1	18.8	153.6	123.0	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay	20.5	208.6		215.9	46.5			104.1	18.8	153.6	123.0	
LOS	C	F		F	D			F	B	F	F	

Olentangy River Rd & SR 161

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		204.2			78.6			77.5			138.6	
Approach LOS		F			E			E			F	

Intersection Summary	
Area Type: Other	
Cycle Length: 130.5	
Actuated Cycle Length: 130.5	
Offset: 0 (0%), Referenced to phase 2:NBTL, Start of Green	
Natural Cycle: 140	
Control Type: Pretimed	
Maximum v/c Ratio: 1.37	
Intersection Signal Delay: 115.8	Intersection LOS: F
Intersection Capacity Utilization 115.7%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 24: SR 161#1 & Olentangy River Rd



Summary of All Intervals

Start Time	7:27
End Time	8:30
Total Time (min)	63
Time Recorded (min)	60
# of Intervals	2
# of Recorded Intvls	1
Vehs Entered	6450
Vehs Exited	6171
Starting Vehs	219
Ending Vehs	498
Denied Entry Before	4
Denied Entry After	800
Travel Distance (mi)	5413
Travel Time (hr)	806.5
Total Delay (hr)	637.4
Total Stops	13691
Fuel Used (gal)	325.3

Interval #0 Information Seeding

Start Time	7:27
End Time	7:30
Total Time (min)	3

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:30
End Time	8:30
Total Time (min)	60

Volumes adjusted by Growth Factors.

Vehs Entered	6450
Vehs Exited	6171
Starting Vehs	219
Ending Vehs	498
Denied Entry Before	4
Denied Entry After	800
Travel Distance (mi)	5413
Travel Time (hr)	806.5
Total Delay (hr)	637.4
Total Stops	13691
Fuel Used (gal)	325.3

2: Sawmill Rd & SR 161 #1 Performance by movement

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Total Delay (hr)	1.8	8.6	0.8	1.6	9.0	0.4	2.4	3.4	0.2	1.0	2.8	0.1
Delay / Veh (s)	50.7	40.7	23.4	54.0	43.5	12.8	63.0	39.2	5.0	46.7	22.3	5.9
Total Stops	104	592	93	104	589	94	120	236	98	63	161	15
Travel Dist (mi)	19.7	118.1	16.1	17.4	117.2	19.4	16.0	37.2	18.1	18.2	107.3	10.7
Travel Time (hr)	2.5	12.7	1.3	2.3	13.0	1.2	2.9	4.3	0.8	1.5	5.3	0.4
Avg Speed (mph)	8	9	12	8	9	19	6	9	22	12	20	27
Fuel Used (gal)	1.0	5.9	0.6	0.9	5.8	0.8	1.2	2.0	0.6	0.8	4.1	0.3
HC Emissions (g)	5	57	11	5	49	17	6	34	7	11	54	14
CO Emissions (g)	210	1739	270	195	1549	489	474	1009	361	444	2248	361
NOx Emissions (g)	17	175	28	15	152	46	22	93	23	35	190	39
Vehicles Entered	126	765	117	109	744	126	134	307	147	76	453	44
Vehicles Exited	129	764	119	108	743	124	139	308	147	73	453	44
Hourly Exit Rate	129	764	119	108	743	124	139	308	147	73	453	44
Input Volume	140	760	110	110	750	140	140	310	150	80	561	60
% of Volume	92	101	108	98	99	89	99	99	98	91	81	73
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	1	0	0	0	0	0	0	0

2: Sawmill Rd & SR 161 #1 Performance by movement

Movement	All
Total Delay (hr)	32.1
Delay / Veh (s)	36.6
Total Stops	2269
Travel Dist (mi)	515.4
Travel Time (hr)	48.3
Avg Speed (mph)	11
Fuel Used (gal)	23.9
HC Emissions (g)	271
CO Emissions (g)	9350
NOx Emissions (g)	835
Vehicles Entered	3148
Vehicles Exited	3151
Hourly Exit Rate	3151
Input Volume	3311
% of Volume	95
Denied Entry Before	0
Denied Entry After	1

3: SR 161 #1 & Sawmill Pl Blvd Performance by movement

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Total Delay (hr)	0.1	0.7	0.0	0.2	2.0	0.0	0.3	0.1	0.1	0.4	0.1	0.3
Delay / Veh (s)	5.6	4.6	1.3	19.9	14.5	9.5	34.1	28.0	4.9	53.0	26.8	8.7
Total Stops	11	45	1	27	206	3	23	5	65	21	10	107
Travel Dist (mi)	4.8	76.6	1.3	2.0	30.4	0.6	1.6	0.5	4.2	2.0	1.2	10.4
Travel Time (hr)	0.2	2.5	0.0	0.2	2.6	0.1	0.4	0.1	0.3	0.4	0.2	0.8
Avg Speed (mph)	24	30	28	8	12	12	5	6	14	5	8	14
Fuel Used (gal)	0.2	3.4	0.0	0.1	1.4	0.0	0.1	0.0	0.1	0.1	0.1	0.4
HC Emissions (g)	2	72	0	0	14	0	1	0	1	0	0	4
CO Emissions (g)	113	2689	14	12	403	2	22	7	25	24	11	133
NOx Emissions (g)	7	238	1	1	51	0	2	1	2	2	1	12
Vehicles Entered	32	526	9	31	486	10	30	9	77	24	15	126
Vehicles Exited	33	527	9	31	486	10	30	9	77	24	15	126
Hourly Exit Rate	33	527	9	31	486	10	30	9	77	24	15	126
Input Volume	40	500	10	40	650	20	30	10	80	20	10	120
% of Volume	82	105	90	78	75	50	100	90	96	120	150	105
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

3: SR 161 #1 & Sawmill Pl Blvd Performance by movement

Movement	All
Total Delay (hr)	4.1
Delay / Veh (s)	10.7
Total Stops	524
Travel Dist (mi)	135.7
Travel Time (hr)	7.8
Avg Speed (mph)	17
Fuel Used (gal)	5.9
HC Emissions (g)	95
CO Emissions (g)	3456
NOx Emissions (g)	317
Vehicles Entered	1375
Vehicles Exited	1377
Hourly Exit Rate	1377
Input Volume	1530
% of Volume	90
Denied Entry Before	0
Denied Entry After	0

6: SR 161 #1 & Martin Rd Performance by movement

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Total Delay (hr)	0.3	1.6	0.1	0.4	1.2	0.1	0.3	0.1	0.2	0.2	0.3	0.1
Delay / Veh (s)	15.6	12.4	10.6	12.8	8.9	6.7	45.9	31.4	5.6	35.8	38.8	3.4
Total Stops	47	83	4	61	81	6	17	6	80	17	23	45
Travel Dist (mi)	14.9	110.4	5.4	15.2	73.2	4.0	1.0	0.5	4.8	0.9	1.4	2.6
Travel Time (hr)	0.7	4.3	0.2	0.8	3.0	0.2	0.3	0.1	0.4	0.2	0.4	0.2
Avg Speed (mph)	22	25	24	18	24	21	4	4	12	4	3	13
Fuel Used (gal)	0.7	5.3	0.2	0.7	4.0	0.2	0.1	0.0	0.1	0.1	0.1	0.1
HC Emissions (g)	5	106	2	10	62	6	0	0	1	0	0	0
CO Emissions (g)	327	3955	140	459	3092	175	22	5	33	7	16	13
NOx Emissions (g)	23	345	8	36	218	17	1	0	3	1	1	1
Vehicles Entered	62	451	22	104	494	27	20	10	99	19	31	59
Vehicles Exited	59	449	22	102	491	27	20	11	99	19	31	59
Hourly Exit Rate	59	449	22	102	491	27	20	11	99	19	31	59
Input Volume	70	440	20	130	610	40	20	10	90	20	20	70
% of Volume	84	102	110	78	80	68	100	110	110	95	155	84
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

6: SR 161 #1 & Martin Rd Performance by movement

Movement	All
Total Delay (hr)	4.6
Delay / Veh (s)	11.9
Total Stops	470
Travel Dist (mi)	234.2
Travel Time (hr)	10.9
Avg Speed (mph)	21
Fuel Used (gal)	11.7
HC Emissions (g)	193
CO Emissions (g)	8246
NOx Emissions (g)	655
Vehicles Entered	1398
Vehicles Exited	1389
Hourly Exit Rate	1389
Input Volume	1540
% of Volume	90
Denied Entry Before	0
Denied Entry After	0

9: SR 161 #1 & Federated Blvd Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBR	All
Total Delay (hr)	0.0	0.2	2.0	0.2	1.0	0.1	3.5
Delay / Veh (s)	3.3	1.1	12.3	13.8	27.1	7.3	8.7
Total Stops	6	0	0	0	131	69	206
Travel Dist (mi)	2.5	55.8	676.7	64.5	6.1	3.2	808.9
Travel Time (hr)	0.1	1.4	17.2	1.7	1.3	0.3	22.1
Avg Speed (mph)	25	40	39	38	5	11	37
Fuel Used (gal)	0.1	1.8	18.1	1.7	0.4	0.1	22.1
HC Emissions (g)	2	34	240	41	5	1	322
CO Emissions (g)	47	1040	6019	869	115	29	8119
NOx Emissions (g)	5	123	1007	143	12	2	1293
Vehicles Entered	27	589	590	52	131	69	1458
Vehicles Exited	27	588	572	49	131	68	1435
Hourly Exit Rate	27	588	572	49	131	68	1435
Input Volume	30	570	780	70	140	80	1670
% of Volume	90	103	73	70	94	85	86
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

13: SR 161 #1 & RR Crossing Performance by movement

Movement	EBT	WBT	NBT	All
Total Delay (hr)	13.0	2.5	0.0	15.6
Delay / Veh (s)	61.5	14.1	56.8	39.8
Total Stops	551	33	1	585
Travel Dist (mi)	216.5	101.5	0.1	318.1
Travel Time (hr)	19.4	5.8	0.0	25.2
Avg Speed (mph)	11	17	4	13
Fuel Used (gal)	9.1	5.1	0.0	14.2
HC Emissions (g)	81	55	0	136
CO Emissions (g)	2032	1917	0	3949
NOx Emissions (g)	251	214	0	465
Vehicles Entered	767	643	1	1411
Vehicles Exited	757	644	1	1402
Hourly Exit Rate	757	644	1	1402
Input Volume	770	860	1	1631
% of Volume	98	75	100	86
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

17: SR 161 #1 & McVey Blvd Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBR	All
Total Delay (hr)	0.1	2.1	0.8	0.0	1.4	0.3	4.8
Delay / Veh (s)	15.3	10.9	4.4	3.3	36.0	33.2	11.0
Total Stops	7	29	0	0	140	33	209
Travel Dist (mi)	20.7	865.7	191.0	6.5	5.9	1.5	1091.4
Travel Time (hr)	0.5	21.7	6.3	0.2	1.7	0.4	30.9
Avg Speed (mph)	38	40	31	29	3	4	35
Fuel Used (gal)	0.5	21.8	5.2	0.2	0.4	0.1	28.3
HC Emissions (g)	2	372	45	7	1	0	428
CO Emissions (g)	61	7839	765	107	45	13	8830
NOx Emissions (g)	17	1477	152	18	4	1	1669
Vehicles Entered	16	703	623	21	144	36	1543
Vehicles Exited	16	711	632	21	142	36	1558
Hourly Exit Rate	16	711	632	21	142	36	1558
Input Volume	10	700	830	30	140	40	1750
% of Volume	160	102	76	70	101	90	89
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

19: SR 161 #1 & Linworth Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay (hr)	2.9	14.6	3.2	1.5	13.5	1.3	7.0	25.7	4.3	22.9	44.6	6.0
Delay / Veh (s)	225.8	116.1	114.4	140.2	89.4	88.5	357.2	436.1	311.8	474.4	506.0	498.6
Total Stops	89	581	139	72	752	77	227	783	152	478	901	119
Travel Dist (mi)	7.2	71.0	15.9	20.2	273.7	27.0	20.5	63.0	15.1	49.8	92.2	12.2
Travel Time (hr)	3.1	16.7	3.8	2.5	27.3	2.7	7.8	27.8	4.9	24.7	47.7	6.4
Avg Speed (mph)	2	4	4	8	10	10	3	2	3	3	3	3
Fuel Used (gal)	0.9	5.2	1.2	1.0	12.0	1.2	2.2	7.8	1.4	6.8	12.9	1.7
HC Emissions (g)	1	36	10	0	36	12	14	17	28	18	38	20
CO Emissions (g)	57	788	205	78	1291	248	353	693	461	610	1183	356
NOx Emissions (g)	4	92	24	7	149	32	36	61	52	52	95	35
Vehicles Entered	48	464	104	41	555	56	74	234	53	179	329	45
Vehicles Exited	45	444	99	36	533	53	68	190	48	169	305	42
Hourly Exit Rate	45	444	99	36	533	53	68	190	48	169	305	42
Input Volume	40	490	100	60	711	70	100	220	60	200	370	50
% of Volume	112	91	99	60	75	76	68	86	80	84	82	84
Denied Entry Before	0	0	0	0	0	0	0	0	0	1	0	0
Denied Entry After	0	0	0	0	0	0	5	17	2	20	46	7

19: SR 161 #1 & Linworth Rd Performance by movement

Movement	All
Total Delay (hr)	147.6
Delay / Veh (s)	252.1
Total Stops	4370
Travel Dist (mi)	667.9
Travel Time (hr)	175.2
Avg Speed (mph)	5
Fuel Used (gal)	54.3
HC Emissions (g)	231
CO Emissions (g)	6322
NOx Emissions (g)	639
Vehicles Entered	2182
Vehicles Exited	2032
Hourly Exit Rate	2032
Input Volume	2471
% of Volume	82
Denied Entry Before	1
Denied Entry After	97

24: SR 161 #1 & Olentangy River Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay (hr)	2.9	38.3	0.8	66.8	129.4	22.9	1.6	5.9	6.3	52.3	49.8	4.4
Delay / Veh (s)	476.9	249.0	101.3	977.7	859.6	793.8	95.4	111.7	76.8	682.4	766.7	663.5
Total Stops	25	464	26	471	416	77	84	299	509	397	332	32
Travel Dist (mi)	1.8	44.1	2.2	18.5	41.4	7.9	10.6	32.2	50.1	24.9	21.2	2.1
Travel Time (hr)	3.0	39.7	0.9	67.5	130.6	23.3	2.0	7.0	8.2	53.3	50.6	4.5
Avg Speed (mph)	4	3	3	1	5	8	5	5	7	2	2	3
Fuel Used (gal)	0.7	10.2	0.2	15.9	31.7	5.5	0.7	2.3	3.0	12.8	12.2	1.1
HC Emissions (g)	2	68	0	67	54	25	5	15	12	42	40	11
CO Emissions (g)	66	1392	15	1598	2707	619	121	398	493	1211	1124	188
NOx Emissions (g)	4	104	1	75	115	27	13	43	44	69	57	11
Vehicles Entered	23	563	27	251	543	103	62	191	299	273	233	24
Vehicles Exited	22	544	27	242	541	104	62	190	289	279	235	24
Hourly Exit Rate	22	544	27	242	541	104	62	190	289	279	235	24
Input Volume	50	770	40	370	740	150	50	180	280	380	320	30
% of Volume	44	71	68	65	73	69	124	106	103	73	73	80
Denied Entry Before	0	0	0	0	2	0	0	0	0	1	0	0
Denied Entry After	6	75	2	117	255	38	0	0	1	103	97	8

24: SR 161 #1 & Olentangy River Rd Performance by movement

Movement	All
Total Delay (hr)	381.5
Delay / Veh (s)	533.3
Total Stops	3132
Travel Dist (mi)	257.1
Travel Time (hr)	390.5
Avg Speed (mph)	4
Fuel Used (gal)	96.2
HC Emissions (g)	342
CO Emissions (g)	9932
NOx Emissions (g)	562
Vehicles Entered	2592
Vehicles Exited	2559
Hourly Exit Rate	2559
Input Volume	3360
% of Volume	76
Denied Entry Before	3
Denied Entry After	702

Total Network Performance

Total Delay (hr)	637.4
Delay / Veh (s)	363.7
Total Stops	13691
Travel Dist (mi)	5413.3
Travel Time (hr)	806.5
Avg Speed (mph)	12
Fuel Used (gal)	325.3
HC Emissions (g)	2830
CO Emissions (g)	86180
NOx Emissions (g)	9142
Vehicles Entered	6450
Vehicles Exited	6171
Hourly Exit Rate	6171
Input Volume	27044
% of Volume	23
Denied Entry Before	4
Denied Entry After	800

Intersection: 2: Sawmill Rd & SR 161 #1

Movement	NB	NB	NB	NB	SB	SB	SB	SB	SB	SE	SE	SE
Directions Served	L	T	T	TR	L	T	T	T	R	L	L	T
Maximum Queue (ft)	183	248	285	314	174	200	208	261	90	88	84	291
Average Queue (ft)	75	146	177	215	55	126	149	168	46	25	33	156
95th Queue (ft)	143	238	273	312	118	191	209	232	81	60	71	261
Link Distance (ft)		803	803	803		812	812					595
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	360				400			480	480	270	270	
Storage Blk Time (%)												1
Queuing Penalty (veh)												1

Intersection: 2: Sawmill Rd & SR 161 #1

Movement	SE	NW	NW	NW	NW
Directions Served	R	L	T	T	R
Maximum Queue (ft)	41	120	177	239	205
Average Queue (ft)	4	43	40	52	8
95th Queue (ft)	19	101	112	128	68
Link Distance (ft)	595		1163	1163	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		950			180
Storage Blk Time (%)				0	
Queuing Penalty (veh)				0	

Intersection: 3: SR 161 #1 & Sawmill Pl Blvd

Movement	SE	SE	NW	NW	B16	NE	NE	SW	SW	SW
Directions Served	L	TR	L	TR	T	L	TR	L	T	R
Maximum Queue (ft)	26	67	174	349	104	52	77	51	50	88
Average Queue (ft)	8	35	22	187	13	24	36	21	10	40
95th Queue (ft)	25	65	77	390	60	55	60	53	38	71
Link Distance (ft)		702		275	454	289	289	430	430	430
Upstream Blk Time (%)				4						
Queuing Penalty (veh)				27						
Storage Bay Dist (ft)	250		150							
Storage Blk Time (%)				9						
Queuing Penalty (veh)				4						

Intersection: 6: SR 161 #1 & Martin Rd

Movement	SE	SE	NW	NW	NW	NE	NE	NE	SW	SW	SW
Directions Served	L	TR	L	T	TR	L	T	R	L	T	R
Maximum Queue (ft)	52	1276	98	115	96	52	31	70	51	74	52
Average Queue (ft)	26	298	35	35	48	19	8	36	17	26	28
95th Queue (ft)	50	1085	74	81	93	52	29	61	46	67	51
Link Distance (ft)		1163		702			257	257	228	228	228
Upstream Blk Time (%)		0									
Queuing Penalty (veh)		0									
Storage Bay Dist (ft)	300		280		380	170					
Storage Blk Time (%)											
Queuing Penalty (veh)											

Intersection: 9: SR 161 #1 & Federated Blvd

Movement	EB	SB	SB
Directions Served	L	L	R
Maximum Queue (ft)	30	220	54
Average Queue (ft)	5	65	28
95th Queue (ft)	22	134	49
Link Distance (ft)		244	244
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	200		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 13: SR 161 #1 & RR Crossing

Movement	EB	WB	NB
Directions Served	T	T	T
Maximum Queue (ft)	1583	767	54
Average Queue (ft)	585	76	2
95th Queue (ft)	1411	440	18
Link Distance (ft)	1582	765	432
Upstream Blk Time (%)	2	4	
Queuing Penalty (veh)	16	32	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 17: SR 161 #1 & McVey Blvd

Movement	EB	SB	B18
Directions Served	LT	LR	T
Maximum Queue (ft)	357	235	70
Average Queue (ft)	30	99	3
95th Queue (ft)	149	197	25
Link Distance (ft)	6764	179	114
Upstream Blk Time (%)		7	
Queuing Penalty (veh)		0	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 19: SR 161 #1 & Linworth Rd

Movement	EB	EB	WB	WB	NB	NB	SB
Directions Served	L	TR	L	TR	L	TR	LTR
Maximum Queue (ft)	174	785	114	1312	174	1583	1552
Average Queue (ft)	70	662	42	768	88	955	1388
95th Queue (ft)	151	1026	82	1271	190	1809	1987
Link Distance (ft)		765		2570		1542	1537
Upstream Blk Time (%)		33				22	55
Queuing Penalty (veh)		205				0	0
Storage Bay Dist (ft)	150		300		150		
Storage Blk Time (%)	0	54		43	3	74	
Queuing Penalty (veh)	2	21		26	9	74	

Intersection: 24: SR 161 #1 & Olentangy River Rd

Movement	EB	EB	B30	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	T	L	T	TR	LT	R	L	TR
Maximum Queue (ft)	148	459	2584	324	430	410	906	205	225	497
Average Queue (ft)	25	423	1500	319	405	315	463	170	211	476
95th Queue (ft)	94	532	3255	363	446	518	879	260	260	565
Link Distance (ft)		376	2570		394	394	891			479
Upstream Blk Time (%)		50	3		44	9	2			50
Queuing Penalty (veh)		373	22		0	0	0			0
Storage Bay Dist (ft)	130			300				180	200	
Storage Blk Time (%)	0	58		55	4		36	11	44	33
Queuing Penalty (veh)	0	29		202	14		100	24	155	124

Network Summary

Network wide Queuing Penalty: 1461

Intersection: 13: SR 161 #1 & RR Crossing

Phase	2	4	6	8
Movement(s) Served	NBT	EBT	SBT	WBT
Maximum Green (s)	296.0	17.0	296.0	17.0
Minimum Green (s)	296.0	4.0	296.0	4.0
Recall	None	C-Max	None	C-Max
Avg. Green (s)	296.0	0.0	296.0	0.0
g/C Ratio	0.09	0.00	0.09	0.00
Cycles Skipped (%)	90	100	90	100
Cycles @ Minimum (%)	10	0	10	0
Cycles Maxed Out (%)	10	0	10	0
Cycles with Peds (%)	0	0	0	0

Controller Summary
Average Cycle Length (s): 321.0
Number of Complete Cycles : 10

Intersection: 19: SR 161 #1 & Linworth Rd

Phase	2	4	6	8
Movement(s) Served	NBTL	EBTL	SBTL	WBTL
Maximum Green (s)	24.0	59.0	47.0	59.0
Minimum Green (s)	4.0	4.0	4.0	4.0
Recall	None	None	None	None
Avg. Green (s)	24.0	58.8	46.9	58.8
g/C Ratio	0.16	0.40	0.32	0.40
Cycles Skipped (%)	0	0	0	0
Cycles @ Minimum (%)	0	0	0	0
Cycles Maxed Out (%)	100	96	96	96
Cycles with Peds (%)	0	0	0	0

Controller Summary
Average Cycle Length (s): 148.0
Number of Complete Cycles : 23

Summary of All Intervals

Run Number	2	Avg
Start Time	4:57	4:57
End Time	6:00	6:00
Total Time (min)	63	63
Time Recorded (min)	60	60
# of Intervals	2	2
# of Recorded Intvls	1	1
Vehs Entered	9018	9018
Vehs Exited	8507	8507
Starting Vehs	296	296
Ending Vehs	807	807
Denied Entry Before	10	10
Denied Entry After	1247	1247
Travel Distance (mi)	6512	6512
Travel Time (hr)	1111.3	1111.3
Total Delay (hr)	905.7	905.7
Total Stops	21867	21867
Fuel Used (gal)	430.8	430.8

Interval #0 Information Seeding

Start Time	4:57
End Time	5:00
Total Time (min)	3

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	5:00
End Time	6:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	2	Avg
Vehs Entered	9018	9018
Vehs Exited	8507	8507
Starting Vehs	296	296
Ending Vehs	807	807
Denied Entry Before	10	10
Denied Entry After	1247	1247
Travel Distance (mi)	6512	6512
Travel Time (hr)	1111.3	1111.3
Total Delay (hr)	905.7	905.7
Total Stops	21867	21867
Fuel Used (gal)	430.8	430.8

2: Sawmill Rd & SR 161#1 Performance by movement

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Total Delay (hr)	28.2	32.2	5.7	28.8	65.7	6.0	20.0	31.1	12.4	7.3	4.1	0.4
Delay / Veh (s)	344.8	113.8	113.9	584.9	232.4	139.5	234.1	245.3	144.1	112.6	31.3	11.7
Total Stops	852	1244	207	635	1747	179	476	619	277	328	290	70
Travel Dist (mi)	45.5	156.1	24.9	28.5	160.7	23.9	36.9	55.6	37.8	56.4	111.2	31.6
Travel Time (hr)	29.8	37.6	6.6	29.8	71.3	6.9	21.3	32.4	13.9	9.0	6.9	1.4
Avg Speed (mph)	2	6	5	1	4	14	3	4	14	6	16	22
Fuel Used (gal)	8.1	13.2	2.1	7.6	21.0	2.3	5.9	8.9	3.8	3.8	5.3	1.3
HC Emissions (g)	24	90	3	16	114	14	25	57	19	29	74	11
CO Emissions (g)	831	2839	212	652	3173	552	825	1298	845	1487	3352	765
NOx Emissions (g)	69	284	18	44	317	44	66	130	46	95	246	42
Vehicles Entered	302	1010	179	192	1029	156	312	458	308	237	475	128
Vehicles Exited	287	1024	182	163	1008	154	305	455	309	229	477	132
Hourly Exit Rate	287	1024	182	163	1008	154	305	455	309	229	477	132
Input Volume	290	1060	180	210	1150	180	360	520	370	250	570	150
% of Volume	99	97	101	78	88	86	85	88	84	92	84	88
Denied Entry Before	1	1	0	5	0	0	0	0	0	0	0	0
Denied Entry After	10	52	12	30	163	22	38	68	46	0	0	0

2: Sawmill Rd & SR 161#1 Performance by movement

Movement	All
Total Delay (hr)	241.9
Delay / Veh (s)	183.1
Total Stops	6924
Travel Dist (mi)	769.0
Travel Time (hr)	267.0
Avg Speed (mph)	5
Fuel Used (gal)	83.2
HC Emissions (g)	476
CO Emissions (g)	16830
NOx Emissions (g)	1402
Vehicles Entered	4786
Vehicles Exited	4725
Hourly Exit Rate	4725
Input Volume	5290
% of Volume	89
Denied Entry Before	7
Denied Entry After	441

3: SR 161#1 & Sawmill Pl Blvd Performance by movement

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Total Delay (hr)	1.2	2.2	0.1	0.5	4.9	0.2	0.5	0.6	0.8	0.9	0.9	0.9
Delay / Veh (s)	27.9	12.8	7.6	28.2	26.3	20.7	75.0	62.4	25.9	81.3	61.8	17.5
Total Stops	103	177	4	70	293	21	21	36	101	40	51	171
Travel Dist (mi)	23.1	93.3	4.0	4.2	40.8	2.6	1.2	1.9	6.1	3.4	4.4	16.0
Travel Time (hr)	2.0	4.7	0.2	0.7	5.9	0.4	0.5	0.7	1.1	1.1	1.1	1.7
Avg Speed (mph)	12	20	21	7	9	9	2	3	5	3	4	10
Fuel Used (gal)	1.3	4.9	0.2	0.2	2.3	0.1	0.1	0.2	0.4	0.3	0.4	0.7
HC Emissions (g)	14	65	1	0	18	0	0	0	3	3	3	4
CO Emissions (g)	621	2970	85	27	462	10	14	25	96	83	101	192
NOx Emissions (g)	49	239	6	3	60	1	1	2	10	6	9	15
Vehicles Entered	157	631	27	69	682	43	22	35	111	41	54	195
Vehicles Exited	157	625	26	68	672	42	22	34	111	41	55	195
Hourly Exit Rate	157	625	26	68	672	42	22	34	111	41	55	195
Input Volume	160	700	40	100	830	50	20	50	110	40	60	200
% of Volume	98	89	65	68	81	84	110	68	101	102	92	98
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

3: SR 161#1 & Sawmill Pl Blvd Performance by movement

Movement	All
Total Delay (hr)	13.9
Delay / Veh (s)	24.3
Total Stops	1088
Travel Dist (mi)	201.1
Travel Time (hr)	19.9
Avg Speed (mph)	11
Fuel Used (gal)	11.2
HC Emissions (g)	112
CO Emissions (g)	4686
NOx Emissions (g)	400
Vehicles Entered	2067
Vehicles Exited	2048
Hourly Exit Rate	2048
Input Volume	2360
% of Volume	87
Denied Entry Before	0
Denied Entry After	0

6: SR 161#1 & Martin Rd Performance by movement

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Total Delay (hr)	1.6	3.1	0.2	2.4	2.3	0.2	0.7	1.1	1.1	0.7	1.5	0.3
Delay / Veh (s)	27.2	20.4	20.4	33.0	14.0	9.1	59.2	50.6	15.3	46.6	55.8	5.8
Total Stops	181	147	17	232	135	23	37	64	221	50	75	173
Travel Dist (mi)	51.8	131.0	9.8	38.0	85.7	10.1	2.1	3.9	12.3	2.4	4.1	9.1
Travel Time (hr)	3.1	6.4	0.5	3.6	4.5	0.5	0.8	1.3	1.7	0.8	1.7	0.8
Avg Speed (mph)	17	20	19	11	19	20	3	3	7	3	2	11
Fuel Used (gal)	2.4	6.3	0.4	2.1	4.9	0.5	0.3	0.4	0.7	0.2	0.5	0.3
HC Emissions (g)	28	88	9	20	60	10	1	1	4	1	1	2
CO Emissions (g)	1243	3661	290	870	3107	317	47	66	148	42	66	67
NOx Emissions (g)	102	315	30	77	220	32	4	6	15	5	7	7
Vehicles Entered	210	550	40	264	594	70	43	80	253	55	94	209
Vehicles Exited	210	555	39	264	588	69	43	81	250	56	98	209
Hourly Exit Rate	210	555	39	264	588	69	43	81	250	56	98	209
Input Volume	220	640	50	280	730	80	50	90	250	60	80	190
% of Volume	95	87	78	94	81	86	86	90	100	93	122	110
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	1	0	0	0	0	0	0	0

6: SR 161#1 & Martin Rd Performance by movement

Movement	All
Total Delay (hr)	15.3
Delay / Veh (s)	22.4
Total Stops	1355
Travel Dist (mi)	360.2
Travel Time (hr)	25.9
Avg Speed (mph)	14
Fuel Used (gal)	19.0
HC Emissions (g)	226
CO Emissions (g)	9925
NOx Emissions (g)	818
Vehicles Entered	2462
Vehicles Exited	2462
Hourly Exit Rate	2462
Input Volume	2720
% of Volume	91
Denied Entry Before	0
Denied Entry After	1

9: SR 161#1 & Federated Blvd Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBR	All
Total Delay (hr)	0.4	0.4	2.8	0.5	0.7	0.3	4.9
Delay / Veh (s)	10.2	1.8	15.2	12.1	51.3	10.7	9.9
Total Stops	78	0	1	3	48	86	216
Travel Dist (mi)	11.5	66.2	762.8	160.4	2.2	4.0	1007.2
Travel Time (hr)	0.7	1.9	20.1	4.3	0.8	0.5	28.2
Avg Speed (mph)	17	39	38	38	3	9	36
Fuel Used (gal)	0.3	2.5	20.0	4.0	0.2	0.2	27.2
HC Emissions (g)	5	39	272	62	0	1	380
CO Emissions (g)	174	1589	6888	1529	30	34	10243
NOx Emissions (g)	15	146	1113	249	3	3	1529
Vehicles Entered	125	709	668	142	48	86	1778
Vehicles Exited	125	710	651	138	44	85	1753
Hourly Exit Rate	125	710	651	138	44	85	1753
Input Volume	140	740	830	160	50	90	2010
% of Volume	89	96	78	86	88	94	87
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

13: SR 161#1 & RR Crossing Performance by movement

Movement	EBT	WBT	NBT	All
Total Delay (hr)	32.9	3.0	0.0	35.9
Delay / Veh (s)	187.5	15.6	142.5	98.3
Total Stops	1077	34	1	1112
Travel Dist (mi)	194.6	107.9	0.1	302.6
Travel Time (hr)	38.6	6.5	0.0	45.1
Avg Speed (mph)	5	17	2	7
Fuel Used (gal)	12.9	5.6	0.0	18.5
HC Emissions (g)	85	75	0	160
CO Emissions (g)	1899	2486	0	4386
NOx Emissions (g)	226	268	0	494
Vehicles Entered	653	683	1	1337
Vehicles Exited	611	684	1	1296
Hourly Exit Rate	611	684	1	1296
Input Volume	780	910	1	1691
% of Volume	78	75	100	77
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

17: SR 161#1 & McVey Blvd Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBR	All
Total Delay (hr)	1.2	24.6	1.1	0.1	2.9	0.0	29.9
Delay / Veh (s)	172.8	129.0	6.1	4.7	750.7	6.3	72.7
Total Stops	56	1042	0	0	19	22	1139
Travel Dist (mi)	33.0	920.6	186.7	34.1	0.6	0.9	1175.9
Travel Time (hr)	1.9	45.4	6.5	1.2	2.9	0.1	58.1
Avg Speed (mph)	17	20	29	28	0	11	20
Fuel Used (gal)	1.1	27.1	4.9	0.8	0.7	0.0	34.6
HC Emissions (g)	3	287	54	8	0	0	353
CO Emissions (g)	105	5848	925	133	32	3	7045
NOx Emissions (g)	24	1179	171	25	0	0	1400
Vehicles Entered	26	728	619	112	19	22	1526
Vehicles Exited	23	644	623	113	9	22	1434
Hourly Exit Rate	23	644	623	113	9	22	1434
Input Volume	30	760	820	140	20	20	1790
% of Volume	77	85	76	81	45	110	80
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

19: SR 161#1 & Linworth Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay (hr)	1.2	17.1	2.6	3.5	38.3	5.4	43.8	84.6	13.7	17.2	25.4	9.4
Delay / Veh (s)	168.0	133.0	118.7	329.3	243.8	264.1	1018.1	995.1	824.9	423.2	444.5	443.2
Total Stops	48	618	104	118	1363	190	505	973	188	453	647	237
Travel Dist (mi)	3.7	72.5	12.6	18.9	265.3	36.8	44.1	87.9	17.2	42.2	59.2	22.3
Travel Time (hr)	1.3	19.2	3.1	4.5	51.8	7.2	45.4	87.5	14.4	18.6	27.4	10.2
Avg Speed (mph)	3	4	4	4	5	5	3	3	3	3	3	3
Fuel Used (gal)	0.4	5.8	1.0	1.4	17.4	2.4	11.4	22.0	3.7	5.2	7.5	2.8
HC Emissions (g)	0	33	7	5	72	17	85	92	1	5	43	21
CO Emissions (g)	28	776	152	161	2009	373	1669	2305	209	378	1009	425
NOx Emissions (g)	3	85	18	17	215	41	123	157	11	27	94	39
Vehicles Entered	24	479	81	37	573	75	161	315	60	153	220	82
Vehicles Exited	25	448	79	38	560	71	149	298	60	139	192	71
Hourly Exit Rate	25	448	79	38	560	71	149	298	60	139	192	71
Input Volume	40	610	90	60	750	100	210	440	70	190	280	70
% of Volume	62	73	88	63	75	71	71	68	86	73	69	101
Denied Entry Before	0	0	0	0	0	0	0	1	0	0	0	0
Denied Entry After	0	0	0	0	0	0	67	140	18	11	25	5

19: SR 161#1 & Linworth Rd Performance by movement

Movement	All
Total Delay (hr)	262.2
Delay / Veh (s)	430.0
Total Stops	5444
Travel Dist (mi)	682.7
Travel Time (hr)	290.6
Avg Speed (mph)	4
Fuel Used (gal)	80.9
HC Emissions (g)	382
CO Emissions (g)	9492
NOx Emissions (g)	828
Vehicles Entered	2260
Vehicles Exited	2130
Hourly Exit Rate	2130
Input Volume	2910
% of Volume	73
Denied Entry Before	1
Denied Entry After	266

24: SR 161#1 & Olentangy River Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay (hr)	0.3	10.7	0.7	40.5	83.9	59.3	4.5	43.6	23.1	7.4	5.4	0.6
Delay / Veh (s)	75.0	71.8	65.3	574.5	484.2	473.5	382.5	498.0	423.5	120.5	109.9	93.5
Total Stops	18	466	31	466	570	366	89	691	439	319	237	31
Travel Dist (mi)	1.0	43.6	3.0	19.2	47.7	34.7	7.0	53.3	33.1	20.2	16.2	2.2
Travel Time (hr)	0.3	12.1	0.8	41.2	85.3	60.9	4.7	45.4	24.3	8.1	6.0	0.7
Avg Speed (mph)	3	4	4	2	5	7	3	3	4	3	3	4
Fuel Used (gal)	0.1	3.9	0.3	10.0	21.0	14.6	1.2	11.7	6.4	2.5	1.9	0.2
HC Emissions (g)	0	15	2	22	70	37	8	77	30	9	11	0
CO Emissions (g)	8	447	41	821	2163	1284	165	1644	800	355	331	32
NOx Emissions (g)	1	52	5	44	127	55	14	140	65	31	33	2
Vehicles Entered	13	544	38	259	633	453	41	320	200	223	179	25
Vehicles Exited	12	527	36	249	615	450	43	311	193	218	177	24
Hourly Exit Rate	12	527	36	249	615	450	43	311	193	218	177	24
Input Volume	20	810	40	320	820	550	60	380	200	250	210	30
% of Volume	60	65	90	78	75	82	72	82	96	87	84	80
Denied Entry Before	0	0	0	1	1	0	0	0	0	0	0	0
Denied Entry After	0	0	0	64	205	141	6	70	32	12	9	0

24: SR 161#1 & Olentangy River Rd Performance by movement

Movement	All
Total Delay (hr)	279.9
Delay / Veh (s)	348.5
Total Stops	3723
Travel Dist (mi)	281.2
Travel Time (hr)	290.0
Avg Speed (mph)	3
Fuel Used (gal)	73.8
HC Emissions (g)	280
CO Emissions (g)	8089
NOx Emissions (g)	571
Vehicles Entered	2928
Vehicles Exited	2855
Hourly Exit Rate	2855
Input Volume	3690
% of Volume	77
Denied Entry Before	2
Denied Entry After	539

Total Network Performance

Total Delay (hr)	905.7
Delay / Veh (s)	372.1
Total Stops	21867
Travel Dist (mi)	6512.4
Travel Time (hr)	1111.3
Avg Speed (mph)	9
Fuel Used (gal)	430.8
HC Emissions (g)	3328
CO Emissions (g)	107083
NOx Emissions (g)	10839
Vehicles Entered	9018
Vehicles Exited	8507
Hourly Exit Rate	8507
Input Volume	36072
% of Volume	24
Denied Entry Before	10
Denied Entry After	1247

Intersection: 2: Sawmill Rd & SR 161#1

Movement	NB	NB	NB	NB	SB	SB	SB	SB	SB	SE	SE	SE
Directions Served	L	T	T	TR	L	T	T	T	R	L	L	T
Maximum Queue (ft)	385	818	831	808	425	864	827	505	492	236	295	627
Average Queue (ft)	382	722	559	445	393	738	722	398	123	113	193	590
95th Queue (ft)	391	927	902	696	486	1028	1016	593	393	195	333	699
Link Distance (ft)		803	803	803		812	812					595
Upstream Blk Time (%)		24	0	0		28	9					32
Queuing Penalty (veh)		0	0	0		0	0					0
Storage Bay Dist (ft)	360				400			480	480	270	270	
Storage Blk Time (%)	75	3			48	19	15	14	0		0	46
Queuing Penalty (veh)	264	10			186	40	84	53	1		0	164

Intersection: 2: Sawmill Rd & SR 161#1

Movement	SE	NW	NW	NW	NW
Directions Served	R	L	T	T	R
Maximum Queue (ft)	607	518	217	254	195
Average Queue (ft)	104	260	103	104	14
95th Queue (ft)	341	466	174	175	73
Link Distance (ft)	595		1163	1163	
Upstream Blk Time (%)	1				
Queuing Penalty (veh)	0				
Storage Bay Dist (ft)		950			180
Storage Blk Time (%)				0	0
Queuing Penalty (veh)				1	0

Intersection: 3: SR 161#1 & Sawmill Pl Blvd

Movement	SE	SE	NW	NW	B16	NE	NE	SW	SW	SW
Directions Served	L	TR	L	TR	T	L	TR	L	T	R
Maximum Queue (ft)	157	385	174	358	278	73	270	109	135	223
Average Queue (ft)	69	150	36	301	67	26	93	48	52	71
95th Queue (ft)	127	264	92	447	202	62	180	92	97	145
Link Distance (ft)		702		275	454	289	289	430	430	430
Upstream Blk Time (%)				12			0			
Queuing Penalty (veh)				107			0			
Storage Bay Dist (ft)	250		150							
Storage Blk Time (%)		1		20						
Queuing Penalty (veh)		1		20						

Intersection: 6: SR 161#1 & Martin Rd

Movement	SE	SE	NW	NW	NW	NE	NE	NE	SW	SW	SW
Directions Served	L	TR	L	T	TR	L	T	R	L	T	R
Maximum Queue (ft)	195	1300	200	140	198	94	116	224	117	177	110
Average Queue (ft)	75	318	117	65	77	37	60	95	45	74	55
95th Queue (ft)	131	1024	196	128	162	69	111	173	94	138	93
Link Distance (ft)		1163		702			257	257	228	228	228
Upstream Blk Time (%)		0									
Queuing Penalty (veh)		3									
Storage Bay Dist (ft)	300		280		380	170					
Storage Blk Time (%)											
Queuing Penalty (veh)											

Intersection: 9: SR 161#1 & Federated Blvd

Movement	EB	WB	SB	SB
Directions Served	L	TR	L	R
Maximum Queue (ft)	74	31	94	94
Average Queue (ft)	38	3	36	39
95th Queue (ft)	73	16	79	74
Link Distance (ft)		6752	244	244
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	200			
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 13: SR 161#1 & RR Crossing

Movement	EB	WB	NB
Directions Served	T	T	T
Maximum Queue (ft)	1596	777	54
Average Queue (ft)	1076	87	3
95th Queue (ft)	2146	473	23
Link Distance (ft)	1582	765	432
Upstream Blk Time (%)	32	5	
Queuing Penalty (veh)	246	50	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 17: SR 161#1 & McVey Blvd

Movement	EB	SB	SB
Directions Served	LT	L	R
Maximum Queue (ft)	2487	225	31
Average Queue (ft)	887	72	16
95th Queue (ft)	2188	171	40
Link Distance (ft)	6752	178	178
Upstream Blk Time (%)		6	
Queuing Penalty (veh)		0	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 19: SR 161#1 & Linworth Rd

Movement	EB	EB	WB	WB	B30	B30	NB	NB	SB
Directions Served	L	TR	L	TR	T		L	TR	LTR
Maximum Queue (ft)	163	783	324	2642	389	385	174	1596	1572
Average Queue (ft)	34	671	59	1653	90	25	119	1429	1237
95th Queue (ft)	88	1023	153	2997	346	182	216	1877	1870
Link Distance (ft)		765		2570	376	376		1533	1538
Upstream Blk Time (%)		43		14	6	3		53	39
Queuing Penalty (veh)		320		125	28	12		0	0
Storage Bay Dist (ft)	150		300				150		
Storage Blk Time (%)	0	57	0	60			12	66	
Queuing Penalty (veh)	0	23	0	36			62	139	

Intersection: 24: SR 161#1 & Olentangy River Rd

Movement	EB	EB	B30	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	T	L	T	TR	LT	R	L	TR
Maximum Queue (ft)	31	471	1687	325	440	410	925	205	224	494
Average Queue (ft)	12	421	529	295	399	359	828	165	201	302
95th Queue (ft)	35	542	1359	389	469	497	1071	266	261	506
Link Distance (ft)		376	2570		394	394	891			479
Upstream Blk Time (%)		44			33	6	43			8
Queuing Penalty (veh)		380			0	0	0			0
Storage Bay Dist (ft)	130			300				180	200	
Storage Blk Time (%)		56		34	19		66	2	29	17
Queuing Penalty (veh)		11		139	62		132	10	70	43

Network Summary

Network wide Queuing Penalty: 2819

Intersection: 13: SR 161#1 & RR Crossing

Phase	2	4	6	8
Movement(s) Served	NBT	EBT	SBT	WBT
Maximum Green (s)	296.0	17.0	296.0	17.0
Minimum Green (s)	296.0	4.0	296.0	4.0
Recall	None	C-Max	None	C-Max
Avg. Green (s)	296.0	0.0	296.0	0.0
g/C Ratio	0.09	0.00	0.09	0.00
Cycles Skipped (%)	90	100	90	100
Cycles @ Minimum (%)	10	0	10	0
Cycles Maxed Out (%)	10	0	10	0
Cycles with Peds (%)	0	0	0	0

Controller Summary
Average Cycle Length (s): 321.0
Number of Complete Cycles : 10

Intersection: 19: SR 161#1 & Linworth Rd

Phase	2	4	6	8
Movement(s) Served	NBTL	EBTL	SBTL	WBTL
Maximum Green (s)	38.0	54.0	38.0	54.0
Minimum Green (s)	4.0	4.0	4.0	4.0
Recall	None	None	None	None
Avg. Green (s)	38.0	54.0	38.0	54.0
g/C Ratio	0.26	0.36	0.26	0.36
Cycles Skipped (%)	0	0	0	0
Cycles @ Minimum (%)	0	0	0	0
Cycles Maxed Out (%)	100	100	100	100
Cycles with Peds (%)	0	0	0	0

Controller Summary
Average Cycle Length (s): 148.0
Number of Complete Cycles : 23

Summary of All Intervals

Start Time	7:27
End Time	8:30
Total Time (min)	63
Time Recorded (min)	60
# of Intervals	2
# of Recorded Intvls	1
Vehs Entered	6440
Vehs Exited	6060
Starting Vehs	229
Ending Vehs	609
Denied Entry Before	14
Denied Entry After	805
Travel Distance (mi)	5307
Travel Time (hr)	932.2
Total Delay (hr)	766.4
Total Stops	15165
Fuel Used (gal)	351.9

Interval #0 Information Seeding

Start Time	7:27
End Time	7:30
Total Time (min)	3

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:30
End Time	8:30
Total Time (min)	60

Volumes adjusted by Growth Factors.

Vehs Entered	6440
Vehs Exited	6060
Starting Vehs	229
Ending Vehs	609
Denied Entry Before	14
Denied Entry After	805
Travel Distance (mi)	5307
Travel Time (hr)	932.2
Total Delay (hr)	766.4
Total Stops	15165
Fuel Used (gal)	351.9

2: Sawmill Rd & SR 161 #1 Performance by movement

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Total Delay (hr)	2.1	7.8	0.7	2.0	8.8	0.6	2.5	3.9	0.3	0.8	3.1	0.1
Delay / Veh (s)	50.2	38.2	20.1	59.1	41.2	13.0	64.6	45.0	5.9	43.8	24.5	10.0
Total Stops	123	544	80	120	582	115	133	255	95	54	187	14
Travel Dist (mi)	22.8	113.1	17.1	19.3	120.4	24.4	16.8	37.7	18.9	15.2	109.4	8.5
Travel Time (hr)	2.9	11.7	1.3	2.7	12.9	1.5	3.1	4.9	0.9	1.2	5.7	0.4
Avg Speed (mph)	8	10	13	8	10	19	6	8	21	13	19	24
Fuel Used (gal)	1.2	5.5	0.7	1.0	5.9	1.0	1.2	2.1	0.6	0.7	4.3	0.3
HC Emissions (g)	9	32	4	3	41	8	8	25	9	10	60	4
CO Emissions (g)	286	1292	162	180	1422	430	500	860	435	362	2540	164
NOx Emissions (g)	26	121	14	13	137	28	26	71	27	32	200	13
Vehicles Entered	146	736	123	120	761	157	141	311	154	64	462	35
Vehicles Exited	149	730	124	122	770	158	143	312	154	61	461	35
Hourly Exit Rate	149	730	124	122	770	158	143	312	154	61	461	35
Input Volume	140	760	110	110	750	140	140	310	150	80	561	60
% of Volume	106	96	113	111	103	113	102	101	103	76	82	58
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	1	0	0	0	0	0

2: Sawmill Rd & SR 161 #1 Performance by movement

Movement	All
Total Delay (hr)	32.5
Delay / Veh (s)	36.4
Total Stops	2302
Travel Dist (mi)	523.7
Travel Time (hr)	49.1
Avg Speed (mph)	11
Fuel Used (gal)	24.4
HC Emissions (g)	213
CO Emissions (g)	8634
NOx Emissions (g)	708
Vehicles Entered	3210
Vehicles Exited	3219
Hourly Exit Rate	3219
Input Volume	3311
% of Volume	97
Denied Entry Before	0
Denied Entry After	1

3: SR 161 #1 & Sawmill Pl Blvd Performance by movement

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Total Delay (hr)	0.0	0.6	0.0	0.1	1.7	0.1	0.3	0.1	0.1	0.3	0.1	0.4
Delay / Veh (s)	4.0	4.3	1.1	12.0	13.0	10.3	47.0	44.4	5.9	57.5	38.6	10.0
Total Stops	5	39	0	19	174	7	23	6	70	15	6	112
Travel Dist (mi)	4.4	74.1	1.2	1.7	29.6	1.1	1.4	0.4	4.5	1.4	0.6	10.7
Travel Time (hr)	0.2	2.4	0.0	0.2	2.4	0.1	0.4	0.1	0.4	0.3	0.1	0.8
Avg Speed (mph)	27	30	30	11	13	11	4	3	13	4	6	13
Fuel Used (gal)	0.2	3.3	0.0	0.1	1.2	0.0	0.1	0.0	0.1	0.1	0.0	0.4
HC Emissions (g)	1	57	0	0	14	0	0	0	3	0	0	2
CO Emissions (g)	89	2344	17	9	352	4	14	8	77	16	3	105
NOx Emissions (g)	6	196	1	1	47	0	1	0	9	1	0	8
Vehicles Entered	29	512	8	27	470	18	25	7	81	17	7	131
Vehicles Exited	28	508	8	26	469	18	25	8	82	17	7	129
Hourly Exit Rate	28	508	8	26	469	18	25	8	82	17	7	129
Input Volume	40	500	10	40	650	20	30	10	80	20	10	120
% of Volume	70	102	80	65	72	90	83	80	102	85	70	108
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

3: SR 161 #1 & Sawmill Pl Blvd Performance by movement

Movement	All
Total Delay (hr)	3.8
Delay / Veh (s)	10.2
Total Stops	476
Travel Dist (mi)	131.0
Travel Time (hr)	7.4
Avg Speed (mph)	18
Fuel Used (gal)	5.6
HC Emissions (g)	78
CO Emissions (g)	3038
NOx Emissions (g)	272
Vehicles Entered	1332
Vehicles Exited	1325
Hourly Exit Rate	1325
Input Volume	1530
% of Volume	87
Denied Entry Before	0
Denied Entry After	0

6: SR 161 #1 & Martin Rd Performance by movement

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Total Delay (hr)	0.3	1.6	0.0	0.4	1.4	0.0	0.3	0.1	0.2	0.2	0.2	0.1
Delay / Veh (s)	14.6	12.6	9.4	14.2	10.9	5.3	34.2	29.8	6.3	65.7	33.7	4.3
Total Stops	58	90	4	79	96	4	21	9	84	8	12	46
Travel Dist (mi)	20.2	111.2	4.7	16.0	69.8	4.9	1.4	0.8	4.5	0.3	0.7	2.4
Travel Time (hr)	0.9	4.4	0.2	0.9	3.2	0.2	0.3	0.2	0.4	0.2	0.2	0.2
Avg Speed (mph)	22	25	24	17	22	24	5	5	12	2	4	12
Fuel Used (gal)	0.9	5.3	0.2	0.7	3.9	0.2	0.1	0.0	0.2	0.0	0.1	0.1
HC Emissions (g)	7	81	2	5	69	6	0	0	2	0	0	0
CO Emissions (g)	453	3614	122	362	3109	194	30	7	59	2	11	9
NOx Emissions (g)	31	287	7	24	227	19	2	0	6	0	1	1
Vehicles Entered	83	456	19	110	471	33	29	16	93	8	17	57
Vehicles Exited	82	448	19	107	471	33	31	16	92	9	18	57
Hourly Exit Rate	82	448	19	107	471	33	31	16	92	9	18	57
Input Volume	70	440	20	130	610	40	20	10	90	20	20	70
% of Volume	117	102	95	82	77	82	155	160	102	45	90	81
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

6: SR 161 #1 & Martin Rd Performance by movement

Movement	All
Total Delay (hr)	4.8
Delay / Veh (s)	12.6
Total Stops	511
Travel Dist (mi)	237.1
Travel Time (hr)	11.3
Avg Speed (mph)	21
Fuel Used (gal)	11.8
HC Emissions (g)	173
CO Emissions (g)	7974
NOx Emissions (g)	605
Vehicles Entered	1392
Vehicles Exited	1383
Hourly Exit Rate	1383
Input Volume	1540
% of Volume	90
Denied Entry Before	0
Denied Entry After	0

9: SR 161 #1 & Federated Blvd Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBR	All
Total Delay (hr)	0.0	0.2	2.0	0.2	1.5	0.1	4.0
Delay / Veh (s)	3.7	1.4	12.9	10.6	36.3	5.8	10.0
Total Stops	11	0	0	0	148	75	234
Travel Dist (mi)	3.3	54.3	642.3	69.9	6.9	3.5	780.3
Travel Time (hr)	0.1	1.5	16.5	1.8	1.9	0.3	22.1
Avg Speed (mph)	24	39	39	38	4	12	35
Fuel Used (gal)	0.1	1.8	17.1	1.8	0.6	0.1	21.5
HC Emissions (g)	1	29	268	24	2	1	325
CO Emissions (g)	32	1031	6240	601	91	23	8018
NOx Emissions (g)	2	110	1070	102	10	2	1296
Vehicles Entered	36	585	549	54	148	75	1447
Vehicles Exited	36	587	543	55	150	75	1446
Hourly Exit Rate	36	587	543	55	150	75	1446
Input Volume	30	570	780	70	140	80	1670
% of Volume	120	103	70	79	107	94	87
Denied Entry Before	0	1	0	0	0	0	1
Denied Entry After	0	0	0	0	0	0	0

13: SR 161 #1 & RR Crossing Performance by movement

Movement	EBT	WBT	NBT	All
Total Delay (hr)	36.3	5.2	0.1	41.6
Delay / Veh (s)	180.9	29.9	349.6	110.6
Total Stops	1161	35	1	1197
Travel Dist (mi)	206.3	99.6	0.1	306.1
Travel Time (hr)	42.3	8.5	0.1	50.9
Avg Speed (mph)	5	12	1	6
Fuel Used (gal)	14.4	5.7	0.0	20.1
HC Emissions (g)	81	76	4	161
CO Emissions (g)	2081	2264	48	4393
NOx Emissions (g)	234	268	3	505
Vehicles Entered	747	635	1	1383
Vehicles Exited	698	627	1	1326
Hourly Exit Rate	698	627	1	1326
Input Volume	770	860	1	1631
% of Volume	91	73	100	81
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

17: SR 161 #1 & McVey Blvd Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBR	All
Total Delay (hr)	0.2	12.6	0.7	0.0	6.7	1.1	21.4
Delay / Veh (s)	85.8	62.4	4.4	3.4	234.8	142.3	51.8
Total Stops	9	369	0	0	46	14	438
Travel Dist (mi)	10.7	892.1	182.1	9.0	4.3	1.2	1099.5
Travel Time (hr)	0.5	32.9	6.0	0.3	6.9	1.2	47.8
Avg Speed (mph)	23	27	31	29	1	1	23
Fuel Used (gal)	0.3	24.6	5.0	0.2	1.7	0.3	32.0
HC Emissions (g)	1	303	59	6	0	0	370
CO Emissions (g)	35	6931	971	84	92	16	8129
NOx Emissions (g)	8	1246	189	15	4	1	1462
Vehicles Entered	8	729	598	29	108	30	1502
Vehicles Exited	9	721	585	29	99	29	1472
Hourly Exit Rate	9	721	585	29	99	29	1472
Input Volume	10	700	830	30	140	40	1750
% of Volume	90	103	70	97	71	72	84
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

19: SR 161 #1 & Linworth Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay (hr)	2.1	12.7	2.7	9.0	55.6	5.9	12.2	23.6	5.4	30.7	53.2	6.4
Delay / Veh (s)	171.1	108.9	99.8	689.2	382.5	330.8	470.5	438.5	465.7	639.1	674.7	724.1
Total Stops	82	473	107	179	1696	213	369	726	170	473	778	88
Travel Dist (mi)	7.0	66.0	15.2	24.1	259.1	32.1	26.9	56.7	12.5	50.6	82.9	9.4
Travel Time (hr)	2.3	14.7	3.2	10.2	68.6	7.5	13.1	25.6	5.9	32.5	56.0	6.8
Avg Speed (mph)	3	5	5	3	4	4	2	2	2	3	3	3
Fuel Used (gal)	0.7	4.7	1.0	2.9	21.3	2.4	3.7	7.2	1.6	8.5	14.6	1.7
HC Emissions (g)	1	26	7	1	122	11	9	18	18	43	42	20
CO Emissions (g)	46	613	156	181	2841	278	365	677	345	1017	1296	343
NOx Emissions (g)	4	70	17	12	305	29	35	56	33	85	94	29
Vehicles Entered	45	429	98	51	526	65	100	213	47	183	303	36
Vehicles Exited	44	413	95	44	520	64	87	175	38	163	265	28
Hourly Exit Rate	44	413	95	44	520	64	87	175	38	163	265	28
Input Volume	40	490	100	60	711	70	100	220	60	200	370	50
% of Volume	110	84	95	73	73	91	87	80	63	82	72	56
Denied Entry Before	0	0	0	0	0	0	1	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	3	0	34	72	8

19: SR 161 #1 & Linworth Rd Performance by movement

Movement	All
Total Delay (hr)	219.5
Delay / Veh (s)	392.0
Total Stops	5354
Travel Dist (mi)	642.5
Travel Time (hr)	246.4
Avg Speed (mph)	3
Fuel Used (gal)	70.3
HC Emissions (g)	316
CO Emissions (g)	8159
NOx Emissions (g)	769
Vehicles Entered	2096
Vehicles Exited	1936
Hourly Exit Rate	1936
Input Volume	2471
% of Volume	78
Denied Entry Before	1
Denied Entry After	117

24: SR 161 #1 & Olentangy River Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay (hr)	1.3	27.8	0.8	52.1	98.8	18.7	2.9	10.6	11.0	73.5	70.4	6.2
Delay / Veh (s)	162.7	200.3	97.7	749.6	642.3	576.5	234.2	233.7	151.9	1029.1	953.2	1020.9
Total Stops	41	412	25	458	562	103	90	328	478	378	390	34
Travel Dist (mi)	2.3	39.4	2.5	18.9	42.4	8.9	7.4	27.5	44.3	23.2	24.0	2.0
Travel Time (hr)	1.4	29.1	1.0	52.7	100.1	19.2	3.2	11.5	12.7	74.4	71.3	6.3
Avg Speed (mph)	3	4	4	2	4	6	3	3	5	2	2	2
Fuel Used (gal)	0.4	7.8	0.3	12.7	24.4	4.5	0.9	3.3	3.8	17.6	16.9	1.5
HC Emissions (g)	0	23	3	28	69	26	5	12	38	51	74	0
CO Emissions (g)	27	734	69	1011	2409	581	130	374	856	1507	1766	79
NOx Emissions (g)	2	66	8	49	131	29	14	35	84	71	92	2
Vehicles Entered	30	510	31	257	559	118	44	164	261	254	263	22
Vehicles Exited	29	490	31	243	549	116	45	162	260	259	268	22
Hourly Exit Rate	29	490	31	243	549	116	45	162	260	259	268	22
Input Volume	50	770	40	370	740	150	50	180	280	380	320	30
% of Volume	58	64	78	66	74	77	90	90	93	68	84	73
Denied Entry Before	0	0	0	4	4	3	0	0	0	1	0	0
Denied Entry After	2	61	1	89	212	38	0	0	0	127	111	7

24: SR 161 #1 & Olentangy River Rd Performance by movement

Movement	All
Total Delay (hr)	374.2
Delay / Veh (s)	540.4
Total Stops	3299
Travel Dist (mi)	242.9
Travel Time (hr)	382.8
Avg Speed (mph)	3
Fuel Used (gal)	94.1
HC Emissions (g)	328
CO Emissions (g)	9543
NOx Emissions (g)	582
Vehicles Entered	2513
Vehicles Exited	2474
Hourly Exit Rate	2474
Input Volume	3360
% of Volume	74
Denied Entry Before	12
Denied Entry After	648

Total Network Performance

Total Delay (hr)	766.4
Delay / Veh (s)	441.4
Total Stops	15165
Travel Dist (mi)	5307.2
Travel Time (hr)	932.2
Avg Speed (mph)	10
Fuel Used (gal)	351.9
HC Emissions (g)	2689
CO Emissions (g)	84642
NOx Emissions (g)	8679
Vehicles Entered	6440
Vehicles Exited	6060
Hourly Exit Rate	6060
Input Volume	27044
% of Volume	22
Denied Entry Before	14
Denied Entry After	805

Intersection: 2: Sawmill Rd & SR 161 #1

Movement	NB	NB	NB	NB	SB	SB	SB	SB	SB	SE	SE	SE
Directions Served	L	T	T	TR	L	T	T	T	R	L	L	T
Maximum Queue (ft)	164	225	294	293	127	224	241	253	71	113	127	305
Average Queue (ft)	93	139	151	200	62	135	152	167	42	34	35	156
95th Queue (ft)	152	212	236	269	118	202	214	225	69	81	86	273
Link Distance (ft)		803	803	803		812	812					595
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	360				400			480	480	270	270	
Storage Blk Time (%)												1
Queuing Penalty (veh)												1

Intersection: 2: Sawmill Rd & SR 161 #1

Movement	SE	NW	NW	NW	NW
Directions Served	R	L	T	T	R
Maximum Queue (ft)	41	139	216	231	34
Average Queue (ft)	4	35	56	61	2
95th Queue (ft)	19	84	134	145	12
Link Distance (ft)	595		1163	1163	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		950			180
Storage Blk Time (%)				0	
Queuing Penalty (veh)				0	

Intersection: 3: SR 161 #1 & Sawmill Pl Blvd

Movement	SE	SE	NW	NW	B16	NE	NE	SW	SW	SW
Directions Served	L	TR	L	TR	T	L	TR	L	T	R
Maximum Queue (ft)	24	109	174	368	86	73	74	73	47	93
Average Queue (ft)	4	33	17	151	5	24	38	16	7	43
95th Queue (ft)	18	78	72	340	35	55	65	49	28	79
Link Distance (ft)		702		275	454	289	289	430	430	430
Upstream Blk Time (%)				2						
Queuing Penalty (veh)				16						
Storage Bay Dist (ft)	250		150							
Storage Blk Time (%)				7						
Queuing Penalty (veh)				3						

Intersection: 6: SR 161 #1 & Martin Rd

Movement	SE	SE	NW	NW	NW	NE	NE	NE	SW	SW	SW
Directions Served	L	TR	L	T	TR	L	T	R	L	T	R
Maximum Queue (ft)	52	1274	139	107	96	94	53	72	30	52	72
Average Queue (ft)	31	310	42	46	49	24	10	37	10	13	26
95th Queue (ft)	58	1094	84	95	94	63	36	60	30	40	52
Link Distance (ft)		1163		702			257	257	228	228	228
Upstream Blk Time (%)		0									
Queuing Penalty (veh)		2									
Storage Bay Dist (ft)	300		280		380	170					
Storage Blk Time (%)											
Queuing Penalty (veh)											

Intersection: 9: SR 161 #1 & Federated Blvd

Movement	EB	SB	SB
Directions Served	L	L	R
Maximum Queue (ft)	53	160	52
Average Queue (ft)	8	81	30
95th Queue (ft)	32	146	43
Link Distance (ft)		244	244
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	200		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 13: SR 161 #1 & RR Crossing

Movement	EB	WB	NB
Directions Served	T	T	T
Maximum Queue (ft)	1596	770	49
Average Queue (ft)	1271	121	5
95th Queue (ft)	2208	565	27
Link Distance (ft)	1582	765	432
Upstream Blk Time (%)	26	12	
Queuing Penalty (veh)	197	100	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 17: SR 161 #1 & McVey Blvd

Movement	EB	SB	B18
Directions Served	LT	LR	T
Maximum Queue (ft)	2461	260	153
Average Queue (ft)	433	206	86
95th Queue (ft)	1509	312	178
Link Distance (ft)	6764	179	114
Upstream Blk Time (%)		71	67
Queuing Penalty (veh)		0	0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 19: SR 161 #1 & Linworth Rd

Movement	EB	EB	WB	WB	B30	B30	NB	NB	SB
Directions Served	L	TR	L	TR	T		L	TR	LTR
Maximum Queue (ft)	164	782	324	2645	394	376	174	1557	1576
Average Queue (ft)	62	559	125	2082	156	13	123	1102	1320
95th Queue (ft)	123	1073	289	3161	454	124	213	1874	1996
Link Distance (ft)		765		2570	376	376		1542	1537
Upstream Blk Time (%)		36		20	11	0		11	52
Queuing Penalty (veh)		227		165	45	0		0	0
Storage Bay Dist (ft)	150		300				150		
Storage Blk Time (%)	0	42		62			16	65	
Queuing Penalty (veh)	0	17		37			45	65	

Intersection: 24: SR 161 #1 & Olentangy River Rd

Movement	EB	EB	B30	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	T	L	T	TR	LT	R	L	TR
Maximum Queue (ft)	154	459	2585	324	428	424	906	205	225	514
Average Queue (ft)	36	381	836	307	408	322	554	160	203	495
95th Queue (ft)	114	584	2313	374	419	527	1109	268	266	505
Link Distance (ft)		376	2570		394	394	891			479
Upstream Blk Time (%)		41	1		43	9	20			55
Queuing Penalty (veh)		305	9		0	0	0			0
Storage Bay Dist (ft)	130			300				180	200	
Storage Blk Time (%)	0	52		38	20		40	11	33	49
Queuing Penalty (veh)	0	26		139	74		112	25	115	186

Network Summary

Network wide Queuing Penalty: 1911

Intersection: 13: SR 161 #1 & RR Crossing

Phase	2	4	6	8
Movement(s) Served	NBT	EBT	SBT	WBT
Maximum Green (s)	596.0	17.0	596.0	17.0
Minimum Green (s)	596.0	4.0	596.0	4.0
Recall	None	C-Max	None	C-Max
Avg. Green (s)	596.0	0.0	596.0	0.0
g/C Ratio	0.24	0.00	0.24	0.00
Cycles Skipped (%)	75	100	75	100
Cycles @ Minimum (%)	25	0	25	0
Cycles Maxed Out (%)	25	0	25	0
Cycles with Peds (%)	0	0	0	0

Controller Summary
Average Cycle Length (s): 621.0
Number of Complete Cycles : 4

Intersection: 19: SR 161 #1 & Linworth Rd

Phase	2	4	6	8
Movement(s) Served	NBTL	EBTL	SBTL	WBTL
Maximum Green (s)	24.0	59.0	47.0	59.0
Minimum Green (s)	4.0	4.0	4.0	4.0
Recall	None	None	None	None
Avg. Green (s)	23.9	58.1	47.0	58.1
g/C Ratio	0.16	0.39	0.32	0.39
Cycles Skipped (%)	0	0	0	0
Cycles @ Minimum (%)	0	0	0	0
Cycles Maxed Out (%)	96	96	100	96
Cycles with Peds (%)	0	0	0	0

Controller Summary
Average Cycle Length (s): 147.9
Number of Complete Cycles : 24

Summary of All Intervals

Start Time	4:57
End Time	6:00
Total Time (min)	63
Time Recorded (min)	60
# of Intervals	2
# of Recorded Intvls	1
Vehs Entered	9061
Vehs Exited	8431
Starting Vehs	288
Ending Vehs	918
Denied Entry Before	10
Denied Entry After	1102
Travel Distance (mi)	6423
Travel Time (hr)	1147.6
Total Delay (hr)	945.0
Total Stops	20712
Fuel Used (gal)	436.5

Interval #0 Information Seeding

Start Time	4:57
End Time	5:00
Total Time (min)	3

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	5:00
End Time	6:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Vehs Entered	9061
Vehs Exited	8431
Starting Vehs	288
Ending Vehs	918
Denied Entry Before	10
Denied Entry After	1102
Travel Distance (mi)	6423
Travel Time (hr)	1147.6
Total Delay (hr)	945.0
Total Stops	20712
Fuel Used (gal)	436.5

2: Sawmill Rd & SR 161#1 Performance by movement

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Total Delay (hr)	21.1	27.1	4.4	34.2	76.6	9.4	25.0	32.8	16.8	4.2	4.6	0.5
Delay / Veh (s)	265.1	93.4	83.3	715.8	265.1	183.0	281.0	267.3	173.0	77.8	31.7	13.5
Total Stops	657	1122	192	710	1596	175	492	612	326	214	320	70
Travel Dist (mi)	44.5	160.7	26.8	28.0	164.8	28.3	38.5	53.7	43.1	46.0	122.0	30.2
Travel Time (hr)	22.7	32.7	5.4	35.3	82.3	10.5	26.2	34.1	18.6	5.5	7.5	1.4
Avg Speed (mph)	2	7	7	1	5	15	4	4	13	8	16	21
Fuel Used (gal)	6.3	11.9	1.8	8.8	23.8	3.2	7.2	9.1	5.1	2.7	5.8	1.2
HC Emissions (g)	30	64	12	20	100	25	32	34	32	31	99	21
CO Emissions (g)	853	2344	350	747	3193	796	1004	982	1122	1357	4079	859
NOx Emissions (g)	71	233	38	45	303	63	81	87	63	97	303	64
Vehicles Entered	296	1048	194	188	1068	183	328	444	349	192	518	122
Vehicles Exited	276	1045	190	157	1012	184	313	440	349	194	520	125
Hourly Exit Rate	276	1045	190	157	1012	184	313	440	349	194	520	125
Input Volume	290	1060	180	210	1150	180	360	520	370	250	570	150
% of Volume	95	99	106	75	88	102	87	85	94	78	91	83
Denied Entry Before	0	0	0	0	1	0	1	0	0	0	0	0
Denied Entry After	5	16	3	19	111	19	20	37	27	0	0	0

2: Sawmill Rd & SR 161#1 Performance by movement

Movement	All
Total Delay (hr)	256.6
Delay / Veh (s)	189.8
Total Stops	6486
Travel Dist (mi)	786.6
Travel Time (hr)	282.2
Avg Speed (mph)	5
Fuel Used (gal)	86.9
HC Emissions (g)	500
CO Emissions (g)	17686
NOx Emissions (g)	1448
Vehicles Entered	4930
Vehicles Exited	4805
Hourly Exit Rate	4805
Input Volume	5290
% of Volume	91
Denied Entry Before	2
Denied Entry After	257

3: SR 161#1 & Sawmill Pl Blvd Performance by movement

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Total Delay (hr)	1.5	2.2	0.1	0.6	4.1	0.2	0.4	0.6	0.8	0.9	1.0	1.0
Delay / Veh (s)	35.2	12.4	8.9	30.3	21.5	20.7	68.4	49.2	25.1	89.0	55.1	18.5
Total Stops	108	183	9	78	257	14	20	34	95	34	52	163
Travel Dist (mi)	23.2	95.5	4.0	4.6	42.2	2.0	1.2	2.5	6.0	2.9	5.1	15.7
Travel Time (hr)	2.3	4.8	0.2	0.8	5.1	0.3	0.5	0.7	1.1	1.0	1.2	1.7
Avg Speed (mph)	10	20	19	7	10	10	3	4	6	3	4	9
Fuel Used (gal)	1.3	5.2	0.2	0.3	2.2	0.1	0.1	0.2	0.4	0.3	0.4	0.8
HC Emissions (g)	10	67	1	1	14	1	0	1	2	1	1	9
CO Emissions (g)	542	3125	66	29	401	26	13	39	90	38	85	282
NOx Emissions (g)	41	250	5	3	52	3	1	3	9	3	6	27
Vehicles Entered	157	646	27	76	694	35	22	45	109	35	61	189
Vehicles Exited	157	645	27	76	685	34	21	44	110	35	65	191
Hourly Exit Rate	157	645	27	76	685	34	21	44	110	35	65	191
Input Volume	160	700	40	100	830	50	20	50	110	40	60	200
% of Volume	98	92	68	76	83	68	105	88	100	88	108	96
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	2	0	0	0	0	0	0	0

3: SR 161#1 & Sawmill Pl Blvd Performance by movement

Movement	All
Total Delay (hr)	13.4
Delay / Veh (s)	23.0
Total Stops	1047
Travel Dist (mi)	204.8
Travel Time (hr)	19.5
Avg Speed (mph)	11
Fuel Used (gal)	11.4
HC Emissions (g)	108
CO Emissions (g)	4735
NOx Emissions (g)	403
Vehicles Entered	2096
Vehicles Exited	2090
Hourly Exit Rate	2090
Input Volume	2360
% of Volume	89
Denied Entry Before	0
Denied Entry After	2

6: SR 161#1 & Martin Rd Performance by movement

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Total Delay (hr)	1.9	3.4	0.1	2.5	2.6	0.2	1.0	1.3	1.1	0.9	1.0	0.4
Delay / Veh (s)	33.4	22.1	12.9	35.4	15.4	10.6	62.5	50.3	15.5	53.0	52.3	7.3
Total Stops	192	162	13	221	156	20	54	79	225	55	60	158
Travel Dist (mi)	51.0	129.6	9.2	37.3	87.0	10.8	2.7	4.7	12.9	2.6	3.1	7.7
Travel Time (hr)	3.4	6.7	0.4	3.7	4.8	0.6	1.1	1.5	1.8	1.0	1.2	0.8
Avg Speed (mph)	15	19	22	10	18	18	3	3	7	3	3	10
Fuel Used (gal)	2.4	6.3	0.4	2.0	4.9	0.5	0.3	0.5	0.7	0.3	0.4	0.3
HC Emissions (g)	17	94	8	20	68	7	2	3	2	0	1	4
CO Emissions (g)	983	3617	269	784	3171	245	80	99	121	30	50	93
NOx Emissions (g)	77	328	24	75	237	24	8	10	12	3	5	11
Vehicles Entered	207	545	35	259	601	75	54	96	264	61	72	178
Vehicles Exited	208	546	38	256	599	75	57	96	264	60	72	176
Hourly Exit Rate	208	546	38	256	599	75	57	96	264	60	72	176
Input Volume	220	640	50	280	730	80	50	90	250	60	80	190
% of Volume	95	85	76	91	82	94	114	107	106	100	90	93
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

6: SR 161#1 & Martin Rd Performance by movement

Movement	All
Total Delay (hr)	16.5
Delay / Veh (s)	24.2
Total Stops	1395
Travel Dist (mi)	358.6
Travel Time (hr)	27.0
Avg Speed (mph)	13
Fuel Used (gal)	18.9
HC Emissions (g)	228
CO Emissions (g)	9544
NOx Emissions (g)	813
Vehicles Entered	2447
Vehicles Exited	2447
Hourly Exit Rate	2447
Input Volume	2720
% of Volume	90
Denied Entry Before	0
Denied Entry After	0

9: SR 161#1 & Federated Blvd Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBR	All
Total Delay (hr)	0.7	0.3	3.0	0.4	1.5	0.3	6.2
Delay / Veh (s)	20.4	1.4	16.1	13.4	104.0	10.8	12.9
Total Stops	83	0	21	4	52	90	250
Travel Dist (mi)	12.5	64.5	780.7	124.7	2.4	4.2	989.0
Travel Time (hr)	1.2	1.7	20.6	3.3	1.6	0.5	28.9
Avg Speed (mph)	11	39	38	38	2	9	34
Fuel Used (gal)	0.4	2.3	20.5	3.2	0.4	0.2	27.0
HC Emissions (g)	4	32	233	35	0	1	305
CO Emissions (g)	119	1375	6171	931	39	35	8670
NOx Emissions (g)	11	123	1033	159	3	3	1331
Vehicles Entered	132	681	674	110	52	90	1739
Vehicles Exited	132	678	664	106	52	90	1722
Hourly Exit Rate	132	678	664	106	52	90	1722
Input Volume	140	740	830	160	50	90	2010
% of Volume	94	92	80	66	104	100	86
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

13: SR 161#1 & RR Crossing Performance by movement

Movement	EBT	WBT	NBT	All
Total Delay (hr)	27.5	5.5	0.1	33.1
Delay / Veh (s)	161.2	29.9	275.3	93.0
Total Stops	750	35	1	786
Travel Dist (mi)	187.9	105.0	0.1	292.9
Travel Time (hr)	33.0	8.9	0.1	42.0
Avg Speed (mph)	6	12	1	7
Fuel Used (gal)	11.4	6.1	0.0	17.5
HC Emissions (g)	64	56	0	121
CO Emissions (g)	1521	2171	0	3692
NOx Emissions (g)	175	218	0	394
Vehicles Entered	645	670	1	1316
Vehicles Exited	584	662	1	1247
Hourly Exit Rate	584	662	1	1247
Input Volume	780	910	1	1691
% of Volume	75	73	100	74
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

17: SR 161#1 & McVey Blvd Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBR	All
Total Delay (hr)	0.5	25.4	1.0	0.1	2.4	0.1	29.6
Delay / Veh (s)	81.9	136.4	6.2	5.0	660.1	10.8	74.6
Total Stops	29	876	0	1	17	22	945
Travel Dist (mi)	31.7	892.4	182.8	26.8	0.5	1.0	1135.1
Travel Time (hr)	1.3	45.7	6.3	1.0	2.4	0.1	56.8
Avg Speed (mph)	25	20	29	27	0	8	20
Fuel Used (gal)	0.9	26.7	4.8	0.7	0.6	0.0	33.7
HC Emissions (g)	3	211	41	2	0	0	258
CO Emissions (g)	87	4752	700	46	26	3	5613
NOx Emissions (g)	24	979	134	10	0	0	1148
Vehicles Entered	25	705	612	88	18	23	1471
Vehicles Exited	23	637	603	90	8	22	1383
Hourly Exit Rate	23	637	603	90	8	22	1383
Input Volume	30	760	820	140	20	20	1790
% of Volume	77	84	74	64	40	110	77
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

19: SR 161#1 & Linworth Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay (hr)	1.1	14.4	2.2	3.9	38.8	5.1	38.2	71.8	14.6	32.5	40.4	13.6
Delay / Veh (s)	164.9	117.1	105.0	364.3	233.3	271.9	917.4	888.7	975.1	806.1	795.3	728.6
Total Stops	47	539	90	127	1284	170	464	929	166	447	556	190
Travel Dist (mi)	3.9	69.3	12.0	19.8	270.5	33.5	42.8	85.7	15.5	43.2	53.3	19.6
Travel Time (hr)	1.2	16.5	2.6	4.9	52.3	6.9	39.7	74.7	15.2	34.0	42.2	14.3
Avg Speed (mph)	3	4	5	4	5	5	3	3	3	3	2	2
Fuel Used (gal)	0.4	5.1	0.8	1.5	17.8	2.3	10.1	19.0	3.8	8.6	10.8	3.6
HC Emissions (g)	3	21	4	1	86	14	15	61	2	21	29	21
CO Emissions (g)	60	571	96	112	2222	334	720	1755	215	716	925	458
NOx Emissions (g)	6	62	11	9	241	40	38	118	10	42	56	32
Vehicles Entered	25	451	77	44	619	74	157	309	57	155	194	71
Vehicles Exited	23	438	76	34	577	63	144	274	51	136	172	64
Hourly Exit Rate	23	438	76	34	577	63	144	274	51	136	172	64
Input Volume	40	610	90	60	750	100	210	440	70	190	280	70
% of Volume	58	72	84	57	77	63	69	62	73	72	61	91
Denied Entry Before	0	0	0	0	0	0	0	1	0	0	0	0
Denied Entry After	0	0	0	0	0	0	50	105	25	55	65	18

19: SR 161#1 & Linworth Rd Performance by movement

Movement	All
Total Delay (hr)	276.7
Delay / Veh (s)	465.1
Total Stops	5009
Travel Dist (mi)	669.0
Travel Time (hr)	304.6
Avg Speed (mph)	4
Fuel Used (gal)	83.8
HC Emissions (g)	278
CO Emissions (g)	8185
NOx Emissions (g)	664
Vehicles Entered	2233
Vehicles Exited	2052
Hourly Exit Rate	2052
Input Volume	2910
% of Volume	71
Denied Entry Before	1
Denied Entry After	318

24: SR 161#1 & Olentangy River Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay (hr)	0.3	10.5	0.4	30.5	71.6	46.0	5.1	33.3	18.5	39.2	30.4	4.4
Delay / Veh (s)	78.8	70.6	55.9	427.9	384.9	375.5	457.1	398.0	389.3	635.9	670.8	510.2
Total Stops	22	461	21	440	677	370	95	635	393	435	298	54
Travel Dist (mi)	1.1	43.4	2.2	19.4	51.2	33.8	6.7	50.7	28.7	20.0	14.9	2.8
Travel Time (hr)	0.3	11.9	0.5	31.3	73.2	47.6	5.3	35.0	19.6	40.0	30.9	4.5
Avg Speed (mph)	3	4	4	2	4	6	3	3	3	2	2	2
Fuel Used (gal)	0.1	3.9	0.2	7.8	18.3	11.6	1.4	9.2	5.2	9.7	7.3	1.1
HC Emissions (g)	0	14	0	20	50	30	1	42	20	31	51	6
CO Emissions (g)	8	439	14	695	1721	1035	85	1052	593	886	1007	142
NOx Emissions (g)	1	51	1	44	105	52	5	88	42	52	60	12
Vehicles Entered	13	544	27	262	677	442	42	305	178	220	165	32
Vehicles Exited	14	524	27	252	664	441	39	297	165	224	161	30
Hourly Exit Rate	14	524	27	252	664	441	39	297	165	224	161	30
Input Volume	20	810	40	320	820	550	60	380	200	250	210	30
% of Volume	70	65	68	79	81	80	65	78	82	90	77	100
Denied Entry Before	0	0	0	2	1	4	0	0	0	0	0	0
Denied Entry After	0	0	0	53	147	110	8	53	41	59	50	4

24: SR 161#1 & Olentangy River Rd Performance by movement

Movement	All
Total Delay (hr)	290.2
Delay / Veh (s)	363.8
Total Stops	3901
Travel Dist (mi)	274.7
Travel Time (hr)	300.1
Avg Speed (mph)	3
Fuel Used (gal)	75.7
HC Emissions (g)	265
CO Emissions (g)	7676
NOx Emissions (g)	515
Vehicles Entered	2907
Vehicles Exited	2838
Hourly Exit Rate	2838
Input Volume	3690
% of Volume	77
Denied Entry Before	7
Denied Entry After	525

Total Network Performance

Total Delay (hr)	945.0
Delay / Veh (s)	389.0
Total Stops	20712
Travel Dist (mi)	6423.4
Travel Time (hr)	1147.6
Avg Speed (mph)	9
Fuel Used (gal)	436.5
HC Emissions (g)	2963
CO Emissions (g)	101085
NOx Emissions (g)	9959
Vehicles Entered	9061
Vehicles Exited	8431
Hourly Exit Rate	8431
Input Volume	36072
% of Volume	23
Denied Entry Before	10
Denied Entry After	1102

Intersection: 2: Sawmill Rd & SR 161#1

Movement	NB	NB	NB	NB	SB	SB	SB	SB	SB	SE	SE	SE
Directions Served	L	T	T	TR	L	T	T	T	R	L	L	T
Maximum Queue (ft)	385	837	842	816	425	846	846	505	492	220	295	610
Average Queue (ft)	328	587	517	437	401	721	687	358	91	120	159	584
95th Queue (ft)	491	978	877	730	504	1039	1032	538	276	196	298	726
Link Distance (ft)		803	803	803		812	812					595
Upstream Blk Time (%)		23	1	0		35	6					30
Queuing Penalty (veh)		0	0	0		0	0					0
Storage Bay Dist (ft)	360				400			480	480	270	270	
Storage Blk Time (%)	47	1			73	0	3	2	0			45
Queuing Penalty (veh)	167	2			281	1	18	6	0			162

Intersection: 2: Sawmill Rd & SR 161#1

Movement	SE	NW	NW	NW	NW
Directions Served	R	L	T	T	R
Maximum Queue (ft)	610	452	215	281	205
Average Queue (ft)	139	175	103	125	30
95th Queue (ft)	409	370	180	214	126
Link Distance (ft)	595		1163	1163	
Upstream Blk Time (%)	1				
Queuing Penalty (veh)	0				
Storage Bay Dist (ft)		950			180
Storage Blk Time (%)				2	0
Queuing Penalty (veh)				2	0

Intersection: 3: SR 161#1 & Sawmill Pl Blvd

Movement	SE	SE	NW	NW	B16	NE	NE	SW	SW	SW
Directions Served	L	TR	L	TR	T	L	TR	L	T	R
Maximum Queue (ft)	197	325	174	350	474	71	204	116	93	245
Average Queue (ft)	81	150	44	251	65	24	93	40	49	73
95th Queue (ft)	164	258	110	414	286	58	173	87	87	149
Link Distance (ft)		702		275	454	289	289	430	430	430
Upstream Blk Time (%)				8	1					
Queuing Penalty (veh)				76	7					
Storage Bay Dist (ft)	250		150							
Storage Blk Time (%)		1	0	17						
Queuing Penalty (veh)		1	0	17						

Intersection: 6: SR 161#1 & Martin Rd

Movement	SE	SE	NW	NW	NW	NE	NE	NE	SW	SW	SW
Directions Served	L	TR	L	T	TR	L	T	R	L	T	R
Maximum Queue (ft)	245	1298	294	206	227	95	162	243	137	158	118
Average Queue (ft)	87	557	130	79	85	53	82	98	51	57	60
95th Queue (ft)	186	1457	230	154	157	96	158	188	98	127	98
Link Distance (ft)		1163		702			257	257	228	228	228
Upstream Blk Time (%)		1						0			
Queuing Penalty (veh)		7						0			
Storage Bay Dist (ft)	300		280		380	170					
Storage Blk Time (%)		0	1				0				
Queuing Penalty (veh)		0	4				0				

Intersection: 9: SR 161#1 & Federated Blvd

Movement	EB	WB	SB	SB
Directions Served	L	TR	L	R
Maximum Queue (ft)	198	227	211	95
Average Queue (ft)	54	18	60	39
95th Queue (ft)	139	96	138	72
Link Distance (ft)		6752	244	244
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	200			
Storage Blk Time (%)	1			
Queuing Penalty (veh)	5			

Intersection: 13: SR 161#1 & RR Crossing

Movement	EB	WB	NB
Directions Served	T	T	T
Maximum Queue (ft)	1597	772	54
Average Queue (ft)	872	131	4
95th Queue (ft)	2030	601	27
Link Distance (ft)	1582	765	432
Upstream Blk Time (%)	26	12	
Queuing Penalty (veh)	201	113	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 17: SR 161#1 & McVey Blvd

Movement	EB	WB	SB	SB	B18
Directions Served	LT	TR	L	R	T
Maximum Queue (ft)	2561	19	235	31	47
Average Queue (ft)	864	1	61	15	6
95th Queue (ft)	2468	6	206	39	29
Link Distance (ft)	6752	1582	178	178	114
Upstream Blk Time (%)			19		
Queuing Penalty (veh)			0		
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 19: SR 161#1 & Linworth Rd

Movement	EB	EB	WB	WB	B30	B30	NB	NB	SB
Directions Served	L	TR	L	TR	T		L	TR	LTR
Maximum Queue (ft)	94	782	324	2660	416	368	174	1567	1568
Average Queue (ft)	33	610	84	1623	115	12	118	1402	1221
95th Queue (ft)	78	1006	245	3081	393	121	214	1864	2011
Link Distance (ft)		765		2570	376	376		1533	1538
Upstream Blk Time (%)		29		17	9	0		49	46
Queuing Penalty (veh)		216		158	42	0		0	0
Storage Bay Dist (ft)	150		300				150		
Storage Blk Time (%)		52	0	62			17	61	
Queuing Penalty (veh)		21	0	37			87	128	

Intersection: 24: SR 161#1 & Olentangy River Rd

Movement	EB	EB	B30	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	T	L	T	TR	LT	R	L	TR
Maximum Queue (ft)	154	447	1568	325	428	410	906	205	224	494
Average Queue (ft)	18	416	542	296	406	376	802	131	217	479
95th Queue (ft)	68	543	1368	380	432	453	1105	246	245	563
Link Distance (ft)		376	2570		394	394	891			479
Upstream Blk Time (%)		44			28	8	44			59
Queuing Penalty (veh)		382			0	0	0			0
Storage Bay Dist (ft)	130			300				180	200	
Storage Blk Time (%)	0	54		17	29		67	1	58	36
Queuing Penalty (veh)	0	11		71	93		134	6	140	91

Network Summary

Network wide Queuing Penalty: 2688

Intersection: 13: SR 161#1 & RR Crossing

Phase	2	4	6	8
Movement(s) Served	NBT	EBT	SBT	WBT
Maximum Green (s)	596.0	17.0	596.0	17.0
Minimum Green (s)	596.0	4.0	596.0	4.0
Recall	None	C-Max	None	C-Max
Avg. Green (s)	596.0	0.0	596.0	0.0
g/C Ratio	0.19	0.00	0.19	0.00
Cycles Skipped (%)	80	100	80	100
Cycles @ Minimum (%)	20	0	20	0
Cycles Maxed Out (%)	20	0	20	0
Cycles with Peds (%)	0	0	0	0

Controller Summary
Average Cycle Length (s): 621.0
Number of Complete Cycles : 5

Intersection: 19: SR 161#1 & Linworth Rd

Phase	2	4	6	8
Movement(s) Served	NBTL	EBTL	SBTL	WBTL
Maximum Green (s)	38.0	54.0	38.0	54.0
Minimum Green (s)	4.0	4.0	4.0	4.0
Recall	None	None	None	None
Avg. Green (s)	38.0	52.9	38.0	52.9
g/C Ratio	0.26	0.36	0.26	0.36
Cycles Skipped (%)	0	0	0	0
Cycles @ Minimum (%)	0	0	0	0
Cycles Maxed Out (%)	100	96	100	96
Cycles with Peds (%)	0	0	0	0

Controller Summary
Average Cycle Length (s): 148.0
Number of Complete Cycles : 23

Sawmill Rd & SR 161

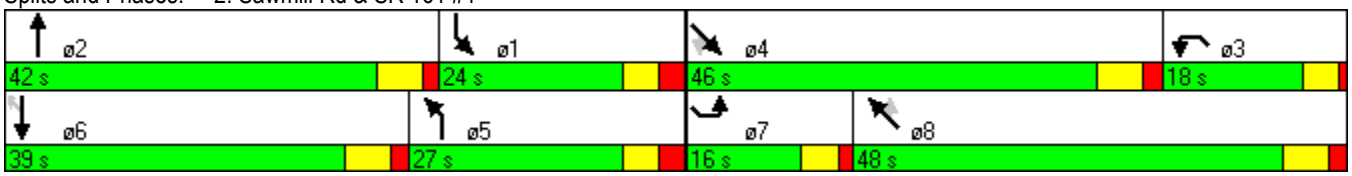
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	140	760	110	110	750	130	140	330	150	80	570	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	360		0	400		480	270		0	950		180
Storage Lanes	1		0	1		2	2		1	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	1.00	0.97	1.00	1.00	1.00	0.95	1.00
Frt		0.981				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	4989	0	1770	5085	1583	3433	1863	1583	1770	3539	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	4989	0	1770	5085	1583	3433	1863	1583	1770	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		20				141			163			65
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		874			921			715			1294	
Travel Time (s)		19.9			20.9			10.8			19.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	152	826	120	120	815	141	152	359	163	87	620	65
Shared Lane Traffic (%)												
Lane Group Flow (vph)	152	946	0	120	815	141	152	359	163	87	620	65
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane								Yes				
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases						6			4			8
Minimum Split (s)	10.3	22.5		10.3	22.5	22.5	9.6	22.5	22.5	9.6	22.5	22.5
Total Split (s)	27.0	42.0	0.0	24.0	39.0	39.0	16.0	46.0	46.0	18.0	48.0	48.0
Total Split (%)	20.8%	32.3%	0.0%	18.5%	30.0%	30.0%	12.3%	35.4%	35.4%	13.8%	36.9%	36.9%
Maximum Green (s)	20.7	35.9		17.7	32.9	32.9	11.0	39.6	39.6	13.5	41.6	41.6
Yellow Time (s)	3.6	4.5		3.6	4.5	4.5	3.6	4.5	4.5	3.6	4.5	4.5
All-Red Time (s)	2.7	1.6		2.7	1.6	1.6	1.4	1.9	1.9	0.9	1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.1	4.0	6.3	6.1	6.1	5.0	6.4	6.4	4.5	6.4	6.4
Lead/Lag	Lag	Lead		Lag	Lead	Lead	Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Act Effct Green (s)	20.7	35.9		17.7	32.9	32.9	11.0	39.6	39.6	13.5	41.6	41.6
Actuated g/C Ratio	0.16	0.28		0.14	0.25	0.25	0.08	0.30	0.30	0.10	0.32	0.32
v/c Ratio	0.54	0.68		0.50	0.63	0.28	0.52	0.63	0.27	0.47	0.55	0.12
Control Delay	58.2	43.9		59.9	45.8	7.5	64.0	44.9	6.0	49.9	25.0	1.9
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.2	43.9		59.9	45.8	7.5	64.0	44.9	6.0	49.9	25.0	1.9
LOS	E	D		E	D	A	E	D	A	D	C	A

Sawmill Rd & SR 161

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Approach Delay		45.9			42.4			39.8			25.9	
Approach LOS		D			D			D			C	

Intersection Summary	
Area Type:	Other
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 83 (64%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 70	
Control Type: Pretimed	
Maximum v/c Ratio: 0.68	
Intersection Signal Delay: 39.4	Intersection LOS: D
Intersection Capacity Utilization 64.4%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 2: Sawmill Rd & SR 161 #1



Sawmill Place Blvd & SR 161

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	30	490	10	40	670	20	20	10	80	20	10	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	150		0	0		0	0		0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.997			0.996			0.867				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1857	0	1770	1855	0	1770	1615	0	1770	1863	1583
Flt Permitted	0.321			0.355			0.750			0.647		
Satd. Flow (perm)	598	1857	0	661	1855	0	1397	1615	0	1205	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			2			87				130
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		794			358			324			467	
Travel Time (s)		12.0			5.4			7.4			10.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	533	11	43	728	22	22	11	87	22	11	130
Shared Lane Traffic (%)												
Lane Group Flow (vph)	33	544	0	43	750	0	22	98	0	22	11	130
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt			pm+pt			Perm			Perm		Perm
Protected Phases	1	6		5	2			4			8	
Permitted Phases	6			2			4			8		8
Minimum Split (s)	8.7	21.9		8.7	20.0		21.0	21.0		20.0	20.0	20.0
Total Split (s)	13.0	92.0	0.0	13.0	92.0	0.0	25.0	25.0	0.0	25.0	25.0	25.0
Total Split (%)	10.0%	70.8%	0.0%	10.0%	70.8%	0.0%	19.2%	19.2%	0.0%	19.2%	19.2%	19.2%
Maximum Green (s)	8.3	86.1		8.3	86.1		20.0	20.0		20.0	20.0	20.0
Yellow Time (s)	3.6	4.5		3.6	4.5		3.6	3.6		3.6	3.6	3.6
All-Red Time (s)	1.1	1.4		1.1	1.4		1.4	1.4		1.4	1.4	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	5.9	4.0	4.7	5.9	4.0	5.0	5.0	4.0	5.0	5.0	5.0
Lead/Lag	Lag	Lag		Lead	Lead							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Act Effct Green (s)	87.3	86.1		87.3	86.1		20.0	20.0		20.0	20.0	20.0
Actuated g/C Ratio	0.67	0.66		0.67	0.66		0.15	0.15		0.15	0.15	0.15
v/c Ratio	0.07	0.44		0.08	0.61		0.10	0.30		0.12	0.04	0.37
Control Delay	2.3	3.1		7.6	15.1		48.8	15.0		49.4	47.4	11.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	2.3	3.1		7.6	15.1		48.8	15.0		49.4	47.4	11.0
LOS	A	A		A	B		D	B		D	D	B

Sawmill Place Blvd & SR 161

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Approach Delay		3.1			14.7			21.2			18.6	
Approach LOS		A			B			C			B	

Intersection Summary	
Area Type:	Other
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 86 (66%), Referenced to phase 1:SEL and 5:NWL, Start of Green	
Natural Cycle: 65	
Control Type: Pretimed	
Maximum v/c Ratio: 0.61	
Intersection Signal Delay: 11.5	Intersection LOS: B
Intersection Capacity Utilization 60.5%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 3: SR 161 #1 & Sawmill Pl Blvd

Martin Rd & SR 161

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	70	470	20	130	640	40	20	10	90	20	10	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	280		380	170		0	0		0
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.994			0.991				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1852	0	1770	3507	0	1770	1863	1583	1770	1863	1583
Flt Permitted	0.324			0.348			0.750			0.750		
Satd. Flow (perm)	604	1852	0	648	3507	0	1397	1863	1583	1397	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			8				98			76
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1294			794			291			276	
Travel Time (s)		19.6			12.0			6.6			6.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	76	511	22	141	696	43	22	11	98	22	11	76
Shared Lane Traffic (%)												
Lane Group Flow (vph)	76	533	0	141	739	0	22	11	98	22	11	76
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane					Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6			2			4		4	8		8
Minimum Split (s)	8.0	22.0		8.0	22.0		8.0	21.4	21.4	8.0	21.4	21.4
Total Split (s)	11.0	76.0	0.0	17.0	82.0	0.0	10.0	27.0	27.0	10.0	27.0	27.0
Total Split (%)	8.5%	58.5%	0.0%	13.1%	63.1%	0.0%	7.7%	20.8%	20.8%	7.7%	20.8%	20.8%
Maximum Green (s)	7.0	70.0		13.0	76.0		6.0	21.6	21.6	6.0	21.6	21.6
Yellow Time (s)	3.5	5.0		3.5	5.0		3.5	3.6	3.6	3.5	3.6	3.6
All-Red Time (s)	0.5	1.0		0.5	1.0		0.5	1.8	1.8	0.5	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	4.0	4.0	6.0	4.0	4.0	5.4	5.4	4.0	5.4	5.4
Lead/Lag	Lag	Lead		Lag	Lead		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Act Effct Green (s)	79.0	70.0		89.0	76.0		29.0	21.6	21.6	29.0	21.6	21.6
Actuated g/C Ratio	0.61	0.54		0.68	0.58		0.22	0.17	0.17	0.22	0.17	0.17
v/c Ratio	0.18	0.53		0.25	0.36		0.07	0.04	0.28	0.07	0.04	0.23
Control Delay	5.5	7.1		3.4	6.2		37.4	46.0	11.1	37.4	46.0	11.9
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.5	7.1		3.4	6.2		37.4	46.0	11.1	37.4	46.0	11.9
LOS	A	A		A	A		D	D	B	D	D	B

Martin Rd & SR 161

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Approach Delay		6.9			5.7			18.4			20.5	
Approach LOS		A			A			B			C	

Intersection Summary	
Area Type:	Other
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 8 (6%), Referenced to phase 2:NWTL and 6:SETL, Start of Green	
Natural Cycle: 65	
Control Type: Pretimed	
Maximum v/c Ratio: 0.53	
Intersection Signal Delay: 8.0	Intersection LOS: A
Intersection Capacity Utilization 53.8%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: SR 161 #1 & Martin Rd

Federated Blvd & SR 161

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	30	600	670	70	140	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200			0	0	0
Storage Lanes	1			0	1	1
Taper Length (ft)	25			25	25	25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.987			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1863	1839	0	1770	1583
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1863	1839	0	1770	1583
Link Speed (mph)		45	45		30	
Link Distance (ft)		521	6835		281	
Travel Time (s)		7.9	103.6		6.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	652	728	76	152	87
Shared Lane Traffic (%)						
Lane Group Flow (vph)	33	652	804	0	152	87
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane		Yes	Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 53.9%	ICU Level of Service A
Analysis Period (min) 15	

Railroad Crossing & SR 161

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	670	0	0	950	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt												
Flt Protected												
Satd. Flow (prot)	0	1863	0	0	1863	0	0	950	0	0	1863	0
Flt Permitted												
Satd. Flow (perm)	0	1863	0	0	1863	0	0	950	0	0	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		1647			832			469			501	
Travel Time (s)		32.1			16.2			10.7			11.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	100%	2%	2%	2%	2%
Adj. Flow (vph)	0	728	0	0	1033	0	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	728	0	0	1033	0	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2			2			2			2	
Detector Template		Thru			Thru			Thru			Thru	
Leading Detector (ft)		100			100			100			100	
Trailing Detector (ft)		0			0			0			0	
Detector 1 Position(ft)		0			0			0			0	
Detector 1 Size(ft)		6			6			6			6	
Detector 1 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0			0.0			0.0			0.0	
Detector 1 Queue (s)		0.0			0.0			0.0			0.0	
Detector 1 Delay (s)		0.0			0.0			0.0			0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type												
Protected Phases		4			8			2			6	
Permitted Phases												
Detector Phase		4			8			2			6	
Switch Phase												
Minimum Initial (s)		4.0			4.0			180.0			180.0	

Railroad Crossing & SR 161

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)		20.0			20.0			184.0			184.0	
Total Split (s)	0.0	20.0	0.0	0.0	20.0	0.0	0.0	184.0	0.0	0.0	184.0	0.0
Total Split (%)	0.0%	9.8%	0.0%	0.0%	9.8%	0.0%	0.0%	90.2%	0.0%	0.0%	90.2%	0.0%
Maximum Green (s)		16.0			16.0			180.0			180.0	
Yellow Time (s)		3.5			3.5			3.5			3.5	
All-Red Time (s)		0.5			0.5			0.5			0.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Recall Mode		C-Max			C-Max			None			None	
Act Effct Green (s)		204.0			204.0							
Actuated g/C Ratio		1.00			1.00							
v/c Ratio		0.39			0.55							
Control Delay		0.6			1.2							
Queue Delay		0.0			0.0							
Total Delay		0.6			1.2							
LOS		A			A							
Approach Delay		0.6			1.2							
Approach LOS		A			A							

Intersection Summary

Area Type: Other
Cycle Length: 204
Actuated Cycle Length: 204
Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 205
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.55
Intersection Signal Delay: 1.0 Intersection LOS: A
Intersection Capacity Utilization 53.3% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 13: SR 161 #1 & RR Crossing

McVey Blvd & SR 161

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	10	680	870	20	140	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25			25	25	25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.997		0.976	
Flt Protected	0.950				0.961	
Satd. Flow (prot)	1770	1863	1857	0	1747	0
Flt Permitted	0.950				0.961	
Satd. Flow (perm)	1770	1863	1857	0	1747	0
Link Speed (mph)		45	35		30	
Link Distance (ft)		6835	1647		228	
Travel Time (s)		103.6	32.1		5.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	739	946	22	152	33
Shared Lane Traffic (%)						
Lane Group Flow (vph)	11	739	968	0	185	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane		Yes	Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 63.3%	ICU Level of Service B
Analysis Period (min) 15	

Linworth Rd & SR 161

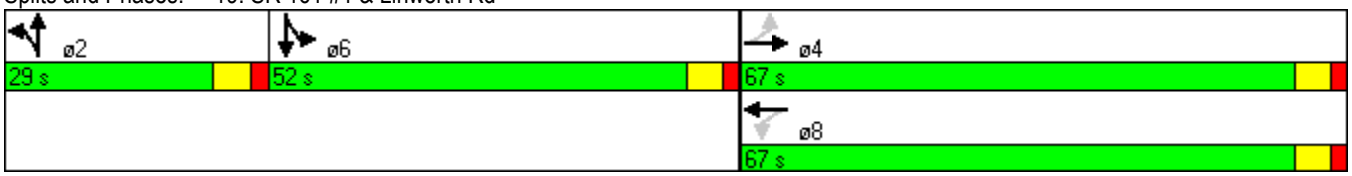
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	530	100	60	780	70	110	220	60	210	360	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	300		0	150		0	0		0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.976			0.988			0.968			0.987	
Flt Protected	0.950			0.950			0.950				0.984	
Satd. Flow (prot)	1770	1818	0	1770	1840	0	1770	1803	0	0	1809	0
Flt Permitted	0.066			0.090			0.950				0.984	
Satd. Flow (perm)	123	1818	0	168	1840	0	1770	1803	0	0	1809	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			4			8			4	
Link Speed (mph)		35			20			30			30	
Link Distance (ft)		832			2636			1579			1572	
Travel Time (s)		16.2			89.9			35.9			35.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	43	576	109	65	848	76	120	239	65	228	391	65
Shared Lane Traffic (%)												
Lane Group Flow (vph)	43	685	0	65	924	0	120	304	0	0	684	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm			Perm			Split			Split		
Protected Phases		4			8		2	2		6	6	
Permitted Phases	4			8								
Detector Phase	4	4		8	8		2	2		6	6	

Linworth Rd & SR 161

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	22.0	22.0		22.0	22.0		16.0	16.0		16.0	16.0	
Total Split (s)	67.0	67.0	0.0	67.0	67.0	0.0	29.0	29.0	0.0	52.0	52.0	0.0
Total Split (%)	45.3%	45.3%	0.0%	45.3%	45.3%	0.0%	19.6%	19.6%	0.0%	35.1%	35.1%	0.0%
Maximum Green (s)	61.0	61.0		61.0	61.0		23.0	23.0		46.0	46.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Act Effct Green (s)	61.0	61.0		61.0	61.0		23.0	23.0			46.0	
Actuated g/C Ratio	0.41	0.41		0.41	0.41		0.16	0.16			0.31	
v/c Ratio	0.84	0.91		0.94	1.21		0.44	1.06			1.21	
Control Delay	130.2	57.7		137.4	146.3		62.3	126.1			153.5	
Queue Delay	0.0	1.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	130.2	58.6		137.4	146.3		62.3	126.1			153.5	
LOS	F	E		F	F		E	F			F	
Approach Delay		62.9			145.7			108.1			153.5	
Approach LOS		E			F			F			F	

Intersection Summary	
Area Type: Other	
Cycle Length: 148	
Actuated Cycle Length: 148	
Natural Cycle: 150	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.21	
Intersection Signal Delay: 120.6	Intersection LOS: F
Intersection Capacity Utilization 114.3%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 19: SR 161 #1 & Linworth Rd



Olentangy River Rd & SR 161

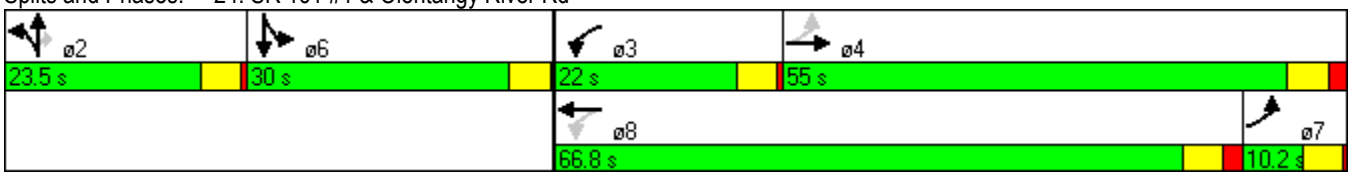
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	830	40	370	800	160	50	180	280	390	320	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	130		0	300		0	0		180	200		0
Storage Lanes	1		0	1		0	0		1	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.993			0.975				0.850		0.987	
Flt Protected	0.950			0.950				0.989		0.950		
Satd. Flow (prot)	1770	1850	0	1770	3451	0	0	1842	1583	1770	1839	0
Flt Permitted	0.258			0.092				0.989		0.950		
Satd. Flow (perm)	481	1850	0	171	3451	0	0	1842	1583	1770	1839	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			24				261		3	
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		438			441			925			526	
Travel Time (s)		8.5			8.6			21.0			12.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	902	43	402	870	174	54	196	304	424	348	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	54	945	0	402	1044	0	0	250	304	424	381	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt			pm+pt			Split		Perm	Split		
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases	4			8					2			
Minimum Split (s)	8.5	22.0		8.5	22.0		20.5	20.5	20.5	20.5	20.5	
Total Split (s)	10.2	55.0	0.0	22.0	66.8	0.0	23.5	23.5	23.5	30.0	30.0	0.0
Total Split (%)	7.8%	42.1%	0.0%	16.9%	51.2%	0.0%	18.0%	18.0%	18.0%	23.0%	23.0%	0.0%
Maximum Green (s)	5.7	49.0		17.5	60.8		19.0	19.0	19.0	25.5	25.5	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	0.5	2.0		0.5	2.0		0.5	0.5	0.5	0.5	0.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	6.0	4.0	4.5	6.0	4.0	4.5	4.5	4.5	4.5	4.5	4.0
Lead/Lag	Lag	Lag		Lead	Lead							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Act Effct Green (s)	50.5	49.0		62.3	60.8			19.0	19.0	25.5	25.5	
Actuated g/C Ratio	0.39	0.38		0.48	0.47			0.15	0.15	0.20	0.20	
v/c Ratio	0.22	1.36		1.36	0.64			0.93	0.67	1.23	1.05	
Control Delay	31.3	204.0		213.2	28.2			95.3	17.9	168.4	111.5	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay	31.3	204.0		213.2	28.2			95.3	17.9	168.4	111.5	
LOS	C	F		F	C			F	B	F	F	

Olentangy River Rd & SR 161

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		194.6			79.6			52.8			141.5	
Approach LOS		F			E			D			F	

Intersection Summary	
Area Type:	Other
Cycle Length: 130.5	
Actuated Cycle Length: 130.5	
Offset: 0 (0%), Referenced to phase 2:NBTL, Start of Green	
Natural Cycle: 140	
Control Type: Pretimed	
Maximum v/c Ratio: 1.36	
Intersection Signal Delay: 119.0	Intersection LOS: F
Intersection Capacity Utilization 116.7%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 24: SR 161 #1 & Olentangy River Rd



Sawmill Rd & SR 161

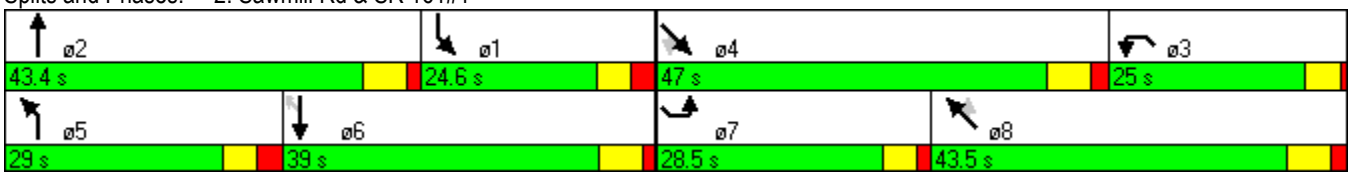
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	290	1050	180	220	1140	190	360	550	380	260	570	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	360		0	400		480	270		0	950		180
Storage Lanes	1		0	1		2	2		1	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	1.00	0.97	1.00	1.00	1.00	0.95	1.00
Frt		0.978				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	4973	0	1770	5085	1583	3433	1863	1583	1770	3539	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	4973	0	1770	5085	1583	3433	1863	1583	1770	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		23				207			275			143
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		874			921			715			1294	
Travel Time (s)		19.9			20.9			10.8			19.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	315	1141	196	239	1239	207	391	598	413	283	620	163
Shared Lane Traffic (%)												
Lane Group Flow (vph)	315	1337	0	239	1239	207	391	598	413	283	620	163
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane								Yes				
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases						6			4			8
Minimum Split (s)	11.9	25.2		11.9	25.2	25.2	11.2	22.5	22.5	11.2	22.5	22.5
Total Split (s)	29.0	43.4	0.0	24.6	39.0	39.0	28.5	47.0	47.0	25.0	43.5	43.5
Total Split (%)	20.7%	31.0%	0.0%	17.6%	27.9%	27.9%	20.4%	33.6%	33.6%	17.9%	31.1%	31.1%
Maximum Green (s)	22.7	37.3		18.3	32.9	32.9	23.5	40.6	40.6	20.5	37.1	37.1
Yellow Time (s)	3.6	4.5		3.6	4.5	4.5	3.6	4.5	4.5	3.6	4.5	4.5
All-Red Time (s)	2.7	1.6		2.7	1.6	1.6	1.4	1.9	1.9	0.9	1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.1	4.0	6.3	6.1	6.1	5.0	6.4	6.4	4.5	6.4	6.4
Lead/Lag	Lead	Lead		Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Act Effct Green (s)	22.7	37.3		18.3	32.9	32.9	23.5	40.6	40.6	20.5	37.1	37.1
Actuated g/C Ratio	0.16	0.27		0.13	0.24	0.24	0.17	0.29	0.29	0.15	0.26	0.26
v/c Ratio	1.10	1.00		1.03	1.04	0.39	0.68	1.11	0.63	1.09	0.66	0.31
Control Delay	134.9	73.8		126.6	87.7	7.7	61.4	117.1	18.5	124.5	37.2	7.2
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	134.9	73.8		126.6	87.7	7.7	61.4	117.1	18.5	124.5	37.2	7.2
LOS	F	E		F	F	A	E	F	B	F	D	A

Sawmill Rd & SR 161

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Approach Delay		85.4			83.4			72.5			55.8	
Approach LOS		F			F			E			E	

Intersection Summary	
Area Type:	Other
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 110 (79%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 130	
Control Type: Pretimed	
Maximum v/c Ratio: 1.11	
Intersection Signal Delay: 76.3	Intersection LOS: E
Intersection Capacity Utilization 100.9%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 2: Sawmill Rd & SR 161#1



Sawmill Place Blvd & SR 161

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	160	730	40	110	890	80	20	40	110	40	60	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	150		0	0		0	0		0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992			0.988			0.890				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1848	0	1770	1840	0	1770	1658	0	1770	1863	1583
Flt Permitted	0.113			0.183			0.715			0.375		
Satd. Flow (perm)	210	1848	0	341	1840	0	1332	1658	0	699	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			6			82				217
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		794			358			324			467	
Travel Time (s)		12.0			5.4			7.4			10.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	174	793	43	120	967	87	22	43	120	43	65	217
Shared Lane Traffic (%)												
Lane Group Flow (vph)	174	836	0	120	1054	0	22	163	0	43	65	217
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt			pm+pt			Perm			Perm		Perm
Protected Phases	1	6		5	2			4			8	
Permitted Phases	6			2			4			8		8
Minimum Split (s)	8.7	21.9		8.7	20.0		21.0	21.0		20.0	20.0	20.0
Total Split (s)	22.0	101.4	0.0	16.6	96.0	0.0	22.0	22.0	0.0	22.0	22.0	22.0
Total Split (%)	15.7%	72.4%	0.0%	11.9%	68.6%	0.0%	15.7%	15.7%	0.0%	15.7%	15.7%	15.7%
Maximum Green (s)	17.3	95.5		11.9	90.1		17.0	17.0		17.0	17.0	17.0
Yellow Time (s)	3.6	4.5		3.6	4.5		3.6	3.6		3.6	3.6	3.6
All-Red Time (s)	1.1	1.4		1.1	1.4		1.4	1.4		1.4	1.4	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	5.9	4.0	4.7	5.9	4.0	5.0	5.0	4.0	5.0	5.0	5.0
Lead/Lag	Lag	Lag		Lead	Lead							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Act Effct Green (s)	96.7	95.5		91.3	90.1		17.0	17.0		17.0	17.0	17.0
Actuated g/C Ratio	0.69	0.68		0.65	0.64		0.12	0.12		0.12	0.12	0.12
v/c Ratio	0.51	0.66		0.35	0.89		0.14	0.60		0.51	0.29	0.57
Control Delay	17.9	7.3		12.0	31.7		57.3	38.5		79.3	59.8	13.1
Queue Delay	0.0	0.2		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	17.9	7.5		12.0	31.7		57.3	38.5		79.3	59.8	13.1
LOS	B	A		B	C		E	D		E	E	B

Sawmill Place Blvd & SR 161

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Approach Delay		9.3			29.7			40.7			31.2	
Approach LOS		A			C			D			C	

Intersection Summary	
Area Type:	Other
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 65 (46%), Referenced to phase 1:SEL and 5:NWL, Start of Green	
Natural Cycle: 90	
Control Type: Pretimed	
Maximum v/c Ratio: 0.89	
Intersection Signal Delay: 23.0	Intersection LOS: C
Intersection Capacity Utilization 89.9%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 3: SR 161#1 & Sawmill Pl Blvd

Martin Rd & SR 161

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	230	630	50	280	780	80	50	90	250	60	80	190
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	280		380	170		0	0		0
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.989			0.986				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1842	0	1770	3490	0	1770	1863	1583	1770	1863	1583
Flt Permitted	0.255			0.148			0.678			0.644		
Satd. Flow (perm)	475	1842	0	276	3490	0	1263	1863	1583	1200	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			12				272			207
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1294			794			291			276	
Travel Time (s)		19.6			12.0			6.6			6.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	250	685	54	304	848	87	54	98	272	65	87	207
Shared Lane Traffic (%)												
Lane Group Flow (vph)	250	739	0	304	935	0	54	98	272	65	87	207
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane					Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6			2			4		4	8		8
Minimum Split (s)	8.0	22.0		8.0	22.0		8.0	21.4	21.4	8.0	21.4	21.4
Total Split (s)	23.0	77.0	0.0	29.0	83.0	0.0	8.0	26.0	26.0	8.0	26.0	26.0
Total Split (%)	16.4%	55.0%	0.0%	20.7%	59.3%	0.0%	5.7%	18.6%	18.6%	5.7%	18.6%	18.6%
Maximum Green (s)	19.0	71.0		25.0	77.0		4.0	20.6	20.6	4.0	20.6	20.6
Yellow Time (s)	3.5	5.0		3.5	5.0		3.5	3.6	3.6	3.5	3.6	3.6
All-Red Time (s)	0.5	1.0		0.5	1.0		0.5	1.8	1.8	0.5	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	4.0	4.0	6.0	4.0	4.0	5.4	5.4	4.0	5.4	5.4
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Act Effct Green (s)	92.0	71.0		102.0	77.0		26.0	20.6	20.6	26.0	20.6	20.6
Actuated g/C Ratio	0.66	0.51		0.73	0.55		0.19	0.15	0.15	0.19	0.15	0.15
v/c Ratio	0.51	0.79		0.65	0.49		0.22	0.36	0.58	0.27	0.32	0.51
Control Delay	5.6	6.9		28.2	6.9		47.9	58.0	11.4	49.3	57.1	11.3
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.6	6.9		28.2	6.9		47.9	58.0	11.4	49.3	57.1	11.3
LOS	A	A		C	A		D	E	B	D	E	B

Martin Rd & SR 161

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Approach Delay		6.6			12.1			26.8			29.3	
Approach LOS		A			B			C			C	

Intersection Summary	
Area Type:	Other
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 0 (0%), Referenced to phase 2:NWTL and 6:SETL, Start of Green	
Natural Cycle: 90	
Control Type: Pretimed	
Maximum v/c Ratio: 0.79	
Intersection Signal Delay: 14.4	Intersection LOS: B
Intersection Capacity Utilization 74.5%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 6: SR 161#1 & Martin Rd

Federated Blvd & SR 161

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	140	790	880	160	50	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200			0	0	0
Storage Lanes	1			0	1	1
Taper Length (ft)	25			25	25	25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.979			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1863	1824	0	1770	1583
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1863	1824	0	1770	1583
Link Speed (mph)		45	45		30	
Link Distance (ft)		521	6835		281	
Travel Time (s)		7.9	103.6		6.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	152	859	957	174	54	98
Shared Lane Traffic (%)						
Lane Group Flow (vph)	152	859	1131	0	54	98
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane		Yes	Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 77.1%	ICU Level of Service D
Analysis Period (min) 15	

Railroad Crossing & SR 161

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	800	0	0	980	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt												
Flt Protected												
Satd. Flow (prot)	0	1863	0	0	1863	0	0	950	0	0	1863	0
Flt Permitted												
Satd. Flow (perm)	0	1863	0	0	1863	0	0	950	0	0	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		1647			832			469			501	
Travel Time (s)		32.1			16.2			10.7			11.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	100%	2%	2%	2%	2%
Adj. Flow (vph)	0	870	0	0	1065	0	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	870	0	0	1065	0	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2			2			2			2	
Detector Template		Thru			Thru			Thru			Thru	
Leading Detector (ft)		100			100			100			100	
Trailing Detector (ft)		0			0			0			0	
Detector 1 Position(ft)		0			0			0			0	
Detector 1 Size(ft)		6			6			6			6	
Detector 1 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0			0.0			0.0			0.0	
Detector 1 Queue (s)		0.0			0.0			0.0			0.0	
Detector 1 Delay (s)		0.0			0.0			0.0			0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type												
Protected Phases		4			8			2			6	
Permitted Phases												
Detector Phase		4			8			2			6	
Switch Phase												
Minimum Initial (s)		4.0			4.0			180.0			180.0	

Railroad Crossing & SR 161

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)		20.0			20.0			184.0			184.0	
Total Split (s)	0.0	21.0	0.0	0.0	21.0	0.0	0.0	184.0	0.0	0.0	184.0	0.0
Total Split (%)	0.0%	10.2%	0.0%	0.0%	10.2%	0.0%	0.0%	89.8%	0.0%	0.0%	89.8%	0.0%
Maximum Green (s)		17.0			17.0			180.0			180.0	
Yellow Time (s)		3.5			3.5			3.5			3.5	
All-Red Time (s)		0.5			0.5			0.5			0.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Recall Mode		C-Max			C-Max			None			None	
Act Effct Green (s)		205.0			205.0							
Actuated g/C Ratio		1.00			1.00							
v/c Ratio		0.47			0.57							
Control Delay		0.8			1.3							
Queue Delay		0.0			0.0							
Total Delay		0.8			1.3							
LOS		A			A							
Approach Delay		0.8			1.3							
Approach LOS		A			A							

Intersection Summary

Area Type: Other
Cycle Length: 205
Actuated Cycle Length: 205
Offset: 184 (90%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 205
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.57
Intersection Signal Delay: 1.1 Intersection LOS: A
Intersection Capacity Utilization 54.9% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 13: SR 161#1 & RR Crossing

McVey Blvd & SR 161

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	30	820	880	140	20	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150			0	0	0
Storage Lanes	1			0	1	1
Taper Length (ft)	25			25	25	25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.981			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1863	1827	0	1770	1583
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1863	1827	0	1770	1583
Link Speed (mph)		45	35		30	
Link Distance (ft)		6835	1647		228	
Travel Time (s)		103.6	32.1		5.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	891	957	152	22	22
Shared Lane Traffic (%)						
Lane Group Flow (vph)	33	891	1109	0	22	22
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane		Yes	Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 64.8%	ICU Level of Service C
Analysis Period (min) 15	

Linworth Rd & SR 161

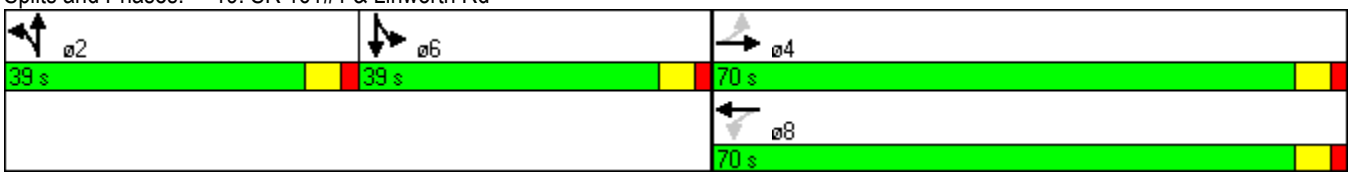
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	670	90	70	690	110	210	440	70	200	270	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	300		0	150		0	0		0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.982			0.979			0.979			0.980	
Flt Protected	0.950			0.950			0.950				0.982	
Satd. Flow (prot)	1770	1829	0	1770	1824	0	1770	1824	0	0	1793	0
Flt Permitted	0.062			0.062			0.950				0.982	
Satd. Flow (perm)	115	1829	0	115	1824	0	1770	1824	0	0	1793	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			7			5			5	
Link Speed (mph)		35			20			30			30	
Link Distance (ft)		832			2636			1571			1573	
Travel Time (s)		16.2			89.9			35.7			35.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	43	728	98	76	750	120	228	478	76	217	293	87
Shared Lane Traffic (%)												
Lane Group Flow (vph)	43	826	0	76	870	0	228	554	0	0	597	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm			Perm			Split			Split		
Protected Phases		4			8		2	2		6	6	
Permitted Phases	4			8								
Detector Phase	4	4		8	8		2	2		6	6	

Linworth Rd & SR 161

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	22.0	22.0		22.0	22.0		16.0	16.0		16.0	16.0	
Total Split (s)	70.0	70.0	0.0	70.0	70.0	0.0	39.0	39.0	0.0	39.0	39.0	0.0
Total Split (%)	47.3%	47.3%	0.0%	47.3%	47.3%	0.0%	26.4%	26.4%	0.0%	26.4%	26.4%	0.0%
Maximum Green (s)	64.0	64.0		64.0	64.0		33.0	33.0		33.0	33.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Act Effct Green (s)	64.0	64.0		64.0	64.0		33.0	33.0			33.0	
Actuated g/C Ratio	0.43	0.43		0.43	0.43		0.22	0.22			0.22	
v/c Ratio	0.86	1.04		1.52	1.10		0.58	1.35			1.48	
Control Delay	134.1	83.3		344.9	101.1		58.0	214.8			267.1	
Queue Delay	0.0	16.3		0.0	0.0		0.0	0.0			0.0	
Total Delay	134.1	99.7		344.9	101.1		58.0	214.8			267.1	
LOS	F	F		F	F		E	F			F	
Approach Delay		101.4			120.7			169.1			267.1	
Approach LOS		F			F			F			F	

Intersection Summary	
Area Type: Other	
Cycle Length: 148	
Actuated Cycle Length: 148	
Natural Cycle: 150	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.52	
Intersection Signal Delay: 154.6	Intersection LOS: F
Intersection Capacity Utilization 123.9%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 19: SR 161#1 & Linworth Rd



Olentangy River Rd & SR 161

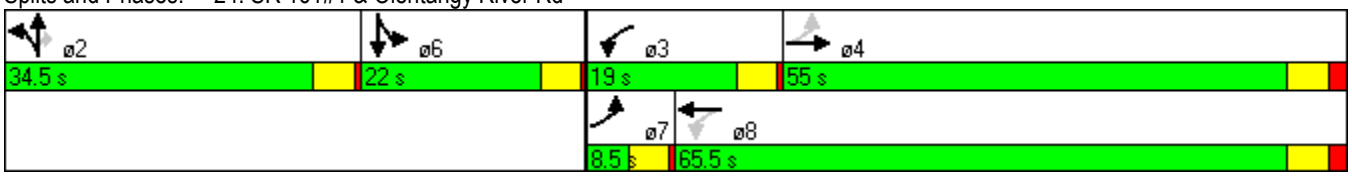
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	850	40	320	890	550	60	380	190	250	200	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	130		0	300		0	0		180	200		0
Storage Lanes	1		0	1		0	0		1	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.993			0.943				0.850		0.980	
Flt Protected	0.950			0.950				0.993		0.950		
Satd. Flow (prot)	1770	1850	0	1770	3337	0	0	1850	1583	1770	1825	0
Flt Permitted	0.082			0.075				0.993		0.950		
Satd. Flow (perm)	153	1850	0	140	3337	0	0	1850	1583	1770	1825	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			134				127		5	
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		438			441			925			526	
Travel Time (s)		8.5			8.6			21.0			12.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	924	43	348	967	598	65	413	207	272	217	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	967	0	348	1565	0	0	478	207	272	250	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt			pm+pt			Split		Perm	Split		
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases	4			8					2			
Minimum Split (s)	8.5	22.0		8.5	22.0		20.5	20.5	20.5	20.5	20.5	
Total Split (s)	8.5	55.0	0.0	19.0	65.5	0.0	34.5	34.5	34.5	22.0	22.0	0.0
Total Split (%)	6.5%	42.1%	0.0%	14.6%	50.2%	0.0%	26.4%	26.4%	26.4%	16.9%	16.9%	0.0%
Maximum Green (s)	4.0	49.0		14.5	59.5		30.0	30.0	30.0	17.5	17.5	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	0.5	2.0		0.5	2.0		0.5	0.5	0.5	0.5	0.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	6.0	4.0	4.5	6.0	4.0	4.5	4.5	4.5	4.5	4.5	4.0
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Act Effct Green (s)	54.5	49.0		69.5	59.5			30.0	30.0	17.5	17.5	
Actuated g/C Ratio	0.42	0.38		0.53	0.46			0.23	0.23	0.13	0.13	
v/c Ratio	0.19	1.39		1.36	0.98			1.12	0.45	1.15	1.00	
Control Delay	19.6	217.2		216.0	50.7			127.8	20.2	153.6	113.0	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay	19.6	217.2		216.0	50.7			127.8	20.2	153.6	113.0	
LOS	B	F		F	D			F	C	F	F	

Olentangy River Rd & SR 161

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		212.8			80.8			95.3			134.1	
Approach LOS		F			F			F			F	

Intersection Summary	
Area Type: Other	
Cycle Length: 130.5	
Actuated Cycle Length: 130.5	
Offset: 0 (0%), Referenced to phase 2:NBTL, Start of Green	
Natural Cycle: 150	
Control Type: Pretimed	
Maximum v/c Ratio: 1.39	
Intersection Signal Delay: 121.8	Intersection LOS: F
Intersection Capacity Utilization 118.3%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 24: SR 161#1 & Olentangy River Rd



Sawmill Rd & SR 161

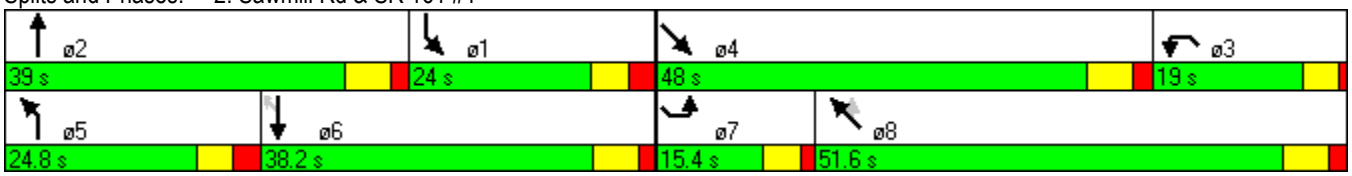
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	130	740	130	130	730	130	140	380	150	90	650	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	360		0	400		480	270		0	950		180
Storage Lanes	1		0	1		2	2		0	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	1.00	0.97	0.95	0.95	1.00	0.95	1.00
Frt		0.978				0.850		0.958				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	4973	0	1770	5085	1583	3433	3391	0	1770	3539	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	4973	0	1770	5085	1583	3433	3391	0	1770	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		26				141		47				71
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		874			921			715			1294	
Travel Time (s)		19.9			20.9			10.8			19.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	141	804	141	141	793	141	152	413	163	98	707	76
Shared Lane Traffic (%)												
Lane Group Flow (vph)	141	945	0	141	793	141	152	576	0	98	707	76
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane								Yes				
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot			Prot		Perm	Prot			Prot		Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases						6						8
Minimum Split (s)	10.3	22.5		10.3	22.5	22.5	9.6	22.5		9.6	22.5	22.5
Total Split (s)	24.8	39.0	0.0	24.0	38.2	38.2	15.4	48.0	0.0	19.0	51.6	51.6
Total Split (%)	19.1%	30.0%	0.0%	18.5%	29.4%	29.4%	11.8%	36.9%	0.0%	14.6%	39.7%	39.7%
Maximum Green (s)	18.5	32.9		17.7	32.1	32.1	10.4	41.6		14.5	45.2	45.2
Yellow Time (s)	3.6	4.5		3.6	4.5	4.5	3.6	4.5		3.6	4.5	4.5
All-Red Time (s)	2.7	1.6		2.7	1.6	1.6	1.4	1.9		0.9	1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.1	4.0	6.3	6.1	6.1	5.0	6.4	4.0	4.5	6.4	6.4
Lead/Lag	Lead	Lead		Lag	Lag	Lag	Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Act Effct Green (s)	18.5	32.9		17.7	32.1	32.1	10.4	41.6		14.5	45.2	45.2
Actuated g/C Ratio	0.14	0.25		0.14	0.25	0.25	0.08	0.32		0.11	0.35	0.35
v/c Ratio	0.56	0.74		0.59	0.63	0.28	0.55	0.52		0.50	0.57	0.13
Control Delay	61.4	47.5		63.4	46.3	7.6	65.7	34.8		44.3	18.0	1.3
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	61.4	47.5		63.4	46.3	7.6	65.7	34.8		44.3	18.0	1.3
LOS	E	D		E	D	A	E	C		D	B	A

Sawmill Rd & SR 161

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Approach Delay		49.3			43.5			41.3			19.5	
Approach LOS		D			D			D			B	

Intersection Summary	
Area Type: Other	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 103 (79%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 70	
Control Type: Pretimed	
Maximum v/c Ratio: 0.74	
Intersection Signal Delay: 39.1	Intersection LOS: D
Intersection Capacity Utilization 66.2%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 2: Sawmill Rd & SR 161 #1



Sawmill Place Blvd & SR 161

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	40	600	10	50	810	20	30	10	90	20	10	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	150		0	0		0	0		0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998			0.996			0.865				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3532	0	1770	3525	0	1770	1611	0	1770	1863	1583
Flt Permitted	0.316			0.308			0.750			0.651		
Satd. Flow (perm)	589	3532	0	574	3525	0	1397	1611	0	1213	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			3			98				141
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		794			358			324			467	
Travel Time (s)		12.0			5.4			7.4			10.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	43	652	11	54	880	22	33	11	98	22	11	141
Shared Lane Traffic (%)												
Lane Group Flow (vph)	43	663	0	54	902	0	33	109	0	22	11	141
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt			pm+pt			Perm			Perm		Perm
Protected Phases	1	6		5	2			4			8	
Permitted Phases	6			2			4			8		8
Minimum Split (s)	8.7	21.9		8.7	20.0		21.0	21.0		20.0	20.0	20.0
Total Split (s)	19.0	77.0	0.0	19.0	77.0	0.0	34.0	34.0	0.0	34.0	34.0	34.0
Total Split (%)	14.6%	59.2%	0.0%	14.6%	59.2%	0.0%	26.2%	26.2%	0.0%	26.2%	26.2%	26.2%
Maximum Green (s)	14.3	71.1		14.3	71.1		29.0	29.0		29.0	29.0	29.0
Yellow Time (s)	3.6	4.5		3.6	4.5		3.6	3.6		3.6	3.6	3.6
All-Red Time (s)	1.1	1.4		1.1	1.4		1.4	1.4		1.4	1.4	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	5.9	4.0	4.7	5.9	4.0	5.0	5.0	4.0	5.0	5.0	5.0
Lead/Lag	Lag	Lag		Lead	Lead							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Act Effct Green (s)	72.3	71.1		72.3	71.1		29.0	29.0		29.0	29.0	29.0
Actuated g/C Ratio	0.56	0.55		0.56	0.55		0.22	0.22		0.22	0.22	0.22
v/c Ratio	0.09	0.34		0.12	0.47		0.11	0.25		0.08	0.03	0.30
Control Delay	3.5	3.5		13.9	18.9		41.4	11.3		41.2	39.9	8.3
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	3.5	3.5		13.9	18.9		41.4	11.3		41.2	39.9	8.3
LOS	A	A		B	B		D	B		D	D	A

Sawmill Place Blvd & SR 161

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Approach Delay		3.5			18.6			18.3			14.4	
Approach LOS		A			B			B			B	

Intersection Summary	
Area Type:	Other
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 78 (60%), Referenced to phase 1:SEL and 5:NWL, Start of Green	
Natural Cycle: 55	
Control Type: Pretimed	
Maximum v/c Ratio: 0.47	
Intersection Signal Delay: 12.8	Intersection LOS: B
Intersection Capacity Utilization 47.7%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 3: SR 161 #1 & Sawmill Pl Blvd

Martin Rd & SR 161

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	70	560	20	140	760	40	20	10	90	20	10	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	280		0	170		0	0		0
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.995			0.993				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3522	0	1770	3514	0	1770	1863	1583	1770	1863	1583
Flt Permitted	0.302			0.323			0.750			0.750		
Satd. Flow (perm)	563	3522	0	602	3514	0	1397	1863	1583	1397	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			6				98			76
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1294			794			291			276	
Travel Time (s)		19.6			12.0			6.6			6.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	76	609	22	152	826	43	22	11	98	22	11	76
Shared Lane Traffic (%)												
Lane Group Flow (vph)	76	631	0	152	869	0	22	11	98	22	11	76
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane					Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6			2			4		4	8		8
Minimum Split (s)	8.0	22.0		8.0	22.0		8.0	21.4	21.4	8.0	21.4	21.4
Total Split (s)	14.0	66.0	0.0	24.0	76.0	0.0	10.0	30.0	30.0	10.0	30.0	30.0
Total Split (%)	10.8%	50.8%	0.0%	18.5%	58.5%	0.0%	7.7%	23.1%	23.1%	7.7%	23.1%	23.1%
Maximum Green (s)	10.0	60.0		20.0	70.0		6.0	24.6	24.6	6.0	24.6	24.6
Yellow Time (s)	3.5	5.0		3.5	5.0		3.5	3.6	3.6	3.5	3.6	3.6
All-Red Time (s)	0.5	1.0		0.5	1.0		0.5	1.8	1.8	0.5	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	4.0	4.0	6.0	4.0	4.0	5.4	5.4	4.0	5.4	5.4
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Act Effct Green (s)	72.0	60.0		86.0	70.0		32.0	24.6	24.6	32.0	24.6	24.6
Actuated g/C Ratio	0.55	0.46		0.66	0.54		0.25	0.19	0.19	0.25	0.19	0.19
v/c Ratio	0.19	0.39		0.26	0.46		0.06	0.03	0.26	0.06	0.03	0.21
Control Delay	3.2	10.1		5.2	8.2		35.1	43.5	10.2	35.1	43.5	11.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.2	10.1		5.2	8.2		35.1	43.5	10.2	35.1	43.5	11.0
LOS	A	B		A	A		D	D	B	D	D	B

Martin Rd & SR 161

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Approach Delay		9.3			7.7			17.1			19.1	
Approach LOS		A			A			B			B	

Intersection Summary	
Area Type:	Other
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 11 (8%), Referenced to phase 2:NWTL and 6:SETL, Start of Green	
Natural Cycle: 60	
Control Type: Pretimed	
Maximum v/c Ratio: 0.46	
Intersection Signal Delay: 9.6	Intersection LOS: A
Intersection Capacity Utilization 46.8%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: SR 161 #1 & Martin Rd

Federated Blvd & SR 161

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	30	740	820	70	150	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200			0	0	0
Storage Lanes	1			0	1	1
Taper Length (ft)	25			25	25	25
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.988			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	3539	3497	0	1770	1583
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	3539	3497	0	1770	1583
Link Speed (mph)		45	45		30	
Link Distance (ft)		521	6835		281	
Travel Time (s)		7.9	103.6		6.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	804	891	76	163	87
Shared Lane Traffic (%)						
Lane Group Flow (vph)	33	804	967	0	163	87
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane		Yes	Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 39.9%	ICU Level of Service A
Analysis Period (min) 15	

Railroad Crossing & SR 161

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	860	0	0	1200	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt												
Flt Protected												
Satd. Flow (prot)	0	3539	0	0	3539	0	0	950	0	0	1863	0
Flt Permitted												
Satd. Flow (perm)	0	3539	0	0	3539	0	0	950	0	0	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		1647			832			469			501	
Travel Time (s)		32.1			16.2			10.7			11.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	100%	2%	2%	2%	2%
Adj. Flow (vph)	0	935	0	0	1304	0	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	935	0	0	1304	0	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2			2			2			2	
Detector Template		Thru			Thru			Thru			Thru	
Leading Detector (ft)		100			100			100			100	
Trailing Detector (ft)		0			0			0			0	
Detector 1 Position(ft)		0			0			0			0	
Detector 1 Size(ft)		6			6			6			6	
Detector 1 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0			0.0			0.0			0.0	
Detector 1 Queue (s)		0.0			0.0			0.0			0.0	
Detector 1 Delay (s)		0.0			0.0			0.0			0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type												
Protected Phases		4			8			2			6	
Permitted Phases												
Detector Phase		4			8			2			6	
Switch Phase												
Minimum Initial (s)		4.0			4.0			180.0			180.0	

Railroad Crossing & SR 161

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)		20.0			20.0			184.0			184.0	
Total Split (s)	0.0	20.0	0.0	0.0	20.0	0.0	0.0	184.0	0.0	0.0	184.0	0.0
Total Split (%)	0.0%	9.8%	0.0%	0.0%	9.8%	0.0%	0.0%	90.2%	0.0%	0.0%	90.2%	0.0%
Maximum Green (s)		16.0			16.0			180.0			180.0	
Yellow Time (s)		3.5			3.5			3.5			3.5	
All-Red Time (s)		0.5			0.5			0.5			0.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Recall Mode		C-Max			C-Max			None			None	
Act Effct Green (s)		204.0			204.0							
Actuated g/C Ratio		1.00			1.00							
v/c Ratio		0.26			0.37							
Control Delay		0.2			0.3							
Queue Delay		0.0			0.0							
Total Delay		0.2			0.3							
LOS		A			A							
Approach Delay		0.2			0.3							
Approach LOS		A			A							

Intersection Summary	
Area Type: Other	
Cycle Length: 204	
Actuated Cycle Length: 204	
Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green	
Natural Cycle: 205	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.37	
Intersection Signal Delay: 0.2	Intersection LOS: A
Intersection Capacity Utilization 36.5%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 13: SR 161 #1 & RR Crossing

McVey Blvd & SR 161

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	10	860	1080	30	160	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25			25	25	25
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.996		0.978	
Flt Protected	0.950				0.960	
Satd. Flow (prot)	1770	3539	3525	0	1749	0
Flt Permitted	0.950				0.960	
Satd. Flow (perm)	1770	3539	3525	0	1749	0
Link Speed (mph)		45	35		30	
Link Distance (ft)		6835	1647		228	
Travel Time (s)		103.6	32.1		5.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	935	1174	33	174	33
Shared Lane Traffic (%)						
Lane Group Flow (vph)	11	935	1207	0	207	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane		Yes	Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 48.2%	ICU Level of Service A
Analysis Period (min) 15	

Linworth Rd & SR 161

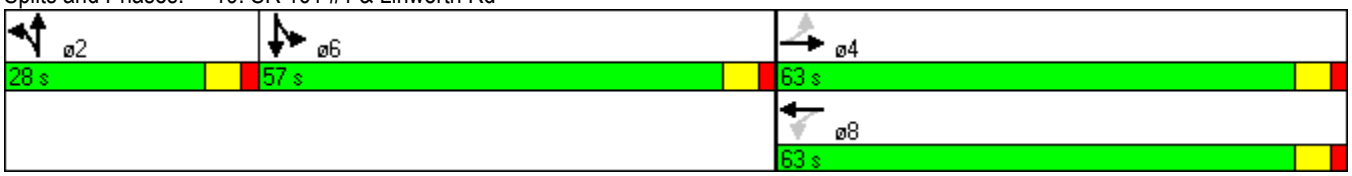
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	700	110	60	1010	80	120	200	60	230	330	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	300		0	150		0	0		0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.980			0.989			0.965			0.985	
Flt Protected	0.950			0.950			0.950				0.982	
Satd. Flow (prot)	1770	3468	0	1770	3500	0	1770	1798	0	0	1802	0
Flt Permitted	0.070			0.178			0.950				0.982	
Satd. Flow (perm)	130	3468	0	332	3500	0	1770	1798	0	0	1802	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		14			6			9			5	
Link Speed (mph)		35			20			30			30	
Link Distance (ft)		832			2636			1579			1572	
Travel Time (s)		16.2			89.9			35.9			35.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	761	120	65	1098	87	130	217	65	250	359	76
Shared Lane Traffic (%)												
Lane Group Flow (vph)	54	881	0	65	1185	0	130	282	0	0	685	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm			Perm			Split			Split		
Protected Phases		4			8		2	2		6	6	
Permitted Phases	4			8								
Detector Phase	4	4		8	8		2	2		6	6	

Linworth Rd & SR 161

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	22.0	22.0		22.0	22.0		16.0	16.0		16.0	16.0	
Total Split (s)	63.0	63.0	0.0	63.0	63.0	0.0	28.0	28.0	0.0	57.0	57.0	0.0
Total Split (%)	42.6%	42.6%	0.0%	42.6%	42.6%	0.0%	18.9%	18.9%	0.0%	38.5%	38.5%	0.0%
Maximum Green (s)	57.0	57.0		57.0	57.0		22.0	22.0		51.0	51.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Act Effct Green (s)	57.0	57.0		57.0	57.0		22.0	22.0			51.0	
Actuated g/C Ratio	0.39	0.39		0.39	0.39		0.15	0.15			0.34	
v/c Ratio	1.08	0.66		0.51	0.88		0.49	1.03			1.10	
Control Delay	196.1	39.6		51.6	50.6		65.1	119.4			110.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	196.1	39.6		51.6	50.6		65.1	119.4			110.2	
LOS	F	D		D	D		E	F			F	
Approach Delay		48.7			50.7			102.3			110.2	
Approach LOS		D			D			F			F	

Intersection Summary	
Area Type: Other	
Cycle Length: 148	
Actuated Cycle Length: 148	
Natural Cycle: 130	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.10	
Intersection Signal Delay: 69.0	Intersection LOS: E
Intersection Capacity Utilization 102.3%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 19: SR 161 #1 & Linworth Rd



Olentangy River Rd & SR 161

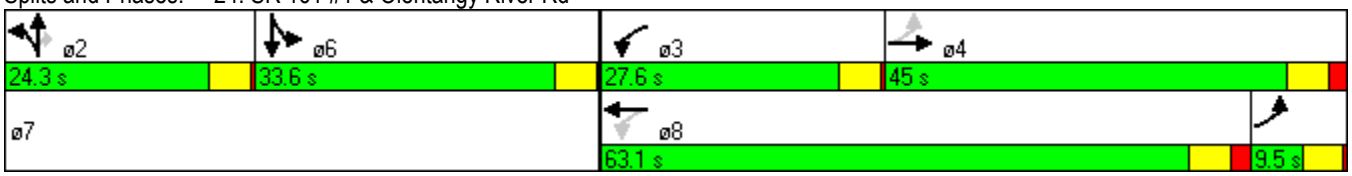
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	1030	60	370	990	150	60	170	290	380	300	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	130		0	300		0	0		180	200		0
Storage Lanes	1		0	1		0	0		1	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992			0.980				0.850		0.986	
Flt Protected	0.950			0.950				0.987		0.950		
Satd. Flow (prot)	1770	3511	0	1770	3468	0	0	1839	1583	1770	1837	0
Flt Permitted	0.174			0.118				0.987		0.950		
Satd. Flow (perm)	324	3511	0	220	3468	0	0	1839	1583	1770	1837	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			16				315		4	
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		438			441			925			526	
Travel Time (s)		8.5			8.6			21.0			12.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	65	1120	65	402	1076	163	65	185	315	413	326	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	65	1185	0	402	1239	0	0	250	315	413	359	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt			pm+pt			Split		Perm	Split		
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases	4			8					2			
Minimum Split (s)	8.5	22.0		8.5	22.0		20.5	20.5	20.5	20.5	20.5	
Total Split (s)	9.5	45.0	0.0	27.6	63.1	0.0	24.3	24.3	24.3	33.6	33.6	0.0
Total Split (%)	7.3%	34.5%	0.0%	21.1%	48.4%	0.0%	18.6%	18.6%	18.6%	25.7%	25.7%	0.0%
Maximum Green (s)	5.0	39.0		23.1	57.1		19.8	19.8	19.8	29.1	29.1	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	0.5	2.0		0.5	2.0		0.5	0.5	0.5	0.5	0.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	6.0	4.0	4.5	6.0	4.0	4.5	4.5	4.5	4.5	4.5	4.0
Lead/Lag	Lag	Lag		Lead	Lead							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Act Effct Green (s)	40.5	39.0		58.6	57.1			19.8	19.8	29.1	29.1	
Actuated g/C Ratio	0.31	0.30		0.45	0.44			0.15	0.15	0.22	0.22	
v/c Ratio	0.42	1.13		1.08	0.81			0.90	0.62	1.05	0.87	
Control Delay	50.3	110.8		105.1	36.8			87.3	11.1	106.5	70.1	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay	50.3	110.8		105.1	36.8			87.3	11.1	106.5	70.1	
LOS	D	F		F	D			F	B	F	E	

Olentangy River Rd & SR 161

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		107.7			53.6			44.8			89.6	
Approach LOS		F			D			D			F	

Intersection Summary	
Area Type: Other	
Cycle Length: 130.5	
Actuated Cycle Length: 130.5	
Offset: 0 (0%), Referenced to phase 2:NBTL, Start of Green	
Natural Cycle: 120	
Control Type: Pretimed	
Maximum v/c Ratio: 1.13	
Intersection Signal Delay: 75.0	Intersection LOS: E
Intersection Capacity Utilization 100.4%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 24: SR 161 #1 & Olentangy River Rd



Sawmill Rd & SR 161

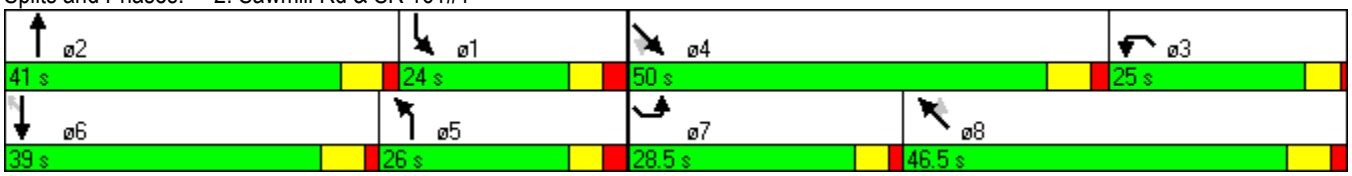
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	280	1020	210	250	1100	180	360	640	370	290	660	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	360		0	400		480	270		0	950		180
Storage Lanes	1		0	1		2	2		1	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	1.00	0.97	1.00	1.00	1.00	0.95	1.00
Frt		0.974				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	4953	0	1770	5085	1583	3433	1863	1583	1770	3539	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	4953	0	1770	5085	1583	3433	1863	1583	1770	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		30				196			237			154
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		874			921			715			1294	
Travel Time (s)		19.9			20.9			10.8			19.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	304	1109	228	272	1196	196	391	696	402	315	717	196
Shared Lane Traffic (%)												
Lane Group Flow (vph)	304	1337	0	272	1196	196	391	696	402	315	717	196
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane								Yes				
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases						6			4			8
Minimum Split (s)	11.9	25.2		11.9	25.2	25.2	11.2	22.5	22.5	11.2	22.5	22.5
Total Split (s)	26.0	41.0	0.0	24.0	39.0	39.0	28.5	50.0	50.0	25.0	46.5	46.5
Total Split (%)	18.6%	29.3%	0.0%	17.1%	27.9%	27.9%	20.4%	35.7%	35.7%	17.9%	33.2%	33.2%
Maximum Green (s)	19.7	34.9		17.7	32.9	32.9	23.5	43.6	43.6	20.5	40.1	40.1
Yellow Time (s)	3.6	4.5		3.6	4.5	4.5	3.6	4.5	4.5	3.6	4.5	4.5
All-Red Time (s)	2.7	1.6		2.7	1.6	1.6	1.4	1.9	1.9	0.9	1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.1	4.0	6.3	6.1	6.1	5.0	6.4	6.4	4.5	6.4	6.4
Lead/Lag	Lag	Lead		Lag	Lead	Lead	Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Act Effct Green (s)	19.7	34.9		17.7	32.9	32.9	23.5	43.6	43.6	20.5	40.1	40.1
Actuated g/C Ratio	0.14	0.25		0.13	0.24	0.24	0.17	0.31	0.31	0.15	0.29	0.29
v/c Ratio	1.22	1.06		1.21	1.00	0.38	0.68	1.20	0.61	1.22	0.71	0.35
Control Delay	178.9	92.7		180.1	79.4	7.7	61.4	147.5	20.5	155.0	25.2	2.4
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	178.9	92.7		180.1	79.4	7.7	61.4	147.5	20.5	155.0	25.2	2.4
LOS	F	F		F	E	A	E	F	C	F	C	A

Sawmill Rd & SR 161

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Approach Delay		108.7			87.4			90.6			54.8	
Approach LOS		F			F			F			D	

Intersection Summary	
Area Type: Other	
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 76 (54%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 140	
Control Type: Pretimed	
Maximum v/c Ratio: 1.22	
Intersection Signal Delay: 87.3	Intersection LOS: F
Intersection Capacity Utilization 107.4%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 2: Sawmill Rd & SR 161#1



Sawmill Place Blvd & SR 161

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	160	890	40	110	1070	50	20	40	120	50	50	210
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	150		0	0		0	0		0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.994			0.993			0.887				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3518	0	1770	3514	0	1770	1652	0	1770	1863	1583
Flt Permitted	0.188			0.164			0.722			0.480		
Satd. Flow (perm)	350	3518	0	305	3514	0	1345	1652	0	894	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			5			96				228
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		794			358			324			467	
Travel Time (s)		12.0			5.4			7.4			10.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	174	967	43	120	1163	54	22	43	130	54	54	228
Shared Lane Traffic (%)												
Lane Group Flow (vph)	174	1010	0	120	1217	0	22	173	0	54	54	228
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt			pm+pt			Perm			Perm		Perm
Protected Phases	1	6		5	2			4			8	
Permitted Phases	6			2			4			8		8
Minimum Split (s)	8.7	21.9		8.7	20.0		21.0	21.0		20.0	20.0	20.0
Total Split (s)	30.0	87.0	0.0	21.0	78.0	0.0	32.0	32.0	0.0	32.0	32.0	32.0
Total Split (%)	21.4%	62.1%	0.0%	15.0%	55.7%	0.0%	22.9%	22.9%	0.0%	22.9%	22.9%	22.9%
Maximum Green (s)	25.3	81.1		16.3	72.1		27.0	27.0		27.0	27.0	27.0
Yellow Time (s)	3.6	4.5		3.6	4.5		3.6	3.6		3.6	3.6	3.6
All-Red Time (s)	1.1	1.4		1.1	1.4		1.4	1.4		1.4	1.4	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	5.9	4.0	4.7	5.9	4.0	5.0	5.0	4.0	5.0	5.0	5.0
Lead/Lag	Lag	Lag		Lead	Lead							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Act Effct Green (s)	82.3	81.1		73.3	72.1		27.0	27.0		27.0	27.0	27.0
Actuated g/C Ratio	0.59	0.58		0.52	0.52		0.19	0.19		0.19	0.19	0.19
v/c Ratio	0.38	0.50		0.36	0.67		0.08	0.44		0.31	0.15	0.47
Control Delay	12.3	5.9		20.3	27.4		47.6	26.0		54.5	48.4	9.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	12.3	5.9		20.3	27.4		47.6	26.0		54.5	48.4	9.0
LOS	B	A		C	C		D	C		D	D	A

Sawmill Place Blvd & SR 161

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Approach Delay		6.8			26.7			28.4			22.7	
Approach LOS		A			C			C			C	

Intersection Summary	
Area Type:	Other
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 62 (44%), Referenced to phase 1:SEL and 5:NWL, Start of Green	
Natural Cycle: 60	
Control Type: Pretimed	
Maximum v/c Ratio: 0.67	
Intersection Signal Delay: 18.7	Intersection LOS: B
Intersection Capacity Utilization 70.0%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 3: SR 161#1 & Sawmill Pl Blvd

Martin Rd & SR 161

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	230	770	50	300	940	90	50	80	270	60	70	190
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	280		0	170		0	0		0
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.991			0.987				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3507	0	1770	3493	0	1770	1863	1583	1770	1863	1583
Flt Permitted	0.136			0.172			0.708			0.693		
Satd. Flow (perm)	253	3507	0	320	3493	0	1319	1863	1583	1291	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			9				293			207
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1294			794			291			276	
Travel Time (s)		19.6			12.0			6.6			6.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	250	837	54	326	1022	98	54	87	293	65	76	207
Shared Lane Traffic (%)												
Lane Group Flow (vph)	250	891	0	326	1120	0	54	87	293	65	76	207
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane					Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6			2			4		4	8		8
Minimum Split (s)	8.0	22.0		8.0	22.0		8.0	21.4	21.4	8.0	21.4	21.4
Total Split (s)	31.0	62.0	0.0	37.0	68.0	0.0	8.0	33.0	33.0	8.0	33.0	33.0
Total Split (%)	22.1%	44.3%	0.0%	26.4%	48.6%	0.0%	5.7%	23.6%	23.6%	5.7%	23.6%	23.6%
Maximum Green (s)	27.0	56.0		33.0	62.0		4.0	27.6	27.6	4.0	27.6	27.6
Yellow Time (s)	3.5	5.0		3.5	5.0		3.5	3.6	3.6	3.5	3.6	3.6
All-Red Time (s)	0.5	1.0		0.5	1.0		0.5	1.8	1.8	0.5	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	4.0	4.0	6.0	4.0	4.0	5.4	5.4	4.0	5.4	5.4
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Act Effct Green (s)	85.0	56.0		95.0	62.0		33.0	27.6	27.6	33.0	27.6	27.6
Actuated g/C Ratio	0.61	0.40		0.68	0.44		0.24	0.20	0.20	0.24	0.20	0.20
v/c Ratio	0.56	0.63		0.58	0.72		0.17	0.24	0.54	0.20	0.21	0.43
Control Delay	35.4	10.8		35.5	14.7		41.3	49.4	8.9	42.1	48.8	8.9
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.4	10.8		35.5	14.7		41.3	49.4	8.9	42.1	48.8	8.9
LOS	D	B		D	B		D	D	A	D	D	A

Martin Rd & SR 161

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Approach Delay		16.2			19.4			21.1			23.9	
Approach LOS		B			B			C			C	

Intersection Summary	
Area Type:	Other
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 8 (6%), Referenced to phase 2:NWTL and 6:SETL, Start of Green	
Natural Cycle: 75	
Control Type: Pretimed	
Maximum v/c Ratio: 0.72	
Intersection Signal Delay: 19.0	Intersection LOS: B
Intersection Capacity Utilization 64.4%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 6: SR 161#1 & Martin Rd

Federated Blvd & SR 161

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	140	940	1070	160	50	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200			0	0	0
Storage Lanes	1			0	1	1
Taper Length (ft)	25			25	25	25
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.980			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	3539	3468	0	1770	1583
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	3539	3468	0	1770	1583
Link Speed (mph)		45	45		30	
Link Distance (ft)		521	6835		281	
Travel Time (s)		7.9	103.6		6.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	152	1022	1163	174	54	98
Shared Lane Traffic (%)						
Lane Group Flow (vph)	152	1022	1337	0	54	98
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane		Yes	Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 55.8%	ICU Level of Service B
Analysis Period (min) 15	

Railroad Crossing & SR 161

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	1040	0	0	1240	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt												
Flt Protected												
Satd. Flow (prot)	0	3539	0	0	3539	0	0	950	0	0	1863	0
Flt Permitted												
Satd. Flow (perm)	0	3539	0	0	3539	0	0	950	0	0	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		1647			832			469			501	
Travel Time (s)		32.1			16.2			10.7			11.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	100%	2%	2%	2%	2%
Adj. Flow (vph)	0	1130	0	0	1348	0	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1130	0	0	1348	0	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2			2			2			2	
Detector Template		Thru			Thru			Thru			Thru	
Leading Detector (ft)		100			100			100			100	
Trailing Detector (ft)		0			0			0			0	
Detector 1 Position(ft)		0			0			0			0	
Detector 1 Size(ft)		6			6			6			6	
Detector 1 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0			0.0			0.0			0.0	
Detector 1 Queue (s)		0.0			0.0			0.0			0.0	
Detector 1 Delay (s)		0.0			0.0			0.0			0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type												
Protected Phases		4			8			2			6	
Permitted Phases												
Detector Phase		4			8			2			6	
Switch Phase												
Minimum Initial (s)		4.0			4.0			180.0			180.0	

Railroad Crossing & SR 161

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)		20.0			20.0			184.0			184.0	
Total Split (s)	0.0	21.0	0.0	0.0	21.0	0.0	0.0	184.0	0.0	0.0	184.0	0.0
Total Split (%)	0.0%	10.2%	0.0%	0.0%	10.2%	0.0%	0.0%	89.8%	0.0%	0.0%	89.8%	0.0%
Maximum Green (s)		17.0			17.0			180.0			180.0	
Yellow Time (s)		3.5			3.5			3.5			3.5	
All-Red Time (s)		0.5			0.5			0.5			0.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Recall Mode		C-Max			C-Max			None			None	
Act Effct Green (s)		205.0			205.0							
Actuated g/C Ratio		1.00			1.00							
v/c Ratio		0.32			0.38							
Control Delay		0.2			0.3							
Queue Delay		0.0			0.0							
Total Delay		0.2			0.3							
LOS		A			A							
Approach Delay		0.2			0.3							
Approach LOS		A			A							

Intersection Summary

Area Type: Other
Cycle Length: 205
Actuated Cycle Length: 205
Offset: 184 (90%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 205
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.38
Intersection Signal Delay: 0.3 Intersection LOS: A
Intersection Capacity Utilization 37.6% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 13: SR 161#1 & RR Crossing

McVey Blvd & SR 161

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	30	1030	1090	160	20	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25			25	25	25
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.981		0.932	
Flt Protected	0.950				0.976	
Satd. Flow (prot)	1770	3539	3472	0	1694	0
Flt Permitted	0.950				0.976	
Satd. Flow (perm)	1770	3539	3472	0	1694	0
Link Speed (mph)		45	35		30	
Link Distance (ft)		6835	1647		228	
Travel Time (s)		103.6	32.1		5.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	1120	1185	174	22	22
Shared Lane Traffic (%)						
Lane Group Flow (vph)	33	1120	1359	0	44	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane		Yes	Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 45.2%	ICU Level of Service A
Analysis Period (min) 15	

Linworth Rd & SR 161

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	890	100	70	910	120	230	410	60	220	250	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	300		0	150		0	0		0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.985			0.983			0.981			0.976	
Flt Protected	0.950			0.950			0.950				0.981	
Satd. Flow (prot)	1770	3486	0	1770	3479	0	1770	1827	0	0	1783	0
Flt Permitted	0.073			0.088			0.950				0.981	
Satd. Flow (perm)	136	3486	0	164	3479	0	1770	1827	0	0	1783	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			11			5			7	
Link Speed (mph)		35			20			30			30	
Link Distance (ft)		832			2636			1571			1573	
Travel Time (s)		16.2			89.9			35.7			35.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	967	109	76	989	130	250	446	65	239	272	109
Shared Lane Traffic (%)												
Lane Group Flow (vph)	54	1076	0	76	1119	0	250	511	0	0	620	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm			Perm			Split			Split		
Protected Phases		4			8		2	2		6	6	
Permitted Phases	4			8								
Detector Phase	4	4		8	8		2	2		6	6	

Linworth Rd & SR 161

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	22.0	22.0		22.0	22.0		16.0	16.0		16.0	16.0	
Total Split (s)	61.0	61.0	0.0	61.0	61.0	0.0	41.0	41.0	0.0	46.0	46.0	0.0
Total Split (%)	41.2%	41.2%	0.0%	41.2%	41.2%	0.0%	27.7%	27.7%	0.0%	31.1%	31.1%	0.0%
Maximum Green (s)	55.0	55.0		55.0	55.0		35.0	35.0		40.0	40.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Act Effct Green (s)	55.0	55.0		55.0	55.0		35.0	35.0			40.0	
Actuated g/C Ratio	0.37	0.37		0.37	0.37		0.24	0.24			0.27	
v/c Ratio	1.06	0.83		1.25	0.86		0.60	1.17			1.27	
Control Delay	189.8	48.4		235.2	50.6		57.1	147.3			181.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	189.8	48.4		235.2	50.6		57.1	147.3			181.1	
LOS	F	D		F	D		E	F			F	
Approach Delay		55.1			62.3			117.6			181.1	
Approach LOS		E			E			F			F	

Intersection Summary	
Area Type: Other	
Cycle Length: 148	
Actuated Cycle Length: 148	
Natural Cycle: 120	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.27	
Intersection Signal Delay: 91.4	Intersection LOS: F
Intersection Capacity Utilization 108.9%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 19: SR 161#1 & Linworth Rd

Olentangy River Rd & SR 161

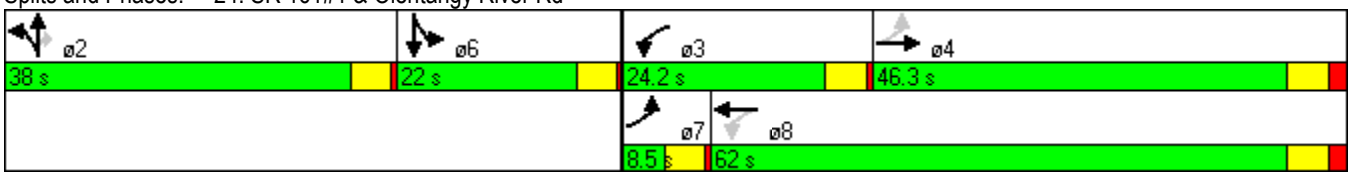
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	1030	40	320	1090	540	70	360	190	240	190	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	130		0	300		0	0		180	200		0
Storage Lanes	1		0	1		0	0		1	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.994			0.950				0.850		0.979	
Flt Protected	0.950			0.950				0.992		0.950		
Satd. Flow (prot)	1770	3518	0	1770	3362	0	0	1848	1583	1770	1824	0
Flt Permitted	0.099			0.089				0.992		0.950		
Satd. Flow (perm)	184	3518	0	166	3362	0	0	1848	1583	1770	1824	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			82				135		5	
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		438			441			925			526	
Travel Time (s)		8.5			8.6			21.0			12.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	1120	43	348	1185	587	76	391	207	261	207	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	33	1163	0	348	1772	0	0	467	207	261	240	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt			pm+pt			Split		Perm	Split		
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases	4			8					2			
Minimum Split (s)	8.5	22.0		8.5	22.0		20.5	20.5	20.5	20.5	20.5	
Total Split (s)	8.5	46.3	0.0	24.2	62.0	0.0	38.0	38.0	38.0	22.0	22.0	0.0
Total Split (%)	6.5%	35.5%	0.0%	18.5%	47.5%	0.0%	29.1%	29.1%	29.1%	16.9%	16.9%	0.0%
Maximum Green (s)	4.0	40.3		19.7	56.0		33.5	33.5	33.5	17.5	17.5	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	0.5	2.0		0.5	2.0		0.5	0.5	0.5	0.5	0.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	6.0	4.0	4.5	6.0	4.0	4.5	4.5	4.5	4.5	4.5	4.0
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Act Effct Green (s)	45.8	40.3		66.0	56.0			33.5	33.5	17.5	17.5	
Actuated g/C Ratio	0.35	0.31		0.51	0.43			0.26	0.26	0.13	0.13	
v/c Ratio	0.29	1.07		1.07	1.19			0.99	0.41	1.10	0.96	
Control Delay	25.1	90.6		105.5	125.1			86.1	17.1	139.6	103.4	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay	25.1	90.6		105.5	125.1			86.1	17.1	139.6	103.4	
LOS	C	F		F	F			F	B	F	F	

Olentangy River Rd & SR 161

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		88.8			121.9			64.9			122.3	
Approach LOS		F			F			E			F	

Intersection Summary	
Area Type: Other	
Cycle Length: 130.5	
Actuated Cycle Length: 130.5	
Offset: 0 (0%), Referenced to phase 2:NBTL, Start of Green	
Natural Cycle: 150	
Control Type: Pretimed	
Maximum v/c Ratio: 1.19	
Intersection Signal Delay: 104.6	Intersection LOS: F
Intersection Capacity Utilization 103.1%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 24: SR 161#1 & Olentangy River Rd



Sawmill Rd & SR 161

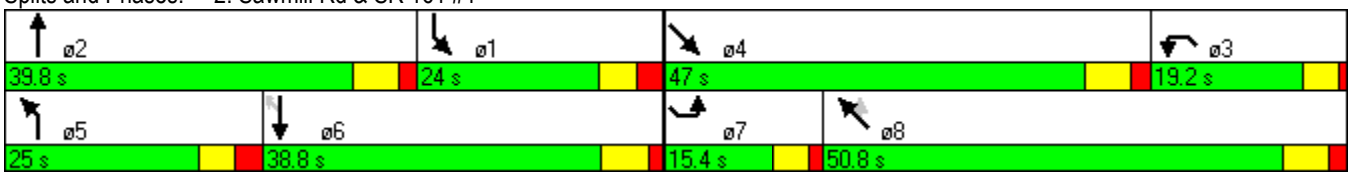
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	130	750	120	120	740	130	140	360	150	90	630	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	360		0	400		480	270		0	950		180
Storage Lanes	1		0	1		2	2		0	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	1.00	0.97	0.95	0.95	1.00	0.95	1.00
Frt		0.979				0.850		0.956				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	4979	0	1770	5085	1583	3433	3383	0	1770	3539	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	4979	0	1770	5085	1583	3433	3383	0	1770	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		22				141		51				73
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		874			921			715			1294	
Travel Time (s)		19.9			20.9			10.8			19.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	141	815	130	130	804	141	152	391	163	98	685	76
Shared Lane Traffic (%)												
Lane Group Flow (vph)	141	945	0	130	804	141	152	554	0	98	685	76
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane								Yes				
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot			Prot		Perm	Prot			Prot		Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases						6						8
Minimum Split (s)	10.3	22.5		10.3	22.5	22.5	9.6	22.5		9.6	22.5	22.5
Total Split (s)	25.0	39.8	0.0	24.0	38.8	38.8	15.4	47.0	0.0	19.2	50.8	50.8
Total Split (%)	19.2%	30.6%	0.0%	18.5%	29.8%	29.8%	11.8%	36.2%	0.0%	14.8%	39.1%	39.1%
Maximum Green (s)	18.7	33.7		17.7	32.7	32.7	10.4	40.6		14.7	44.4	44.4
Yellow Time (s)	3.6	4.5		3.6	4.5	4.5	3.6	4.5		3.6	4.5	4.5
All-Red Time (s)	2.7	1.6		2.7	1.6	1.6	1.4	1.9		0.9	1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.1	4.0	6.3	6.1	6.1	5.0	6.4	4.0	4.5	6.4	6.4
Lead/Lag	Lead	Lead		Lag	Lag	Lag	Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Act Effct Green (s)	18.7	33.7		17.7	32.7	32.7	10.4	40.6		14.7	44.4	44.4
Actuated g/C Ratio	0.14	0.26		0.14	0.25	0.25	0.08	0.31		0.11	0.34	0.34
v/c Ratio	0.55	0.72		0.54	0.63	0.28	0.55	0.51		0.49	0.57	0.13
Control Delay	60.9	46.6		61.5	45.8	7.5	65.7	34.9		45.2	19.8	1.1
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	60.9	46.6		61.5	45.8	7.5	65.7	34.9		45.2	19.8	1.1
LOS	E	D		E	D	A	E	C		D	B	A

Sawmill Rd & SR 161

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Approach Delay		48.4			42.7			41.5			21.0	
Approach LOS		D			D			D			C	

Intersection Summary	
Area Type: Other	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 97 (75%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 70	
Control Type: Pretimed	
Maximum v/c Ratio: 0.72	
Intersection Signal Delay: 39.1	Intersection LOS: D
Intersection Capacity Utilization 65.1%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 2: Sawmill Rd & SR 161 #1



Sawmill Place Blvd & SR 161

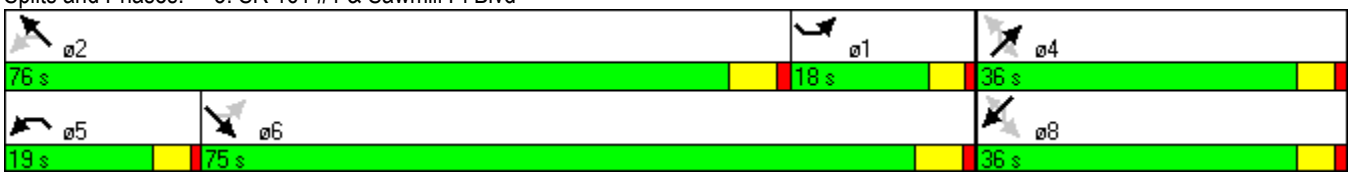
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	30	570	10	50	770	20	30	10	90	20	10	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	150		0	0		0	0		0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00
Frt		0.997			0.996				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3529	0	1770	3525	0	1770	3539	1583	1770	1863	1583
Flt Permitted	0.330			0.319			0.750			0.750		
Satd. Flow (perm)	615	3529	0	594	3525	0	1397	3539	1583	1397	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			3				98			141
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		794			358			324			467	
Travel Time (s)		12.0			5.4			7.4			10.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	620	11	54	837	22	33	11	98	22	11	141
Shared Lane Traffic (%)												
Lane Group Flow (vph)	33	631	0	54	859	0	33	11	98	22	11	141
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt			pm+pt			Perm		Perm	Perm		Perm
Protected Phases	1	6		5	2			4			8	
Permitted Phases	6			2			4		4	8		8
Minimum Split (s)	8.7	21.9		8.7	20.0		21.0	21.0	21.0	20.0	20.0	20.0
Total Split (s)	18.0	75.0	0.0	19.0	76.0	0.0	36.0	36.0	36.0	36.0	36.0	36.0
Total Split (%)	13.8%	57.7%	0.0%	14.6%	58.5%	0.0%	27.7%	27.7%	27.7%	27.7%	27.7%	27.7%
Maximum Green (s)	13.3	69.1		14.3	70.1		31.0	31.0	31.0	31.0	31.0	31.0
Yellow Time (s)	3.6	4.5		3.6	4.5		3.6	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	1.1	1.4		1.1	1.4		1.4	1.4	1.4	1.4	1.4	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	5.9	4.0	4.7	5.9	4.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lag		Lead	Lead							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Act Effct Green (s)	70.3	69.1		71.3	70.1		31.0	31.0	31.0	31.0	31.0	31.0
Actuated g/C Ratio	0.54	0.53		0.55	0.54		0.24	0.24	0.24	0.24	0.24	0.24
v/c Ratio	0.07	0.34		0.12	0.45		0.10	0.01	0.22	0.07	0.02	0.29
Control Delay	3.6	3.7		14.4	19.1		39.7	38.0	8.6	39.2	38.3	7.8
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.6	3.7		14.4	19.1		39.7	38.0	8.6	39.2	38.3	7.8
LOS	A	A		B	B		D	D	A	D	D	A

Sawmill Place Blvd & SR 161

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Approach Delay		3.7			18.8			18.1			13.7	
Approach LOS		A			B			B			B	

Intersection Summary	
Area Type:	Other
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 69 (53%), Referenced to phase 1:SEL and 5:NWL, Start of Green	
Natural Cycle: 55	
Control Type: Pretimed	
Maximum v/c Ratio: 0.45	
Intersection Signal Delay: 13.0	Intersection LOS: B
Intersection Capacity Utilization 46.6%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 3: SR 161 #1 & Sawmill Pl Blvd



Martin Rd & SR 161

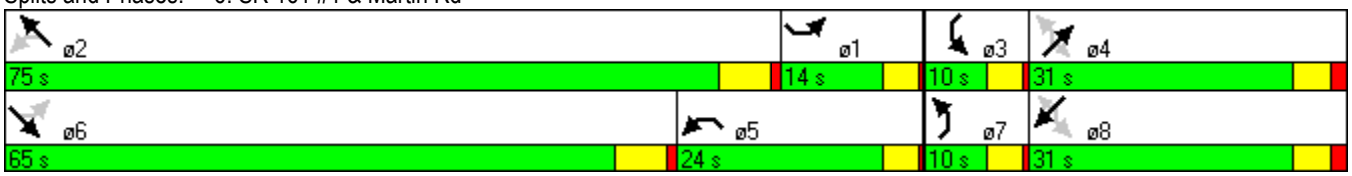
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	70	540	20	140	730	40	20	10	90	20	10	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	280		0	170		0	0		0
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.995			0.992				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3522	0	1770	3511	0	1770	1863	1583	1770	1863	1583
Flt Permitted	0.259			0.361			0.750			0.750		
Satd. Flow (perm)	482	3522	0	672	3511	0	1397	1863	1583	1397	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			6				98			76
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1294			794			291			276	
Travel Time (s)		19.6			12.0			6.6			6.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	76	587	22	152	793	43	22	11	98	22	11	76
Shared Lane Traffic (%)												
Lane Group Flow (vph)	76	609	0	152	836	0	22	11	98	22	11	76
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane					Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6			2			4		4	8		8
Minimum Split (s)	8.0	22.0		8.0	22.0		8.0	21.4	21.4	8.0	21.4	21.4
Total Split (s)	14.0	65.0	0.0	24.0	75.0	0.0	10.0	31.0	31.0	10.0	31.0	31.0
Total Split (%)	10.8%	50.0%	0.0%	18.5%	57.7%	0.0%	7.7%	23.8%	23.8%	7.7%	23.8%	23.8%
Maximum Green (s)	10.0	59.0		20.0	69.0		6.0	25.6	25.6	6.0	25.6	25.6
Yellow Time (s)	3.5	5.0		3.5	5.0		3.5	3.6	3.6	3.5	3.6	3.6
All-Red Time (s)	0.5	1.0		0.5	1.0		0.5	1.8	1.8	0.5	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	4.0	4.0	6.0	4.0	4.0	5.4	5.4	4.0	5.4	5.4
Lead/Lag	Lag	Lead		Lag	Lead		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Act Effct Green (s)	71.0	59.0		85.0	69.0		33.0	25.6	25.6	33.0	25.6	25.6
Actuated g/C Ratio	0.55	0.45		0.65	0.53		0.25	0.20	0.20	0.25	0.20	0.20
v/c Ratio	0.21	0.38		0.25	0.45		0.06	0.03	0.25	0.06	0.03	0.20
Control Delay	8.8	10.6		4.2	5.6		34.4	42.6	9.9	34.4	42.6	10.7
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.8	10.6		4.2	5.6		34.4	42.6	9.9	34.4	42.6	10.7
LOS	A	B		A	A		C	D	A	C	D	B

Martin Rd & SR 161

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Approach Delay		10.4			5.4			16.8			18.7	
Approach LOS		B			A			B			B	

Intersection Summary	
Area Type:	Other
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 3 (2%), Referenced to phase 2:NWTL and 6:SETL, Start of Green	
Natural Cycle: 60	
Control Type: Pretimed	
Maximum v/c Ratio: 0.45	
Intersection Signal Delay: 8.7	Intersection LOS: A
Intersection Capacity Utilization 45.9%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: SR 161 #1 & Martin Rd



Federated Blvd & SR 161

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	30	700	780	70	150	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200			0	0	0
Storage Lanes	1			0	1	1
Taper Length (ft)	25			25	25	25
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.988			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	3539	3497	0	1770	1583
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	3539	3497	0	1770	1583
Link Speed (mph)		45	45		30	
Link Distance (ft)		521	6835		281	
Travel Time (s)		7.9	103.6		6.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	761	848	76	163	87
Shared Lane Traffic (%)						
Lane Group Flow (vph)	33	761	924	0	163	87
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane		Yes	Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 39.9%	ICU Level of Service A
Analysis Period (min) 15	

Railroad Crossing & SR 161

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	810	0	0	1120	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt												
Flt Protected												
Satd. Flow (prot)	0	3539	0	0	3539	0	0	950	0	0	1863	0
Flt Permitted												
Satd. Flow (perm)	0	3539	0	0	3539	0	0	950	0	0	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		1647			832			469			501	
Travel Time (s)		32.1			16.2			10.7			11.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	100%	2%	2%	2%	2%
Adj. Flow (vph)	0	880	0	0	1217	0	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	880	0	0	1217	0	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2			2			2			2	
Detector Template		Thru			Thru			Thru			Thru	
Leading Detector (ft)		100			100			100			100	
Trailing Detector (ft)		0			0			0			0	
Detector 1 Position(ft)		0			0			0			0	
Detector 1 Size(ft)		6			6			6			6	
Detector 1 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0			0.0			0.0			0.0	
Detector 1 Queue (s)		0.0			0.0			0.0			0.0	
Detector 1 Delay (s)		0.0			0.0			0.0			0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type												
Protected Phases		4			8			2			6	
Permitted Phases												
Detector Phase		4			8			2			6	
Switch Phase												
Minimum Initial (s)		4.0			4.0			180.0			180.0	

Railroad Crossing & SR 161

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)		20.0			20.0			184.0			184.0	
Total Split (s)	0.0	20.0	0.0	0.0	20.0	0.0	0.0	184.0	0.0	0.0	184.0	0.0
Total Split (%)	0.0%	9.8%	0.0%	0.0%	9.8%	0.0%	0.0%	90.2%	0.0%	0.0%	90.2%	0.0%
Maximum Green (s)		16.0			16.0			180.0			180.0	
Yellow Time (s)		3.5			3.5			3.5			3.5	
All-Red Time (s)		0.5			0.5			0.5			0.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Recall Mode		C-Max			C-Max			None			None	
Act Effct Green (s)		204.0			204.0							
Actuated g/C Ratio		1.00			1.00							
v/c Ratio		0.25			0.34							
Control Delay		0.2			0.3							
Queue Delay		0.0			0.0							
Total Delay		0.2			0.3							
LOS		A			A							
Approach Delay		0.2			0.3							
Approach LOS		A			A							

Intersection Summary	
Area Type:	Other
Cycle Length: 204	
Actuated Cycle Length: 204	
Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green	
Natural Cycle: 205	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.34	
Intersection Signal Delay: 0.2	Intersection LOS: A
Intersection Capacity Utilization 34.3%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 13: SR 161 #1 & RR Crossing

McVey Blvd & SR 161

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	10	810	1020	30	160	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25			25	25	25
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.996		0.978	
Flt Protected	0.950				0.960	
Satd. Flow (prot)	1770	3539	3525	0	1749	0
Flt Permitted	0.950				0.960	
Satd. Flow (perm)	1770	3539	3525	0	1749	0
Link Speed (mph)		45	35		30	
Link Distance (ft)		6835	1647		228	
Travel Time (s)		103.6	32.1		5.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	880	1109	33	174	33
Shared Lane Traffic (%)						
Lane Group Flow (vph)	11	880	1142	0	207	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane		Yes	Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 46.5%	ICU Level of Service A
Analysis Period (min) 15	

Linworth Rd & SR 161

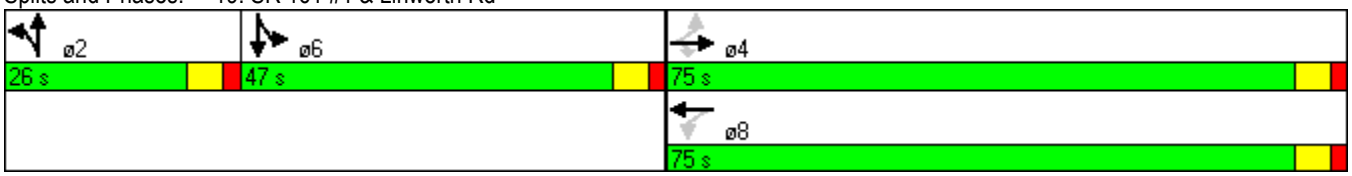
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	70	610	140	30	880	70	160	190	30	200	340	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	300		0	150		0	0		0
Storage Lanes	1		1	1		0	1		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.989			0.979			0.983	
Flt Protected	0.950			0.950			0.950				0.984	
Satd. Flow (prot)	1770	1863	1583	1770	1842	0	1770	1824	0	0	1802	0
Flt Permitted	0.058			0.173			0.950				0.984	
Satd. Flow (perm)	108	1863	1583	322	1842	0	1770	1824	0	0	1802	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			115		4			4			5	
Link Speed (mph)		35			20			30			30	
Link Distance (ft)		832			2636			1579			1572	
Travel Time (s)		16.2			89.9			35.9			35.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	76	663	152	33	957	76	174	207	33	217	370	87
Shared Lane Traffic (%)												
Lane Group Flow (vph)	76	663	152	33	1033	0	174	240	0	0	674	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm		Perm	Perm			Split			Split		
Protected Phases		4			8		2	2		6	6	
Permitted Phases	4		4	8								
Detector Phase	4	4	4	8	8		2	2		6	6	

Linworth Rd & SR 161

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	22.0	22.0	22.0	22.0	22.0		16.0	16.0		16.0	16.0	
Total Split (s)	75.0	75.0	75.0	75.0	75.0	0.0	26.0	26.0	0.0	47.0	47.0	0.0
Total Split (%)	50.7%	50.7%	50.7%	50.7%	50.7%	0.0%	17.6%	17.6%	0.0%	31.8%	31.8%	0.0%
Maximum Green (s)	69.0	69.0	69.0	69.0	69.0		20.0	20.0		41.0	41.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	None		None	None	
Act Effct Green (s)	69.0	69.0	69.0	69.0	69.0		20.0	20.0			41.0	
Actuated g/C Ratio	0.47	0.47	0.47	0.47	0.47		0.14	0.14			0.28	
v/c Ratio	1.52	0.76	0.19	0.22	1.20		0.73	0.96			1.34	
Control Delay	343.8	39.8	7.2	28.5	136.6		79.5	109.2			206.8	
Queue Delay	0.0	1.6	0.0	0.0	0.0		0.0	0.0			0.0	
Total Delay	343.8	41.4	7.2	28.5	136.6		79.5	109.2			206.8	
LOS	F	D	A	C	F		E	F			F	
Approach Delay		61.4			133.3			96.7			206.8	
Approach LOS		E			F			F			F	

Intersection Summary	
Area Type: Other	
Cycle Length: 148	
Actuated Cycle Length: 148	
Natural Cycle: 130	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.52	
Intersection Signal Delay: 123.6	Intersection LOS: F
Intersection Capacity Utilization 118.8%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 19: SR 161 #1 & Linworth Rd



Olentangy River Rd & SR 161

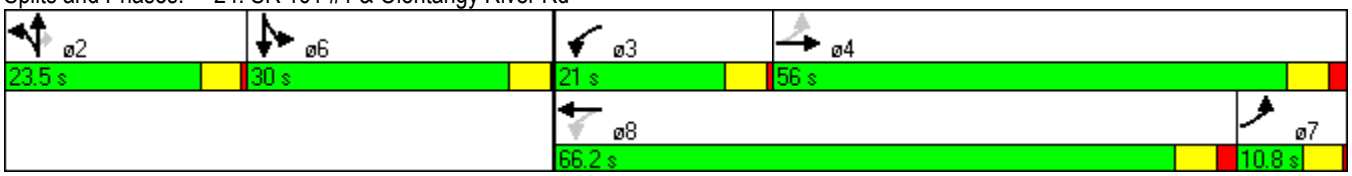
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	870	50	360	840	160	50	180	280	390	310	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	130		0	300		0	0		180	200		0
Storage Lanes	1		0	1		0	0		1	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992			0.976				0.850		0.987	
Flt Protected	0.950			0.950				0.989		0.950		
Satd. Flow (prot)	1770	1848	0	1770	3454	0	0	1842	1583	1770	1839	0
Flt Permitted	0.229			0.092				0.989		0.950		
Satd. Flow (perm)	427	1848	0	171	3454	0	0	1842	1583	1770	1839	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			22				247		3	
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		438			441			925			526	
Travel Time (s)		8.5			8.6			21.0			12.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	65	946	54	391	913	174	54	196	304	424	337	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	65	1000	0	391	1087	0	0	250	304	424	370	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt			pm+pt			Split		Perm	Split		
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases	4			8					2			
Minimum Split (s)	8.5	22.0		8.5	22.0		20.5	20.5	20.5	20.5	20.5	
Total Split (s)	10.8	56.0	0.0	21.0	66.2	0.0	23.5	23.5	23.5	30.0	30.0	0.0
Total Split (%)	8.3%	42.9%	0.0%	16.1%	50.7%	0.0%	18.0%	18.0%	18.0%	23.0%	23.0%	0.0%
Maximum Green (s)	6.3	50.0		16.5	60.2		19.0	19.0	19.0	25.5	25.5	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	0.5	2.0		0.5	2.0		0.5	0.5	0.5	0.5	0.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	6.0	4.0	4.5	6.0	4.0	4.5	4.5	4.5	4.5	4.5	4.0
Lead/Lag	Lag	Lag		Lead	Lead							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Act Effct Green (s)	51.5	50.0		61.7	60.2			19.0	19.0	25.5	25.5	
Actuated g/C Ratio	0.39	0.38		0.47	0.46			0.15	0.15	0.20	0.20	
v/c Ratio	0.28	1.41		1.38	0.68			0.93	0.69	1.23	1.02	
Control Delay	33.1	224.7		223.2	29.6			95.3	20.4	168.4	104.1	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay	33.1	224.7		223.2	29.6			95.3	20.4	168.4	104.1	
LOS	C	F		F	C			F	C	F	F	

Olentangy River Rd & SR 161

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		213.0			80.8			54.2			138.4	
Approach LOS		F			F			D			F	

Intersection Summary	
Area Type: Other	
Cycle Length: 130.5	
Actuated Cycle Length: 130.5	
Offset: 0 (0%), Referenced to phase 2:NBTL, Start of Green	
Natural Cycle: 140	
Control Type: Pretimed	
Maximum v/c Ratio: 1.41	
Intersection Signal Delay: 125.0	Intersection LOS: F
Intersection Capacity Utilization 118.9%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 24: SR 161 #1 & Olentangy River Rd



Sawmill Rd & SR 161

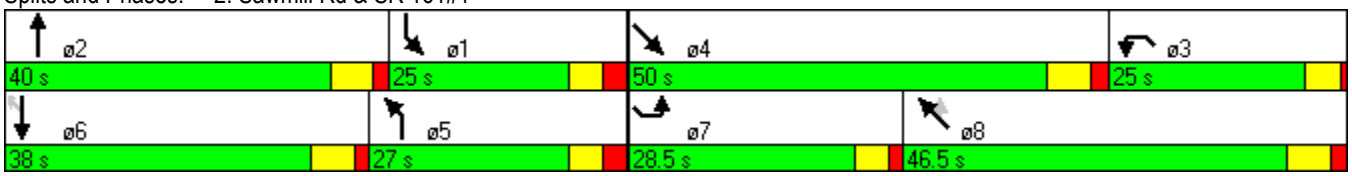
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	280	1040	200	250	1120	180	360	620	370	280	640	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	360		0	400		480	270		0	950		180
Storage Lanes	1		0	1		2	2		0	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	1.00	0.97	0.95	0.95	1.00	0.95	1.00
Frt		0.976				0.850		0.944				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	4963	0	1770	5085	1583	3433	3341	0	1770	3539	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	4963	0	1770	5085	1583	3433	3341	0	1770	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		27				196		92				149
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		874			921			715			1294	
Travel Time (s)		19.9			20.9			10.8			19.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	304	1130	217	272	1217	196	391	674	402	304	696	185
Shared Lane Traffic (%)												
Lane Group Flow (vph)	304	1347	0	272	1217	196	391	1076	0	304	696	185
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane								Yes				
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot			Prot		Perm	Prot			Prot		Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases						6						8
Minimum Split (s)	11.9	25.2		11.9	25.2	25.2	11.2	22.5		11.2	22.5	22.5
Total Split (s)	27.0	40.0	0.0	25.0	38.0	38.0	28.5	50.0	0.0	25.0	46.5	46.5
Total Split (%)	19.3%	28.6%	0.0%	17.9%	27.1%	27.1%	20.4%	35.7%	0.0%	17.9%	33.2%	33.2%
Maximum Green (s)	20.7	33.9		18.7	31.9	31.9	23.5	43.6		20.5	40.1	40.1
Yellow Time (s)	3.6	4.5		3.6	4.5	4.5	3.6	4.5		3.6	4.5	4.5
All-Red Time (s)	2.7	1.6		2.7	1.6	1.6	1.4	1.9		0.9	1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.1	4.0	6.3	6.1	6.1	5.0	6.4	4.0	4.5	6.4	6.4
Lead/Lag	Lag	Lead		Lag	Lead	Lead	Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Act Effct Green (s)	20.7	33.9		18.7	31.9	31.9	23.5	43.6		20.5	40.1	40.1
Actuated g/C Ratio	0.15	0.24		0.13	0.23	0.23	0.17	0.31		0.15	0.29	0.29
v/c Ratio	1.16	1.10		1.15	1.05	0.38	0.68	0.97		1.17	0.69	0.33
Control Delay	157.1	106.1		158.1	92.1	7.9	61.4	65.1		139.2	22.8	2.2
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	157.1	106.1		158.1	92.1	7.9	61.4	65.1		139.2	22.8	2.2
LOS	F	F		F	F	A	E	E		F	C	A

Sawmill Rd & SR 161

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Approach Delay		115.5			93.0			64.1			49.5	
Approach LOS		F			F			E			D	

Intersection Summary	
Area Type: Other	
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 72 (51%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 130	
Control Type: Pretimed	
Maximum v/c Ratio: 1.17	
Intersection Signal Delay: 83.5	Intersection LOS: F
Intersection Capacity Utilization 102.3%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 2: Sawmill Rd & SR 161#1



Sawmill Place Blvd & SR 161

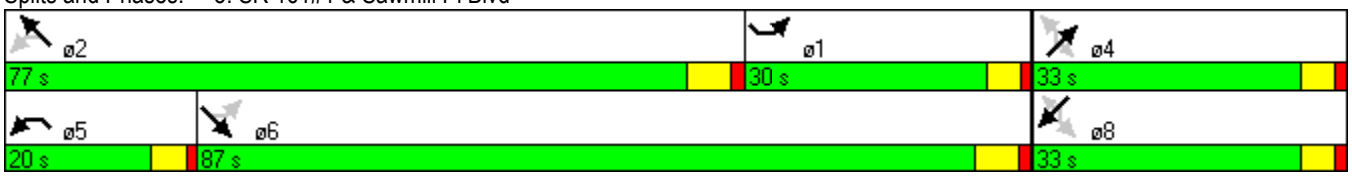
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	160	850	40	110	1020	50	20	40	110	50	60	210
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	150		0	0		0	0		0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00
Frt		0.993			0.993				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3514	0	1770	3514	0	1770	3539	1583	1770	1863	1583
Flt Permitted	0.203			0.179			0.715			0.728		
Satd. Flow (perm)	378	3514	0	333	3514	0	1332	3539	1583	1356	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			5				120			228
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		794			358			324			467	
Travel Time (s)		12.0			5.4			7.4			10.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	174	924	43	120	1109	54	22	43	120	54	65	228
Shared Lane Traffic (%)												
Lane Group Flow (vph)	174	967	0	120	1163	0	22	43	120	54	65	228
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt			pm+pt			Perm		Perm	Perm		Perm
Protected Phases	1	6		5	2			4			8	
Permitted Phases	6			2			4		4	8		8
Minimum Split (s)	8.7	21.9		8.7	20.0		21.0	21.0	21.0	20.0	20.0	20.0
Total Split (s)	30.0	87.0	0.0	20.0	77.0	0.0	33.0	33.0	33.0	33.0	33.0	33.0
Total Split (%)	21.4%	62.1%	0.0%	14.3%	55.0%	0.0%	23.6%	23.6%	23.6%	23.6%	23.6%	23.6%
Maximum Green (s)	25.3	81.1		15.3	71.1		28.0	28.0	28.0	28.0	28.0	28.0
Yellow Time (s)	3.6	4.5		3.6	4.5		3.6	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	1.1	1.4		1.1	1.4		1.4	1.4	1.4	1.4	1.4	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	5.9	4.0	4.7	5.9	4.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lag		Lead	Lead							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Act Effct Green (s)	82.3	81.1		72.3	71.1		28.0	28.0	28.0	28.0	28.0	28.0
Actuated g/C Ratio	0.59	0.58		0.52	0.51		0.20	0.20	0.20	0.20	0.20	0.20
v/c Ratio	0.37	0.47		0.36	0.65		0.08	0.06	0.29	0.20	0.17	0.46
Control Delay	12.2	7.6		20.9	27.4		46.7	45.8	9.6	49.0	48.0	8.8
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.2	7.6		20.9	27.4		46.7	45.8	9.6	49.0	48.0	8.8
LOS	B	A		C	C		D	D	A	D	D	A

Sawmill Place Blvd & SR 161

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Approach Delay		8.3			26.8			22.4			22.4	
Approach LOS		A			C			C			C	

Intersection Summary	
Area Type:	Other
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 48 (34%), Referenced to phase 1:SEL and 5:NWL, Start of Green	
Natural Cycle: 60	
Control Type: Pretimed	
Maximum v/c Ratio: 0.65	
Intersection Signal Delay: 18.9	Intersection LOS: B
Intersection Capacity Utilization 61.1%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 3: SR 161#1 & Sawmill Pl Blvd



Martin Rd & SR 161

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	230	730	50	290	900	90	50	80	260	60	70	190
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	280		0	170		0	0		0
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.990			0.986				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3504	0	1770	3490	0	1770	1863	1583	1770	1863	1583
Flt Permitted	0.157			0.195			0.708			0.693		
Satd. Flow (perm)	292	3504	0	363	3490	0	1319	1863	1583	1291	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			10				283			207
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1294			794			291			276	
Travel Time (s)		19.6			12.0			6.6			6.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	250	793	54	315	978	98	54	87	283	65	76	207
Shared Lane Traffic (%)												
Lane Group Flow (vph)	250	847	0	315	1076	0	54	87	283	65	76	207
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane					Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6			2			4		4	8		8
Minimum Split (s)	8.0	22.0		8.0	22.0		8.0	21.4	21.4	8.0	21.4	21.4
Total Split (s)	30.0	63.0	0.0	36.0	69.0	0.0	8.0	33.0	33.0	8.0	33.0	33.0
Total Split (%)	21.4%	45.0%	0.0%	25.7%	49.3%	0.0%	5.7%	23.6%	23.6%	5.7%	23.6%	23.6%
Maximum Green (s)	26.0	57.0		32.0	63.0		4.0	27.6	27.6	4.0	27.6	27.6
Yellow Time (s)	3.5	5.0		3.5	5.0		3.5	3.6	3.6	3.5	3.6	3.6
All-Red Time (s)	0.5	1.0		0.5	1.0		0.5	1.8	1.8	0.5	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	4.0	4.0	6.0	4.0	4.0	5.4	5.4	4.0	5.4	5.4
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Act Effct Green (s)	85.0	57.0		95.0	63.0		33.0	27.6	27.6	33.0	27.6	27.6
Actuated g/C Ratio	0.61	0.41		0.68	0.45		0.24	0.20	0.20	0.24	0.20	0.20
v/c Ratio	0.55	0.59		0.55	0.68		0.17	0.24	0.53	0.20	0.21	0.43
Control Delay	29.3	12.0		20.0	17.1		41.3	49.4	8.9	42.1	48.8	8.9
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.3	12.0		20.0	17.1		41.3	49.4	8.9	42.1	48.8	8.9
LOS	C	B		B	B		D	D	A	D	D	A

Martin Rd & SR 161

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Approach Delay		16.0			17.8			21.3			23.9	
Approach LOS		B			B			C			C	

Intersection Summary	
Area Type:	Other
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 3 (2%), Referenced to phase 2:NWTL and 6:SETL, Start of Green	
Natural Cycle: 70	
Control Type: Pretimed	
Maximum v/c Ratio: 0.68	
Intersection Signal Delay: 18.3	Intersection LOS: B
Intersection Capacity Utilization 63.3%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 6: SR 161#1 & Martin Rd

Federated Blvd & SR 161

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	140	900	1010	160	50	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200			0	0	0
Storage Lanes	1			0	1	1
Taper Length (ft)	25			25	25	25
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.979			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	3539	3465	0	1770	1583
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	3539	3465	0	1770	1583
Link Speed (mph)		45	45		30	
Link Distance (ft)		521	6835		281	
Travel Time (s)		7.9	103.6		6.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	152	978	1098	174	54	98
Shared Lane Traffic (%)						
Lane Group Flow (vph)	152	978	1272	0	54	98
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane		Yes	Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 54.1%	ICU Level of Service A
Analysis Period (min) 15	

Railroad Crossing & SR 161

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	940	0	0	1160	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt												
Flt Protected												
Satd. Flow (prot)	0	3539	0	0	3539	0	0	950	0	0	1863	0
Flt Permitted												
Satd. Flow (perm)	0	3539	0	0	3539	0	0	950	0	0	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		1647			832			469			501	
Travel Time (s)		32.1			16.2			10.7			11.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	100%	2%	2%	2%	2%
Adj. Flow (vph)	0	1022	0	0	1261	0	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1022	0	0	1261	0	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2			2			2			2	
Detector Template		Thru			Thru			Thru			Thru	
Leading Detector (ft)		100			100			100			100	
Trailing Detector (ft)		0			0			0			0	
Detector 1 Position(ft)		0			0			0			0	
Detector 1 Size(ft)		6			6			6			6	
Detector 1 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0			0.0			0.0			0.0	
Detector 1 Queue (s)		0.0			0.0			0.0			0.0	
Detector 1 Delay (s)		0.0			0.0			0.0			0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type												
Protected Phases		4			8			2			6	
Permitted Phases												
Detector Phase		4			8			2			6	
Switch Phase												
Minimum Initial (s)		4.0			4.0			180.0			180.0	

Railroad Crossing & SR 161

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)		20.0			20.0			184.0			184.0	
Total Split (s)	0.0	21.0	0.0	0.0	21.0	0.0	0.0	184.0	0.0	0.0	184.0	0.0
Total Split (%)	0.0%	10.2%	0.0%	0.0%	10.2%	0.0%	0.0%	89.8%	0.0%	0.0%	89.8%	0.0%
Maximum Green (s)		17.0			17.0			180.0			180.0	
Yellow Time (s)		3.5			3.5			3.5			3.5	
All-Red Time (s)		0.5			0.5			0.5			0.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Recall Mode		C-Max			C-Max			None			None	
Act Effct Green (s)		205.0			205.0							
Actuated g/C Ratio		1.00			1.00							
v/c Ratio		0.29			0.36							
Control Delay		0.2			0.3							
Queue Delay		0.0			0.0							
Total Delay		0.2			0.3							
LOS		A			A							
Approach Delay		0.2			0.3							
Approach LOS		A			A							

Intersection Summary

Area Type: Other
Cycle Length: 205
Actuated Cycle Length: 205
Offset: 184 (90%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 205
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.36
Intersection Signal Delay: 0.2 Intersection LOS: A
Intersection Capacity Utilization 35.4% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 13: SR 161#1 & RR Crossing

McVey Blvd & SR 161

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	30	970	1030	150	20	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25			25	25	25
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.981		0.932	
Flt Protected	0.950				0.976	
Satd. Flow (prot)	1770	3539	3472	0	1694	0
Flt Permitted	0.950				0.976	
Satd. Flow (perm)	1770	3539	3472	0	1694	0
Link Speed (mph)		45	35		30	
Link Distance (ft)		6835	1647		228	
Travel Time (s)		103.6	32.1		5.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	1054	1120	163	22	22
Shared Lane Traffic (%)						
Lane Group Flow (vph)	33	1054	1283	0	44	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane		Yes	Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 43.3%		ICU Level of Service A	
Analysis Period (min) 15			

McVey Blvd & SR 161

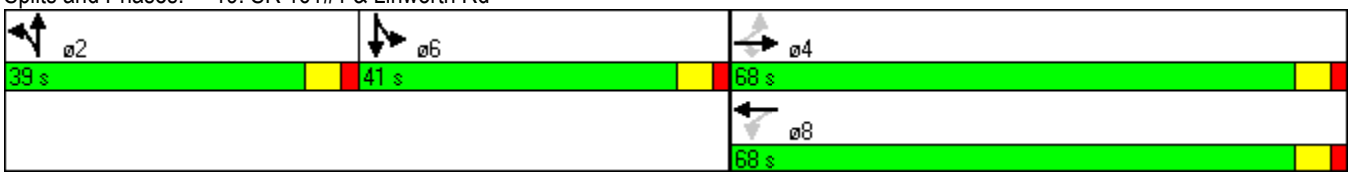
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	770	110	50	790	90	260	410	50	170	260	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	300		0	150		0	0		0
Storage Lanes	1		1	1		0	1		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.985			0.984			0.972	
Flt Protected	0.950			0.950			0.950				0.985	
Satd. Flow (prot)	1770	1863	1583	1770	1835	0	1770	1833	0	0	1783	0
Flt Permitted	0.065			0.065			0.950				0.985	
Satd. Flow (perm)	121	1863	1583	121	1835	0	1770	1833	0	0	1783	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			66		5			4			8	
Link Speed (mph)		35			20			30			30	
Link Distance (ft)		832			2636			1571			1573	
Travel Time (s)		16.2			89.9			35.7			35.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	65	837	120	54	859	98	283	446	54	185	283	120
Shared Lane Traffic (%)												
Lane Group Flow (vph)	65	837	120	54	957	0	283	500	0	0	588	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm		Perm	Perm			Split			Split		
Protected Phases		4			8		2	2		6	6	
Permitted Phases	4		4	8								
Detector Phase	4	4	4	8	8		2	2		6	6	

Linworth Rd & SR 161

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	22.0	22.0	22.0	22.0	22.0		16.0	16.0		16.0	16.0	
Total Split (s)	68.0	68.0	68.0	68.0	68.0	0.0	39.0	39.0	0.0	41.0	41.0	0.0
Total Split (%)	45.9%	45.9%	45.9%	45.9%	45.9%	0.0%	26.4%	26.4%	0.0%	27.7%	27.7%	0.0%
Maximum Green (s)	62.0	62.0	62.0	62.0	62.0		33.0	33.0		35.0	35.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	None		None	None	
Act Effct Green (s)	62.0	62.0	62.0	62.0	62.0		33.0	33.0			35.0	
Actuated g/C Ratio	0.42	0.42	0.42	0.42	0.42		0.22	0.22			0.24	
v/c Ratio	1.27	1.07	0.17	1.06	1.24		0.72	1.21			1.37	
Control Delay	254.5	94.6	13.1	187.3	155.9		64.6	163.7			223.7	
Queue Delay	0.0	14.3	0.0	0.0	0.0		0.0	0.0			0.0	
Total Delay	254.5	108.8	13.1	187.3	155.9		64.6	163.7			223.7	
LOS	F	F	B	F	F		E	F			F	
Approach Delay		106.9			157.6			127.9			223.7	
Approach LOS		F			F			F			F	

Intersection Summary	
Area Type: Other	
Cycle Length: 148	
Actuated Cycle Length: 148	
Natural Cycle: 150	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.37	
Intersection Signal Delay: 147.0	Intersection LOS: F
Intersection Capacity Utilization 119.3%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 19: SR 161#1 & Linworth Rd



Olentangy River Rd & SR 161

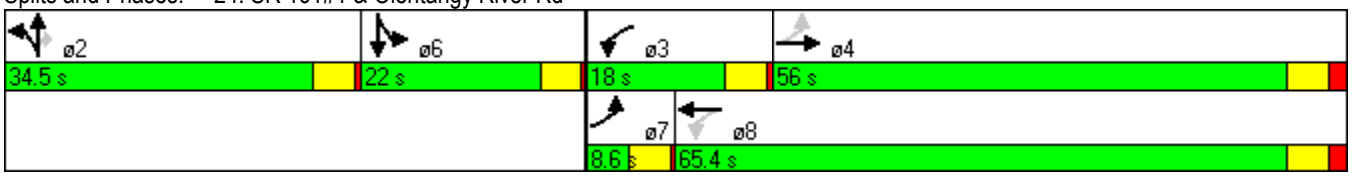
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	890	40	310	930	560	60	370	190	250	200	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	130		0	300		0	0		180	200		0
Storage Lanes	1		0	1		0	0		1	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.994			0.944				0.850		0.980	
Flt Protected	0.950			0.950				0.993		0.950		
Satd. Flow (prot)	1770	1852	0	1770	3341	0	0	1850	1583	1770	1825	0
Flt Permitted	0.080			0.073				0.993		0.950		
Satd. Flow (perm)	149	1852	0	136	3341	0	0	1850	1583	1770	1825	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			126				130		5	
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		438			441			925			526	
Travel Time (s)		8.5			8.6			21.0			12.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	967	43	337	1011	609	65	402	207	272	217	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	33	1010	0	337	1620	0	0	467	207	272	250	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt			pm+pt			Split		Perm	Split		
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases	4			8					2			
Minimum Split (s)	8.5	22.0		8.5	22.0		20.5	20.5	20.5	20.5	20.5	
Total Split (s)	8.6	56.0	0.0	18.0	65.4	0.0	34.5	34.5	34.5	22.0	22.0	0.0
Total Split (%)	6.6%	42.9%	0.0%	13.8%	50.1%	0.0%	26.4%	26.4%	26.4%	16.9%	16.9%	0.0%
Maximum Green (s)	4.1	50.0		13.5	59.4		30.0	30.0	30.0	17.5	17.5	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	0.5	2.0		0.5	2.0		0.5	0.5	0.5	0.5	0.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	6.0	4.0	4.5	6.0	4.0	4.5	4.5	4.5	4.5	4.5	4.0
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Act Effct Green (s)	55.6	50.0		69.5	59.4			30.0	30.0	17.5	17.5	
Actuated g/C Ratio	0.43	0.38		0.53	0.46			0.23	0.23	0.13	0.13	
v/c Ratio	0.29	1.42		1.40	1.02			1.10	0.45	1.15	1.00	
Control Delay	22.2	229.8		232.7	60.3			119.5	19.7	153.6	113.0	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay	22.2	229.8		232.7	60.3			119.5	19.7	153.6	113.0	
LOS	C	F		F	E			F	B	F	F	

Olentangy River Rd & SR 161

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		223.3			89.9			88.9			134.1	
Approach LOS		F			F			F			F	

Intersection Summary	
Area Type: Other	
Cycle Length: 130.5	
Actuated Cycle Length: 130.5	
Offset: 0 (0%), Referenced to phase 2:NBTL, Start of Green	
Natural Cycle: 150	
Control Type: Pretimed	
Maximum v/c Ratio: 1.42	
Intersection Signal Delay: 128.4	Intersection LOS: F
Intersection Capacity Utilization 119.3%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 24: SR 161#1 & Olentangy River Rd



Sawmill Rd & SR 161

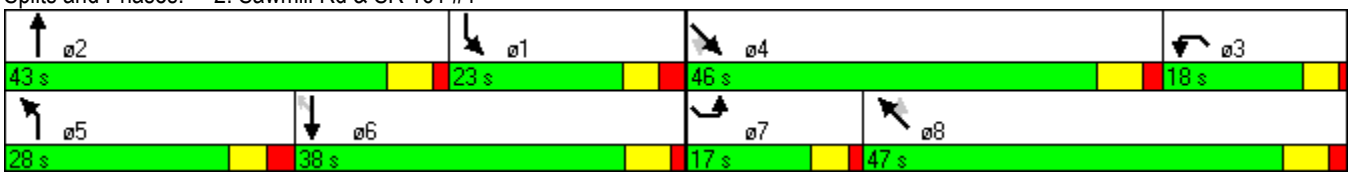
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	140	740	100	100	720	140	150	320	150	70	550	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	360		0	400		480	270		0	950		180
Storage Lanes	1		0	1		2	2		1	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	1.00	0.97	1.00	1.00	1.00	0.95	1.00
Frt		0.982				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	4994	0	1770	5085	1583	3433	1863	1583	1770	3539	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	4994	0	1770	5085	1583	3433	1863	1583	1770	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		19				152			163			65
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		874			921			715			1294	
Travel Time (s)		19.9			20.9			10.8			19.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	152	804	109	109	783	152	163	348	163	76	598	65
Shared Lane Traffic (%)												
Lane Group Flow (vph)	152	913	0	109	783	152	163	348	163	76	598	65
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane								Yes				
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases						6			4			8
Minimum Split (s)	10.3	22.5		10.3	22.5	22.5	9.6	22.5	22.5	9.6	22.5	22.5
Total Split (s)	28.0	43.0	0.0	23.0	38.0	38.0	17.0	46.0	46.0	18.0	47.0	47.0
Total Split (%)	21.5%	33.1%	0.0%	17.7%	29.2%	29.2%	13.1%	35.4%	35.4%	13.8%	36.2%	36.2%
Maximum Green (s)	21.7	36.9		16.7	31.9	31.9	12.0	39.6	39.6	13.5	40.6	40.6
Yellow Time (s)	3.6	4.5		3.6	4.5	4.5	3.6	4.5	4.5	3.6	4.5	4.5
All-Red Time (s)	2.7	1.6		2.7	1.6	1.6	1.4	1.9	1.9	0.9	1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.1	4.0	6.3	6.1	6.1	5.0	6.4	6.4	4.5	6.4	6.4
Lead/Lag	Lead	Lead		Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Act Effct Green (s)	21.7	36.9		16.7	31.9	31.9	12.0	39.6	39.6	13.5	40.6	40.6
Actuated g/C Ratio	0.17	0.28		0.13	0.25	0.25	0.09	0.30	0.30	0.10	0.31	0.31
v/c Ratio	0.52	0.64		0.48	0.63	0.30	0.51	0.61	0.27	0.41	0.54	0.12
Control Delay	56.3	42.2		60.4	46.4	7.5	62.4	44.2	6.0	47.0	24.9	2.1
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.3	42.2		60.4	46.4	7.5	62.4	44.2	6.0	47.0	24.9	2.1
LOS	E	D		E	D	A	E	D	A	D	C	A

Sawmill Rd & SR 161

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Approach Delay		44.2			42.2			39.4			25.2	
Approach LOS		D			D			D			C	

Intersection Summary	
Area Type:	Other
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 111 (85%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 70	
Control Type: Pretimed	
Maximum v/c Ratio: 0.64	
Intersection Signal Delay: 38.7	Intersection LOS: D
Intersection Capacity Utilization 62.2%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 2: Sawmill Rd & SR 161 #1



Sawmill Place Blvd & SR 161

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	30	460	10	40	640	20	20	10	80	20	10	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	150		0	0		0	0		0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.997			0.995			0.867				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1857	0	1770	1853	0	1770	1615	0	1770	1863	1583
Flt Permitted	0.281			0.407			0.750			0.647		
Satd. Flow (perm)	523	1857	0	758	1853	0	1397	1615	0	1205	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			3			87				130
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		794			358			324			467	
Travel Time (s)		12.0			5.4			7.4			10.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	500	11	43	696	22	22	11	87	22	11	130
Shared Lane Traffic (%)												
Lane Group Flow (vph)	33	511	0	43	718	0	22	98	0	22	11	130
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt			pm+pt			Perm			Perm		Perm
Protected Phases	1	6		5	2			4			8	
Permitted Phases	6			2			4			8		8
Minimum Split (s)	8.7	21.9		8.7	20.0		21.0	21.0		20.0	20.0	20.0
Total Split (s)	14.0	90.0	0.0	15.0	91.0	0.0	25.0	25.0	0.0	25.0	25.0	25.0
Total Split (%)	10.8%	69.2%	0.0%	11.5%	70.0%	0.0%	19.2%	19.2%	0.0%	19.2%	19.2%	19.2%
Maximum Green (s)	9.3	84.1		10.3	85.1		20.0	20.0		20.0	20.0	20.0
Yellow Time (s)	3.6	4.5		3.6	4.5		3.6	3.6		3.6	3.6	3.6
All-Red Time (s)	1.1	1.4		1.1	1.4		1.4	1.4		1.4	1.4	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	5.9	4.0	4.7	5.9	4.0	5.0	5.0	4.0	5.0	5.0	5.0
Lead/Lag	Lag	Lead		Lag	Lead							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Act Effct Green (s)	94.6	84.1		96.6	85.1		20.0	20.0		20.0	20.0	20.0
Actuated g/C Ratio	0.73	0.65		0.74	0.65		0.15	0.15		0.15	0.15	0.15
v/c Ratio	0.07	0.43		0.07	0.59		0.10	0.30		0.12	0.04	0.37
Control Delay	1.4	3.9		4.0	15.1		48.8	15.0		49.4	47.4	11.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	1.4	3.9		4.0	15.1		48.8	15.0		49.4	47.4	11.0
LOS	A	A		A	B		D	B		D	D	B

Sawmill Place Blvd & SR 161

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Approach Delay		3.7			14.5			21.2			18.6	
Approach LOS		A			B			C			B	

Intersection Summary	
Area Type:	Other
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 91 (70%), Referenced to phase 1:SEL and 5:NWL, Start of Green	
Natural Cycle: 65	
Control Type: Pretimed	
Maximum v/c Ratio: 0.59	
Intersection Signal Delay: 11.7	Intersection LOS: B
Intersection Capacity Utilization 58.9%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 3: SR 161 #1 & Sawmill Pl Blvd

Martin Rd & SR 161

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	70	440	20	130	610	40	20	10	80	20	10	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	280		380	170		0	0		0
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.993			0.991				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1850	0	1770	3507	0	1770	1863	1583	1770	1863	1583
Flt Permitted	0.339			0.372			0.750			0.750		
Satd. Flow (perm)	631	1850	0	693	3507	0	1397	1863	1583	1397	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			9				87			76
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1294			794			291			276	
Travel Time (s)		19.6			12.0			6.6			6.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	76	478	22	141	663	43	22	11	87	22	11	76
Shared Lane Traffic (%)												
Lane Group Flow (vph)	76	500	0	141	706	0	22	11	87	22	11	76
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane					Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6			2			4		4	8		8
Minimum Split (s)	8.0	22.0		8.0	22.0		8.0	21.4	21.4	8.0	21.4	21.4
Total Split (s)	11.0	76.0	0.0	17.0	82.0	0.0	10.0	27.0	27.0	10.0	27.0	27.0
Total Split (%)	8.5%	58.5%	0.0%	13.1%	63.1%	0.0%	7.7%	20.8%	20.8%	7.7%	20.8%	20.8%
Maximum Green (s)	7.0	70.0		13.0	76.0		6.0	21.6	21.6	6.0	21.6	21.6
Yellow Time (s)	3.5	5.0		3.5	5.0		3.5	3.6	3.6	3.5	3.6	3.6
All-Red Time (s)	0.5	1.0		0.5	1.0		0.5	1.8	1.8	0.5	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	4.0	4.0	6.0	4.0	4.0	5.4	5.4	4.0	5.4	5.4
Lead/Lag	Lag	Lead		Lag	Lead		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Act Effct Green (s)	79.0	70.0		89.0	76.0		29.0	21.6	21.6	29.0	21.6	21.6
Actuated g/C Ratio	0.61	0.54		0.68	0.58		0.22	0.17	0.17	0.22	0.17	0.17
v/c Ratio	0.17	0.50		0.24	0.34		0.07	0.04	0.26	0.07	0.04	0.23
Control Delay	5.3	6.6		2.8	7.0		37.4	46.0	11.4	37.4	46.0	11.9
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.3	6.6		2.8	7.0		37.4	46.0	11.4	37.4	46.0	11.9
LOS	A	A		A	A		D	D	B	D	D	B

Martin Rd & SR 161

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Approach Delay		6.5			6.3			19.4			20.5	
Approach LOS		A			A			B			C	

Intersection Summary	
Area Type:	Other
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 8 (6%), Referenced to phase 2:NWTL and 6:SETL, Start of Green	
Natural Cycle: 60	
Control Type: Pretimed	
Maximum v/c Ratio: 0.50	
Intersection Signal Delay: 8.2	Intersection LOS: A
Intersection Capacity Utilization 52.2%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: SR 161 #1 & Martin Rd

Federated Blvd & SR 161

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	30	580	650	70	140	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200			0	0	0
Storage Lanes	1			0	1	1
Taper Length (ft)	25			25	25	25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.987			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1863	1839	0	1770	1583
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1863	1839	0	1770	1583
Link Speed (mph)		45	45		30	
Link Distance (ft)		521	6835		281	
Travel Time (s)		7.9	103.6		6.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	630	707	76	152	76
Shared Lane Traffic (%)						
Lane Group Flow (vph)	33	630	783	0	152	76
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane		Yes	Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 52.9%	ICU Level of Service A
Analysis Period (min) 15	

Railroad Crossing & SR 161

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	600	0	0	820	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt												
Flt Protected												
Satd. Flow (prot)	0	1863	0	0	1863	0	0	950	0	0	1863	0
Flt Permitted												
Satd. Flow (perm)	0	1863	0	0	1863	0	0	950	0	0	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		1647			832			469			501	
Travel Time (s)		32.1			16.2			10.7			11.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	100%	2%	2%	2%	2%
Adj. Flow (vph)	0	652	0	0	891	0	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	652	0	0	891	0	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2			2			2			2	
Detector Template		Thru			Thru			Thru			Thru	
Leading Detector (ft)		100			100			100			100	
Trailing Detector (ft)		0			0			0			0	
Detector 1 Position(ft)		0			0			0			0	
Detector 1 Size(ft)		6			6			6			6	
Detector 1 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0			0.0			0.0			0.0	
Detector 1 Queue (s)		0.0			0.0			0.0			0.0	
Detector 1 Delay (s)		0.0			0.0			0.0			0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type												
Protected Phases		4			8			2			6	
Permitted Phases												
Detector Phase		4			8			2			6	
Switch Phase												
Minimum Initial (s)		4.0			4.0			180.0			180.0	

Railroad Crossing & SR 161

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)		20.0			20.0			184.0			184.0	
Total Split (s)	0.0	20.0	0.0	0.0	20.0	0.0	0.0	184.0	0.0	0.0	184.0	0.0
Total Split (%)	0.0%	9.8%	0.0%	0.0%	9.8%	0.0%	0.0%	90.2%	0.0%	0.0%	90.2%	0.0%
Maximum Green (s)		16.0			16.0			180.0			180.0	
Yellow Time (s)		3.5			3.5			3.5			3.5	
All-Red Time (s)		0.5			0.5			0.5			0.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Recall Mode		C-Max			C-Max			None			None	
Act Effct Green (s)		204.0			204.0							
Actuated g/C Ratio		1.00			1.00							
v/c Ratio		0.35			0.48							
Control Delay		0.5			0.9							
Queue Delay		0.0			0.0							
Total Delay		0.5			0.9							
LOS		A			A							
Approach Delay		0.5			0.9							
Approach LOS		A			A							

Intersection Summary

Area Type: Other
Cycle Length: 204
Actuated Cycle Length: 204
Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 205
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.48
Intersection Signal Delay: 0.7 Intersection LOS: A
Intersection Capacity Utilization 46.5% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 13: SR 161 #1 & RR Crossing

McVey Blvd & SR 161

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	490	70	60	720	110	60	80	20	120	130	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	150		0	150		0	0		0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.981			0.980			0.970			0.990	
Flt Protected	0.950			0.950			0.950				0.978	
Satd. Flow (prot)	1770	1827	0	1770	1825	0	1770	1807	0	0	1804	0
Flt Permitted	0.950			0.950			0.950				0.978	
Satd. Flow (perm)	1770	1827	0	1770	1825	0	1770	1807	0	0	1804	0
Link Speed (mph)		45			35			30			30	
Link Distance (ft)		6835			1647			3230			228	
Travel Time (s)		103.6			32.1			73.4			5.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	533	76	65	783	120	65	87	22	130	141	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	11	609	0	65	903	0	65	109	0	0	293	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes			Yes				
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 77.9%		ICU Level of Service D	
Analysis Period (min) 15			

Linworth Rd & SR 161

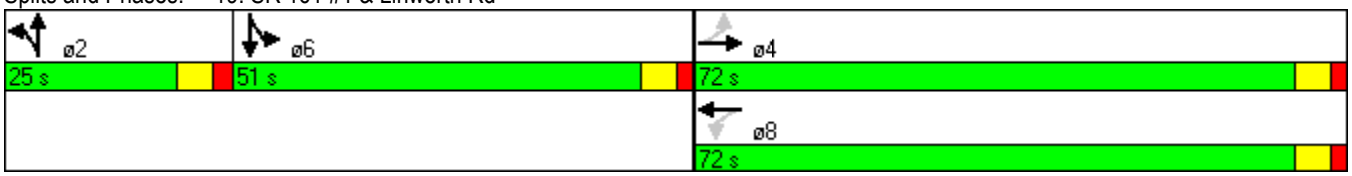
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	520	80	40	770	70	80	180	40	210	290	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	300		0	150		0	0		0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.980			0.988			0.973			0.983	
Flt Protected	0.950			0.950			0.950				0.982	
Satd. Flow (prot)	1770	1825	0	1770	1840	0	1770	1812	0	0	1798	0
Flt Permitted	0.061			0.161			0.950				0.982	
Satd. Flow (perm)	114	1825	0	300	1840	0	1770	1812	0	0	1798	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7			4			6			5	
Link Speed (mph)		35			20			30			30	
Link Distance (ft)		832			2636			1579			1572	
Travel Time (s)		16.2			89.9			35.9			35.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	565	87	43	837	76	87	196	43	228	315	76
Shared Lane Traffic (%)												
Lane Group Flow (vph)	54	652	0	43	913	0	87	239	0	0	619	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm			Perm			Split			Split		
Protected Phases		4			8		2	2		6	6	
Permitted Phases	4			8								
Detector Phase	4	4		8	8		2	2		6	6	

Linworth Rd & SR 161

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	22.0	22.0		22.0	22.0		16.0	16.0		16.0	16.0	
Total Split (s)	72.0	72.0	0.0	72.0	72.0	0.0	25.0	25.0	0.0	51.0	51.0	0.0
Total Split (%)	48.6%	48.6%	0.0%	48.6%	48.6%	0.0%	16.9%	16.9%	0.0%	34.5%	34.5%	0.0%
Maximum Green (s)	66.0	66.0		66.0	66.0		19.0	19.0		45.0	45.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Act Effct Green (s)	66.0	66.0		66.0	66.0		19.0	19.0			45.0	
Actuated g/C Ratio	0.45	0.45		0.45	0.45		0.13	0.13			0.30	
v/c Ratio	1.06	0.80		0.32	1.11		0.38	1.00			1.13	
Control Delay	185.8	43.6		35.0	104.1		64.6	120.8			123.7	
Queue Delay	0.0	1.3		0.0	0.0		0.0	0.0			0.0	
Total Delay	185.8	44.9		35.0	104.1		64.6	120.8			123.7	
LOS	F	D		C	F		E	F			F	
Approach Delay		55.7			101.0			105.8			123.7	
Approach LOS		E			F			F			F	

Intersection Summary	
Area Type: Other	
Cycle Length: 148	
Actuated Cycle Length: 148	
Natural Cycle: 140	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.13	
Intersection Signal Delay: 94.7	Intersection LOS: F
Intersection Capacity Utilization 102.8%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 19: SR 161 #1 & Linworth Rd



Olentangy River Rd & SR 161

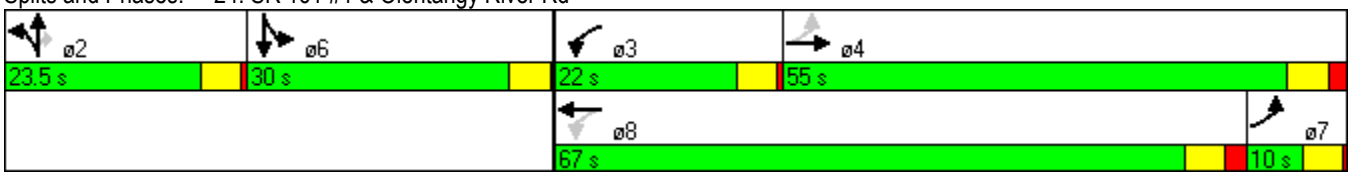
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	820	40	370	780	150	50	180	290	380	320	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	130		0	300		0	0		180	200		0
Storage Lanes	1		0	1		0	0		1	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.993			0.976				0.850		0.987	
Flt Protected	0.950			0.950				0.989		0.950		
Satd. Flow (prot)	1770	1850	0	1770	3454	0	0	1842	1583	1770	1839	0
Flt Permitted	0.276			0.092				0.989		0.950		
Satd. Flow (perm)	514	1850	0	171	3454	0	0	1842	1583	1770	1839	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			23				264		3	
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		438			441			925			526	
Travel Time (s)		8.5			8.6			21.0			12.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	891	43	402	848	163	54	196	315	413	348	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	54	934	0	402	1011	0	0	250	315	413	381	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt			pm+pt			Split		Perm	Split		
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases	4			8					2			
Minimum Split (s)	8.5	22.0		8.5	22.0		20.5	20.5	20.5	20.5	20.5	
Total Split (s)	10.0	55.0	0.0	22.0	67.0	0.0	23.5	23.5	23.5	30.0	30.0	0.0
Total Split (%)	7.7%	42.1%	0.0%	16.9%	51.3%	0.0%	18.0%	18.0%	18.0%	23.0%	23.0%	0.0%
Maximum Green (s)	5.5	49.0		17.5	61.0		19.0	19.0	19.0	25.5	25.5	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	0.5	2.0		0.5	2.0		0.5	0.5	0.5	0.5	0.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	6.0	4.0	4.5	6.0	4.0	4.5	4.5	4.5	4.5	4.5	4.0
Lead/Lag	Lag	Lag		Lead	Lead							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Act Effct Green (s)	50.5	49.0		62.5	61.0			19.0	19.0	25.5	25.5	
Actuated g/C Ratio	0.39	0.38		0.48	0.47			0.15	0.15	0.20	0.20	
v/c Ratio	0.21	1.34		1.36	0.62			0.93	0.69	1.19	1.05	
Control Delay	30.7	197.4		213.1	27.5			95.3	19.2	157.0	111.5	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay	30.7	197.4		213.1	27.5			95.3	19.2	157.0	111.5	
LOS	C	F		F	C			F	B	F	F	

Olentangy River Rd & SR 161

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		188.3			80.3			52.9			135.2	
Approach LOS		F			F			D			F	

Intersection Summary	
Area Type:	Other
Cycle Length: 130.5	
Actuated Cycle Length: 130.5	
Offset: 0 (0%), Referenced to phase 2:NBTL, Start of Green	
Natural Cycle: 150	
Control Type: Pretimed	
Maximum v/c Ratio: 1.36	
Intersection Signal Delay: 116.1	Intersection LOS: F
Intersection Capacity Utilization 115.6%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 24: SR 161 #1 & Olentangy River Rd



Sawmill Rd & SR 161

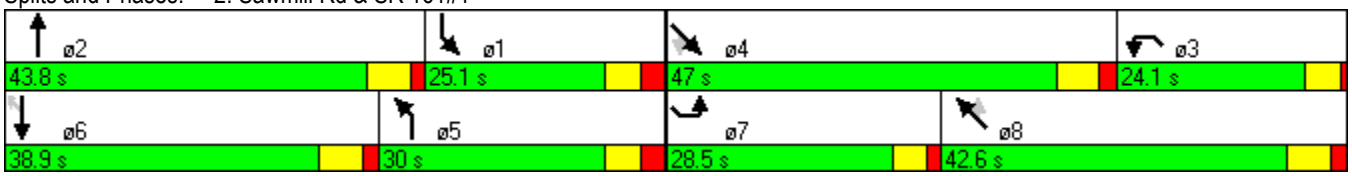
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	290	1020	170	210	1110	190	360	530	380	240	560	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	360		0	400		480	270		0	950		180
Storage Lanes	1		0	1		2	2		1	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	1.00	0.97	1.00	1.00	1.00	0.95	1.00
Frt		0.979				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	4979	0	1770	5085	1583	3433	1863	1583	1770	3539	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	4979	0	1770	5085	1583	3433	1863	1583	1770	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		23				207			286			135
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		874			921			715			1294	
Travel Time (s)		19.9			20.9			10.8			19.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	315	1109	185	228	1207	207	391	576	413	261	609	152
Shared Lane Traffic (%)												
Lane Group Flow (vph)	315	1294	0	228	1207	207	391	576	413	261	609	152
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane								Yes				
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases						6			4			8
Minimum Split (s)	11.9	25.2		11.9	25.2	25.2	11.2	22.5	22.5	11.2	22.5	22.5
Total Split (s)	30.0	43.8	0.0	25.1	38.9	38.9	28.5	47.0	47.0	24.1	42.6	42.6
Total Split (%)	21.4%	31.3%	0.0%	17.9%	27.8%	27.8%	20.4%	33.6%	33.6%	17.2%	30.4%	30.4%
Maximum Green (s)	23.7	37.7		18.8	32.8	32.8	23.5	40.6	40.6	19.6	36.2	36.2
Yellow Time (s)	3.6	4.5		3.6	4.5	4.5	3.6	4.5	4.5	3.6	4.5	4.5
All-Red Time (s)	2.7	1.6		2.7	1.6	1.6	1.4	1.9	1.9	0.9	1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.1	4.0	6.3	6.1	6.1	5.0	6.4	6.4	4.5	6.4	6.4
Lead/Lag	Lag	Lead		Lag	Lead	Lead	Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Act Effct Green (s)	23.7	37.7		18.8	32.8	32.8	23.5	40.6	40.6	19.6	36.2	36.2
Actuated g/C Ratio	0.17	0.27		0.13	0.23	0.23	0.17	0.29	0.29	0.14	0.26	0.26
v/c Ratio	1.05	0.95		0.96	1.01	0.39	0.68	1.07	0.62	1.05	0.67	0.30
Control Delay	120.6	64.8		108.1	82.1	7.7	61.4	104.6	17.2	115.4	38.1	7.0
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	120.6	64.8		108.1	82.1	7.7	61.4	104.6	17.2	115.4	38.1	7.0
LOS	F	E		F	F	A	E	F	B	F	D	A

Sawmill Rd & SR 161

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Approach Delay		75.7			76.3			66.2			53.2	
Approach LOS		E			E			E			D	

Intersection Summary	
Area Type: Other	
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 83 (59%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 110	
Control Type: Pretimed	
Maximum v/c Ratio: 1.07	
Intersection Signal Delay: 69.5	Intersection LOS: E
Intersection Capacity Utilization 98.1%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 2: Sawmill Rd & SR 161#1



Sawmill Place Blvd & SR 161

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	160	700	40	100	840	50	20	40	110	40	60	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	150		0	0		0	0		0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992			0.992			0.890				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1848	0	1770	1848	0	1770	1658	0	1770	1863	1583
Flt Permitted	0.168			0.189			0.715			0.394		
Satd. Flow (perm)	313	1848	0	352	1848	0	1332	1658	0	734	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			4			82				217
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		794			358			324			467	
Travel Time (s)		12.0			5.4			7.4			10.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	174	761	43	109	913	54	22	43	120	43	65	217
Shared Lane Traffic (%)												
Lane Group Flow (vph)	174	804	0	109	967	0	22	163	0	43	65	217
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt			pm+pt			Perm			Perm		Perm
Protected Phases	1	6		5	2			4			8	
Permitted Phases	6			2			4			8		8
Minimum Split (s)	8.7	21.9		8.7	20.0		21.0	21.0		20.0	20.0	20.0
Total Split (s)	22.0	99.4	0.0	17.6	95.0	0.0	23.0	23.0	0.0	23.0	23.0	23.0
Total Split (%)	15.7%	71.0%	0.0%	12.6%	67.9%	0.0%	16.4%	16.4%	0.0%	16.4%	16.4%	16.4%
Maximum Green (s)	17.3	93.5		12.9	89.1		18.0	18.0		18.0	18.0	18.0
Yellow Time (s)	3.6	4.5		3.6	4.5		3.6	3.6		3.6	3.6	3.6
All-Red Time (s)	1.1	1.4		1.1	1.4		1.4	1.4		1.4	1.4	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	5.9	4.0	4.7	5.9	4.0	5.0	5.0	4.0	5.0	5.0	5.0
Lead/Lag	Lag	Lag		Lead	Lead							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Act Effct Green (s)	94.7	93.5		90.3	89.1		18.0	18.0		18.0	18.0	18.0
Actuated g/C Ratio	0.68	0.67		0.64	0.64		0.13	0.13		0.13	0.13	0.13
v/c Ratio	0.44	0.65		0.30	0.82		0.13	0.57		0.46	0.27	0.55
Control Delay	10.9	7.6		11.7	26.7		56.2	36.8		73.3	58.5	12.5
Queue Delay	0.0	0.2		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	10.9	7.8		11.7	26.7		56.2	36.8		73.3	58.5	12.5
LOS	B	A		B	C		E	D		E	E	B

Sawmill Place Blvd & SR 161

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Approach Delay		8.4			25.2			39.2			29.8	
Approach LOS		A			C			D			C	

Intersection Summary	
Area Type:	Other
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 68 (49%), Referenced to phase 1:SEL and 5:NWL, Start of Green	
Natural Cycle: 90	
Control Type: Pretimed	
Maximum v/c Ratio: 0.82	
Intersection Signal Delay: 20.4	Intersection LOS: C
Intersection Capacity Utilization 85.5%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 3: SR 161#1 & Sawmill Pl Blvd

Martin Rd & SR 161

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	230	600	50	270	740	80	50	90	240	60	80	190
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	280		380	170		0	0		0
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.989			0.985				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1842	0	1770	3486	0	1770	1863	1583	1770	1863	1583
Flt Permitted	0.273			0.172			0.681			0.648		
Satd. Flow (perm)	509	1842	0	320	3486	0	1269	1863	1583	1207	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			13				261			207
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1294			794			291			276	
Travel Time (s)		19.6			12.0			6.6			6.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	250	652	54	293	804	87	54	98	261	65	87	207
Shared Lane Traffic (%)												
Lane Group Flow (vph)	250	706	0	293	891	0	54	98	261	65	87	207
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane					Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6			2			4		4	8		8
Minimum Split (s)	8.0	22.0		8.0	22.0		8.0	21.4	21.4	8.0	21.4	21.4
Total Split (s)	22.0	77.0	0.0	28.0	83.0	0.0	8.0	27.0	27.0	8.0	27.0	27.0
Total Split (%)	15.7%	55.0%	0.0%	20.0%	59.3%	0.0%	5.7%	19.3%	19.3%	5.7%	19.3%	19.3%
Maximum Green (s)	18.0	71.0		24.0	77.0		4.0	21.6	21.6	4.0	21.6	21.6
Yellow Time (s)	3.5	5.0		3.5	5.0		3.5	3.6	3.6	3.5	3.6	3.6
All-Red Time (s)	0.5	1.0		0.5	1.0		0.5	1.8	1.8	0.5	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	4.0	4.0	6.0	4.0	4.0	5.4	5.4	4.0	5.4	5.4
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Act Effct Green (s)	91.0	71.0		101.0	77.0		27.0	21.6	21.6	27.0	21.6	21.6
Actuated g/C Ratio	0.65	0.51		0.72	0.55		0.19	0.15	0.15	0.19	0.15	0.15
v/c Ratio	0.51	0.75		0.61	0.46		0.21	0.34	0.56	0.26	0.30	0.49
Control Delay	4.4	7.1		21.1	7.2		46.9	56.7	10.9	48.2	55.8	10.9
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.4	7.1		21.1	7.2		46.9	56.7	10.9	48.2	55.8	10.9
LOS	A	A		C	A		D	E	B	D	E	B

Martin Rd & SR 161

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Approach Delay		6.4			10.6			26.5			28.5	
Approach LOS		A			B			C			C	

Intersection Summary	
Area Type:	Other
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 4 (3%), Referenced to phase 2:NWTL and 6:SETL, Start of Green	
Natural Cycle: 90	
Control Type: Pretimed	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay: 13.7	Intersection LOS: B
Intersection Capacity Utilization 72.4%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 6: SR 161#1 & Martin Rd

Federated Blvd & SR 161

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	130	760	850	160	50	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200			0	0	0
Storage Lanes	1			0	1	1
Taper Length (ft)	25			25	25	25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.979			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1863	1824	0	1770	1583
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1863	1824	0	1770	1583
Link Speed (mph)		45	45		30	
Link Distance (ft)		521	6835		281	
Travel Time (s)		7.9	103.6		6.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	141	826	924	174	54	98
Shared Lane Traffic (%)						
Lane Group Flow (vph)	141	826	1098	0	54	98
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane		Yes	Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 75.0%	ICU Level of Service D
Analysis Period (min) 15	

Railroad Crossing & SR 161

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	720	0	0	850	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt												
Flt Protected												
Satd. Flow (prot)	0	1863	0	0	1863	0	0	950	0	0	1863	0
Flt Permitted												
Satd. Flow (perm)	0	1863	0	0	1863	0	0	950	0	0	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		1647			832			469			501	
Travel Time (s)		32.1			16.2			10.7			11.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	100%	2%	2%	2%	2%
Adj. Flow (vph)	0	783	0	0	924	0	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	783	0	0	924	0	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2			2			2			2	
Detector Template		Thru			Thru			Thru			Thru	
Leading Detector (ft)		100			100			100			100	
Trailing Detector (ft)		0			0			0			0	
Detector 1 Position(ft)		0			0			0			0	
Detector 1 Size(ft)		6			6			6			6	
Detector 1 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0			0.0			0.0			0.0	
Detector 1 Queue (s)		0.0			0.0			0.0			0.0	
Detector 1 Delay (s)		0.0			0.0			0.0			0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type												
Protected Phases		4			8			2			6	
Permitted Phases												
Detector Phase		4			8			2			6	
Switch Phase												
Minimum Initial (s)		4.0			4.0			180.0			180.0	

Railroad Crossing & SR 161

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)		20.0			20.0			184.0			184.0	
Total Split (s)	0.0	21.0	0.0	0.0	21.0	0.0	0.0	184.0	0.0	0.0	184.0	0.0
Total Split (%)	0.0%	10.2%	0.0%	0.0%	10.2%	0.0%	0.0%	89.8%	0.0%	0.0%	89.8%	0.0%
Maximum Green (s)		17.0			17.0			180.0			180.0	
Yellow Time (s)		3.5			3.5			3.5			3.5	
All-Red Time (s)		0.5			0.5			0.5			0.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Recall Mode		C-Max			C-Max			None			None	
Act Effct Green (s)		205.0			205.0							
Actuated g/C Ratio		1.00			1.00							
v/c Ratio		0.42			0.50							
Control Delay		0.7			0.9							
Queue Delay		0.0			0.0							
Total Delay		0.7			0.9							
LOS		A			A							
Approach Delay		0.7			0.9							
Approach LOS		A			A							

Intersection Summary	
Area Type:	Other
Cycle Length: 205	
Actuated Cycle Length: 205	
Offset: 184 (90%), Referenced to phase 4:EBT and 8:WBT, Start of Green	
Natural Cycle: 205	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.50	
Intersection Signal Delay: 0.8	Intersection LOS: A
Intersection Capacity Utilization 48.1%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 13: SR 161#1 & RR Crossing

McVey Blvd & SR 161

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	710	20	50	850	140	70	130	40	20	30	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	150		0	150		0	0		0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.996			0.979			0.965			0.927	
Flt Protected	0.950			0.950			0.950				0.991	
Satd. Flow (prot)	1770	1855	0	1770	1824	0	1770	1798	0	0	1711	0
Flt Permitted	0.950			0.950			0.950				0.991	
Satd. Flow (perm)	1770	1855	0	1770	1824	0	1770	1798	0	0	1711	0
Link Speed (mph)		45			35			30			30	
Link Distance (ft)		6835			1647			3218			228	
Travel Time (s)		103.6			32.1			73.1			5.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	772	22	54	924	152	76	141	43	22	33	65
Shared Lane Traffic (%)												
Lane Group Flow (vph)	33	794	0	54	1076	0	76	184	0	0	120	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes			Yes				
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 78.9%	ICU Level of Service D
Analysis Period (min) 15	

Linworth Rd & SR 161

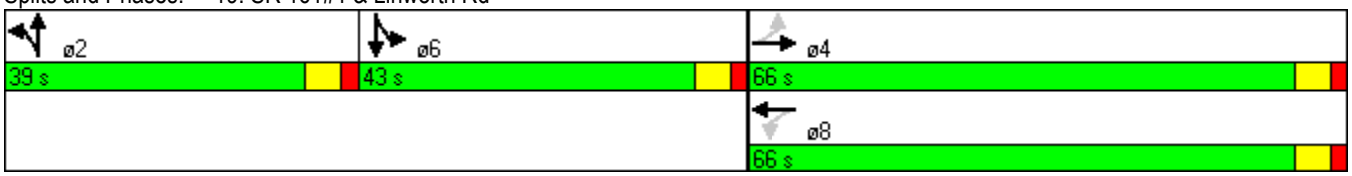
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	670	70	50	690	120	170	370	50	200	220	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	300		0	150		0	0		0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.986			0.978			0.982			0.976	
Flt Protected	0.950			0.950			0.950				0.981	
Satd. Flow (prot)	1770	1837	0	1770	1822	0	1770	1829	0	0	1783	0
Flt Permitted	0.067			0.067			0.950				0.981	
Satd. Flow (perm)	125	1837	0	125	1822	0	1770	1829	0	0	1783	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			7			4			7	
Link Speed (mph)		35			20			30			30	
Link Distance (ft)		832			2636			2832			1573	
Travel Time (s)		16.2			89.9			64.4			35.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	728	76	54	750	130	185	402	54	217	239	98
Shared Lane Traffic (%)												
Lane Group Flow (vph)	54	804	0	54	880	0	185	456	0	0	554	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm			Perm			Split			Split		
Protected Phases		4			8		2	2		6	6	
Permitted Phases	4			8								
Detector Phase	4	4		8	8		2	2		6	6	

Linworth Rd & SR 161

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	22.0	22.0		22.0	22.0		16.0	16.0		16.0	16.0	
Total Split (s)	66.0	66.0	0.0	66.0	66.0	0.0	39.0	39.0	0.0	43.0	43.0	0.0
Total Split (%)	44.6%	44.6%	0.0%	44.6%	44.6%	0.0%	26.4%	26.4%	0.0%	29.1%	29.1%	0.0%
Maximum Green (s)	60.0	60.0		60.0	60.0		33.0	33.0		37.0	37.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Act Effct Green (s)	60.0	60.0		60.0	60.0		33.0	33.0			37.0	
Actuated g/C Ratio	0.41	0.41		0.41	0.41		0.22	0.22			0.25	
v/c Ratio	1.06	1.08		1.06	1.18		0.47	1.11			1.23	
Control Delay	188.0	96.9		188.0	135.2		54.5	128.7			166.1	
Queue Delay	0.0	4.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	188.0	100.9		188.0	135.2		54.5	128.7			166.1	
LOS	F	F		F	F		D	F			F	
Approach Delay		106.4			138.3			107.3			166.1	
Approach LOS		F			F			F			F	

Intersection Summary	
Area Type: Other	
Cycle Length: 148	
Actuated Cycle Length: 148	
Natural Cycle: 150	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.23	
Intersection Signal Delay: 127.6	Intersection LOS: F
Intersection Capacity Utilization 109.2%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 19: SR 161#1 & Linworth Rd

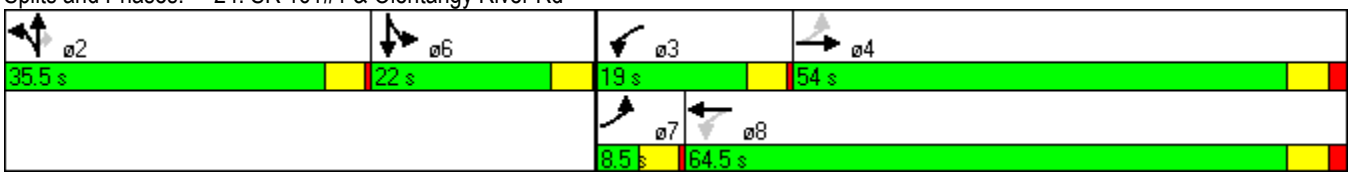


Olentangy River Rd & SR 161

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	840	40	320	870	550	60	380	200	250	210	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	130		0	300		0	0		180	200		0
Storage Lanes	1		0	1		0	0		1	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.993			0.942				0.850		0.981	
Flt Protected	0.950			0.950				0.993		0.950		
Satd. Flow (prot)	1770	1850	0	1770	3334	0	0	1850	1583	1770	1827	0
Flt Permitted	0.083			0.076				0.993		0.950		
Satd. Flow (perm)	155	1850	0	142	3334	0	0	1850	1583	1770	1827	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			139				135		5	
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		438			441			925			526	
Travel Time (s)		8.5			8.6			21.0			12.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	913	43	348	946	598	65	413	217	272	228	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	956	0	348	1544	0	0	478	217	272	261	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt			pm+pt			Split		Perm	Split		
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases	4			8					2			
Minimum Split (s)	8.5	22.0		8.5	22.0		20.5	20.5	20.5	20.5	20.5	
Total Split (s)	8.5	54.0	0.0	19.0	64.5	0.0	35.5	35.5	35.5	22.0	22.0	0.0
Total Split (%)	6.5%	41.4%	0.0%	14.6%	49.4%	0.0%	27.2%	27.2%	27.2%	16.9%	16.9%	0.0%
Maximum Green (s)	4.0	48.0		14.5	58.5		31.0	31.0	31.0	17.5	17.5	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	0.5	2.0		0.5	2.0		0.5	0.5	0.5	0.5	0.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	6.0	4.0	4.5	6.0	4.0	4.5	4.5	4.5	4.5	4.5	4.0
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Act Effct Green (s)	53.5	48.0		68.5	58.5			31.0	31.0	17.5	17.5	
Actuated g/C Ratio	0.41	0.37		0.52	0.45			0.24	0.24	0.13	0.13	
v/c Ratio	0.19	1.40		1.36	0.98			1.09	0.45	1.15	1.05	
Control Delay	20.1	222.8		218.2	51.4			115.4	19.5	153.6	123.0	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay	20.1	222.8		218.2	51.4			115.4	19.5	153.6	123.0	
LOS	C	F		F	D			F	B	F	F	

Olentangy River Rd & SR 161

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		218.2			82.1			85.5			138.6	
Approach LOS		F			F			F			F	

Intersection Summary	
Area Type: Other	
Cycle Length: 130.5	
Actuated Cycle Length: 130.5	
Offset: 0 (0%), Referenced to phase 2:NBTL, Start of Green	
Natural Cycle: 150	
Control Type: Pretimed	
Maximum v/c Ratio: 1.40	
Intersection Signal Delay: 122.5	Intersection LOS: F
Intersection Capacity Utilization 117.8%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 24: SR 161#1 & Olentangy River Rd