

June 24, 2024

20243845.0001

SAWYER'S LANDING DEVELOPMENT UPDATE

TOWN OF AMHERST, NY

PREPARED FOR:
Severyn Development, Inc.
Attn: William Severyn // Chief Executive Officer
43 Central Ave Suite 300
Lancaster, New York 14086

June 24, 2024

TABLE OF CONTENTS

1.0	EXECUTIVE SUMMARY	2
2.0	INTRODUCTION	5
2.1	Study Purpose and Objectives	5
2.2	Project Location	5
3.0	TRANSPORTATION SETTING	5
3.1	Description of Study Area Roadways	5
	Table 1: Existing Highway System	6
3.2	Description of Multimodal Network	6
	Table 2: Multimodal Network	7
3.3	Planned/Programmed Highway Improvements.....	7
4.0	EXISTING CONDITIONS ANALYSIS.....	7
4.1	Peak Intervals for Analysis.....	7
4.2	Existing Traffic Volume Data.....	7
4.3	Existing Crash Investigation.....	8
	Table 3: Intersection Crash Rate Analysis	8
5.0	BACKGROUND (NO BUILD) CONDITIONS.....	9
6.0	PROPOSED DEVELOPMENT CONDITIONS.....	9
6.1	Project Description	9
6.2	Proposed Traffic Generation.....	10
	Table 4: Site Generated Trips.....	11
6.3	Trip Distribution.....	11
6.4	Full Development Volumes.....	12
7.0	TRAFFIC OPERATIONS AND ANALYSIS	12
7.1	Traffic Signal Warrant Investigation.....	12
	Table 5: Signal Warrant Analysis Results.....	13
7.2	Description of Capacity Analysis.....	14
	Table 6: Level of Service Criteria	14
7.3	Capacity Analysis Results	15
	Table 7: Capacity Analysis Results	16
8.0	CONCLUSIONS AND RECOMMENDATIONS.....	17
9.0	REFERENCES	19
10.0	FIGURES	19

APPENDICES

- APPENDIX A: EXISTING TRAFFIC COUNT DATA
- APPENDIX B: MISCELLANEOUS CALCULATIONS
- APPENDIX C: LOS CALCULATIONS – EXISTING CONDITIONS
- APPENDIX D: LOS CALCULATIONS – BACKGROUND CONDITIONS
- APPENDIX E: LOS CALCULATIONS – FULL BUILD CONDITIONS

June 24, 2024

1.0 EXECUTIVE SUMMARY

The purpose of this updated report is to evaluate the potential traffic impacts related to the proposed Sawyer’s Landing development to be located on the property at 50 Dodge Road, which is along the north side of Dodge Road in the Town of Amherst, NY (Commonly referred to as Site “A” of the Muir Woods Project Site”). Within this report, the operating characteristics of the proposed access points and impacts to the adjacent roadway network are evaluated and mitigating measures are identified (if needed) to minimize operational concerns.

To define traffic impact, this analysis establishes existing baseline traffic conditions, projects background traffic flow including area growth, and determines the traffic operations that would result from the proposed project.

Project Location and Description

The project site is located along the north side of Dodge Road, west of Interstate 990, in the Town of Amherst, Erie County, New York. The project site is bounded by a residential development and Heritage Heights Elementary School to the north, vacant land to the east, offices to the south, and a medical plaza to the west. Land uses in the vicinity of the project site include residential, office, medical, and educational uses. The project site currently consists of a vacant building.

The proposed Sawyer’s Landing development will consist of constructing:

- Mixed-Use Building 1 (four-stories)
 - 51 Mid-Rise apartment units,
 - a ±3,901 square foot (SF) restaurant,
 - a ±432 SF leasing office,
 - and an ±8,002 SF membership-based gym
- Mixed-Use Building 2 (four-stories)
 - 51 Mid-Rise apartment units,
 - a ±3,901 square foot (SF) retail store,
 - a ±8,953 square foot (SF) retail store,
 - and a ±2,300 SF office
- a four-story ±26,400 SF self-storage building (±105,600 SF in total),
- 22 two-story duplex townhome buildings containing two units each for a total of 44 duplex townhome units,
- 63 two-story townhomes with attached garages.

Access to the site will be provided via one enter only driveway and one exit only driveway along Dodge Rd and one full access driveway along Dodge Rd to the south of the enter only driveway. There will also be an emergency access driveway along Dodge Road to the north of the exit only driveway with an emergency gate.

Study Area

To ensure a comprehensive analysis of potential traffic impacts, a study area was selected consisting of the following two (2) intersections:

1. Dodge Road/Sweet Home Road
2. Dodge Road/North Forest Road

Existing and Background Conditions

Turning movement traffic counts were collected by Passero Associates on Thursday, March 3, 2022, at the Dodge Rd/North Forest Rd study intersection for both the weekday AM and PM peak hour periods. Turning movement traffic counts were collected by the Town of Amherst on Tuesday May 14, 2024, at the Dodge Rd/Sweet Home Rd study

June 24, 2024

intersection for both the weekday AM and PM peak hour periods. Traffic counts were conducted between 7:00-9:00 AM for the weekday AM peak period and 4:00-6:00 PM for the weekday PM peak period. The peak hour traffic periods generally occurred between 7:30-8:30 AM and 4:30-5:30 PM.

Construction of the proposed project is anticipated to reach full build-out within approximately two years. The widely accepted methodology for preparing traffic impact studies requires that any projects in the study area that are currently approved and/or under construction must be considered in the traffic analysis. Projects that are contemplated but not yet approved are not included in a traffic analysis. Local municipal personnel were contacted to discuss any other specific projects that are currently approved or under construction that would generate additional traffic in the study area. The following projects were identified and are listed below:

- Aspen Heights Student Housing – Traffic generated by this student housing development was added to the study intersections.
- 480 Dodge Road - Traffic generated by this approved but not yet constructed multifamily project was added to the study intersections.
- 775 John James Audubon Pkwy – Traffic generated by this approved project is included in the background growth rate.

A review of available historical NYSDOT traffic volume data in the vicinity of the site indicates that traffic has decreased between 2010 and 2019 in the study area. To account for normal increases in background traffic growth, including the approved development noted above as well as any unforeseen developments in the study area, a growth rate of 1.0% per year was applied to the existing traffic volumes for the two-year build out period.

Conclusions and Recommendations

This updated Traffic Impact Study identified and evaluated the potential traffic impacts that can be expected from the proposed Sawyer’s Landing development to be located on the property at 50 Dodge Road, which is along the north side of Dodge Road in the Town of Amherst, NY (Commonly referred to as Site “A” of the Muir Woods Project Site”). The results of this study determined that the existing transportation network can adequately accommodate the projected traffic volumes and resulting minor impacts to study area intersections. The following sets forth the conclusions and recommendations based upon the results of the analyses:

Conclusions

1. The proposed project is expected to generate approximately 76 entering/102 exiting vehicle trips during the AM peak hour and 163 entering/136 exiting vehicle trips during the PM peak hour.
2. However, not all these driveway volumes are new, but instead a portion of the proposed volumes will visit more than one land use during one trip to the site. Thus, based upon internal capture rates from the NCHRP 684 model and professional judgement, the proposed site is expected to generate approximately 69 entering/92 exiting new vehicle trips during the AM peak hour and 133 entering/110 exiting new vehicle trips during the PM peak hour.
3. Based upon the results of the traffic signal warrant at the Dodge Rd/North Forest Rd intersection, a traffic signal is not warranted at this intersection.
4. All movements generally operate at an acceptable LOS “D” or better under existing, projected background, and full build conditions (with proposed development) during both peak hours at all study intersections except for the northbound left approach at the Sweet Home Rd/Dodge Rd intersection during the AM peak hour, which

June 24, 2024

operates at LOS “F” under background and full build conditions. There are no LOS changes at any of the study intersections that require mitigation.

5. The detailed analysis contained in this Traffic Impact Study demonstrates the proposed project will not result in any potentially significant adverse environmental impacts for the purpose of the environmental review of the project pursuant to the State Environmental Quality Review Act (“SEQRA”).

Recommendations

1. The proposed exit driveway along Dodge Rd should be designed to provide one exiting lane.
2. The proposed enter driveway along Dodge Rd should be designed to provide one entering lane.
3. The proposed southerly driveway along Dodge Rd should be designed to provide one entering and one exiting lane.

June 24, 2024

2.0 INTRODUCTION

2.1 Study Purpose and Objectives

The purpose of this updated report is to evaluate the potential traffic impacts related to the proposed Sawyer’s Landing development to be located on the property at 50 Dodge Road, which is along the north side of Dodge Road in the Town of Amherst, NY (Commonly referred to as Site “A” of the Muir Woods Project Site”). Within this report, the operating characteristics of the proposed access points and impacts to the adjacent roadway network are evaluated and mitigating measures are identified (if needed) to minimize operational concerns.

To define traffic impact, this analysis establishes existing baseline traffic conditions, projects background traffic flow including area growth, and determines the traffic operations that would result from the proposed project.

2.2 Project Location

The project site is located along the north side of Dodge Road, west of Interstate 990, in the Town of Amherst, Erie County, New York. The project site is bounded by a residential development and Heritage Heights Elementary School to the north, vacant land to the east, offices to the south, and a medical plaza to the west. Land uses in the vicinity of the project site include residential, office, medical, and educational uses. The project site currently consists of a vacant building.

Study Area

To ensure a comprehensive analysis of potential traffic impacts, a study area was selected consisting of the following two (2) intersections:

1. Dodge Road/Sweet Home Road
2. Dodge Road/North Forest Road

The project site location and study area are illustrated in **Figure 1** (all figures are included at the end of this report).

3.0 TRANSPORTATION SETTING

3.1 Description of Study Area Roadways

The information outlined in **Table 1** provides a description of the existing roadway network within the study area. **Figure 2** illustrates the lane geometry and traffic control at each of the study intersections and the Annual Average Daily Traffic (AADT) volumes on the study roadways. The AADTs reflect the most recently collected data obtained from the NYSDOT.

Table 1: Existing Highway System

ROADWAY	CLASS ¹	AGENCY ²	SPEED LIMIT ³	TRAVEL LANES ⁴	ORIENTATION OF TRAVEL	AADT ⁵
Dodge Road	16	ECDPW	40	2	Two-Way/ East-West	6,738 NYSDOT (2017)
Sweet Home Road	16	ECDPW	45	4	Two-way/ North-South	18,050 NYSDOT (2019)
North Forest Road	19	Town of Amherst	35	2	Two-way/ North-South	1,797 NYSDOT (2019)

Notes:

1. State functional classification of roadway
2. Jurisdictional agency of roadway.
3. Posted or statewide limit in miles per hour (mph).
4. Number of travel lanes. Excludes turning/auxiliary lanes developed at intersections.
5. Estimated AADT in vehicles per day (vpd). AADT source (Year).

The Highway Functional Classification System defines the role a roadway plays in the overall road network. Functional classification of highways within the study area is determined by the NYSDOT and the Federal Highway Administration (FHWA).

Urban Minor Arterial (Class 16)

An urban minor arterial interconnects and augments the higher-level arterials as well as serves trips of moderate length at a somewhat lower level of travel mobility than Principal Arterials. They distribute traffic to smaller geographic areas than those served by higher-level Arterials and provide more land access than Principal Arterials without penetrating identifiable neighborhoods. They also provide urban connections for Rural Collectors.

Urban Local (Class 19)

According to the FHWA, this class of roadway includes all facilities not in one of the higher systems (e.g., arterial, collector, etc.). It primarily permits direct access to abutting lands and connections to the higher order systems and is not intended for use in long distance travel. As public roads, they should be accessible for public use throughout the year. Generally, the streets carry little to no through-traffic flows.

3.2 Description of Multimodal Network

Table 2 summarizes the traffic controls, pedestrian, bicycle, and transit accommodations within the study area.

Table 2: Multimodal Network

INTERSECTION	Dodge Rd/Sweet Home Rd	Dodge Rd/North Forest Rd
Intersection Control Type	Signalized	Unsignalized
Sidewalks	●	○
Crosswalks	●	○
Curb Ramps	●	○
Pedestrian Signal	●	○
Pedestrian Push Button	●	○
Pedestrian Countdown	●	○
Bicycle Facilities	○	○
Street Lighting	●	○
Transit Route	N/A	N/A

● Present at entire intersection
 ● Present at portion of intersection
 ○ Not present at intersection

3.3 Planned/Programmed Highway Improvements

There are no planned highway improvement projects in the study area.

4.0 EXISTING CONDITIONS ANALYSIS

4.1 Peak Intervals for Analysis

Given the functional characteristics of the corridors, adjacent land uses, and the proposed land use for the project site, the peak hours selected for analysis are the weekday AM and weekday PM peak periods. The combination of site traffic and adjacent street traffic produces the greatest demand during these time periods.

4.2 Existing Traffic Volume Data

Turning movement traffic counts were collected by Passero Associates on Thursday, March 3, 2022, at the Dodge Rd/North Forest Rd study intersection for both the weekday AM and PM peak hour periods. Turning movement traffic counts were collected by the Town of Amherst on Tuesday May 14, 2024, at the Dodge Rd/Sweet Home Rd study intersection for both the weekday AM and PM peak hour periods. Traffic counts were conducted between 7:00-9:00 AM for the weekday AM peak period and 4:00-6:00 PM for the weekday PM peak period. The peak hour traffic periods generally occurred between 7:30-8:30 AM and 4:30-5:30 PM.

All turning movement count data was collected on a typical weekday while local schools were in session. No adverse weather conditions impacted the traffic counts. The traffic volumes were reviewed for seasonality and to confirm the accuracy and relative balance of the collective traffic counts. The actual differences in traffic volumes can be attributed to temporal variations in traffic volumes as well as activity related to driveways located in the segments between the study intersections. Additionally, the volumes at the Dodge Rd/North Forest Rd intersection were increased using a

June 24, 2024

0.5% growth rate based on the historical traffic data described in Section 5.0 to account for any growth in traffic between the time of data collection and now. The existing peak hour traffic volumes are shown in **Figure 3**.

4.3 Existing Crash Investigation

The purpose of this crash analysis is to identify inherent safety issues by studying and quantifying historical crashes at the study intersections and identifying potential crash patterns and clusters.

A crash cluster is defined as an abnormal occurrence of similar crash types occurring at approximately the same location or involving the same geometric features. The severity of the crashes should also be considered. A history of crashes is an indication that further analysis is required to determine the cause(s) of the crash(es) and to identify what actions, if any, could be taken to mitigate the crashes.

A crash investigation within the study area was conducted to assess the safety history from January 1, 2019, through December 31, 2023.

Reportable (non-injury, injury, and fatal injury) type crashes are defined as damage to one person’s property in the amount of \$1,001 or more. The Non-Reportable type crashes result in property damage of \$1,000 or less. Crash rates were computed for the study intersections and compared with NYSDOT average crash rates for similar intersections, as summarized in **Table 3**. Intersection rates are listed as crashes per million entering vehicle (CR/MEV).

Table 3: Intersection Crash Rate Analysis

INTERSECTION	NUMBER OF CRASHES	NUMBER OF ENTERING VEHICLES	ACTUAL CRASH RATE	STATEWIDE AVERAGE CRASH RATE
Sweet Home Rd at Dodge Rd	30	29,442 vpd	0.56	0.26
Dodge Rd at North Forest Rd	6	6,379 vpd	0.52	0.19

Notable crash clusters are approaches with three or greater identifiable consistent crash types.

1. Sweet Home Rd at Dodge Rd

As shown in **Table 3**, the intersection has a crash rate that is approximately 2.15 times higher than the statewide average crash rate for similar intersections. The following crashes occurred: rear end (7), left turn (9), right angle (8), sideswipe (3), and backing (2). The following crash patterns were reported:

- Left Turn
 - Northbound (three crashes)
 - Southbound (four crashes)
- Rear End
 - Southbound (three crashes)
- Right Angle
 - Northbound (five crashes)

The reported rear end crashes (23%) are characteristic of moderate to heavily trafficked signalized intersections. The causes of the rear end crashes were generally due to driver inattention, driver error, unsafe speeds, or following too closely. The causes of the left turn crashes were generally due to failure to yield the right of way. The causes of the right angle crashes were generally driver inattention, driver error, and brake failure. Flashing yellow left turn arrows were installed sometime after June 2022 based on review of historical aerial imagery of the intersection. Based on the

June 24, 2024

descriptions in the MV-104 crash reports, there has only been one left turn crash and three right angle crashes at the intersection since the new traffic signal was installed. No other discernible crash patterns exist; thus, no geometric improvements are recommended.

2. Dodge Rd at North Forest Rd

As shown in **Table 3**, the intersection has a crash rate that is approximately 2.73 times higher than the statewide average crash rate for similar intersections. The following crashes occurred: rear end (2), right angle (1), and fixed object (3). No discernible crash patterns exist; thus, no geometric improvements are recommended.

5.0 BACKGROUND (NO BUILD) CONDITIONS

Construction of the proposed project is anticipated to reach full build-out within approximately two years. The widely accepted methodology for preparing traffic impact studies requires that any projects in the study area that are currently approved and/or under construction must be considered in the traffic analysis. Projects that are contemplated but not yet approved are not included in a traffic analysis. Local municipal personnel were contacted to discuss any other specific projects that are currently approved or under construction that would generate additional traffic in the study area. The following projects were identified and are listed below:

- Aspen Heights Student Housing – Traffic generated by this student housing development was added to the study intersections.
- 480 Dodge Road - Traffic generated by this approved but not yet constructed multifamily project was added to the study intersections.
- 775 John James Audubon Pkwy – Traffic generated by this approved project is included in the background growth rate.

A review of available historical NYSDOT traffic volume data in the vicinity of the site indicates that traffic has decreased between 2010 and 2019 in the study area. To account for normal increases in background traffic growth, including the approved development noted above as well as any unforeseen developments in the study area, a growth rate of 1.0% per year was applied to the existing traffic volumes for the two-year build out period. The background traffic volumes are depicted in **Figure 4**.

6.0 PROPOSED DEVELOPMENT CONDITIONS

6.1 Project Description

The proposed Sawyer’s Landing development will consist of constructing:

- Mixed-Use Building 1 (four-stories)
 - 51 Mid-Rise apartment units,
 - a ±3,901 square foot (SF) restaurant,
 - a ±432 SF leasing office,
 - and an ±8,002 SF membership-based gym
- Mixed-Use Building 2 (four-stories)
 - 51 Mid-Rise apartment units,
 - a ±3,901 square foot (SF) retail store,
 - a ±8,953 square foot (SF) retail store,

June 24, 2024

- and a ±2,300 SF office
- a four-story ±26,400 SF self-storage building (±105,600 SF in total),
- 22 two-story duplex townhome buildings containing two units each for a total of 44 duplex townhome units,
- 63 two-story townhomes with attached garages.

Access to the site will be provided via one enter only driveway and one exit only driveway along Dodge Rd and one full access driveway along Didge Rd, to the south of the enter only driveway. There will also be an emergency access driveway along Dodge Road to the north of the exit only driveway with an emergency gate.

6.2 Proposed Traffic Generation

The volume of traffic generated by a site is dependent on the intended land use and size of the development. Trip generation is an estimate of the number of trips generated by a specific building or land use. These trips represent the volume of traffic entering and exiting the development. *Trip Generation Manual* (11th Edition) published by the Institute of Transportation Engineers (ITE) is used as a reference for this information. The trip rate for the peak hour of the generator may or may not coincide in time or volume with the trip rate for the peak hour of adjacent street traffic. Volumes generated during the peak hour of the adjacent street traffic and proposed land uses, in this case, the weekday commuter AM and PM peak hours, represent a more critical volume when analyzing the capacity of the system; those intervals will provide the basis of this analysis.

The proposed project consists of multiple different land uses (residential, office, retail, and restaurant) and is considered mixed-use (multi-use). According to the Institute of Transportation Engineers *Trip Generation Handbook*, (3rd Edition), "...a multi-use development is typically a single real-estate project that consists of two or more ITE land use classifications between which trips can be made without using the off-site road system. Because of the nature of these land uses, the trip-making characteristics are interrelated, and some trips are made among the on-site uses. This capture of trips internal to the site has the net effect of reducing vehicle trip generation between the overall development site and the external street system (compared to the total number of trips generated by comparable, standalone sites)." "In some multi-use developments, these internal trips can be made by walking or by vehicles entirely on internal pathways or internal roadways without using streets external to the site."

The Handbook indicates internal capture rates for trips within a multi-use development to vary between residential, office, retail, restaurant, and entertainment and recreational uses during the AM and PM peak hours. Given the proposed land use components and interconnection between these components, multi-use total volume trips will likely occur.

Methodology contained in National Cooperative Highway Research Program (NCHRP) Report 684: Enhancing Internal Trip Capture Estimation for Mixed-Use Development was consulted to perform the mixed-use adjustment. The interactive spreadsheet considers baseline mode shares and vehicle occupancy factors for the proposed land uses, as described in the Handbook, as well as average land use interchange distances (feet walking distance) to determine the internal capture percentage. In order to accurately capture the internal site trips that will occur in the site, the existing office land use that will remain was included in the internal capture calculations. This completed spreadsheet model is included in the Appendices.

The NCHRP 684 model reported an internal baseline capture percentage of 13% during the AM peak hour, and 26% during the PM peak hour. In order to be conservative, an internal baseline capture percentage of 10% was used during the AM peak hour, and 20% was used during the PM peak hour. These multi-use trip projection adjustments were applied to the respective site generated trips and subtracted from the traffic entering and exiting the site during the peak periods.

June 24, 2024

Table 4 shows the estimated site generated trips that will be added to the existing roadway system under full project development.

Table 4: Site Generated Trips

DESCRIPTION	ITE LUC ¹	SIZE	PM PEAK HOUR		SAT PEAK HOUR	
			ENTER	EXIT	ENTER	EXIT
General Office Building	710	±2,300 sf	6	1	1	6
Strip Retail Plaza (<40k)	822	±12,854 sf	18	12	47	47
High-Turnover (Sit-Down) Restaurant	932	±3,901 sf	21	17	22	14
Single Family Attached Housing	215	107 units	12	37	36	25
Multifamily Housing (Mid-Rise)	221	102 units	8	26	24	16
Mini-Warehouse	151	±105,600 sf	6	4	7	8
Health/Fitness Club	492	±8,002 sf	5	5	26	20
Total Site Generated Trips			76	102	163	136
<i>Internal Capture Adjustment</i>			<i>-7</i>	<i>-10</i>	<i>-30</i>	<i>-26</i>
Total Primary Site Generated Trips			69	92	133	110

Note:
1. LUC = Land Use Code.

The proposed project is expected to generate approximately 76 entering/102 exiting vehicle trips during the AM peak hour and 163 entering/136 exiting vehicle trips during the PM peak hour. However, not all these driveway volumes are new, but instead a portion of the proposed volumes will visit more than one land use during one trip to the site. Thus, based upon internal capture rates from the NCHRP 684 model and professional judgement, the proposed site is expected to generate approximately 69 entering/92 exiting new vehicle trips during the AM peak hour and 133 entering/110 exiting new vehicle trips during the PM peak hour.

6.3 Trip Distribution

The cumulative effect of site-generated traffic on the transportation network is dependent on the origins and destinations of that traffic and the location of the access drives serving the site. The proposed arrival/departure distribution of traffic generated by the proposed project is considered a function of several parameters, including:

- Employment centers in the local area and region.
- Population centers in the local area and region.
- Proximity and access to Interstate 990.
- Proximity to the North Campus of the University at Buffalo.
- Site access drive locations and internal roadway circulation.
- Existing highway network.
- Existing traffic patterns.
- Existing traffic conditions and controls.

June 24, 2024

Figure 5 shows the anticipated trip distribution pattern percentage for the project site. Figures 6 illustrate the total peak hour site-generated traffic.

6.4 Full Development Volumes

The proposed design hour traffic volumes are developed for the peak hours by combining the background traffic conditions (Figure 4) and the new site-generated traffic volumes (Figure 6) to yield the traffic volumes under full development conditions. Figure 7 illustrates the total peak hour volumes anticipated for the proposed project under full build-out conditions.

7.0 TRAFFIC OPERATIONS AND ANALYSIS

7.1 Traffic Signal Warrant Investigation

A traffic signal warrant analysis was conducted at the existing Dodge Rd/North Forest Rd intersection under full build conditions. The evaluation is based on traffic exiting North Forest Rd (i.e. northbound traffic). The need for a traffic signal is determined by comprehensive investigation of existing traffic conditions and physical characteristics at the location. The *Standard Specifications Update for the adoption of the National MUTCD (FHWA)* and the *New York State Supplement* were reviewed to investigate the need for a traffic control signal at this location. There are nine (9) warrants, and they are as follows:

- Warrant 1 Eight-Hour Vehicular Volume
- Warrant 2 Four-Hour Vehicular Volume
- Warrant 3 Peak Hour Vehicular Volume
- Warrant 4 Pedestrian Volume
- Warrant 5 School Crossing
- Warrant 6 Coordinated Signal System
- Warrant 7 Crash Experience
- Warrant 8 Roadway Network
- Warrant 9 Intersection Near a Grade Crossing

Prior to applying warrants, the MUTCD suggests consideration of the effects of right-turn volumes on the minor street approach, a 20% reduction was taken in the number of right turning vehicles to be conservative. ITE data and the trip distribution percentages from Figure 5 were used to project the hourly distribution of traffic going to and from the proposed project through this intersection. The posted speed limit on Dodge Rd is 40 MPH, thus 70% thresholds in Table 4C-1, Figure 4C-2, and Figure 4C-4 are used as a basis for analysis.

1. Warrant 1 is subdivided into Condition A and Condition B. The Minimum Vehicular Volume, Condition A, is intended for application at locations where a large volume of intersecting traffic is the principal reason to consider installing a traffic control signal. The Interruption of Continuous Traffic, Condition B, is intended for application at locations where Condition A is not satisfied and where the traffic volume on a major street is so heavy that traffic on a minor intersecting street suffers excessive delay or conflict in entering or crossing the major street. These conditions are satisfied when, for each of any eight hours of an average day, anticipated volumes on the artery and side road are more than the minimum values presented in Tables 4C-1 in the MUTCD. **The warrant for Condition A is not met, and the warrant for Condition B is not met.**
2. Warrant 2, the Four-Hour Vehicular Volume signal warrant conditions, are intended to be applied where the volume of intersecting traffic is the principal reason to consider installing a traffic control signal. This warrant

June 24, 2024

stipulates that for any four hours of a day, minimum threshold volumes are met on the artery and side road. **This warrant is not met.**

3. Warrant 3 is intended for application where minor street traffic suffers undue delay in entering or crossing the major street for one hour of the day. It stipulates that the warrant shall be applied in unusual cases (high-occupancy vehicle facilities – i.e., shopping centers, office parks) where a large number of vehicles discharge over a short period of time. **This warrant is not met.**
4. Warrant 4 is met when pedestrians experience excessive delay in crossing the major street because the traffic volumes are so heavy. The intersection currently has low pedestrian activity and is not likely to increase significantly under future development phases. **This warrant is not met.**
5. Warrant 5 is met when a sufficient number of gaps in traffic do not exist for certain size and frequency of school children to cross the major roadway. **This warrant is not met.**
6. Warrant 6 is met when a traffic signal is needed to maintain progressive movement and vehicle platooning in a coordinated signal system. The intersection would likely be coordinated with adjacent signals, if warranted. There is currently no issue with platooning along the Dodge Rd corridor, therefore, **this warrant is not met.**
7. Warrant 7 is intended for application where the severity and frequency of crashes are the principal reasons to consider installing a traffic control signal. The need for a traffic control signal shall be considered if *all* of the following criteria are met:
 - a. Adequate trial of alternatives with satisfactory observance and enforcement has failed to reduce crash frequency.
 - b. Five (5) or more reported crashes, of types susceptible to correction by a traffic signal, to have occurred within a 12-month period, each crash involving a personal injury or property damage.

This warrant is not met.

8. Warrant 8 is met when a traffic signal might encourage concentration and organization of traffic flow on a roadway network. This warrant primarily focuses on two major intersecting roadways, which is not the case at the study intersection. **This warrant is not met.**
9. Warrant 9 is applicable when an intersection is located near an at-grade rail crossing. **This warrant is not met.**

Table 5: Signal Warrant Analysis Results

WARRANT	SATISFACTION OF WARRANTS
1A – Eight-Hour Condition A	NO
1B – Eight-Hour Condition B	NO
2 – Four-Hour	NO
3 – Peak-Hour	NO
4 – Pedestrian Volume	NO
5 – School Crossing	NO
6 – Coordinated Signal System	NO

June 24, 2024

WARRANT	SATISFACTION OF WARRANTS
7 – Crash Experience	NO
8 – Roadway Network	NO
9 – Intersection Near a Grade Crossing	NO

Table 5 summarizes the signal warrant findings at the existing Dodge Rd/North Forest Rd intersection under full build conditions. Based upon the results, a traffic signal is not warranted at this intersection.

7.2 Description of Capacity Analysis

Capacity analysis is a technique used for determining a measure of effectiveness for a section of roadway and/or intersection based on the number of vehicles during a specific time period. The measure of effectiveness used for the capacity analysis is referred to as a Level of Service (LOS). Levels of service are calculated to provide an indication of the amount of delay that a motorist experiences while traveling along a roadway or through an intersection. Since the most amount of delay to motorists usually occurs at intersections, capacity analysis focuses on intersections, as opposed to highway segments.

The standard procedure for capacity analysis of signalized and unsignalized intersections is outlined in the *Highway Capacity Manual (HCM) 7th Edition* published by the Transportation Research Board (TRB). Traffic analysis software, Synchro 12, which is based on procedures and methodologies contained in the HCM, was used to analyze operating conditions at study area intersections. The procedure yields a level of service based on the HCM as an indicator of how well intersections operate.

Six levels of service are defined for analysis purposes. They are assigned letter designations, from "A" to "F", with LOS "A" representing the conditions with little to no delay, and LOS "F" conditions with very long delays. Suggested ranges of service capacity and an explanation of levels of service are included in the Appendices. LOS "C" or better is desirable, but LOS "D" for signalized locations and LOS "E" for unsignalized locations are generally thresholds of acceptable operation during peak periods so long as the volume to capacity ratio (v/c) is below 1.0. **Table 6** depicts level of service criteria for both signalized and unsignalized intersections.

Table 6: Level of Service Criteria

LEVEL OF SERVICE	SIGNALIZED CONTROL DELAY PER VEHICLE (seconds)	STOP CONTROL DELAY PER VEHICLE (seconds)
A	< 10	< 10
B	10 – 20	10 – 15
C	20 – 35	15 – 25
D	35 – 55	25 – 35
E	55 – 80	35 – 50
F	> 80	> 50

LOS for signalized intersections is defined in terms of delay specifically, average total delay per vehicle for a 15-minute analysis period. LOS for unsignalized intersections, however, are different from a signalized intersection. The primary reason for this is driver expectation that a signalized intersection is designed to carry higher volumes than an unsignalized intersection. Unsignalized intersections are also associated with more uncertainty for users, as delays are less predictable than they are at signals.

June 24, 2024

The v/c ratio, also referred to as degree of saturation, represents the sufficiency of an intersection to accommodate the vehicular demand. A v/c ratio less than 0.85 generally indicates that adequate capacity is available, and vehicles are not expected to experience significant queues and delays. As the v/c ratio approaches 1.0, traffic flow may become unstable, and delay and queuing conditions may occur.

7.3 Capacity Analysis Results

Existing and background operating conditions during the peak study periods are evaluated to determine a basis for comparison with the projected future conditions. The future traffic conditions generated by the project were analyzed to assess the operation of the study area intersections. Capacity results for existing, background, and full development conditions are listed in **Table 7**. The discussion following the table summarizes capacity conditions. The detailed Synchro capacity analysis worksheets are contained in the Appendices.

TABLE 7: CAPACITY ANALYSIS RESULTS

INTERSECTION	2024 EXISTING BASE CONDITIONS				2026 BACKGROUND CONDITIONS				2026 FULL BUILD CONDITIONS			
	AM	PM	PM	SAT	PM	SAT	PM	SAT	PM	SAT		
1. Sweet Home Rd/Dodge Rd/Commerce Dr (S)												
EB Left - Commerce Dr	C	20.7	C	21.3	C	20.7	C	21.5	C	20.4	C	22.7
EB Thru/Right - Commerce Dr	C	31.9	C	34.3	C	33.4	C	34.6	C	34.0	D	36.1
WB Left - Dodge Rd	A	8.9	B	16.4	A	9.1	B	19.2	A	9.0	C	21.5
WB Thru - Dodge Rd	C	21.7	C	22.9	C	22.1	C	24.0	C	23.0	C	27.0
WB Right - Dodge Rd	C	25.3	C	21.1	C	25.2	C	25.4	C	25.7	C	30.4
NB Left - Sweet Home Rd	E	72.5	B	15.6	F	106.1	B	16.0	F	112.6	B	16.3
NB Thru/Right - Sweet Home Rd	B	19.2	D	36.2	C	20.5	D	38.2	C	21.4	D	45.4
SB Left - Sweet Home Rd	B	11.4	C	21.9	B	12.8	C	22.9	B	14.4	C	27.7
SB Thru/Right - Sweet Home Rd	C	24.2	C	25.3	C	26.0	C	25.7	C	26.7	C	25.5
Overall LOS	C	29.6	C	27.1	D	36.0	C	28.9	D	37.1	C	32.7
Volume-to-Capacity (v/c) Ratio	1.03	0.83			1.12	0.86			1.14	0.92		
2. Dodge Rd/Proposed Exit Only Driveway (U)												
SB - Proposed Exit Only Driveway	N/A	—	N/A		N/A	—	N/A		B	11.6	B	12.8
4. Dodge Rd/Proposed Southerly Driveway (U)												
EB Left - Dodge Rd	N/A	—	N/A		N/A	—	N/A		A	7.9	A	8.3
SB - Proposed Southerly Driveway									B	12.1	B	13.6
5. Dodge Rd/N Forest Rd (U)												
WB Left - Dodge Rd	A	7.9	A	7.8	A	7.9	A	7.9	A	8.0	A	8.0
NB - N Forest Rd	B	11.9	B	14.5	B	12.4	C	15.9	B	13.1	C	18.7

Notes:

1. A(2.8) = Level of Service (Delay in seconds per vehicle)
2. NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound
3. (S) = Signalized; (U) = Unsignalized
4. N/A = Approach does not exist and/or was not analyzed during this condition
5. Green shaded cells indicate low delays, yellow shaded cells indicate moderate delays, red shaded cells indicate long delays.

June 24, 2024

Dodge Road/Sweet Home Road (Signalized)

All approaches operate at LOS “D” or better under all conditions during both peak hours with the exception of the northbound left approach which operates at LOS “F” during the AM peak hour under background and full build conditions. In between background and full build conditions, the eastbound thru/right approach is projected to change from LOS “C” to “D” during the PM peak hour period, however, this is considered a borderline condition as the threshold between LOS “C” and “D” is 35.0 seconds per vehicle and the actual increase in delay projected is 1.5 seconds per vehicle. Also, between background and full build conditions, the westbound left approach is projected to change from LOS “B” to “C” during the PM peak hour period, however, this is also considered a borderline condition as the threshold between LOS “B” and “C” is 20.0 seconds per vehicle and the actual increase in delay projected is 2.3 seconds per vehicle. No other changes in levels of service are anticipated and no improvements are warranted nor recommended at this location.

Dodge Road/Proposed Exit Driveway (Unsignalized)

The southbound approach operates at LOS “B” under full build conditions during both peak hours. The proposed exit driveway should consist of one exiting lane.

Dodge Road/Proposed Southerly Driveway (Unsignalized)

All approaches operate at LOS “B” or better under full build conditions during both peak hours. The proposed southerly driveway should consist of one entering and one exiting lane.

Dodge Road/North Forest Road (Signalized)

All approaches operate at LOS “C” or better under all conditions during both peak hours. No changes in level of service are anticipated and no improvements are warranted nor recommended at this location.

8.0 CONCLUSIONS AND RECOMMENDATIONS

This updated Traffic Impact Study identified and evaluated the potential traffic impacts that can be expected from the proposed Sawyer’s Landing development to be located on the property at 50 Dodge Road, which is along the north side of Dodge Road in the Town of Amherst, NY (Commonly referred to as Site “A” of the Muir Woods Project Site”). The results of this study determined that the existing transportation network can adequately accommodate the projected traffic volumes and resulting minor impacts to study area intersections. The following sets forth the conclusions and recommendations based upon the results of the analyses:

Conclusions

1. The proposed project is expected to generate approximately 76 entering/102 exiting vehicle trips during the AM peak hour and 163 entering/136 exiting vehicle trips during the PM peak hour.
2. However, not all these driveway volumes are new, but instead a portion of the proposed volumes will visit more than one land use during one trip to the site. Thus, based upon internal capture rates from the NCHRP 684 model and professional judgement, the proposed site is expected to generate approximately 69 entering/92 exiting new vehicle trips during the AM peak hour and 133 entering/110 exiting new vehicle trips during the PM peak hour.
3. Based upon the results of the traffic signal warrant at the Dodge Rd/North Forest Rd intersection, a traffic signal is not warranted at this intersection.

June 24, 2024

4. All movements generally operate at an acceptable LOS “D” or better under existing, projected background, and full build conditions (with proposed development) during both peak hours at all study intersections except for the northbound left approach at the Sweet Home Rd/Dodge Rd intersection during the AM peak hour, which operates at LOS “F” under background and full build conditions. There are no LOS changes at any of the study intersections that require mitigation.
5. The detailed analysis contained in this Traffic Impact Study demonstrates the proposed project will not result in any potentially significant adverse environmental impacts for the purpose of the environmental review of the project pursuant to the State Environmental Quality Review Act (“SEQRA”).

Recommendations

1. The proposed exit driveway along Dodge Rd should be designed to provide one exiting lane.
2. The proposed enter driveway along Dodge Rd should be designed to provide one entering lane.
3. The proposed southerly driveway along Dodge Rd should be designed to provide one entering and one exiting lane.

June 24, 2024

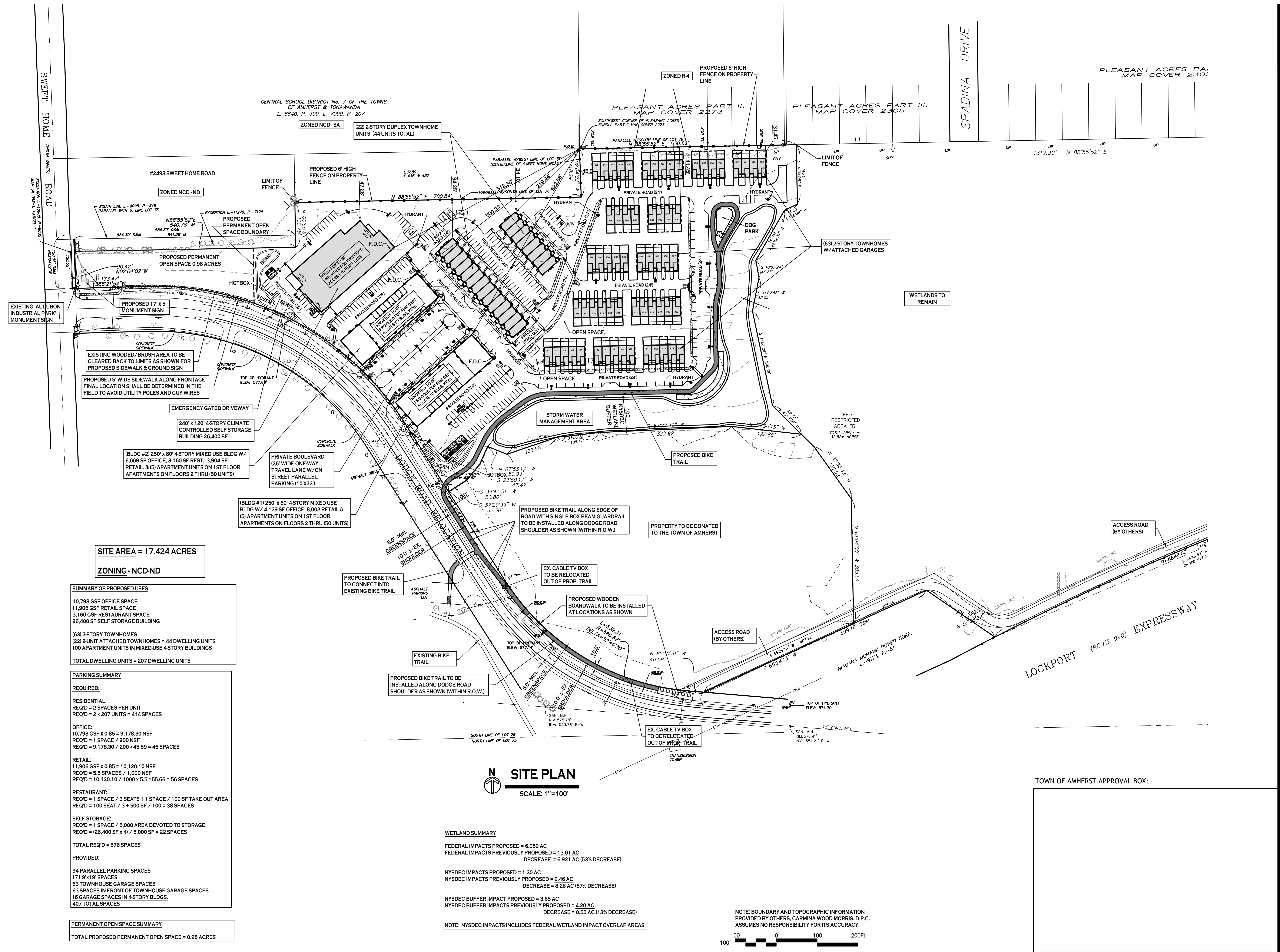
9.0 REFERENCES

- Synchro 12 Software. Cubic ITS.
- Highway Capacity Manual (HCM 7th Edition). Transportation Research Board (TRB). Washington, DC. 2016.
- Highway Functional Classification Concepts, Criteria, and Procedures. FHWA. 2013.
- Trip Generation (11th Edition). Institute of Transportation Engineers (ITE). Washington, DC. 2021.
- OnTheMap. US Census Bureau. 2023.
- NCHRP Report 684 Enhancing Internal Trip Capture Estimation for Mixed-Use Developments. TRB. 1985.
- Traffic Data Viewer. New York State Department of Transportation (NYSDOT). 2023.

10.0 FIGURES

Figures 1 through 7 are included on the following pages.

All rights reserved. Release of these documents without the expressed written permission of Carmina Wood Morris DPC is prohibited. WARNING: It is a violation of article 145 sections 7202N and 7301 of the New York State Education Law for any person, unless acting under the direction of a registered architect, licensed engineer or land surveyor to alter this drawing. If altered such R.A., P.E. or L.L.S. shall affix his or her seal, signature, the date, the notation "altered by" and a specific description of the alteration.



SITE AREA = 17.424 ACRES
ZONING - NCD-ND

SUMMARY OF PROPOSED USES
10,798 GSF OFFICE SPACE
11,906 GSF RETAIL SPACE
3,160 GSF RESTAURANT SPACE
26,400 SF SELF STORAGE BUILDING
(63) 2-STORY TOWNHOMES
(22) 2-UNIT ATTACHED TOWNHOMES = 44 DWELLING UNITS
100 APARTMENT UNITS IN MIXED-USE 4-STORY BUILDINGS
TOTAL DWELLING UNITS = 207 DWELLING UNITS

PARKING SUMMARY
REQUIRED:
RESIDENTIAL:
REQ'D = 2 SPACES PER UNIT
REQ'D = 2 x 207 UNITS = 414 SPACES
OFFICE:
10,798 GSF x 0.85 = 9,178.30 NSF
REQ'D = 1 SPACE / 200 NSF
REQ'D = 9,178.30 / 200 = 45.89 = 46 SPACES
RETAIL:
11,906 GSF x 0.85 = 10,120.10 NSF
REQ'D = 5.5 SPACES / 1,000 NSF
REQ'D = 10,120.10 / 1000 x 5.5 = 55.66 = 56 SPACES
RESTAURANT:
REQ'D = 1 SPACE / 3 SEATS + 1 SPACE / 100 SF TAKE OUT AREA
REQ'D = 100 SEAT / 3 + 500 SF / 100 = 38 SPACES
SELF STORAGE:
REQ'D = 1 SPACE / 5,000 AREA DEVOTED TO STORAGE
REQ'D = (26,400 SF x 4) / 5,000 SF = 22 SPACES
TOTAL REQ'D = 576 SPACES
PROVIDED:
94 PARALLEL PARKING SPACES
171 9'x19' SPACES
63 TOWNHOUSE GARAGE SPACES
63 SPACES IN FRONT OF TOWNHOUSE GARAGE SPACES
16 GARAGE SPACES IN 4-STORY BLDGS.
407 TOTAL SPACES

PERMANENT OPEN SPACE SUMMARY
TOTAL PROPOSED PERMANENT OPEN SPACE = 0.98 ACRES

WETLAND SUMMARY

FEDERAL IMPACTS PROPOSED = 6.089 AC	FEDERAL IMPACTS PREVIOUSLY PROPOSED = 13.01 AC	DECREASE = 6.921 AC (53% DECREASE)
NYSDEC IMPACTS PROPOSED = 1.20 AC	NYSDEC IMPACTS PREVIOUSLY PROPOSED = 9.46 AC	DECREASE = 8.26 AC (87% DECREASE)
NYSDEC BUFFER IMPACT PROPOSED = 3.65 AC	NYSDEC BUFFER IMPACTS PREVIOUSLY PROPOSED = 4.20 AC	DECREASE = 0.55 AC (13% DECREASE)

NOTE: NYSDEC IMPACTS INCLUDES FEDERAL WETLAND IMPACT OVERLAP AREAS

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS. CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

REVISIONS:

No.	Description	Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/22/24
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Overall Site Plan

DRAWING NO.
C-100
Project no.: 21.011

TOWN OF AMHERST APPROVAL BOX:

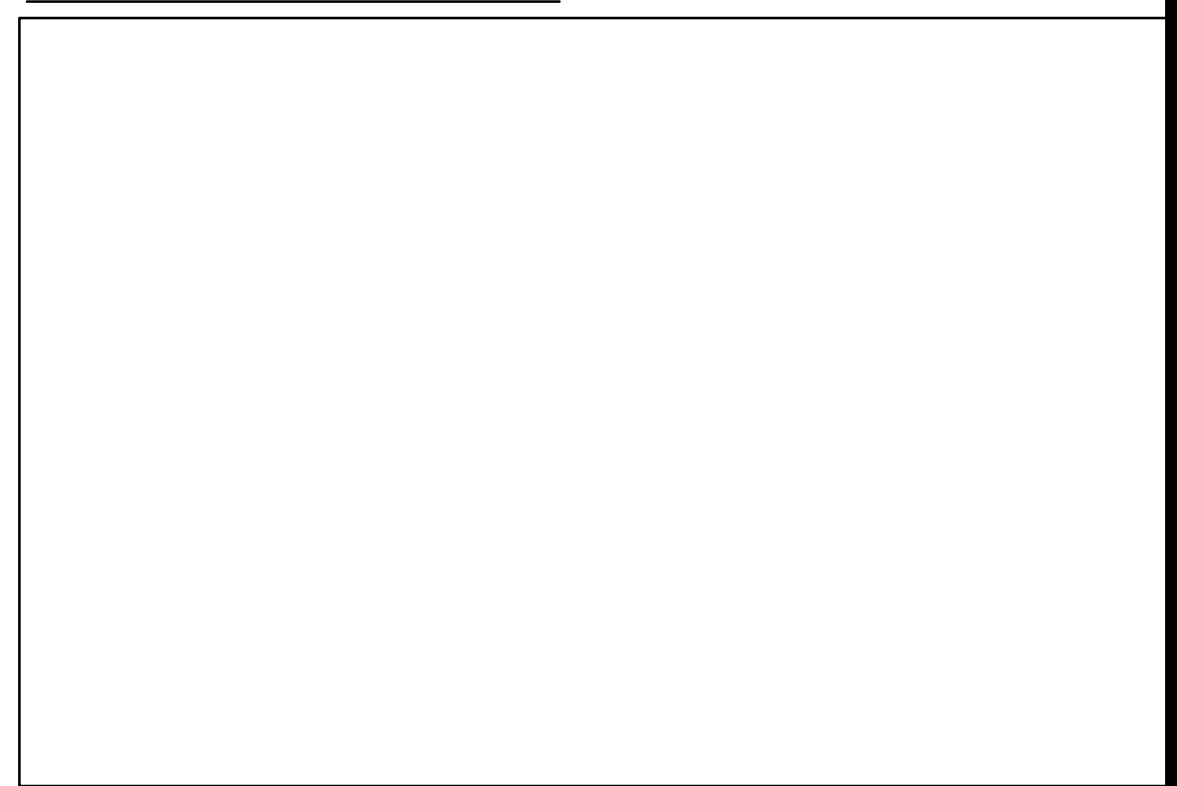


Figure 1



Sawyer's Landing Development | Town of Amherst, Erie County, NY

Site Location and Study Area

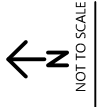
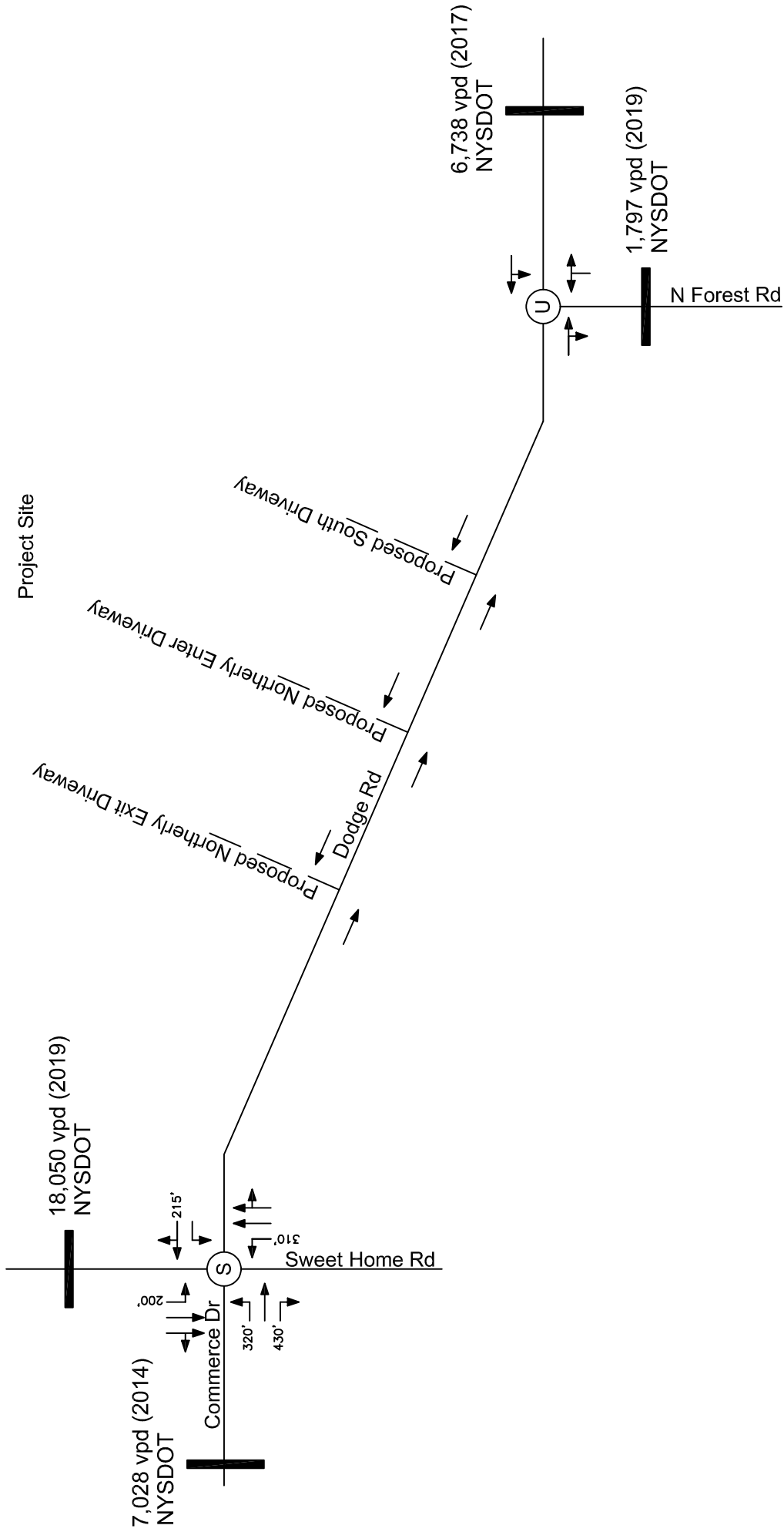
Key:

- Study Intersection
- Proposed Intersection
- Study Area

Figure 2

Notes:

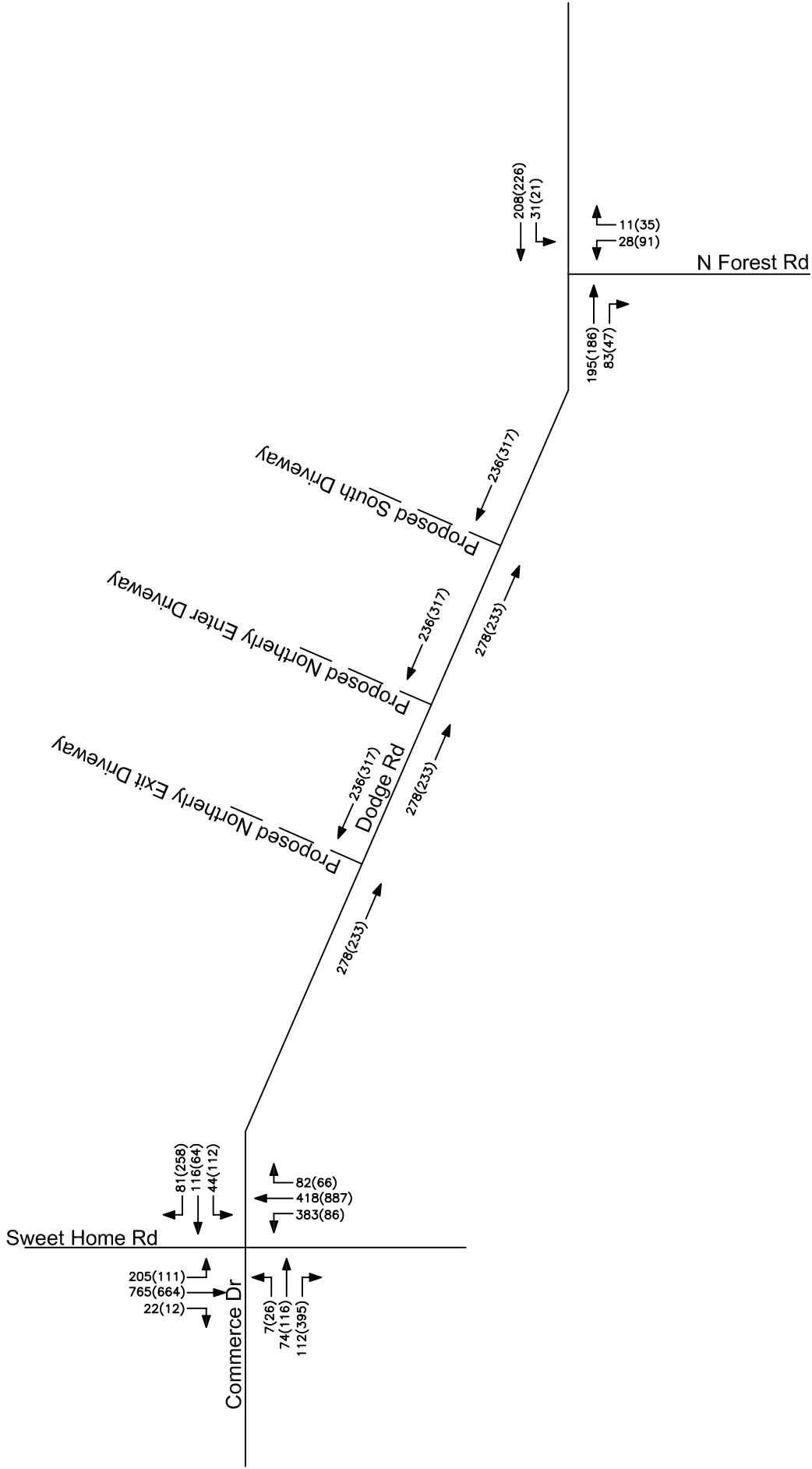
1. All AADT volumes by those noted.
- 1.1. NYSDOT = New York State Department of Transportation.
2. vpd = Vehicles per day.
3. The planned NYSDOT project will include the indicated storage lengths.



- KEY:**
- Proposed Access
 - U = Unsignalized
 - S = Signalized

Sawyer's Landing Development | Town of Amherst, NY
Lane Geometry and
Intersection Control

Figure 3

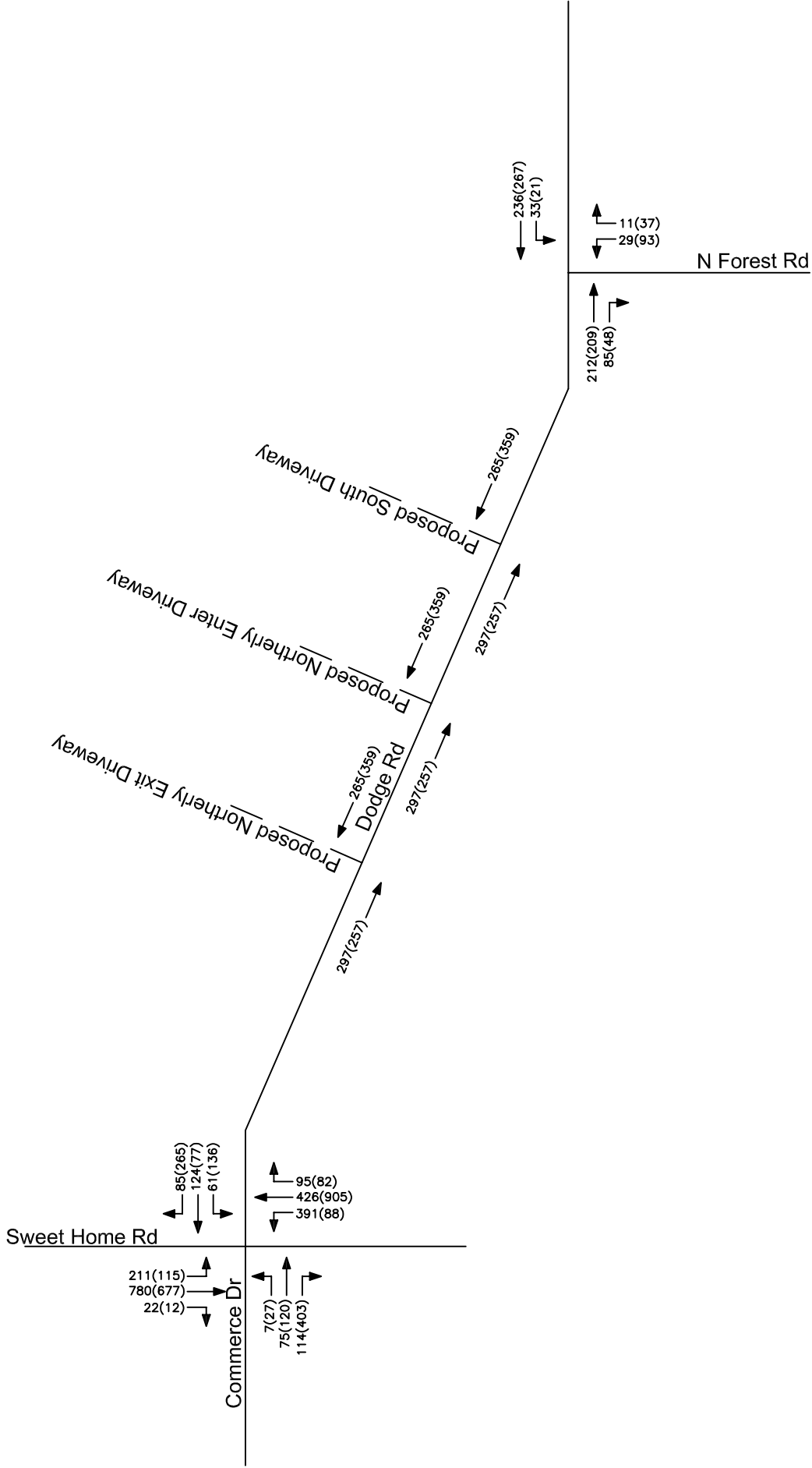


Sawyer's Landing Development | Town of Amherst, NY

**Peak Hour Volumes
2024 Existing Base Conditions**

KEY:
00(00) = AM(PM)
--- Proposed Access

Figure 4

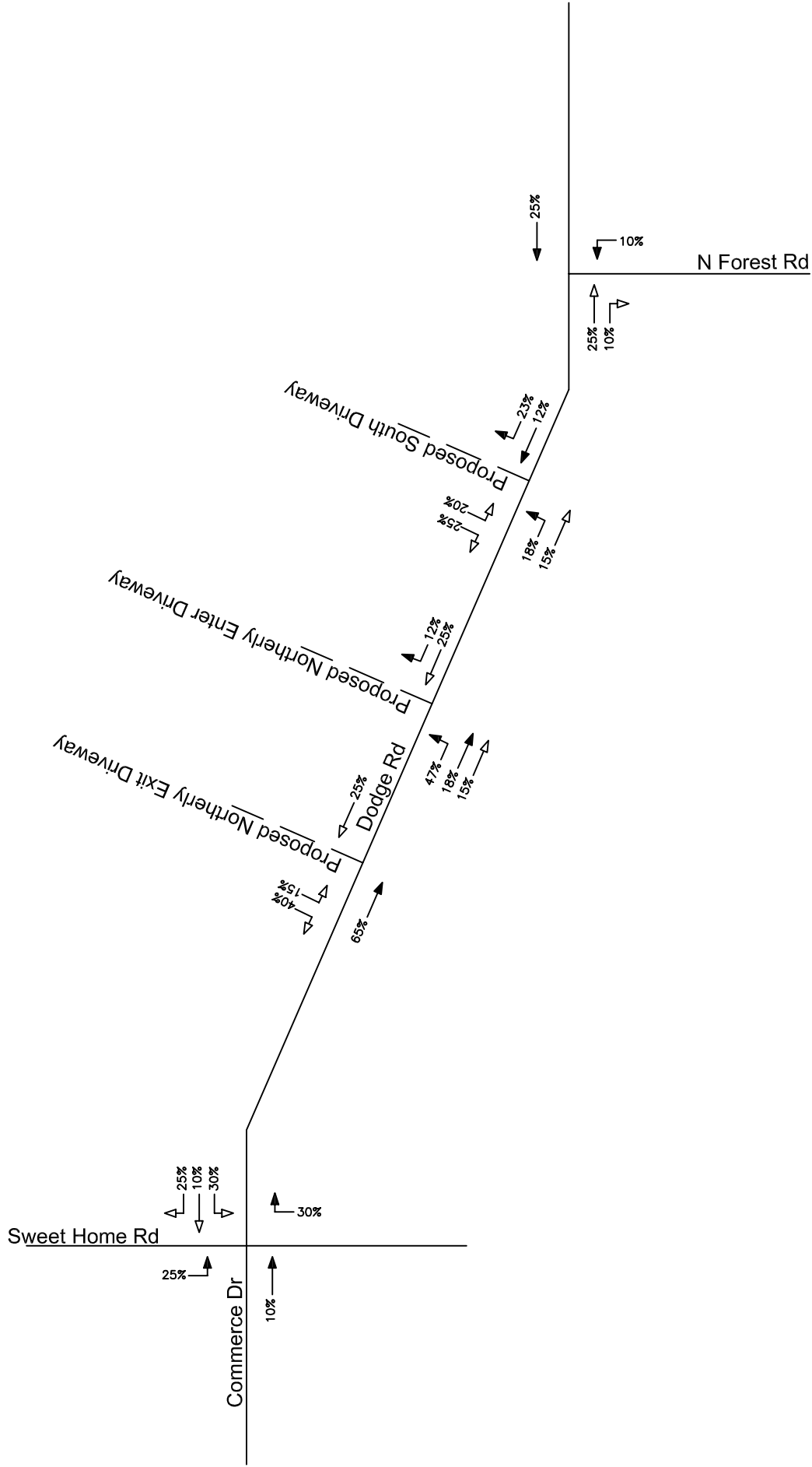


Sawyer's Landing Development | Town of Amherst, NY

**Peak Hour Volumes
2026 Background Conditions**

KEY:
 00(00) = AM(PM)
 --- Proposed Access

Figure 5

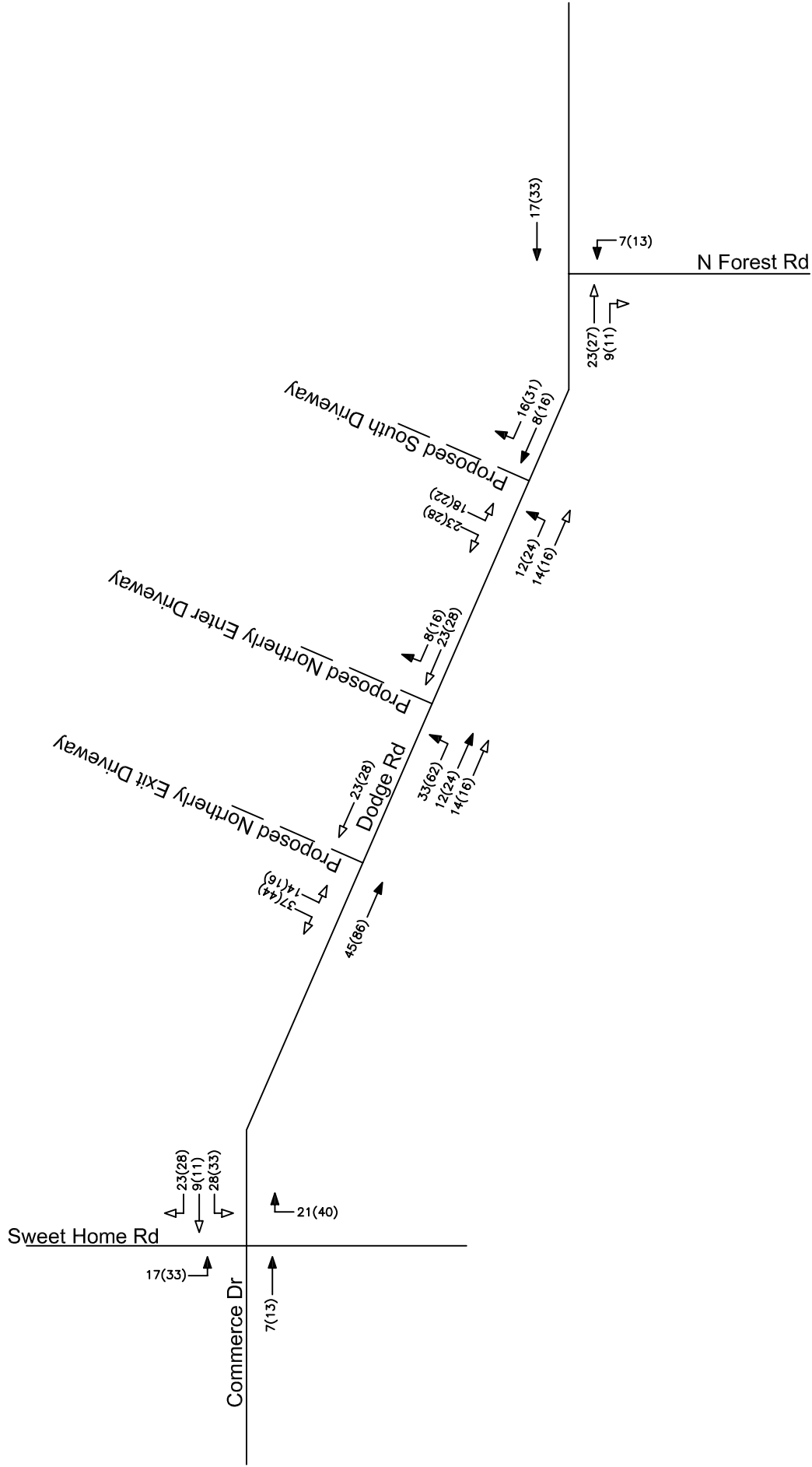


Sawyer's Landing Development | Town of Amherst, NY

Trip Distribution

- KEY:
- 00(00) = AM(PM)
 - ↑ Entering Trip
 - ↑ Exiting Trip
 - - - Proposed Access

Figure 6

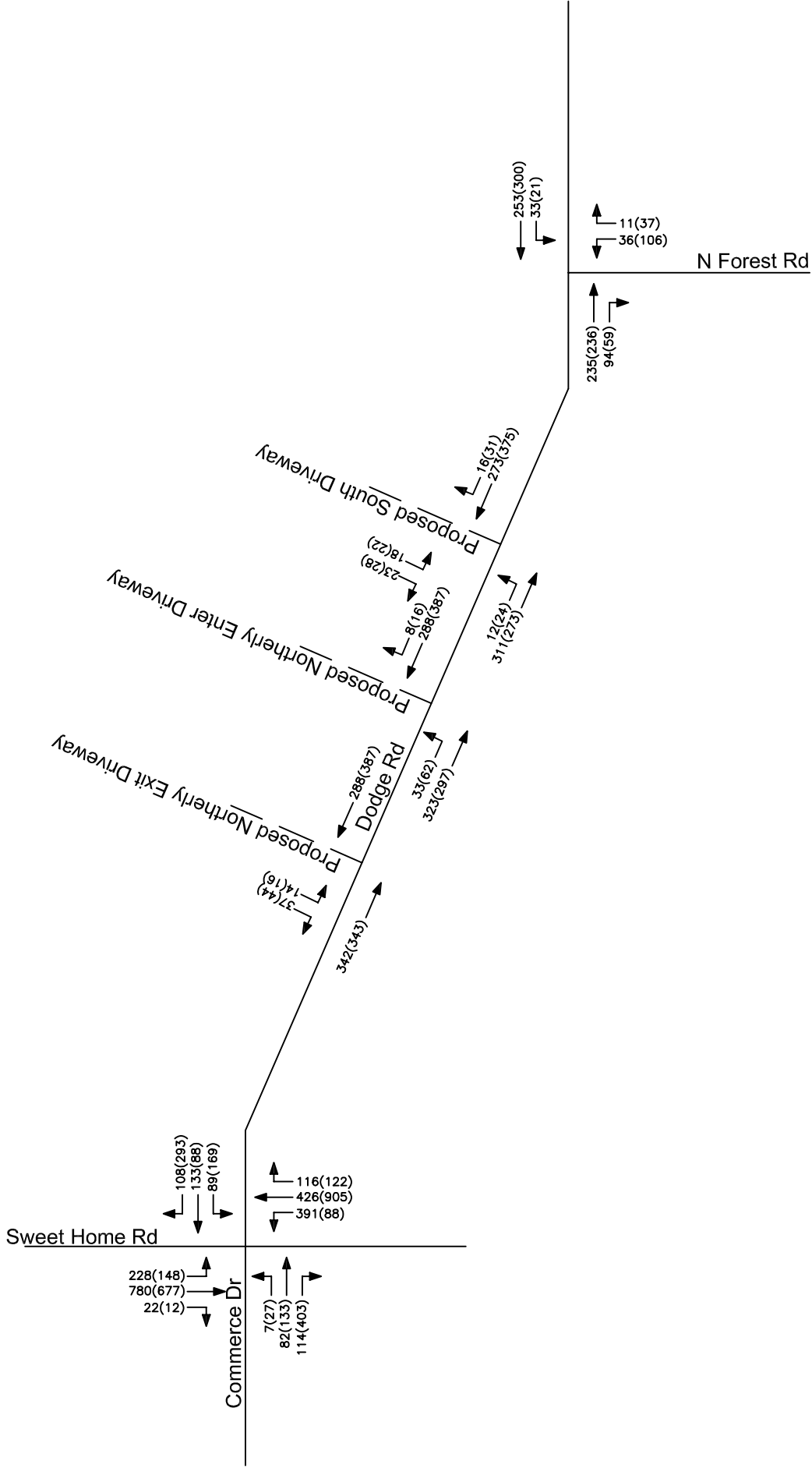


- KEY:
- 00(00) = AM(PM)
 - ↑ Entering Trip
 - ↑ Exiting Trip
 - - - Proposed Access

Sawyer's Landing Development | Town of Amherst, NY

Site Generated Trips

Figure 7



Sawyer's Landing Development | Town of Amherst, NY

**Peak Hour Volumes
Full Development Conditions**

KEY:
 00(00) = AM(PM)
 --- Proposed Access

APPENDICES

APPENDIX A: EXISTING TRAFFIC COUNT DATA

N.Forest Rd/Dodge Rd - TMC

Thu Mar 3, 2022

Full Length (7 AM-7 PM)

All Classes (Motorcycles, Lights, Heavy, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 927236, Location: 43.023705, -78.787962



Provided by: Tri-State Traffic Data: New York Division
1016 Hoosick Rd, Troy, NY, 12180, US

Leg Direction	Dodge Rd Westbound					N.Forest Rd Northbound					Dodge Rd Eastbound					Int
	T	L	U	App	Ped*	R	L	U	App	Ped*	R	T	U	App	Ped*	
2022-03-03 7:00AM	23	2	0	25	0	2	4	0	6	0	9	25	0	34	0	65
7:15AM	27	6	0	33	0	0	1	0	1	0	14	38	0	52	0	86
7:30AM	54	5	0	59	0	3	6	0	9	0	23	48	0	71	0	139
7:45AM	56	9	0	65	0	0	5	0	5	0	24	44	0	68	0	138
Hourly Total	160	22	0	182	0	5	16	0	21	0	70	155	0	225	0	428
8:00AM	48	12	0	60	0	4	8	0	12	0	17	50	0	67	0	139
8:15AM	48	5	0	53	0	4	9	0	13	0	18	51	0	69	0	135
8:30AM	35	5	0	40	0	2	9	0	11	0	13	46	0	59	0	110
8:45AM	41	3	0	44	0	6	10	0	16	0	18	56	0	74	0	134
Hourly Total	172	25	0	197	0	16	36	0	52	0	66	203	0	269	0	518
9:00AM	37	3	0	40	0	0	7	0	7	0	10	38	0	48	0	95
9:15AM	35	4	0	39	0	5	9	0	14	0	18	41	0	59	0	112
9:30AM	30	6	0	36	0	2	5	0	7	0	15	46	0	61	0	104
9:45AM	35	7	0	42	0	4	9	0	13	0	8	32	0	40	0	95
Hourly Total	137	20	0	157	0	11	30	0	41	0	51	157	0	208	0	406
10:00AM	27	6	0	33	0	5	14	0	19	0	10	34	0	44	0	96
10:15AM	35	4	0	39	0	3	9	0	12	0	8	32	0	40	0	91
10:30AM	32	3	0	35	0	2	13	0	15	0	11	32	0	43	0	93
10:45AM	26	2	0	28	0	2	8	0	10	0	13	35	0	48	0	86
Hourly Total	120	15	0	135	0	12	44	0	56	0	42	133	0	175	0	366
11:00AM	34	1	0	35	0	2	13	0	15	0	11	31	0	42	0	92
11:15AM	32	5	0	37	0	3	12	0	15	0	9	38	0	47	0	99
11:30AM	33	4	0	37	0	3	12	0	15	0	12	29	0	41	0	93
11:45AM	31	7	0	38	0	4	17	0	21	0	16	38	0	54	0	113
Hourly Total	130	17	0	147	0	12	54	0	66	0	48	136	0	184	0	397
12:00PM	40	6	0	46	0	4	12	0	16	0	17	41	0	58	0	120
12:15PM	31	6	0	37	0	7	13	0	20	0	15	36	0	51	0	108
12:30PM	36	2	0	38	0	5	22	0	27	0	19	38	0	57	0	122
12:45PM	32	6	0	38	0	2	13	0	15	0	10	40	0	50	0	103
Hourly Total	139	20	0	159	0	18	60	0	78	0	61	155	0	216	0	453
1:00PM	42	7	0	49	0	5	12	2	19	0	13	25	0	38	0	106
1:15PM	40	6	0	46	0	1	15	0	16	0	20	36	0	56	0	118
1:30PM	32	5	0	37	0	6	16	0	22	0	7	21	0	28	0	87
1:45PM	35	2	0	37	0	2	15	0	17	0	12	34	0	46	0	100
Hourly Total	149	20	0	169	0	14	58	2	74	0	52	116	0	168	0	411
2:00PM	36	2	0	38	0	7	14	0	21	0	11	38	0	49	0	108
2:15PM	39	5	0	44	0	3	18	0	21	0	10	31	0	41	0	106
2:30PM	38	3	0	41	0	6	13	0	19	0	18	44	0	62	0	122
2:45PM	34	6	0	40	0	4	13	0	17	0	7	39	0	46	0	103
Hourly Total	147	16	0	163	0	20	58	0	78	0	46	152	0	198	0	439
3:00PM	49	8	0	57	0	4	20	0	24	0	11	49	0	60	0	141
3:15PM	42	2	0	44	0	5	15	0	20	0	14	43	0	57	0	121
3:30PM	43	6	0	49	0	6	12	0	18	0	15	49	0	64	0	131
3:45PM	51	5	0	56	0	6	15	0	21	0	15	50	0	65	0	142
Hourly Total	185	21	0	206	0	21	62	0	83	0	55	191	0	246	0	535
4:00PM	48	2	0	50	0	15	36	0	51	0	14	47	0	61	0	162
4:15PM	47	3	0	50	0	5	14	0	19	0	14	51	0	65	0	134
4:30PM	56	5	0	61	0	10	22	0	32	0	14	47	0	61	0	154
4:45PM	59	3	0	62	0	8	23	0	31	0	7	36	0	43	0	136
Hourly Total	210	13	0	223	0	38	95	0	133	0	49	181	0	230	0	586
5:00PM	62	8	0	70	0	13	28	0	41	0	17	53	0	70	0	181
5:15PM	47	5	0	52	0	4	17	0	21	0	9	48	0	57	0	130
5:30PM	38	4	0	42	0	5	15	0	20	0	2	39	0	41	0	103

Leg Direction	Dodge Rd Westbound					N.Forest Rd Northbound					Dodge Rd Eastbound					Int
	T	L	U	App	Ped*	R	L	U	App	Ped*	R	T	U	App	Ped*	
5:45PM	37	4	0	41	0	3	7	0	10	0	10	31	0	41	0	92
Hourly Total	184	21	0	205	0	25	67	0	92	0	38	171	0	209	0	506
6:00PM	33	2	0	35	0	8	19	1	28	0	6	27	0	33	0	96
6:15PM	23	3	0	26	0	6	7	0	13	0	8	29	0	37	0	76
6:30PM	34	6	0	40	0	4	13	0	17	0	9	26	0	35	0	92
6:45PM	27	8	0	35	0	6	6	0	12	0	2	21	0	23	0	70
Hourly Total	117	19	0	136	0	24	45	1	70	0	25	103	0	128	0	334
Total	1850	229	0	2079	0	216	625	3	844	0	603	1853	0	2456	0	5379
% Approach	89.0%	11.0%	0%	-	-	25.6%	74.1%	0.4%	-	-	24.6%	75.4%	0%	-	-	-
% Total	34.4%	4.3%	0%	38.7%	-	4.0%	11.6%	0.1%	15.7%	-	11.2%	34.4%	0%	45.7%	-	-
Motorcycles	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0
% Motorcycles	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%
Lights	1808	227	0	2035	-	211	616	3	830	-	591	1796	0	2387	-	5252
% Lights	97.7%	99.1%	0%	97.9%	-	97.7%	98.6%	100%	98.3%	-	98.0%	96.9%	0%	97.2%	-	97.6%
Heavy	42	2	0	44	-	5	9	0	14	-	12	57	0	69	-	127
% Heavy	2.3%	0.9%	0%	2.1%	-	2.3%	1.4%	0%	1.7%	-	2.0%	3.1%	0%	2.8%	-	2.4%
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

N.Forest Rd/Dodge Rd - TMC

Thu Mar 3, 2022

Full Length (7 AM-7 PM)

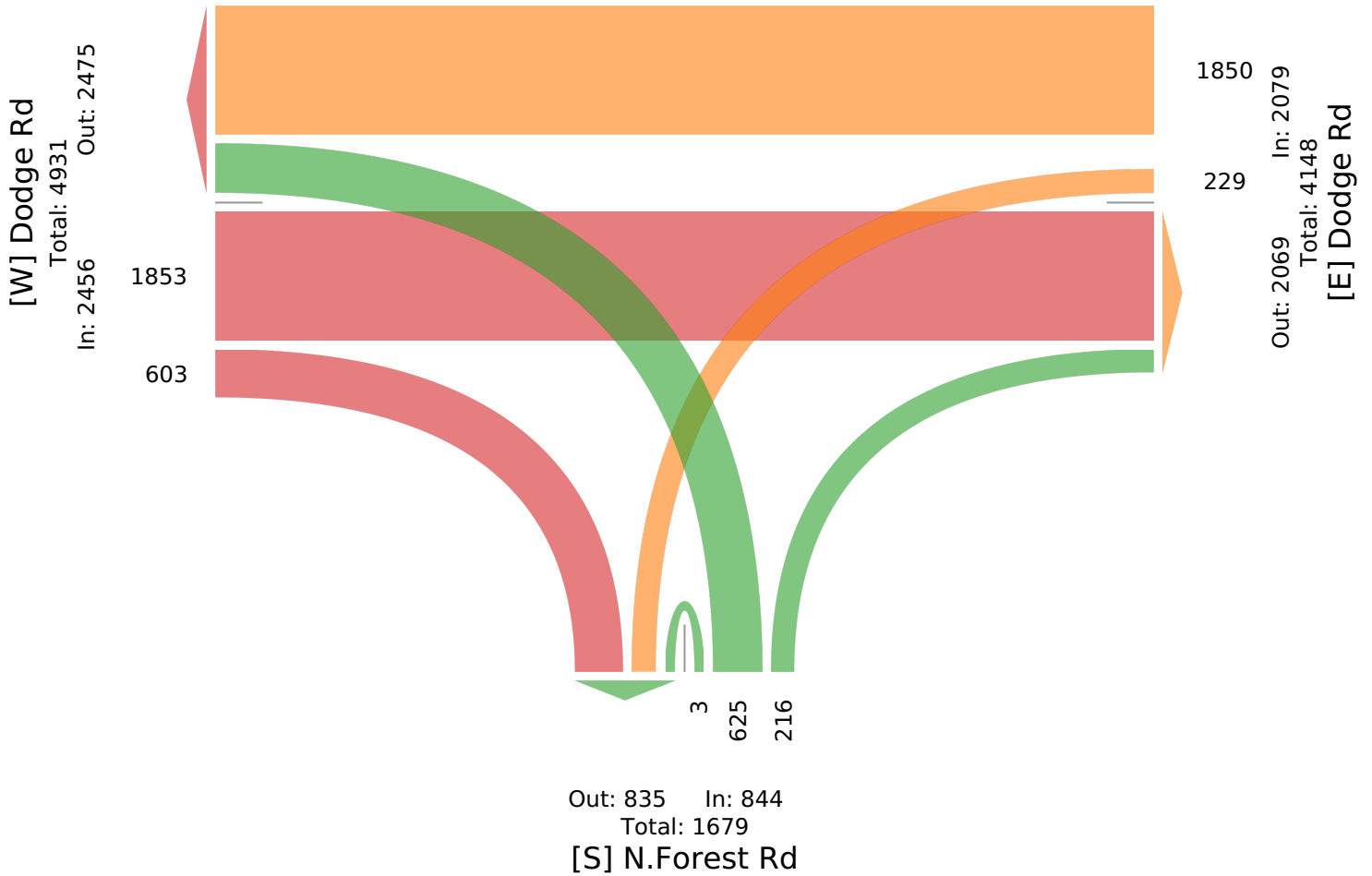
All Classes (Motorcycles, Lights, Heavy, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 927236, Location: 43.023705, -78.787962



Provided by: Tri-State Traffic Data: New York Division
1016 Hoosick Rd, Troy, NY, 12180, US



N.Forest Rd/Dodge Rd - TMC

Thu Mar 3, 2022

AM Peak (7:30 AM - 8:30 AM)

All Classes (Motorcycles, Lights, Heavy, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 927236, Location: 43.023705, -78.787962



Provided by: Tri-State Traffic Data: New York Division
1016 Hoosick Rd, Troy, NY, 12180, US

Leg Direction	Dodge Rd Westbound					N.Forest Rd Northbound					Dodge Rd Eastbound					
Time	T	L	U	App	Ped*	R	L	U	App	Ped*	R	T	U	App	Ped*	Int
2022-03-03 7:30AM	54	5	0	59	0	3	6	0	9	0	23	48	0	71	0	139
7:45AM	56	9	0	65	0	0	5	0	5	0	24	44	0	68	0	138
8:00AM	48	12	0	60	0	4	8	0	12	0	17	50	0	67	0	139
8:15AM	48	5	0	53	0	4	9	0	13	0	18	51	0	69	0	135
Total	206	31	0	237	0	11	28	0	39	0	82	193	0	275	0	551
% Approach	86.9%	13.1%	0%	-	-	28.2%	71.8%	0%	-	-	29.8%	70.2%	0%	-	-	-
% Total	37.4%	5.6%	0%	43.0%	-	2.0%	5.1%	0%	7.1%	-	14.9%	35.0%	0%	49.9%	-	-
PHF	0.920	0.646	-	0.912	-	0.688	0.778	-	0.750	-	0.854	0.946	-	0.968	-	0.991
Motorcycles	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0
% Motorcycles	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%
Lights	202	31	0	233	-	11	27	0	38	-	81	188	0	269	-	540
% Lights	98.1%	100%	0%	98.3%	-	100%	96.4%	0%	97.4%	-	98.8%	97.4%	0%	97.8%	-	98.0%
Heavy	4	0	0	4	-	0	1	0	1	-	1	5	0	6	-	11
% Heavy	1.9%	0%	0%	1.7%	-	0%	3.6%	0%	2.6%	-	1.2%	2.6%	0%	2.2%	-	2.0%
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

N.Forest Rd/Dodge Rd - TMC

Thu Mar 3, 2022

AM Peak (7:30 AM - 8:30 AM)

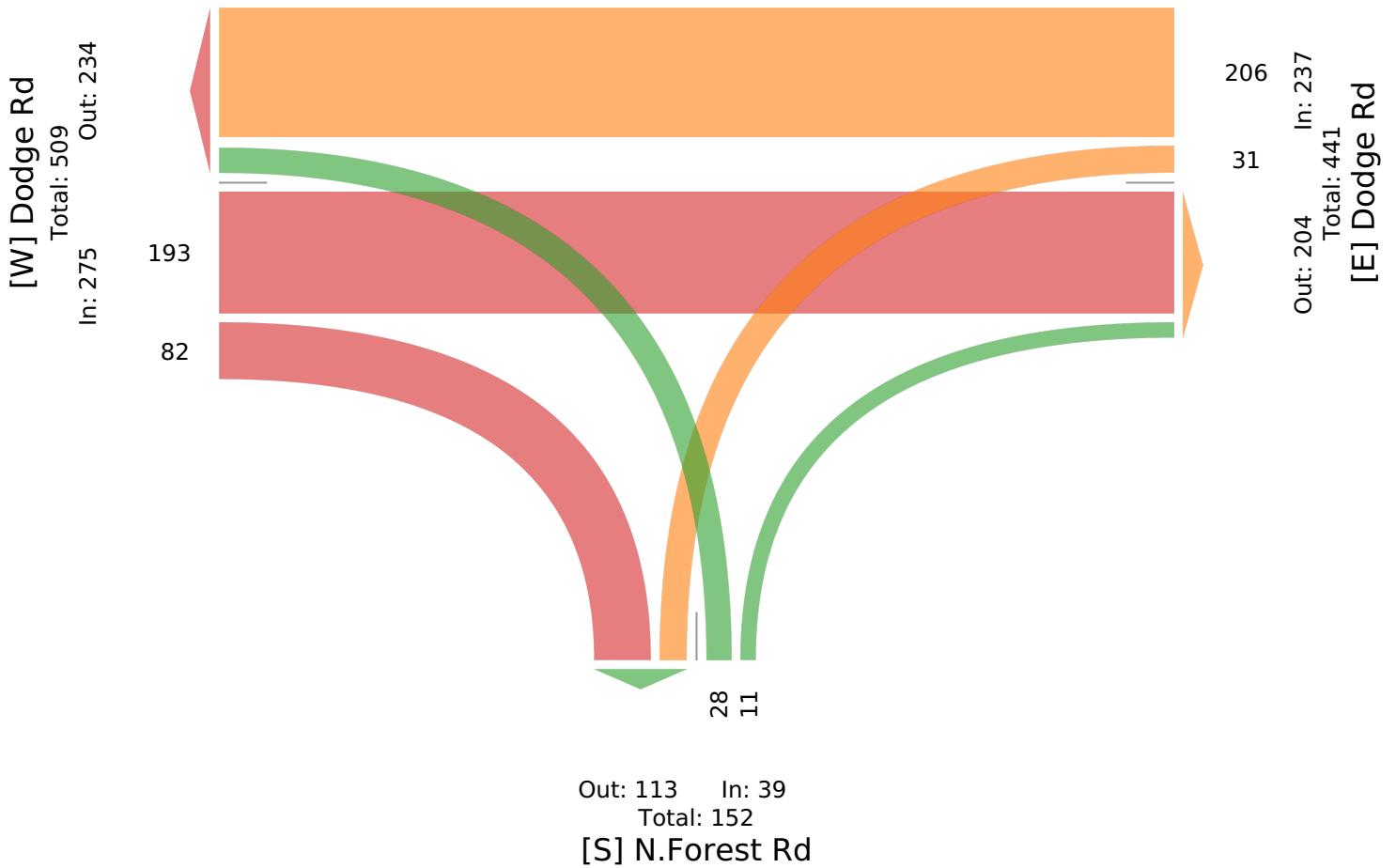
All Classes (Motorcycles, Lights, Heavy, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 927236, Location: 43.023705, -78.787962



Provided by: Tri-State Traffic Data: New York Division
1016 Hoosick Rd, Troy, NY, 12180, US



N.Forest Rd/Dodge Rd - TMC

Thu Mar 3, 2022

Midday Peak (11:45 AM - 12:45 PM)

All Classes (Motorcycles, Lights, Heavy, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 927236, Location: 43.023705, -78.787962



Provided by: Tri-State Traffic Data: New York Division
1016 Hoosick Rd, Troy, NY, 12180, US

Leg Direction	Dodge Rd Westbound					N.Forest Rd Northbound					Dodge Rd Eastbound					
Time	T	L	U	App	Ped*	R	L	U	App	Ped*	R	T	U	App	Ped*	Int
2022-03-03 11:45AM	31	7	0	38	0	4	17	0	21	0	16	38	0	54	0	113
12:00PM	40	6	0	46	0	4	12	0	16	0	17	41	0	58	0	120
12:15PM	31	6	0	37	0	7	13	0	20	0	15	36	0	51	0	108
12:30PM	36	2	0	38	0	5	22	0	27	0	19	38	0	57	0	122
Total	138	21	0	159	0	20	64	0	84	0	67	153	0	220	0	463
% Approach	86.8%	13.2%	0%	-	-	23.8%	76.2%	0%	-	-	30.5%	69.5%	0%	-	-	-
% Total	29.8%	4.5%	0%	34.3%	-	4.3%	13.8%	0%	18.1%	-	14.5%	33.0%	0%	47.5%	-	-
PHF	0.863	0.750	-	0.864	-	0.714	0.727	-	0.778	-	0.882	0.933	-	0.948	-	0.949
Motorcycles	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0
% Motorcycles	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%
Lights	137	21	0	158	-	18	62	0	80	-	65	150	0	215	-	453
% Lights	99.3%	100%	0%	99.4%	-	90.0%	96.9%	0%	95.2%	-	97.0%	98.0%	0%	97.7%	-	97.8%
Heavy	1	0	0	1	-	2	2	0	4	-	2	3	0	5	-	10
% Heavy	0.7%	0%	0%	0.6%	-	10.0%	3.1%	0%	4.8%	-	3.0%	2.0%	0%	2.3%	-	2.2%
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

N.Forest Rd/Dodge Rd - TMC

Thu Mar 3, 2022

Midday Peak (11:45 AM - 12:45 PM)

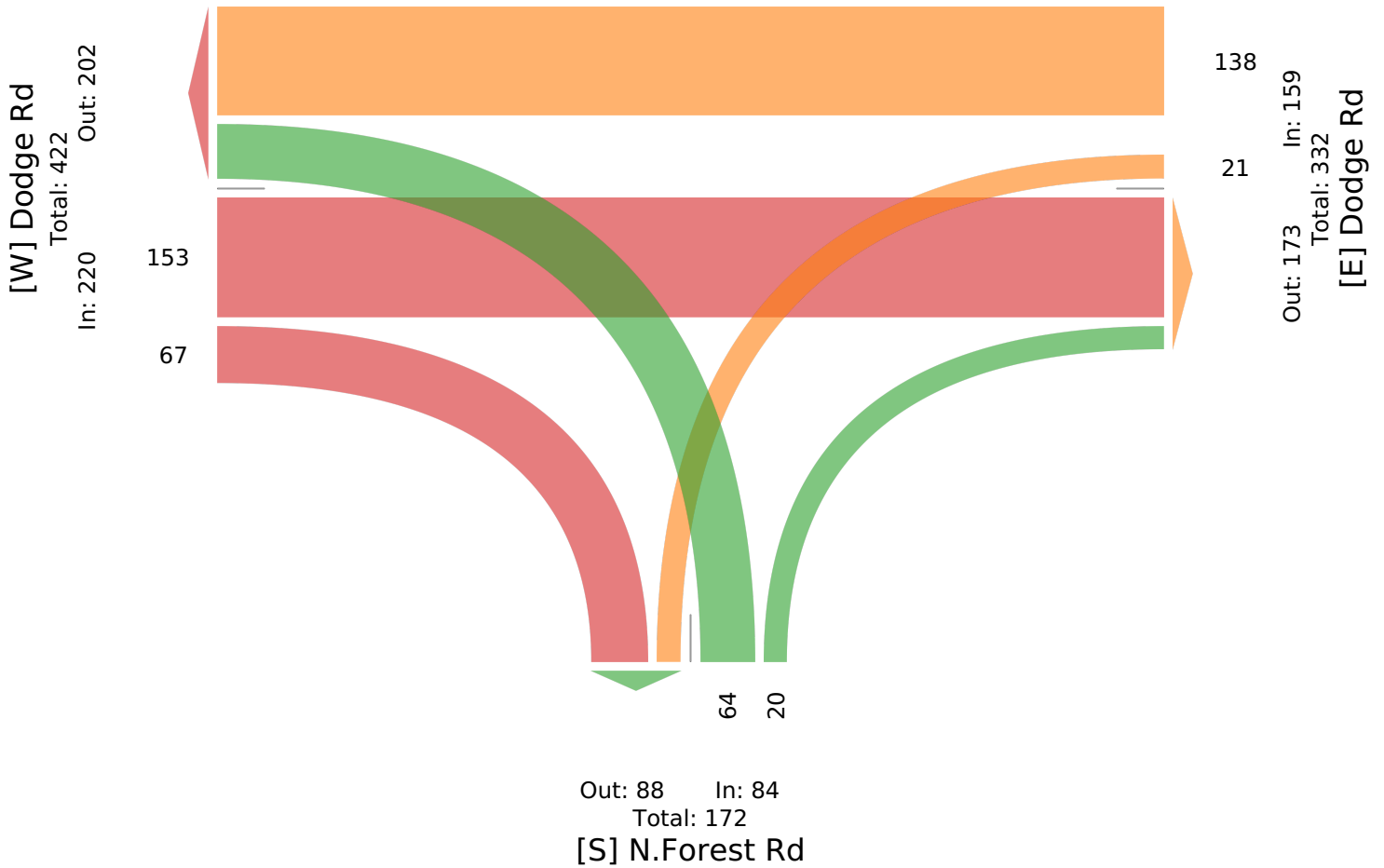
All Classes (Motorcycles, Lights, Heavy, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 927236, Location: 43.023705, -78.787962



Provided by: Tri-State Traffic Data: New York Division
1016 Hoosick Rd, Troy, NY, 12180, US



N.Forest Rd/Dodge Rd - TMC

Thu Mar 3, 2022

PM Peak (4:15 PM - 5:15 PM) - Overall Peak Hour

All Classes (Motorcycles, Lights, Heavy, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 927236, Location: 43.023705, -78.787962



Provided by: Tri-State Traffic Data: New York Division
1016 Hoosick Rd, Troy, NY, 12180, US

Leg Direction	Dodge Rd Westbound					N.Forest Rd Northbound					Dodge Rd Eastbound					Int
	T	L	U	App	Ped*	R	L	U	App	Ped*	R	T	U	App	Ped*	
Time																
2022-03-03 4:15PM	47	3	0	50	0	5	14	0	19	0	14	51	0	65	0	134
4:30PM	56	5	0	61	0	10	22	0	32	0	14	47	0	61	0	154
4:45PM	59	3	0	62	0	8	23	0	31	0	7	36	0	43	0	136
5:00PM	62	8	0	70	0	13	28	0	41	0	17	53	0	70	0	181
Total	224	19	0	243	0	36	87	0	123	0	52	187	0	239	0	605
% Approach	92.2%	7.8%	0%	-	-	29.3%	70.7%	0%	-	-	21.8%	78.2%	0%	-	-	-
% Total	37.0%	3.1%	0%	40.2%	-	6.0%	14.4%	0%	20.3%	-	8.6%	30.9%	0%	39.5%	-	-
PHF	0.903	0.594	-	0.868	-	0.692	0.777	-	0.750	-	0.765	0.882	-	0.854	-	0.836
Motorcycles	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0
% Motorcycles	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%
Lights	221	19	0	240	-	36	86	0	122	-	52	185	0	237	-	599
% Lights	98.7%	100%	0%	98.8%	-	100%	98.9%	0%	99.2%	-	100%	98.9%	0%	99.2%	-	99.0%
Heavy	3	0	0	3	-	0	1	0	1	-	0	2	0	2	-	6
% Heavy	1.3%	0%	0%	1.2%	-	0%	1.1%	0%	0.8%	-	0%	1.1%	0%	0.8%	-	1.0%
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

N.Forest Rd/Dodge Rd - TMC

Thu Mar 3, 2022

PM Peak (4:15 PM - 5:15 PM) - Overall Peak Hour

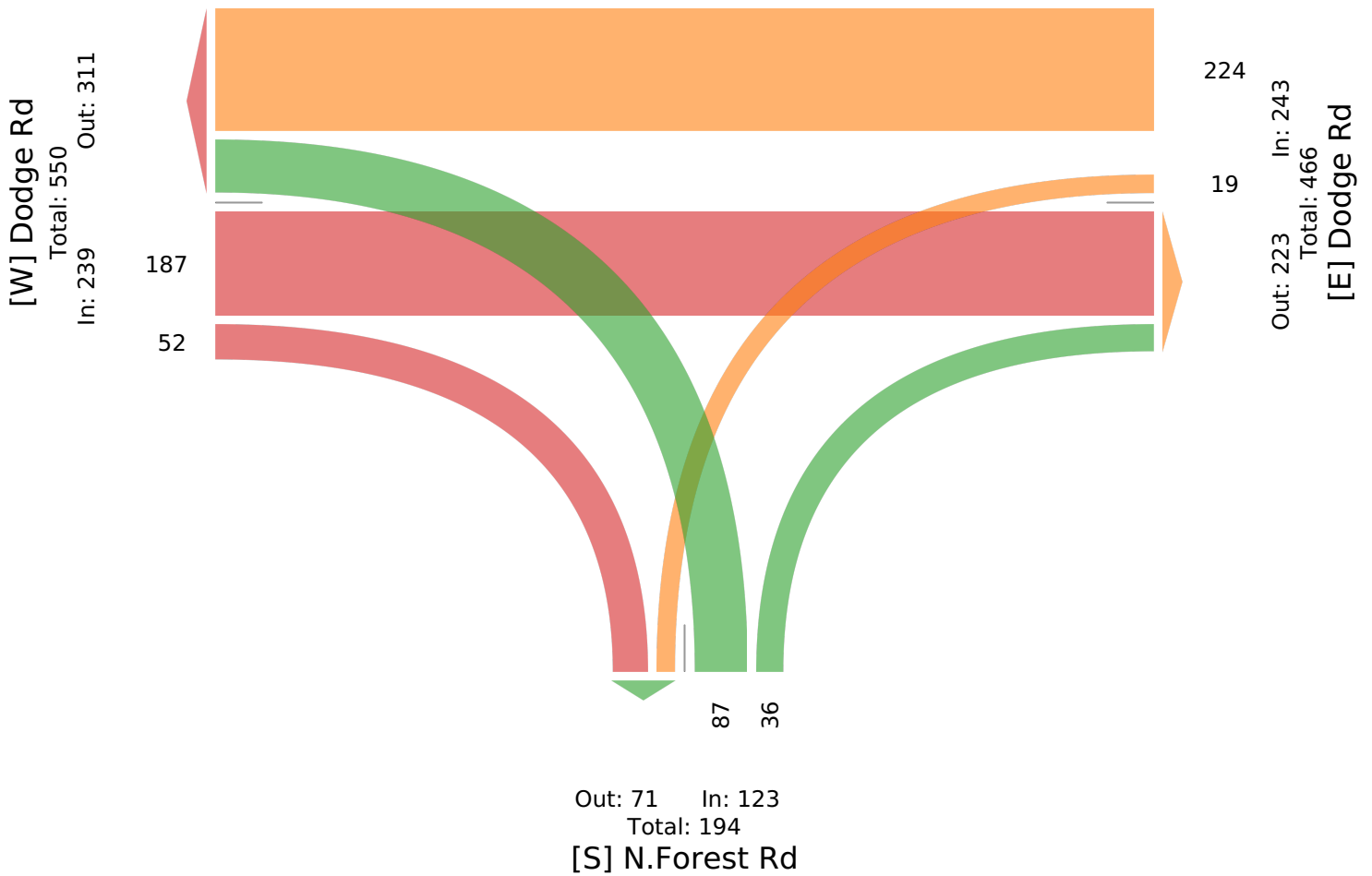
All Classes (Motorcycles, Lights, Heavy, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 927236, Location: 43.023705, -78.787962



Provided by: Tri-State Traffic Data: New York Division
1016 Hoosick Rd, Troy, NY, 12180, US



N.Forest Rd/Dodge Rd - TMC

Thu Mar 3, 2022

Forced Peak (4:30 PM - 5:30 PM)

All Classes (Motorcycles, Lights, Heavy, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 927236, Location: 43.023705, -78.787962



Provided by: Tri-State Traffic Data: New York Division
1016 Hoosick Rd, Troy, NY, 12180, US

Leg Direction	Dodge Rd Westbound					N.Forest Rd Northbound					Dodge Rd Eastbound					
Time	T	L	U	App	Ped*	R	L	U	App	Ped*	R	T	U	App	Ped*	Int
2022-03-03 4:30PM	56	5	0	61	0	10	22	0	32	0	14	47	0	61	0	154
4:45PM	59	3	0	62	0	8	23	0	31	0	7	36	0	43	0	136
5:00PM	62	8	0	70	0	13	28	0	41	0	17	53	0	70	0	181
5:15PM	47	5	0	52	0	4	17	0	21	0	9	48	0	57	0	130
Total	224	21	0	245	0	35	90	0	125	0	47	184	0	231	0	601
% Approach	91.4%	8.6%	0%	-	-	28.0%	72.0%	0%	-	-	20.3%	79.7%	0%	-	-	-
% Total	37.3%	3.5%	0%	40.8%	-	5.8%	15.0%	0%	20.8%	-	7.8%	30.6%	0%	38.4%	-	-
PHF	0.903	0.656	-	0.875	-	0.673	0.804	-	0.762	-	0.691	0.868	-	0.825	-	0.830
Motorcycles	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0
% Motorcycles	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%
Lights	223	21	0	244	-	35	89	0	124	-	47	183	0	230	-	598
% Lights	99.6%	100%	0%	99.6%	-	100%	98.9%	0%	99.2%	-	100%	99.5%	0%	99.6%	-	99.5%
Heavy	1	0	0	1	-	0	1	0	1	-	0	1	0	1	-	3
% Heavy	0.4%	0%	0%	0.4%	-	0%	1.1%	0%	0.8%	-	0%	0.5%	0%	0.4%	-	0.5%
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

N.Forest Rd/Dodge Rd - TMC

Thu Mar 3, 2022

Forced Peak (4:30 PM - 5:30 PM)

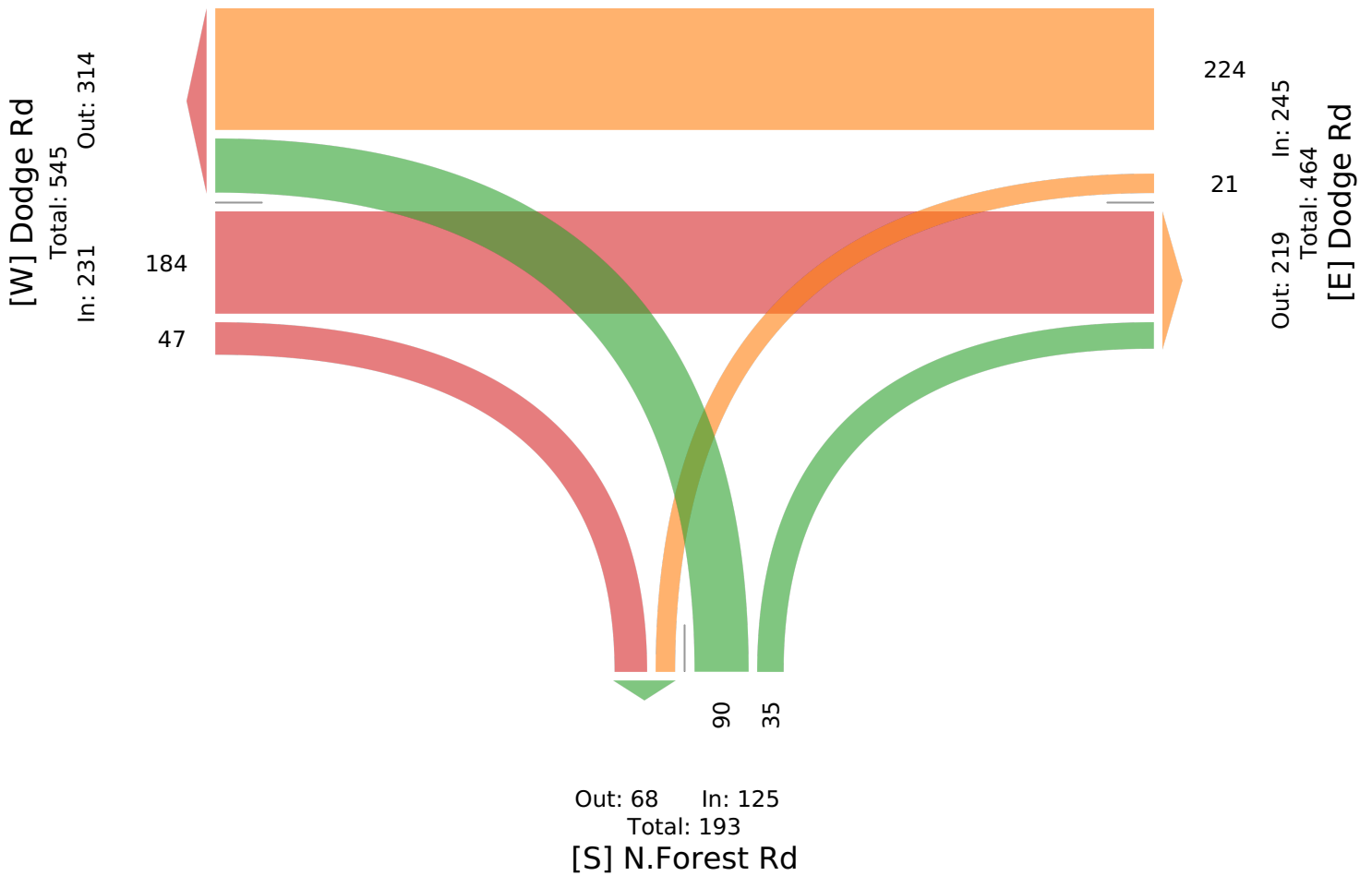
All Classes (Motorcycles, Lights, Heavy, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 927236, Location: 43.023705, -78.787962



Provided by: Tri-State Traffic Data: New York Division
1016 Hoosick Rd, Troy, NY, 12180, US



Lights Entry Direction Start Time	North Southbound			East Westbound			South Northbound			West Eastbound					
	Left	Thru	Right	U-Turn	Left	Thru	Right	Left	Thru	Right	U-Turn	Left	Thru	Right	
	2024-05-14 07:00:00 +0000	27	164	3	0	3	14	9	60	61	7	0	0	1	7
2024-05-14 07:15:00 +0000	35	183	3	0	6	13	15	76	97	11	0	0	3	14	30
2024-05-14 07:30:00 +0000	49	202	5	0	7	19	21	78	99	15	0	0	1	27	32
2024-05-14 07:45:00 +0000	58	194	6	0	6	39	20	113	96	18	0	0	0	18	21
2024-05-14 08:00:00 +0000	47	150	5	0	10	32	19	93	97	17	0	0	1	16	27
2024-05-14 08:15:00 +0000	47	190	5	0	8	26	18	84	103	17	0	0	3	13	24
2024-05-14 08:30:00 +0000	40	162	1	0	12	22	22	71	84	19	0	0	3	10	30
2024-05-14 08:45:00 +0000	41	158	5	0	7	18	19	65	101	21	0	0	1	14	24
2024-05-14 16:00:00 +0000	27	141	3	0	22	13	56	21	222	15	0	0	7	20	88
2024-05-14 16:15:00 +0000	20	141	2	0	26	14	52	19	208	13	0	0	4	19	69
2024-05-14 16:30:00 +0000	26	160	2	0	25	12	68	19	221	17	0	0	11	28	104
2024-05-14 16:45:00 +0000	29	155	4	0	28	13	59	19	226	16	0	0	2	29	92
2024-05-14 17:00:00 +0000	24	176	1	0	34	18	80	21	208	17	0	0	6	37	131
2024-05-14 17:15:00 +0000	29	163	1	0	24	17	50	22	222	16	0	0	5	22	59
2024-05-14 17:30:00 +0000	28	170	4	0	18	10	54	17	207	19	0	0	5	17	47
2024-05-14 17:45:00 +0000	27	142	3	0	20	9	42	15	174	12	0	0	3	15	35
7:30-8:30	201	736	21	0	31	116	78	368	395	67	0	0	5	74	104
4:30-5:30	108	654	8	0	111	60	257	81	877	66	0	0	24	116	386

SingleUnitTruck

Entry	Direction	Start Time	North			East			South			West				
			Southbound			Westbound			Northbound			Eastbound				
			Left	Thru	Right	U-Turn	Left	Thru	Right	Left	Thru	Right	U-Turn	Left	Thru	Right
2024-05-14 07:00:00 +0000		0	1	0	0	0	0	0	1	0	0	0	0	0	1	2
2024-05-14 07:15:00 +0000		0	1	0	0	0	0	0	0	1	0	0	0	0	0	2
2024-05-14 07:30:00 +0000		0	3	0	0	0	0	0	0	0	0	0	0	0	0	2
2024-05-14 07:45:00 +0000		1	1	0	0	0	0	0	0	1	0	0	0	0	0	14
2024-05-14 08:00:00 +0000		1	3	0	0	0	0	0	0	1	2	0	0	0	0	11
2024-05-14 08:15:00 +0000		1	3	0	0	0	0	0	0	2	3	0	0	0	0	15
2024-05-14 08:30:00 +0000		2	1	0	0	0	0	0	0	3	3	0	0	0	0	15
2024-05-14 08:45:00 +0000		0	4	0	0	0	0	0	0	2	2	0	0	0	0	2
2024-05-14 16:00:00 +0000		0	2	0	0	0	0	0	0	2	0	0	0	0	0	2
2024-05-14 16:15:00 +0000		1	1	0	0	0	0	0	0	1	0	0	0	0	0	1
2024-05-14 16:30:00 +0000		0	1	0	0	0	0	0	0	1	0	0	0	0	0	1
2024-05-14 16:45:00 +0000		1	2	0	0	0	0	0	0	1	2	0	0	0	0	8
2024-05-14 17:00:00 +0000		1	0	1	0	0	0	0	0	1	0	0	0	0	0	8
2024-05-14 17:15:00 +0000		0	0	0	0	0	0	0	0	1	0	0	0	0	0	5
2024-05-14 17:30:00 +0000		0	0	1	0	0	0	0	0	2	0	0	0	0	0	7
2024-05-14 17:45:00 +0000		0	1	1	0	0	0	0	0	1	0	0	0	0	0	0
7:30-8:30		3	10	0	0	13	0	2	5	3	14	0	0	0	0	5
4:30-5:30		2	3	2	0	1	3	1	5	6	0	0	0	0	0	5

Direction	Start Time	Southbound			Westbound			Northbound			Eastbound				
		Left	Thru	Right	U-Turn	Left	Thru	Right	Left	Thru	Right	U-Turn	Left	Thru	Right
		205	765	664	22	0	44	116	81	383	418	82	0	7	74
AM Peak		111	664	12	0	112	64	258	86	887	66	0	26	116	395
PM Peak		2.00%	3.80%	4.50%	#DIV/0!	29.50%	0.00%	3.70%	3.90%	5.50%	18.30%	#DIV/0!	28.60%	0.00%	7.10%
PM HV%		2.70%	1.50%	33.30%	#DIV/0!	0.90%	6.30%	0.40%	5.80%	1.10%	0.00%	#DIV/0!	7.70%	0.00%	2.30%
AM PHF:		582	611	549	567	0.944763	709	684	762	642	0.917651				

APPENDIX B: MISCELLANEOUS CALCULATIONS

RG1 4Y RG2 8Y Tue May-21-2024 08:13:09D
 YEL1.7 YEL1.7 1234567890ABCDEF TBC
 GAP MAX O/N N ON O PAT254
 VEH CC CC CYC
 PED OFF
 OVL RYRYR MCT
 FREE COMMD POV LCT
 SP FO H/O PRE

2.1 PHASE TIMINGS SET 1 DR

PHASE#	1	2	3	4	5	6	7	8
MIN GRN	7	25	7	20	7	25	7	20
PASS/10	20	50	20	50	20	50	20	50
MAX 1	15	40	15	30	25	40	15	30
MAX 2	0	0	0	0	0	0	0	0
MAX 3	0	0	0	0	0	0	0	0
MAX 4	0	0	0	0	0	0	0	0

y=YES n=NO End=NEXT

```

RG1 2G RG2 5G Tue May-21-2024 08:13:29D
MIN 23 EXT2.0 1234567890ABCDEF TBC
MAX 38 MAX 10 O/N 0 0 PAT254
      VEH EC EC C CYC
      PED OFF
      OVL GR RG MCT
FREE COMMD POV LCT
SP FO H/O PRE

```

2.1 PHASE TIMINGS SET 1 UDR

```

PHASE# 1 2 3 4 5 6 7 8
YEL/10 40 40 40 40 40 40 40 40
RED/10 20 20 20 20 20 20 20 20
WALK 0 7 0 7 0 7 0 0
PED CLR 0 15 0 15 0 15 0 0
ADD IN/10 0 0 0 0 0 0 0 0
MAX INIT 0 0 0 0 0 0 0 0

```

y=YES n=NO End=NEXT

```

RG1 2G RG2 6G Tue May-21-2024 08:13:49D
MIN 2 MIN 17 1234567890ABCDEF TBC
MAX 17 MAX 32 O/N 0 0 PAT254
      VEH RCC E C CYC
      PED OFF
      OVL GRGRR MCT
FREE COMMD POV LCT
SP FO H/O PRE

```

2.1 PHASE TIMINGS SET 2 DR

PHASE#	1	2	3	4	5	6	7	8
MIN GRN	4	15	4	15	4	15	4	15
PASS/10	20	50	20	50	20	50	20	50
MAX 1	15	45	15	45	15	45	15	45
MAX 2	15	45	15	45	15	45	15	45
MAX 3	0	0	0	0	0	0	0	0
MAX 4	0	0	0	0	0	0	0	0

y=YES n=NO End=NEXT

RG1 2G RG2 6G Tue May-21-2024 08:14:02D
 EXT1.8 MIN 5 1234567890ABCDEF TBC
 MAX 5 MAX 20 O/N 0 0 PAT254
 VEH RCC E C CYC
 PED OFF
 OVL GRGRR MCT
 FREE COMMD POV LCT
 SP FO H/O PRE

2.1 PHASE TIMINGS SET 2 UDR

PHASE#	1	2	3	4	5	6	7	8
YEL/10	30	40	30	40	30	40	30	40
RED/10	10	20	10	20	10	20	10	20
WALK	0	7	0	7	0	7	0	7
PED CLR	0	15	0	15	0	15	0	15
ADD IN/10	0	0	0	0	0	0	0	0
MAX INIT	0	0	0	0	0	0	0	0

y=YES n=NO End=NEXT

Sawyer's Landing Development, Town of Amherst, NY

Documentation of Ambient Traffic Volume Growth

Roadway	Segment starts at	Segment end at	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Annual Growth
North Forest Rd	Turtle Creek Apts	Dodge Rd			2,189			1,809	7,058	1,825	1,845		-2.81%
Dodge Rd	Sweet Home Rd	Campbell Rd			5,440				16,008	6,738			-4.53%
Sweet Home Rd	Commerce Dr	North French Rd		16,606		15,052			21,437			18,050	2.07%
Sweet Home Rd	N Ellicott Rd	Commerce Dr	21,021										0.33%
												AVERAGE	-1.24%

Intersection Crash Rate Calculations										
Sawyer's Landing Development										
Intersection #1:	Sweet Home Rd at Dodge Rd									
Date of Count:	Tuesday, May 14, 2024									
Number of Crashes:	30									
Number of Injuries:	11									
Number of Fatalities:	0									
Entering Vehicles (PM):	2797									
ADT:	29442									
Start Date:	January 1, 2019									
End Date:	December 31, 2023									
Number of Years:	5									
Intersection Type:	4 Legged									
Area Type:	Urban									
Control Type:	Signal w/ Left Turn 5 or More Lanes									
crash rate =	$\frac{\text{Number of Crashes} \times 1 \text{ Million}}{\text{ADT} \times 365 \text{ Days per Year} \times \text{Number of Years}}$									
crash rate =	$\frac{30}{29442 \times 365 \times 5} \times 1,000,000$									
	<table border="1"> <thead> <tr> <th>Crash Rate</th> <th>Fatality Rate</th> <th>Injury Rate</th> </tr> </thead> <tbody> <tr> <td>Study Intersection</td> <td>0.56 cr/mve</td> <td>0%</td> </tr> <tr> <td>Statewide Average*</td> <td>0.26 cr/mve</td> <td>37%</td> </tr> </tbody> </table>	Crash Rate	Fatality Rate	Injury Rate	Study Intersection	0.56 cr/mve	0%	Statewide Average*	0.26 cr/mve	37%
Crash Rate	Fatality Rate	Injury Rate								
Study Intersection	0.56 cr/mve	0%								
Statewide Average*	0.26 cr/mve	37%								
<p>ADT = Average Daily Total vehicles entering intersection cr/mve = crashes per million entering vehicles * Most recent available 2019 Average Crash Rates for State Highways by Facility Type</p>										

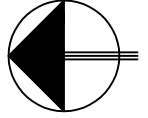
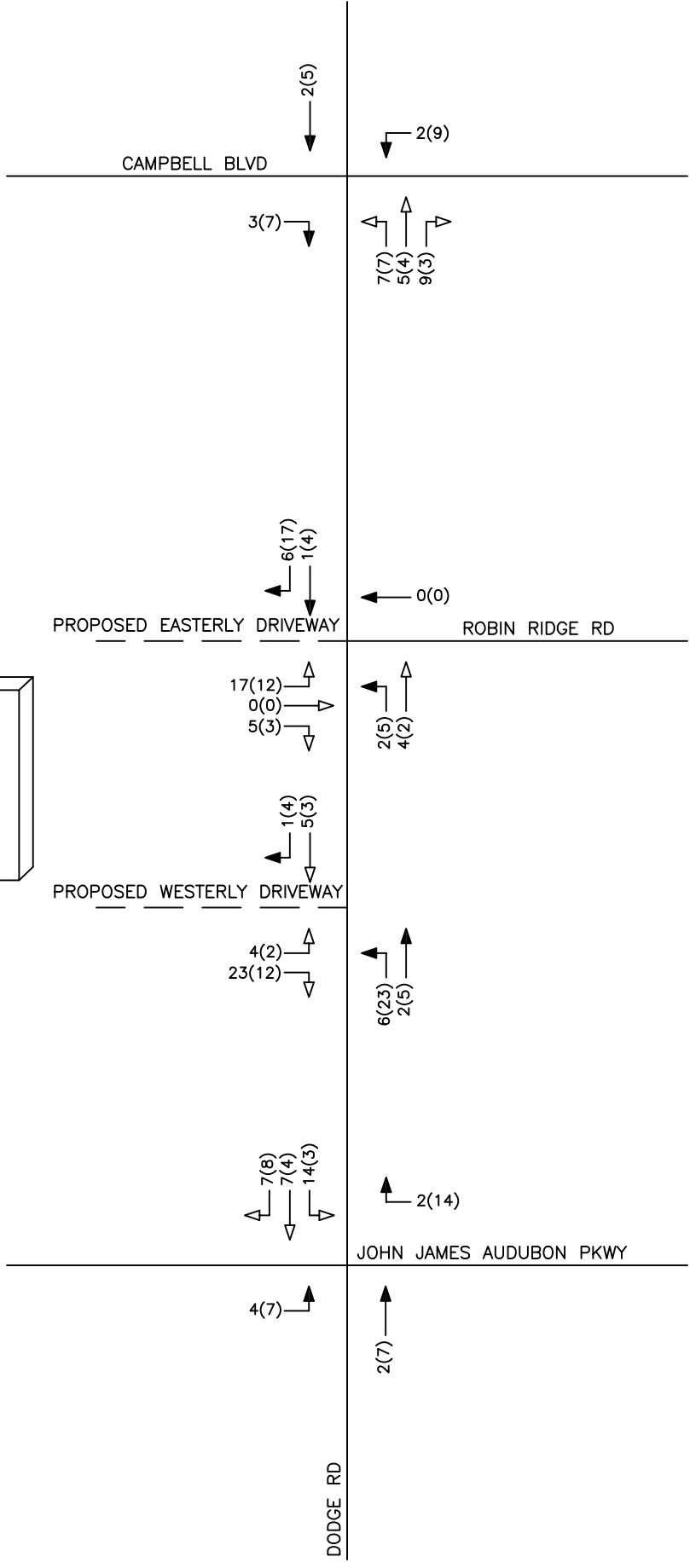
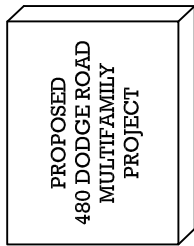
Type	Direction					Totals
	Northbound	Southbound	Eastbound	Westbound	Unknown	
Left turn	3	4		2		9
Rear-end	1	3	2	1		7
Overtaking						0
Right Angle	5	1	1	1		8
Right Turn				1		1
Head On						0
Side-swipe	1	1	1			3
Fixed Object						0
Backing		1	1			2
Other						0
Bike/Ped						0
Animal						0
Totals	10	10	5	5	0	30

PDO	19
Injury	11
Injury + PDO	
Fatal	
NR	
Total	30

Intersection Crash Rate Calculations										
Sawyer's Landing Development										
Intersection #5:	Dodge Rd at North Forest Rd									
Date of Count:	Thursday, March 3, 2022									
Number of Crashes:	6									
Number of Injuries:	0									
Number of Fatalities:	0									
Entering Vehicles (PM):	606									
ADT:	6379									
Start Date:	January 1, 2019									
End Date:	December 31, 2023									
Number of Years:	5									
Intersection Type:	3 Legged									
Area Type:	Urban									
Control Type:	Sign 1-3 Lanes									
crash rate =	$\frac{\text{Number of Crashes} \times 1 \text{ Million}}{\text{ADT} \times 365 \text{ Days per Year} \times \text{Number of Years}}$									
crash rate =	$\frac{6}{6379 \times 365 \times 5} \times 1,000,000$									
	<table border="1"> <thead> <tr> <th>Crash Rate</th> <th>Fatality Rate</th> <th>Injury Rate</th> </tr> </thead> <tbody> <tr> <td>Study Intersection</td> <td>0.52 cr/mve</td> <td>0%</td> </tr> <tr> <td>Statewide Average*</td> <td>0.19 cr/mve</td> <td>0%</td> </tr> </tbody> </table>	Crash Rate	Fatality Rate	Injury Rate	Study Intersection	0.52 cr/mve	0%	Statewide Average*	0.19 cr/mve	0%
Crash Rate	Fatality Rate	Injury Rate								
Study Intersection	0.52 cr/mve	0%								
Statewide Average*	0.19 cr/mve	0%								
<p>ADT = Average Daily Total vehicles entering intersection cr/mve = crashes per million entering vehicles * Most recent available 2019 Average Crash Rates for State Highways by Facility Type</p>										

Type	Direction					Totals
	Northbound	Southbound	Eastbound	Westbound	Unknown	
Left turn						0
Rear-end	1			1		2
Overtaking						0
Right Angle	1					1
Right Turn						0
Head On						0
Side-swipe						0
Fixed Object	2		1			3
Backing						0
Other						0
Bike/Ped						0
Animal						0
Totals	4	0	1	1	0	6

PDO	6
Injury	
Injury + PDO	
Fatal	
NR	
Total	6



N

NOT TO SCALE



FIGURE 7

TOTAL SITE GENERATED TRIPS

PROPOSED 480 DODGE ROAD MULTIFAMILY PROJECT
TOWN OF AMHERST, NY

KEY

00(00) = AM(PM)

→ = ENTERING TRIPS

← = EXITING TRIPS

PROJECT NO: 43125

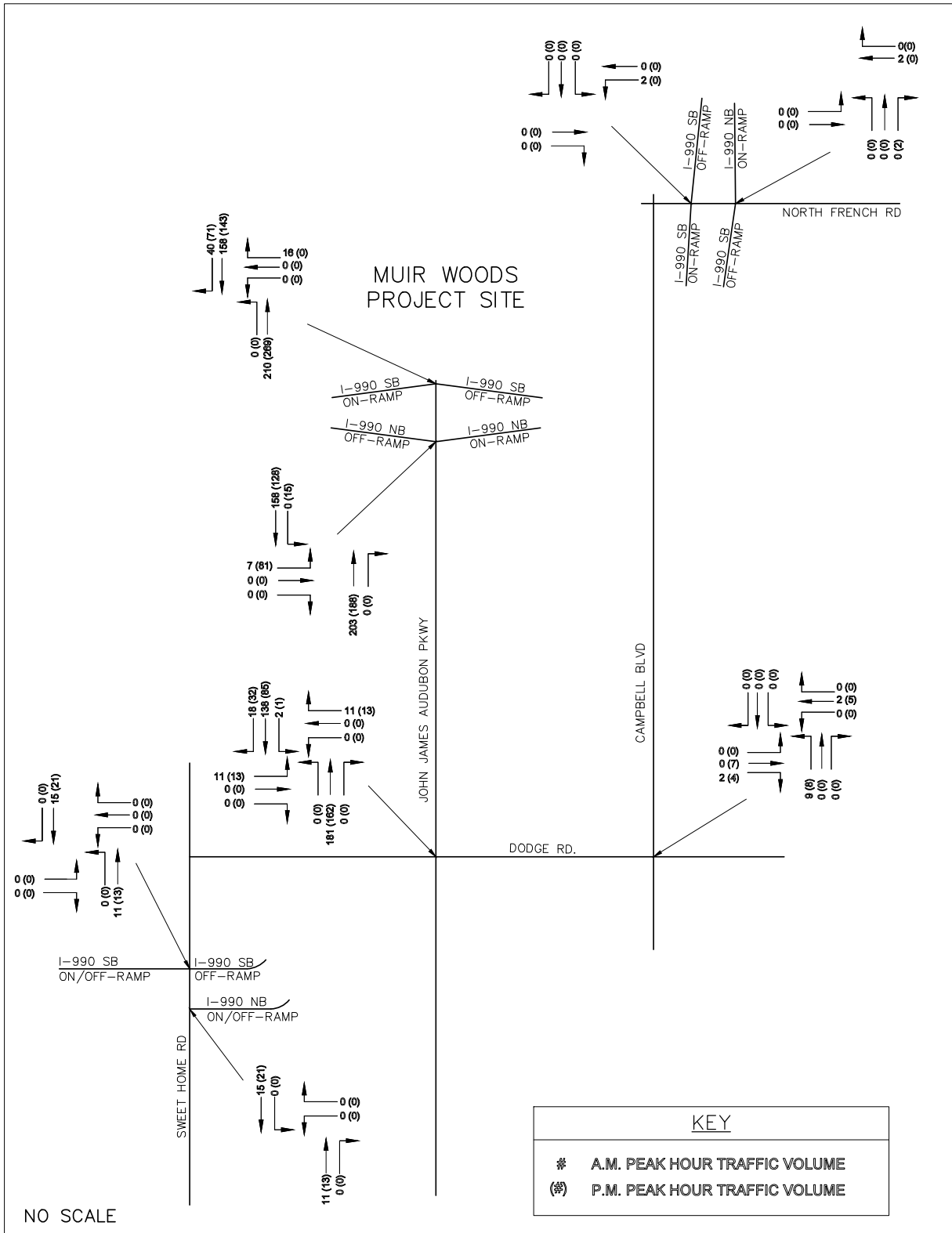


EXHIBIT VII
SITE GENERATED TRAFFIC

PROJECT DETAILS

Project Name: Sawyers Landing
 Project No:
 Country:
 Analyst Name: Amy Dake
 Date: 5/24/2024
 State/Province:
 Analysis Region:

Type of Project:
 City:
 Built-up Area(Sq.ft):
 Client's Name:
 ZIP/Postal Code:
 No. of Scenarios: 2

SCENARIO SUMMARY

Scenarios	Name	No. of Land Uses	Phases of Development	No. of Years to Project Traffic	User Group	Entry	Exit	Total
Scenario - 1	AM Peak	7	1	0		76	102	178
Scenario - 2	PM Peak	7	1	0		163	136	299

Scenario - 1

Scenario Name: AM Peak

User Group:

Dev. phase: 1

No. of Years to Project 0

Analyst Note:

Traffic: 0

Warning:

VEHICLE TRIPS BEFORE REDUCTION

Land Use & Data Source	Location	IV	Size	Time Period	Method Rate/Equation	Entry Split%		Exit Split%		Total
						Entry	Exit	Entry	Exit	
710 - General Office Building Data Source: Trip Generation Manual, 11th Ed	General Urban/Suburban	1000 Sq. Ft. GFA	2.3	Weekday, Peak Hour of Adjacent Street Traffic,	Best Fit (LOG) $\ln(T) = 0.86 \ln(X) + 1.16$	6	1	88%	12%	7
822 - Strip Retail Plaza (<40k) Data Source: Trip Generation Manual, 11th Ed	General Urban/Suburban	1000 Sq. Ft. GLA	12.85	Weekday, Peak Hour of Adjacent Street Traffic,	Average 2.36	18	12	60%	40%	30
151 - Mini-Warehouse Data Source: Trip Generation Manual, 11th Ed	General Urban/Suburban	1000 Sq. Ft. GFA	105.6	Weekday, Peak Hour of Adjacent Street Traffic,	Average 0.09	6	4	59%	41%	10
215 - Single-Family Attached Housing Data Source: Trip Generation Manual, 11th Ed	General Urban/Suburban	Dwelling Units	107	Weekday, Peak Hour of Adjacent Street Traffic,	Best Fit (LIN) $T = 0.52(X) - 5.70$	12	37	25%	75%	49
221 - Multifamily Housing (Mid-Rise) - Not Data Source: Trip Generation Manual, 11th Ed	General Urban/Suburban	Dwelling Units	102	Weekday, Peak Hour of Adjacent Street	Best Fit (LIN) $T = 0.44(X) - 11.61$	8	26	23%	77%	34
932 - High-Turnover (Sit-Down) Restaurant Data Source: Trip Generation Manual, 11th Ed	General Urban/Suburban	1000 Sq. Ft. GFA	3.90	Weekday, Peak Hour of Adjacent Street Traffic,	Average 9.57	21	17	55%	45%	38
492 - Healthy/Fitness Club Data Source: Trip Generation Manual, 11th Ed	General Urban/Suburban	1000 Sq. Ft. GFA	8.00	Weekday, Peak Hour of Adjacent Street Traffic,	Average 1.31	5	5	51%	49%	10

VEHICLE TO PERSON TRIP CONVERSION

BASELINE SITE VEHICLE CHARACTERISTICS:

Land Use	Baseline Site Vehicle Mode Share		Baseline Site Vehicle Occupancy		Baseline Site Vehicle Directional Split	
	Entry (%)	Exit (%)	Entry	Exit	Entry (%)	Exit (%)
710 - General Office Building	99	100	1.1	1.1	88	12
822 - Strip Retail Plaza (<40k)	100	100	1	1	60	40
151 - Mini-Warehouse	100	100	1	1	59	41
215 - Single-Family Attached Housing	100	100	1	1	25	75
221 - Multifamily Housing (Mid-Rise) - Not Close to Rail Transit	100	100	1	1	23	77
932 - High-Turnover (Sit-Down) Restaurant	100	100	1	1	55	45
492 - Healthy/Fitness Club	100	100	1	1	51	49

ESTIMATED BASELINE SITE PERSON TRIPS:

Land Use	Person Trips by Vehicle		Person Trips by Other Modes		Total Baseline Site Person Trips	
	Entry	Exit	Entry	Exit	Entry	Exit
710 - General Office Building	6	1	0	0	6	1
822 - Strip Retail Plaza (<40k)	18	12	0	0	18	12
151 - Mini-Warehouse	6	4	0	0	6	4
215 - Single-Family Attached Housing	12	37	0	0	12	37
221 - Multifamily Housing (Mid-Rise) - Not Close to Rail Transit	8	26	0	0	8	26
932 - High-Turnover (Sit-Down) Restaurant	21	17	0	0	21	17

Land Use	5	38	0	0	0	38
492 - Health/Fitness Club						
	5	38	0	0	0	38
	10					10
					5	5
					10	10

NEW VEHICLE TRIPS

Land Use	New Vehicle Trips		
	Entry	Exit	Total
710 - General Office Building	6	1	7
822 - Strip Retail Plaza (<40k)	18	12	30
151 - Mini-Warehouse	6	4	10
215 - Single-Family Attached Housing	12	37	49
221 - Multifamily Housing (Mid-Rise) - Not Close to Rail Transit	8	26	34
932 - High-Turnover (Sit-Down) Restaurant	21	17	38
492 - Health/Fitness Club	5	5	10

RESULTS

Site Totals	Entry	Exit	Total
Vehicle Trips Before Reduction	76	102	178
External Vehicle Trips	76	102	178
New Vehicle Trips	76	102	178

Scenario - 2

Scenario Name: PM Peak

User Group:

Dev. phase: 1

No. of Years to Project 0

Analyst Note:

Traffic: 0

Warning:

VEHICLE TRIPS BEFORE REDUCTION

Land Use & Data Source	Location	IV	Size	Time Period	Method Rate/Equation	Entry Split%		Exit Split%		Total
						Entry	Exit	Entry	Exit	
710 - General Office Building Data Source: Trip Generation Manual, 11th Ed	General Urban/Suburban	1000 Sq. Ft. GFA	2.3	Weekday, Peak Hour of Adjacent Street Traffic,	Best Fit (LOG) $\ln(T) = 0.83 \ln(X) + 1.29$	1	6	17%	83%	7
822 - Strip Retail Plaza (<40k) Data Source: Trip Generation Manual, 11th Ed	General Urban/Suburban	1000 Sq. Ft. GLA	12.85	Weekday, Peak Hour of Adjacent Street Traffic,	Best Fit (LOG) $\ln(T) = 0.71 \ln(X) + 2.72$	47	47	50%	50%	94
151 - Mini-Warehouse Data Source: Trip Generation Manual, 11th Ed	General Urban/Suburban	1000 Sq. Ft. GFA	105.6	Weekday, Peak Hour of Adjacent Street Traffic,	Average $T = 0.15$	7	8	47%	53%	15
215 - Single-Family Attached Housing Data Source: Trip Generation Manual, 11th Ed	General Urban/Suburban	Dwelling Units	107	Weekday, Peak Hour of Adjacent Street Traffic,	Best Fit (LIN) $T = 0.60(X) - 3.93$	36	25	59%	41%	61
221 - Multifamily Housing (Mid-Rise) - Not Data Source: Trip Generation Manual, 11th Ed	General Urban/Suburban	Dwelling Units	102	Weekday, Peak Hour of Adjacent Street	Best Fit (LIN) $T = 0.39(X) + 0.34$	24	16	61%	39%	40
932 - High-Turnover (Sit-Down) Restaurant Data Source: Trip Generation Manual, 11th Ed	General Urban/Suburban	1000 Sq. Ft. GFA	3.90	Weekday, Peak Hour of Adjacent Street Traffic,	Average $T = 9.05$	22	14	61%	39%	36
492 - Health/Fitness Club Data Source: Trip Generation Manual, 11th Ed	General Urban/Suburban	1000 Sq. Ft. GFA	8.00	Weekday, Peak Hour of Adjacent Street Traffic,	Best Fit (LOG) $\ln(T) = 0.67 \ln(X) + 2.44$	26	20	57%	43%	46

VEHICLE TO PERSON TRIP CONVERSION

BASELINE SITE VEHICLE CHARACTERISTICS:

Land Use	Baseline Site Vehicle Mode Share		Baseline Site Vehicle Occupancy		Baseline Site Vehicle Directional Split	
	Entry (%)	Exit (%)	Entry	Exit	Entry (%)	Exit (%)
710 - General Office Building	100	99	1.1	1.1	17	83
822 - Strip Retail Plaza (<40k)	100	100	1	1	50	50
151 - Mini-Warehouse	100	100	1	1	47	53
215 - Single-Family Attached Housing	100	100	1	1	59	41
221 - Multifamily Housing (Mid-Rise) - Not Close to Rail Transit	100	100	1	1	61	39
932 - High-Turnover (Sit-Down) Restaurant	100	100	1	1	61	39
492 - Health/Fitness Club	100	100	1	1	57	43

ESTIMATED BASELINE SITE PERSON TRIPS:

Land Use	Person Trips by Vehicle		Person Trips by Other Modes		Total Baseline Site Person Trips	
	Entry	Exit	Entry	Exit	Entry	Exit
710 - General Office Building	1	7	0	0	1	7
822 - Strip Retail Plaza (<40k)	47	47	0	0	47	47
151 - Mini-Warehouse	7	8	0	0	7	8
215 - Single-Family Attached Housing	36	25	0	0	36	25
221 - Multifamily Housing (Mid-Rise) - Not Close to Rail Transit	24	16	0	0	24	16
932 - High-Turnover (Sit-Down) Restaurant	22	14	0	0	22	14

492 - High-Turnover Sit-Down Restaurant

492 - Health/Fitness Club	26	36	0	0	0	36
	46	20	0	0	26	20
						46

NEW VEHICLE TRIPS

Land Use	New Vehicle Trips		
	Entry	Exit	Total
710 - General Office Building	1	6	7
822 - Strip Retail Plaza (<40k)	47	47	94
151 - Mini-Warehouse	7	8	15
215 - Single-Family Attached Housing	36	25	61
221 - Multifamily Housing (Mid-Rise) - Not Close to Rail Transit	24	16	40
932 - High-Turnover (Sit-Down) Restaurant	22	14	36
492 - Health/Fitness Club	26	20	46

RESULTS

Site Totals	Entry	Exit	Total
Vehicle Trips Before Reduction	163	136	299
External Vehicle Trips	163	136	299
New Vehicle Trips	163	136	299

NCHRP 8-51 Internal Trip Capture Estimation Tool						
Project Name:	Sawyer's Landing Development			Organization:	Passero Associates	
Project Location:	Town of Amherst, NY			Performed By:	Nick Merrifield	
Scenario Description:				Date:	May 2024	
Analysis Year:	2026			Checked By:		
Analysis Period:	AM Street Peak Hour			Date:		

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)						
Land Use	Development Data (For Information Only)			Estimated Vehicle-Trips		
	ITE LUCs ¹	Quantity	Units	Total	Entering	Exiting
Office	710	2,300	SF	7	6	1
Retail	822	12,854	SF	30	18	12
Restaurant	932	3,901	SF	38	21	17
Cinema/Entertainment				0		
Residential	215/221	209	Units	83	20	63
Hotel				0		
All Other Land Uses ²	492/151	8,002/105,600	SF	20	11	9
Total				178	76	102

Table 2-A: Mode Split and Vehicle Occupancy Estimates						
Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office	1.06	0%	1%	1.06	0%	0%
Retail	1.17	0%	0%	1.16	0%	0%
Restaurant	1.41	0%	1%	1.39	0%	2%
Cinema/Entertainment						
Residential	1.13	0%	3%	1.09	0%	2%
Hotel						
All Other Land Uses ²	1.00	0%	0%	1.00	0%	0%

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		2	0	0	0
Restaurant	1	2		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	6	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary			
	Total	Entering	Exiting
All Person-Trips	208	91	117
Internal Capture Percentage	13%	14%	11%
External Vehicle-Trips ³	156	66	90
External Transit-Trips ⁴	0	0	0
External Non-Motorized Trips ⁴	2	1	1

Table 6-A: Internal Trip Capture Percentages by Land Use		
Land Use	Entering Trips	Exiting Trips
Office	17%	0%
Retail	14%	14%
Restaurant	27%	17%
Cinema/Entertainment	N/A	N/A
Residential	4%	10%
Hotel	N/A	N/A

¹Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

²Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

³Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

⁴Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	Sawyer's Landing Development
Analysis Period:	AM Street Peak Hour

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends						
Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.06	6	6	1.06	1	1
Retail	1.17	18	21	1.16	12	14
Restaurant	1.41	21	30	1.39	17	24
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.13	20	23	1.09	63	69
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	1	0	0	0
Retail	4		2	0	2	0
Restaurant	7	3		0	1	1
Cinema/Entertainment	0	0	0		0	0
Residential	1	1	14	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		7	7	0	0	0
Retail	0		15	0	0	0
Restaurant	1	2		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	4	6	0		0
Hotel	0	1	2	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)						
Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	1	5	6	5	0	0
Retail	3	18	21	15	0	0
Restaurant	8	22	30	16	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	22	23	19	0	1
Hotel	0	0	0	0	0	0
All Other Land Uses ³	0	11	11	11	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)						
Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	0	1	1	1	0	0
Retail	2	12	14	10	0	0
Restaurant	4	20	24	14	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	7	62	69	56	0	1
Hotel	0	0	0	0	0	0
All Other Land Uses ³	0	9	9	9	0	0

¹Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

²Person-Trips

³Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool					
Project Name:	Sawyer's Landing Development			Organization:	Passero Associates
Project Location:	Town of Amherst, NY			Performed By:	Nick Merrifield
Scenario Description:				Date:	May 2024
Analysis Year:	2026			Checked By:	
Analysis Period:	PM Street Peak Hour			Date:	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)						
Land Use	Development Data (For Information Only)			Estimated Vehicle-Trips		
	ITE LUCs ¹	Quantity	Units	Total	Entering	Exiting
Office	710	2,300	SF	7	1	6
Retail	822	12,854	SF	94	47	47
Restaurant	932	3,901	SF	36	22	14
Cinema/Entertainment				0		
Residential	215/221	209	Units	101	60	41
Hotel				0		
All Other Land Uses ²	492/151	8,002/105,600	SF	61	33	28
Total				299	163	136

Table 2-P: Mode Split and Vehicle Occupancy Estimates						
Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office	1.11	0%	0%	1.07	0%	0%
Retail	1.21	0%	0%	1.18	0%	0%
Restaurant	1.41	0%	1%	1.39	0%	2%
Cinema/Entertainment						
Residential	1.15	0%	3%	1.21	0%	4%
Hotel						
All Other Land Uses ²	1.00	0%	0%	1.00	0%	0%

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	194		283	
Retail					283	
Restaurant					283	
Cinema/Entertainment						
Residential		283	283			
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1	0	0	0	0
Retail	0		9	0	14	0
Restaurant	0	8		0	3	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	6	4	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary			
	Total	Entering	Exiting
All Person-Trips	349	191	158
Internal Capture Percentage	26%	24%	28%
External Vehicle-Trips ³	222	125	97
External Transit-Trips ⁴	0	0	0
External Non-Motorized Trips ⁴	4	2	2

Table 6-P: Internal Trip Capture Percentages by Land Use		
Land Use	Entering Trips	Exiting Trips
Office	0%	17%
Retail	26%	42%
Restaurant	42%	58%
Cinema/Entertainment	N/A	N/A
Residential	25%	20%
Hotel	N/A	N/A

¹Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

²Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

³Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

⁴Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	Sawyer's Landing Development
Analysis Period:	PM Street Peak Hour

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.11	1	1	1.07	6	6
Retail	1.21	47	57	1.18	47	55
Restaurant	1.41	22	31	1.39	14	19
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.15	60	69	1.21	41	50
Hotel	1.00	0	0	1.00	0	0

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1	0	0	0	0
Retail	1		16	2	14	3
Restaurant	1	8		2	3	1
Cinema/Entertainment	0	0	0		0	0
Residential	2	20	10	0		2
Hotel	0	0	0	0	0	

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		5	1	0	3	0
Retail	0		9	0	32	0
Restaurant	0	29		0	11	0
Cinema/Entertainment	0	2	1		3	0
Residential	1	6	4	0		0
Hotel	0	1	2	0	0	

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	0	1	1	1	0	0
Retail	15	42	57	35	0	0
Restaurant	13	18	31	13	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	17	52	69	43	0	2
Hotel	0	0	0	0	0	0
All Other Land Uses ³	0	33	33	33	0	0

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	1	5	6	5	0	0
Retail	23	32	55	27	0	0
Restaurant	11	8	19	6	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	10	40	50	31	0	2
Hotel	0	0	0	0	0	0
All Other Land Uses ³	0	28	28	28	0	0

¹Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

²Person-Trips

³Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

Table 7.1a Adjusted Internal Trip Capture Rates for Trip Origins within a Multi-Use Development

Land Use Pairs		Weekday	
		AM Peak Hour	PM Peak Hour
From OFFICE	To Office	0.0%	0.0%
	To Retail	28.0%	20.0%
	To Restaurant	63.0%	4.0%
	To Cinema/Entertainment	0.0%	0.0%
	To Residential	1.0%	2.0%
	To Hotel	0.0%	0.0%
From RETAIL	To Office	29.0%	2.0%
	To Retail	0.0%	0.0%
	To Restaurant	13.0%	29.0%
	To Cinema/Entertainment	0.0%	4.0%
	To Residential	14.0%	26.0%
	To Hotel	0.0%	5.0%
From RESTAURANT	To Office	31.0%	3.0%
	To Retail	14.0%	41.0%
	To Restaurant	0.0%	0.0%
	To Cinema/Entertainment	0.0%	8.0%
	To Residential	4.0%	18.0%
	To Hotel	3.0%	7.0%
From CINEMA/ENTERTAINMENT	To Office	0.0%	2.0%
	To Retail	0.0%	21.0%
	To Restaurant	0.0%	31.0%
	To Cinema/Entertainment	0.0%	0.0%
	To Residential	0.0%	8.0%
	To Hotel	0.0%	2.0%
From RESIDENTIAL	To Office	2.0%	4.0%
	To Retail	1.0%	41.0%
	To Restaurant	20.0%	20.5%
	To Cinema/Entertainment	0.0%	0.0%
	To Residential	0.0%	0.0%
	To Hotel	0.0%	3.0%
From HOTEL	To Office	75.0%	0.0%
	To Retail	14.0%	16.0%
	To Restaurant	9.0%	68.0%
	To Cinema/Entertainment	0.0%	0.0%
	To Residential	0.0%	2.0%
	To Hotel	0.0%	0.0%

Table 7.2a Adjusted Internal Trip Capture Rates for Trip Destinations within a Multi-Use Development

Land Use Pairs		Weekday	
		AM Peak Hour	PM Peak Hour
To OFFICE	From Office	0.0%	0.0%
	From Retail	4.0%	31.0%
	From Restaurant	14.0%	30.0%
	From Cinema/Entertainment	0.0%	6.0%
	From Residential	3.0%	57.0%
	From Hotel	3.0%	0.0%
To RETAIL	From Office	32.0%	8.0%
	From Retail	0.0%	0.0%
	From Restaurant	8.0%	50.0%
	From Cinema/Entertainment	0.0%	4.0%
	From Residential	17.0%	9.8%
	From Hotel	4.0%	2.0%
To RESTAURANT	From Office	23.0%	2.0%
	From Retail	50.0%	29.0%
	From Restaurant	0.0%	0.0%
	From Cinema/Entertainment	0.0%	3.0%
	From Residential	20.0%	13.7%
	From Hotel	6.0%	5.0%
To CINEMA/ENTERTAINMENT	From Office	0.0%	1.0%
	From Retail	0.0%	26.0%
	From Restaurant	0.0%	32.0%
	From Cinema/Entertainment	0.0%	0.0%
	From Residential	0.0%	0.0%
	From Hotel	0.0%	0.0%
To RESIDENTIAL	From Office	0.0%	4.0%
	From Retail	2.0%	46.0%
	From Restaurant	5.0%	16.0%
	From Cinema/Entertainment	0.0%	4.0%
	From Residential	0.0%	0.0%
	From Hotel	0.0%	0.0%
To HOTEL	From Office	0.0%	0.0%
	From Retail	0.0%	17.0%
	From Restaurant	4.0%	71.0%
	From Cinema/Entertainment	0.0%	1.0%
	From Residential	0.0%	12.0%
	From Hotel	0.0%	0.0%

Project: Sawyer's Landing Development
 Location: Town of Amherst, NY

enter	exit	enter	exit
14%	11%	24%	28%
10%	10%	20%	20%
29%	9%	17%	29%
			Base %
			Adjusted %
			% change

Base Internal Capture Percentages			
AM PEAK HOUR	PM PEAK HOUR	Enter	Exit
17%	0%	0%	17%
14%	14%	26%	42%
27%	17%	42%	58%
4%	10%	25%	20%
4%	10%	25%	20%
0%	0%	0%	0%
0%	0%	0%	0%
Adjusted Internal Capture Percentages			
AM PEAK HOUR	PM PEAK HOUR	Enter	Exit
12%	0%	0%	12%
10%	13%	22%	30%
19%	15%	35%	41%
3%	9%	21%	14%
3%	9%	21%	14%
0%	0%	0%	0%
0%	0%	0%	0%

Description	ITE LUC	SIZE/ UNITS	AM PEAK HOUR		PM PEAK HOUR		% of Total Trips	
			Enter	Exit	Enter	Exit	AM	PM
General Office Building	710	2,300 SF	6	1	1	6	4%	2%
Strip Retail Plaza (<40k)	822	12,854 SF	18	12	47	47	17%	31%
High-Turnover (Sit-Down) Restaurant	932	3,901 SF	21	17	22	14	21%	12%
Single Family Attached Housing	215	107 Units	12	37	36	25	28%	20%
Multifamily Housing (Mid-Rise)	221	102 Units	8	26	24	16	19%	13%
Mini-Warehouse	151	105,600 SF	6	4	7	8	6%	5%
Health/Fitness Club	492	8,002 SF	5	5	26	20	6%	15%
Sub-Total Site Generated Trips			76	102	163	136	100%	100%
General Office Building	710	2,300 SF	5	1	1	5	4%	3%
Strip Retail Plaza (<40k)	822	12,854 SF	16	10	37	33	17%	29%
High-Turnover (Sit-Down) Restaurant	932	3,901 SF	17	14	14	8	19%	9%
Single Family Attached Housing	215	107 Units	12	34	29	21	28%	21%
Multifamily Housing (Mid-Rise)	221	102 Units	8	24	19	14	20%	14%
Mini-Warehouse	151	105,600 SF	6	4	7	8	6%	6%
Health/Fitness Club	492	8,002 SF	5	5	26	20	6%	19%
Total Net Site Generated Trips			69	92	133	110	100%	100%

Multi-use Trips 7 10 30 26

Traffic Signal Warrant Analysis

Dodge Rd/North Forest Rd - Full Build Conditions
Town of Amherst, Erie County, NY

Hour	2026 Background Volumes on Dodge Rd		Hourly Fluctuation		2026 Full Build Artery Volume on Dodge Rd		2026 Background Volumes on North Forest Rd		Total Hourly Volumes Exiting North Forest Rd under Full Build Conditions		Warrant 1 - Condition A 350/105	Warrant 1 - Condition B 525/53	Warrant 2 - 4 hour 60 vph	Warrant 3 - Peak hour 75 vph
	Two-Way		Two-Way		Total		SB		Total					
	to	from	to	from	to	from	to	from						
7:00 AM	to	8:00 AM	419	5.14%	464	20	28	N	N	N	N	N	N	N
8:00 AM	to	9:00 AM	480	4.65%	521	50	57	N	N	N	N	N	N	N
9:00 AM	to	10:00 AM	376	4.04%	412	40	46	N	N	N	N	N	N	N
10:00 AM	to	11:00 AM	319	4.40%	358	55	61	N	N	N	N	N	N	N
11:00 AM	to	12:00 PM	341	5.90%	393	65	74	N	N	N	N	N	N	N
12:00 PM	to	1:00 PM	387	6.65%	446	77	87	N	N	N	N	N	N	N
1:00 PM	to	2:00 PM	347	6.20%	402	71	80	N	N	N	N	N	N	N
2:00 PM	to	3:00 PM	372	6.72%	431	77	87	N	N	N	N	N	N	N
3:00 PM	to	4:00 PM	466	6.90%	527	82	92	N	N	N	N	N	N	N
4:00 PM	to	5:00 PM	467	8.63%	543	130	143	Y	Y	Y	Y	Y	Y	Y
5:00 PM	to	6:00 PM	426	9.81%	513	90	104	N	N	N	N	N	N	N
6:00 PM	to	7:00 PM	272	7.94%	342	66	78	N	N	N	N	N	N	N
											1	2	1	0

1471

Table 4C-1. Warrant 1, Eight-Hour Vehicular Volume
Condition A—Minimum Vehicular Volume

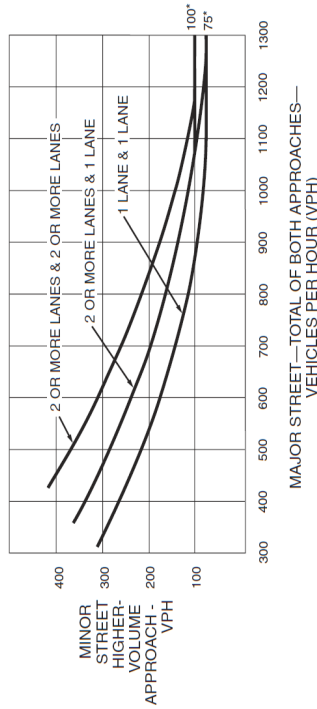
Number of lanes for moving traffic on each approach	Major Street	Minor Street	Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor-street approach (one direction only)			
			100% ^a	80% ^b	70% ^c	56% ^d	100% ^a	80% ^b	70% ^c	56% ^d
1	1	1	500	400	350	280	150	120	105	84
2 or more	1	1	600	480	420	336	150	120	105	84
2 or more	2 or more	1	600	480	420	336	200	160	140	112
1	2 or more	1	500	400	350	280	200	160	140	112

Condition B—Interruption of Continuous Traffic

Number of lanes for moving traffic on each approach	Major Street	Minor Street	Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor-street approach (one direction only)			
			100% ^a	80% ^b	70% ^c	56% ^d	100% ^a	80% ^b	70% ^c	56% ^d
1	1	1	750	600	525	420	75	60	53	42
2 or more	1	1	900	720	630	504	75	60	53	42
2 or more	2 or more	1	900	720	630	504	100	80	70	56
1	2 or more	1	750	600	525	420	100	80	70	56

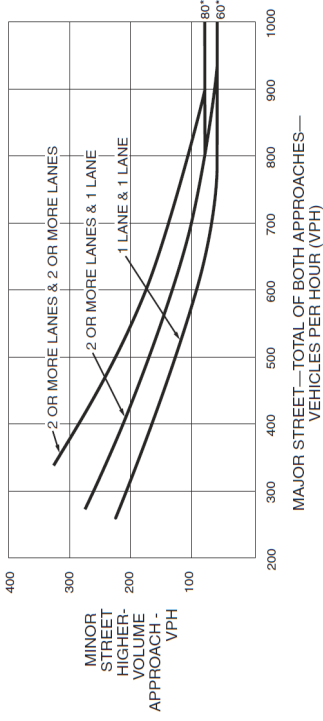
^a Basic minimum hourly volume
^b Used for combination of Conditions A and B after adequate trial of other remedial measures
^c May be used when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000
^d May be used for combination of Conditions A and B after adequate trial of other remedial measures when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 80 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 60 vph applies as the lower threshold volume for a minor-street approach with one lane.

PROJECT DETAILS

Project Name: Sawyers Landing - Full Day
 Project No:
 Country: Amy Dake
 Analyst Name: 5/24/2024
 Date:
 State/Province:
 Analysis Region:

Type of Project:
 City:
 Built-up Area(Sq.ft):
 Client's Name:
 ZIP/Postal Code:
 No. of Scenarios: 1

SCENARIO SUMMARY

Scenarios	Name	No. of Land Uses	Phases of Development	No. of Years to Project Traffic	User Group	Entry	Exit	Total
Scenario - 1	Full Day	6	1	0		1260	1260	2520

Scenario - 1

Scenario Name: Full Day

User Group:

Dev. phase: 1

No. of Years to Project 0

Analyst Note:

Traffic: 0

Warning:

VEHICLE TRIPS BEFORE REDUCTION

Land Use & Data Source	Location	IV	Size	Time Period	Method Rate/Equation	Entry Split%		Exit Split%		Total
						Entry	Exit	Entry	Exit	
710 - General Office Building Data Source: Trip Generation Manual, 11th Ed	General Urban/Suburban	1000 Sq. Ft. GFA	2.3	Weekday	Best Fit (LOG) $\ln(T) = 0.87 \ln(X) + 3.05$	22	22	50%	50%	44
822 - Strip Retail Plaza (<40k) Data Source: Trip Generation Manual, 11th Ed	General Urban/Suburban	1000 Sq. Ft. GLA	12.85	Weekday	Average 54.45	350	350	50%	50%	700
151 - Mini-Warehouse Data Source: Trip Generation Manual, 11th Ed	General Urban/Suburban	1000 Sq. Ft. GFA	105.6	Weekday	Average 1.45	77	77	50%	50%	154
215 - Single-Family Attached Housing Data Source: Trip Generation Manual, 11th Ed	General Urban/Suburban	Dwelling Units	107	Weekday	Best Fit (LIN) $T = 7.62(X) - 50.48$	382	382	50%	50%	764
221 - Multifamily Housing (Mid-Rise) - Not Data Source: Trip Generation Manual, 11th Ed	General Urban/Suburban	Dwelling Units	102	Weekday	Best Fit (LIN) $T = 4.77(X) - 46.46$	220	220	50%	50%	440
932 - High-Turnover (Sit-Down) Restaurant Data Source: Trip Generation Manual, 11th Ed	General Urban/Suburban	1000 Sq. Ft. GFA	3.90	Weekday	Average 107.20	209	209	50%	50%	418

VEHICLE TO PERSON TRIP CONVERSION

BASELINE SITE VEHICLE CHARACTERISTICS:

Land Use	Baseline Site Vehicle Mode Share		Baseline Site Vehicle Occupancy		Baseline Site Vehicle Directional Split	
	Entry (%)	Exit (%)	Entry	Exit	Entry (%)	Exit (%)
710 - General Office Building	100	100	1.1	1.1	50	50
822 - Strip Retail Plaza (<40k)	100	100	1	1	50	50
151 - Mini-Warehouse	100	100	1.6	1.6	50	50
215 - Single-Family Attached Housing	100	100	1	1	50	50
221 - Multifamily Housing (Mid-Rise) - Not Close to Rail Transit	100	100	1	1	50	50
932 - High-Turnover (Sit-Down) Restaurant	100	100	1.5	1.5	50	50

ESTIMATED BASELINE SITE PERSON TRIPS:

Land Use	Person Trips by Vehicle		Person Trips by Other Modes		Total Baseline Site Person Trips	
	Entry	Exit	Entry	Exit	Entry	Exit
710 - General Office Building	24	24	0	0	24	24
822 - Strip Retail Plaza (<40k)	350	350	0	0	350	350
151 - Mini-Warehouse	122	122	0	0	122	122
215 - Single-Family Attached Housing	382	382	0	0	382	382
221 - Multifamily Housing (Mid-Rise) - Not Close to Rail Transit	220	220	0	0	220	220
932 - High-Turnover (Sit-Down) Restaurant	314	314	0	0	314	314
	628	628	0	0	628	628

NEW VEHICLE TRIPS

Land Use	New Vehicle Trips		
	Entry	Exit	Total
710 - General Office Building	22	22	44
822 - Strip Retail Plaza (<40k)	350	350	700
151 - Mini-Warehouse	77	77	154
215 - Single-Family Attached Housing	382	382	764
221 - Multifamily Housing (Mid-Rise) - Not Close to Rail Transit	220	220	440
932 - High-Turnover (Sit-Down) Restaurant	209	209	418

RESULTS

Site Totals	Entry	Exit	Total
Vehicle Trips Before Reduction	1260	1260	2520
External Vehicle Trips	1260	1260	2520
New Vehicle Trips	1260	1260	2520



PASSERO ASSOCIATES
engineering architecture

PROJECT: _____ SHEET: ____ OF ____
PROJECT NO: _____ COMPUTED BY: _____
SUBJECT: _____ CHECKED BY: _____
DATE: _____

Health/fitness PM Exiting Trips = 26

% of total weekday vols = 12.3%

$$\text{Weekday Trips} = \frac{26}{.123} = 211$$

$$\begin{aligned} \text{Sawyers Landing Total Trips} &= 211 + 1260 \\ &= \underline{1471} \end{aligned}$$

APPENDIX C: LOS CALCULATIONS – EXISTING CONDITIONS

Lanes, Volumes, Timings
1: Sweet Home Road & Commerce Drive/Dodge Road

Sawyer's Landing Development
Existing AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	74	112	44	116	81	383	418	82	205	765	22
Future Volume (vph)	7	74	112	44	116	81	383	418	82	205	765	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	320		430	0		215	310		0	200		0
Storage Lanes	1		1	1		1	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	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.938			0.975				0.996
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1399	1900	1509	1388	1753	0	1736	3260	0	1770	3456	0
Flt Permitted	0.627			0.597			0.197			0.423		
Satd. Flow (perm)	923	1900	1509	873	1753	0	360	3260	0	788	3456	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			119		31			20				2
Link Speed (mph)		30			40			45				45
Link Distance (ft)		684			420			772				679
Travel Time (s)		15.5			7.2			11.7				10.3
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	29%	0%	7%	30%	0%	4%	4%	6%	18%	2%	4%	5%
Adj. Flow (vph)	7	79	119	47	123	86	407	445	87	218	814	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	7	79	119	47	209	0	407	532	0	218	837	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	2	2	2	2	2		2	2		2	2	
Detector Template												
Leading Detector (ft)	49	49	49	49	49		49	49		49	49	
Trailing Detector (ft)	-1	-1	-1	-1	-1		-1	-1		-1	-1	
Detector 1 Position(ft)	-1	-1	-1	-1	-1		-1	-1		-1	-1	
Detector 1 Size(ft)	20	20	20	20	20		20	20		20	20	
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)	29	29	29	29	29		29	29		29	29	
Detector 2 Size(ft)	20	20	20	20	20		20	20		20	20	
Detector 2 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		1	6		5	2	

Lanes, Volumes, Timings
1: Sweet Home Road & Commerce Drive/Dodge Road

Sawyer's Landing Development
Existing AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8			6			2		
Detector Phase	7	4	4	3	8		1	6		5	2	
Switch Phase												
Minimum Initial (s)	4.0	15.0	15.0	4.0	15.0		4.0	15.0		4.0	15.0	
Minimum Split (s)	8.0	28.0	28.0	8.0	28.0		8.0	28.0		8.0	28.0	
Total Split (s)	15.0	45.0	45.0	15.0	45.0		15.0	45.0		15.0	45.0	
Total Split (%)	12.5%	37.5%	37.5%	12.5%	37.5%		12.5%	37.5%		12.5%	37.5%	
Maximum Green (s)	11.0	39.0	39.0	11.0	39.0		11.0	39.0		11.0	39.0	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0		3.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0		1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.0	6.0	4.0	6.0		4.0	6.0		4.0	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.0		2.0	5.0		2.0	5.0	
Recall Mode	None	None	None	None	None		None	None		None	None	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Dont Walk (s)		15.0	15.0		15.0			15.0			15.0	
Pedestrian Calls (#/hr)		0	0		0			0			0	
Act Effct Green (s)	21.0	16.1	16.1	24.3	20.8		43.8	30.4		40.8	29.0	
Actuated g/C Ratio	0.27	0.20	0.20	0.31	0.26		0.55	0.38		0.52	0.37	
v/c Ratio	0.02	0.20	0.29	0.15	0.43		1.02	0.41		0.41	0.66	
Control Delay (s/veh)	20.7	31.9	8.9	21.7	25.3		72.5	19.2		11.4	24.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	20.7	31.9	8.9	21.7	25.3		72.5	19.2		11.4	24.2	
LOS	C	C	A	C	C		E	B		B	C	
Approach Delay (s/veh)		18.2			24.7			42.3			21.6	
Approach LOS		B			C			D			C	

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	79.1
Natural Cycle:	80
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	1.03
Intersection Signal Delay (s/veh):	29.6
Intersection LOS:	C
Intersection Capacity Utilization:	68.9%
ICU Level of Service:	C
Analysis Period (min):	15

Splits and Phases: 1: Sweet Home Road & Commerce Drive/Dodge Road



Lanes, Volumes, Timings
5: N Forest Road & Dodge Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	195	83	31	208	28	11
Future Volume (vph)	195	83	31	208	28	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.960			0.962		
Fl _t Protected				0.994	0.965	
Satd. Flow (prot)	1781	0	0	1856	1715	0
Fl _t Permitted				0.994	0.965	
Satd. Flow (perm)	1781	0	0	1856	1715	0
Link Speed (mph)	40			40	30	
Link Distance (ft)	314			290	218	
Travel Time (s)	7.1			6.6	5.0	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	3%	1%	0%	2%	4%	0%
Adj. Flow (vph)	197	84	31	210	28	11
Shared Lane Traffic (%)						
Lane Group Flow (vph)	281	0	0	241	39	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	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)	9		15	15		9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	41.3%
Analysis Period (min)	15
	ICU Level of Service A

Intersection						
Int Delay, s/veh	1.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	195	83	31	208	28	11
Future Vol, veh/h	195	83	31	208	28	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	3	1	0	2	4	0
Mvmt Flow	197	84	31	210	28	11
























Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	281	0	512
Stage 1	-	-	-	-	239
Stage 2	-	-	-	-	273
Critical Hdwy	-	-	4.1	-	6.44
Critical Hdwy Stg 1	-	-	-	-	5.44
Critical Hdwy Stg 2	-	-	-	-	5.44
Follow-up Hdwy	-	-	2.2	-	3.536
Pot Cap-1 Maneuver	-	-	1293	-	519
Stage 1	-	-	-	-	796
Stage 2	-	-	-	-	769
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1293	-	504
Mov Cap-2 Maneuver	-	-	-	-	504
Stage 1	-	-	-	-	796
Stage 2	-	-	-	-	747

Approach	EB	WB	NB
HCM Control Delay, s/v	0	1.02	11.86
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	564	-	-	233	-
HCM Lane V/C Ratio	0.07	-	-	0.024	-
HCM Control Delay (s/veh)	11.9	-	-	7.9	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Lanes, Volumes, Timings
1: Sweet Home Road & Commerce Drive/Dodge Road

Sawyer's Landing Development
Existing PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	116	395	112	64	258	86	887	66	111	664	12
Future Volume (vph)	26	116	395	112	64	258	86	887	66	111	664	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	320		430	0		215	310		0	200		0
Storage Lanes	1		1	1		1	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	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.880			0.990				0.997
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1671	1900	1583	1787	1652	0	1703	3541	0	1752	3510	0
Flt Permitted	0.384			0.574			0.285			0.107		
Satd. Flow (perm)	676	1900	1583	1080	1652	0	511	3541	0	197	3510	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			327		167			7				2
Link Speed (mph)		30			40			45				45
Link Distance (ft)		684			420			772				679
Travel Time (s)		15.5			7.2			11.7				10.3
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
Heavy Vehicles (%)	8%	0%	2%	1%	6%	0%	6%	1%	0%	3%	2%	33%
Adj. Flow (vph)	28	126	429	122	70	280	93	964	72	121	722	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	28	126	429	122	350	0	93	1036	0	121	735	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	2	2	2	2	2		2	2		2	2	
Detector Template												
Leading Detector (ft)	49	49	49	49	49		49	49		49	49	
Trailing Detector (ft)	-1	-1	-1	-1	-1		-1	-1		-1	-1	
Detector 1 Position(ft)	-1	-1	-1	-1	-1		-1	-1		-1	-1	
Detector 1 Size(ft)	20	20	20	20	20		20	20		20	20	
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)	29	29	29	29	29		29	29		29	29	
Detector 2 Size(ft)	20	20	20	20	20		20	20		20	20	
Detector 2 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		1	6		5	2	

Lanes, Volumes, Timings
1: Sweet Home Road & Commerce Drive/Dodge Road

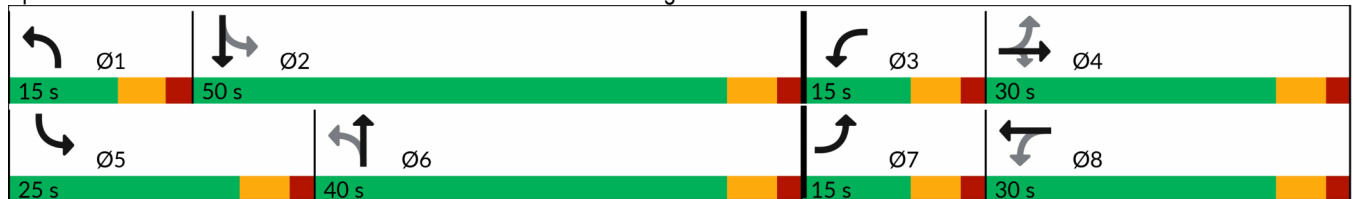
Sawyer's Landing Development
Existing PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8			6			2		
Detector Phase	7	4	4	3	8		1	6		5	2	
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0		7.0	25.0		7.0	25.0	
Minimum Split (s)	13.0	28.0	28.0	13.0	28.0		13.0	31.0		13.0	31.0	
Total Split (s)	15.0	30.0	30.0	15.0	30.0		15.0	40.0		25.0	50.0	
Total Split (%)	13.6%	27.3%	27.3%	13.6%	27.3%		13.6%	36.4%		22.7%	45.5%	
Maximum Green (s)	9.0	24.0	24.0	9.0	24.0		9.0	34.0		19.0	44.0	
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	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.0		2.0	5.0		2.0	5.0	
Recall Mode	None	None	None	None	None		None	None		None	None	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Dont Walk (s)		15.0	15.0		15.0			15.0			15.0	
Pedestrian Calls (#/hr)		0	0		0			0			0	
Act Effct Green (s)	28.0	21.0	21.0	32.9	27.7		41.1	33.4		45.0	37.5	
Actuated g/C Ratio	0.29	0.22	0.22	0.34	0.29		0.43	0.35		0.47	0.39	
v/c Ratio	0.10	0.30	0.71	0.28	0.58		0.29	0.83		0.50	0.53	
Control Delay (s/veh)	21.3	34.3	16.4	22.9	21.1		15.6	36.2		21.9	25.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	21.3	34.3	16.4	22.9	21.1		15.6	36.2		21.9	25.3	
LOS	C	C	B	C	C		B	D		C	C	
Approach Delay (s/veh)		20.6			21.6			34.5			24.8	
Approach LOS		C			C			C			C	

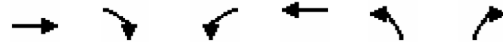
Intersection Summary

Area Type:	Other
Cycle Length:	110
Actuated Cycle Length:	95.7
Natural Cycle:	85
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.83
Intersection Signal Delay (s/veh):	27.1
Intersection LOS:	C
Intersection Capacity Utilization:	69.4%
ICU Level of Service:	C
Analysis Period (min):	15

Splits and Phases: 1: Sweet Home Road & Commerce Drive/Dodge Road



Lanes, Volumes, Timings
5: N Forest Road & Dodge Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	186	47	21	226	91	35
Future Volume (vph)	186	47	21	226	91	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.973			0.963		
Fl _t Protected				0.996	0.965	
Satd. Flow (prot)	1834	0	0	1892	1753	0
Fl _t Permitted				0.996	0.965	
Satd. Flow (perm)	1834	0	0	1892	1753	0
Link Speed (mph)	40			40	30	
Link Distance (ft)	314			290	218	
Travel Time (s)	7.1			6.6	5.0	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	1%	0%	0%	0%	1%	0%
Adj. Flow (vph)	224	57	25	272	110	42
Shared Lane Traffic (%)						
Lane Group Flow (vph)	281	0	0	297	152	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	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)	9		15	15		9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	42.9%
	ICU Level of Service A
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	3.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	186	47	21	226	91	35
Future Vol, veh/h	186	47	21	226	91	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	1	0	0	0	1	0
Mvmt Flow	224	57	25	272	110	42

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	281	0	575 252
Stage 1	-	-	-	-	252 -
Stage 2	-	-	-	-	323 -
Critical Hdwy	-	-	4.1	-	6.41 6.2
Critical Hdwy Stg 1	-	-	-	-	5.41 -
Critical Hdwy Stg 2	-	-	-	-	5.41 -
Follow-up Hdwy	-	-	2.2	-	3.509 3.3
Pot Cap-1 Maneuver	-	-	1293	-	481 791
Stage 1	-	-	-	-	792 -
Stage 2	-	-	-	-	736 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1293	-	470 791
Mov Cap-2 Maneuver	-	-	-	-	470 -
Stage 1	-	-	-	-	792 -
Stage 2	-	-	-	-	719 -

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.67	14.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	530	-	-	153	-
HCM Lane V/C Ratio	0.287	-	-	0.02	-
HCM Control Delay (s/veh)	14.5	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1.2	-	-	0.1	-

APPENDIX D: LOS CALCULATIONS – BACKGROUND CONDITIONS

Lanes, Volumes, Timings
1: Sweet Home Road & Commerce Drive/Dodge Road

Sawyer's Landing Development
Background AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	75	114	61	124	85	391	426	95	211	780	22
Future Volume (vph)	7	75	114	61	124	85	391	426	95	211	780	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	320		430	0		215	310		0	200		0
Storage Lanes	1		1	1		1	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	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.939			0.973			0.996	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1399	1900	1509	1388	1756	0	1736	3247	0	1770	3456	0
Flt Permitted	0.620			0.579			0.181			0.398		
Satd. Flow (perm)	913	1900	1509	846	1756	0	331	3247	0	741	3456	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			121		30			24			2	
Link Speed (mph)		30			40			45			45	
Link Distance (ft)		684			420			772			679	
Travel Time (s)		15.5			7.2			11.7			10.3	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	29%	0%	7%	30%	0%	4%	4%	6%	18%	2%	4%	5%
Adj. Flow (vph)	7	80	121	65	132	90	416	453	101	224	830	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	7	80	121	65	222	0	416	554	0	224	853	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	2	2	2	2	2		2	2		2	2	
Detector Template												
Leading Detector (ft)	49	49	49	49	49		49	49		49	49	
Trailing Detector (ft)	-1	-1	-1	-1	-1		-1	-1		-1	-1	
Detector 1 Position(ft)	-1	-1	-1	-1	-1		-1	-1		-1	-1	
Detector 1 Size(ft)	20	20	20	20	20		20	20		20	20	
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)	29	29	29	29	29		29	29		29	29	
Detector 2 Size(ft)	20	20	20	20	20		20	20		20	20	
Detector 2 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		1	6		5	2	

Lanes, Volumes, Timings
1: Sweet Home Road & Commerce Drive/Dodge Road

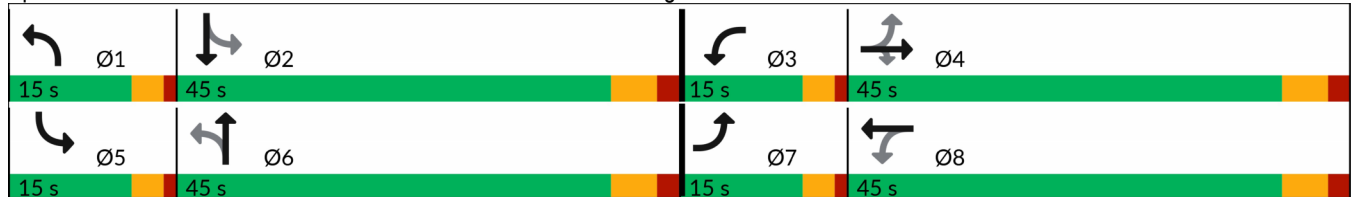
Sawyer's Landing Development
Background AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8			6			2		
Detector Phase	7	4	4	3	8		1	6		5	2	
Switch Phase												
Minimum Initial (s)	4.0	15.0	15.0	4.0	15.0		4.0	15.0		4.0	15.0	
Minimum Split (s)	8.0	28.0	28.0	8.0	28.0		8.0	28.0		8.0	28.0	
Total Split (s)	15.0	45.0	45.0	15.0	45.0		15.0	45.0		15.0	45.0	
Total Split (%)	12.5%	37.5%	37.5%	12.5%	37.5%		12.5%	37.5%		12.5%	37.5%	
Maximum Green (s)	11.0	39.0	39.0	11.0	39.0		11.0	39.0		11.0	39.0	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0		3.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0		1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.0	6.0	4.0	6.0		4.0	6.0		4.0	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.0		2.0	5.0		2.0	5.0	
Recall Mode	None	None	None	None	None		None	None		None	None	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Dont Walk (s)		15.0	15.0		15.0			15.0			15.0	
Pedestrian Calls (#/hr)		0	0		0			0			0	
Act Effct Green (s)	21.9	16.0	16.0	27.2	23.5		44.1	30.8		41.4	29.4	
Actuated g/C Ratio	0.27	0.19	0.19	0.33	0.29		0.54	0.37		0.50	0.36	
v/c Ratio	0.02	0.21	0.30	0.19	0.42		1.12	0.45		0.45	0.68	
Control Delay (s/veh)	20.7	33.4	9.1	22.1	25.2		106.1	20.5		12.8	26.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	20.7	33.4	9.1	22.1	25.2		106.1	20.5		12.8	26.0	
LOS	C	C	A	C	C		F	C		B	C	
Approach Delay (s/veh)		18.9			24.5			57.2			23.3	
Approach LOS		B			C			E			C	

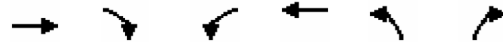
Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	82.2
Natural Cycle:	90
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	1.12
Intersection Signal Delay (s/veh):	36.0
Intersection LOS:	D
Intersection Capacity Utilization:	69.8%
ICU Level of Service:	C
Analysis Period (min):	15

Splits and Phases: 1: Sweet Home Road & Commerce Drive/Dodge Road



Lanes, Volumes, Timings
5: N Forest Road & Dodge Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	212	85	33	236	29	11
Future Volume (vph)	212	85	33	236	29	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.961			0.963		
Fl _t Protected				0.994	0.965	
Satd. Flow (prot)	1783	0	0	1856	1716	0
Fl _t Permitted				0.994	0.965	
Satd. Flow (perm)	1783	0	0	1856	1716	0
Link Speed (mph)	40			40	30	
Link Distance (ft)	314			290	218	
Travel Time (s)	7.1			6.6	5.0	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	3%	1%	0%	2%	4%	0%
Adj. Flow (vph)	214	86	33	238	29	11
Shared Lane Traffic (%)						
Lane Group Flow (vph)	300	0	0	271	40	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	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)	9		15	15		9
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	43.9% ICU Level of Service A
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	1.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	212	85	33	236	29	11
Future Vol, veh/h	212	85	33	236	29	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	3	1	0	2	4	0
Mvmt Flow	214	86	33	238	29	11

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	300	0	562 257
Stage 1	-	-	-	-	257 -
Stage 2	-	-	-	-	305 -
Critical Hdwy	-	-	4.1	-	6.44 6.2
Critical Hdwy Stg 1	-	-	-	-	5.44 -
Critical Hdwy Stg 2	-	-	-	-	5.44 -
Follow-up Hdwy	-	-	2.2	-	3.536 3.3
Pot Cap-1 Maneuver	-	-	1273	-	485 786
Stage 1	-	-	-	-	781 -
Stage 2	-	-	-	-	743 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1273	-	470 786
Mov Cap-2 Maneuver	-	-	-	-	470 -
Stage 1	-	-	-	-	781 -
Stage 2	-	-	-	-	721 -

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.97	12.37
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	529	-	-	221	-
HCM Lane V/C Ratio	0.076	-	-	0.026	-
HCM Control Delay (s/veh)	12.4	-	-	7.9	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Lanes, Volumes, Timings
1: Sweet Home Road & Commerce Drive/Dodge Road

Sawyer's Landing Development
Background PM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	120	403	136	77	265	88	905	82	115	677	12
Future Volume (vph)	27	120	403	136	77	265	88	905	82	115	677	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	320		430	0		215	310		0	200		0
Storage Lanes	1		1	1		1	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	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.884			0.988				0.997
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1671	1900	1583	1787	1657	0	1703	3534	0	1752	3510	0
Flt Permitted	0.347			0.569			0.277			0.105		
Satd. Flow (perm)	610	1900	1583	1070	1657	0	497	3534	0	194	3510	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			311		144			9				2
Link Speed (mph)		30			40			45				45
Link Distance (ft)		684			420			772				679
Travel Time (s)		15.5			7.2			11.7				10.3
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
Heavy Vehicles (%)	8%	0%	2%	1%	6%	0%	6%	1%	0%	3%	2%	33%
Adj. Flow (vph)	29	130	438	148	84	288	96	984	89	125	736	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	29	130	438	148	372	0	96	1073	0	125	749	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	2	2	2	2	2		2	2		2	2	
Detector Template												
Leading Detector (ft)	49	49	49	49	49		49	49		49	49	
Trailing Detector (ft)	-1	-1	-1	-1	-1		-1	-1		-1	-1	
Detector 1 Position(ft)	-1	-1	-1	-1	-1		-1	-1		-1	-1	
Detector 1 Size(ft)	20	20	20	20	20		20	20		20	20	
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)	29	29	29	29	29		29	29		29	29	
Detector 2 Size(ft)	20	20	20	20	20		20	20		20	20	
Detector 2 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		1	6		5	2	

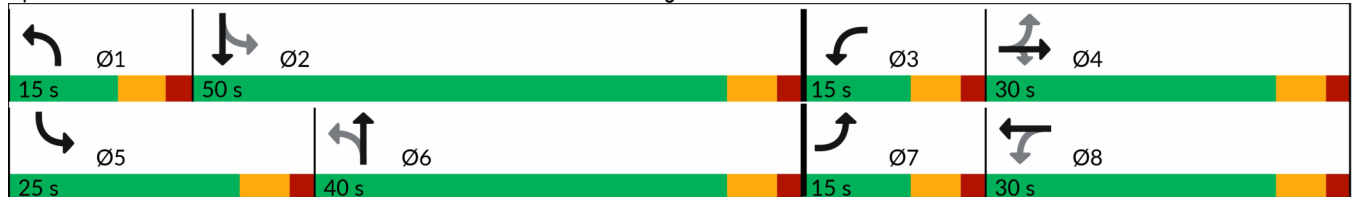
Lanes, Volumes, Timings
1: Sweet Home Road & Commerce Drive/Dodge Road

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8			6			2		
Detector Phase	7	4	4	3	8		1	6		5	2	
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0		7.0	25.0		7.0	25.0	
Minimum Split (s)	13.0	28.0	28.0	13.0	28.0		13.0	31.0		13.0	31.0	
Total Split (s)	15.0	30.0	30.0	15.0	30.0		15.0	40.0		25.0	50.0	
Total Split (%)	13.6%	27.3%	27.3%	13.6%	27.3%		13.6%	36.4%		22.7%	45.5%	
Maximum Green (s)	9.0	24.0	24.0	9.0	24.0		9.0	34.0		19.0	44.0	
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	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.0		2.0	5.0		2.0	5.0	
Recall Mode	None	None	None	None	None		None	None		None	None	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Dont Walk (s)		15.0	15.0		15.0			15.0			15.0	
Pedestrian Calls (#/hr)		0	0		0			0			0	
Act Effct Green (s)	28.4	21.3	21.3	33.4	28.2		41.9	34.1		45.9	38.2	
Actuated g/C Ratio	0.29	0.22	0.22	0.34	0.29		0.43	0.35		0.47	0.39	
v/c Ratio	0.11	0.31	0.74	0.34	0.63		0.30	0.86		0.52	0.54	
Control Delay (s/veh)	21.5	34.6	19.2	24.0	25.4		16.0	38.2		22.9	25.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	21.5	34.6	19.2	24.0	25.4		16.0	38.2		22.9	25.7	
LOS	C	C	B	C	C		B	D		C	C	
Approach Delay (s/veh)		22.7			25.0			36.4			25.3	
Approach LOS		C			C			D			C	

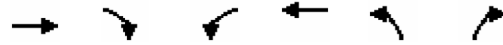
Intersection Summary

Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 97.1
 Natural Cycle: 85
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.86
 Intersection Signal Delay (s/veh): 28.9 Intersection LOS: C
 Intersection Capacity Utilization 71.4% ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 1: Sweet Home Road & Commerce Drive/Dodge Road



Lanes, Volumes, Timings
5: N Forest Road & Dodge Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	209	48	21	267	93	37
Future Volume (vph)	209	48	21	267	93	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.975			0.961		
Fl _t Protected				0.996	0.966	
Satd. Flow (prot)	1838	0	0	1892	1751	0
Fl _t Permitted				0.996	0.966	
Satd. Flow (perm)	1838	0	0	1892	1751	0
Link Speed (mph)	40			40	30	
Link Distance (ft)	314			290	218	
Travel Time (s)	7.1			6.6	5.0	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	1%	0%	0%	0%	1%	0%
Adj. Flow (vph)	252	58	25	322	112	45
Shared Lane Traffic (%)						
Lane Group Flow (vph)	310	0	0	347	157	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	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)	9		15	15		9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	45.5%
	ICU Level of Service A
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	3.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	209	48	21	267	93	37
Future Vol, veh/h	209	48	21	267	93	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	1	0	0	0	1	0
Mvmt Flow	252	58	25	322	112	45

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	310	0	653 281
Stage 1	-	-	-	-	281 -
Stage 2	-	-	-	-	372 -
Critical Hdwy	-	-	4.1	-	6.41 6.2
Critical Hdwy Stg 1	-	-	-	-	5.41 -
Critical Hdwy Stg 2	-	-	-	-	5.41 -
Follow-up Hdwy	-	-	2.2	-	3.509 3.3
Pot Cap-1 Maneuver	-	-	1262	-	434 763
Stage 1	-	-	-	-	769 -
Stage 2	-	-	-	-	699 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1262	-	423 763
Mov Cap-2 Maneuver	-	-	-	-	423 -
Stage 1	-	-	-	-	769 -
Stage 2	-	-	-	-	682 -

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.58	15.94
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	484	-	-	131	-
HCM Lane V/C Ratio	0.323	-	-	0.02	-
HCM Control Delay (s/veh)	15.9	-	-	7.9	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	1.4	-	-	0.1	-

APPENDIX E: LOS CALCULATIONS – FULL BUILD CONDITIONS

Lanes, Volumes, Timings
1: Sweet Home Road & Commerce Drive/Dodge Road

Sawyer's Landing Development
Full Build AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	82	114	89	133	108	391	426	116	228	780	22
Future Volume (vph)	7	82	114	89	133	108	391	426	116	228	780	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	320		430	0		215	310		0	200		0
Storage Lanes	1		1	1		1	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	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.933			0.968			0.996	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1399	1900	1509	1388	1741	0	1736	3219	0	1770	3456	0
Flt Permitted	0.601			0.578			0.184			0.373		
Satd. Flow (perm)	885	1900	1509	845	1741	0	336	3219	0	695	3456	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			121		36			30			2	
Link Speed (mph)		30			40			45			45	
Link Distance (ft)		684			420			772			679	
Travel Time (s)		15.5			7.2			11.7			10.3	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	29%	0%	7%	30%	0%	4%	4%	6%	18%	2%	4%	5%
Adj. Flow (vph)	7	87	121	95	141	115	416	453	123	243	830	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	7	87	121	95	256	0	416	576	0	243	853	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	2	2	2	2	2		2	2		2	2	
Detector Template												
Leading Detector (ft)	49	49	49	49	49		49	49		49	49	
Trailing Detector (ft)	-1	-1	-1	-1	-1		-1	-1		-1	-1	
Detector 1 Position(ft)	-1	-1	-1	-1	-1		-1	-1		-1	-1	
Detector 1 Size(ft)	20	20	20	20	20		20	20		20	20	
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)	29	29	29	29	29		29	29		29	29	
Detector 2 Size(ft)	20	20	20	20	20		20	20		20	20	
Detector 2 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		1	6		5	2	

Lanes, Volumes, Timings
1: Sweet Home Road & Commerce Drive/Dodge Road

Sawyer's Landing Development
Full Build AM

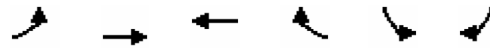
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8			6			2		
Detector Phase	7	4	4	3	8		1	6		5	2	
Switch Phase												
Minimum Initial (s)	4.0	15.0	15.0	4.0	15.0		4.0	15.0		4.0	15.0	
Minimum Split (s)	8.0	28.0	28.0	8.0	28.0		8.0	28.0		8.0	28.0	
Total Split (s)	15.0	45.0	45.0	15.0	45.0		15.0	45.0		15.0	45.0	
Total Split (%)	12.5%	37.5%	37.5%	12.5%	37.5%		12.5%	37.5%		12.5%	37.5%	
Maximum Green (s)	11.0	39.0	39.0	11.0	39.0		11.0	39.0		11.0	39.0	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0		3.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0		1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.0	6.0	4.0	6.0		4.0	6.0		4.0	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.0		2.0	5.0		2.0	5.0	
Recall Mode	None	None	None	None	None		None	None		None	None	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Dont Walk (s)		15.0	15.0		15.0			15.0			15.0	
Pedestrian Calls (#/hr)		0	0		0			0			0	
Act Effct Green (s)	22.3	16.4	16.4	28.5	24.8		44.7	31.3		42.6	30.3	
Actuated g/C Ratio	0.26	0.19	0.19	0.34	0.29		0.53	0.37		0.50	0.36	
v/c Ratio	0.02	0.23	0.31	0.28	0.47		1.14	0.47		0.50	0.68	
Control Delay (s/veh)	20.4	34.0	9.0	23.0	25.7		112.6	21.4		14.4	26.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	20.4	34.0	9.0	23.0	25.7		112.6	21.4		14.4	26.7	
LOS	C	C	A	C	C		F	C		B	C	
Approach Delay (s/veh)		19.5			25.0			59.7			24.0	
Approach LOS		B			C			E			C	

Intersection Summary	
Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	84.4
Natural Cycle:	90
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	1.14
Intersection Signal Delay (s/veh):	37.1
Intersection LOS:	D
Intersection Capacity Utilization:	70.9%
ICU Level of Service:	C
Analysis Period (min):	15

Splits and Phases: 1: Sweet Home Road & Commerce Drive/Dodge Road



Lanes, Volumes, Timings
2: Dodge Rd & Proposed Exit Only Dwy



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↘	↘
Traffic Volume (vph)	0	342	288	0	14	37
Future Volume (vph)	0	342	288	0	14	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t					0.902	
Fl _t Protected					0.987	
Satd. Flow (prot)	0	1845	1863	0	1658	0
Fl _t Permitted					0.987	
Satd. Flow (perm)	0	1845	1863	0	1658	0
Link Speed (mph)		40	40		30	
Link Distance (ft)		161	84		307	
Travel Time (s)		2.6	1.4		7.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	3%	2%	2%	2%	2%
Adj. Flow (vph)	0	372	313	0	15	40
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	372	313	0	55	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	28.0%
	ICU Level of Service A
Analysis Period (min)	15

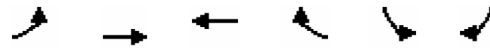
Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↓	
Traffic Vol, veh/h	0	342	288	0	14	37
Future Vol, veh/h	0	342	288	0	14	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	2	2	2
Mvmt Flow	0	372	313	0	15	40

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	-	0	-	0	685 313
Stage 1	-	-	-	-	313 -
Stage 2	-	-	-	-	372 -
Critical Hdwy	-	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	0	-	-	0	414 727
Stage 1	0	-	-	0	741 -
Stage 2	0	-	-	0	697 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	414 727
Mov Cap-2 Maneuver	-	-	-	-	414 -
Stage 1	-	-	-	-	741 -
Stage 2	-	-	-	-	697 -

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	11.58
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	602
HCM Lane V/C Ratio	-	-	0.092
HCM Control Delay (s/veh)	-	-	11.6
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.3

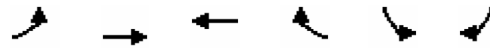
Lanes, Volumes, Timings
 3: Dodge Rd & Proposed Enter Only Dwy



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕			
Traffic Volume (vph)	33	323	288	8	0	0
Future Volume (vph)	33	323	288	8	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t			0.996			
Fl _t Protected		0.995				
Satd. Flow (prot)	0	1837	1855	0	0	0
Fl _t Permitted		0.995				
Satd. Flow (perm)	0	1837	1855	0	0	0
Link Speed (mph)		40	40		30	
Link Distance (ft)		84	108		365	
Travel Time (s)		1.4	1.8		8.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	3%	2%	2%	2%	2%
Adj. Flow (vph)	36	351	313	9	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	387	322	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	41.1% ICU Level of Service A
Analysis Period (min)	15

Lanes, Volumes, Timings
4: Dodge Rd & Proposed South Dwy



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	12	311	273	16	18	23
Future Volume (vph)	12	311	273	16	18	23
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			0.993		0.925	
Flt Protected		0.998			0.978	
Satd. Flow (prot)	0	1842	1850	0	1685	0
Flt Permitted		0.998			0.978	
Satd. Flow (perm)	0	1842	1850	0	1685	0
Link Speed (mph)		40	40		30	
Link Distance (ft)		108	576		362	
Travel Time (s)		1.8	9.8		8.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	3%	2%	2%	2%	2%
Adj. Flow (vph)	13	338	297	17	20	25
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	351	314	0	45	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	36.1% ICU Level of Service A
Analysis Period (min)	15

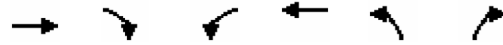
Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↖	↗		↘	
Traffic Vol, veh/h	12	311	273	16	18	23
Future Vol, veh/h	12	311	273	16	18	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	2	2	2
Mvmt Flow	13	338	297	17	20	25

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	314	0	-	0	670
Stage 1	-	-	-	-	305
Stage 2	-	-	-	-	364
Critical Hdwy	4.12	-	-	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	2.218	-	-	-	3.518
Pot Cap-1 Maneuver	1246	-	-	-	422
Stage 1	-	-	-	-	747
Stage 2	-	-	-	-	703
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1246	-	-	-	417
Mov Cap-2 Maneuver	-	-	-	-	417
Stage 1	-	-	-	-	738
Stage 2	-	-	-	-	703

Approach	EB	WB	SB
HCM Control Delay, s/v	0.29	0	12.12
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	67	-	-	-	550
HCM Lane V/C Ratio	0.01	-	-	-	0.081
HCM Control Delay (s/veh)	7.9	0	-	-	12.1
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.3

Lanes, Volumes, Timings
5: N Forest Road & Dodge Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	235	94	33	253	36	11
Future Volume (vph)	235	94	33	253	36	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.961			0.968		
Fl _t Protected				0.994	0.963	
Satd. Flow (prot)	1783	0	0	1856	1718	0
Fl _t Permitted				0.994	0.963	
Satd. Flow (perm)	1783	0	0	1856	1718	0
Link Speed (mph)	40			40	30	
Link Distance (ft)	314			290	218	
Travel Time (s)	7.1			6.6	5.0	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	3%	1%	0%	2%	4%	0%
Adj. Flow (vph)	237	95	33	256	36	11
Shared Lane Traffic (%)						
Lane Group Flow (vph)	332	0	0	289	47	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	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)	9		15	15		9
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	46.6% ICU Level of Service A
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	1.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	
Traffic Vol, veh/h	235	94	33	253	36	11
Future Vol, veh/h	235	94	33	253	36	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	3	1	0	2	4	0
Mvmt Flow	237	95	33	256	36	11

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	332	0	607 285
Stage 1	-	-	-	-	285 -
Stage 2	-	-	-	-	322 -
Critical Hdwy	-	-	4.1	-	6.44 6.2
Critical Hdwy Stg 1	-	-	-	-	5.44 -
Critical Hdwy Stg 2	-	-	-	-	5.44 -
Follow-up Hdwy	-	-	2.2	-	3.536 3.3
Pot Cap-1 Maneuver	-	-	1238	-	456 759
Stage 1	-	-	-	-	759 -
Stage 2	-	-	-	-	730 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1238	-	442 759
Mov Cap-2 Maneuver	-	-	-	-	442 -
Stage 1	-	-	-	-	759 -
Stage 2	-	-	-	-	707 -

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.92	13.14
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	490	-	-	208	-
HCM Lane V/C Ratio	0.097	-	-	0.027	-
HCM Control Delay (s/veh)	13.1	-	-	8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

Lanes, Volumes, Timings
1: Sweet Home Road & Commerce Drive/Dodge Road

Sawyer's Landing Development
Full Build PM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	133	403	169	88	293	88	905	122	148	677	12
Future Volume (vph)	27	133	403	169	88	293	88	905	122	148	677	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	320		430	0		215	310		0	200		0
Storage Lanes	1		1	1		1	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	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.885			0.982			0.997	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1671	1900	1583	1787	1658	0	1703	3514	0	1752	3510	0
Flt Permitted	0.273			0.539			0.293			0.100		
Satd. Flow (perm)	480	1900	1583	1014	1658	0	525	3514	0	184	3510	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			295		139			14			2	
Link Speed (mph)		30			40			45			45	
Link Distance (ft)		684			420			772			679	
Travel Time (s)		15.5			7.2			11.7			10.3	
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
Heavy Vehicles (%)	8%	0%	2%	1%	6%	0%	6%	1%	0%	3%	2%	33%
Adj. Flow (vph)	29	145	438	184	96	318	96	984	133	161	736	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	29	145	438	184	414	0	96	1117	0	161	749	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	2	2	2	2	2		2	2		2	2	
Detector Template												
Leading Detector (ft)	49	49	49	49	49		49	49		49	49	
Trailing Detector (ft)	-1	-1	-1	-1	-1		-1	-1		-1	-1	
Detector 1 Position(ft)	-1	-1	-1	-1	-1		-1	-1		-1	-1	
Detector 1 Size(ft)	20	20	20	20	20		20	20		20	20	
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)	29	29	29	29	29		29	29		29	29	
Detector 2 Size(ft)	20	20	20	20	20		20	20		20	20	
Detector 2 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		1	6		5	2	

Lanes, Volumes, Timings
1: Sweet Home Road & Commerce Drive/Dodge Road

Sawyer's Landing Development
Full Build PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8			6			2		
Detector Phase	7	4	4	3	8		1	6		5	2	
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0		7.0	25.0		7.0	25.0	
Minimum Split (s)	13.0	28.0	28.0	13.0	28.0		13.0	31.0		13.0	31.0	
Total Split (s)	15.0	30.0	30.0	15.0	30.0		15.0	40.0		25.0	50.0	
Total Split (%)	13.6%	27.3%	27.3%	13.6%	27.3%		13.6%	36.4%		22.7%	45.5%	
Maximum Green (s)	9.0	24.0	24.0	9.0	24.0		9.0	34.0		19.0	44.0	
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	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.0		2.0	5.0		2.0	5.0	
Recall Mode	None	None	None	None	None		None	None		None	None	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Dont Walk (s)		15.0	15.0		15.0			15.0			15.0	
Pedestrian Calls (#/hr)		0	0		0			0			0	
Act Effct Green (s)	29.0	22.0	22.0	34.3	29.1		41.9	34.1		49.2	40.0	
Actuated g/C Ratio	0.29	0.22	0.22	0.34	0.29		0.42	0.34		0.49	0.40	
v/c Ratio	0.12	0.34	0.75	0.44	0.71		0.30	0.92		0.61	0.53	
Control Delay (s/veh)	22.7	36.1	21.5	27.0	30.4		16.3	45.4		27.7	25.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	22.7	36.1	21.5	27.0	30.4		16.3	45.4		27.7	25.5	
LOS	C	D	C	C	C		B	D		C	C	
Approach Delay (s/veh)		25.1			29.4			43.2			26.0	
Approach LOS		C			C			D			C	

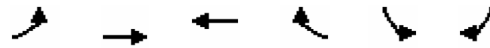
Intersection Summary

Area Type:	Other
Cycle Length:	110
Actuated Cycle Length:	99.7
Natural Cycle:	85
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.92
Intersection Signal Delay (s/veh):	32.7
Intersection LOS:	C
Intersection Capacity Utilization:	85.6%
ICU Level of Service:	E
Analysis Period (min):	15

Splits and Phases: 1: Sweet Home Road & Commerce Drive/Dodge Road



Lanes, Volumes, Timings
2: Dodge Rd & Proposed Exit Only Dwy



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↘	
Traffic Volume (vph)	0	343	387	0	16	44
Future Volume (vph)	0	343	387	0	16	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t					0.900	
Fl _t Protected					0.987	
Satd. Flow (prot)	0	1881	1792	0	1655	0
Fl _t Permitted					0.987	
Satd. Flow (perm)	0	1881	1792	0	1655	0
Link Speed (mph)		40	40		30	
Link Distance (ft)		134	50		272	
Travel Time (s)		3.0	1.1		6.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	1%	6%	2%	2%	2%
Adj. Flow (vph)	0	373	421	0	17	48
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	373	421	0	65	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	30.6%
Analysis Period (min)	15
	ICU Level of Service A

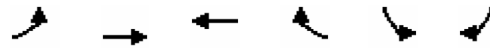
Intersection						
Int Delay, s/veh	1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↓	
Traffic Vol, veh/h	0	343	387	0	16	44
Future Vol, veh/h	0	343	387	0	16	44
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	1	6	2	2	2
Mvmt Flow	0	373	421	0	17	48

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	-	0	-	0	793 421
Stage 1	-	-	-	-	421 -
Stage 2	-	-	-	-	373 -
Critical Hdwy	-	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	0	-	-	0	357 633
Stage 1	0	-	-	0	662 -
Stage 2	0	-	-	0	697 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	357 633
Mov Cap-2 Maneuver	-	-	-	-	357 -
Stage 1	-	-	-	-	662 -
Stage 2	-	-	-	-	697 -

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	12.83
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	525
HCM Lane V/C Ratio	-	-	0.124
HCM Control Delay (s/veh)	-	-	12.8
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.4

Lanes, Volumes, Timings
3: Dodge Rd & Proposed Enter Only Dwy

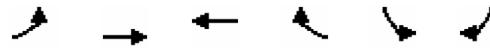


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕			
Traffic Volume (vph)	62	297	387	16	0	0
Future Volume (vph)	62	297	387	16	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t			0.995			
Fl _t Protected		0.991				
Satd. Flow (prot)	0	1846	1853	0	0	0
Fl _t Permitted		0.991				
Satd. Flow (perm)	0	1846	1853	0	0	0
Link Speed (mph)		40	40		30	
Link Distance (ft)		50	136		277	
Travel Time (s)		0.9	2.3		6.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	67	323	421	17	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	390	438	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	47.1% ICU Level of Service A
Analysis Period (min)	15

Lanes, Volumes, Timings
4: Dodge Rd & Proposed South Dwy



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (vph)	24	273	375	31	22	28
Future Volume (vph)	24	273	375	31	22	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.990		0.925	
Flt Protected		0.996			0.978	
Satd. Flow (prot)	0	1855	1844	0	1685	0
Flt Permitted		0.996			0.978	
Satd. Flow (perm)	0	1855	1844	0	1685	0
Link Speed (mph)		40	40		30	
Link Distance (ft)		136	606		319	
Travel Time (s)		2.3	10.3		7.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	26	297	408	34	24	30
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	323	442	0	54	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	44.2%
Analysis Period (min)	15
	ICU Level of Service A

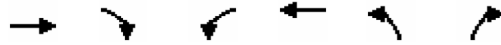
Intersection						
Int Delay, s/veh	1.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	24	273	375	31	22	28
Future Vol, veh/h	24	273	375	31	22	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	26	297	408	34	24	30

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	441	0	-	0	773
Stage 1	-	-	-	-	424
Stage 2	-	-	-	-	349
Critical Hdwy	4.12	-	-	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	2.218	-	-	-	3.518
Pot Cap-1 Maneuver	1119	-	-	-	367
Stage 1	-	-	-	-	660
Stage 2	-	-	-	-	714
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1119	-	-	-	357
Mov Cap-2 Maneuver	-	-	-	-	357
Stage 1	-	-	-	-	641
Stage 2	-	-	-	-	714

Approach	EB	WB	SB
HCM Control Delay, s/v	0.67	0	13.63
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	145	-	-	-	471
HCM Lane V/C Ratio	0.023	-	-	-	0.115
HCM Control Delay (s/veh)	8.3	0	-	-	13.6
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4

Lanes, Volumes, Timings
5: N Forest Road & Dodge Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	236	59	21	300	106	37
Future Volume (vph)	236	59	21	300	106	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.973			0.965		
Fl _t Protected				0.997	0.964	
Satd. Flow (prot)	1834	0	0	1894	1755	0
Fl _t Permitted				0.997	0.964	
Satd. Flow (perm)	1834	0	0	1894	1755	0
Link Speed (mph)	40			40	30	
Link Distance (ft)	314			290	218	
Travel Time (s)	7.1			6.6	5.0	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	1%	0%	0%	0%	1%	0%
Adj. Flow (vph)	284	71	25	361	128	45
Shared Lane Traffic (%)						
Lane Group Flow (vph)	355	0	0	386	173	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	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)	9		15	15		9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	47.8%
ICU Level of Service	A
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	3.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	
Traffic Vol, veh/h	236	59	21	300	106	37
Future Vol, veh/h	236	59	21	300	106	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	1	0	0	0	1	0
Mvmt Flow	284	71	25	361	128	45

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	355	0	732 320
Stage 1	-	-	-	-	320 -
Stage 2	-	-	-	-	412 -
Critical Hdwy	-	-	4.1	-	6.41 6.2
Critical Hdwy Stg 1	-	-	-	-	5.41 -
Critical Hdwy Stg 2	-	-	-	-	5.41 -
Follow-up Hdwy	-	-	2.2	-	3.509 3.3
Pot Cap-1 Maneuver	-	-	1214	-	390 726
Stage 1	-	-	-	-	738 -
Stage 2	-	-	-	-	671 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1214	-	380 726
Mov Cap-2 Maneuver	-	-	-	-	380 -
Stage 1	-	-	-	-	738 -
Stage 2	-	-	-	-	653 -

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.53	18.7
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	433	-	-	118	-
HCM Lane V/C Ratio	0.398	-	-	0.021	-
HCM Control Delay (s/veh)	18.7	-	-	8	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	1.9	-	-	0.1	-