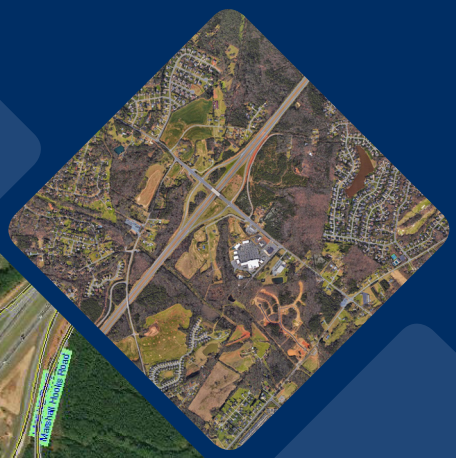
Traffic Impact Study
Idlewild Road Mixed Use
Matthews and Stallings, North Carolina
August 2018



RAMEY KEMP & ASSOCIATES

9/26/2018
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TRAFFIC IMPACT STUDY

FOR THE

Idlewild Road Mixed Use

LOCATED
IN
MATTHEWS AND STALLINGS, NORTH CAROLINA

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TABLE OF CONTENTS

1. EXECUTIVE SUMMARY 1

2. INTRODUCTION 4

2.1. Purpose of Report 4

2.2. Study Objectives 4

3. AREA CONDITIONS 4

3.1. Transportation Network Study Area 4

3.1.1. Area Roadway System 4

3.1.1.1. Existing Roadway Conditions 5

3.1.1.2. Future Roadway Conditions 5

3.1.2. Study Area and Existing Traffic Volumes 5

3.2. Study Area - Adjacent Land Use 6

3.2.1. Existing Land Uses 6

3.2.2. Anticipated or Approved Future Development 6

4. PROJECTED TRAFFIC 6

4.1. Site Traffic 6

4.1.1. Trip Generation 6

4.1.2. Trip Distribution and Assignment 7

5. TRAFFIC ANALYSIS 8

5.1. Traffic Analysis Scenarios 8

5.2. Traffic Analysis Procedure 9

5.3. Mitigation Requirements 10

5.4. Capacity and Level of Service at Study Intersections 11

5.4.1. Idlewild Road and Matthews-Mint Hill Road 11

5.4.2. Idlewild Road and Stallings Road 13

5.4.3. Idlewild Road and I-485 Southbound Ramps 14

5.4.4. Idlewild Road and I-485 Northbound Ramps 15

5.4.5. Idlewild Road and Marshall Hooks Road / Access A 16

5.4.6. Idlewild Road and Rite Aid Driveway 18

5.4.7. Idlewild Road and Stevens Mill Road 20

6. CONCLUSIONS 22

6.1. Summary of Recommended Improvements 22

LIST OF TABLES

Table 1 Study Area Roads 5
Table 2 Proposed Site Trip Generation 7
Table 3 Highway Capacity Manual - Levels of Service and Delay 10
Table 4 Analysis Summary of Idlewild Road and Matthews-Mint Hill Road 12
Table 5 Analysis Summary of Idlewild Road and Stallings Road 13
Table 6 Analysis Summary of Idlewild Road and I-485 Southbound Ramps 14
Table 7 Analysis Summary of Idlewild Road and I-485 Northbound Ramps 15
Table 8 Analysis Summary of Idlewild Road and Marshall Hooks Road / Access A 17
Table 9 Analysis Summary of Idlewild Road and Rite Aid Driveway 19
Table 10 Analysis Summary of Idlewild Road and Stevens Mill Road 21

LIST OF FIGURES

Figure 1 Site Location Map. ..... Appendix A
Figure 2 Preliminary Site Plan ..... Appendix A
Figure 3 2018 Existing Lane Configurations ..... Appendix A
Figure 4 2018 Existing Peak Hour Traffic Volumes ..... Appendix A
Figure 5 Proposed Site Primary Trip Distribution Percentages ..... Appendix A
Figure 6 Proposed Site Primary Trip Assignment ..... Appendix A
Figure 7 Proposed Site Pass-By Trip Distribution Percentages ..... Appendix A
Figure 8 Proposed Site Pass-by Trip Assignment ..... Appendix A
Figure 9 Proposed Site Total Trip Assignment ..... Appendix A
Figure 10 2020 No-Build Peak Hour Traffic Volumes ..... Appendix A
Figure 11 2020 Build Peak Hour Traffic Volumes ..... Appendix A
Figure 12 Recommended Lane Configurations ..... Appendix A

TECHNICAL APPENDIX

Appendix A	Figures
Appendix B	Traffic Count Data
Appendix C	Signal Data
Appendix D	Idlewild Road and Matthews-Mint Hill Road – SIDRA Reports
Appendix E	Idlewild Road and Stallings Road – Synchro Reports
Appendix F	Idlewild Road and I-485 Southbound Ramps – Synchro Reports
Appendix G	Idlewild Road and I-485 Northbound Ramps – Synchro Reports
Appendix H	Idlewild Road and Marshall Hooks Road / Access A – Synchro Reports
Appendix I	Idlewild Road and Rite Aid Driveway – Synchro Reports
Appendix J	Idlewild Road and Stevens Mill Road – Synchro Reports
Appendix K	SimTraffic Reports

TRAFFIC IMPACT STUDY

IDLEWILD ROAD MIXED USE
MATTHEWS AND STALLINGS, NORTH CAROLINA

1. EXECUTIVE SUMMARY

This report summarizes the findings of the Traffic Impact Study (TIS) that was performed for the proposed Idlewild Road Mixed Use development to be located along Idlewild Road, east of I-485 in Matthews and Stallings, North Carolina. The purpose of this study is to determine the potential impact to the surrounding transportation system caused by the traffic generated by the development.

The site is proposed to consist of up to 261 multifamily low-rise homes, 225 multifamily mid-rise homes, a 125 room hotel, a 50,000 square foot medical office, and a 6,000 square foot sit-down restaurant. One site access is expected to be built on Idlewild Road as a right-in / right-out with a left over. The site is expected to be fully built by the year 2020.

The study area for the TIS was determined through coordination with the North Carolina Department of Transportation (NCDOT) and the Cities of Matthews and Stallings and consists of the following intersections:

1. Idlewild Road and Matthews-Mint Hill Road (roundabout)
2. Idlewild Road and Stallings Road
3. Idlewild Road and I-485 Southbound Ramps
4. Idlewild Road and I-485 Northbound Ramps
5. Idlewild Road and Marshall Hooks Road / Access A (right-in / right out / left-in)
6. Idlewild Road and Rite Aid Driveway
7. Idlewild Road and Stevens Mill Road

Based on coordination with the NCDOT, the Town of Matthews, and the town of Stallings no offsite developments were determined to have an impact on the project study area.

Several scenarios were analyzed using traffic analysis software. Traffic operations during the weekday AM and PM peak hours were modeled for each scenario. The results of each scenario

were compared in order to determine impacts from background traffic growth and the proposed development. The following scenarios were modeled:

- 2018 Existing
- 2020 No-Build
- 2020 Build

The following recommendations and improvements should be made by the developer:

Idlewild road and Matthews-Mint Hill Road

- No improvements are recommended.

Idlewild Road and Stallings Road

- No improvements are recommended.

Idlewild Road and I-485 Southbound Ramps

- No improvements are recommended.

Idlewild Road and I-485 Northbound Ramps

- No improvements are recommended.

Idlewild Road and Marshall Hooks Road / Access A

- Construct Access A with one ingress lane and one egress lane (right only).
- Construct a concrete median to restrict access to right-in, right-out, left-in on both sides of Idlewild Road.
- Extend the westbound Idlewild Road left turn lane to provide 125 feet of storage and appropriate taper.
- Construct an eastbound Idlewild Road right turn lane with 100 feet of storage and appropriate taper.

Idlewild Road and Rite Aid Driveway

- Construct a northbound right turn lane on the Rite Aid Driveway with 175 feet of storage and appropriate taper.
- Modify the signal as necessary.

Idlewild Road and Stevens Mill Road

- Construct a northbound right turn lane on Stevens Mill Road with 175 feet of storage and appropriate taper.
- Modify the signal as necessary.
- While it is recommended the developer construct a northbound right turn lane, it may be more feasible to instead construct an eastbound right turn lane; depending on right-of-way availability and the location of utilities. Final determination of the improvement to be done by the developer should consider the feasibility of the improvement.

2. INTRODUCTION

2.1. Purpose of Report

This report summarizes the findings of the Traffic Impact Study (TIS) that was performed for the proposed Idlewild Road Mixed Use development to be located along Idlewild Road, east of I-485 in Matthews and Stallings, North Carolina. The purpose of this study is to determine the potential impact to the surrounding transportation system caused by the traffic generated by the development.

2.2. Study Objectives

The site is proposed to consist of up to 261 multifamily low-rise homes, 225 multifamily mid-rise homes, a 125 room hotel, a 50,000 square foot medical office, and a 6,000 square foot sit-down restaurant. One site access is expected to be built on Idlewild Road as a right-in / right-out with a left over. The site is expected to be fully built by the year 2020.

Refer to Figure 1 in Appendix A for an illustration of the site location. Refer to Figure 2 for the preliminary site plan. The objective of this report is to determine what geometric improvements are necessary to mitigate traffic conditions on the transportation network surrounding the site with the proposed development fully built out.

3. AREA CONDITIONS

3.1. Transportation Network Study Area

3.1.1. Area Roadway System

The project study area for this TIS was determined through coordination with the North Carolina Department of Transportation (NCDOT), the Town of Matthews, and the Town of Stallings. Table 1 summarizes the characteristics of the roadways within the study area. The NCDOT Functional Class map was used to determine the classification of each road. Traffic Volume maps from NCDOT were used to find the average daily traffic (ADT) volumes in vehicles per day (vpd) for the roadways. A field visit was conducted to verify the existing cross-sections and speed limits in mph.

TABLE 1
STUDY AREA ROADS

ROADWAY	CLASSIFICATION	CROSS-SECTION	ADT (vpd)	SPEED LIMIT (mph)
Idlewild Road	Minor Arterial	Two-Lane	27,000	45
Matthews-Mint Hill Road	Principal Arterial	Two-Lane	19,000	45
Stallings Road	Local	Two-Lane	N/A	45
I-485	Interstate	Two-Lane	69,000	70
Marshall Hooks Road	Local	Two-Lane	N/A	Not Posted
Stevens Mill Road	Major Collector	Two-Lane	8,300	45

3.1.1.1. Existing Roadway Conditions

Existing lane configurations (number of traffic lanes on the intersection approach), storage capacities, and other intersection and roadway information within the study area was collected through field reconnaissance by Ramey Kemp and Associates, Inc. (RKA). Refer to Figure 3 for the existing lane configurations and traffic control at study intersections.

3.1.1.2. Future Roadway Conditions

The NCDOT STIP Project U-4913 was identified as an approved roadway project within the project study area. However, since this project will not be completed before the site is fully built out, it was not included in the analysis.

3.1.2. Study Area and Existing Traffic Volumes

The study area for the TIS was determined through coordination with NCDOT, the Town of Matthews, and the Town of Stallings and consists of the following intersections:

1. Idlewild Road and Matthews-Mint Hill Road (roundabout)
2. Idlewild Road and Stallings Road
3. Idlewild Road and I-485 Southbound Ramps
4. Idlewild Road and I-485 Northbound Ramps
5. Idlewild Road and Marshall Hooks Road / Access A (right-in / right out / left-in)
6. Idlewild Road and Rite Aid Driveway
7. Idlewild Road and Stevens Mill Road

Existing traffic volumes were determined through traffic counts conducted during the AM peak period (7:00-9:00 AM) and the PM peak period (4:00-6:00 PM). A turn movement count was performed at intersection 1 on August 8, 2018. Schools were not in session. This intersection will be recounted once schools are back in session to confirm or revise the analysis. Turn movement counts at intersections 2 through 7 were performed on June 6, 2018 while schools were in session. The traffic volumes were balanced between intersections where appropriate. Turn movements with no volume were given a value of 4 vehicles per hour for purposes of this study. A copy of the traffic count data can be found in Appendix B of this report. Refer to Figure 4 for an illustration of the existing peak hour traffic volumes.

3.2. Study Area – Adjacent Land Use

3.2.1. Existing Land Uses

The existing site is undeveloped. The surrounding land is primarily commercial and residential.

3.2.2. Anticipated or Approved Future Development

Based on coordination with NCDOT, the City of Matthews and the City of Stallings, no offsite developments were determined to have an impact on the project study area.

4. PROJECTED TRAFFIC

4.1. Site Traffic

In order to determine the future traffic conditions after the proposed development is completed, an estimate of traffic projected to travel to / from the proposed development is required. The average weekday daily, AM peak hour, and PM peak hour site trips for this study were calculated based on the ITE *Trip Generation Manual, 10th Edition*.

4.1.1. Trip Generation

The site is proposed to consist of up to 261 multifamily low-rise homes, 225 multifamily mid-rise homes, a 125 room hotel, a 50,000 square foot medical office, and a 6,000 square foot sit-down restaurant. One site access is expected to be built on Idlewild Road as a right-in / right-out with a left over. The site is expected to be fully built by the year 2020. Table 2 summarizes the trip generation for the proposed site.

TABLE 2
PROPOSED SITE TRIP GENERATION

LAND USE	SIZE	DAILY TRIPS (VPD)	PEAK HOUR TRIPS (VPH)			
			AM		PM	
			ENTER	EXIT	ENTER	EXIT
Multifamily-low (220)	261 DU	1,934	27	92	88	51
Multifamily-mid (221)	225 DU	1,226	20	56	59	37
Hotel (310)	125 Rooms	986	34	23	35	33
Medical Office (720)	50,000 SF	1,740	108	31	48	125
Sit-Down Restaurant (932)	6,000 SF	674	48	36	54	50
Pass-By Trips			-	-	23	23
Total Trips		6,560	237	238	284	296
Total Pass-By Trips		-	-	-	23	23
Total New External Trips		6,560	237	238	261	273

4.1.2. Trip Distribution and Assignment

The trip distribution percentages were developed based on existing traffic patterns, location of employment centers, and engineering judgment. Figure 5 illustrates the primary site trip distribution percentages. These trip distribution percentages were applied to the total new trip generation data to calculate the site trip assignments shown in Figure 6. Figure 7 illustrates the pass-by trip distribution percentages. These percentages were applied the total pass-by trips to calculate to pass-by trip assignments shown in Figure 8. Adding the primary and pass-by trip assignments (Figures 6 and 8) results in the total trip assignment shown in Figure 9.

5. TRAFFIC ANALYSIS

5.1. Traffic Analysis Scenarios

Several scenarios were analyzed using traffic analysis software, Synchro 9.1. Traffic operations during the AM and PM peak hours were modeled for each scenario. The results of each scenario were compared in order to determine impacts from background traffic growth and the proposed development. The following scenarios were modeled:

- 2018 Existing
- 2020 No-Build
- 2020 Build

The 2018 Existing scenario included the traffic characteristics that currently exist in the study area. Existing peak hour traffic volumes were used from the intersection counts (Figure 4). Existing signal timing data was obtained from NCDOT and referenced in all traffic models. Refer to Appendix C for the signal timing data. Congestion Management guidelines recommend a minimum cycle length of 120 seconds for signals with four or more phases. No changes to the existing lane configurations were made. Right turns on red were prohibited.

The 2020 No-Build scenario was analyzed to determine the expected future traffic operations. Existing peak hour traffic counts were projected to the year 2020 using a compounded growth rate of 1% per year. Refer to Figure 10 for the 2020 projected peak hour traffic volumes. These volumes represent the 2020 No-Build peak hour traffic volumes. The splits at the signalized intersections were optimized. The lane configuration were not changed. No right turns on red were allowed.

The 2020 Build scenario was compared to the 2020 No-Build scenario to determine expected impacts caused by the proposed site. This scenario included the same assumptions as the 2020 No-Build scenario. The trips expected to be generated by the proposed development (Figure 9) were added to the 2020 No-Build peak hour volumes (Figure 10) to determine the 2020 Build peak hour traffic volumes. Refer to Figure 11 for the 2020 Build peak hour traffic volumes. The splits at the signalized intersections were optimized. Boyd Funderburk Drive was replaced with Site Access A and the intersection was modeled as a directional crossover. No right turns on red were allowed.

5.2. Traffic Analysis Procedure

All study intersections (both unsignalized and signalized) were analyzed using the methodology outlined in the Highway Capacity Manual (HCM) published by the Transportation Research Board. A computer software package, Synchro and SimTraffic (Version 9.1), was used to complete the analyses for all of the study area intersections. Synchro was developed by Trafficware Corporation and allows the user to input data into the Synchro software and calculate the output based on methodologies in the HCM. SimTraffic creates a traffic simulation model from the Synchro inputs. SimTraffic was used in this study to determine expected queue lengths.

Analysis results for signalized intersections provide delay and level of service (LOS) for all movements and approaches. The overall intersection delay and LOS is also provided. The capacity analysis for an unsignalized intersection does not provide an overall LOS for the intersection, rather a LOS for movements and/or approaches that have a conflicting movement.

The HCM defines capacity as "the maximum hourly rate at which persons or vehicles can reasonably be expected to traverse a point or uniform section of a lane or roadway during a given time period under prevailing roadway, traffic, and control conditions". LOS is a term used to represent different driving conditions, and is defined as a "qualitative measure describing operational conditions within a traffic stream, and their perception by motorists and/or passengers". LOS varies from Level "A" representing free flow, to Level "F" where greater vehicle delays are evident.

Refer to Table 3 for HCM levels of service and related average control delay per vehicle for both signalized and unsignalized intersections. Control delay as defined by the HCM includes "initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay". As shown in Table 3, an average control delay of 40 seconds at a signalized intersection results in a LOS D.

TABLE 3
HIGHWAY CAPACITY MANUAL - LEVELS OF SERVICE AND DELAY

UNSIGNALIZED INTERSECTION		SIGNALIZED INTERSECTION	
LEVEL OF SERVICE	AVERAGE CONTROL DELAY PER VEHICLE (SECONDS)	LEVEL OF SERVICE	AVERAGE CONTROL DELAY PER VEHICLE (SECONDS)
A	0-10	A	0-10
B	10-15	B	10-20
C	15-25	C	20-35
D	25-35	D	35-55
E	35-50	E	55-80
F	>50	F	>80

5.3. Mitigation Requirements

NCDOT has guidelines for determining when improvements are needed by the developer. The District Engineer is responsible for the final determination of the improvements. NCDOT typically requires mitigation to be identified when developments are expected to impact the traffic operations as described below:

- Overall intersection or intersection approach delay increases by 25% or more.
- LOS degrades by at least one level
- LOS is F
- Synchro 95th or SimTraffic maximum queue results are greater than the existing turn lane storage length

5.4. Capacity and Level of Service at Study Intersections

5.4.1. Idlewild Road and Matthews-Mint Hill Road

The intersection of Idlewild Road and Matthews-Mint Hill Road was analyzed as a four-leg roundabout with existing lane configurations. Table 4 summarizes the capacity analysis results. Refer to Appendix D for the SIDRA reports for this intersection. Impacts requiring mitigation are highlighted in yellow. The intersection was not modeled in Synchro because it is not expected to affect the remainder of the study intersections.

The proposed development is expected to impact the southbound approach and overall intersection during the AM peak hour. A minor impact is also expected on the westbound approach during the AM peak hour. The development is expected to impact the eastbound and northbound approaches during the PM peak hour, along with the overall intersection. A minor impact is also expected on the southbound approach during the PM peak hour. Much of the high delay at the intersection is caused by the No-Build traffic volumes. Changing the existing through/right lane to an exclusive through lane, and adding an exclusive right turn lane to both the northbound and southbound approaches would provide better traffic operations, but is not expected to fully address delay issues in the No-Build and Build scenarios. The capacity results of adding these additional lanes can be found in Appendix D. The existing land development near the intersection would make construction of any additional lanes difficult. No improvements are recommended by the developer due to the right-of-way constraints, and the fact that much of the delay is caused by the No-Build traffic volumes.

TABLE 4
ANALYSIS SUMMARY OF
IDLEWILD ROAD AND MATTHEWS-MINT HILL ROAD

ANALYSIS SCENARIO	APPROACH	LANE CONFIGURATIONS	AM PEAK HOUR		PM PEAK HOUR	
			Approach LOS (Delay)	Overall LOS (Delay)	Approach LOS (Delay)	Overall LOS (Delay)
2018 Existing	EB WB NB SB	1 LT-TH, 1 RT 1 LT-TH, 1 RT 1 LT-TH, 1 TH-RT 1 LT-TH, 1 TH-RT	A (8.8) B (12.6) A (7.1) E (47.5)	C (22.7)	C (18.2) B (13.0) F (52.6) A (9.5)	D (25.9)
2020 No-Build	EB WB NB SB	1 LT-TH, 1 RT 1 LT-TH, 1 RT 1 LT-TH, 1 TH-RT 1 LT-TH, 1 TH-RT	A (8.9) B (13.5) A (7.1) F (59.2)	D (26.7)	C (20.4) B (13.1) F (66.5) A (9.7)	D (30.9)
2020 Build	EB WB NB SB	1 LT-TH, 1 RT 1 LT-TH, 1 RT 1 LT-TH, 1 TH-RT 1 LT-TH, 1 TH-RT	A (9.0) C (16.3) A (7.3) F (106.3)	E (42.0)	E (39.6) B (14.1) F (89.2) B (11.1)	E (42.4)

5.4.2. Idlewild Road and Stallings Road

The intersection of Idlewild Road and Stallings Road was analyzed as a three-leg unsignalized intersection with existing lane configurations. Table 5 summarizes the capacity analysis results. Refer to Appendix E for the Synchro reports for this intersection. Impacts requiring mitigation are highlighted in yellow. All SimTraffic reports can be found in Appendix K.

The main issue at this intersection is the amount of traffic on Idlewild Road. The high traffic volumes result in few gaps in traffic; preventing vehicles to turn onto Idlewild Road from Stallings Road. SimTraffic indicates long queues could be expected on Stallings Road. The delay value on Stallings Road is higher than the limit that Synchro will report. The proposed development is not expected to impact the left turn movement from westbound Idlewild Road. Adding a right turn lane on Stallings could improve delay, but would not affect the lack of gaps in traffic on Idlewild Road. A roundabout may improve the traffic operations, but is not recommended to be done by the developer. Much of the delay at the intersection is due to existing traffic.

TABLE 5
ANALYSIS SUMMARY OF
IDLEWILD ROAD AND STALLINGS ROAD

ANALYSIS SCENARIO	APPROACH	LANE CONFIGURATIONS	AM PEAK HOUR		PM PEAK HOUR	
			Approach LOS (Delay)	Overall LOS (Delay)	Approach LOS (Delay)	Overall LOS (Delay)
2018 Existing	EB WB[1] NB[2]	1 TH-RT 1 LT, 1 TH 1 LT-RT	- B (11.9) F (Err)	NA[3]	- C (15.9) F (Err)	NA[3]
2020 No-Build	EB WB[1] NB[2]	1 TH-RT 1 LT, 1 TH 1 LT-RT	- B (12.2) F (Err)	NA[3]	- C (16.6) F (Err)	NA[3]
2020 Build	EB WB[1] NB[2]	1 TH-RT 1 LT, 1 TH 1 LT-RT	- B (13.0) F (Err)	NA[3]	- C (18.5) F (Err)	NA[3]

1. Major street left-turn movement for unsignalized intersection.
2. Stop controlled approach for unsignalized intersection.
3. Overall intersection LOS is not provided for unsignalized intersections

5.4.3. Idlewild Road and I-485 Southbound Ramps

The intersection of Idlewild Road and I-485 Southbound Ramps was analyzed as a three-leg signalized intersection with existing lane configurations. Table 6 summarizes the capacity analysis results. Refer to Appendix F for the Synchro reports for this intersection. Impacts requiring mitigation are highlighted in yellow. All SimTraffic reports can be found in Appendix K.

The proposed development is not expected to impact the AM peak hour enough to require mitigation. During the PM peak hour the development is expected to increase delay on the westbound approach by more than 25%, but does not degrade the level of service. The development is also expected to impact the level of service on the southbound approach. Delay on this approach is expected to increase less than 25%. The degradation in level of service on the southbound approach is partly due to the No-Build delay being 1.0 second below the LOS E threshold. SimTraffic indicates similar queues could expected between the No-Build and Build scenarios. Due to the technical, but minimal impacts, no improvements are recommended to be done by the developer.

TABLE 6
ANALYSIS SUMMARY OF
IDLEWILD ROAD AND I-485 SOUTHBOUND RAMPS

ANALYSIS SCENARIO	APPROACH	LANE CONFIGURATIONS	AM PEAK HOUR		PM PEAK HOUR	
			Approach LOS (Delay)	Overall LOS (Delay)	Approach LOS (Delay)	Overall LOS (Delay)
2018 Existing	EB WB SB	2 TH, 1 RT 1 LT, 2 TH 1 LT-TH, 1 RT	D (36.4) B (19.5) D (54.2)	C (33.2)	C (23.8) A (9.6) D (53.1)	C (25.3)
2020 No-Build	EB WB SB	2 TH, 1 RT 1 LT, 2 TH 1 LT-TH, 1 RT	D (39.7) C (24.5) D (49.2)	D (35.1)	C (24.6) B (12.2) D (54.0)	C (26.9)
2020 Build	EB WB SB	2 TH, 1 RT 1 LT, 2 TH 1 LT-TH, 1 RT	D (44.8) C (20.1) D (52.2)	D (35.0)	C (29.2) B (19.7) E (59.0)	C (32.3)

5.4.4. Idlewild Road and I-485 Northbound Ramps

The intersection of Idlewild Road and I-485 Northbound Ramps was analyzed as a three-leg signalized intersection with existing lane configurations. Table 7 summarizes the capacity analysis results. Refer to Appendix G for the Synchro reports for this intersection. Impacts requiring mitigation are highlighted in yellow. All SimTraffic reports can be found in Appendix K.

The proposed development is not expected to impact the level of service and delay on the eastbound approach during the AM peak hour and the westbound approach during the PM peak hour. These impacts are minimal, and approaches are expected to operate at LOS B. SimTraffic indicated similar queues are expected between the No-Build and Build scenarios. Due to the technical, but minimal impacts, no improvements are recommended to be done by the developer.

TABLE 7
ANALYSIS SUMMARY OF
IDLEWILD ROAD AND I-485 NORTHBOUND RAMPS

ANALYSIS SCENARIO	APPROACH	LANE CONFIGURATIONS	AM PEAK HOUR		PM PEAK HOUR	
			Approach LOS (Delay)	Overall LOS (Delay)	Approach LOS (Delay)	Overall LOS (Delay)
2018 Existing	EB WB NB	1 LT, 2 TH 2 TH, 1 RT 1 LT-TH, 2 RT	B (12.9) A (8.6) E (63.5)	B (17.3)	B (16.5) A (10.0) E (55.7)	C (25.0)
2020 No-Build	EB WB NB	1 LT, 2 TH 2 TH, 1 RT 1 LT-TH, 2 RT	A (8.5) A (8.8) E (63.6)	B (16.1)	B (13.6) A (8.0) E (55.5)	C (23.1)
2020 Build	EB WB NB	1 LT, 2 TH 2 TH, 1 RT 1 LT-TH, 2 RT	B (13.2) A (9.7) E (65.4)	B (18.4)	A (4.9) B (13.2) D (52.9)	C (20.5)

5.4.5. Idlewild Road and Marshall Hooks Road / Access A

The intersection of Idlewild Road and Marshall Hooks Road / Access A was analyzed as a three-leg unsignalized intersection with full access during the Existing and No-Build scenarios. Table 8 summarizes the capacity analysis results. Refer to Appendix H for the Synchro reports for this intersection. All SimTraffic reports can be found in Appendix K.

Access A of the proposed development would become the northbound approach. The proposed development would also change this intersection from full access to a direction crossover (right-in, right-out, left-in). The No-Build traffic volumes entering and exiting Marshall Hooks Road were rerouted based on the change in access. The Marshall Hooks Road approach is expected to have less delay during the Build scenario due to the prohibition of left and through movements. The delay is expected to increase on the westbound Idlewild Road left turn movement.

Based on turn lane warrants, an eastbound right turn lane is recommended. See Appendix H for the turn lane warrant analysis. It is recommended the developer make the following improvements:

- Construct Access A with one ingress lane and one egress lane (right only).
- Construct a concrete median to restrict access to right-in, right-out, left-in on both sides of Idlewild Road.
- Extend the westbound Idlewild Road left turn lane to provide 125 feet of storage and appropriate taper.
- Construct an eastbound Idlewild Road right turn lane with 100 feet of storage and appropriate taper.

TABLE 8
ANALYSIS SUMMARY OF
IDLEWILD ROAD AND MARSHALL HOOKS ROAD / ACCESS A

ANALYSIS SCENARIO	APPROACH	LANE CONFIGURATIONS	AM PEAK HOUR		PM PEAK HOUR	
			Approach LOS (Delay)	Overall LOS (Delay)	Approach LOS (Delay)	Overall LOS (Delay)
2018 Existing	EB[1] WB[1] NB[2] SB[2]	1 LT, 1 TH, 1 TH-RT 1 LT, 1 TH, 1 TH-RT 1 LT-TH-RT 1 LT-TH-RT	B (12.7) A (8.7) C (17.9) C (24.1)	NA[3]	B (10.4) B (12.3) C (20.7) C (23.3)	NA[3]
2020 No-Build	EB[1] WB[1] NB[2] SB[2]	1 LT, 1 TH, 1 TH-RT 1 LT, 1 TH, 1 TH-RT 1 LT-TH-RT 1 LT-TH-RT	B (12.9) A (8.8) C (18.3) C (24.8)	NA[3]	B (10.5) B (12.5) C (21.2) C (23.9)	NA[3]
2020 Build	EB[1] WB[1] NB[2] SB[2]	1 LT, 1 TH, 1 TH-RT 1 LT, 1 TH, 1 TH-RT 1 RT 1 RT	B (14.1) A (9.7) B (10.9) C (16.3)	NA[3]	B (11.5) C (16.5) B (13.9) B (13.4)	NA[3]
2020 Build With Improvements	EB[1] WB[1] NB[2] SB[2]	1 LT, 2 TH, 1 RT 1 LT, 1 TH, 1 TH-RT 1 RT 1 RT	B (14.1) A (9.8) B (10.5) C (16.3)	NA[3]	B (11.5) C (16.6) B (12.8) B (13.4)	NA[3]

1. Major street left-turn movement for unsignalized intersection.
2. Stop controlled approach for unsignalized intersection.
3. Overall intersection LOS is not provided for unsignalized intersections.

5.4.6. Idlewild Road and Rite Aid Driveway

The intersection of Idlewild Road and Rite Aid Driveway was analyzed as a three-leg signalized intersection. Table 9 summarizes the capacity analysis results. Refer to Appendix I for the Synchro reports for this intersection. All SimTraffic reports can be found in Appendix K.

The proposed development is expected to impact multiple approaches during both peak hours. Much of this impact is due to the number of vehicles entering and exiting the site via the Rite Aid Driveway. It is recommended the developer construct the following improvements:

- Construct a northbound right turn lane on the Rite Aid Driveway with 175 feet of storage and appropriate taper.
- Modify the signal as necessary.

These improvements are expected to mitigate much of the delay caused by the development. Some impacts would still remain. Some approaches would be improved to better than the No-Build scenario. Construction of lanes in addition to what has been recommended would require additional departure lanes as well and are therefore not recommended.

TABLE 9
ANALYSIS SUMMARY OF
IDLEWILD ROAD AND RITE AID DRIVEWAY

ANALYSIS SCENARIO	APPROACH	LANE CONFIGURATIONS	AM PEAK HOUR		PM PEAK HOUR	
			Approach LOS (Delay)	Overall LOS (Delay)	Approach LOS (Delay)	Overall LOS (Delay)
2018 Existing	EB WB NB	1 TH, 1 RT 1 LT, 1 TH 1 LT-RT	A (6.3) A (7.4) E (77.0)	A (9.7)	C (32.8) B (12.6) F (88.9)	C (32.5)
2020 No-Build	EB WB NB	1 TH, 1 RT 1 LT, 1 TH 1 LT-RT	A (3.6) A (7.8) E (76.9)	A (9.2)	D (37.5) B (17.7) F (92.7)	D (37.3)
2020 Build	EB WB NB	1 TH, 1 RT 1 LT, 1 TH 1 LT-RT	A (5.3) C (23.4) F (99.2)	C (28.2)	F (114.8) C (27.2) F (157.4)	F (89.9)
2020 Build With Improvements	EB WB NB	1 TH, 1 RT 1 LT, 1 TH 1 LT, 1 RT	A (3.6) B (12.5) F (81.7)	B (18.8)	C (34.0) B (19.6) E (72.1)	D (36.5)

5.4.7. Idlewild Road and Stevens Mill Road

The intersection of Idlewild Road and Steven Mills Road was analyzed as a four-leg signalized intersection. Table 10 summarizes the capacity analysis results. Refer to Appendix J for the Synchro reports for this intersection. All SimTraffic reports can be found in Appendix K.

The proposed development is expected to impact several approaches during the AM and PM peak hours. The following improvements are recommended to be done by the developer:

- Construct a northbound right turn lane on Stevens Mill Road with 175 feet of storage and appropriate taper.
- Modify the signal as necessary.

These improvements are expected to mitigate much of the delay caused by the development. Some impacts would still remain. Some approaches would be improved to better than the No-Build scenario.

An alternative improvement would be to construct an eastbound right turn lane on Idlewild Road with 125 feet of storage and appropriate taper. This also would mitigate much of the delay caused by the development. Again, some impacts would remain, but some approaches would be improved to slightly better than the No-Build scenario. This alternative improvement scenario is labeled as the 2020 Build With Improvements 2 scenario in Table 10.

While it is recommended the developer construct a northbound right turn lane, it may be more feasible to instead construct an eastbound right turn lane; depending on right-of-way availability and the location of utilities. Final determination of the improvement to be done by the developer should consider the feasibility of the improvement.

TABLE 10
ANALYSIS SUMMARY OF
IDLEWILD ROAD AND STEVENS MILL ROAD

ANALYSIS SCENARIO	APPROACH	LANE CONFIGURATIONS	AM PEAK HOUR		PM PEAK HOUR	
			Approach LOS (Delay)	Overall LOS (Delay)	Approach LOS (Delay)	Overall LOS (Delay)
2018 Existing	EB WB NB SB	1 LT, 1 TH-RT 1 LT, 1 TH-RT 1 LT, 1 TH-RT 1 LT, 1 TH, 1 RT	C (21.6) D (37.2) E (72.0) E (58.5)	D (42.2)	C (35.4) C (34.7) E (72.4) D (44.0)	D (40.6)
2020 No-Build	EB WB NB SB	1 LT, 1 TH-RT 1 LT, 1 TH-RT 1 LT, 1 TH-RT 1 LT, 1 TH, 1 RT	A (9.7) D (39.5) E (76.9) E (70.4)	D (43.9)	D (42.0) D (36.2) E (72.4) D (44.3)	D (44.0)
2020 Build	EB WB NB SB	1 LT, 1 TH-RT 1 LT, 1 TH-RT 1 LT, 1 TH-RT 1 LT, 1 TH, 1 RT	B (16.4) D (50.0) F (89.6) F (82.3)	D (53.2)	E (56.9) D (47.5) F (83.0) D (46.7)	E (55.8)
2020 Build With Improvements	EB WB NB SB	1 LT, 1 TH-RT 1 LT, 1 TH-RT 1 LT, 1 TH, **1 RT** 1 LT, 1 TH, 1 RT	B (16.6) D (50.0) E (55.3) F (80.9)	D (49.4)	D (42.2) C (32.8) E (63.3) E (57.5)	D (43.7)
2020 Build With Improvements 2	EB WB NB SB	1 LT, 1 TH, **1 RT** 1 LT, 1 TH-RT 1 LT, 1 TH-RT 1 LT, 1 TH, 1 RT	B (14.4) D (50.0) F (89.6) F (82.3)	D (52.7)	D (37.8) E (55.7) E (70.5) D (44.1)	D (47.9)

6. CONCLUSIONS

This report summarizes the findings of the Traffic Impact Study (TIS) that was performed for the proposed Idlewild Road Mixed Use development to be located along Idlewild Road, east of I-485 in Matthews and Stallings, North Carolina. The purpose of this study is to determine the potential impact to the surrounding transportation system caused by the traffic generated by the development.

The site is proposed to consist of up to 261 multifamily low-rise homes, 225 multifamily mid-rise homes, a 125 room hotel, a 50,000 square foot medical office, and a 6,000 square foot sit-down restaurant. One site access is expected to be built on Idlewild Road as a right-in / right-out with a left over. The site is expected to be fully built by the year 2020.

6.1. Summary of Recommended Improvements

Based on the analysis results, some impacts are expected by the proposed development. Figure 12 illustrates the improvements recommended to be completed by the developer. The following improvements are recommended to be done by the developer:

<u>Idlewild road and Matthews-Mint Hill Road</u>

- No improvements are recommended.

<u>Idlewild Road and Stallings Road</u>

- No improvements are recommended.

<u>Idlewild Road and I-485 Southbound Ramps</u>

- No improvements are recommended.

<u>Idlewild Road and I-485 Northbound Ramps</u>

- No improvements are recommended.

Idlewild Road and Marshall Hooks Road / Access A

- Construct Access A with one ingress lane and one egress lane (right only).
- Construct a concrete median to restrict access to right-in, right-out, left-in on both sides of Idlewild Road.
- Extend the westbound Idlewild Road left turn lane to provide 125 feet of storage and appropriate taper.
- Construct an eastbound Idlewild Road right turn lane with 100 feet of storage and appropriate taper.

Idlewild Road and Rite Aid Driveway

- Construct a northbound right turn lane on the Rite Aid Driveway with 175 feet of storage and appropriate taper.
- Modify the signal as necessary.

Idlewild Road and Stevens Mill Road

- Construct a northbound right turn lane on Stevens Mill Road with 175 feet of storage and appropriate taper.
- Modify the signal as necessary.
- While it is recommended the developer construct a northbound right turn lane, it may be more feasible to instead construct an eastbound right turn lane; depending on right-of-way availability and the location of utilities. Final determination of the improvement to be done by the developer should consider the feasibility of the improvement.

TECHNICAL APPENDIX

APPENDIX A

FIGURES

RAMEY KEMP & ASSOCIATES
TRANSPORTATION ENGINEERS

Idlewild Road

Matthews, NC

Site Location Map

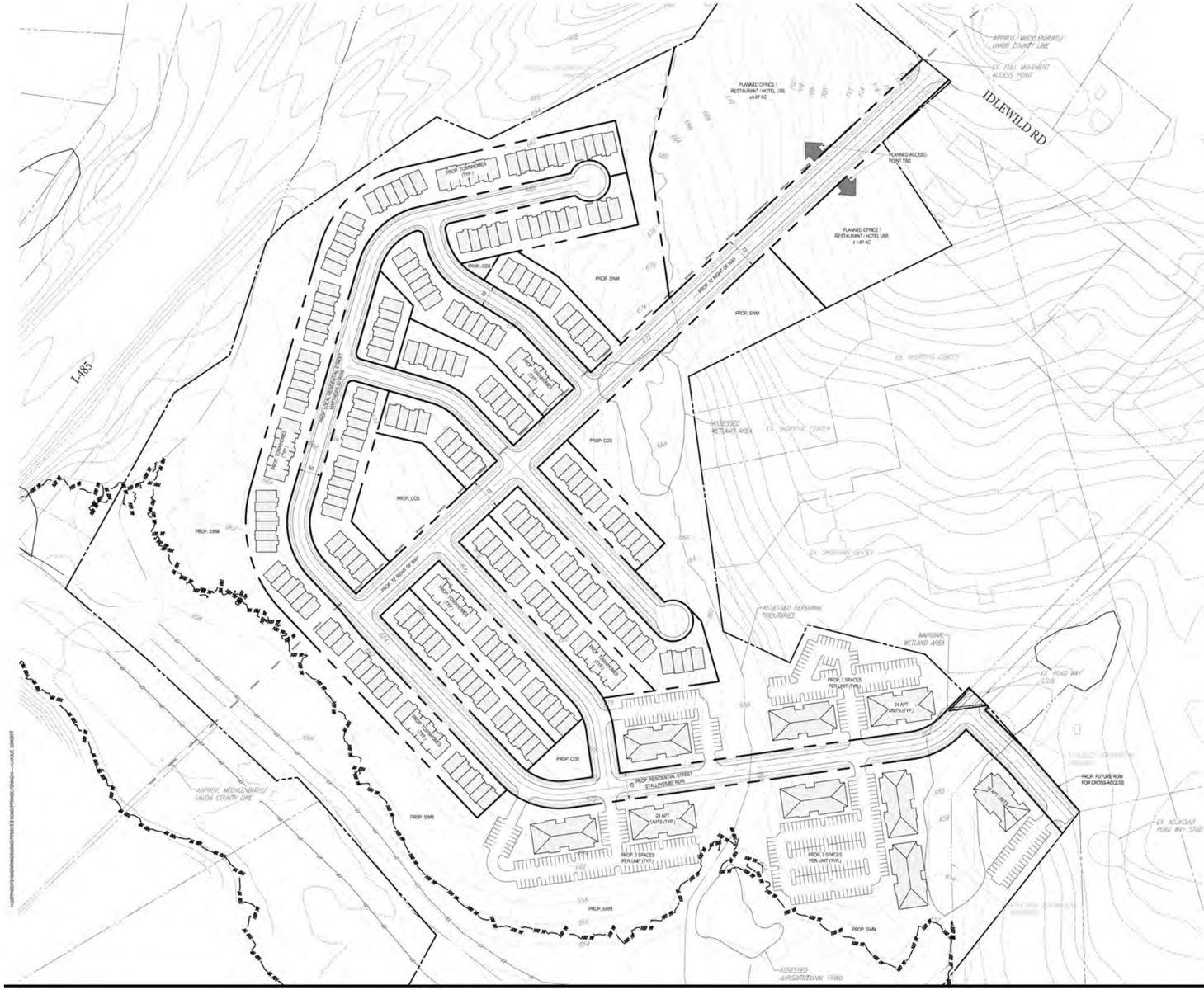
Scale: Not to Scale

Figure 1

N

LEGEND

- Proposed Site Location
- TIA Study Intersection
- Stallings Tech Memo Study Intersection



LOCATION MAP

TOWNHOME UNIT BLOCK

TOWN OF MATTHEWS SITE DATA

CURRENT ZONING:R-15
PROPOSED ZONING: R-VS (RESIDENTIAL) (COMMERCIAL TBD)

TOTAL SITE AREA: ±26.17 AC
FLOODZONE/ STREAM/ WETLAND AC: ±6.73 AC
BUILDABLE AC: ± 19.44 AC

ASSEMBLAGE: PIN 21514103
21514120
21514101

TOTAL TOWNHOME AC: ±20.83 AC
TOTAL FUTURE RESTAURANT/OFFICE/HOTEL AC: ±5.34

TOTAL TOWNHOME UNITS: 152 UNITS
TOTAL MULTIFAMILY DENSITY: 7.30 DUA

TOWN OF STALLINGS SITE DATA

CURRENT ZONING: MU-2
PROPOSED ZONING: MU-2

TOTAL SITE AREA: ±49.17 AC
FLOODZONE/ STREAM/ WETLAND AC: ±17.49 AC
BUILDABLE AC: ±31.68 AC

ASSEMBLAGE: PIN 07075013
07075011B
07075013B
07075291
07075011

TOTAL PROPOSED TOWNHOME AC: 16.23 AC
TOTAL PROPOSED APARTMENTS AC: 29.03 AC
TOTAL FUTURE RESTAURANT/OFFICE/HOTEL AC: ±3.91 AC

TOTAL PROPOSED UNITS: 316 UNITS
TOWNHOMES: 109 UNITS
APARTMENTS: 210 UNITS

TOTAL MULTIFAMILY DENSITY: 7.05 DUA
TOWNHOMES DENSITY: 6.72 DUA
APARTMENTS DENSITY: 7.23 DUA

COMBINED SITE DATA

TOTAL SITE AREA: ±75.34 AC
FLOODZONE/ STREAM/ WETLAND AC: ±24.22 AC
BUILDABLE AC: ± 51.12 AC

TOTAL TOWNHOME UNITS:261 UNITS
TOTAL APARTMENT UNITS: 210 UNITS

NOTES

1. AREA IN STALLINGS ETJ (UNION COUNTY) ANTICIPATED TO BE ANNEXED INTO TOWN OF STALLINGS AS MU-2

BOHLER ENGINEERING NC, PLLC
NCBELS P-1132
1927 S. TRYON STREET, SUITE 310 CHARLOTTE, NC 28203
PHONE: (980) 272-3400 FAX: (980) 272-3401

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IDLEWILD RESIDENTIAL DEVELOPMENT

CONCEPT A1

MATTHEWS/STALLINGS, NC

5/25/18 | ODR | NCC172166 | Rev0

N

100 50 25 0 100
1"= 100'

RAMEY KEMP & ASSOCIATES
TRANSPORTATION ENGINEERS

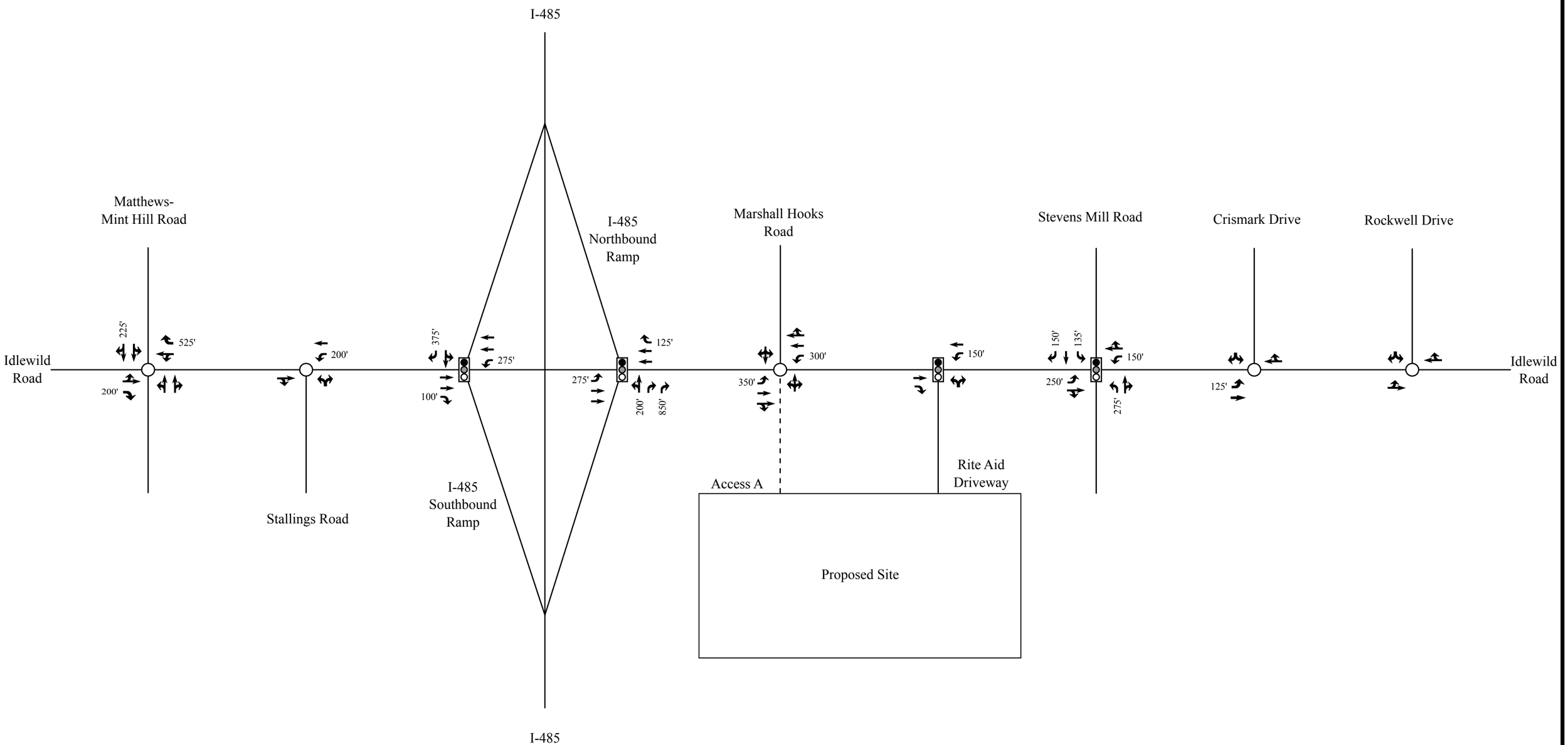
Idlewild Road
Matthews, NC

Preliminary Site Plan

Scale: Not to Scale

Figure 2

N



RAMEY KEMP & ASSOCIATES
TRANSPORTATION ENGINEERS

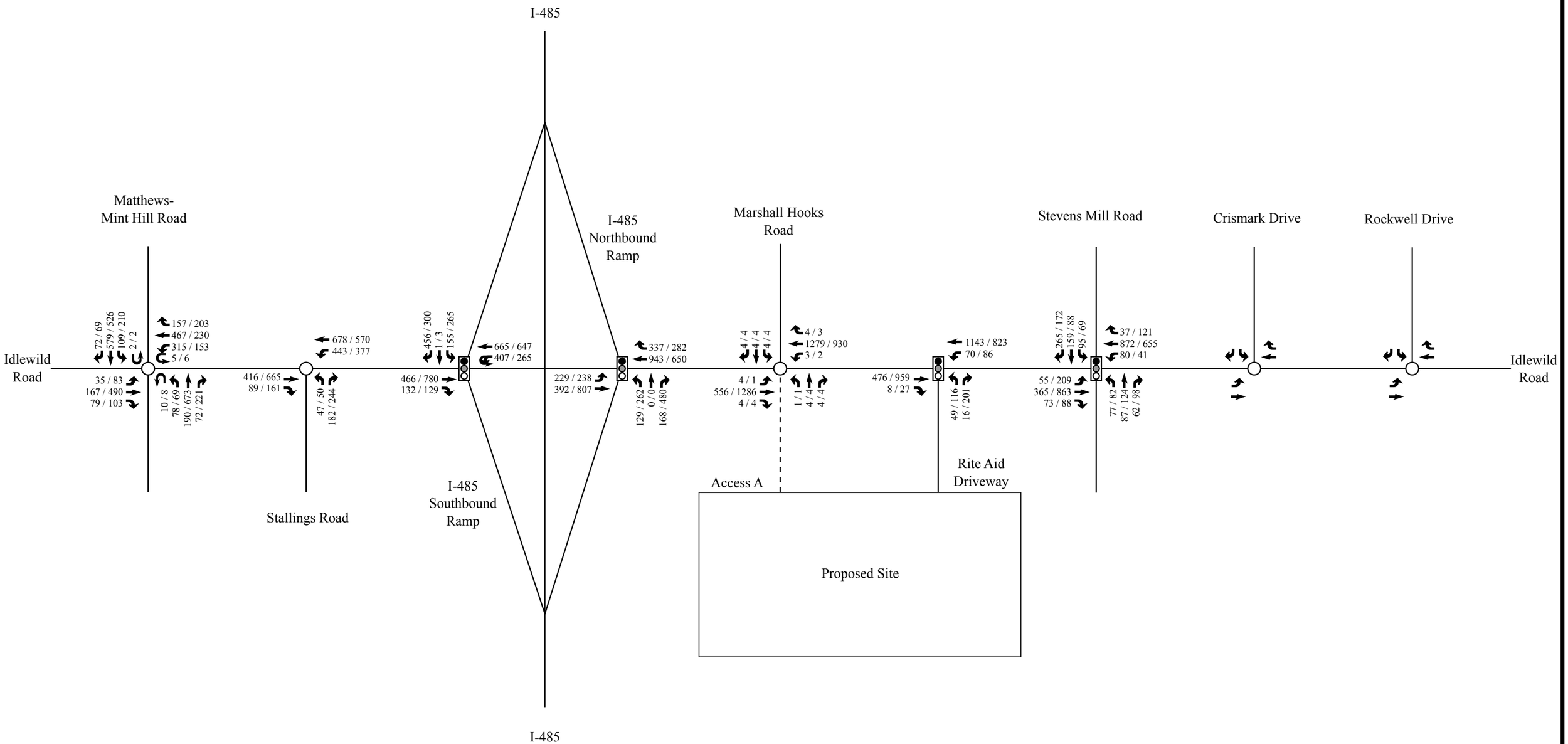
Idlewild Road

Matthews, NC

2018 Existing
Lane Configurations

Scale: Not to Scale

Figure 3



LEGEND

- Unsignalized Intersection
- Signalized Intersection
- X / Y → AM / PM Peak Hour Traffic Volume

RAMEY KEMP & ASSOCIATES
TRANSPORTATION ENGINEERS

Idlewild Road

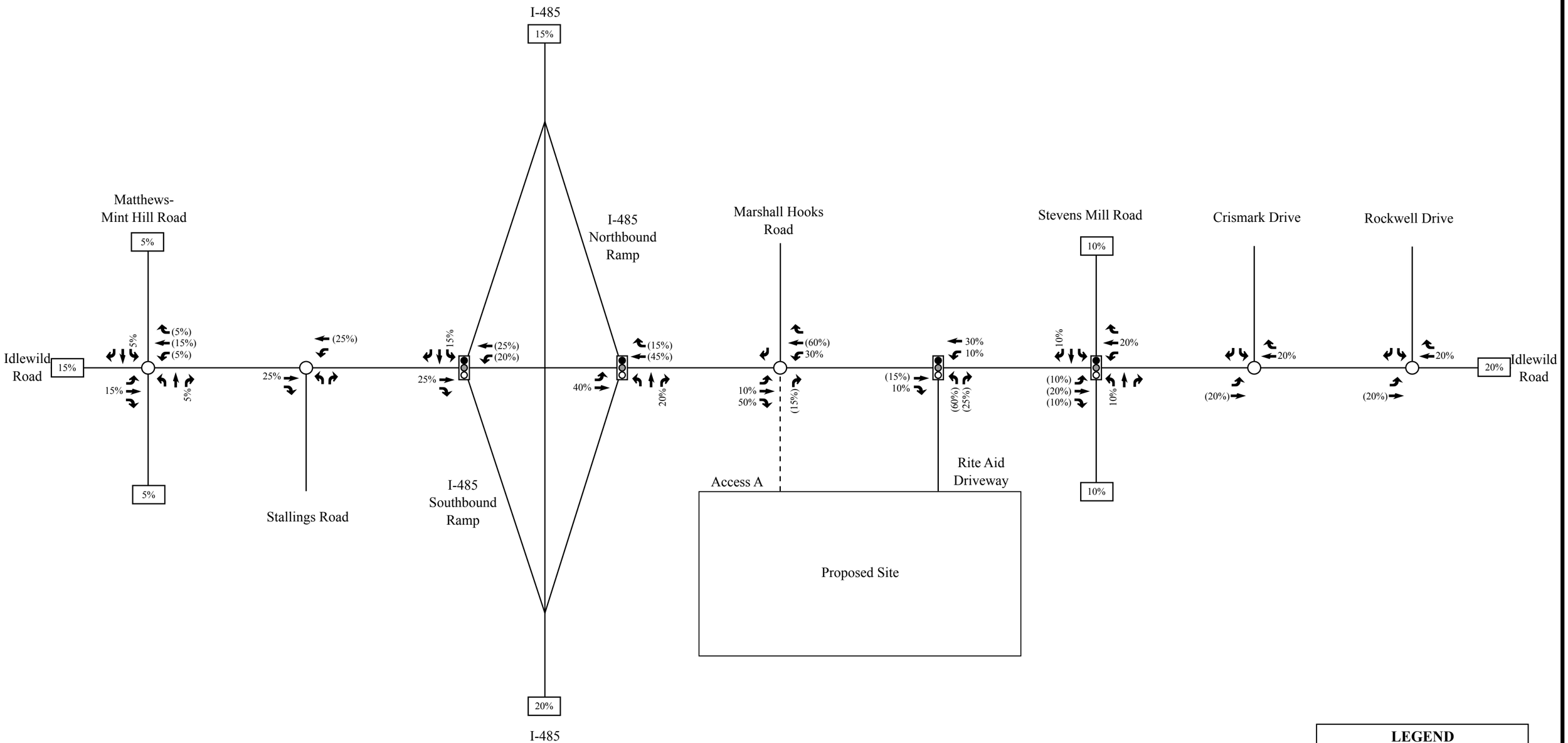
Matthews, NC

2018 Existing
Peak Hour Traffic Volumes

Scale: Not to Scale

Figure 4

N



LEGEND

- Unsignalized Intersection
- Signalized Intersection
- X% → Entering Trip Distributions
- (Y%) → Exiting Trip Distributions
- XX% Regional Trip Distribution

RAMEY KEMP & ASSOCIATES
TRANSPORTATION ENGINEERS

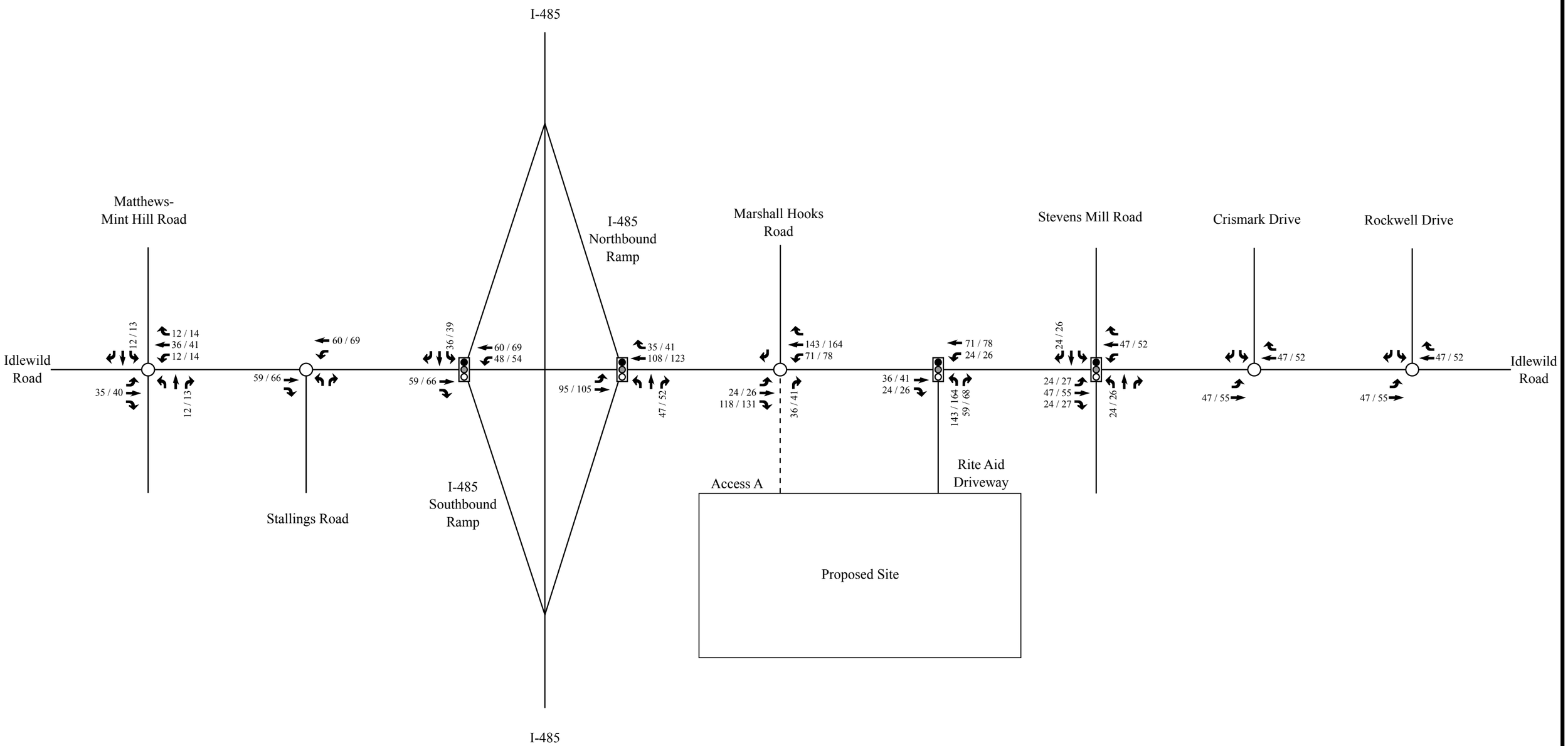
Idlewild Road
Matthews, NC

Proposed Site
Primary
Trip Distribution Percentages

Scale: Not to Scale

Figure 5

N



LEGEND

- Unsignalized Intersection
- Signalized Intersection
- X / Y → AM / PM Peak Hour Traffic Volumes

RAMEY KEMP & ASSOCIATES
TRANSPORTATION ENGINEERS

Idlewild Road

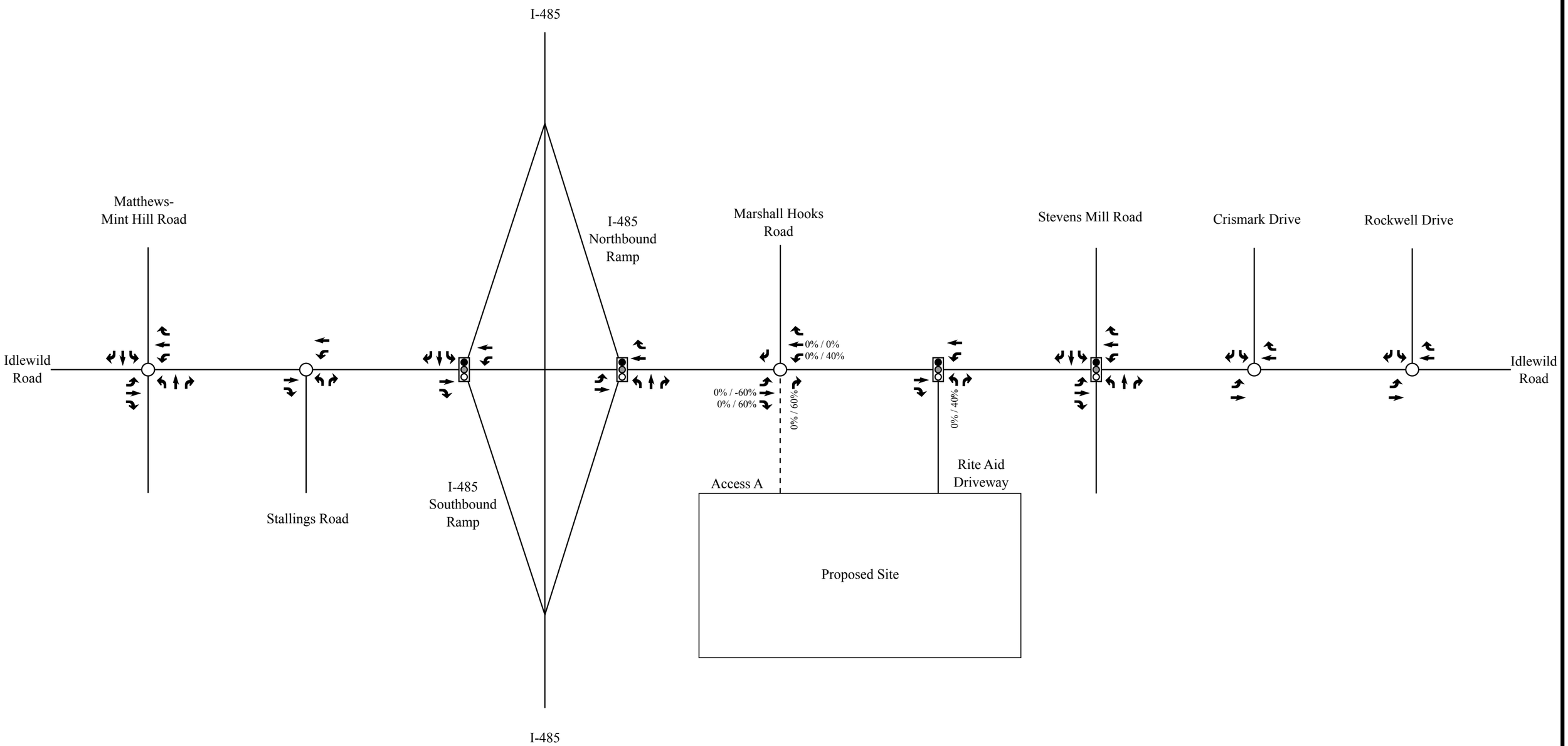
Matthews, NC

Proposed Site
Primary
Trip Assignment

Scale: Not to Scale

Figure 6

N



RAMEY KEMP & ASSOCIATES
TRANSPORTATION ENGINEERS

Idlewild Road
Matthews, NC

Proposed Site
Pass-By
Trip Distribution Percentages

Scale: Not to Scale

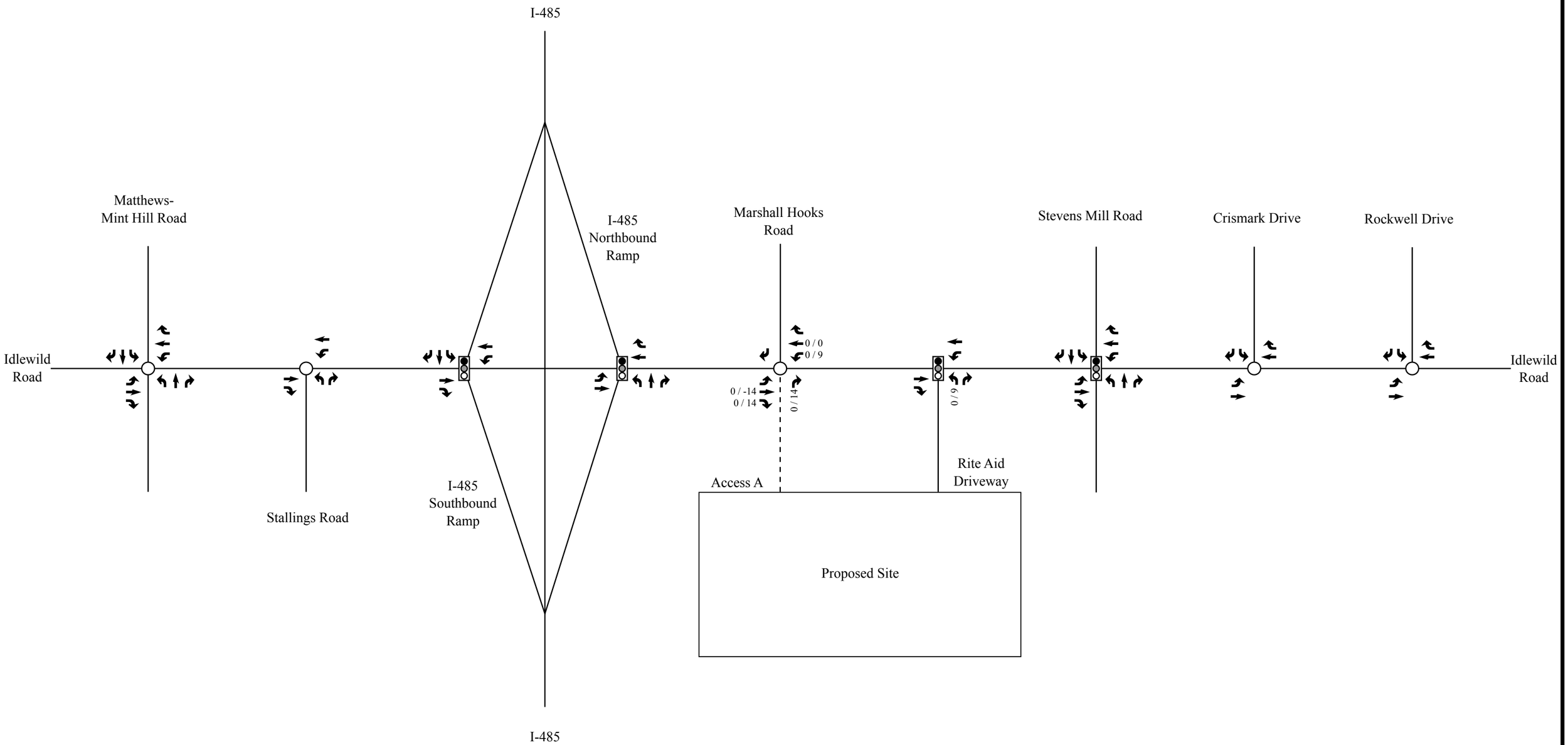
Figure 7

LEGEND

Unsignalized Intersection

Signalized Intersection

X% / Y% → AM / PM Trip Distributions



RAMEY KEMP & ASSOCIATES
TRANSPORTATION ENGINEERS

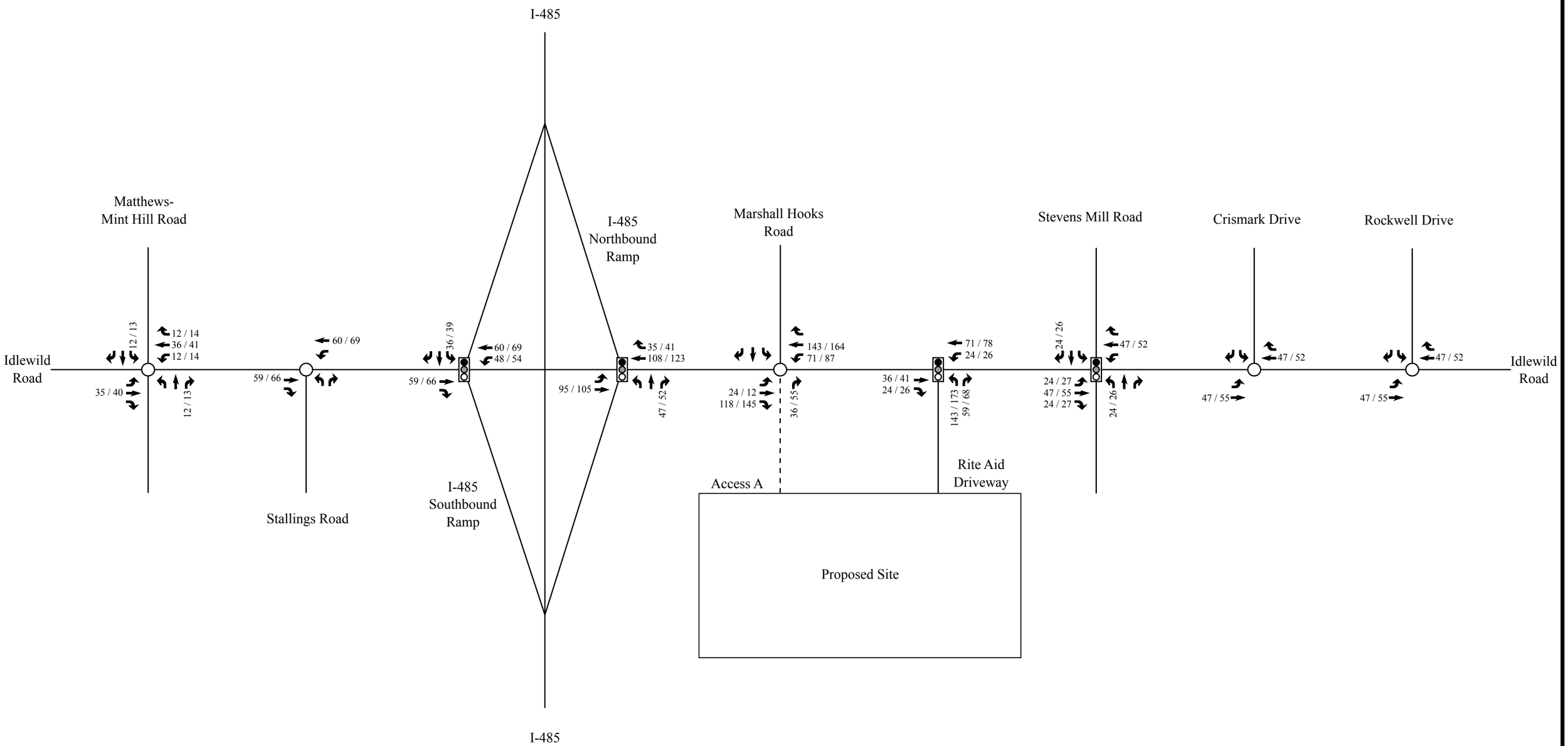
Idlewild Road

Matthews, NC

Proposed Site
Pass-By
Trip Assignment

Scale: Not to Scale

Figure 8



LEGEND

- Unsignalized Intersection
- Signalized Intersection
- X / Y → AM / PM Peak Hour Traffic Volume

RAMEY KEMP & ASSOCIATES
TRANSPORTATION ENGINEERS

Idlewild Road

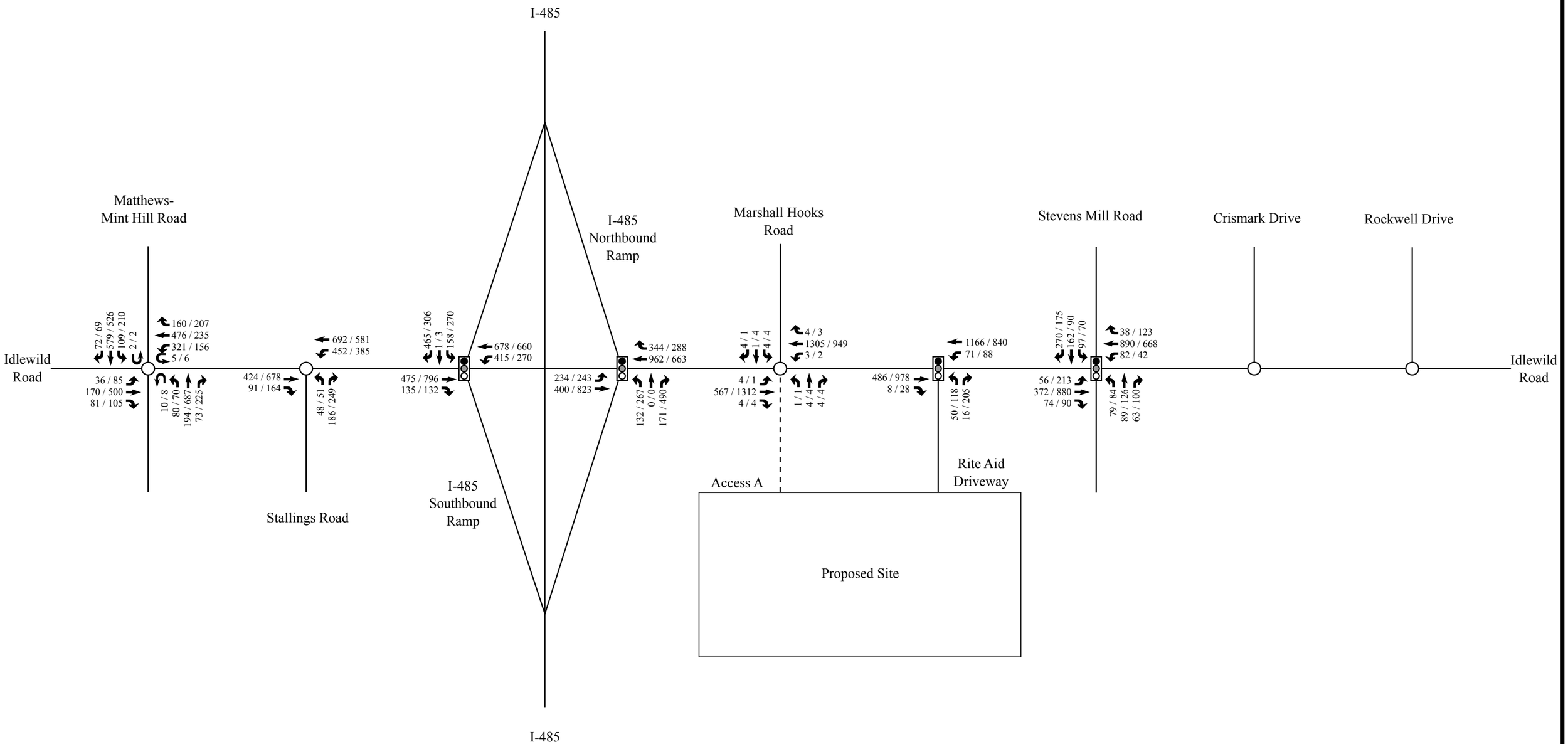
Matthews, NC

Proposed Site
Total
Trip Assignment

Scale: Not to Scale

Figure 9

N



LEGEND

- Unsignalized Intersection
- Signalized Intersection
- X / Y → AM / PM Peak Hour Traffic Volume

RAMEY KEMP & ASSOCIATES
TRANSPORTATION ENGINEERS

Idlewild Road

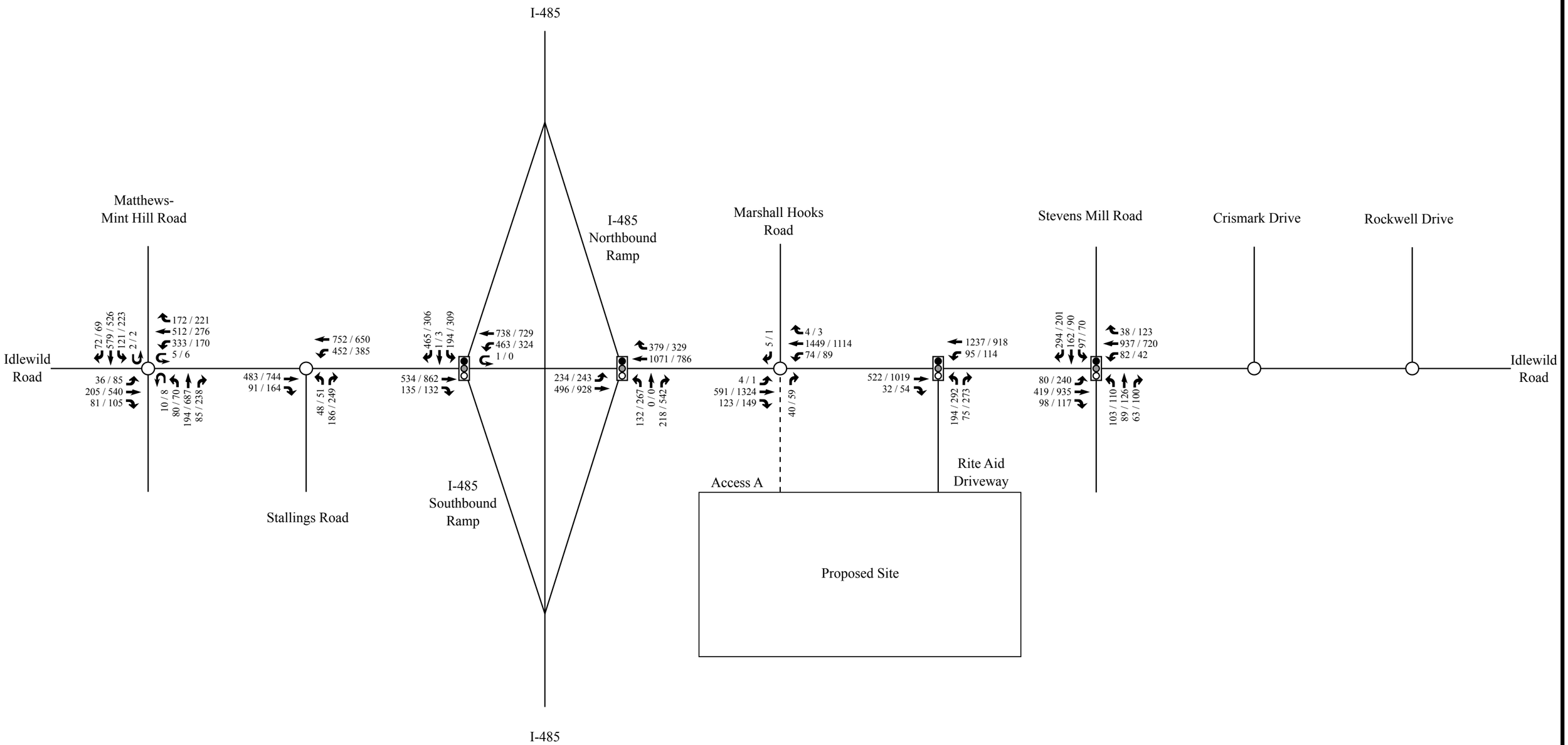
Matthews, NC

2020 No-Build
Peak Hour Traffic Volumes

Scale: Not to Scale

Figure 10

N



LEGEND

- Unsignalized Intersection
- Signalized Intersection
- X / Y → AM / PM Peak Hour Traffic Volume

RAMEY KEMP & ASSOCIATES
TRANSPORTATION ENGINEERS

Idlewild Road

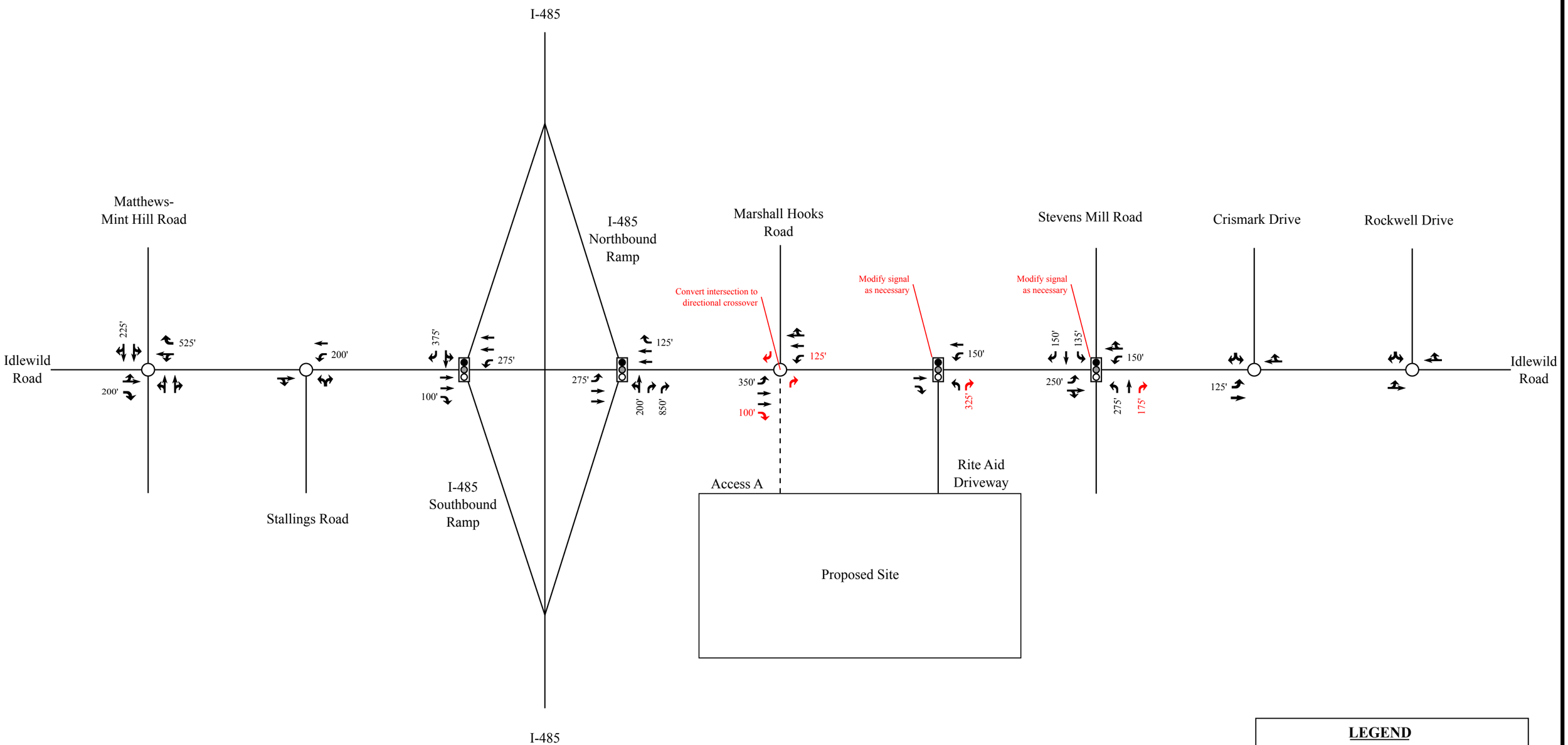
Matthews, NC

2020 Build
Peak Hour Traffic Volumes

Scale: Not to Scale

Figure 11

N



LEGEND

- Unsignalized Intersection
- Signalized Intersection
- Existing Lane
- Improvement By Developer
- X' Storage (In Feet)

RAMEY KEMP & ASSOCIATES
TRANSPORTATION ENGINEERS

Idlewild Road
Matthews, NC

Recommended
Lane Configurations

Scale: Not to Scale

Figure 12

N

APPENDIX B

TRAFFIC COUNT DATA

Burns Service Inc.

1202 Langdon Terrace Drive
Indian Trail, NC, 28079

We Count because YOU Count

File Name : Mint Hill(Matthews Mint Hill and Idlewild) AM Peak
Site Code :
Start Date : 8/8/2018
Page No : 1

Groups Printed- Cars + - Trucks

	Matthews Mint Hill Road Southbound					Idlewild Road Westbound					Matthews Mint Hill Road Northbound					Idlewild Road Eastbound					
Start Time	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Int. Total
07:00	15	117	35	0	167	31	96	66	4	197	14	25	21	1	61	21	31	3	0	55	480
07:15	16	146	24	1	187	31	119	79	3	232	19	38	18	3	78	12	38	6	0	56	553
07:30	9	157	28	0	194	31	112	81	0	224	14	43	24	3	84	22	44	6	0	72	574
07:45	19	119	18	1	157	47	131	89	1	268	25	58	19	3	105	25	43	16	0	84	614
Total	59	539	105	2	705	140	458	315	8	921	72	164	82	10	328	80	156	31	0	267	2221
08:00	27	146	37	0	210	48	105	66	1	220	14	51	17	1	83	20	42	7	0	69	582
08:15	18	150	34	1	203	35	91	64	2	192	16	43	18	4	81	19	31	14	0	64	540
08:30	17	130	28	2	177	38	87	54	3	182	19	58	19	1	97	20	35	8	1	64	520
08:45	12	118	38	0	168	33	64	67	1	165	15	73	20	4	112	19	35	5	0	59	504
Total	74	544	137	3	758	154	347	251	7	759	64	225	74	10	373	78	143	34	1	256	2146
Grand Total	133	1083	242	5	1463	294	805	566	15	1680	136	389	156	20	701	158	299	65	1	523	4367
Apprch %	9.1	74	16.5	0.3		17.5	47.9	33.7	0.9		19.4	55.5	22.3	2.9		30.2	57.2	12.4	0.2		
Total %	3	24.8	5.5	0.1	33.5	6.7	18.4	13	0.3	38.5	3.1	8.9	3.6	0.5	16.1	3.6	6.8	1.5	0	12	
Cars +	133	1077	241	5	1456	293	803	566	15	1677	136	384	155	20	695	158	299	65	1	523	4351
% Cars +	100	99.4	99.6	100	99.5	99.7	99.8	100	100	99.8	100	98.7	99.4	100	99.1	100	100	100	100	100	99.6
Trucks	0	6	1	0	7	1	2	0	0	3	0	5	1	0	6	0	0	0	0	0	16
% Trucks	0	0.6	0.4	0	0.5	0.3	0.2	0	0	0.2	0	1.3	0.6	0	0.9	0	0	0	0	0	0.4

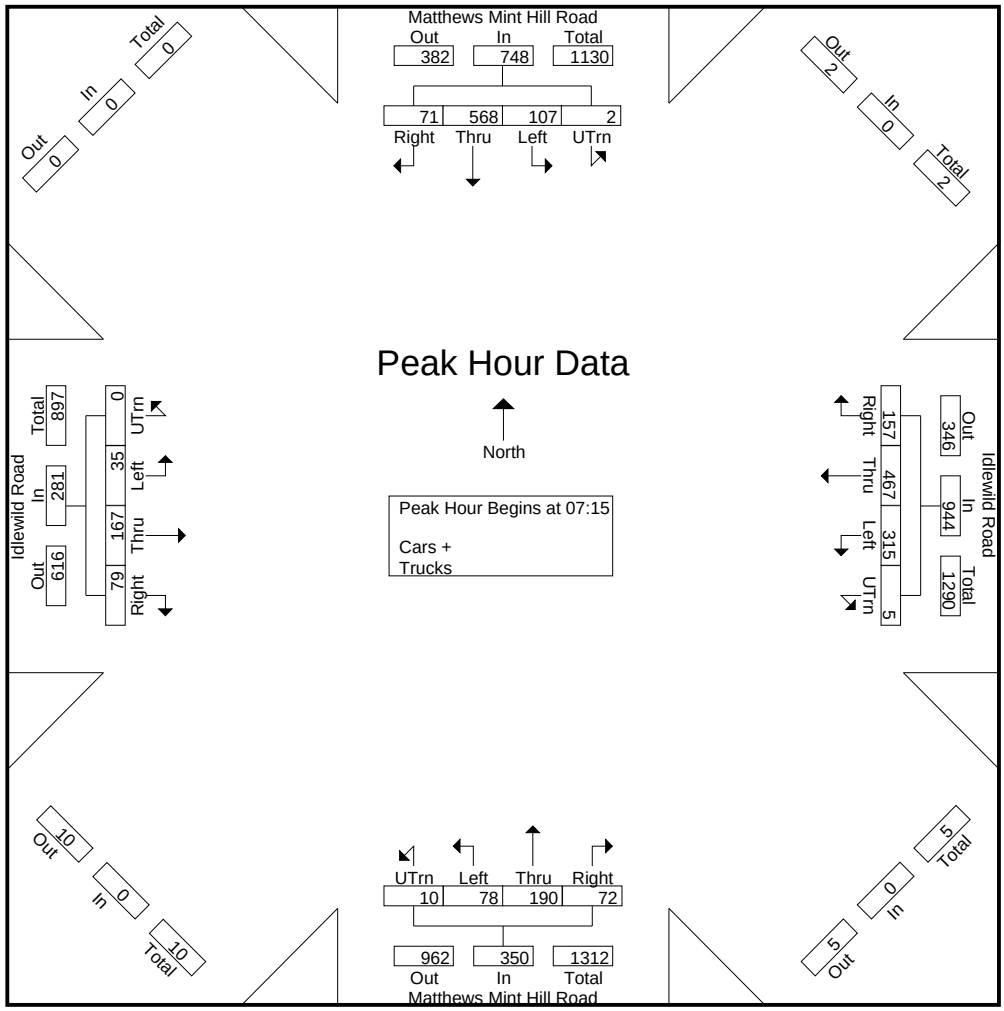
Burns Service Inc.

1202 Langdon Terrace Drive
Indian Trail, NC, 28079

We Count because YOU Count

File Name : Mint Hill(Matthews Mint Hill and Idlewild) AM Peak
Site Code :
Start Date : 8/8/2018
Page No : 2

	Matthews Mint Hill Road Southbound					Idlewild Road Westbound					Matthews Mint Hill Road Northbound					Idlewild Road Eastbound					
Start Time	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15																					
07:15	16	146	24	**1**	187	31	119	79	**3**	232	19	38	18	**3**	78	12	38	6	0	56	553
07:30	9	**157**	28	0	194	31	112	81	0	224	14	43	**24**	3	84	22	**44**	6	0	72	574
07:45	19	119	18	1	157	47	**131**	**89**	1	**268**	**25**	**58**	19	3	**105**	**25**	43	**16**	0	**84**	**614**
08:00	**27**	146	**37**	0	**210**	**48**	105	66	1	220	14	51	17	1	83	20	42	7	0	69	582
Total Volume	71	568	107	2	748	157	467	315	5	944	72	190	78	10	350	79	167	35	0	281	2323
% App. Total																					
PHF	.657	.904	.723	.500	.890	.818	.891	.885	.417	.881	.720	.819	.813	.833	.833	.790	.949	.547	.000	.836	.946



Burns Service Inc.

1202 Langdon Terrace Drive
Indian Trail, NC, 28079

We Count because YOU Count

File Name : Mint Hill(Matthews Mint Hill and Idlewild) PM Peak
Site Code :
Start Date : 8/8/2018
Page No : 1

Groups Printed- Cars + - Trucks

	Matthews Mint Hill Road Southbound						Idlewild Road Westbound						Matthews Mint Hill Road Northbound						Idlewild Road Eastbound						
Start Time	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Int. Total
16:00	15	112	64	0	0	191	45	37	34	1	0	117	55	153	14	4	0	226	18	84	7	0	3	112	646
16:15	15	112	43	1	0	171	49	51	43	0	0	143	48	171	12	0	0	231	21	92	13	0	0	126	671
16:30	22	97	65	1	0	185	46	59	40	1	0	146	55	154	18	4	0	231	17	110	14	0	0	141	703
16:45	19	109	56	1	0	185	44	44	31	6	0	125	49	165	19	0	0	233	21	112	23	0	0	156	699
Total	71	430	228	3	0	732	184	191	148	8	0	531	207	643	63	8	0	921	77	398	57	0	3	535	2719
17:00	15	137	42	0	0	194	44	45	36	1	0	126	57	155	18	2	0	232	25	122	18	0	0	165	717
17:15	25	123	58	0	0	206	61	67	33	0	0	161	68	165	20	3	0	256	23	121	22	0	0	166	789
17:30	14	126	66	1	0	207	48	52	38	4	0	142	45	176	17	2	0	240	21	113	25	0	0	159	748
17:45	14	130	40	1	0	185	50	66	46	1	0	163	51	177	14	1	0	243	34	134	18	0	0	186	777
Total	68	516	206	2	0	792	203	230	153	6	0	592	221	673	69	8	0	971	103	490	83	0	0	676	3031
Grand Total	139	946	434	5	0	1524	387	421	301	14	0	1123	428	1316	132	16	0	1892	180	888	140	0	3	1211	5750
Apprch %	9.1	62.1	28.5	0.3	0		34.5	37.5	26.8	1.2	0		22.6	69.6	7	0.8	0		14.9	73.3	11.6	0	0.2		
Total %	2.4	16.5	7.5	0.1	0	26.5	6.7	7.3	5.2	0.2	0	19.5	7.4	22.9	2.3	0.3	0	32.9	3.1	15.4	2.4	0	0.1	21.1	
Cars +	139	944	434	5	0	1522	386	421	301	14	0	1122	428	1313	132	16	0	1889	180	885	140	0	3	1208	5741
% Cars +	100	99.8	100	100	0	99.9	99.7	100	100	100	0	99.9	100	99.8	100	100	0	99.8	100	99.7	100	0	100	99.8	99.8
Trucks	0	2	0	0	0	2	1	0	0	0	0	1	0	3	0	0	0	3	0	3	0	0	0	3	9
% Trucks	0	0.2	0	0	0	0.1	0.3	0	0	0	0	0.1	0	0.2	0	0	0	0.2	0	0.3	0	0	0	0.2	0.2

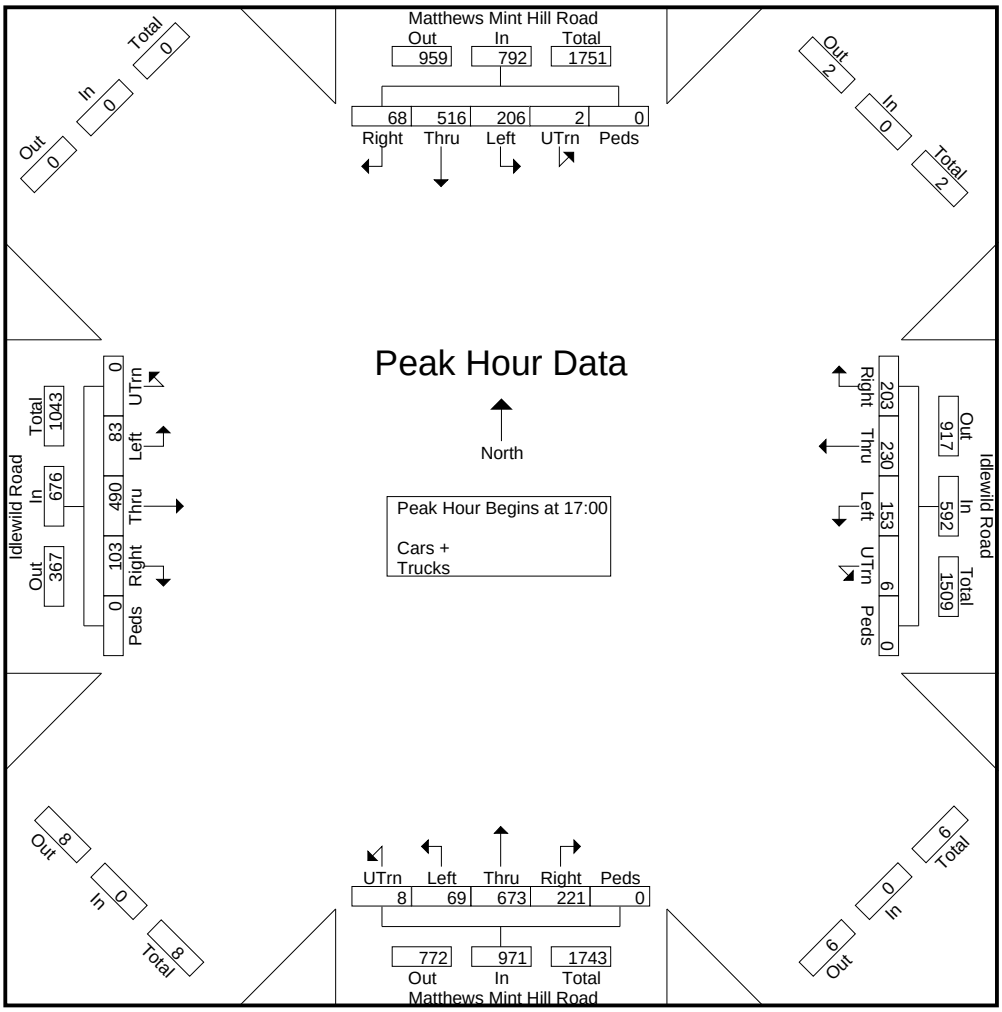
Burns Service Inc.

1202 Langdon Terrace Drive
Indian Trail, NC, 28079

We Count because YOU Count

File Name : Mint Hill(Matthews Mint Hill and Idlewild) PM Peak
Site Code :
Start Date : 8/8/2018
Page No : 2

	Matthews Mint Hill Road Southbound						Idlewild Road Westbound						Matthews Mint Hill Road Northbound						Idlewild Road Eastbound						
Start Time	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																									
Peak Hour for Entire Intersection Begins at 17:00																									
17:00	15	**137**	42	0	0	194	44	45	36	1	0	126	57	155	18	2	0	232	25	122	18	0	0	165	717
17:15	**25**	123	58	0	0	206	**61**	**67**	33	0	0	161	**68**	165	**20**	**3**	0	**256**	23	121	22	0	0	166	**789**
17:30	14	126	**66**	**1**	0	**207**	48	52	38	**4**	0	142	45	176	17	2	0	240	21	113	**25**	0	0	159	748
17:45	14	130	40	1	0	185	50	66	**46**	1	0	**163**	51	**177**	14	1	0	243	**34**	**134**	18	0	0	**186**	777
Total Volume	68	516	206	2	0	792	203	230	153	6	0	592	221	673	69	8	0	971	103	490	83	0	0	676	3031
% App. Total	8.6	65.2	26	0.3	0		34.3	38.9	25.8	1	0		22.8	69.3	7.1	0.8	0		15.2	72.5	12.3	0	0		
PHF	.680	.942	.780	.500	.000	.957	.832	.858	.832	.375	.000	.908	.813	.951	.863	.667	.000	.948	.757	.914	.830	.000	.000	.909	.960



Burns Service Inc.

1202 Langdon Terrace Drive
Indian Trail, NC, 28079
We Count because YOU Count

File Name : Matthews(Idlewild and Stallings) AM Peak
Site Code :
Start Date : 6/6/2018
Page No : 1

Groups Printed- Cars + - Trucks

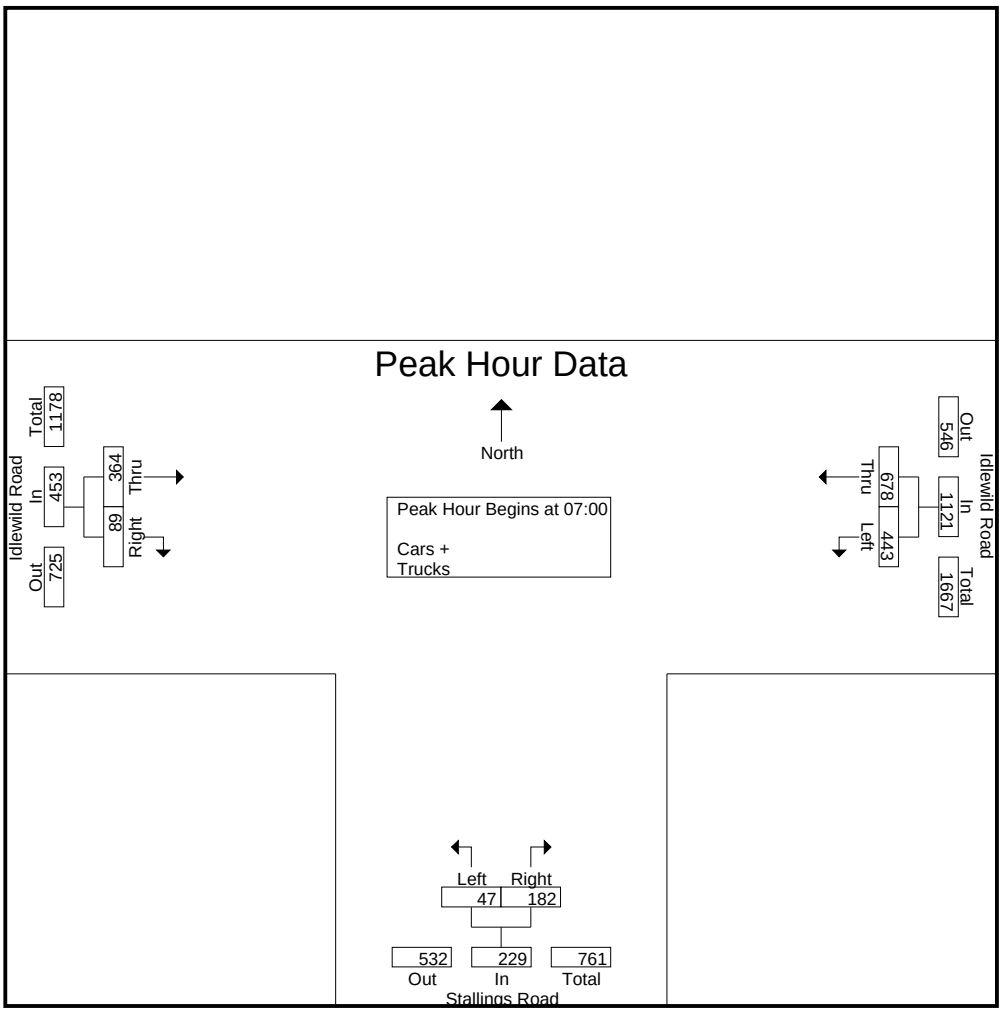
	Idlewild Road Westbound			Stallings Road Northbound			Idlewild Road Eastbound			
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	Int. Total
07:00	143	88	231	34	10	44	19	116	135	410
07:15	160	115	275	36	13	49	17	82	99	423
07:30	184	136	320	48	9	57	32	79	111	488
07:45	191	104	295	64	15	79	21	87	108	482
Total	678	443	1121	182	47	229	89	364	453	1803
08:00	142	84	226	46	14	60	20	101	121	407
08:15	151	66	217	21	15	36	16	77	93	346
08:30	134	45	179	20	8	28	3	78	81	288
08:45	131	40	171	20	7	27	6	76	82	280
Total	558	235	793	107	44	151	45	332	377	1321
Grand Total	1236	678	1914	289	91	380	134	696	830	3124
Apprch %	64.6	35.4		76.1	23.9		16.1	83.9		
Total %	39.6	21.7	61.3	9.3	2.9	12.2	4.3	22.3	26.6	
Cars +	1225	670	1895	286	90	376	133	688	821	3092
% Cars +	99.1	98.8	99	99	98.9	98.9	99.3	98.9	98.9	99
Trucks	11	8	19	3	1	4	1	8	9	32
% Trucks	0.9	1.2	1	1	1.1	1.1	0.7	1.1	1.1	1

Burns Service Inc.

1202 Langdon Terrace Drive
Indian Trail, NC, 28079
We Count because YOU Count

File Name : Matthews(Idlewild and Stallings) AM Peak
Site Code :
Start Date : 6/6/2018
Page No : 2

	Idlewild Road Westbound			Stallings Road Northbound			Idlewild Road Eastbound			
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00										
07:00	143	88	231	34	10	44	19	**116**	**135**	410
07:15	160	115	275	36	13	49	17	82	99	423
07:30	184	**136**	**320**	48	9	57	**32**	79	111	**488**
07:45	**191**	104	295	**64**	**15**	**79**	21	87	108	482
Total Volume	678	443	1121	182	47	229	89	364	453	1803
% App. Total	60.5	39.5		79.5	20.5		19.6	80.4		
PHF	.887	.814	.876	.711	.783	.725	.695	.784	.839	.924



Burns Service Inc.

1202 Langdon Terrace Drive
Indian Trail, NC, 28079

We Count because YOU Count

File Name : Matthews(Idlewild and Stallings) PM Peak
Site Code :
Start Date : 6/6/2018
Page No : 1

Groups Printed- Cars + - Trucks

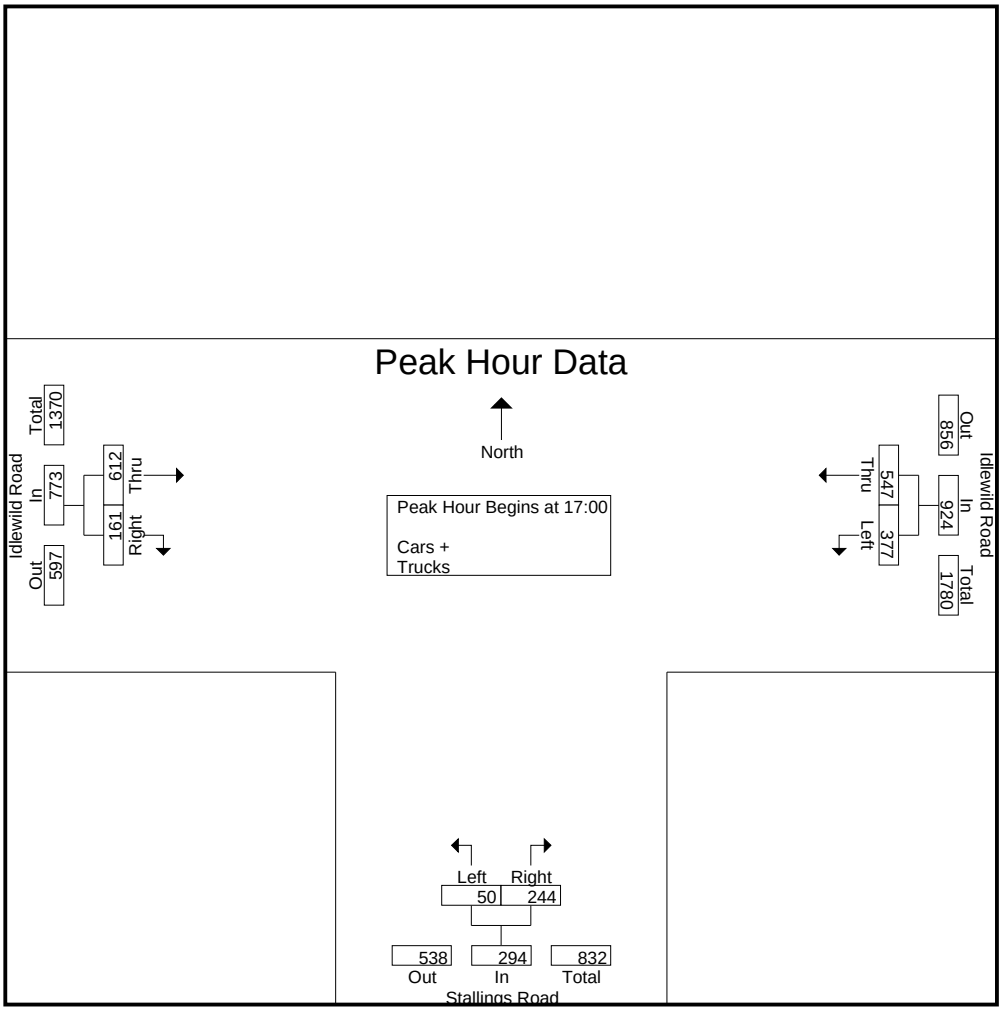
	Idlewild Road Westbound			Stallings Road Northbound			Idlewild Road Eastbound			
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	Int. Total
16:00	108	71	179	47	8	55	24	121	145	379
16:15	129	57	186	56	9	65	16	127	143	394
16:30	116	79	195	52	10	62	29	155	184	441
16:45	140	66	206	46	14	60	22	164	186	452
Total	493	273	766	201	41	242	91	567	658	1666
17:00	155	97	252	60	6	66	33	147	180	498
17:15	145	92	237	60	14	74	42	172	214	525
17:30	112	96	208	50	18	68	50	159	209	485
17:45	135	92	227	74	12	86	36	134	170	483
Total	547	377	924	244	50	294	161	612	773	1991
Grand Total	1040	650	1690	445	91	536	252	1179	1431	3657
Apprch %	61.5	38.5		83	17		17.6	82.4		
Total %	28.4	17.8	46.2	12.2	2.5	14.7	6.9	32.2	39.1	
Cars +	1037	626	1663	442	91	533	250	1178	1428	3624
% Cars +	99.7	96.3	98.4	99.3	100	99.4	99.2	99.9	99.8	99.1
Trucks	3	24	27	3	0	3	2	1	3	33
% Trucks	0.3	3.7	1.6	0.7	0	0.6	0.8	0.1	0.2	0.9

Burns Service Inc.

1202 Langdon Terrace Drive
Indian Trail, NC, 28079
We Count because YOU Count

File Name : Matthews(Idlewild and Stallings) PM Peak
Site Code :
Start Date : 6/6/2018
Page No : 2

	Idlewild Road Westbound			Stallings Road Northbound			Idlewild Road Eastbound			
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 17:00										
17:00	**155**	**97**	**252**	60	6	66	33	147	180	498
17:15	145	92	237	60	14	74	42	**172**	**214**	**525**
17:30	112	96	208	50	**18**	68	**50**	159	209	485
17:45	135	92	227	**74**	12	**86**	36	134	170	483
Total Volume	547	377	924	244	50	294	161	612	773	1991
% App. Total	59.2	40.8		83	17		20.8	79.2		
PHF	.882	.972	.917	.824	.694	.855	.805	.890	.903	.948



Burns Service Inc.

1202 Langdon Terrace Drive
Indian Trail, NC, 28079

We Count because YOU Count

File Name : Matthews(Idlewild and I-485 SB Ramps) AM Peak
Site Code :
Start Date : 6/6/2018
Page No : 1

Groups Printed- Cars + - Trucks

	I-485 SB Ramps Southbound				Idlewild Road Westbound				I-485 SB Ramps Northbound				Idlewild Road Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
07:00	84	0	34	118	0	141	130	271	0	0	0	0	54	92	0	146	535
07:15	123	0	44	167	0	144	88	232	0	0	0	0	24	110	0	134	533
07:30	137	0	33	170	0	179	90	269	0	0	0	0	24	116	0	140	579
07:45	112	1	44	157	0	163	99	262	0	0	0	0	30	115	0	145	564
Total	456	1	155	612	0	627	407	1034	0	0	0	0	132	433	0	565	2211
08:00	63	0	39	102	0	153	101	254	0	0	0	0	31	123	0	154	510
08:15	71	2	38	111	0	144	94	238	0	0	0	0	21	79	0	100	449
08:30	42	0	53	95	0	135	77	212	0	0	0	0	23	77	0	100	407
08:45	40	0	48	88	0	119	73	192	0	0	0	0	29	64	0	93	373
Total	216	2	178	396	0	551	345	896	0	0	0	0	104	343	0	447	1739
Grand Total	672	3	333	1008	0	1178	752	1930	0	0	0	0	236	776	0	1012	3950
Apprch %	66.7	0.3	33		0	61	39		0	0	0		23.3	76.7	0		
Total %	17	0.1	8.4	25.5	0	29.8	19	48.9	0	0	0	0	6	19.6	0	25.6	
Cars +	668	3	320	991	0	1169	747	1916	0	0	0	0	233	768	0	1001	3908
% Cars +	99.4	100	96.1	98.3	0	99.2	99.3	99.3	0	0	0	0	98.7	99	0	98.9	98.9
Trucks	4	0	13	17	0	9	5	14	0	0	0	0	3	8	0	11	42
% Trucks	0.6	0	3.9	1.7	0	0.8	0.7	0.7	0	0	0	0	1.3	1	0	1.1	1.1

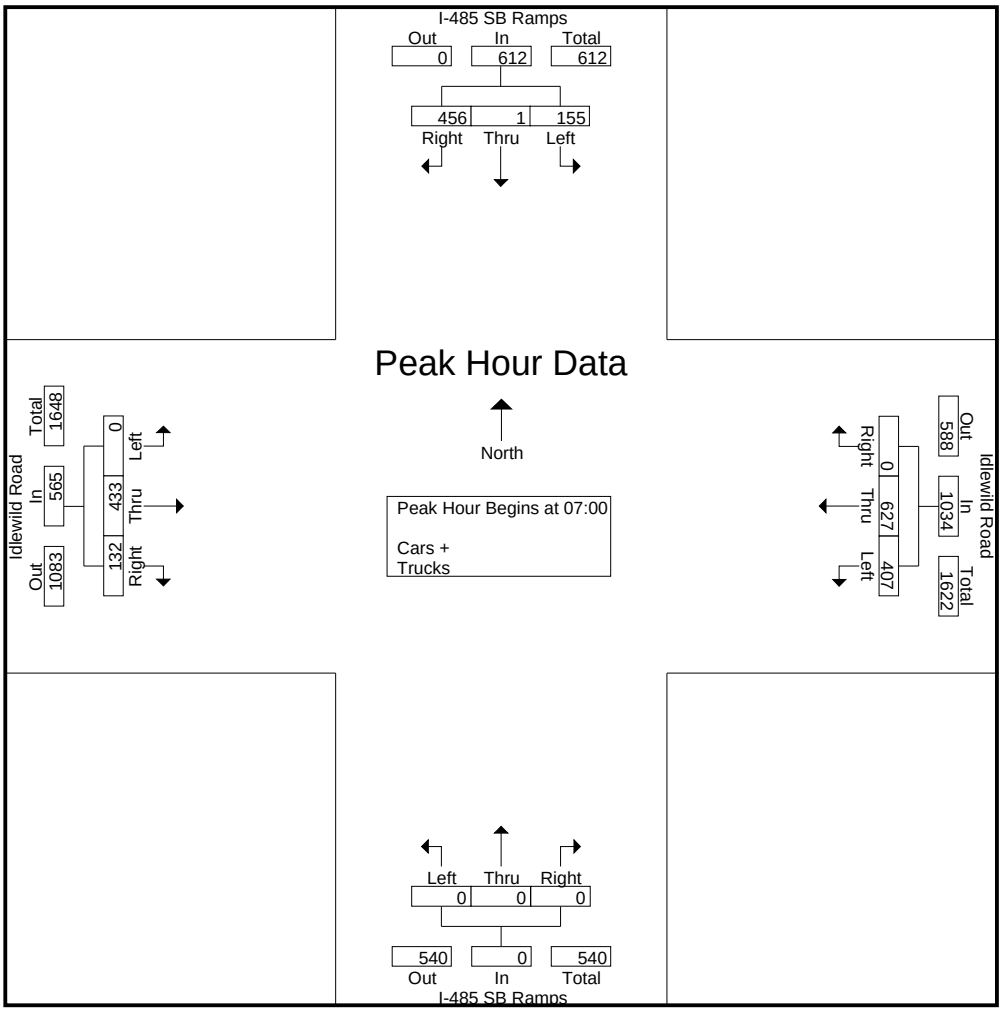
Burns Service Inc.

1202 Langdon Terrace Drive
Indian Trail, NC, 28079

We Count because YOU Count

File Name : Matthews(Idlewild and I-485 SB Ramps) AM Peak
Site Code :
Start Date : 6/6/2018
Page No : 2

	I-485 SB Ramps Southbound				Idlewild Road Westbound				I-485 SB Ramps Northbound				Idlewild Road Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00																	
07:00	**84**	**0**	**34**	**118**	**0**	**141**	130	271	0	0	0	0	54	92	0	146	535
07:15	123	0	**44**	167	0	144	88	232	0	0	0	0	24	110	0	134	533
07:30	**137**	0	33	**170**	0	**179**	90	269	0	0	0	0	24	**116**	0	140	**579**
07:45	112	**1**	44	157	0	163	99	262	0	0	0	0	30	115	0	145	564
Total Volume	456	1	155	612	0	627	407	1034	0	0	0	0	132	433	0	565	2211
% App. Total	74.5	0.2	25.3		0	60.6	39.4		0	0	0		23.4	76.6	0		
PHF	.832	.250	.881	.900	.000	.876	.783	.954	.000	.000	.000	.000	.611	.933	.000	.967	.955



Burns Service Inc.

1202 Langdon Terrace Drive
Indian Trail, NC, 28079

We Count because YOU Count

File Name : Matthews(Idlewild and I-485 SB Ramps) PM Peak
Site Code :
Start Date : 6/6/2018
Page No : 1

Groups Printed- Cars + - Trucks

	I-485 SB Ramps Southbound				Idlewild Road Westbound				I-485 SB Ramps Northbound				Idlewild Road Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
16:00	53	0	52	105	0	125	55	180	0	0	0	0	24	143	0	167	452
16:15	57	0	63	120	0	121	54	175	0	0	0	0	21	162	0	183	478
16:30	61	0	85	146	0	128	42	170	0	0	0	0	23	186	0	209	525
16:45	61	0	58	119	0	135	66	201	0	0	0	0	30	182	0	212	532
Total	232	0	258	490	0	509	217	726	0	0	0	0	98	673	0	771	1987
17:00	64	1	74	139	0	173	67	240	0	0	0	0	33	190	0	223	602
17:15	93	1	75	169	0	167	63	230	0	0	0	0	34	211	0	245	644
17:30	76	1	61	138	0	151	61	212	0	0	0	0	36	185	0	221	571
17:45	67	0	55	122	0	156	74	230	0	0	0	0	26	191	0	217	569
Total	300	3	265	568	0	647	265	912	0	0	0	0	129	777	0	906	2386
Grand Total	532	3	523	1058	0	1156	482	1638	0	0	0	0	227	1450	0	1677	4373
Apprch %	50.3	0.3	49.4		0	70.6	29.4		0	0	0		13.5	86.5	0		
Total %	12.2	0.1	12	24.2	0	26.4	11	37.5	0	0	0	0	5.2	33.2	0	38.3	
Cars +	527	3	515	1045	0	1148	476	1624	0	0	0	0	227	1448	0	1675	4344
% Cars +	99.1	100	98.5	98.8	0	99.3	98.8	99.1	0	0	0	0	100	99.9	0	99.9	99.3
Trucks	5	0	8	13	0	8	6	14	0	0	0	0	0	2	0	2	29
% Trucks	0.9	0	1.5	1.2	0	0.7	1.2	0.9	0	0	0	0	0	0.1	0	0.1	0.7

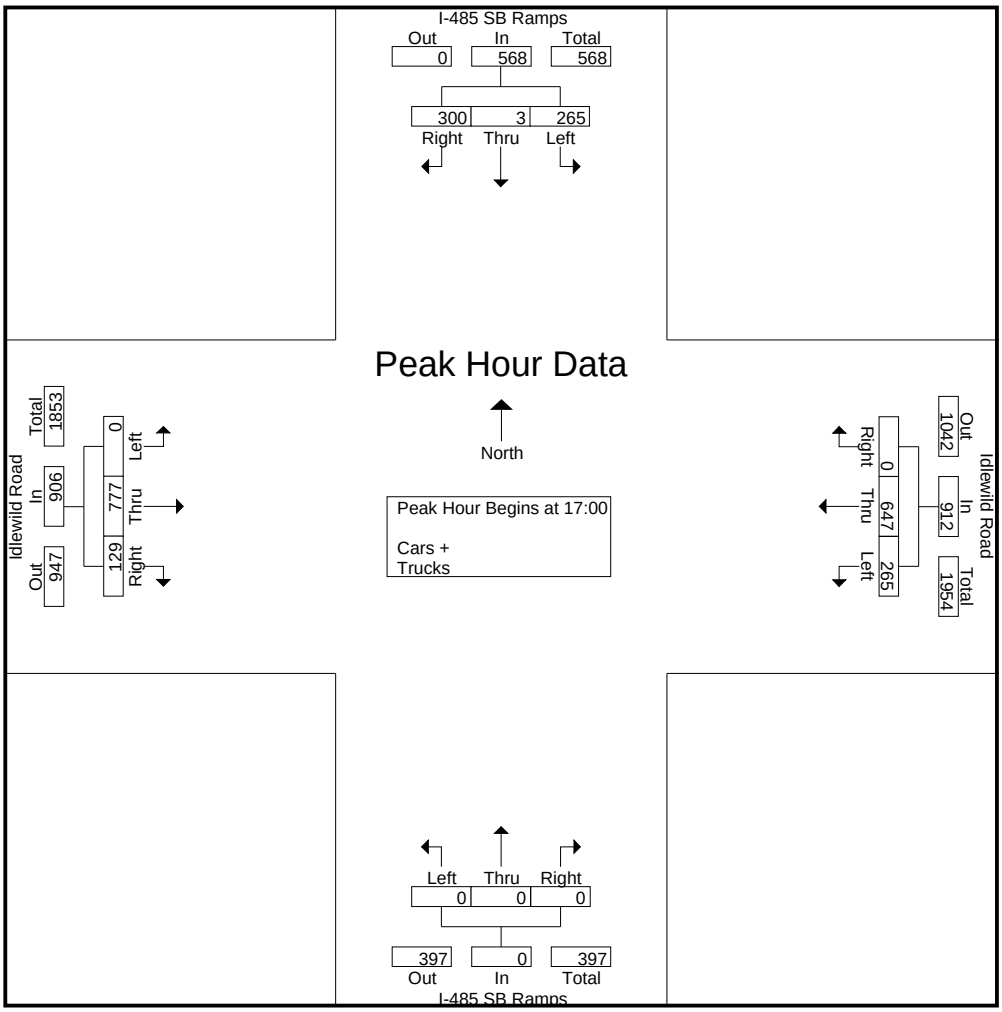
Burns Service Inc.

1202 Langdon Terrace Drive
Indian Trail, NC, 28079

We Count because YOU Count

File Name : Matthews(Idlewild and I-485 SB Ramps) PM Peak
Site Code :
Start Date : 6/6/2018
Page No : 2

	I-485 SB Ramps Southbound				Idlewild Road Westbound				I-485 SB Ramps Northbound				Idlewild Road Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:00																	
17:00	**64**	1	74	139	0	173	67	240	0	0	0	0	33	190	0	223	602
17:15	93	1	**75**	**169**	0	167	63	230	0	0	0	0	34	**211**	0	**245**	**644**
17:30	76	1	61	138	0	151	61	212	0	0	0	0	**36**	185	0	221	571
17:45	67	0	55	122	0	156	**74**	230	0	0	0	0	26	191	0	217	569
Total Volume	300	3	265	568	0	647	265	912	0	0	0	0	129	777	0	906	2386
% App. Total	52.8	0.5	46.7		0	70.9	29.1		0	0	0		14.2	85.8	0		
PHF	.806	.750	.883	.840	.000	.935	.895	.950	.000	.000	.000	.000	.896	.921	.000	.924	.926



Burns Service Inc.

1202 Langdon Terrace Drive
Indian Trail, NC, 28079
We Count because YOU Count

File Name : Matthews(Idlewild and I-485 NB Ramps) AM Peak
Site Code :
Start Date : 6/6/2018
Page No : 1

Groups Printed- Cars + - Trucks

	I-485 Ramp Southbound				Idlewild Road Westbound				I-485 Ramp Northbound				Idlewild Road Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
07:00	0	0	0	0	84	240	0	324	30	0	25	55	0	90	40	130	509
07:15	0	0	0	0	76	200	0	276	36	0	28	64	0	105	50	155	495
07:30	0	0	0	0	103	243	0	346	50	0	31	81	0	92	58	150	577
07:45	0	0	0	0	85	220	0	305	39	0	41	80	0	94	65	159	544
Total	0	0	0	0	348	903	0	1251	155	0	125	280	0	381	213	594	2125
08:00	0	0	0	0	73	237	0	310	43	0	29	72	0	101	56	157	539
08:15	0	0	0	0	62	208	0	270	29	2	26	57	0	90	37	127	454
08:30	0	0	0	0	71	170	0	241	32	0	26	58	0	108	20	128	427
08:45	0	0	0	0	36	157	0	193	50	0	33	83	0	97	19	116	392
Total	0	0	0	0	242	772	0	1014	154	2	114	270	0	396	132	528	1812
Grand Total	0	0	0	0	590	1675	0	2265	309	2	239	550	0	777	345	1122	3937
Apprch %	0	0	0		26	74	0		56.2	0.4	43.5		0	69.3	30.7		
Total %	0	0	0	0	15	42.5	0	57.5	7.8	0.1	6.1	14	0	19.7	8.8	28.5	
Cars +	0	0	0	0	583	1671	0	2254	304	2	237	543	0	766	344	1110	3907
% Cars +	0	0	0	0	98.8	99.8	0	99.5	98.4	100	99.2	98.7	0	98.6	99.7	98.9	99.2
Trucks	0	0	0	0	7	4	0	11	5	0	2	7	0	11	1	12	30
% Trucks	0	0	0	0	1.2	0.2	0	0.5	1.6	0	0.8	1.3	0	1.4	0.3	1.1	0.8

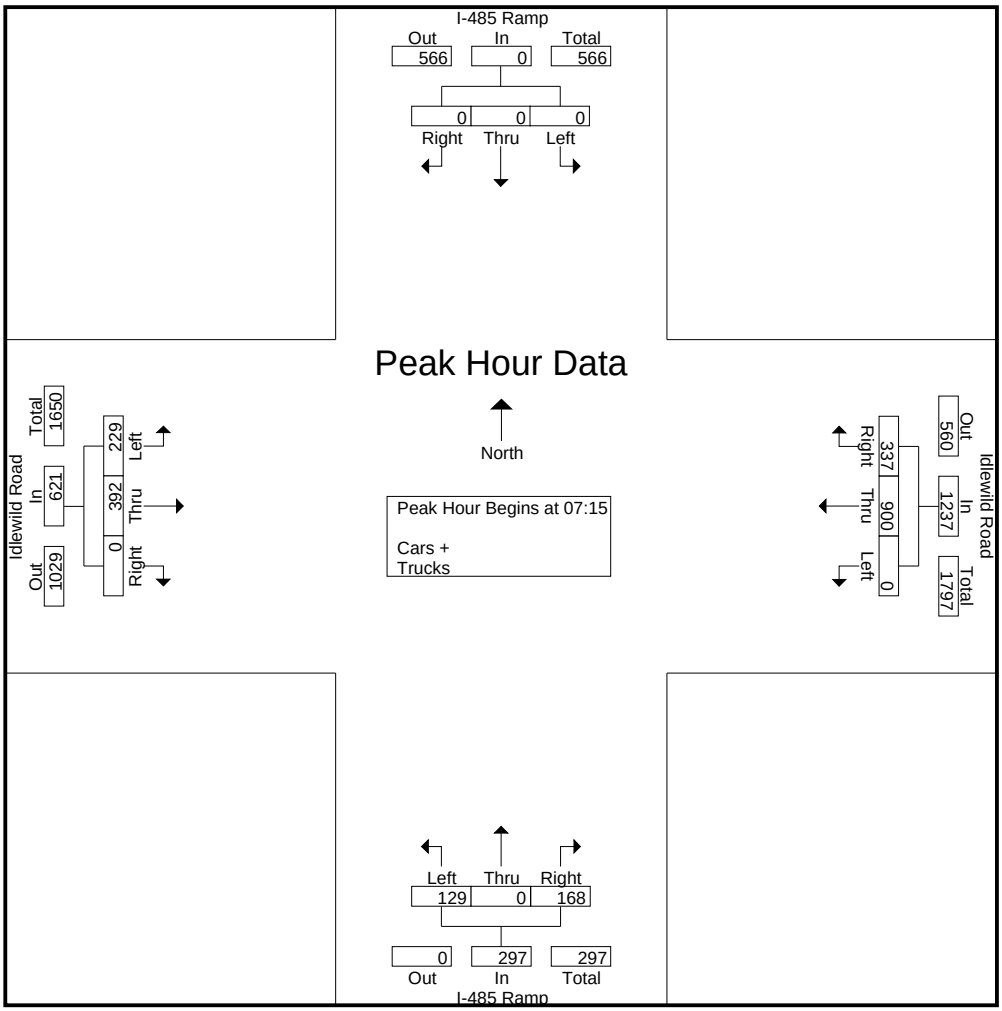
Burns Service Inc.

1202 Langdon Terrace Drive
Indian Trail, NC, 28079

We Count because YOU Count

File Name : Matthews(Idlewild and I-485 NB Ramps) AM Peak
Site Code :
Start Date : 6/6/2018
Page No : 2

	I-485 Ramp Southbound				Idlewild Road Westbound				I-485 Ramp Northbound				Idlewild Road Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15																	
07:15	**0**	**0**	**0**	**0**	**76**	**200**	**0**	**276**	**36**	**0**	**28**	**64**	**0**	105	50	155	495
07:30	0	0	0	0	103	243	0	346	**50**	0	31	**81**	0	92	58	150	**577**
07:45	0	0	0	0	85	220	0	305	39	0	**41**	80	0	94	**65**	**159**	544
08:00	0	0	0	0	73	237	0	310	43	0	29	72	0	101	56	157	539
Total Volume	0	0	0	0	337	900	0	1237	168	0	129	297	0	392	229	621	2155
% App. Total	0	0	0		27.2	72.8	0		56.6	0	43.4		0	63.1	36.9		
PHF	.000	.000	.000	.000	.818	.926	.000	.894	.840	.000	.787	.917	.000	.933	.881	.976	.934



Burns Service Inc.

1202 Langdon Terrace Drive
Indian Trail, NC, 28079

We Count because YOU Count

File Name : Matthews(Idlewild and I-485 NB Ramps) PM Peak
Site Code :
Start Date : 6/6/2018
Page No : 1

Groups Printed- Cars + - Trucks

	I-485 NB Ramps Southbound				Idlewild Road Westbound				I-485 NB Ramps Northbound				Idlewild Road Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
16:00	0	0	0	0	65	121	0	186	113	0	46	159	0	155	39	194	539
16:15	0	0	0	0	67	116	0	183	105	0	51	156	0	173	38	211	550
16:30	0	0	0	0	49	135	0	184	133	0	63	196	0	210	54	264	644
16:45	0	0	0	0	79	127	0	206	122	0	70	192	0	190	51	241	639
Total	0	0	0	0	260	499	0	759	473	0	230	703	0	728	182	910	2372
17:00	0	0	0	0	80	176	0	256	127	0	62	189	0	191	69	260	705
17:15	0	0	0	0	74	159	0	233	98	0	67	165	0	216	64	280	678
17:30	0	0	0	0	74	162	0	236	96	0	45	141	0	184	53	237	614
17:45	0	0	0	0	58	163	0	221	109	0	59	168	0	182	60	242	631
Total	0	0	0	0	286	660	0	946	430	0	233	663	0	773	246	1019	2628
Grand Total	0	0	0	0	546	1159	0	1705	903	0	463	1366	0	1501	428	1929	5000
Apprch %	0	0	0		32	68	0		66.1	0	33.9		0	77.8	22.2		
Total %	0	0	0	0	10.9	23.2	0	34.1	18.1	0	9.3	27.3	0	30	8.6	38.6	
Cars +	0	0	0	0	534	1155	0	1689	896	0	463	1359	0	1499	426	1925	4973
% Cars +	0	0	0	0	97.8	99.7	0	99.1	99.2	0	100	99.5	0	99.9	99.5	99.8	99.5
Trucks	0	0	0	0	12	4	0	16	7	0	0	7	0	2	2	4	27
% Trucks	0	0	0	0	2.2	0.3	0	0.9	0.8	0	0	0.5	0	0.1	0.5	0.2	0.5

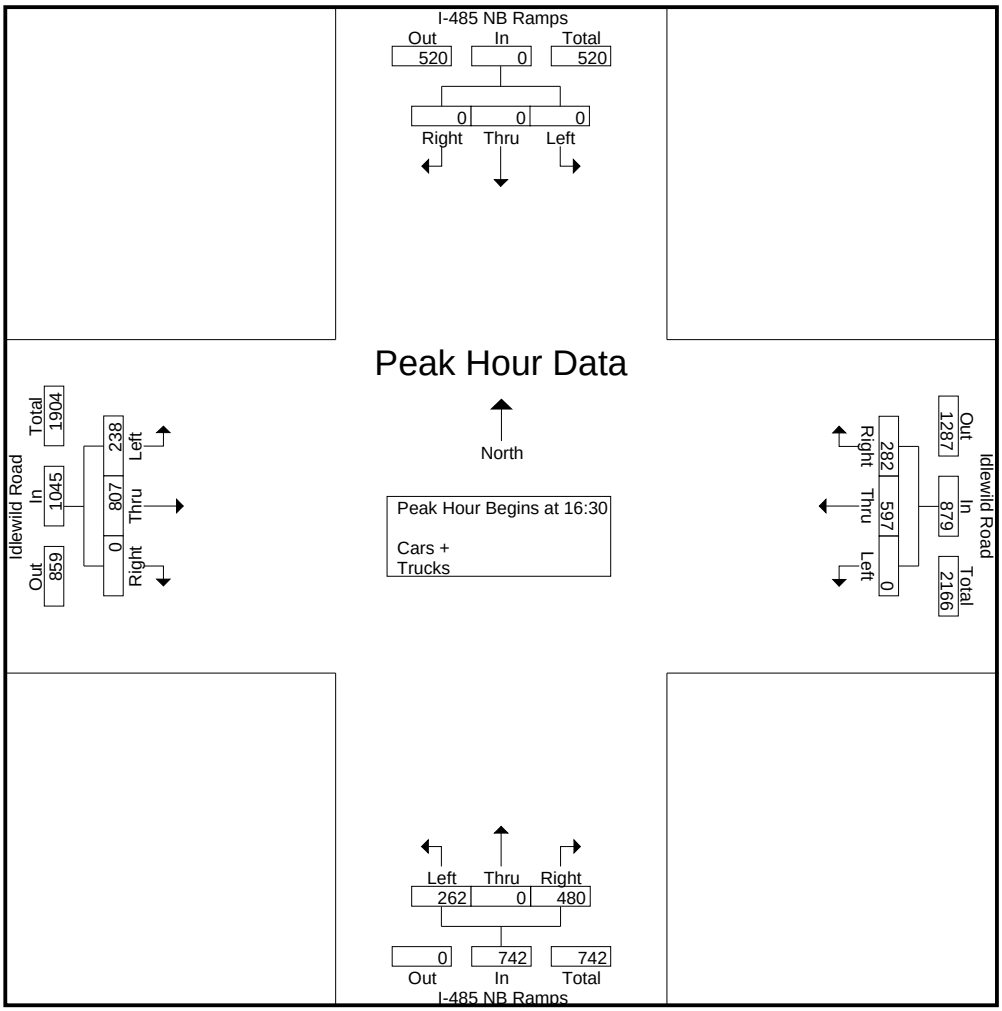
Burns Service Inc.

1202 Langdon Terrace Drive
Indian Trail, NC, 28079

We Count because YOU Count

File Name : Matthews(Idlewild and I-485 NB Ramps) PM Peak
Site Code :
Start Date : 6/6/2018
Page No : 2

	I-485 NB Ramps Southbound				Idlewild Road Westbound				I-485 NB Ramps Northbound				Idlewild Road Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:30																	
16:30	**0**	**0**	**0**	**0**	**49**	**135**	**0**	**184**	133	0	63	196	0	210	54	264	644
16:45	0	0	0	0	79	127	0	206	122	0	70	192	0	190	51	241	639
17:00	0	0	0	0	80	**176**	0	**256**	127	0	62	189	0	191	**69**	260	**705**
17:15	0	0	0	0	74	159	0	233	98	0	67	165	0	**216**	64	**280**	678
Total Volume	0	0	0	0	282	597	0	879	480	0	262	742	0	807	238	1045	2666
% App. Total	0	0	0		32.1	67.9	0		64.7	0	35.3		0	77.2	22.8		
PHF	.000	.000	.000	.000	.881	.848	.000	.858	.902	.000	.936	.946	.000	.934	.862	.933	.945



Burns Service Inc.

1202 Langdon Terrace Drive
Indian Trail, NC, 28079

We Count because YOU Count

File Name : Matthews(Idlewild and Marshall Hooks) AM Peak
Site Code :
Start Date : 6/6/2018
Page No : 1

Groups Printed- Cars + - Trucks

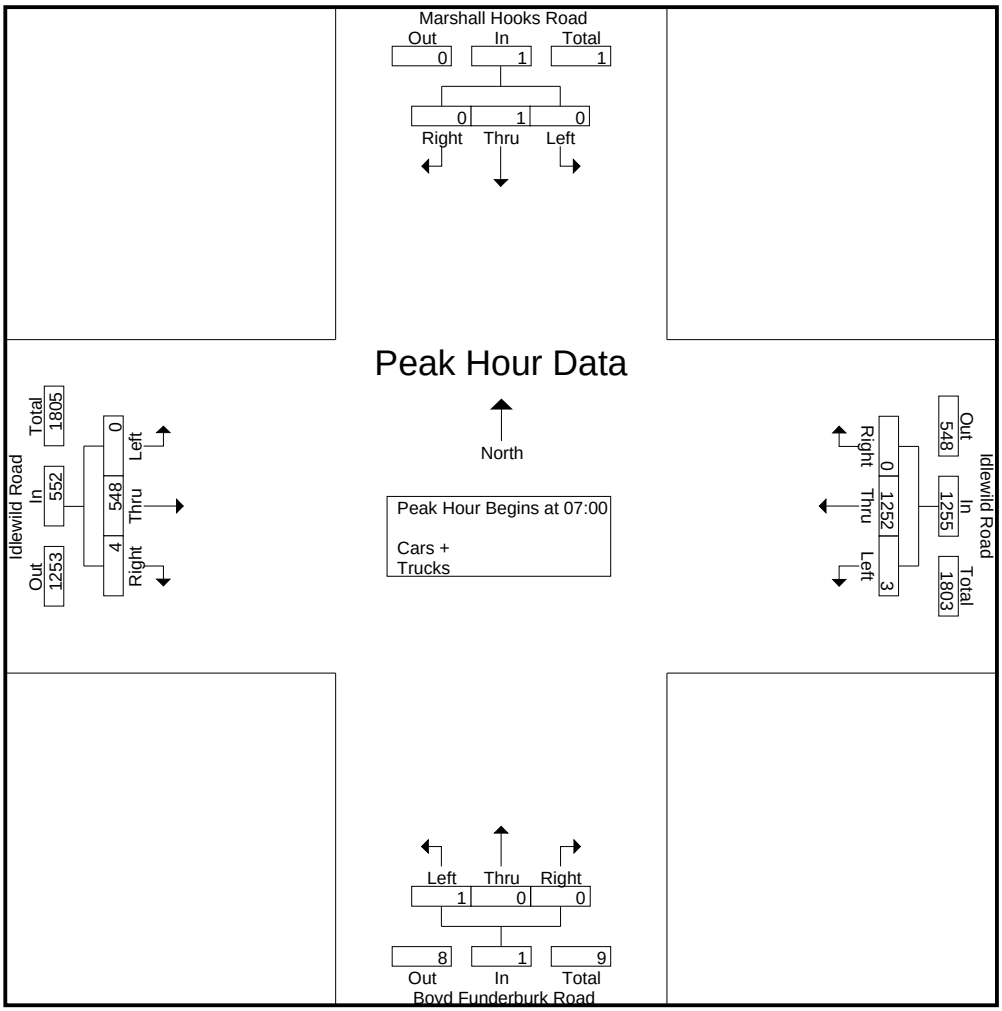
	Marshall Hooks Road Southbound				Idlewild Road Westbound				Boyd Funderburk Road Northbound				Idlewild Road Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
07:00	0	0	0	0	0	325	1	326	0	0	1	1	0	122	0	122	449
07:15	0	1	0	1	0	281	0	281	0	0	0	0	1	142	0	143	425
07:30	0	0	0	0	0	334	1	335	0	0	0	0	0	145	0	145	480
07:45	0	0	0	0	0	312	1	313	0	0	0	0	3	139	0	142	455
Total	0	1	0	1	0	1252	3	1255	0	0	1	1	4	548	0	552	1809
08:00	0	0	0	0	0	197	0	197	0	0	0	0	0	235	0	235	432
08:15	0	0	0	0	0	144	0	144	0	0	0	0	0	248	0	248	392
08:30	0	0	0	0	0	241	0	241	0	0	0	0	0	145	0	145	386
08:45	0	0	0	0	0	189	0	189	0	0	0	0	0	144	0	144	333
Total	0	0	0	0	0	771	0	771	0	0	0	0	0	772	0	772	1543
Grand Total	0	1	0	1	0	2023	3	2026	0	0	1	1	4	1320	0	1324	3352
Apprch %	0	100	0		0	99.9	0.1		0	0	100		0.3	99.7	0		
Total %	0	0	0	0	0	60.4	0.1	60.4	0	0	0	0	0.1	39.4	0	39.5	
Cars +	0	1	0	1	0	1991	2	1993	0	0	1	1	3	1295	0	1298	3293
% Cars +	0	100	0	100	0	98.4	66.7	98.4	0	0	100	100	75	98.1	0	98	98.2
Trucks	0	0	0	0	0	32	1	33	0	0	0	0	1	25	0	26	59
% Trucks	0	0	0	0	0	1.6	33.3	1.6	0	0	0	0	25	1.9	0	2	1.8

Burns Service Inc.

1202 Langdon Terrace Drive
Indian Trail, NC, 28079
We Count because YOU Count

File Name : Matthews(Idlewild and Marshall Hooks) AM Peak
Site Code :
Start Date : 6/6/2018
Page No : 2

	Marshall Hooks Road Southbound				Idlewild Road Westbound				Boyd Funderburk Road Northbound				Idlewild Road Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00																	
07:00	**0**	**0**	**0**	**0**	**0**	**325**	1	326	0	0	1	1	0	122	0	122	449
07:15	0	1	0	**1**	0	281	0	281	0	0	0	0	1	142	0	143	425
07:30	0	0	0	0	0	**334**	1	**335**	0	0	0	0	0	**145**	0	**145**	**480**
07:45	0	0	0	0	0	312	1	313	0	0	0	0	**3**	139	0	142	455
Total Volume	0	1	0	1	0	1252	3	1255	0	0	1	1	4	548	0	552	1809
% App. Total	0	100	0		0	99.8	0.2		0	0	100		0.7	99.3	0		
PHF	.000	.250	.000	.250	.000	.937	.750	.937	.000	.000	.250	.250	.333	.945	.000	.952	.942



Burns Service Inc.

1202 Langdon Terrace Drive
Indian Trail, NC, 28079

We Count because YOU Count

File Name : Matthews(Idlewild and Marshall Hooks) PM Peak
Site Code :
Start Date : 6/6/2018
Page No : 1

Groups Printed- Cars + - Trucks

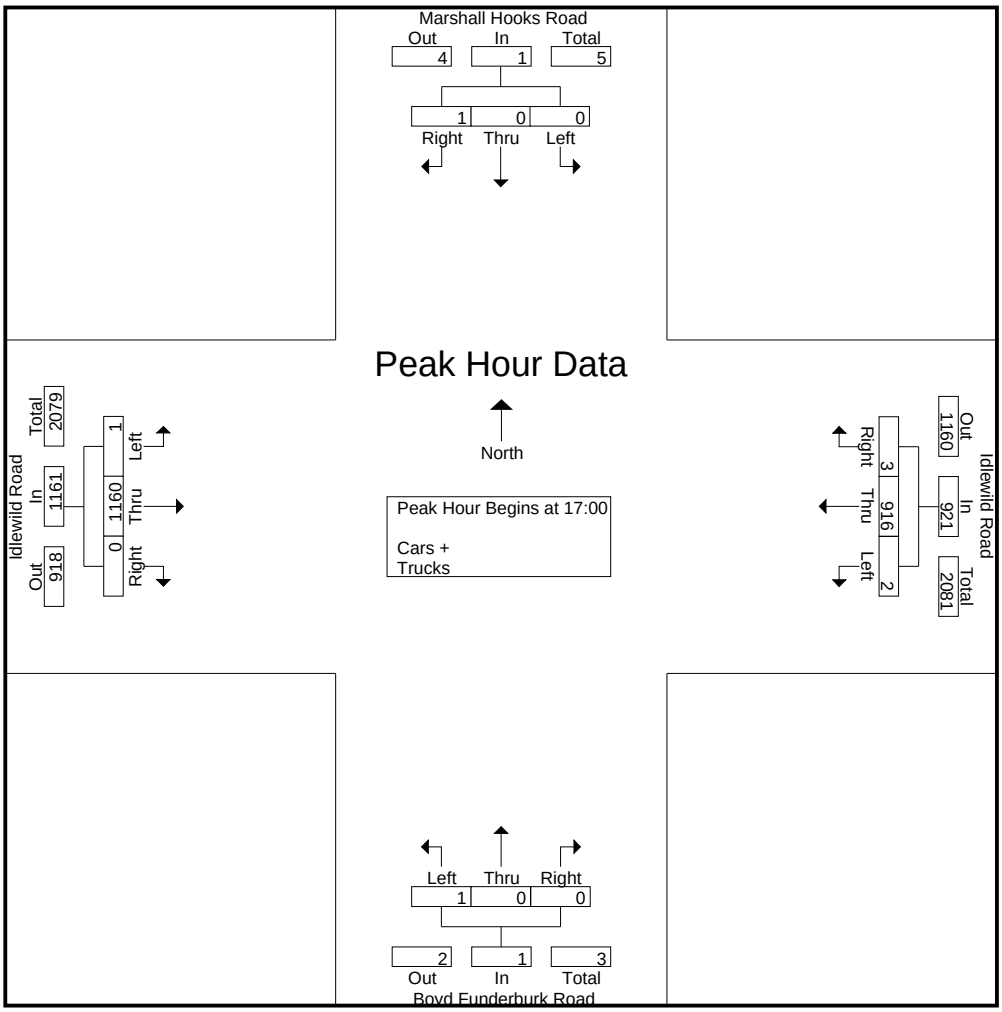
	Marshall Hooks Road Southbound				Idlewild Road Westbound				Boyd Funderburk Road Northbound				Idlewild Road Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
16:00	0	0	0	0	0	169	0	169	0	0	0	0	0	283	0	283	452
16:15	0	0	0	0	0	161	0	161	0	0	0	0	1	279	0	280	441
16:30	0	0	0	0	0	151	0	151	0	0	0	0	0	328	0	328	479
16:45	0	0	0	0	0	205	0	205	0	0	0	0	0	299	0	299	504
Total	0	0	0	0	0	686	0	686	0	0	0	0	1	1189	0	1190	1876
17:00	1	0	0	1	1	227	0	228	0	0	0	0	0	315	0	315	544
17:15	0	0	0	0	0	230	1	231	0	0	0	0	0	309	0	309	540
17:30	0	0	0	0	0	230	0	230	0	0	0	0	0	259	1	260	490
17:45	0	0	0	0	2	229	1	232	0	0	1	1	0	277	0	277	510
Total	1	0	0	1	3	916	2	921	0	0	1	1	0	1160	1	1161	2084
Grand Total	1	0	0	1	3	1602	2	1607	0	0	1	1	1	2349	1	2351	3960
Apprch %	100	0	0		0.2	99.7	0.1		0	0	100		0	99.9	0		
Total %	0	0	0	0	0.1	40.5	0.1	40.6	0	0	0	0	0	59.3	0	59.4	
Cars +	1	0	0	1	3	1582	2	1587	0	0	1	1	1	2323	1	2325	3914
% Cars +	100	0	0	100	100	98.8	100	98.8	0	0	100	100	100	98.9	100	98.9	98.8
Trucks	0	0	0	0	0	20	0	20	0	0	0	0	0	26	0	26	46
% Trucks	0	0	0	0	0	1.2	0	1.2	0	0	0	0	0	1.1	0	1.1	1.2

Burns Service Inc.

1202 Langdon Terrace Drive
Indian Trail, NC, 28079
We Count because YOU Count

File Name : Matthews(Idlewild and Marshall Hooks) PM Peak
Site Code :
Start Date : 6/6/2018
Page No : 2

	Marshall Hooks Road Southbound				Idlewild Road Westbound				Boyd Funderburk Road Northbound				Idlewild Road Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:00																	
17:00	1	0	0	1	1	227	0	228	0	0	0	0	0	315	0	315	**544**
17:15	0	0	0	0	0	**230**	**1**	231	0	0	0	0	0	309	0	309	540
17:30	0	0	0	0	0	230	0	230	0	0	0	0	0	259	**1**	260	490
17:45	0	0	0	0	**2**	229	1	**232**	0	0	**1**	**1**	0	277	0	277	510
Total Volume	1	0	0	1	3	916	2	921	0	0	1	1	0	1160	1	1161	2084
% App. Total	100	0	0		0.3	99.5	0.2		0	0	100		0	99.9	0.1		
PHF	.250	.000	.000	.250	.375	.996	.500	.992	.000	.000	.250	.250	.000	.921	.250	.921	.958



Burns Service Inc.

1202 Langdon Terrace Drive
Indian Trail, NC, 28079

We Count because YOU Count

File Name : Matthews(Idlewild and Idlewild Market Access) AM Peak
Site Code :
Start Date : 6/6/2018
Page No : 1

Groups Printed- Cars + - Trucks

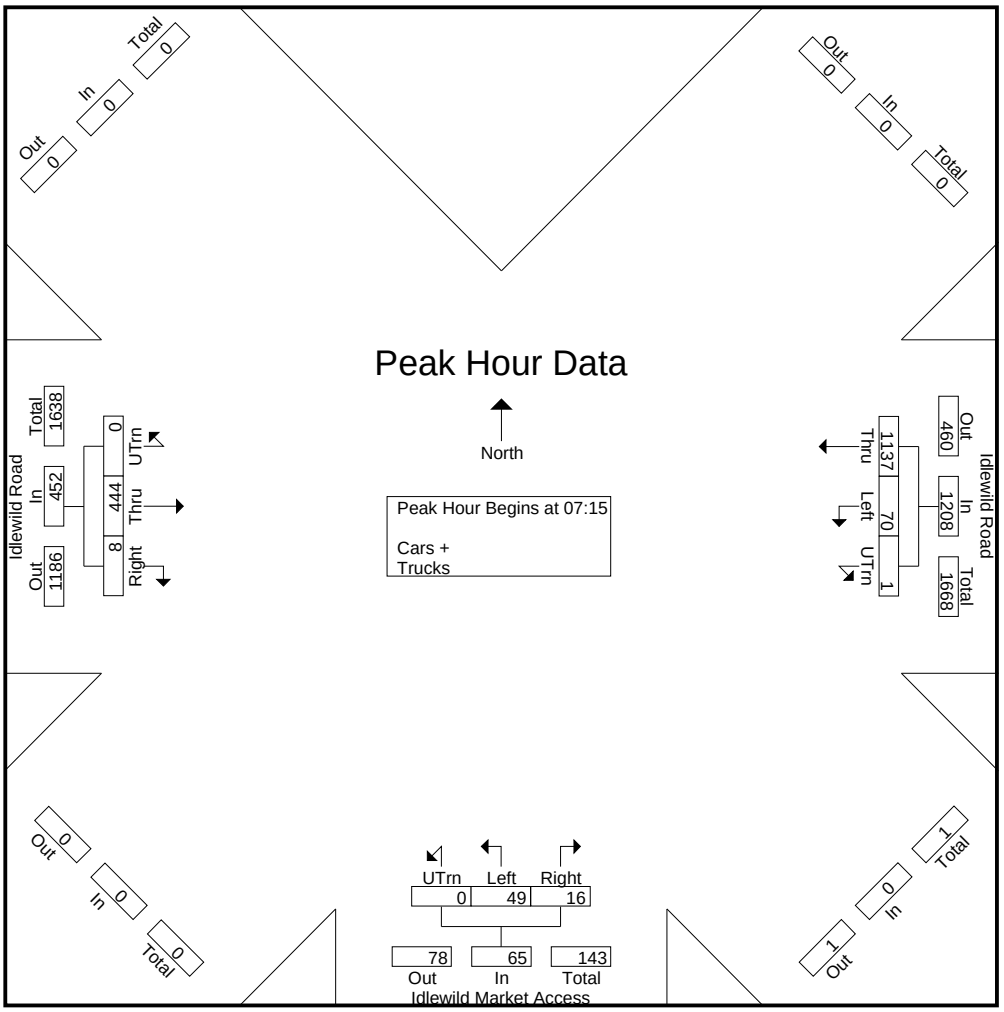
	Idlewild Road Westbound				Idlewild Market Access Northbound				Idlewild Road Eastbound				
Start Time	Thru	Left	UTrn	App. Total	Right	Left	UTrn	App. Total	Right	Thru	UTrn	App. Total	Int. Total
07:00	312	14	0	326	2	7	0	9	1	97	0	98	433
07:15	267	27	1	295	6	7	0	13	1	121	0	122	430
07:30	288	11	0	299	2	15	0	17	2	97	0	99	415
07:45	297	18	0	315	1	10	0	11	3	111	0	114	440
Total	1164	70	1	1235	11	39	0	50	7	426	0	433	1718
08:00	285	14	0	299	7	17	0	24	2	115	0	117	440
08:15	267	27	0	294	4	14	0	18	1	98	0	99	411
08:30	225	11	0	236	8	10	0	18	2	103	0	105	359
08:45	179	23	0	202	5	9	0	14	1	102	0	103	319
Total	956	75	0	1031	24	50	0	74	6	418	0	424	1529
Grand Total	2120	145	1	2266	35	89	0	124	13	844	0	857	3247
Apprch %	93.6	6.4	0		28.2	71.8	0		1.5	98.5	0		
Total %	65.3	4.5	0	69.8	1.1	2.7	0	3.8	0.4	26	0	26.4	
Cars +	2106	144	1	2251	35	89	0	124	13	832	0	845	3220
% Cars +	99.3	99.3	100	99.3	100	100	0	100	100	98.6	0	98.6	99.2
Trucks	14	1	0	15	0	0	0	0	0	12	0	12	27
% Trucks	0.7	0.7	0	0.7	0	0	0	0	0	1.4	0	1.4	0.8

Burns Service Inc.

1202 Langdon Terrace Drive
Indian Trail, NC, 28079
We Count because YOU Count

File Name : Matthews(Idlewild and Idlewild Market Access) AM Peak
Site Code :
Start Date : 6/6/2018
Page No : 2

	Idlewild Road Westbound				Idlewild Market Access Northbound				Idlewild Road Eastbound				
Start Time	Thru	Left	UTrn	App. Total	Right	Left	UTrn	App. Total	Right	Thru	UTrn	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:15													
07:15	267	**27**	**1**	295	6	7	0	13	1	**121**	0	**122**	430
07:30	288	11	0	299	2	15	0	17	2	97	0	99	415
07:45	**297**	18	0	**315**	1	10	0	11	**3**	111	0	114	**440**
08:00	285	14	0	299	**7**	**17**	0	**24**	2	115	0	117	440
Total Volume	1137	70	1	1208	16	49	0	65	8	444	0	452	1725
% App. Total	94.1	5.8	0.1		24.6	75.4	0		1.8	98.2	0		
PHF	.957	.648	.250	.959	.571	.721	.000	.677	.667	.917	.000	.926	.980



Burns Service Inc.

1202 Langdon Terrace Drive
Indian Trail, NC, 28079
We Count because YOU Count

File Name : Matthews(Idlewild and Idlewild Market Access) PM Peak
Site Code :
Start Date : 6/6/2018
Page No : 1

Groups Printed- Cars + - Trucks

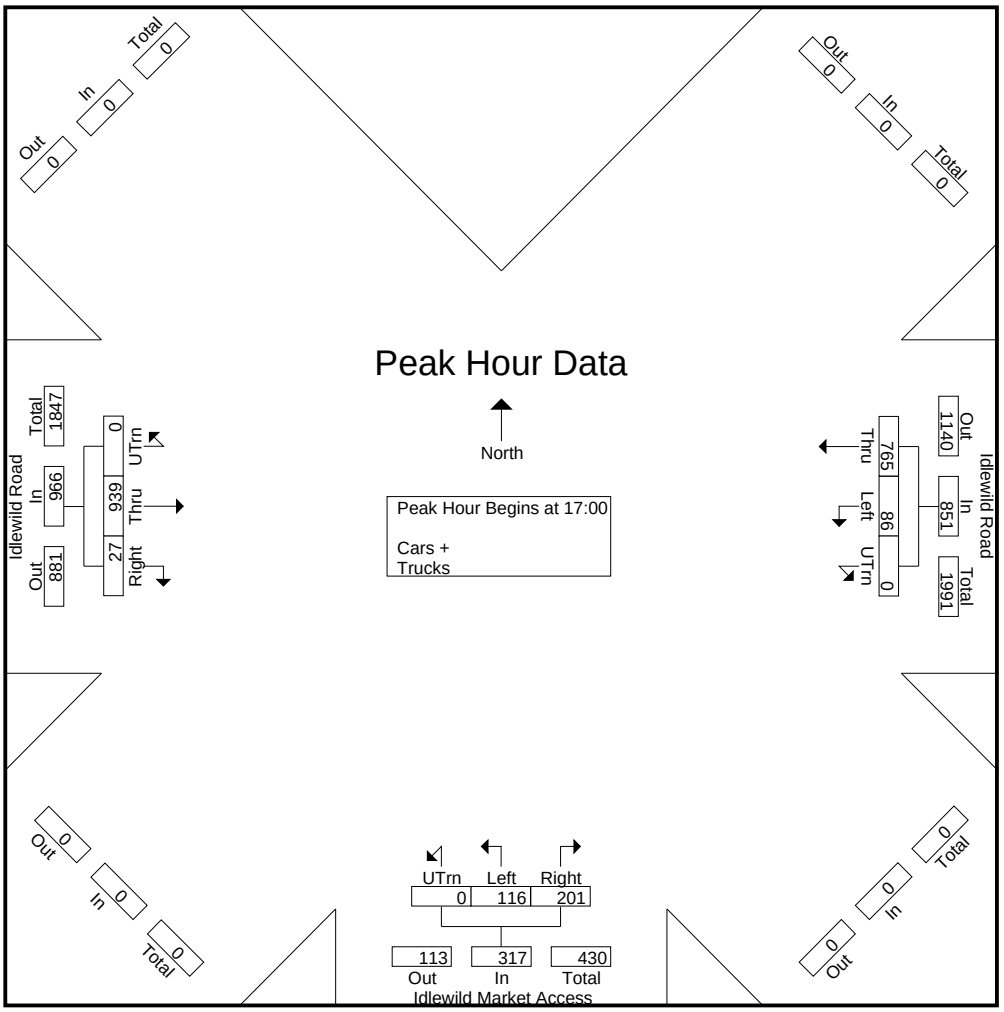
	Idlewild Road Westbound				Idlewild Market Access Northbound				Idlewild Road Eastbound				
Start Time	Thru	Left	UTrn	App. Total	Right	Left	UTrn	App. Total	Right	Thru	UTrn	App. Total	Int. Total
16:00	129	24	0	153	25	13	0	38	4	222	0	226	417
16:15	157	21	0	178	24	19	0	43	0	240	0	240	461
16:30	150	26	0	176	35	25	0	60	7	239	0	246	482
16:45	163	21	0	184	44	22	0	66	11	247	0	258	508
Total	599	92	0	691	128	79	0	207	22	948	0	970	1868
17:00	199	20	0	219	43	31	0	74	10	243	0	253	546
17:15	190	24	0	214	52	38	0	90	5	243	0	248	552
17:30	192	16	0	208	54	20	0	74	8	220	0	228	510
17:45	184	26	0	210	52	27	0	79	4	233	0	237	526
Total	765	86	0	851	201	116	0	317	27	939	0	966	2134
Grand Total	1364	178	0	1542	329	195	0	524	49	1887	0	1936	4002
Apprch %	88.5	11.5	0		62.8	37.2	0		2.5	97.5	0		
Total %	34.1	4.4	0	38.5	8.2	4.9	0	13.1	1.2	47.2	0	48.4	
Cars +	1350	177	0	1527	329	193	0	522	49	1868	0	1917	3966
% Cars +	99	99.4	0	99	100	99	0	99.6	100	99	0	99	99.1
Trucks	14	1	0	15	0	2	0	2	0	19	0	19	36
% Trucks	1	0.6	0	1	0	1	0	0.4	0	1	0	1	0.9

Burns Service Inc.

1202 Langdon Terrace Drive
Indian Trail, NC, 28079
We Count because YOU Count

File Name : Matthews(Idlewild and Idlewild Market Access) PM Peak
Site Code :
Start Date : 6/6/2018
Page No : 2

	Idlewild Road Westbound				Idlewild Market Access Northbound				Idlewild Road Eastbound				
Start Time	Thru	Left	UTrn	App. Total	Right	Left	UTrn	App. Total	Right	Thru	UTrn	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 17:00													
17:00	**199**	20	0	**219**	43	31	0	74	**10**	**243**	0	**253**	546
17:15	190	24	0	214	52	**38**	0	**90**	5	243	0	248	**552**
17:30	192	16	0	208	**54**	20	0	74	8	220	0	228	510
17:45	184	**26**	0	210	52	27	0	79	4	233	0	237	526
Total Volume	765	86	0	851	201	116	0	317	27	939	0	966	2134
% App. Total	89.9	10.1	0		63.4	36.6	0		2.8	97.2	0		
PHF	.961	.827	.000	.971	.931	.763	.000	.881	.675	.966	.000	.955	.966



Burns Service Inc.

1202 Langdon Terrace Drive
Indian Trail, NC, 28079

We Count because YOU Count

File Name : Matthews(Idlewild and Stevens Mill) AM Peak
Site Code :
Start Date : 6/6/2018
Page No : 1

Groups Printed- Cars + - Trucks

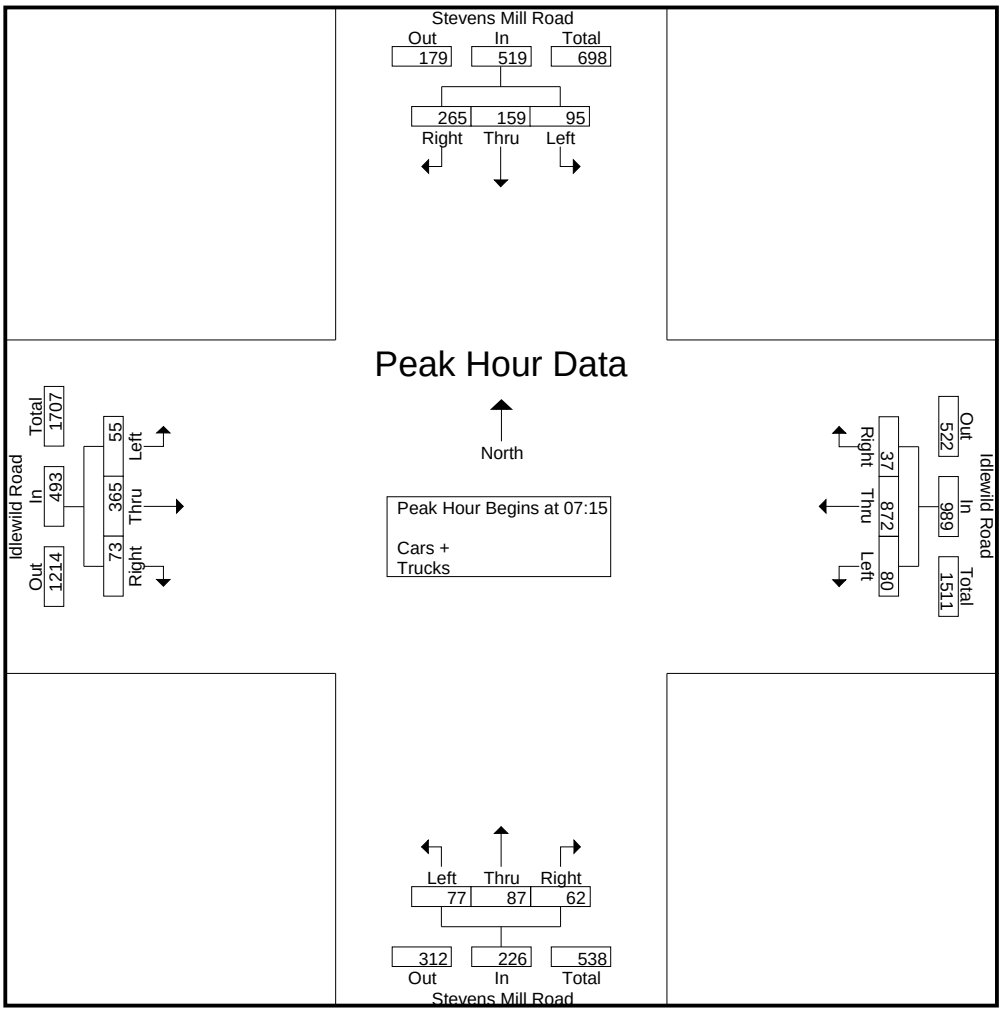
	Stevens Mill Road Southbound				Idlewild Road Westbound				Stevens Mill Road Northbound				Idlewild Road Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
07:00	60	27	32	119	12	225	10	247	15	9	25	49	9	83	8	100	515
07:15	78	44	28	150	9	206	23	238	15	10	24	49	13	99	11	123	560
07:30	70	52	24	146	11	226	22	259	14	27	20	61	22	89	9	120	586
07:45	66	33	24	123	6	212	20	238	17	25	18	60	14	88	15	117	538
Total	274	156	108	538	38	869	75	982	61	71	87	219	58	359	43	460	2199
08:00	51	30	19	100	11	228	15	254	16	25	15	56	24	89	20	133	543
08:15	48	17	16	81	8	209	9	226	13	12	22	47	4	89	15	108	462
08:30	51	23	16	90	14	169	5	188	6	9	22	37	13	99	19	131	446
08:45	45	19	19	83	17	154	16	187	14	6	11	31	14	96	21	131	432
Total	195	89	70	354	50	760	45	855	49	52	70	171	55	373	75	503	1883
Grand Total	469	245	178	892	88	1629	120	1837	110	123	157	390	113	732	118	963	4082
Apprch %	52.6	27.5	20		4.8	88.7	6.5		28.2	31.5	40.3		11.7	76	12.3		
Total %	11.5	6	4.4	21.9	2.2	39.9	2.9	45	2.7	3	3.8	9.6	2.8	17.9	2.9	23.6	
Cars +	469	245	178	892	85	1619	114	1818	106	123	156	385	113	718	118	949	4044
% Cars +	100	100	100	100	96.6	99.4	95	99	96.4	100	99.4	98.7	100	98.1	100	98.5	99.1
Trucks	0	0	0	0	3	10	6	19	4	0	1	5	0	14	0	14	38
% Trucks	0	0	0	0	3.4	0.6	5	1	3.6	0	0.6	1.3	0	1.9	0	1.5	0.9

Burns Service Inc.

1202 Langdon Terrace Drive
Indian Trail, NC, 28079
We Count because YOU Count

File Name : Matthews(Idlewild and Stevens Mill) AM Peak
Site Code :
Start Date : 6/6/2018
Page No : 2

	Stevens Mill Road Southbound				Idlewild Road Westbound				Stevens Mill Road Northbound				Idlewild Road Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15																	
07:15	78	44	28	150	9	206	23	238	15	10	**24**	49	13	**99**	11	123	560
07:30	70	**52**	24	146	**11**	226	22	**259**	14	**27**	20	**61**	22	89	9	120	**586**
07:45	66	33	24	123	6	212	20	238	**17**	25	18	60	14	88	15	117	538
08:00	51	30	19	100	11	**228**	15	254	16	25	15	56	**24**	89	**20**	**133**	543
Total Volume	265	159	95	519	37	872	80	989	62	87	77	226	73	365	55	493	2227
% App. Total	51.1	30.6	18.3		3.7	88.2	8.1		27.4	38.5	34.1		14.8	74	11.2		
PHF	.849	.764	.848	.865	.841	.956	.870	.955	.912	.806	.802	.926	.760	.922	.688	.927	.950



Burns Service Inc.

1202 Langdon Terrace Drive
Indian Trail, NC, 28079

We Count because YOU Count

File Name : Matthews(Idlewild and Stevens Mill) PM Peak
Site Code :
Start Date : 6/6/2018
Page No : 1

Groups Printed- Cars + - Trucks

	Stevens Mill Road Southbound				Idlewild Road Westbound				Stevens Mill Road Northbound				Idlewild Road Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
16:00	23	17	21	61	24	125	17	166	17	27	24	68	21	197	49	267	562
16:15	26	26	16	68	27	148	16	191	17	22	17	56	21	199	47	267	582
16:30	30	16	17	63	28	119	5	152	27	25	26	78	20	226	54	300	593
16:45	22	20	18	60	32	160	10	202	22	28	22	72	23	225	61	309	643
Total	101	79	72	252	111	552	48	711	83	102	89	274	85	847	211	1143	2380
17:00	41	24	16	81	36	154	9	199	23	32	22	77	22	216	50	288	645
17:15	44	18	19	81	15	174	13	202	27	33	24	84	25	224	43	292	659
17:30	42	20	16	78	35	158	10	203	26	29	14	69	24	200	54	278	628
17:45	45	26	18	89	35	169	9	213	22	30	22	74	17	223	62	302	678
Total	172	88	69	329	121	655	41	817	98	124	82	304	88	863	209	1160	2610
Grand Total	273	167	141	581	232	1207	89	1528	181	226	171	578	173	1710	420	2303	4990
Apprch %	47	28.7	24.3		15.2	79	5.8		31.3	39.1	29.6		7.5	74.3	18.2		
Total %	5.5	3.3	2.8	11.6	4.6	24.2	1.8	30.6	3.6	4.5	3.4	11.6	3.5	34.3	8.4	46.2	
Cars +	273	163	141	577	232	1193	88	1513	180	226	170	576	173	1696	420	2289	4955
% Cars +	100	97.6	100	99.3	100	98.8	98.9	99	99.4	100	99.4	99.7	100	99.2	100	99.4	99.3
Trucks	0	4	0	4	0	14	1	15	1	0	1	2	0	14	0	14	35
% Trucks	0	2.4	0	0.7	0	1.2	1.1	1	0.6	0	0.6	0.3	0	0.8	0	0.6	0.7

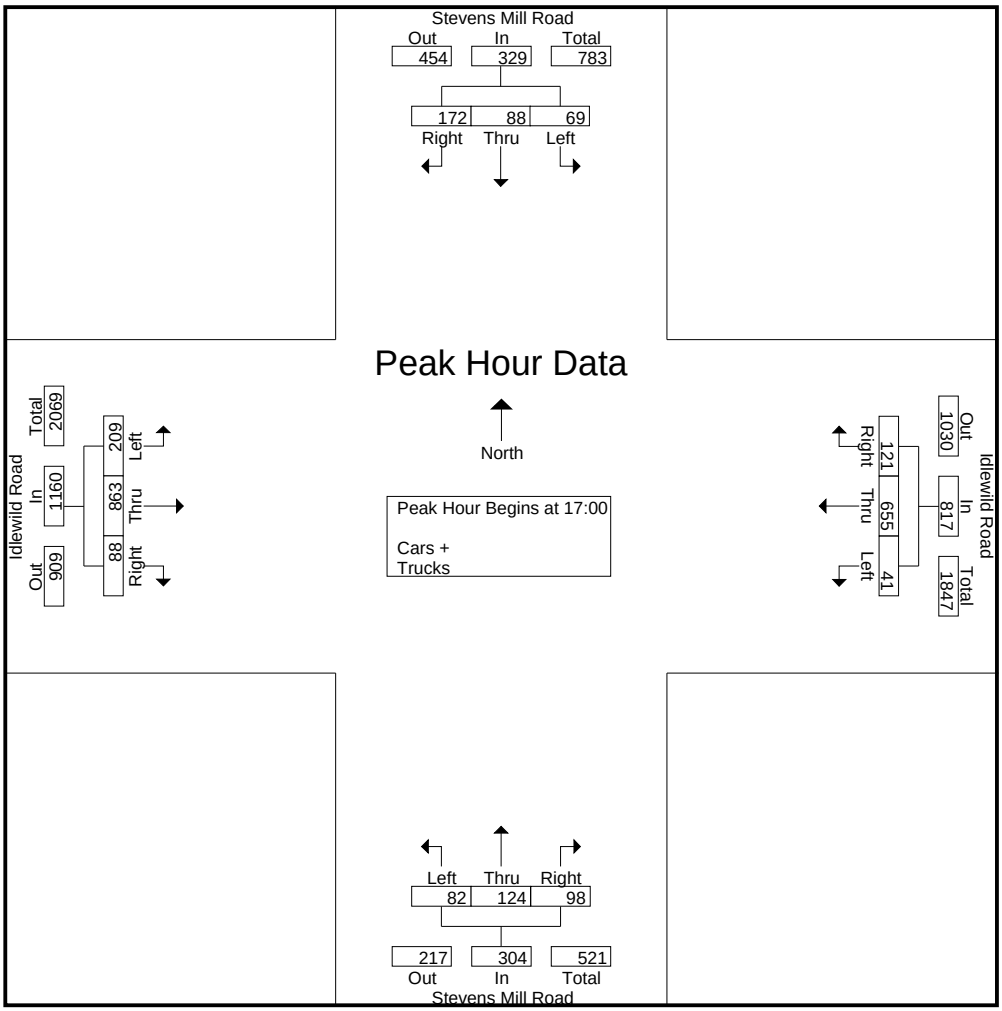
Burns Service Inc.

1202 Langdon Terrace Drive
Indian Trail, NC, 28079

We Count because YOU Count

File Name : Matthews(Idlewild and Stevens Mill) PM Peak
Site Code :
Start Date : 6/6/2018
Page No : 2

	Stevens Mill Road Southbound				Idlewild Road Westbound				Stevens Mill Road Northbound				Idlewild Road Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:00																	
17:00	**41**	**24**	**16**	**81**	36	154	9	199	23	32	22	77	22	216	50	288	645
17:15	44	18	19	81	15	174	13	202	**27**	**33**	**24**	**84**	**25**	**224**	43	292	659
17:30	42	20	16	78	35	158	10	203	26	29	14	69	24	200	54	278	628
17:45	**45**	**26**	18	**89**	35	169	9	**213**	22	30	22	74	17	223	**62**	**302**	**678**
Total Volume	172	88	69	329	121	655	41	817	98	124	82	304	88	863	209	1160	2610
% App. Total	52.3	26.7	21		14.8	80.2	5		32.2	40.8	27		7.6	74.4	18		
PHF	.956	.846	.908	.924	.840	.941	.788	.959	.907	.939	.854	.905	.880	.963	.843	.960	.962

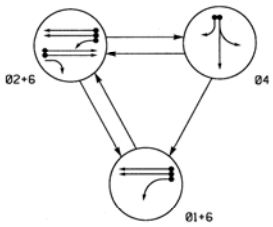


APPENDIX C

SIGNAL DATA

PROJECT REFERENCE NO.	SHEET NO.
N/A	Sig. 2

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø1+6	PHASE Ø2+6	PHASE Ø4	PHASE FLASH
11	←	↓	↓	↓
21,22	R	G	R	Y
41,42	R	R	G	R
61,62	G	G	R	Y

↓ = Flashing Yellow Arrow

STANDARD SIGNAL FACE CLEARANCES FOR FLASHING LEFT TURN SIGNAL

FROM	TO ← (1)	TO ↓ (1)	TO ↓ (2)	TO ↑ (1)	TO ↑ (2)	TO →
←	←	↓	↓	↑	↑	→
↓	↓	↓	↓	↑	↑	→
→	→	→	→	→	→	→

↓ = Flashing Yellow Arrow

SIGNAL FACE I.D.

All Heads L.E.D.

11 21, 22 41, 42 61, 62

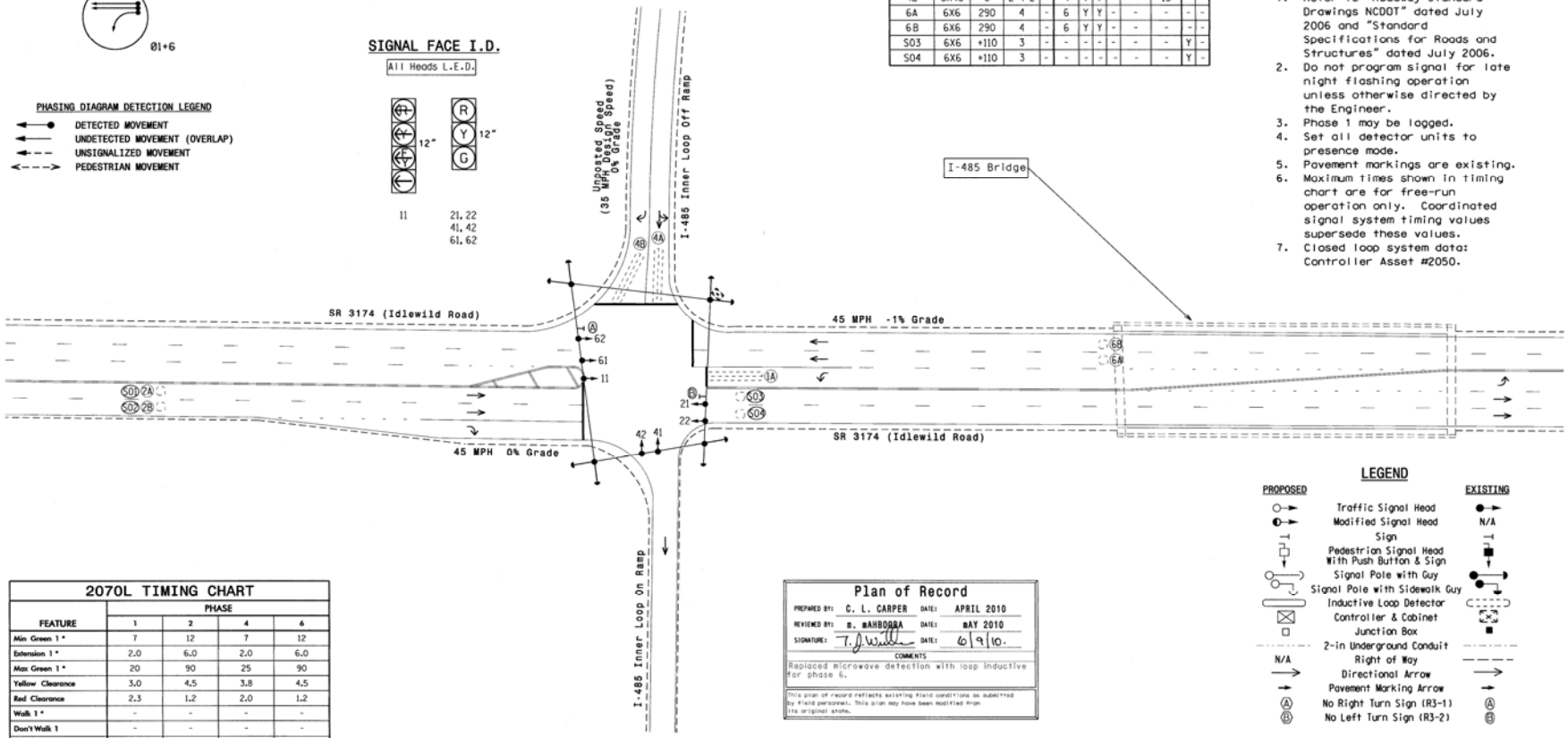
2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS: LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING: PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X40	0	2-4-2	-	1	Y	Y	-	-	15	-	-
					6	Y	Y	Y	-	3	-	-
2A/S01	6X6	300	5	-	2	Y	Y	-	-	-	Y	-
2B/S02	6X6	300	5	-	2	Y	Y	-	-	-	Y	-
4A	6X40	0	2-4-2	-	4	Y	Y	-	-	-	-	-
4B	6X40	0	2-4-2	-	4	Y	Y	-	-	15	-	-
6A	6X6	290	4	-	6	Y	Y	-	-	-	-	-
6B	6X6	290	4	-	6	Y	Y	-	-	-	-	-
S03	6X6	+110	3	-	-	-	-	-	-	-	Y	-
S04	6X6	+110	3	-	-	-	-	-	-	-	Y	-

3 Phase
Fully Actuated
SR 3174/1501 (Idlewild Road) CLS

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 may be lagged.
4. Set all detector units to presence mode.
5. Pavement markings are existing.
6. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
7. Closed loop system data: Controller Asset #2050.



2070L TIMING CHART

FEATURE	PHASE 1	PHASE 2	PHASE 4	PHASE 6
Min Green 1 *	7	12	7	12
Extension 1 *	2.0	6.0	2.0	6.0
Max Green 1 *	20	90	25	90
Yellow Clearance	3.0	4.5	3.8	4.5
Red Clearance	2.3	1.2	2.0	1.2
Walk 1 *	-	-	-	-
Don't Walk 1	-	-	-	-
Seconds Per Actuation *	-	1.5 ▽	-	1.5
Max Variable Initial *	-	34	-	33
Time Before Reduction *	-	15	-	15
Time To Reduce *	-	30	-	2.0
Minimum Gap	-	3.0	-	3.0
Recall Mode	-	MIN RECALL	-	MIN RECALL
Vehicle Call Memory	-	YELLOW	-	YELLOW
Dual Entry	-	-	-	-
Simultaneous Gap	ON	ON	ON	ON

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

Plan of Record

PREPARED BY:	C. L. CARPER	DATE:	APRIL 2010
REVIEWED BY:	M. MAHBOOBA	DATE:	MAY 2010
SIGNATURE:	T. J. Williams	DATE:	6/9/10.

COMMENTS

Replaced microwave detection with loop inductive for phase 6.

This plan of record reflects existing field conditions as submitted by field personnel. This plan may have been modified from its original state.

LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	Pedestrian Signal Head With Push Button & Sign	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
	Inductive Loop Detector	
	Controller & Cabinet	
	Junction Box	
	2-in Underground Conduit	
N/A	Right of Way	
	Directional Arrow	
	Pavement Marking Arrow	
Ⓐ	No Right Turn Sign (R3-1)	Ⓐ
Ⓑ	No Left Turn Sign (R3-2)	Ⓑ

Plan of Record

REVISION ▽ SEAL

NORTH CAROLINA PROFESSIONAL SEAL 24393 ENGINEER TIMOTHY J. WILLIAMS

T. J. Williams 6/9/10.
SIGNATURE DATE

Prepared in the Offices of:
Transportation Mobility and Safety Division
Traffic Engineering Branch
Signal Design Section
750 N.Greenfield Pkwy,Garner,NC 27529

SCALE 0 40 1"=40'

SR 3174 (Idlewild Road) at I-485 Inner Loop Ramps

Division 10 Mecklenburg County Stallings

PLAN DATE:	February 2009	REVIEWED BY:	M.Mahbooba
PREPARED BY:	MKM	REVIEWED BY:	

REVISIONS	INIT.	DATE
▽ Revise flash display for head # 11 & Volume density timing for phase 2	TJW	6/9/10.

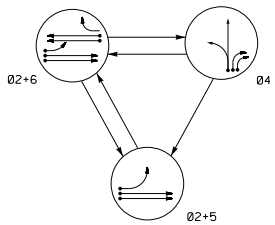
Not a certified document. This document originally Issued and sealed by Zachary M.Little,PE No.30530 on 4/16/2009. This document shall not be considered a certified document.

SIG. INVENTORY NO. 10-2050

05-JUN-2010 11:27
T:\NTS_Signals\Signal Design Section\Western Regional\U-1040\U-2050\4102050sor_sig_dsn_2010xxx.dgn
TJWILLIAMS

PROJECT REFERENCE NO.	SHEET NO.
POR	Sig. 1

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø2+5	PHASE Ø2+6	PHASE Ø4	FLASH
21,22	G	G	R	Y
41,42,43	R	R	G	R
43	R	R	G	R
51	~~←~~	~~↓~~	~~R~~	~~Y~~
61, 62	R	G	R	Y

SIGNAL FACE I.D.

All Heads L.E.D.

OASIS 2070L LOOP & DETECTOR INSTALLATION

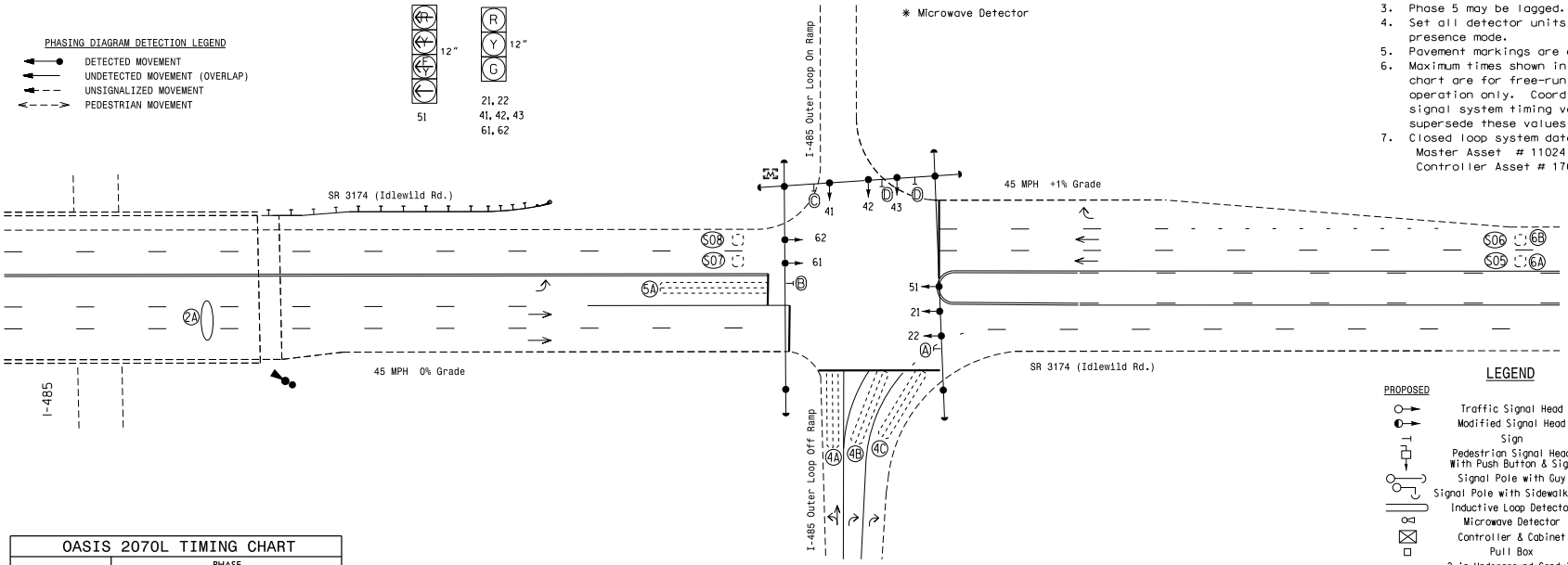
INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A	✱	300	✱	-	2	Y	Y	-	-	-	-	-
4A	6X40	0	2-4-2	-	4	Y	Y	-	-	-	-	-
4B	6X40	0	2-4-2	-	4	Y	Y	-	-	15	-	-
4C	6X40	0	2-4-2	-	4	Y	Y	-	-	15	-	-
5A	6X60	0	2-4-2	-	5	Y	Y	-	-	15	-	-
					2	Y	Y	Y	-	3	-	-
6A/SO5	6X6	300	4	-	6	Y	Y	-	-	-	Y	-
6B/SO6	6X6	300	4	-	6	Y	Y	-	-	-	Y	-
SO7	6X6	+75	3	-	-	-	-	-	-	-	Y	-
SO8	6X6	+75	3	-	-	-	-	-	-	-	Y	-

✱ Microwave Detector

3 Phase
Fully Actuated
SR 3174/1501 (Idlewild Rd.) CLS

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 5 may be lagged.
4. Set all detector units to presence mode.
5. Pavement markings are existing.
6. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
7. Closed loop system data: Master Asset # 11024. Controller Asset # 1768.



LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	Pedestrian Signal Head With Push Button & Sign	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
	Inductive Loop Detector	
	Microwave Detector	
	Controller & Cabinet	
	Pull Box	
	2-in Underground Conduit	
	Right of Way with Marker	
	Directional Arrow	
	Pavement Marking Arrow	
M	Master Controller & Cabinet	M
	Microwave Detection Zone	
A	No Right Turn Sign (R3-1)	A
B	No Left Turn Sign (R3-2)	B
C	Combined Through and Left Arrow Sign (R3-6L)	C
D	Right Arrow "ONLY" Sign (R3-5R)	D

OASIS 2070L TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 5	PHASE 6
Min Green 1 *	12	7	7	12
Extension 1 *	6.0	1.0	1.0	6.0
Max Green 1 *	90	25	25	90
Yellow Clearance	4.5	3.7	3.0	4.5
Red Clearance	1.2	1.6	2.4	1.2
Walk 1 *	-	-	-	-
Don't Walk 1	-	-	-	-
Seconds Per Actuation *	2.0	-	-	1.5
Max Variable Initial *	34	-	-	34
Time Before Reduction *	15	-	-	15
Time To Reduction *	30	-	-	30
Minimum Gap	3.0	-	-	3.0
Recall Mode	MIN RECALL	-	-	MIN RECALL
Vehicle Call Memory	YELLOW	-	-	YELLOW
Dual Entry	-	-	-	-
Simultaneous Gap	ON	ON	ON	ON

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

Plan of Record

PREPARED BY: C. Pierce DATE: August 2017
REVIEWED BY: T. J. Williams DATE: August 2017
SIGNATURE: T. J. Williams DATE: 8/23/2017
ENTS
Added a second right turn lane on the ramp.

This plan of record reflects existing field conditions as submitted by field personnel. This plan may have been modified from its original state.

Plan of Record

Prepared in the Offices of:
Transportation Mobility and Safety Division
Traffic Design Section
750 N.Greenfield Pkwy,Garner,NC 27529

SR 3174 (Idlewild Rd.)
at
I-485 Outer Loop Ramps

Division 10 Mecklenburg County Stallings

PLAN DATE: February 2009 REVIEWED BY: N. Mahbooba
PREPARED BY: MKM REVIEWED BY:

SCALE 0 30 1":30'

REVISIONS	INIT.	DATE

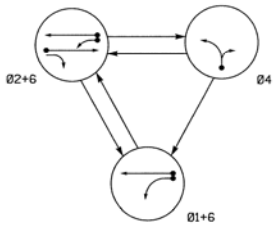
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Not a certified document. This document originally issued and sealed by Zachary M. Little, # 305330 on 04/16/09 This document shall not be considered a certified document.

SIG. INVENTORY NO. 10-1768

PROJECT REFERENCE NO.	SHEET NO.
SF-5110A	Sig.8

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø1+6	PHASE Ø2+6	PHASE Ø4	PHASE FLASH
11	←	↓	↓	↓
21,22	R	G	R	Y
41,42	R	R	G	R
61,62	G	G	R	Y

↓ = Flashing Yellow Arrow

STANDARD SIGNAL FACE CLEARANCES FOR FLASHING LEFT TURN SIGNAL

		TO ← 1	TO ↓ 2	TO ↓ 1	TO ↓ 2	TO ↑ 1	TO ↑ 2
FROM ←		←	←	↓	↓	↓	↓
FROM ↓		↓	↓	↓	↓	↓	↓
FROM ↓		↓	↓	↓	↓	↓	↓
FROM ↑		↓	↓	↓	↓	↓	↓
FROM ↑		↓	↓	↓	↓	↓	↓
FROM ↑		↓	↓	↓	↓	↓	↓
FROM ↑		↓	↓	↓	↓	↓	↓

↓ = Flashing Yellow Arrow

2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS: LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING: PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X60	0	2-4-2	-	1	Y	Y	-	-	15	-	-
					6	Y	Y	Y	-	3	-	-
2A/S07	6X6	300	5	-	2	Y	Y	-	-	-	Y	-
4A	6X60	0	2-4-2	-	4	Y	Y	-	-	3	-	-
4B	6X6	0	3	-	4	Y	Y	-	-	10	-	-
6A/S08	6X6	300	5	-	6	Y	Y	-	-	-	Y	-

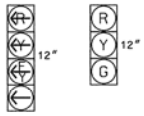
3 Phase
Fully Actuatted
SR 3174/1501 (Idlewild Rd) CLS

NOTES

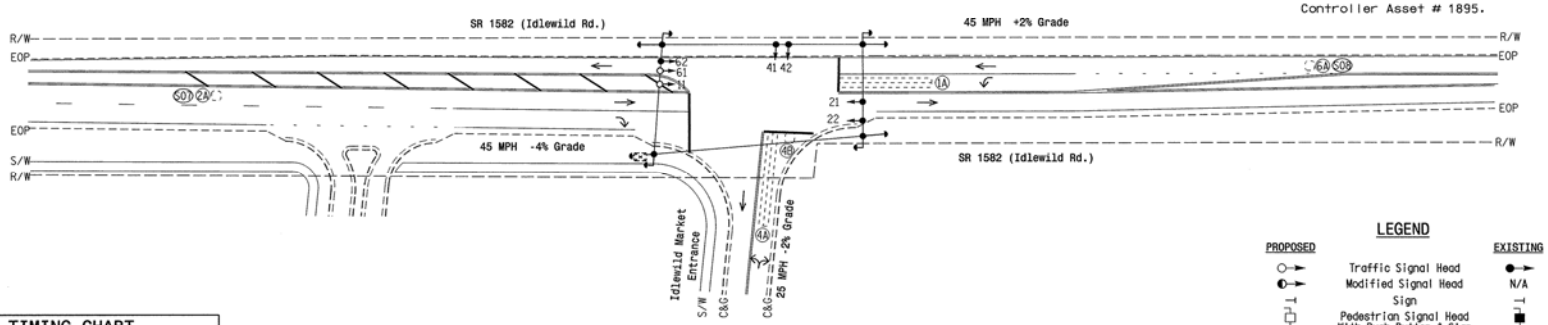
1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 may be lagged.
4. Reposition signal head numbered 62.
5. Set all detector units to presence mode.
6. Pavement markings are existing.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
8. Closed loop system data: Controller Asset # 1895.

SIGNAL FACE I.D.

All Heads L.E.D.



11 — 21, 22 / 41, 42 / 61, 62



LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	Pedestrian Signal Head With Push Button & Sign	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
	Inductive Loop Detector	
	Controller & Cabinet	
	Junction Box	
	2-in Underground Conduit	
N/A	Right of Way	
	Directional Arrow	
	Pavement Marking Arrow	

2070L TIMING CHART

FEATURE	PHASE 1	PHASE 2	PHASE 4	PHASE 6
Min Green 1 *	7	12	7	12
Extension 1 *	1.0	6.0	1.0	6.0
Max Green 1 *	15	90	25	90
Yellow Clearance	3.0	4.9	3.0	4.9
Red Clearance	2.3	1.3	1.9	1.3
Walk 1 *	-	-	-	-
Don't Walk 1	-	-	-	-
Seconds Per Actuation *	-	2.5	-	2.5
Max Variable Initial *	-	34	-	34
Time Before Reduction *	-	15	-	15
Time To Reduce *	-	30	-	30
Minimum Gap	-	3.0	-	3.0
Recall Mode	-	MIN RECALL	-	MIN RECALL
Vehicle Call Memory	-	YELLOW	-	YELLOW
Dual Entry	-	-	-	-
Simultaneous Gap	ON	ON	ON	ON

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

Signal Upgrade Corr. File No. 10-08-208

Prepared In the Offices of:
Transportation Mobility and Safety Division
Traffic Engineering Branch
Signal Design Section
750 N.Greenfield Pkwy,Garner,NC 27529

SCALE 0 40 1"=40'

SR 1501 (Idlewild Road)
at
Idlewild Market Entrance

Division 10 Union County Stallings

PLAN DATE:	February 2009	REVIEWED BY:	M.Wahbooba
PREPARED BY:	WKW	REVIEWED BY:	

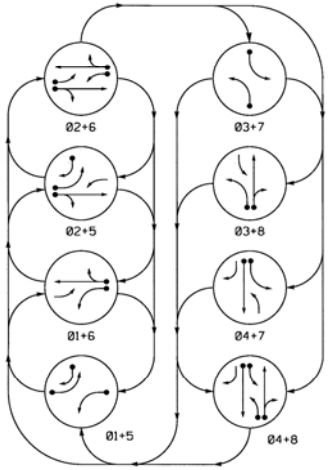
REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 30530 ENGINEER ZACHARY M. LITTLE
SIGNATURE DATE
ENG. INVENTORY NO. 10-1895

15-APR-2009 11:25
c:\pwworking\ctb\d1603\d1603 design section\western region\si-1ldwild rd\10-1895\10195_sig_dsn_2009mod5.dgn
mwbooba

PROJECT REFERENCE NO.	SHEET NO.
SS-4910BE	Sig. 1

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE 01+5	02+6	02+5	02+6	03+7	04+7	04+8	FLASH
11	-	-	F/Y	F/Y	R	R	R	Y
21, 22	R	R	G	G	R	R	R	Y
31	R	R	R	R	-	-	F/Y	R
41	R	R	R	R	R	R	G	R
42	R/Y	R	R/Y	R	R	R	G	R
51	-	F/Y	-	F/Y	R	R	R	Y
61, 62	R	G	R	G	R	R	R	Y
71	R	R	R	R	-	F/Y	-	R
81, 82	R	R	R	R	R	G	R	G

SIGNAL FACE I.D.

All Heads L.E.D.

11, 31, 51, 71 — 21, 22, 41, 61, 62, 81, 82 — 42

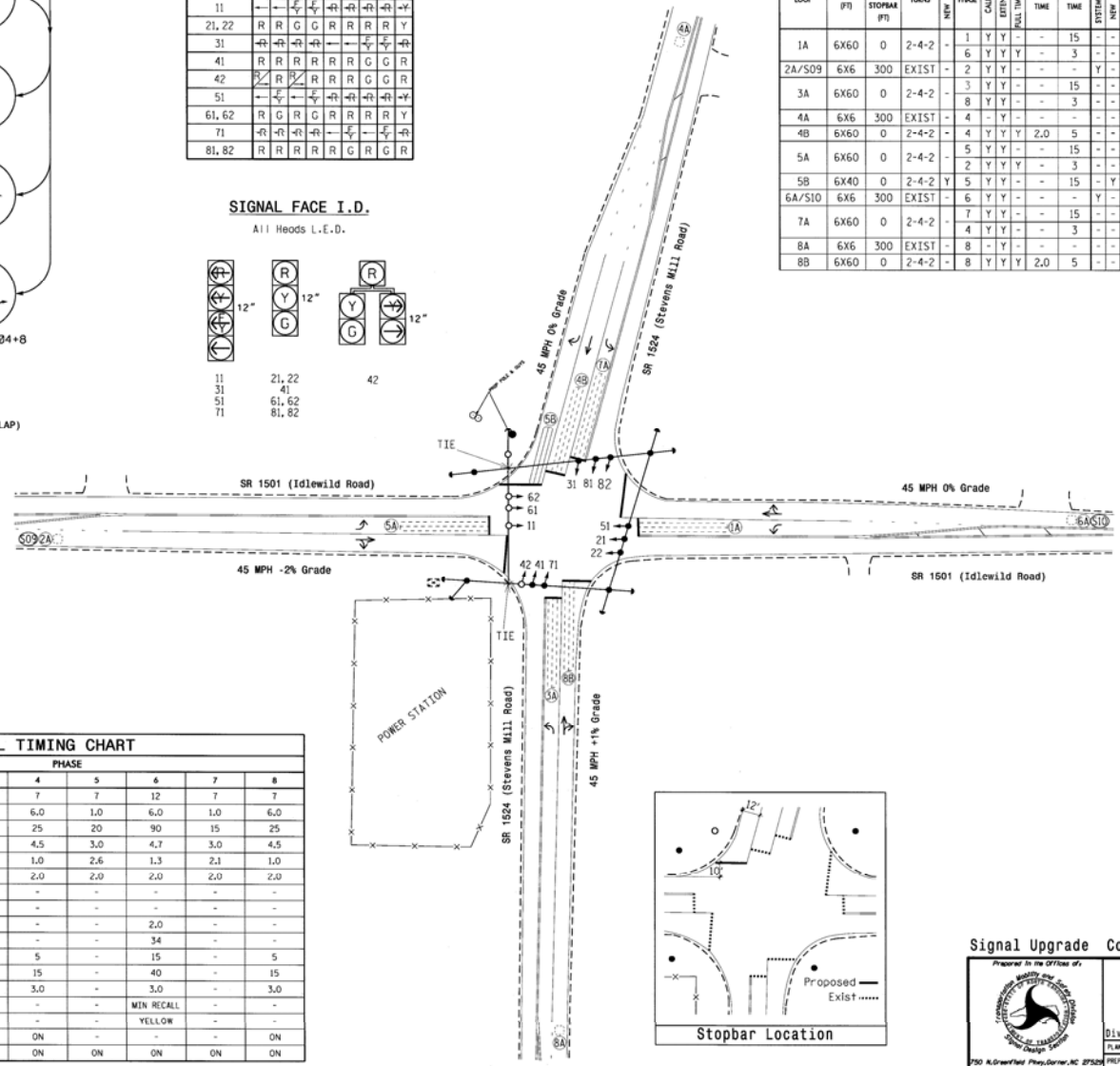
OASIS 2070L LOOP & DETECTOR INSTALLATION CHART

INDUCTIVE LOOPS					DETECTOR PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	PULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X60	0	2-4-2	-	1	Y	Y	-	-	15	-	-
					6	Y	Y	Y	-	3	-	-
2A/S09	6X6	300	EXIST	-	2	Y	Y	-	-	-	Y	-
3A	6X60	0	2-4-2	-	3	Y	Y	-	-	15	-	-
					8	Y	Y	-	-	3	-	-
4A	6X6	300	EXIST	-	4	-	Y	-	-	-	-	-
4B	6X60	0	2-4-2	-	4	Y	Y	Y	2.0	5	-	-
5A	6X60	0	2-4-2	-	5	Y	Y	-	-	15	-	-
					2	Y	Y	Y	-	3	-	-
5B	6X40	0	2-4-2	Y	5	Y	Y	-	-	15	-	Y
6A/S10	6X6	300	EXIST	-	6	Y	Y	-	-	-	Y	-
7A	6X60	0	2-4-2	-	7	Y	Y	-	-	15	-	-
					4	Y	Y	-	-	3	-	-
8A	6X6	300	EXIST	-	8	-	Y	-	-	-	-	-
8B	6X60	0	2-4-2	-	8	Y	Y	Y	2.0	5	-	-

8 Phase
Fully Actuated
SR 3174/1501 (Idlewild Rd.) CLS

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Phase 3 and/or phase 7 may be lagged.
5. Set all detector units to presence mode.
6. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
7. Closed loop system data: Controller Asset # 1367.



OASIS 2070L TIMING CHART

FEATURE	PHASE 1	2	3	4	5	6	7	8
Min Green 1 *	7	12	7	7	7	12	7	7
Extension 1 *	1.0	6.0	1.0	6.0	1.0	6.0	1.0	6.0
Max Green 1 *	15	90	20	25	20	90	15	25
Yellow Clearance	3.0	4.7	3.0	4.5	3.0	4.7	3.0	4.5
Red Clearance	2.8	1.3	2.3	1.0	2.6	1.3	2.1	1.0
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Walk 1 *	-	-	-	-	-	-	-	-
Don't Walk 1	-	-	-	-	-	-	-	-
Seconds Per Actuation *	-	2.0	-	-	-	2.0	-	-
Max Variable Initial *	-	34	-	-	-	34	-	-
Time Before Reduction *	-	15	-	5	-	15	-	5
Time To Reduce *	-	40	-	15	-	40	-	15
Minimum Gap	-	3.0	-	3.0	-	3.0	-	3.0
Recall Mode	-	MIN RECALL	-	-	-	MIN RECALL	-	-
Vehicle Call Memory	-	YELLOW	-	-	-	YELLOW	-	-
Dual Entry	-	-	-	ON	-	-	-	ON
Simultaneous Gap	ON	ON	ON	ON	ON	ON	ON	ON

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

Stopbar Location

LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	Pedestrian Signal Head With Push Button & Sign	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
	Inductive Loop Detector	
	Controller & Cabinet	
	Junction Box	
	2-in Underground Conduit	
N/A	Right of Way	
	Directional Arrow	
N/A	Fence	

Signal Upgrade Corr. File No. 10-11-201

Prepared in the Offices of:
Transportation Mobility & Safety Division
Traffic Engineering Branch
Signal Design Section
750 N.Greenfield Pkwy,Garner,NC 27529

SR 1501 (Idlewild Road)
at
SR 1524 (Stevens Mill Road)

Division 10 Union County Stallings

PLAN DATE:	December 2012	REVIEWED BY:	M. Mahbooba
PREPARED BY:	N. D'Aiuto	REVIEWED BY:	

SCALE 0 40 1"=40'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 24393 ENGINEER TIMOTHY W. WILLIAMS

SIGNATURE 1/8/13 DATE

SIG. INVENTORY NO. 10-1367

07-JAN-2013 12:06
S:\ws\TSSG\SHETS\Signals\Signal Design Sections\Eastern Regional\U-1949in3826\U3826_sig_dsn_2012mod1.dgn

APPENDIX D

IDLEWILD ROAD AND MATTHEWS-MINT HILL ROAD

SIDRA REPORTS

MOVEMENT SUMMARY

Site: 2018 Existing AM

Idlewild Road and Matthews-Mint Hill Road
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Matthews-Mint Hill Road											
3u	U	11	0.0	0.190	14.3	LOS B	1.1	27.0	0.53	0.65	36.4
3	L2	87	2.6	0.190	11.9	LOS B	1.1	27.0	0.53	0.65	35.3
8	T1	211	2.1	0.190	5.4	LOS A	1.1	27.6	0.53	0.59	36.0
18	R2	80	1.4	0.190	5.5	LOS A	1.1	27.6	0.52	0.55	35.3
Approach		389	2.0	0.190	7.1	LOS A	1.1	27.6	0.53	0.60	35.7
East: Idlewild Road											
1u	U	6	0.0	0.852	19.7	LOS C	12.5	318.5	0.92	1.01	34.4
1	L2	350	1.9	0.852	17.3	LOS C	12.5	318.5	0.92	1.01	33.5
6	T1	519	1.9	0.852	11.0	LOS B	12.5	318.5	0.92	1.01	33.2
16	R2	174	1.9	0.317	7.7	LOS A	1.5	36.9	0.58	0.74	34.9
Approach		1049	1.9	0.852	12.6	LOS B	12.5	318.5	0.86	0.97	33.6
North: Matthews-Mint Hill Road											
7u	U	2	0.0	0.930	56.9	LOS F	15.8	401.1	1.00	1.50	22.2
7	L2	121	1.8	0.930	54.5	LOS F	15.8	401.1	1.00	1.50	21.8
4	T1	643	2.1	0.930	46.4	LOS E	18.2	461.7	1.00	1.53	22.3
14	R2	80	1.4	0.930	45.3	LOS E	18.2	461.7	1.00	1.54	22.1
Approach		847	2.0	0.930	47.5	LOS E	18.2	461.7	1.00	1.53	22.2
West: Idlewild Road											
5u	U	1	0.0	0.366	16.4	LOS C	1.9	48.5	0.76	0.79	36.4
5	L2	39	2.9	0.366	14.0	LOS B	1.9	48.5	0.76	0.79	35.4
2	T1	186	1.8	0.366	7.6	LOS A	1.9	48.5	0.76	0.79	35.2
12	R2	88	2.5	0.207	8.9	LOS A	0.9	22.0	0.71	0.84	34.3
Approach		313	2.1	0.366	8.8	LOS A	1.9	48.5	0.75	0.81	34.9
All Vehicles		2598	2.0	0.930	22.7	LOS C	18.2	461.7	0.84	1.07	29.1

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 2020 No-Build AM

Idlewild Road and Matthews-Mint Hill Road
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Matthews-Mint Hill Road											
3u	U	11	0.0	0.195	14.4	LOS B	1.1	27.7	0.54	0.65	36.4
3	L2	89	2.5	0.195	11.9	LOS B	1.1	27.7	0.54	0.65	35.3
8	T1	216	2.1	0.195	5.4	LOS A	1.1	28.4	0.53	0.59	36.0
18	R2	81	1.4	0.195	5.5	LOS A	1.1	28.4	0.53	0.55	35.3
Approach		397	2.0	0.195	7.1	LOS A	1.1	28.4	0.53	0.60	35.7
East: Idlewild Road											
1u	U	6	0.0	0.874	20.8	LOS C	13.9	353.3	0.96	1.07	33.8
1	L2	357	1.9	0.874	18.4	LOS C	13.9	353.3	0.96	1.07	33.0
6	T1	529	2.1	0.874	12.0	LOS B	13.9	353.3	0.96	1.07	32.7
16	R2	178	1.9	0.325	7.8	LOS A	1.5	38.0	0.59	0.75	34.9
Approach		1069	2.0	0.874	13.5	LOS B	13.9	353.3	0.89	1.01	33.1
North: Matthews-Mint Hill Road											
7u	U	2	0.0	0.978	68.6	LOS F	18.7	475.1	1.00	1.61	20.0
7	L2	121	1.8	0.978	66.3	LOS F	18.7	475.1	1.00	1.61	19.6
4	T1	643	2.1	0.978	58.1	LOS F	21.8	552.6	1.00	1.64	20.0
14	R2	80	1.4	0.978	57.0	LOS F	21.8	552.6	1.00	1.67	19.9
Approach		847	2.0	0.978	59.2	LOS F	21.8	552.6	1.00	1.64	19.9
West: Idlewild Road											
5u	U	1	0.0	0.375	16.5	LOS C	2.0	50.1	0.77	0.80	36.4
5	L2	40	2.8	0.375	14.1	LOS B	2.0	50.1	0.77	0.80	35.4
2	T1	189	1.8	0.375	7.7	LOS A	2.0	50.1	0.77	0.80	35.1
12	R2	90	2.5	0.213	8.9	LOS A	0.9	22.7	0.72	0.84	34.2
Approach		320	2.1	0.375	8.9	LOS A	2.0	50.1	0.75	0.82	34.9
All Vehicles		2632	2.0	0.978	26.7	LOS D	21.8	552.6	0.86	1.13	27.7

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 2020 Build AM

Idlewild Road and Matthews-Mint Hill Road
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Matthews-Mint Hill Road											
3u	U	11	0.0	0.209	14.6	LOS B	1.2	30.4	0.57	0.67	36.3
3	L2	89	2.5	0.209	12.1	LOS B	1.2	30.4	0.57	0.67	35.2
8	T1	216	2.1	0.209	5.7	LOS A	1.2	31.3	0.57	0.62	35.9
18	R2	94	2.4	0.209	5.8	LOS A	1.2	31.3	0.56	0.58	35.2
Approach		410	2.2	0.209	7.3	LOS A	1.2	31.3	0.57	0.62	35.6
East: Idlewild Road											
1u	U	6	0.0	0.926	24.2	LOS C	18.6	472.8	1.00	1.18	32.3
1	L2	370	2.1	0.926	21.8	LOS C	18.6	472.8	1.00	1.18	31.5
6	T1	569	2.0	0.926	15.4	LOS C	18.6	472.8	1.00	1.18	31.3
16	R2	191	1.7	0.350	7.9	LOS A	1.7	41.8	0.60	0.76	34.8
Approach		1136	2.0	0.926	16.3	LOS C	18.6	472.8	0.93	1.11	31.9
North: Matthews-Mint Hill Road											
7u	U	2	0.0	1.120	115.7	LOS F	29.5	748.1	1.00	1.96	14.2
7	L2	134	1.7	1.120	113.3	LOS F	29.5	748.1	1.00	1.96	14.0
4	T1	643	2.1	1.120	105.1	LOS F	35.1	890.7	1.00	2.04	14.2
14	R2	80	1.4	1.120	104.0	LOS F	35.1	890.7	1.00	2.08	14.1
Approach		860	1.9	1.120	106.3	LOS F	35.1	890.7	1.00	2.03	14.1
West: Idlewild Road											
5u	U	1	0.0	0.421	16.7	LOS C	2.3	58.6	0.77	0.83	36.5
5	L2	40	2.8	0.421	14.3	LOS B	2.3	58.6	0.77	0.83	35.4
2	T1	228	2.0	0.421	7.9	LOS A	2.3	58.6	0.77	0.83	35.2
12	R2	90	2.5	0.218	9.2	LOS A	0.9	22.7	0.70	0.84	34.1
Approach		359	2.2	0.421	9.0	LOS A	2.3	58.6	0.75	0.83	35.0
All Vehicles		2764	2.0	1.120	42.0	LOS E	35.1	890.7	0.88	1.29	23.4

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

Site: 2020 No-Build Improved AM

Idlewild Road and Matthews-Mint Hill Road
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Matthews-Mint Hill Road											
3u	U	11	0.0	0.155	14.3	LOS B	0.8	21.5	0.52	0.67	36.0
3	L2	89	2.5	0.155	11.8	LOS B	0.8	21.5	0.52	0.67	34.9
8	T1	216	2.1	0.155	5.3	LOS A	0.9	22.0	0.52	0.55	36.2
18	R2	81	1.4	0.096	6.2	LOS A	0.5	12.2	0.51	0.60	35.4
Approach		397	2.0	0.155	7.2	LOS A	0.9	22.0	0.52	0.59	35.7
East: Idlewild Road											
1u	U	6	0.0	0.872	20.5	LOS C	13.5	342.5	0.94	1.06	34.0
1	L2	357	1.9	0.872	18.1	LOS C	13.5	342.5	0.94	1.06	33.1
6	T1	529	2.1	0.872	11.7	LOS B	13.5	342.5	0.94	1.06	32.9
16	R2	178	1.9	0.325	7.8	LOS A	1.5	37.5	0.59	0.75	34.9
Approach		1069	2.0	0.872	13.2	LOS B	13.5	342.5	0.88	1.01	33.3
North: Matthews-Mint Hill Road											
7u	U	2	0.0	0.875	49.0	LOS E	12.6	319.3	1.00	1.39	24.0
7	L2	121	1.8	0.875	46.7	LOS E	12.6	319.3	1.00	1.39	23.5
4	T1	643	2.1	0.875	38.5	LOS E	14.4	365.5	1.00	1.41	24.2
14	R2	80	1.4	0.272	14.6	LOS B	1.6	41.5	0.91	0.95	31.3
Approach		847	2.0	0.875	37.5	LOS E	14.4	365.5	0.99	1.36	24.6
West: Idlewild Road											
5u	U	1	0.0	0.370	16.3	LOS C	1.9	48.6	0.76	0.79	36.5
5	L2	40	2.8	0.370	13.9	LOS B	1.9	48.6	0.76	0.79	35.4
2	T1	189	1.8	0.370	7.5	LOS A	1.9	48.6	0.76	0.79	35.2
12	R2	90	2.5	0.210	8.8	LOS A	0.9	22.1	0.71	0.84	34.3
Approach		320	2.1	0.370	8.7	LOS A	1.9	48.6	0.75	0.80	35.0
All Vehicles		2632	2.0	0.875	19.6	LOS C	14.4	365.5	0.85	1.03	30.3

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

Site: 2020 Build Improved AM

Idlewild Road and Matthews-Mint Hill Road
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Matthews-Mint Hill Road											
3u	U	11	0.0	0.162	14.6	LOS B	0.9	22.9	0.56	0.69	35.9
3	L2	89	2.5	0.162	12.1	LOS B	0.9	22.9	0.56	0.69	34.8
8	T1	216	2.1	0.162	5.6	LOS A	0.9	23.6	0.56	0.57	36.0
18	R2	94	2.4	0.114	6.5	LOS A	0.6	15.2	0.55	0.63	35.3
Approach		410	2.2	0.162	7.5	LOS A	0.9	23.6	0.56	0.61	35.6
East: Idlewild Road											
1u	U	6	0.0	0.924	23.7	LOS C	18.0	456.5	1.00	1.18	32.5
1	L2	370	2.1	0.924	21.3	LOS C	18.0	456.5	1.00	1.18	31.7
6	T1	569	2.0	0.924	14.9	LOS B	18.0	456.5	1.00	1.18	31.5
16	R2	191	1.7	0.350	7.9	LOS A	1.6	41.3	0.60	0.76	34.9
Approach		1136	2.0	0.924	15.8	LOS C	18.0	456.5	0.93	1.11	32.0
North: Matthews-Mint Hill Road											
7u	U	2	0.0	1.009	81.4	LOS F	20.0	507.5	1.00	1.66	17.9
7	L2	134	1.7	1.009	79.0	LOS F	20.0	507.5	1.00	1.66	17.7
4	T1	643	2.1	1.009	70.6	LOS F	23.5	596.8	1.00	1.71	18.1
14	R2	80	1.4	0.306	15.8	LOS C	1.9	47.8	0.94	0.97	30.8
Approach		860	1.9	1.009	66.8	LOS F	23.5	596.8	0.99	1.63	18.7
West: Idlewild Road											
5u	U	1	0.0	0.439	16.9	LOS C	2.4	61.5	0.78	0.85	36.4
5	L2	40	2.8	0.439	14.6	LOS B	2.4	61.5	0.78	0.85	35.3
2	T1	228	2.0	0.439	8.2	LOS A	2.4	61.5	0.78	0.85	35.1
12	R2	90	2.5	0.228	9.3	LOS A	0.9	23.7	0.72	0.84	34.1
Approach		359	2.2	0.439	9.2	LOS A	2.4	61.5	0.77	0.85	34.9
All Vehicles		2764	2.0	1.009	29.6	LOS D	23.5	596.8	0.87	1.16	26.8

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

Site: 2018 Existing PM

Idlewild Road and Matthews-Mint Hill Road
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Matthews-Mint Hill Road											
3u	U	9	0.0	0.985	62.4	LOS F	22.0	558.1	1.00	1.70	21.2
3	L2	77	1.4	0.985	60.0	LOS F	22.0	558.1	1.00	1.70	20.9
8	T1	748	1.9	0.985	52.3	LOS F	25.1	638.1	1.00	1.72	21.1
18	R2	246	1.8	0.985	50.9	LOS F	25.1	638.1	1.00	1.75	20.9
Approach		1079	1.9	0.985	52.6	LOS F	25.1	638.1	1.00	1.73	21.0
East: Idlewild Road											
1u	U	7	0.0	0.705	20.5	LOS C	5.7	144.4	0.90	1.07	33.9
1	L2	170	2.0	0.705	18.1	LOS C	5.7	144.4	0.90	1.07	33.1
6	T1	256	2.2	0.705	11.7	LOS B	5.7	144.4	0.90	1.07	32.8
16	R2	226	2.0	0.476	10.5	LOS B	2.7	68.7	0.81	0.94	33.5
Approach		658	2.0	0.705	13.0	LOS B	5.7	144.4	0.87	1.03	33.1
North: Matthews-Mint Hill Road											
7u	U	2	0.0	0.522	17.0	LOS C	4.2	107.8	0.81	0.88	35.1
7	L2	233	1.9	0.522	14.5	LOS B	4.2	107.8	0.81	0.88	34.1
4	T1	584	2.1	0.522	7.7	LOS A	4.4	111.1	0.81	0.81	35.0
14	R2	77	1.4	0.522	7.8	LOS A	4.4	111.1	0.81	0.77	34.3
Approach		897	2.0	0.522	9.5	LOS A	4.4	111.1	0.81	0.82	34.7
West: Idlewild Road											
5u	U	1	0.0	0.919	27.5	LOS D	11.5	293.4	0.97	1.33	31.4
5	L2	92	2.4	0.919	25.1	LOS D	11.5	293.4	0.97	1.33	30.7
2	T1	544	2.0	0.919	18.7	LOS C	11.5	293.4	0.97	1.33	30.5
12	R2	114	1.9	0.299	10.0	LOS A	1.2	30.2	0.70	0.85	33.7
Approach		752	2.1	0.919	18.2	LOS C	11.5	293.4	0.93	1.26	30.9
All Vehicles		3386	2.0	0.985	25.9	LOS D	25.1	638.1	0.91	1.25	27.9

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

Site: 2020 No-Build PM

Idlewild Road and Matthews-Mint Hill Road
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Matthews-Mint Hill Road											
3u	U	9	0.0	1.034	76.3	LOS F	26.7	677.5	1.00	1.86	18.8
3	L2	78	1.4	1.034	73.9	LOS F	26.7	677.5	1.00	1.86	18.5
8	T1	763	2.0	1.034	66.2	LOS F	30.8	781.8	1.00	1.90	18.7
18	R2	250	2.2	1.034	64.8	LOS F	30.8	781.8	1.00	1.94	18.5
Approach		1100	2.0	1.034	66.5	LOS F	30.8	781.8	1.00	1.90	18.6
East: Idlewild Road											
1u	U	7	0.0	0.715	20.6	LOS C	5.9	148.7	0.91	1.08	33.9
1	L2	173	1.9	0.715	18.3	LOS C	5.9	148.7	0.91	1.08	33.0
6	T1	261	2.1	0.715	11.9	LOS B	5.9	148.7	0.91	1.08	32.8
16	R2	230	1.9	0.483	10.5	LOS B	2.8	69.9	0.81	0.94	33.5
Approach		671	2.0	0.715	13.1	LOS B	5.9	148.7	0.87	1.03	33.1
North: Matthews-Mint Hill Road											
7u	U	2	0.0	0.527	17.1	LOS C	4.3	109.9	0.81	0.89	35.1
7	L2	233	1.9	0.527	14.6	LOS B	4.3	109.9	0.81	0.89	34.1
4	T1	584	2.1	0.527	7.9	LOS A	4.5	113.4	0.81	0.82	35.0
14	R2	77	1.4	0.527	7.9	LOS A	4.5	113.4	0.81	0.79	34.3
Approach		897	2.0	0.527	9.7	LOS A	4.5	113.4	0.81	0.84	34.7
West: Idlewild Road											
5u	U	1	0.0	0.942	30.1	LOS D	13.1	332.6	0.98	1.40	30.4
5	L2	94	2.4	0.942	27.7	LOS D	13.1	332.6	0.98	1.40	29.6
2	T1	556	2.0	0.942	21.3	LOS C	13.1	332.6	0.98	1.40	29.5
12	R2	117	1.9	0.306	10.0	LOS B	1.2	31.1	0.71	0.85	33.7
Approach		768	2.0	0.942	20.4	LOS C	13.1	332.6	0.94	1.32	30.1
All Vehicles		3436	2.0	1.034	30.9	LOS D	30.8	781.8	0.91	1.32	26.3

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

Site: 2020 Build PM

Idlewild Road and Matthews-Mint Hill Road
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Matthews-Mint Hill Road											
3u	U	9	0.0	1.099	98.9	LOS F	33.4	846.6	1.00	2.09	15.9
3	L2	78	1.4	1.099	96.5	LOS F	33.4	846.6	1.00	2.09	15.7
8	T1	763	2.0	1.099	88.9	LOS F	38.9	989.7	1.00	2.14	15.8
18	R2	264	2.1	1.099	87.5	LOS F	38.9	989.7	1.00	2.20	15.6
Approach		1114	2.0	1.099	89.2	LOS F	38.9	989.7	1.00	2.15	15.7
East: Idlewild Road											
1u	U	7	0.0	0.781	22.0	LOS C	7.3	185.7	0.93	1.13	33.2
1	L2	189	1.8	0.781	19.7	LOS C	7.3	185.7	0.93	1.13	32.4
6	T1	307	2.2	0.781	13.3	LOS B	7.3	185.7	0.93	1.13	32.2
16	R2	246	1.8	0.504	10.6	LOS B	2.9	74.7	0.81	0.95	33.4
Approach		748	1.9	0.781	14.1	LOS B	7.3	185.7	0.89	1.07	32.6
North: Matthews-Mint Hill Road											
7u	U	2	0.0	0.574	18.5	LOS C	5.1	130.7	0.87	0.97	34.4
7	L2	248	1.8	0.574	16.0	LOS C	5.1	130.7	0.87	0.97	33.4
4	T1	584	2.1	0.574	9.2	LOS A	5.4	136.6	0.88	0.92	34.6
14	R2	77	1.4	0.574	9.2	LOS A	5.4	136.6	0.88	0.91	34.0
Approach		911	2.0	0.574	11.1	LOS B	5.4	136.6	0.88	0.93	34.2
West: Idlewild Road											
5u	U	1	0.0	1.041	52.4	LOS F	24.3	617.8	1.00	1.91	23.5
5	L2	94	2.4	1.041	50.0	LOS F	24.3	617.8	1.00	1.91	23.0
2	T1	600	2.0	1.041	43.6	LOS E	24.3	617.8	1.00	1.91	22.9
12	R2	117	1.9	0.317	10.3	LOS B	1.3	32.8	0.72	0.86	33.6
Approach		812	2.1	1.041	39.6	LOS E	24.3	617.8	0.96	1.76	24.0
All Vehicles		3586	2.0	1.099	42.4	LOS E	38.9	989.7	0.94	1.53	23.3

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

Site: 2020 No-Build Improved PM

Idlewild Road and Matthews-Mint Hill Road
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Matthews-Mint Hill Road											
3u	U	9	0.0	0.792	35.4	LOS E	10.2	257.6	1.00	1.28	28.2
3	L2	78	1.4	0.792	33.0	LOS D	10.2	257.6	1.00	1.28	27.5
8	T1	763	2.0	0.792	25.4	LOS D	11.3	287.2	1.00	1.29	28.1
18	R2	250	2.2	0.559	17.2	LOS C	4.8	121.0	0.97	1.08	30.2
Approach		1100	2.0	0.792	24.1	LOS C	11.3	287.2	0.99	1.24	28.5
East: Idlewild Road											
1u	U	7	0.0	0.716	20.0	LOS C	5.5	140.5	0.89	1.06	34.2
1	L2	173	1.9	0.716	17.6	LOS C	5.5	140.5	0.89	1.06	33.3
6	T1	261	2.1	0.716	11.3	LOS B	5.5	140.5	0.89	1.06	33.1
16	R2	230	1.9	0.486	10.2	LOS B	2.7	67.7	0.80	0.94	33.6
Approach		671	2.0	0.716	12.6	LOS B	5.5	140.5	0.86	1.02	33.3
North: Matthews-Mint Hill Road											
7u	U	2	0.0	0.484	16.7	LOS C	3.7	94.3	0.79	0.86	35.1
7	L2	233	1.9	0.484	14.2	LOS B	3.7	94.3	0.79	0.86	34.1
4	T1	584	2.1	0.484	7.4	LOS A	3.8	97.1	0.79	0.76	35.1
14	R2	77	1.4	0.142	8.5	LOS A	0.7	18.6	0.67	0.75	34.2
Approach		897	2.0	0.484	9.3	LOS A	3.8	97.1	0.78	0.78	34.8
West: Idlewild Road											
5u	U	1	0.0	0.927	27.7	LOS D	11.9	301.3	0.97	1.34	31.3
5	L2	94	2.4	0.927	25.4	LOS D	11.9	301.3	0.97	1.34	30.6
2	T1	556	2.0	0.927	19.0	LOS C	11.9	301.3	0.97	1.34	30.4
12	R2	117	1.9	0.302	9.9	LOS A	1.2	30.2	0.70	0.85	33.8
Approach		768	2.0	0.927	18.4	LOS C	11.9	301.3	0.93	1.27	30.9
All Vehicles		3436	2.0	0.927	16.7	LOS C	11.9	301.3	0.90	1.08	31.4

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

Site: 2020 Build Improved PM

Idlewild Road and Matthews-Mint Hill Road
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Matthews-Mint Hill Road											
3u	U	9	0.0	0.853	43.6	LOS E	12.3	312.5	1.00	1.37	25.6
3	L2	78	1.4	0.853	41.2	LOS E	12.3	312.5	1.00	1.37	25.1
8	T1	763	2.0	0.853	33.3	LOS D	13.9	353.5	1.00	1.39	25.6
18	R2	264	2.1	0.629	20.8	LOS C	5.8	148.3	1.00	1.14	28.8
Approach		1114	2.0	0.853	30.9	LOS D	13.9	353.5	1.00	1.33	26.3
East: Idlewild Road											
1u	U	7	0.0	0.813	22.6	LOS C	7.5	189.5	0.94	1.15	33.0
1	L2	189	1.8	0.813	20.3	LOS C	7.5	189.5	0.94	1.15	32.1
6	T1	307	2.2	0.813	13.9	LOS B	7.5	189.5	0.94	1.15	31.9
16	R2	246	1.8	0.531	10.9	LOS B	3.0	76.3	0.81	0.95	33.3
Approach		748	1.9	0.813	14.6	LOS B	7.5	189.5	0.90	1.09	32.4
North: Matthews-Mint Hill Road											
7u	U	2	0.0	0.527	17.8	LOS C	4.4	111.0	0.85	0.94	34.6
7	L2	248	1.8	0.527	15.3	LOS C	4.4	111.0	0.85	0.94	33.6
4	T1	584	2.1	0.527	8.5	LOS A	4.6	115.7	0.85	0.87	34.8
14	R2	77	1.4	0.151	9.0	LOS A	0.8	20.1	0.70	0.78	34.0
Approach		911	2.0	0.527	10.4	LOS B	4.6	115.7	0.84	0.88	34.4
West: Idlewild Road											
5u	U	1	0.0	1.025	46.7	LOS E	21.8	553.6	1.00	1.80	24.9
5	L2	94	2.4	1.025	44.4	LOS E	21.8	553.6	1.00	1.80	24.4
2	T1	600	2.0	1.025	38.0	LOS E	21.8	553.6	1.00	1.80	24.3
12	R2	117	1.9	0.313	10.1	LOS B	1.3	31.8	0.72	0.86	33.7
Approach		812	2.1	1.025	34.7	LOS D	21.8	553.6	0.96	1.67	25.3
All Vehicles		3586	2.0	1.025	23.2	LOS C	21.8	553.6	0.93	1.24	28.9

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

APPENDIX E

IDLEWILD ROAD AND STALLINGS ROAD

SYNCHRO REPORTS

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	416	89	443	678	47	182
Future Volume (Veh/h)	416	89	443	678	47	182
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	462	99	492	753	52	202
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				800		
pX, platoon unblocked					0.87	
vC, conflicting volume			561		2248	512
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			561		2358	512
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			51		0	64
cM capacity (veh/h)			1010		17	562

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	561	492	753	254
Volume Left	0	492	0	52
Volume Right	99	0	0	202
cSH	1700	1010	1700	76
Volume to Capacity	0.33	0.49	0.44	3.33
Queue Length 95th (ft)	0	68	0	Err
Control Delay (s)	0.0	11.9	0.0	Err
Lane LOS		B		F
Approach Delay (s)	0.0	4.7		Err
Approach LOS				F

Intersection Summary			
Average Delay	1235.7		
Intersection Capacity Utilization	75.7%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	424	91	452	692	48	186
Future Volume (Veh/h)	424	91	452	692	48	186
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	471	101	502	769	53	207
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				800		
pX, platoon unblocked					0.86	
vC, conflicting volume			572		2294	522
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			572		2419	522
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			50		0	63
cM capacity (veh/h)			1001		15	555

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	572	502	769	260
Volume Left	0	502	0	53
Volume Right	101	0	0	207
cSH	1700	1001	1700	68
Volume to Capacity	0.34	0.50	0.45	3.81
Queue Length 95th (ft)	0	72	0	Err
Control Delay (s)	0.0	12.2	0.0	Err
Lane LOS		B		F
Approach Delay (s)	0.0	4.8		Err
Approach LOS				F

Intersection Summary			
Average Delay	1239.1		
Intersection Capacity Utilization	77.0%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	483	91	452	752	48	186
Future Volume (Veh/h)	483	91	452	752	48	186
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	537	101	502	836	53	207
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				800		
pX, platoon unblocked					0.85	
vC, conflicting volume			638		2428	588
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			638		2593	588
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			47		0	59
cM capacity (veh/h)			946		11	509

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	638	502	836	260
Volume Left	0	502	0	53
Volume Right	101	0	0	207
cSH	1700	946	1700	50
Volume to Capacity	0.38	0.53	0.49	5.23
Queue Length 95th (ft)	0	80	0	Err
Control Delay (s)	0.0	13.0	0.0	Err
Lane LOS		B		F
Approach Delay (s)	0.0	4.9		Err
Approach LOS				F

Intersection Summary			
Average Delay	1165.6		
Intersection Capacity Utilization	80.1%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	665	161	377	570	50	244
Future Volume (Veh/h)	665	161	377	570	50	244
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	739	179	419	633	56	271
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				800		
pX, platoon unblocked					0.90	
vC, conflicting volume			918		2300	828
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			918		2386	828
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			44		0	27
cM capacity (veh/h)			743		15	371

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	918	419	633	327
Volume Left	0	419	0	56
Volume Right	179	0	0	271
cSH	1700	743	1700	72
Volume to Capacity	0.54	0.56	0.37	4.53
Queue Length 95th (ft)	0	89	0	Err
Control Delay (s)	0.0	15.9	0.0	Err
Lane LOS		C		F
Approach Delay (s)	0.0	6.3		Err
Approach LOS				F

Intersection Summary			
Average Delay	1426.4		
Intersection Capacity Utilization	93.5%	ICU Level of Service	F
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	678	164	385	581	51	249
Future Volume (Veh/h)	678	164	385	581	51	249
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	753	182	428	646	57	277
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				800		
pX, platoon unblocked					0.90	
vC, conflicting volume			935		2346	844
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			935		2441	844
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			42		0	24
cM capacity (veh/h)			732		13	363

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	935	428	646	334
Volume Left	0	428	0	57
Volume Right	182	0	0	277
cSH	1700	732	1700	65
Volume to Capacity	0.55	0.58	0.38	5.17
Queue Length 95th (ft)	0	96	0	Err
Control Delay (s)	0.0	16.6	0.0	Err
Lane LOS		C		F
Approach Delay (s)	0.0	6.6		Err
Approach LOS				F

Intersection Summary			
Average Delay	1428.4		
Intersection Capacity Utilization	95.2%	ICU Level of Service	F
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	744	164	385	650	51	249
Future Volume (Veh/h)	744	164	385	650	51	249
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	827	182	428	722	57	277
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				800		
pX, platoon unblocked					0.88	
vC, conflicting volume			1009		2496	918
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1009		2629	918
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			38		0	16
cM capacity (veh/h)			687		9	329

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	1009	428	722	334
Volume Left	0	428	0	57
Volume Right	182	0	0	277
cSH	1700	687	1700	45
Volume to Capacity	0.59	0.62	0.42	7.39
Queue Length 95th (ft)	0	109	0	Err
Control Delay (s)	0.0	18.5	0.0	Err
Lane LOS		C		F
Approach Delay (s)	0.0	6.9		Err
Approach LOS				F

Intersection Summary			
Average Delay	1342.8		
Intersection Capacity Utilization	98.6%	ICU Level of Service	F
Analysis Period (min)	15		

APPENDIX F

IDLEWILD ROAD AND
I-485 SOUTHBOUND RAMPS

SYNCHRO REPORTS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	466	132	407	665	0	0	0	0	155	1	456
Future Volume (vph)	0	466	132	407	665	0	0	0	0	155	1	456
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		100	275		0	0		0	0		375
Storage Lanes	0		1	1		0	0		0	0		1
Taper Length (ft)	0			225			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850									0.850
Flt Protected				0.950							0.953	
Satd. Flow (prot)	0	3539	1583	1770	3539	0	0	0	0	0	1775	1583
Flt Permitted				0.306							0.953	
Satd. Flow (perm)	0	3539	1583	570	3539	0	0	0	0	0	1775	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			50			50	
Link Distance (ft)		800			888			1574			1654	
Travel Time (s)		12.1			13.5			21.5			22.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	518	147	452	739	0	0	0	0	172	1	507
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	518	147	452	739	0	0	0	0	0	173	507
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type		NA	Perm	pm+pt	NA					Perm	NA	Perm
Protected Phases		2		1	6						4	
Permitted Phases			2	6						4		4
Detector Phase		2	2	1	6					4	4	4
Switch Phase												
Minimum Initial (s)		12.0	12.0	7.0	12.0					7.0	7.0	7.0
Minimum Split (s)		18.0	18.0	13.0	18.0					13.0	13.0	13.0
Total Split (s)		31.0	31.0	40.0	71.0					49.0	49.0	49.0
Total Split (%)		25.8%	25.8%	33.3%	59.2%					40.8%	40.8%	40.8%
Maximum Green (s)		25.3	25.3	34.7	65.3					43.2	43.2	43.2
Yellow Time (s)		4.5	4.5	3.0	4.5					3.8	3.8	3.8
All-Red Time (s)		1.2	1.2	2.3	1.2					2.0	2.0	2.0
Lost Time Adjust (s)		-0.7	-0.7	-0.3	-0.7						-0.8	-0.8
Total Lost Time (s)		5.0	5.0	5.0	5.0						5.0	5.0
Lead/Lag		Lag	Lag	Lead								
Lead-Lag Optimize?		Yes	Yes	Yes								
Vehicle Extension (s)		6.0	6.0	2.0	6.0					2.0	2.0	2.0
Minimum Gap (s)		3.0	3.0	0.2	3.0					0.2	0.2	0.2
Time Before Reduce (s)		15.0	15.0	0.0	15.0					0.0	0.0	0.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Time To Reduce (s)		30.0	30.0	0.0	2.0					0.0	0.0	0.0
Recall Mode		C-Min	C-Min	None	C-Min					None	None	None
Act Effct Green (s)		38.8	38.8	68.6	68.6						41.4	41.4
Actuated g/C Ratio		0.32	0.32	0.57	0.57						0.34	0.34
v/c Ratio		0.45	0.29	0.79	0.37						0.28	0.93
Control Delay		36.4	36.2	30.2	12.9						29.3	62.7
Queue Delay		0.0	0.0	0.0	0.0						0.0	0.0
Total Delay		36.4	36.2	30.2	12.9						29.3	62.7
LOS		D	D	C	B						C	E
Approach Delay		36.4			19.5						54.2	
Approach LOS		D			B						D	
Queue Length 50th (ft)		173	88	137	117						93	363
Queue Length 95th (ft)		256	164	337	170						150	#562
Internal Link Dist (ft)		720			808			1494			1574	
Turn Bay Length (ft)			100	275								375
Base Capacity (vph)		1143	511	676	2024						650	580
Starvation Cap Reductn		0	0	0	0						0	0
Spillback Cap Reductn		0	0	0	0						0	0
Storage Cap Reductn		0	0	0	0						0	0
Reduced v/c Ratio		0.45	0.29	0.67	0.37						0.27	0.87

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.93
Intersection Signal Delay: 33.2 Intersection LOS: C
Intersection Capacity Utilization 58.4% ICU Level of Service B
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: I-485 SB Ramp & Idlewild Road

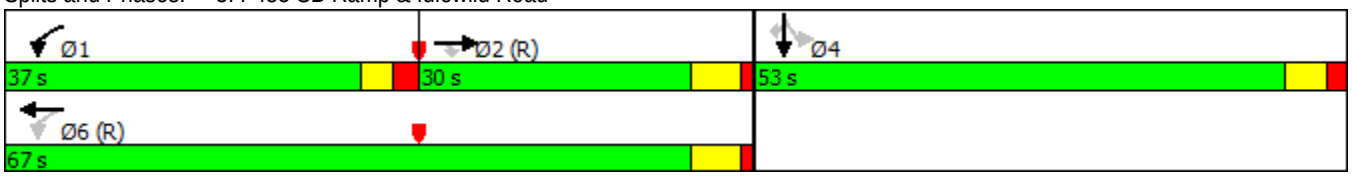
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	475	135	415	678	0	0	0	0	158	1	465
Future Volume (vph)	0	475	135	415	678	0	0	0	0	158	1	465
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		100	275		0	0		0	0		375
Storage Lanes	0		1	1		0	0		0	0		1
Taper Length (ft)	0			225			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850									0.850
Flt Protected				0.950							0.953	
Satd. Flow (prot)	0	3539	1583	1770	3539	0	0	0	0	0	1775	1583
Flt Permitted				0.281							0.953	
Satd. Flow (perm)	0	3539	1583	523	3539	0	0	0	0	0	1775	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			50			50	
Link Distance (ft)		800			888			1574			1654	
Travel Time (s)		12.1			13.5			21.5			22.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	528	150	461	753	0	0	0	0	176	1	517
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	528	150	461	753	0	0	0	0	0	177	517
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type		NA	Perm	pm+pt	NA					Perm	NA	Perm
Protected Phases		2		1	6						4	
Permitted Phases			2	6						4		4
Detector Phase		2	2	1	6					4	4	4
Switch Phase												
Minimum Initial (s)		12.0	12.0	7.0	12.0					7.0	7.0	7.0
Minimum Split (s)		18.0	18.0	13.0	18.0					13.0	13.0	13.0
Total Split (s)		30.0	30.0	37.0	67.0					53.0	53.0	53.0
Total Split (%)		25.0%	25.0%	30.8%	55.8%					44.2%	44.2%	44.2%
Maximum Green (s)		24.3	24.3	31.7	61.3					47.2	47.2	47.2
Yellow Time (s)		4.5	4.5	3.0	4.5					3.8	3.8	3.8
All-Red Time (s)		1.2	1.2	2.3	1.2					2.0	2.0	2.0
Lost Time Adjust (s)		-0.7	-0.7	-0.3	-0.7						-0.8	-0.8
Total Lost Time (s)		5.0	5.0	5.0	5.0						5.0	5.0
Lead/Lag		Lag	Lag	Lead								
Lead-Lag Optimize?		Yes	Yes	Yes								
Vehicle Extension (s)		6.0	6.0	2.0	6.0					2.0	2.0	2.0
Minimum Gap (s)		3.0	3.0	0.2	3.0					0.2	0.2	0.2
Time Before Reduce (s)		15.0	15.0	0.0	15.0					0.0	0.0	0.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Time To Reduce (s)		30.0	30.0	0.0	2.0					0.0	0.0	0.0
Recall Mode		C-Min	C-Min	None	C-Min					None	None	None
Act Effct Green (s)		35.5	35.5	66.7	66.7						43.3	43.3
Actuated g/C Ratio		0.30	0.30	0.56	0.56						0.36	0.36
v/c Ratio		0.51	0.32	0.82	0.38						0.28	0.91
Control Delay		39.8	39.3	32.8	19.4						27.4	56.7
Queue Delay		0.0	0.0	0.0	0.0						0.0	0.0
Total Delay		39.8	39.3	32.8	19.4						27.4	56.7
LOS		D	D	C	B						C	E
Approach Delay		39.7			24.5						49.2	
Approach LOS		D			C						D	
Queue Length 50th (ft)		188	96	266	227						94	366
Queue Length 95th (ft)		264	170	367	262						144	#537
Internal Link Dist (ft)		720			808			1494			1574	
Turn Bay Length (ft)			100	275								375
Base Capacity (vph)		1045	467	623	1967						710	633
Starvation Cap Reductn		0	0	0	0						0	0
Spillback Cap Reductn		0	0	0	0						0	0
Storage Cap Reductn		0	0	0	0						0	0
Reduced v/c Ratio		0.51	0.32	0.74	0.38						0.25	0.82

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 71 (59%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.91
Intersection Signal Delay: 35.1 Intersection LOS: D
Intersection Capacity Utilization 59.4% ICU Level of Service B
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: I-485 SB Ramp & Idlewild Road



Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	0	534	135	1	463	738	0	0	0	0	194	1
Future Volume (vph)	0	534	135	1	463	738	0	0	0	0	194	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		100		275		0	0		0	0	
Storage Lanes	0		1		1		0	0		0	0	
Taper Length (ft)	0				225			25			25	
Lane Util. Factor	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850									
Flt Protected					0.950							0.953
Satd. Flow (prot)	0	3539	1583	0	1770	3539	0	0	0	0	0	1775
Flt Permitted					0.204							0.953
Satd. Flow (perm)	0	3539	1583	0	380	3539	0	0	0	0	0	1775
Right Turn on Red			No				No			No		
Satd. Flow (RTOR)												
Link Speed (mph)		45				45			50			50
Link Distance (ft)		800				888			1574			1654
Travel Time (s)		12.1				13.5			21.5			22.6
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	593	150	1	514	820	0	0	0	0	216	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	593	150	0	515	820	0	0	0	0	0	217
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	Left	Left
Median Width(ft)		12				12			0			0
Link Offset(ft)		0				0			0			0
Crosswalk Width(ft)		16				16			16			16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	9	15		9	15		9	15	
Turn Type		NA	Perm	pm+pt	pm+pt	NA					Perm	NA
Protected Phases		2		1	1	6						4
Permitted Phases			2	6	6						4	
Detector Phase		2	2	1	1	6					4	4
Switch Phase												
Minimum Initial (s)		12.0	12.0	7.0	7.0	12.0					7.0	7.0
Minimum Split (s)		18.0	18.0	13.0	13.0	18.0					13.0	13.0
Total Split (s)		30.0	30.0	40.0	40.0	70.0					50.0	50.0
Total Split (%)		25.0%	25.0%	33.3%	33.3%	58.3%					41.7%	41.7%
Maximum Green (s)		24.3	24.3	34.7	34.7	64.3					44.2	44.2
Yellow Time (s)		4.5	4.5	3.0	3.0	4.5					3.8	3.8
All-Red Time (s)		1.2	1.2	2.3	2.3	1.2					2.0	2.0
Lost Time Adjust (s)		-0.7	-0.7		-0.3	-0.7						-0.8
Total Lost Time (s)		5.0	5.0		5.0	5.0						5.0
Lead/Lag		Lag	Lag	Lead	Lead							
Lead-Lag Optimize?		Yes	Yes	Yes	Yes							
Vehicle Extension (s)		6.0	6.0	2.0	2.0	6.0					2.0	2.0
Minimum Gap (s)		3.0	3.0	0.2	0.2	3.0					0.2	0.2
Time Before Reduce (s)		15.0	15.0	0.0	0.0	15.0					0.0	0.0

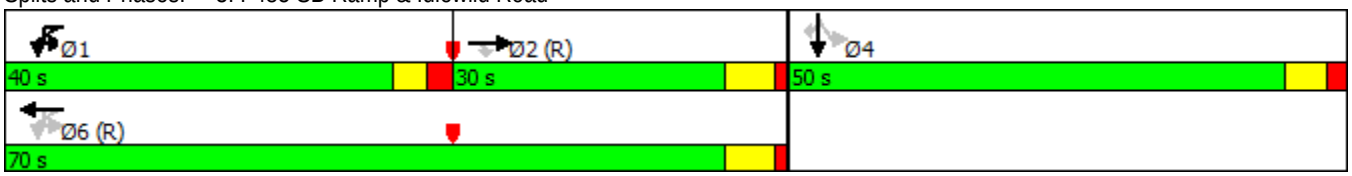
Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	465
Future Volume (vph)	465
Ideal Flow (vphpl)	1900
Storage Length (ft)	375
Storage Lanes	1
Taper Length (ft)	
Lane Util. Factor	1.00
Frt	0.850
Flt Protected	
Satd. Flow (prot)	1583
Flt Permitted	
Satd. Flow (perm)	1583
Right Turn on Red	No
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.90
Adj. Flow (vph)	517
Shared Lane Traffic (%)	
Lane Group Flow (vph)	517
Enter Blocked Intersection	No
Lane Alignment	Right
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	1.00
Turning Speed (mph)	9
Turn Type	Perm
Protected Phases	
Permitted Phases	4
Detector Phase	4
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	13.0
Total Split (s)	50.0
Total Split (%)	41.7%
Maximum Green (s)	44.2
Yellow Time (s)	3.8
All-Red Time (s)	2.0
Lost Time Adjust (s)	-0.8
Total Lost Time (s)	5.0
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	2.0
Minimum Gap (s)	0.2
Time Before Reduce (s)	0.0

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Time To Reduce (s)		30.0	30.0	0.0	0.0	2.0					0.0	0.0
Recall Mode		C-Min	C-Min	None	None	C-Min					None	None
Act Effct Green (s)		31.1	31.1		67.8	67.8						42.2
Actuated g/C Ratio		0.26	0.26		0.56	0.56						0.35
v/c Ratio		0.65	0.37		0.88	0.41						0.35
Control Delay		45.4	42.4		35.6	10.4						29.8
Queue Delay		0.0	0.0		0.0	0.0						0.0
Total Delay		45.4	42.4		35.6	10.4						29.8
LOS		D	D		D	B						C
Approach Delay		44.8				20.1						52.2
Approach LOS		D				C						D
Queue Length 50th (ft)		231	102		285	200						119
Queue Length 95th (ft)		300	170		#451	57						183
Internal Link Dist (ft)		720				808			1494			1574
Turn Bay Length (ft)			100		275							
Base Capacity (vph)		916	409		620	1998						665
Starvation Cap Reductn		0	0		0	0						0
Spillback Cap Reductn		0	0		0	0						0
Storage Cap Reductn		0	0		0	0						0
Reduced v/c Ratio		0.65	0.37		0.83	0.41						0.33

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 56 (47%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.93
Intersection Signal Delay: 35.0 Intersection LOS: D
Intersection Capacity Utilization 63.8% ICU Level of Service B
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: I-485 SB Ramp & Idlewild Road



Lane Group	SBR
Time To Reduce (s)	0.0
Recall Mode	None
Act Effct Green (s)	42.2
Actuated g/C Ratio	0.35
v/c Ratio	0.93
Control Delay	61.6
Queue Delay	0.0
Total Delay	61.6
LOS	E
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	368
Queue Length 95th (ft)	#569
Internal Link Dist (ft)	
Turn Bay Length (ft)	375
Base Capacity (vph)	593
Starvation Cap Reductn	0
Spillback Cap Reductn	0
Storage Cap Reductn	0
Reduced v/c Ratio	0.87

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	780	129	265	647	0	0	0	0	265	3	300
Future Volume (vph)	0	780	129	265	647	0	0	0	0	265	3	300
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		100	275		0	0		0	0		375
Storage Lanes	0		1	1		0	0		0	0		1
Taper Length (ft)	0			225			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850									0.850
Flt Protected				0.950							0.953	
Satd. Flow (prot)	0	3539	1583	1770	3539	0	0	0	0	0	1775	1583
Flt Permitted				0.220							0.953	
Satd. Flow (perm)	0	3539	1583	410	3539	0	0	0	0	0	1775	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			50			50	
Link Distance (ft)		800			888			1574			1654	
Travel Time (s)		12.1			13.5			21.5			22.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	867	143	294	719	0	0	0	0	294	3	333
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	867	143	294	719	0	0	0	0	0	297	333
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type		NA	Perm	pm+pt	NA					Perm	NA	Perm
Protected Phases		2		1	6						4	
Permitted Phases			2	6						4		4
Detector Phase		2	2	1	6					4	4	4
Switch Phase												
Minimum Initial (s)		12.0	12.0	7.0	12.0					7.0	7.0	7.0
Minimum Split (s)		18.0	18.0	13.0	18.0					13.0	13.0	13.0
Total Split (s)		48.0	48.0	28.0	76.0					44.0	44.0	44.0
Total Split (%)		40.0%	40.0%	23.3%	63.3%					36.7%	36.7%	36.7%
Maximum Green (s)		42.3	42.3	22.7	70.3					38.2	38.2	38.2
Yellow Time (s)		4.5	4.5	3.0	4.5					3.8	3.8	3.8
All-Red Time (s)		1.2	1.2	2.3	1.2					2.0	2.0	2.0
Lost Time Adjust (s)		-0.7	-0.7	-0.3	-0.7						-0.8	-0.8
Total Lost Time (s)		5.0	5.0	5.0	5.0						5.0	5.0
Lead/Lag		Lag	Lag	Lead								
Lead-Lag Optimize?		Yes	Yes	Yes								
Vehicle Extension (s)		6.0	6.0	2.0	6.0					2.0	2.0	2.0
Minimum Gap (s)		3.0	3.0	0.2	3.0					0.2	0.2	0.2
Time Before Reduce (s)		15.0	15.0	0.0	15.0					0.0	0.0	0.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Time To Reduce (s)		30.0	30.0	0.0	2.0					0.0	0.0	0.0
Recall Mode		C-Min	C-Min	None	C-Min					None	None	None
Act Effct Green (s)		58.9	58.9	79.5	79.5						30.5	30.5
Actuated g/C Ratio		0.49	0.49	0.66	0.66						0.25	0.25
v/c Ratio		0.50	0.18	0.66	0.31						0.66	0.83
Control Delay		24.2	21.3	15.2	7.3						46.5	59.0
Queue Delay		0.0	0.0	0.0	0.0						0.0	0.0
Total Delay		24.2	21.3	15.2	7.3						46.5	59.0
LOS		C	C	B	A						D	E
Approach Delay		23.8			9.6						53.1	
Approach LOS		C			A						D	
Queue Length 50th (ft)		231	60	99	133						206	244
Queue Length 95th (ft)		371	130	212	221						275	325
Internal Link Dist (ft)		720			808			1494			1574	
Turn Bay Length (ft)			100	275								375
Base Capacity (vph)		1736	776	532	2343						576	514
Starvation Cap Reductn		0	0	0	0						0	0
Spillback Cap Reductn		0	0	0	0						0	0
Storage Cap Reductn		0	0	0	0						0	0
Reduced v/c Ratio		0.50	0.18	0.55	0.31						0.52	0.65

Intersection Summary

Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 63 (53%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 55	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.83	
Intersection Signal Delay: 25.3	Intersection LOS: C
Intersection Capacity Utilization 63.6%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 3: I-485 SB Ramp & Idlewild Road

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	796	132	270	660	0	0	0	0	270	3	306
Future Volume (vph)	0	796	132	270	660	0	0	0	0	270	3	306
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		100	275		0	0		0	0		375
Storage Lanes	0		1	1		0	0		0	0		1
Taper Length (ft)	0			225			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850									0.850
Flt Protected				0.950							0.953	
Satd. Flow (prot)	0	3539	1583	1770	3539	0	0	0	0	0	1775	1583
Flt Permitted				0.210							0.953	
Satd. Flow (perm)	0	3539	1583	391	3539	0	0	0	0	0	1775	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			50			50	
Link Distance (ft)		800			888			1574			1654	
Travel Time (s)		12.1			13.5			21.5			22.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	884	147	300	733	0	0	0	0	300	3	340
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	884	147	300	733	0	0	0	0	0	303	340
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type		NA	Perm	pm+pt	NA					Perm	NA	Perm
Protected Phases		2		1	6						4	
Permitted Phases			2	6						4		4
Detector Phase		2	2	1	6					4	4	4
Switch Phase												
Minimum Initial (s)		12.0	12.0	7.0	12.0					7.0	7.0	7.0
Minimum Split (s)		18.0	18.0	13.0	18.0					13.0	13.0	13.0
Total Split (s)		48.0	48.0	29.0	77.0					43.0	43.0	43.0
Total Split (%)		40.0%	40.0%	24.2%	64.2%					35.8%	35.8%	35.8%
Maximum Green (s)		42.3	42.3	23.7	71.3					37.2	37.2	37.2
Yellow Time (s)		4.5	4.5	3.0	4.5					3.8	3.8	3.8
All-Red Time (s)		1.2	1.2	2.3	1.2					2.0	2.0	2.0
Lost Time Adjust (s)		-0.7	-0.7	-0.3	-0.7						-0.8	-0.8
Total Lost Time (s)		5.0	5.0	5.0	5.0						5.0	5.0
Lead/Lag		Lag	Lag	Lead								
Lead-Lag Optimize?		Yes	Yes	Yes								
Vehicle Extension (s)		6.0	6.0	2.0	6.0					2.0	2.0	2.0
Minimum Gap (s)		3.0	3.0	0.2	3.0					0.2	0.2	0.2
Time Before Reduce (s)		15.0	15.0	0.0	15.0					0.0	0.0	0.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Time To Reduce (s)		30.0	30.0	0.0	2.0					0.0	0.0	0.0
Recall Mode		C-Min	C-Min	None	C-Min					None	None	None
Act Effct Green (s)		58.0	58.0	79.3	79.3						30.7	30.7
Actuated g/C Ratio		0.48	0.48	0.66	0.66						0.26	0.26
v/c Ratio		0.52	0.19	0.67	0.31						0.67	0.84
Control Delay		25.1	21.8	17.7	10.0						46.9	60.4
Queue Delay		0.0	0.0	0.0	0.0						0.0	0.0
Total Delay		25.1	21.8	17.7	10.0						46.9	60.4
LOS		C	C	B	A						D	E
Approach Delay		24.6			12.2						54.0	
Approach LOS		C			B						D	
Queue Length 50th (ft)		242	63	102	139						210	249
Queue Length 95th (ft)		380	133	192	214						285	337
Internal Link Dist (ft)		720			808			1494			1574	
Turn Bay Length (ft)			100	275								375
Base Capacity (vph)		1709	764	534	2339						562	501
Starvation Cap Reductn		0	0	0	0						0	0
Spillback Cap Reductn		0	0	0	0						0	0
Storage Cap Reductn		0	0	0	0						0	0
Reduced v/c Ratio		0.52	0.19	0.56	0.31						0.54	0.68

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 70 (58%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 55
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.84
Intersection Signal Delay: 26.9 — Intersection LOS: C
Intersection Capacity Utilization 64.6% — ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 3: I-485 SB Ramp & Idlewild Road

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	862	132	324	729	0	0	0	0	309	3	306
Future Volume (vph)	0	862	132	324	729	0	0	0	0	309	3	306
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		100	275		0	0		0	0		375
Storage Lanes	0		1	1		0	0		0	0		1
Taper Length (ft)	0			225			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850									0.850
Flt Protected				0.950							0.953	
Satd. Flow (prot)	0	3539	1583	1770	3539	0	0	0	0	0	1775	1583
Flt Permitted				0.164							0.953	
Satd. Flow (perm)	0	3539	1583	305	3539	0	0	0	0	0	1775	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			50			50	
Link Distance (ft)		800			888			1574			1654	
Travel Time (s)		12.1			13.5			21.5			22.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	958	147	360	810	0	0	0	0	343	3	340
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	958	147	360	810	0	0	0	0	0	346	340
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type		NA	Perm	pm+pt	NA					Perm	NA	Perm
Protected Phases		2		1	6						4	
Permitted Phases			2	6						4		4
Detector Phase		2	2	1	6					4	4	4
Switch Phase												
Minimum Initial (s)		12.0	12.0	7.0	12.0					7.0	7.0	7.0
Minimum Split (s)		18.0	18.0	13.0	18.0					13.0	13.0	13.0
Total Split (s)		47.0	47.0	33.0	80.0					40.0	40.0	40.0
Total Split (%)		39.2%	39.2%	27.5%	66.7%					33.3%	33.3%	33.3%
Maximum Green (s)		41.3	41.3	27.7	74.3					34.2	34.2	34.2
Yellow Time (s)		4.5	4.5	3.0	4.5					3.8	3.8	3.8
All-Red Time (s)		1.2	1.2	2.3	1.2					2.0	2.0	2.0
Lost Time Adjust (s)		-0.7	-0.7	-0.3	-0.7						-0.8	-0.8
Total Lost Time (s)		5.0	5.0	5.0	5.0						5.0	5.0
Lead/Lag		Lag	Lag	Lead								
Lead-Lag Optimize?		Yes	Yes	Yes								
Vehicle Extension (s)		6.0	6.0	2.0	6.0					2.0	2.0	2.0
Minimum Gap (s)		3.0	3.0	0.2	3.0					0.2	0.2	0.2
Time Before Reduce (s)		15.0	15.0	0.0	15.0					0.0	0.0	0.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Time To Reduce (s)		30.0	30.0	0.0	2.0					0.0	0.0	0.0
Recall Mode		C-Min	C-Min	None	C-Min					None	None	None
Act Effct Green (s)		53.1	53.1	80.0	80.0						30.0	30.0
Actuated g/C Ratio		0.44	0.44	0.67	0.67						0.25	0.25
v/c Ratio		0.61	0.21	0.76	0.34						0.78	0.86
Control Delay		29.9	24.7	29.8	15.2						54.3	63.8
Queue Delay		0.0	0.0	0.0	0.0						0.0	0.0
Total Delay		29.9	24.7	29.8	15.2						54.3	63.8
LOS		C	C	C	B						D	E
Approach Delay		29.2			19.7						59.0	
Approach LOS		C			B						E	
Queue Length 50th (ft)		300	70	195	178						248	249
Queue Length 95th (ft)		427	135	297	313						344	350
Internal Link Dist (ft)		720			808			1494			1574	
Turn Bay Length (ft)			100	275								375
Base Capacity (vph)		1565	700	545	2360						517	461
Starvation Cap Reductn		0	0	0	0						0	0
Spillback Cap Reductn		0	0	0	0						0	0
Storage Cap Reductn		0	0	0	0						0	0
Reduced v/c Ratio		0.61	0.21	0.66	0.34						0.67	0.74

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 86 (72%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 32.3 — Intersection LOS: C
Intersection Capacity Utilization 71.6% — ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 3: I-485 SB Ramp & Idlewild Road

APPENDIX G

IDLEWILD ROAD AND
I-485 NORTHBOUND RAMPS

SYNCHRO REPORTS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	229	392	0	0	943	337	129	4	168	0	0	0
Future Volume (vph)	229	392	0	0	943	337	129	4	168	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	275		0	0		125	200		850	0		0
Storage Lanes	1		0	0		1	1		1	0		0
Taper Length (ft)	225			25			225			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	0.88	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950							0.954				
Satd. Flow (prot)	1770	3539	0	0	3539	1583	0	1777	2787	0	0	0
Flt Permitted	0.220							0.954				
Satd. Flow (perm)	410	3539	0	0	3539	1583	0	1777	2787	0	0	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			50			50	
Link Distance (ft)		888			595			1516			1596	
Travel Time (s)		13.5			9.0			20.7			21.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	254	436	0	0	1048	374	143	4	187	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	254	436	0	0	1048	374	0	147	187	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane					Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	5	2			6			4				
Permitted Phases	2					6	4		4			
Detector Phase	5	2			6	6	4	4	4			
Switch Phase												
Minimum Initial (s)	7.0	12.0			12.0	12.0	7.0	7.0	7.0			
Minimum Split (s)	13.0	18.0			18.0	18.0	13.0	13.0	13.0			
Total Split (s)	28.0	93.0			65.0	65.0	27.0	27.0	27.0			
Total Split (%)	23.3%	77.5%			54.2%	54.2%	22.5%	22.5%	22.5%			
Maximum Green (s)	22.6	87.3			59.3	59.3	21.7	21.7	21.7			
Yellow Time (s)	3.0	4.5			4.5	4.5	3.7	3.7	3.7			
All-Red Time (s)	2.4	1.2			1.2	1.2	1.6	1.6	1.6			
Lost Time Adjust (s)	-0.4	-0.7			-0.7	-0.7		-0.3	-0.3			
Total Lost Time (s)	5.0	5.0			5.0	5.0		5.0	5.0			
Lead/Lag	Lead				Lag	Lag						
Lead-Lag Optimize?	Yes				Yes	Yes						
Vehicle Extension (s)	1.0	6.0			6.0	6.0	1.0	1.0	1.0			
Minimum Gap (s)	0.2	3.0			3.0	3.0	0.2	0.2	0.2			
Time Before Reduce (s)	0.0	15.0			15.0	15.0	0.0	0.0	0.0			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Time To Reduce (s)	0.0	30.0			30.0	30.0	0.0	0.0	0.0			
Recall Mode	None	C-Min			C-Min	C-Min	None	None	None			
Act Effct Green (s)	96.3	96.3			81.9	81.9		13.7	13.7			
Actuated g/C Ratio	0.80	0.80			0.68	0.68		0.11	0.11			
v/c Ratio	0.58	0.15			0.43	0.35		0.73	0.59			
Control Delay	29.1	3.5			8.6	8.7		71.1	57.5			
Queue Delay	0.0	0.0			0.0	0.0		0.0	0.0			
Total Delay	29.1	3.5			8.6	8.7		71.1	57.5			
LOS	C	A			A	A		E	E			
Approach Delay		12.9			8.6			63.5				
Approach LOS		B			A			E				
Queue Length 50th (ft)	93	37			119	75		112	79			
Queue Length 95th (ft)	195	36			308	m236		174	115			
Internal Link Dist (ft)		808			515			1436			1516	
Turn Bay Length (ft)	275					125			850			
Base Capacity (vph)	589	2841			2416	1080		325	510			
Starvation Cap Reductn	0	0			0	0		0	0			
Spillback Cap Reductn	0	0			0	0		0	0			
Storage Cap Reductn	0	0			0	0		0	0			
Reduced v/c Ratio	0.43	0.15			0.43	0.35		0.45	0.37			

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 55
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.73
Intersection Signal Delay: 17.3 Intersection LOS: B
Intersection Capacity Utilization 58.6% ICU Level of Service B
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Idlewild Road & I-485 NB Ramp

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	234	400	0	0	962	344	132	0	171	0	0	0
Future Volume (vph)	234	400	0	0	962	344	132	0	171	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	275		0	0		125	200		850	0		0
Storage Lanes	1		0	0		1	1		1	0		0
Taper Length (ft)	225			25			225			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	0.88	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950							0.950				
Satd. Flow (prot)	1770	3539	0	0	3539	1583	0	1770	2787	0	0	0
Flt Permitted	0.213							0.950				
Satd. Flow (perm)	397	3539	0	0	3539	1583	0	1770	2787	0	0	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			50			50	
Link Distance (ft)		888			595			1516			1596	
Travel Time (s)		13.5			9.0			20.7			21.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	260	444	0	0	1069	382	147	0	190	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	260	444	0	0	1069	382	0	147	190	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane					Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	5	2			6			4				
Permitted Phases	2					6	4		4			
Detector Phase	5	2			6	6	4	4	4			
Switch Phase												
Minimum Initial (s)	7.0	12.0			12.0	12.0	7.0	7.0	7.0			
Minimum Split (s)	13.0	18.0			18.0	18.0	13.0	13.0	13.0			
Total Split (s)	28.0	93.0			65.0	65.0	27.0	27.0	27.0			
Total Split (%)	23.3%	77.5%			54.2%	54.2%	22.5%	22.5%	22.5%			
Maximum Green (s)	22.6	87.3			59.3	59.3	21.7	21.7	21.7			
Yellow Time (s)	3.0	4.5			4.5	4.5	3.7	3.7	3.7			
All-Red Time (s)	2.4	1.2			1.2	1.2	1.6	1.6	1.6			
Lost Time Adjust (s)	-0.4	-0.7			-0.7	-0.7		-0.3	-0.3			
Total Lost Time (s)	5.0	5.0			5.0	5.0		5.0	5.0			
Lead/Lag	Lead				Lag	Lag						
Lead-Lag Optimize?	Yes				Yes	Yes						
Vehicle Extension (s)	1.0	6.0			6.0	6.0	1.0	1.0	1.0			
Minimum Gap (s)	0.2	3.0			3.0	3.0	0.2	0.2	0.2			
Time Before Reduce (s)	0.0	15.0			15.0	15.0	0.0	0.0	0.0			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Time To Reduce (s)	0.0	30.0			30.0	30.0	0.0	0.0	0.0			
Recall Mode	None	C-Min			C-Min	C-Min	None	None	None			
Act Effct Green (s)	96.3	96.3			81.4	81.4		13.7	13.7			
Actuated g/C Ratio	0.80	0.80			0.68	0.68		0.11	0.11			
v/c Ratio	0.60	0.16			0.45	0.36		0.73	0.60			
Control Delay	15.6	4.4			8.8	8.7		71.2	57.8			
Queue Delay	0.0	0.0			0.0	0.0		0.0	0.0			
Total Delay	15.6	4.4			8.8	8.7		71.2	57.8			
LOS	B	A			A	A		E	E			
Approach Delay		8.5			8.8			63.6				
Approach LOS		A			A			E				
Queue Length 50th (ft)	5	0			138	83		112	80			
Queue Length 95th (ft)	228	184			271	m190		174	117			
Internal Link Dist (ft)		808			515			1436			1516	
Turn Bay Length (ft)	275					125			850			
Base Capacity (vph)	581	2840			2401	1074		324	510			
Starvation Cap Reductn	0	0			0	0		0	0			
Spillback Cap Reductn	0	0			0	0		0	0			
Storage Cap Reductn	0	0			0	0		0	0			
Reduced v/c Ratio	0.45	0.16			0.45	0.36		0.45	0.37			

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 17 (14%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.73
Intersection Signal Delay: 16.1 Intersection LOS: B
Intersection Capacity Utilization 59.4% ICU Level of Service B
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Idlewild Road & I-485 NB Ramp

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	234	496	0	0	1071	379	132	0	218	0	0	0
Future Volume (vph)	234	496	0	0	1071	379	132	0	218	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	275		0	0		125	200		850	0		0
Storage Lanes	1		0	0		1	1		1	0		0
Taper Length (ft)	225			25			225			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	0.88	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950							0.950				
Satd. Flow (prot)	1770	3539	0	0	3539	1583	0	1770	2787	0	0	0
Flt Permitted	0.176							0.950				
Satd. Flow (perm)	328	3539	0	0	3539	1583	0	1770	2787	0	0	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			50			50	
Link Distance (ft)		888			595			1516			1596	
Travel Time (s)		13.5			9.0			20.7			21.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	260	551	0	0	1190	421	147	0	242	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	260	551	0	0	1190	421	0	147	242	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane					Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	5	2			6			4				
Permitted Phases	2					6	4		4			
Detector Phase	5	2			6	6	4	4	4			
Switch Phase												
Minimum Initial (s)	7.0	12.0			12.0	12.0	7.0	7.0	7.0			
Minimum Split (s)	13.0	18.0			18.0	18.0	13.0	13.0	13.0			
Total Split (s)	27.0	95.0			68.0	68.0	25.0	25.0	25.0			
Total Split (%)	22.5%	79.2%			56.7%	56.7%	20.8%	20.8%	20.8%			
Maximum Green (s)	21.6	89.3			62.3	62.3	19.7	19.7	19.7			
Yellow Time (s)	3.0	4.5			4.5	4.5	3.7	3.7	3.7			
All-Red Time (s)	2.4	1.2			1.2	1.2	1.6	1.6	1.6			
Lost Time Adjust (s)	-0.4	-0.7			-0.7	-0.7		-0.3	-0.3			
Total Lost Time (s)	5.0	5.0			5.0	5.0		5.0	5.0			
Lead/Lag	Lead				Lag	Lag						
Lead-Lag Optimize?	Yes				Yes	Yes						
Vehicle Extension (s)	1.0	6.0			6.0	6.0	1.0	1.0	1.0			
Minimum Gap (s)	0.2	3.0			3.0	3.0	0.2	0.2	0.2			
Time Before Reduce (s)	0.0	15.0			15.0	15.0	0.0	0.0	0.0			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Time To Reduce (s)	0.0	30.0			30.0	30.0	0.0	0.0	0.0			
Recall Mode	None	C-Min			C-Min	C-Min	None	None	None			
Act Effct Green (s)	95.7	95.7			79.7	79.7		14.3	14.3			
Actuated g/C Ratio	0.80	0.80			0.66	0.66		0.12	0.12			
v/c Ratio	0.66	0.20			0.51	0.40		0.70	0.73			
Control Delay	22.4	8.8			9.7	9.5		68.0	63.8			
Queue Delay	0.0	0.0			0.0	0.0		0.0	0.0			
Total Delay	22.4	8.8			9.7	9.5		68.0	63.8			
LOS	C	A			A	A		E	E			
Approach Delay		13.2			9.7			65.4				
Approach LOS		B			A			E				
Queue Length 50th (ft)	17	0			161	104		111	104			
Queue Length 95th (ft)	274	225			m306	m185		174	146			
Internal Link Dist (ft)		808			515			1436			1516	
Turn Bay Length (ft)	275					125			850			
Base Capacity (vph)	526	2823			2349	1051		295	464			
Starvation Cap Reductn	0	0			0	0		0	0			
Spillback Cap Reductn	0	0			0	0		0	0			
Storage Cap Reductn	0	0			0	0		0	0			
Reduced v/c Ratio	0.49	0.20			0.51	0.40		0.50	0.52			

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 13 (11%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.73
Intersection Signal Delay: 18.4 Intersection LOS: B
Intersection Capacity Utilization 63.8% ICU Level of Service B
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Idlewild Road & I-485 NB Ramp

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	238	807	0	0	650	282	262	4	480	0	0	0
Future Volume (vph)	238	807	0	0	650	282	262	4	480	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	275		0	0		125	200		850	0		0
Storage Lanes	1		0	0		1	1		1	0		0
Taper Length (ft)	225			25			225			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	0.88	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950							0.953				
Satd. Flow (prot)	1770	3539	0	0	3539	1583	0	1775	2787	0	0	0
Flt Permitted	0.302							0.953				
Satd. Flow (perm)	563	3539	0	0	3539	1583	0	1775	2787	0	0	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			50			50	
Link Distance (ft)		888			595			1516			1596	
Travel Time (s)		13.5			9.0			20.7			21.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	264	897	0	0	722	313	291	4	533	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	264	897	0	0	722	313	0	295	533	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane					Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	5	2			6			4				
Permitted Phases	2					6	4		4			
Detector Phase	5	2			6	6	4	4	4			
Switch Phase												
Minimum Initial (s)	7.0	12.0			12.0	12.0	7.0	7.0	7.0			
Minimum Split (s)	13.0	18.0			18.0	18.0	13.0	13.0	13.0			
Total Split (s)	28.0	77.0			49.0	49.0	43.0	43.0	43.0			
Total Split (%)	23.3%	64.2%			40.8%	40.8%	35.8%	35.8%	35.8%			
Maximum Green (s)	22.6	71.3			43.3	43.3	37.7	37.7	37.7			
Yellow Time (s)	3.0	4.5			4.5	4.5	3.7	3.7	3.7			
All-Red Time (s)	2.4	1.2			1.2	1.2	1.6	1.6	1.6			
Lost Time Adjust (s)	-0.4	-0.7			-0.7	-0.7		-0.3	-0.3			
Total Lost Time (s)	5.0	5.0			5.0	5.0		5.0	5.0			
Lead/Lag	Lead				Lag	Lag						
Lead-Lag Optimize?	Yes				Yes	Yes						
Vehicle Extension (s)	1.0	6.0			6.0	6.0	1.0	1.0	1.0			
Minimum Gap (s)	0.2	3.0			3.0	3.0	0.2	0.2	0.2			
Time Before Reduce (s)	0.0	15.0			15.0	15.0	0.0	0.0	0.0			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Time To Reduce (s)	0.0	30.0			30.0	30.0	0.0	0.0	0.0			
Recall Mode	None	C-Min			C-Min	C-Min	None	None	None			
Act Effct Green (s)	82.8	82.8			66.8	66.8		27.2	27.2			
Actuated g/C Ratio	0.69	0.69			0.56	0.56		0.23	0.23			
v/c Ratio	0.53	0.37			0.37	0.36		0.73	0.84			
Control Delay	18.4	15.9			9.7	10.6		53.7	56.8			
Queue Delay	0.0	0.0			0.0	0.0		0.0	0.0			
Total Delay	18.4	15.9			9.7	10.6		53.7	56.8			
LOS	B	B			A	B		D	E			
Approach Delay		16.5			10.0			55.7				
Approach LOS		B			A			E				
Queue Length 50th (ft)	134	249			90	74		213	225			
Queue Length 95th (ft)	228	357			m234	m226		290	274			
Internal Link Dist (ft)		808			515			1436			1516	
Turn Bay Length (ft)	275					125			850			
Base Capacity (vph)	619	2441			1970	881		562	882			
Starvation Cap Reductn	0	0			0	0		0	0			
Spillback Cap Reductn	0	0			0	0		0	0			
Storage Cap Reductn	0	0			0	0		0	0			
Reduced v/c Ratio	0.43	0.37			0.37	0.36		0.52	0.60			

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 21 (18%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 55
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.84
Intersection Signal Delay: 25.0 Intersection LOS: C
Intersection Capacity Utilization 63.6% ICU Level of Service B
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Idlewild Road & I-485 NB Ramp

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	243	823	0	0	663	288	267	0	490	0	0	0
Future Volume (vph)	243	823	0	0	663	288	267	0	490	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	275		0	0		125	200		850	0		0
Storage Lanes	1		0	0		1	1		1	0		0
Taper Length (ft)	225			25			225			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	0.88	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950							0.950				
Satd. Flow (prot)	1770	3539	0	0	3539	1583	0	1770	2787	0	0	0
Flt Permitted	0.294							0.950				
Satd. Flow (perm)	548	3539	0	0	3539	1583	0	1770	2787	0	0	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			50			50	
Link Distance (ft)		888			595			1516			1596	
Travel Time (s)		13.5			9.0			20.7			21.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	270	914	0	0	737	320	297	0	544	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	270	914	0	0	737	320	0	297	544	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane					Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	5	2			6			4				
Permitted Phases	2					6	4		4			
Detector Phase	5	2			6	6	4	4	4			
Switch Phase												
Minimum Initial (s)	7.0	12.0			12.0	12.0	7.0	7.0	7.0			
Minimum Split (s)	13.0	18.0			18.0	18.0	13.0	13.0	13.0			
Total Split (s)	27.0	78.0			51.0	51.0	42.0	42.0	42.0			
Total Split (%)	22.5%	65.0%			42.5%	42.5%	35.0%	35.0%	35.0%			
Maximum Green (s)	21.6	72.3			45.3	45.3	36.7	36.7	36.7			
Yellow Time (s)	3.0	4.5			4.5	4.5	3.7	3.7	3.7			
All-Red Time (s)	2.4	1.2			1.2	1.2	1.6	1.6	1.6			
Lost Time Adjust (s)	-0.4	-0.7			-0.7	-0.7		-0.3	-0.3			
Total Lost Time (s)	5.0	5.0			5.0	5.0		5.0	5.0			
Lead/Lag	Lead				Lag	Lag						
Lead-Lag Optimize?	Yes				Yes	Yes						
Vehicle Extension (s)	1.0	6.0			6.0	6.0	1.0	1.0	1.0			
Minimum Gap (s)	0.2	3.0			3.0	3.0	0.2	0.2	0.2			
Time Before Reduce (s)	0.0	15.0			15.0	15.0	0.0	0.0	0.0			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Time To Reduce (s)	0.0	30.0			30.0	30.0	0.0	0.0	0.0			
Recall Mode	None	C-Min			C-Min	C-Min	None	None	None			
Act Effct Green (s)	82.4	82.4			66.2	66.2		27.6	27.6			
Actuated g/C Ratio	0.69	0.69			0.55	0.55		0.23	0.23			
v/c Ratio	0.55	0.38			0.38	0.37		0.73	0.85			
Control Delay	14.5	13.4			7.8	8.5		53.1	56.8			
Queue Delay	0.0	0.0			0.0	0.0		0.0	0.0			
Total Delay	14.5	13.4			7.8	8.5		53.1	56.8			
LOS	B	B			A	A		D	E			
Approach Delay		13.6			8.0			55.5				
Approach LOS		B			A			E				
Queue Length 50th (ft)	138	270			50	42		214	230			
Queue Length 95th (ft)	201	347			m193	m187		290	280			
Internal Link Dist (ft)		808			515			1436			1516	
Turn Bay Length (ft)	275					125			850			
Base Capacity (vph)	600	2429			1951	873		545	859			
Starvation Cap Reductn	0	0			0	0		0	0			
Spillback Cap Reductn	0	0			0	0		0	0			
Storage Cap Reductn	0	0			0	0		0	0			
Reduced v/c Ratio	0.45	0.38			0.38	0.37		0.54	0.63			

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 18 (15%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 55
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.85
Intersection Signal Delay: 23.1 Intersection LOS: C
Intersection Capacity Utilization 64.6% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Idlewild Road & I-485 NB Ramp

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	243	928	0	0	786	329	267	0	542	0	0	0
Future Volume (vph)	243	928	0	0	786	329	267	0	542	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	275		0	0		125	200		850	0		0
Storage Lanes	1		0	0		1	1		1	0		0
Taper Length (ft)	225			25			225			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	0.88	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950							0.950				
Satd. Flow (prot)	1770	3539	0	0	3539	1583	0	1770	2787	0	0	0
Flt Permitted	0.230							0.950				
Satd. Flow (perm)	428	3539	0	0	3539	1583	0	1770	2787	0	0	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			50			50	
Link Distance (ft)		888			595			1516			1596	
Travel Time (s)		13.5			9.0			20.7			21.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	270	1031	0	0	873	366	297	0	602	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	270	1031	0	0	873	366	0	297	602	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane					Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	5	2			6			4				
Permitted Phases	2					6	4		4			
Detector Phase	5	2			6	6	4	4	4			
Switch Phase												
Minimum Initial (s)	7.0	12.0			12.0	12.0	7.0	7.0	7.0			
Minimum Split (s)	13.0	18.0			18.0	18.0	13.0	13.0	13.0			
Total Split (s)	26.0	77.0			51.0	51.0	43.0	43.0	43.0			
Total Split (%)	21.7%	64.2%			42.5%	42.5%	35.8%	35.8%	35.8%			
Maximum Green (s)	20.6	71.3			45.3	45.3	37.7	37.7	37.7			
Yellow Time (s)	3.0	4.5			4.5	4.5	3.7	3.7	3.7			
All-Red Time (s)	2.4	1.2			1.2	1.2	1.6	1.6	1.6			
Lost Time Adjust (s)	-0.4	-0.7			-0.7	-0.7		-0.3	-0.3			
Total Lost Time (s)	5.0	5.0			5.0	5.0		5.0	5.0			
Lead/Lag	Lead				Lag	Lag						
Lead-Lag Optimize?	Yes				Yes	Yes						
Vehicle Extension (s)	1.0	6.0			6.0	6.0	1.0	1.0	1.0			
Minimum Gap (s)	0.2	3.0			3.0	3.0	0.2	0.2	0.2			
Time Before Reduce (s)	0.0	15.0			15.0	15.0	0.0	0.0	0.0			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Time To Reduce (s)	0.0	30.0			30.0	30.0	0.0	0.0	0.0			
Recall Mode	None	C-Min			C-Min	C-Min	None	None	None			
Act Effct Green (s)	79.9	79.9			62.5	62.5		30.1	30.1			
Actuated g/C Ratio	0.67	0.67			0.52	0.52		0.25	0.25			
v/c Ratio	0.64	0.44			0.47	0.44		0.67	0.86			
Control Delay	11.4	3.2			12.9	13.8		47.6	55.6			
Queue Delay	0.0	0.0			0.0	0.0		0.0	0.0			
Total Delay	11.4	3.2			12.9	13.8		47.6	55.6			
LOS	B	A			B	B		D	E			
Approach Delay		4.9			13.2			52.9				
Approach LOS		A			B			D				
Queue Length 50th (ft)	18	6			116	90		208	254			
Queue Length 95th (ft)	23	22			m272	m211		281	303			
Internal Link Dist (ft)		808			515			1436			1516	
Turn Bay Length (ft)	275					125			850			
Base Capacity (vph)	519	2355			1842	824		560	882			
Starvation Cap Reductn	0	0			0	0		0	0			
Spillback Cap Reductn	0	0			0	0		0	0			
Storage Cap Reductn	0	0			0	0		0	0			
Reduced v/c Ratio	0.52	0.44			0.47	0.44		0.53	0.68			

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 12 (10%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 20.5 Intersection LOS: C
Intersection Capacity Utilization 71.6% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Idlewild Road & I-485 NB Ramp

APPENDIX H

IDLEWILD ROAD AND
MARSHALL HOOKS ROAD / ACCESS A

SYNCHRO REPORTS

5: Boyd Funderburk Drive/Marshall Hooks Road & Idlewild Road

Timing Plan: AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	556	4	3	1279	4	1	4	4	4	1	4
Future Volume (Veh/h)	4	556	4	3	1279	4	1	4	4	4	1	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	618	4	3	1421	4	1	4	4	4	1	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage veh)		2										
Upstream signal (ft)		595			1027							
pX, platoon unblocked				0.99			0.99	0.99	0.99	0.99	0.99	
vC, conflicting volume	1425			622			1349	2059	311	1752	2059	712
vC1, stage 1 conf vol							628	628		1429	1429	
vC2, stage 2 conf vol							721	1431		323	630	
vCu, unblocked vol	1425			590			1327	2046	275	1735	2046	712
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			100	98	99	97	99	99
cM capacity (veh/h)	473			969			299	179	713	136	182	375

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	4	412	210	3	947	478	9	9
Volume Left	4	0	0	3	0	0	1	4
Volume Right	0	0	4	0	0	4	4	4
cSH	473	1700	1700	969	1700	1700	287	198
Volume to Capacity	0.01	0.24	0.12	0.00	0.56	0.28	0.03	0.05
Queue Length 95th (ft)	1	0	0	0	0	0	2	4
Control Delay (s)	12.7	0.0	0.0	8.7	0.0	0.0	17.9	24.1
Lane LOS	B			A			C	C
Approach Delay (s)	0.1			0.0			17.9	24.1
Approach LOS							C	C

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	45.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	567	4	3	1305	4	1	4	4	4	1	4
Future Volume (Veh/h)	4	567	4	3	1305	4	1	4	4	4	1	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	630	4	3	1450	4	1	4	4	4	1	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage veh)		2										
Upstream signal (ft)		595			1027							
pX, platoon unblocked				0.99			0.99	0.99	0.99	0.99	0.99	
vC, conflicting volume	1454			634			1376	2100	317	1787	2100	727
vC1, stage 1 conf vol							640	640		1458	1458	
vC2, stage 2 conf vol							736	1460		329	642	
vCu, unblocked vol	1454			598			1351	2086	277	1769	2086	727
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			100	98	99	97	99	99
cM capacity (veh/h)	461			960			293	173	710	131	177	366

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	4	420	214	3	967	487	9	9
Volume Left	4	0	0	3	0	0	1	4
Volume Right	0	0	4	0	0	4	4	4
cSH	461	1700	1700	960	1700	1700	280	191
Volume to Capacity	0.01	0.25	0.13	0.00	0.57	0.29	0.03	0.05
Queue Length 95th (ft)	1	0	0	0	0	0	2	4
Control Delay (s)	12.9	0.0	0.0	8.8	0.0	0.0	18.3	24.8
Lane LOS	B			A			C	C
Approach Delay (s)	0.1			0.0			18.3	24.8
Approach LOS							C	C

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	46.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	591	123	74	1449	4	0	0	40	0	0	5
Future Volume (Veh/h)	4	591	123	74	1449	4	0	0	40	0	0	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	657	137	82	1610	4	0	0	44	0	0	6
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage veh)		2										
Upstream signal (ft)		595			1027							
pX, platoon unblocked				0.97			0.97	0.97	0.97	0.97	0.97	
vC, conflicting volume	1614			794			1708	2512	397	2156	2578	807
vC1, stage 1 conf vol							734	734		1776	1776	
vC2, stage 2 conf vol							975	1778		380	802	
vCu, unblocked vol	1614			730			1671	2497	322	2132	2566	807
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			90			100	100	93	100	100	98
cM capacity (veh/h)	400			845			203	110	655	75	111	324

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	4	438	356	82	1073	541	44	6
Volume Left	4	0	0	82	0	0	0	0
Volume Right	0	0	137	0	0	4	44	6
cSH	400	1700	1700	845	1700	1700	655	324
Volume to Capacity	0.01	0.26	0.21	0.10	0.63	0.32	0.07	0.02
Queue Length 95th (ft)	1	0	0	8	0	0	5	1
Control Delay (s)	14.1	0.0	0.0	9.7	0.0	0.0	10.9	16.3
Lane LOS	B			A			B	C
Approach Delay (s)	0.1			0.5			10.9	16.3
Approach LOS							B	C

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	50.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	591	123	74	1449	4	0	0	40	0	0	5
Future Volume (Veh/h)	4	591	123	74	1449	4	0	0	40	0	0	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	657	137	82	1610	4	0	0	44	0	0	6
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage veh)		2										
Upstream signal (ft)		595			1027							
pX, platoon unblocked				0.99			0.99	0.99	0.99	0.99	0.99	
vC, conflicting volume	1614			794			1640	2443	328	2156	2578	807
vC1, stage 1 conf vol							665	665		1776	1776	
vC2, stage 2 conf vol							975	1778		380	802	
vCu, unblocked vol	1614			761			1620	2435	289	2144	2572	807
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			90			100	100	94	100	100	98
cM capacity (veh/h)	400			834			207	111	698	75	110	324

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	4	328	328	137	82	1073	541	44	6
Volume Left	4	0	0	0	82	0	0	0	0
Volume Right	0	0	0	137	0	0	4	44	6
cSH	400	1700	1700	1700	834	1700	1700	698	324
Volume to Capacity	0.01	0.19	0.19	0.08	0.10	0.63	0.32	0.06	0.02
Queue Length 95th (ft)	1	0	0	0	8	0	0	5	1
Control Delay (s)	14.1	0.0	0.0	0.0	9.8	0.0	0.0	10.5	16.3
Lane LOS	B				A			B	C
Approach Delay (s)	0.1				0.5			10.5	16.3
Approach LOS								B	C

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	50.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	1286	4	2	930	3	1	4	4	4	4	1
Future Volume (Veh/h)	1	1286	4	2	930	3	1	4	4	4	4	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1	1429	4	2	1033	3	1	4	4	4	4	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage veh)		2										
Upstream signal (ft)		595			1027							
pX, platoon unblocked				0.89			0.89	0.89	0.89	0.89	0.89	
vC, conflicting volume	1036			1433			1956	2473	716	1761	2474	518
vC1, stage 1 conf vol							1433	1433		1038	1038	
vC2, stage 2 conf vol							524	1040		722	1435	
vCu, unblocked vol	1036			1248			1833	2411	446	1614	2411	518
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	98	99	98	98	100
cM capacity (veh/h)	667			495			153	172	500	218	171	502

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	1	953	480	2	689	347	9	9
Volume Left	1	0	0	2	0	0	1	4
Volume Right	0	0	4	0	0	3	4	1
cSH	667	1700	1700	495	1700	1700	238	206
Volume to Capacity	0.00	0.56	0.28	0.00	0.41	0.20	0.04	0.04
Queue Length 95th (ft)	0	0	0	0	0	0	3	3
Control Delay (s)	10.4	0.0	0.0	12.3	0.0	0.0	20.7	23.3
Lane LOS	B			B			C	C
Approach Delay (s)	0.0			0.0			20.7	23.3
Approach LOS							C	C

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	1312	4	2	949	3	1	4	4	4	4	1
Future Volume (Veh/h)	1	1312	4	2	949	3	1	4	4	4	4	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1	1458	4	2	1054	3	1	4	4	4	4	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage veh)		2										
Upstream signal (ft)		595			1027							
pX, platoon unblocked				0.89			0.89	0.89	0.89	0.89	0.89	
vC, conflicting volume	1057			1462			1996	2523	731	1796	2524	528
vC1, stage 1 conf vol							1462	1462		1060	1060	
vC2, stage 2 conf vol							534	1061		737	1464	
vCu, unblocked vol	1057			1272			1872	2464	451	1648	2465	528
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	98	99	98	98	100
cM capacity (veh/h)	655			482			148	167	495	212	166	495

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	1	972	490	2	703	354	9	9
Volume Left	1	0	0	2	0	0	1	4
Volume Right	0	0	4	0	0	3	4	1
cSH	655	1700	1700	482	1700	1700	232	200
Volume to Capacity	0.00	0.57	0.29	0.00	0.41	0.21	0.04	0.05
Queue Length 95th (ft)	0	0	0	0	0	0	3	4
Control Delay (s)	10.5	0.0	0.0	12.5	0.0	0.0	21.2	23.9
Lane LOS	B			B			C	C
Approach Delay (s)	0.0			0.0			21.2	23.9
Approach LOS							C	C

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	46.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	1324	149	89	1114	3	0	0	59	0	0	1
Future Volume (Veh/h)	1	1324	149	89	1114	3	0	0	59	0	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1	1471	166	99	1238	3	0	0	66	0	0	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage veh)		2										
Upstream signal (ft)		595			1027							
pX, platoon unblocked				0.86			0.86	0.86	0.86	0.86	0.86	
vC, conflicting volume	1241			1637			2374	2995	818	2241	3076	620
vC1, stage 1 conf vol							1556	1556		1438	1438	
vC2, stage 2 conf vol							818	1439		804	1639	
vCu, unblocked vol	1241			1415			2272	2994	463	2117	3089	620
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			76			100	100	86	100	100	100
cM capacity (veh/h)	557			411			119	111	469	98	64	431

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	1	981	656	99	825	416	66	1
Volume Left	1	0	0	99	0	0	0	0
Volume Right	0	0	166	0	0	3	66	1
cSH	557	1700	1700	411	1700	1700	469	431
Volume to Capacity	0.00	0.58	0.39	0.24	0.49	0.24	0.14	0.00
Queue Length 95th (ft)	0	0	0	23	0	0	12	0
Control Delay (s)	11.5	0.0	0.0	16.5	0.0	0.0	13.9	13.4
Lane LOS	B			C			B	B
Approach Delay (s)	0.0			1.2			13.9	13.4
Approach LOS							B	B

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	52.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	1324	149	89	1114	3	0	0	59	0	0	1
Future Volume (Veh/h)	1	1324	149	89	1114	3	0	0	59	0	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1	1471	166	99	1238	3	0	0	66	0	0	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage veh)		2										
Upstream signal (ft)		595			1027							
pX, platoon unblocked				0.87			0.87	0.87	0.87	0.87	0.87	
vC, conflicting volume	1241			1637			2291	2912	736	2241	3076	620
vC1, stage 1 conf vol							1473	1473		1438	1438	
vC2, stage 2 conf vol							818	1439		804	1639	
vCu, unblocked vol	1241			1431			2184	2899	393	2126	3088	620
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			76			100	100	87	100	100	100
cM capacity (veh/h)	557			409			131	115	526	98	63	431

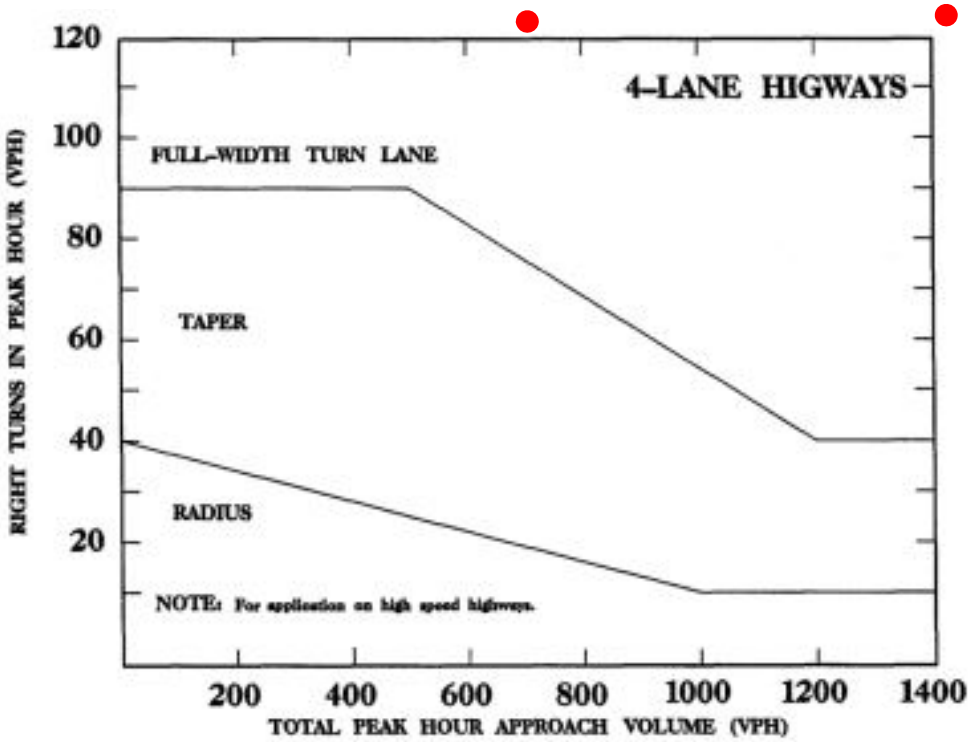
Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	1	736	736	166	99	825	416	66	1
Volume Left	1	0	0	0	99	0	0	0	0
Volume Right	0	0	0	166	0	0	3	66	1
cSH	557	1700	1700	1700	409	1700	1700	526	431
Volume to Capacity	0.00	0.43	0.43	0.10	0.24	0.49	0.24	0.13	0.00
Queue Length 95th (ft)	0	0	0	0	23	0	0	11	0
Control Delay (s)	11.5	0.0	0.0	0.0	16.6	0.0	0.0	12.8	13.4
Lane LOS	B				C			B	B
Approach Delay (s)	0.0				1.2			12.8	13.4
Approach LOS								B	B

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	48.2%	ICU Level of Service	A
Analysis Period (min)	15		

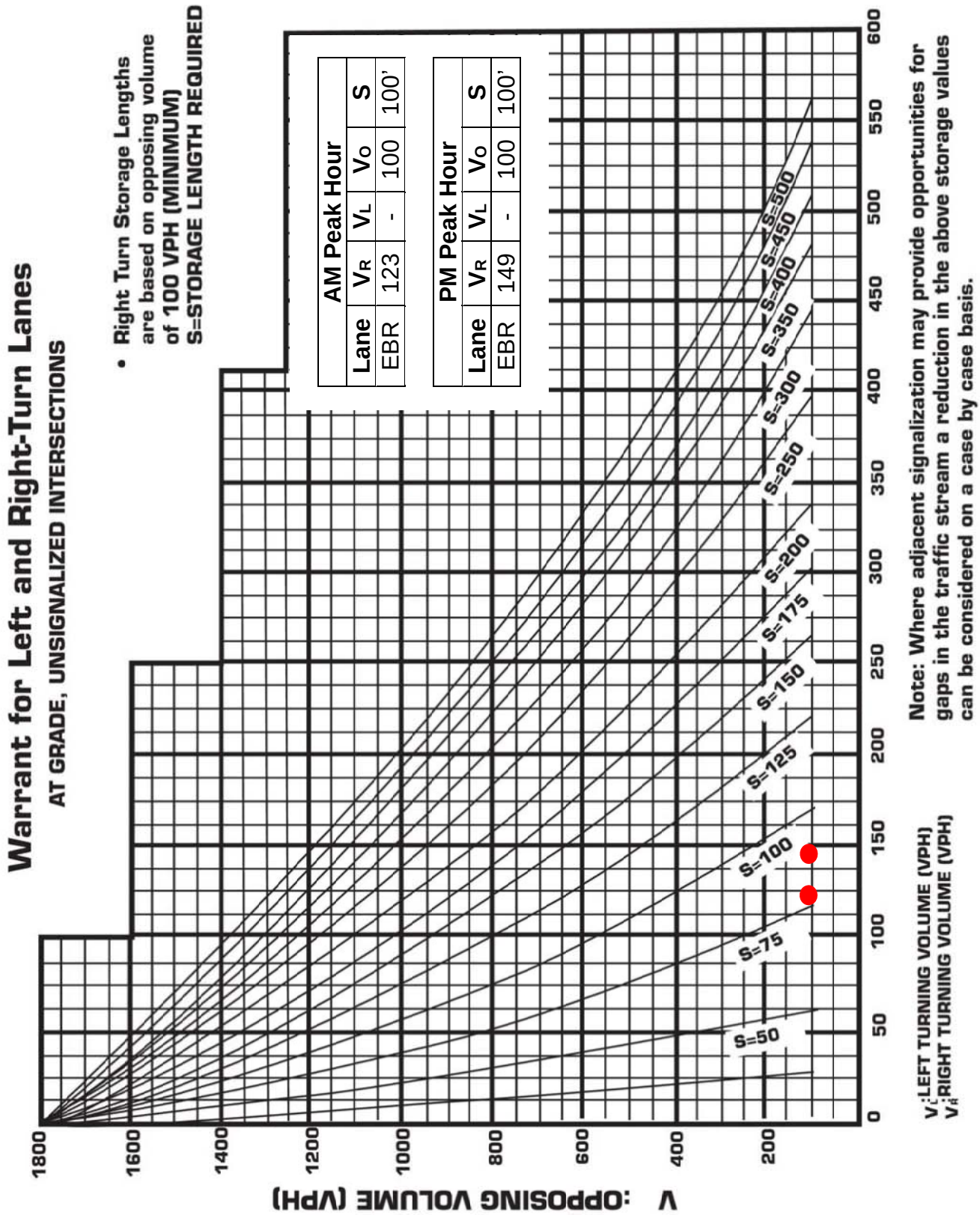
Idlewild Road and Access A

2020 Build				
Peak Hour	**Approach**	**Right Turn Volume**	**Approach Volume**	**Warranted?**
AM	Eastbound	123	714	Yes
PM	Eastbound	149	1473	Yes

RIGHT TURN LANE WARRANTS



Idlewild Road and Access A
2020 Build



APPENDIX I

IDLEWILD ROAD AND RITE AID DRIVEWAY

SYNCHRO REPORTS

Lane Group	EBT	EBR	WBU	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	476	8	1	70	1143	49	16
Future Volume (vph)	476	8	1	70	1143	49	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0		150		0	0
Storage Lanes		1		1		1	0
Taper Length (ft)				150		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.966	
Flt Protected				0.950		0.964	
Satd. Flow (prot)	1863	1583	0	1770	1863	1735	0
Flt Permitted				0.412		0.964	
Satd. Flow (perm)	1863	1583	0	767	1863	1735	0
Right Turn on Red		No					No
Satd. Flow (RTOR)							
Link Speed (mph)	45				45	35	
Link Distance (ft)	558				2122	2088	
Travel Time (s)	8.5				32.2	40.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	529	9	1	78	1270	54	18
Shared Lane Traffic (%)							
Lane Group Flow (vph)	529	9	0	79	1270	72	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Right	R NA	Left	Left	Left	Right
Median Width(ft)	12				12	12	
Link Offset(ft)	0				0	0	
Crosswalk Width(ft)	16				16	16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	9	15		15	9
Turn Type	NA	Perm	pm+pt	pm+pt	NA	Prot	
Protected Phases	2		1	1	6	4	
Permitted Phases		2	6	6			
Detector Phase	2	2	1	1	6	4	
Switch Phase							
Minimum Initial (s)	12.0	12.0	7.0	7.0	12.0	7.0	
Minimum Split (s)	19.0	19.0	13.0	13.0	19.0	12.0	
Total Split (s)	95.0	95.0	13.0	13.0	108.0	12.0	
Total Split (%)	79.2%	79.2%	10.8%	10.8%	90.0%	10.0%	
Maximum Green (s)	88.8	88.8	7.7	7.7	101.8	7.1	
Yellow Time (s)	4.9	4.9	3.0	3.0	4.9	3.0	
All-Red Time (s)	1.3	1.3	2.3	2.3	1.3	1.9	
Lost Time Adjust (s)	-1.2	-1.2		-0.3	-1.2	0.1	
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	
Lead/Lag	Lag	Lag	Lead	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			
Vehicle Extension (s)	6.0	6.0	1.0	1.0	6.0	1.0	
Minimum Gap (s)	3.0	3.0	0.2	0.2	3.0	0.2	
Time Before Reduce (s)	15.0	15.0	0.0	0.0	15.0	0.0	

Lane Group	EBT	EBR	WBU	WBL	WBT	NBL	NBR
Time To Reduce (s)	30.0	30.0	0.0	0.0	30.0	0.0	
Recall Mode	C-Min	C-Min	None	None	C-Min	None	
Act Effct Green (s)	95.4	95.4		104.3	105.3	8.1	
Actuated g/C Ratio	0.80	0.80		0.87	0.88	0.07	
v/c Ratio	0.36	0.01		0.11	0.78	0.62	
Control Delay	6.3	4.9		1.9	7.8	77.0	
Queue Delay	0.0	0.0		0.0	0.0	0.0	
Total Delay	6.3	4.9		1.9	7.8	77.0	
LOS	A	A		A	A	E	
Approach Delay	6.3				7.4	77.0	
Approach LOS	A				A	E	
Queue Length 50th (ft)	159	1		10	550	55	
Queue Length 95th (ft)	96	m4		m10	m201	#133	
Internal Link Dist (ft)	478				2042	2008	
Turn Bay Length (ft)				150			
Base Capacity (vph)	1494	1269		733	1652	117	
Starvation Cap Reductn	0	0		0	0	0	
Spillback Cap Reductn	0	0		0	0	0	
Storage Cap Reductn	0	0		0	0	0	
Reduced v/c Ratio	0.35	0.01		0.11	0.77	0.62	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.78
Intersection Signal Delay: 9.7 Intersection LOS: A
Intersection Capacity Utilization 74.3% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Rite Aid Driveway & Idlewild Road

Lane Group	EBT	EBR	WBU	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	486	8	1	71	1166	50	16
Future Volume (vph)	486	8	1	71	1166	50	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0		150		0	0
Storage Lanes		1		1		1	0
Taper Length (ft)				150		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.967	
Flt Protected				0.950		0.964	
Satd. Flow (prot)	1863	1583	0	1770	1863	1736	0
Flt Permitted				0.406		0.964	
Satd. Flow (perm)	1863	1583	0	756	1863	1736	0
Right Turn on Red		No					No
Satd. Flow (RTOR)							
Link Speed (mph)	45				45	35	
Link Distance (ft)	558				2122	2088	
Travel Time (s)	8.5				32.2	40.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	540	9	1	79	1296	56	18
Shared Lane Traffic (%)							
Lane Group Flow (vph)	540	9	0	80	1296	74	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Right	R NA	Left	Left	Left	Right
Median Width(ft)	12				12	12	
Link Offset(ft)	0				0	0	
Crosswalk Width(ft)	16				16	16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	9	15		15	9
Turn Type	NA	Perm	pm+pt	pm+pt	NA	Prot	
Protected Phases	2		1	1	6	4	
Permitted Phases		2	6	6			
Detector Phase	2	2	1	1	6	4	
Switch Phase							
Minimum Initial (s)	12.0	12.0	7.0	7.0	12.0	7.0	
Minimum Split (s)	19.0	19.0	13.0	13.0	19.0	12.0	
Total Split (s)	94.0	94.0	13.0	13.0	107.0	13.0	
Total Split (%)	78.3%	78.3%	10.8%	10.8%	89.2%	10.8%	
Maximum Green (s)	87.8	87.8	7.7	7.7	100.8	8.1	
Yellow Time (s)	4.9	4.9	3.0	3.0	4.9	3.0	
All-Red Time (s)	1.3	1.3	2.3	2.3	1.3	1.9	
Lost Time Adjust (s)	-1.2	-1.2		-0.3	-1.2	0.1	
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	
Lead/Lag	Lag	Lag	Lead	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			
Vehicle Extension (s)	6.0	6.0	1.0	1.0	6.0	1.0	
Minimum Gap (s)	3.0	3.0	0.2	0.2	3.0	0.2	
Time Before Reduce (s)	15.0	15.0	0.0	0.0	15.0	0.0	

Lane Group	EBT	EBR	WBU	WBL	WBT	NBL	NBR
Time To Reduce (s)	30.0	30.0	0.0	0.0	30.0	0.0	
Recall Mode	C-Min	C-Min	None	None	C-Min	None	
Act Effct Green (s)	95.3	95.3		104.1	105.1	8.2	
Actuated g/C Ratio	0.79	0.79		0.87	0.88	0.07	
v/c Ratio	0.37	0.01		0.11	0.79	0.62	
Control Delay	3.6	0.6		1.8	8.2	76.9	
Queue Delay	0.0	0.0		0.0	0.0	0.0	
Total Delay	3.6	0.6		1.8	8.2	76.9	
LOS	A	A		A	A	E	
Approach Delay	3.6				7.8	76.9	
Approach LOS	A				A	E	
Queue Length 50th (ft)	46	0		4	601	56	
Queue Length 95th (ft)	108	m0		m10	m564	#128	
Internal Link Dist (ft)	478				2042	2008	
Turn Bay Length (ft)				150			
Base Capacity (vph)	1485	1262		723	1642	125	
Starvation Cap Reductn	0	0		0	0	0	
Spillback Cap Reductn	0	0		0	0	0	
Storage Cap Reductn	0	0		0	0	0	
Reduced v/c Ratio	0.36	0.01		0.11	0.79	0.59	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 103 (86%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.79
Intersection Signal Delay: 9.2 Intersection LOS: A
Intersection Capacity Utilization 75.5% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Rite Aid Driveway & Idlewild Road

Lane Group	EBT	EBR	WBU	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	522	32	1	95	1237	194	75
Future Volume (vph)	522	32	1	95	1237	194	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0		150		0	0
Storage Lanes		1		1		1	0
Taper Length (ft)				150		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.963	
Flt Protected				0.950		0.965	
Satd. Flow (prot)	1863	1583	0	1770	1863	1731	0
Flt Permitted				0.332		0.965	
Satd. Flow (perm)	1863	1583	0	618	1863	1731	0
Right Turn on Red		No					No
Satd. Flow (RTOR)							
Link Speed (mph)	45				45	35	
Link Distance (ft)	558				2122	2088	
Travel Time (s)	8.5				32.2	40.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	580	36	1	106	1374	216	83
Shared Lane Traffic (%)							
Lane Group Flow (vph)	580	36	0	107	1374	299	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Right	R NA	Left	Left	Left	Right
Median Width(ft)	12				12	12	
Link Offset(ft)	0				0	0	
Crosswalk Width(ft)	16				16	16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	9	15		15	9
Turn Type	NA	Perm	pm+pt	pm+pt	NA	Prot	
Protected Phases	2		1	1	6	4	
Permitted Phases		2	6	6			
Detector Phase	2	2	1	1	6	4	
Switch Phase							
Minimum Initial (s)	12.0	12.0	7.0	7.0	12.0	7.0	
Minimum Split (s)	19.0	19.0	13.0	13.0	19.0	12.0	
Total Split (s)	81.0	81.0	13.0	13.0	94.0	26.0	
Total Split (%)	67.5%	67.5%	10.8%	10.8%	78.3%	21.7%	
Maximum Green (s)	74.8	74.8	7.7	7.7	87.8	21.1	
Yellow Time (s)	4.9	4.9	3.0	3.0	4.9	3.0	
All-Red Time (s)	1.3	1.3	2.3	2.3	1.3	1.9	
Lost Time Adjust (s)	-1.2	-1.2		-0.3	-1.2	0.1	
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	
Lead/Lag	Lag	Lag	Lead	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			
Vehicle Extension (s)	6.0	6.0	1.0	1.0	6.0	1.0	
Minimum Gap (s)	3.0	3.0	0.2	0.2	3.0	0.2	
Time Before Reduce (s)	15.0	15.0	0.0	0.0	15.0	0.0	

Lane Group	EBT	EBR	WBU	WBL	WBT	NBL	NBR
Time To Reduce (s)	30.0	30.0	0.0	0.0	30.0	0.0	
Recall Mode	C-Min	C-Min	None	None	C-Min	None	
Act Effct Green (s)	76.7	76.7		89.0	89.0	21.0	
Actuated g/C Ratio	0.64	0.64		0.74	0.74	0.18	
v/c Ratio	0.49	0.04		0.20	0.99	0.99	
Control Delay	5.6	1.0		4.6	24.9	99.2	
Queue Delay	0.0	0.0		0.0	0.0	0.0	
Total Delay	5.6	1.0		4.6	24.9	99.2	
LOS	A	A		A	C	F	
Approach Delay	5.3				23.4	99.2	
Approach LOS	A				C	F	
Queue Length 50th (ft)	153	1		19	550	234	
Queue Length 95th (ft)	56	m2		m19	m#1160	#417	
Internal Link Dist (ft)	478				2042	2008	
Turn Bay Length (ft)				150			
Base Capacity (vph)	1190	1011		535	1381	302	
Starvation Cap Reductn	0	0		0	0	0	
Spillback Cap Reductn	0	0		0	0	0	
Storage Cap Reductn	0	0		0	0	0	
Reduced v/c Ratio	0.49	0.04		0.20	0.99	0.99	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 88 (73%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.99
Intersection Signal Delay: 28.2 Intersection LOS: C
Intersection Capacity Utilization 88.8% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Rite Aid Driveway & Idlewild Road

Lane Group	EBT	EBR	WBU	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	522	32	1	95	1237	194	75
Future Volume (vph)	522	32	1	95	1237	194	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0		150		0	325
Storage Lanes		1		1		1	1
Taper Length (ft)				150		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850					0.850
Flt Protected				0.950		0.950	
Satd. Flow (prot)	1863	1583	0	1770	1863	1770	1583
Flt Permitted				0.353		0.950	
Satd. Flow (perm)	1863	1583	0	658	1863	1770	1583
Right Turn on Red		No					No
Satd. Flow (RTOR)							
Link Speed (mph)	45				45	35	
Link Distance (ft)	558				2122	2088	
Travel Time (s)	8.5				32.2	40.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	580	36	1	106	1374	216	83
Shared Lane Traffic (%)							
Lane Group Flow (vph)	580	36	0	107	1374	216	83
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Right	R NA	Left	Left	Left	Right
Median Width(ft)	12				12	12	
Link Offset(ft)	0				0	0	
Crosswalk Width(ft)	16				16	16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	9	15		15	9
Turn Type	NA	Perm	pm+pt	pm+pt	NA	Prot	pm+ov
Protected Phases	2		1!	1	6	4	1!
Permitted Phases		2	6!	6			4
Detector Phase	2	2	1	1	6	4	1
Switch Phase							
Minimum Initial (s)	12.0	12.0	7.0	7.0	12.0	7.0	7.0
Minimum Split (s)	19.0	19.0	13.0	13.0	19.0	12.0	13.0
Total Split (s)	86.0	86.0	13.0	13.0	99.0	21.0	13.0
Total Split (%)	71.7%	71.7%	10.8%	10.8%	82.5%	17.5%	10.8%
Maximum Green (s)	79.8	79.8	7.7	7.7	92.8	16.1	7.7
Yellow Time (s)	4.9	4.9	3.0	3.0	4.9	3.0	3.0
All-Red Time (s)	1.3	1.3	2.3	2.3	1.3	1.9	2.3
Lost Time Adjust (s)	-1.2	-1.2		-0.3	-1.2	0.1	-0.3
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lag	Lead	Lead			Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes
Vehicle Extension (s)	6.0	6.0	1.0	1.0	6.0	1.0	1.0
Minimum Gap (s)	3.0	3.0	0.2	0.2	3.0	0.2	0.2
Time Before Reduce (s)	15.0	15.0	0.0	0.0	15.0	0.0	0.0

Lane Group	EBT	EBR	WBU	WBL	WBT	NBL	NBR
Time To Reduce (s)	30.0	30.0	0.0	0.0	30.0	0.0	0.0
Recall Mode	C-Min	C-Min	None	None	C-Min	None	None
Act Effct Green (s)	82.1	82.1		94.4	94.4	15.6	27.9
Actuated g/C Ratio	0.68	0.68		0.79	0.79	0.13	0.23
v/c Ratio	0.45	0.03		0.18	0.94	0.94	0.23
Control Delay	3.8	0.7		3.0	13.2	98.1	39.1
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0
Total Delay	3.8	0.7		3.0	13.2	98.1	39.1
LOS	A	A		A	B	F	D
Approach Delay	3.6				12.5	81.7	
Approach LOS	A				B	F	
Queue Length 50th (ft)	150	3		14	482	168	52
Queue Length 95th (ft)	59	m1		m14	m495	#314	98
Internal Link Dist (ft)	478				2042	2008	
Turn Bay Length (ft)				150			325
Base Capacity (vph)	1275	1083		591	1466	236	376
Starvation Cap Reductn	0	0		0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0
Reduced v/c Ratio	0.45	0.03		0.18	0.94	0.92	0.22

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 89 (74%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.94
Intersection Signal Delay: 18.8 Intersection LOS: B
Intersection Capacity Utilization 84.2% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.
! Phase conflict between lane groups.

Splits and Phases: 6: Rite Aid Driveway & Idlewild Road

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	959	27	86	823	116	201
Future Volume (vph)	959	27	86	823	116	201
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	150		0	0
Storage Lanes		1	1		1	0
Taper Length (ft)			150		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.914	
Flt Protected			0.950		0.982	
Satd. Flow (prot)	1863	1583	1770	1863	1672	0
Flt Permitted			0.053		0.982	
Satd. Flow (perm)	1863	1583	99	1863	1672	0
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	45			45	35	
Link Distance (ft)	558			2122	2088	
Travel Time (s)	8.5			32.2	40.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1066	30	96	914	129	223
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1066	30	96	914	352	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Turn Type	NA	Perm	pm+pt	NA	Prot	
Protected Phases	2		1	6	4	
Permitted Phases		2	6			
Detector Phase	2	2	1	6	4	
Switch Phase						
Minimum Initial (s)	12.0	12.0	7.0	12.0	7.0	
Minimum Split (s)	19.0	19.0	13.0	19.0	12.0	
Total Split (s)	76.0	76.0	13.0	89.0	31.0	
Total Split (%)	63.3%	63.3%	10.8%	74.2%	25.8%	
Maximum Green (s)	69.8	69.8	7.7	82.8	26.1	
Yellow Time (s)	4.9	4.9	3.0	4.9	3.0	
All-Red Time (s)	1.3	1.3	2.3	1.3	1.9	
Lost Time Adjust (s)	-1.2	-1.2	-0.3	-1.2	0.1	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Vehicle Extension (s)	6.0	6.0	1.0	6.0	1.0	
Minimum Gap (s)	3.0	3.0	0.2	3.0	0.2	
Time Before Reduce (s)	15.0	15.0	0.0	15.0	0.0	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Time To Reduce (s)	30.0	30.0	0.0	30.0	0.0	
Recall Mode	C-Min	C-Min	None	C-Min	None	
Act Effct Green (s)	71.6	71.6	84.1	84.1	25.9	
Actuated g/C Ratio	0.60	0.60	0.70	0.70	0.22	
v/c Ratio	0.96	0.03	0.55	0.70	0.98	
Control Delay	33.6	4.9	25.3	11.3	88.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	33.6	4.9	25.3	11.3	88.9	
LOS	C	A	C	B	F	
Approach Delay	32.8			12.6	88.9	
Approach LOS	C			B	F	
Queue Length 50th (ft)	762	2	16	506	272	
Queue Length 95th (ft)	#1054	m10	m39	m575	#464	
Internal Link Dist (ft)	478			2042	2008	
Turn Bay Length (ft)			150			
Base Capacity (vph)	1111	943	180	1305	362	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.96	0.03	0.53	0.70	0.97	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 86 (72%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.98
Intersection Signal Delay: 32.5 Intersection LOS: C
Intersection Capacity Utilization 87.6% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Rite Aid Driveway & Idlewild Road

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	978	28	88	840	118	205
Future Volume (vph)	978	28	88	840	118	205
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	150		0	0
Storage Lanes		1	1		1	0
Taper Length (ft)			150		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.914	
Flt Protected			0.950		0.982	
Satd. Flow (prot)	1863	1583	1770	1863	1672	0
Flt Permitted			0.053		0.982	
Satd. Flow (perm)	1863	1583	99	1863	1672	0
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	45			45	35	
Link Distance (ft)	558			2122	2088	
Travel Time (s)	8.5			32.2	40.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1087	31	98	933	131	228
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1087	31	98	933	359	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Turn Type	NA	Perm	pm+pt	NA	Prot	
Protected Phases	2		1	6	4	
Permitted Phases		2	6			
Detector Phase	2	2	1	6	4	
Switch Phase						
Minimum Initial (s)	12.0	12.0	7.0	12.0	7.0	
Minimum Split (s)	19.0	19.0	13.0	19.0	12.0	
Total Split (s)	76.0	76.0	13.0	89.0	31.0	
Total Split (%)	63.3%	63.3%	10.8%	74.2%	25.8%	
Maximum Green (s)	69.8	69.8	7.7	82.8	26.1	
Yellow Time (s)	4.9	4.9	3.0	4.9	3.0	
All-Red Time (s)	1.3	1.3	2.3	1.3	1.9	
Lost Time Adjust (s)	-1.2	-1.2	-0.3	-1.2	0.1	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Vehicle Extension (s)	6.0	6.0	1.0	6.0	1.0	
Minimum Gap (s)	3.0	3.0	0.2	3.0	0.2	
Time Before Reduce (s)	15.0	15.0	0.0	15.0	0.0	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Time To Reduce (s)	30.0	30.0	0.0	30.0	0.0	
Recall Mode	C-Min	C-Min	None	C-Min	None	
Act Effct Green (s)	71.5	71.5	84.0	84.0	26.0	
Actuated g/C Ratio	0.60	0.60	0.70	0.70	0.22	
v/c Ratio	0.98	0.03	0.57	0.72	0.99	
Control Delay	38.5	4.0	24.4	16.9	92.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	38.5	4.0	24.4	16.9	92.7	
LOS	D	A	C	B	F	
Approach Delay	37.5			17.7	92.7	
Approach LOS	D			B	F	
Queue Length 50th (ft)	790	2	24	563	280	
Queue Length 95th (ft)	#1136	m7	m40	m649	#477	
Internal Link Dist (ft)	478			2042	2008	
Turn Bay Length (ft)			150			
Base Capacity (vph)	1109	942	180	1304	362	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.98	0.03	0.54	0.72	0.99	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 92 (77%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.99
Intersection Signal Delay: 37.3 Intersection LOS: D
Intersection Capacity Utilization 88.9% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Rite Aid Driveway & Idlewild Road

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1019	54	114	918	292	273
Future Volume (vph)	1019	54	114	918	292	273
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	150		0	0
Storage Lanes		1	1		1	0
Taper Length (ft)			150		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.935	
Flt Protected			0.950		0.975	
Satd. Flow (prot)	1863	1583	1770	1863	1698	0
Flt Permitted			0.061		0.975	
Satd. Flow (perm)	1863	1583	114	1863	1698	0
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	45			45	35	
Link Distance (ft)	558			2122	2088	
Travel Time (s)	8.5			32.2	40.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1132	60	127	1020	324	303
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1132	60	127	1020	627	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Turn Type	NA	Perm	pm+pt	NA	Prot	
Protected Phases	2		1	6	4	
Permitted Phases		2	6			
Detector Phase	2	2	1	6	4	
Switch Phase						
Minimum Initial (s)	12.0	12.0	7.0	12.0	7.0	
Minimum Split (s)	19.0	19.0	13.0	19.0	12.0	
Total Split (s)	66.0	66.0	13.0	79.0	41.0	
Total Split (%)	55.0%	55.0%	10.8%	65.8%	34.2%	
Maximum Green (s)	59.8	59.8	7.7	72.8	36.1	
Yellow Time (s)	4.9	4.9	3.0	4.9	3.0	
All-Red Time (s)	1.3	1.3	2.3	1.3	1.9	
Lost Time Adjust (s)	-1.2	-1.2	-0.3	-1.2	0.1	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Vehicle Extension (s)	6.0	6.0	1.0	6.0	1.0	
Minimum Gap (s)	3.0	3.0	0.2	3.0	0.2	
Time Before Reduce (s)	15.0	15.0	0.0	15.0	0.0	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Time To Reduce (s)	30.0	30.0	0.0	30.0	0.0	
Recall Mode	C-Min	C-Min	None	C-Min	None	
Act Effct Green (s)	61.3	61.3	74.0	74.0	36.0	
Actuated g/C Ratio	0.51	0.51	0.62	0.62	0.30	
v/c Ratio	1.19	0.07	0.72	0.89	1.23	
Control Delay	120.3	10.8	32.4	26.5	157.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	120.3	10.8	32.4	26.5	157.4	
LOS	F	B	C	C	F	
Approach Delay	114.8			27.2	157.4	
Approach LOS	F			C	F	
Queue Length 50th (ft)	~1084	17	41	684	~600	
Queue Length 95th (ft)	#1303	m28	m64	m717	#827	
Internal Link Dist (ft)	478			2042	2008	
Turn Bay Length (ft)			150			
Base Capacity (vph)	951	808	180	1148	509	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	1.19	0.07	0.71	0.89	1.23	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 92 (77%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.23
Intersection Signal Delay: 89.9 Intersection LOS: F
Intersection Capacity Utilization 105.4% ICU Level of Service G
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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

Splits and Phases: 6: Rite Aid Driveway & Idlewild Road

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1019	54	114	918	292	273
Future Volume (vph)	1019	54	114	918	292	273
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	150		0	325
Storage Lanes		1	1		1	1
Taper Length (ft)			150		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1863	1583	1770	1863	1770	1583
Flt Permitted			0.051		0.950	
Satd. Flow (perm)	1863	1583	95	1863	1770	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	45			45	35	
Link Distance (ft)	558			2122	2088	
Travel Time (s)	8.5			32.2	40.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1132	60	127	1020	324	303
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1132	60	127	1020	324	303
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Turn Type	NA	Perm	pm+pt	NA	Prot	pm+ov
Protected Phases	2		1	6	4	1
Permitted Phases		2	6			4
Detector Phase	2	2	1	6	4	1
Switch Phase						
Minimum Initial (s)	12.0	12.0	7.0	12.0	7.0	7.0
Minimum Split (s)	19.0	19.0	13.0	19.0	12.0	13.0
Total Split (s)	80.0	80.0	13.0	93.0	27.0	13.0
Total Split (%)	66.7%	66.7%	10.8%	77.5%	22.5%	10.8%
Maximum Green (s)	73.8	73.8	7.7	86.8	22.1	7.7
Yellow Time (s)	4.9	4.9	3.0	4.9	3.0	3.0
All-Red Time (s)	1.3	1.3	2.3	1.3	1.9	2.3
Lost Time Adjust (s)	-1.2	-1.2	-0.3	-1.2	0.1	-0.3
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lag	Lead			Lead
Lead-Lag Optimize?	Yes	Yes	Yes			Yes
Vehicle Extension (s)	6.0	6.0	1.0	6.0	1.0	1.0
Minimum Gap (s)	3.0	3.0	0.2	3.0	0.2	0.2
Time Before Reduce (s)	15.0	15.0	0.0	15.0	0.0	0.0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Time To Reduce (s)	30.0	30.0	0.0	30.0	0.0	0.0
Recall Mode	C-Min	C-Min	None	C-Min	None	None
Act Effct Green (s)	75.1	75.1	87.8	87.8	22.2	34.9
Actuated g/C Ratio	0.63	0.63	0.73	0.73	0.18	0.29
v/c Ratio	0.97	0.06	0.72	0.75	0.99	0.66
Control Delay	35.6	3.7	33.4	17.8	97.1	45.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.6	3.7	33.4	17.8	97.1	45.3
LOS	D	A	C	B	F	D
Approach Delay	34.0			19.6	72.1	
Approach LOS	C			B	E	
Queue Length 50th (ft)	831	10	42	529	254	206
Queue Length 95th (ft)	#1156	m10	m71	m654	#443	308
Internal Link Dist (ft)	478			2042	2008	
Turn Bay Length (ft)			150			325
Base Capacity (vph)	1166	991	181	1366	327	463
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.97	0.06	0.70	0.75	0.99	0.65

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 100 (83%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.99
Intersection Signal Delay: 36.5 Intersection LOS: D
Intersection Capacity Utilization 88.6% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Rite Aid Driveway & Idlewild Road

APPENDIX J

IDLEWILD ROAD AND STEVENS MILL ROAD

SYNCHRO REPORTS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	365	73	80	872	37	77	87	62	95	159	265
Future Volume (vph)	55	365	73	80	872	37	77	87	62	95	159	265
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	150		0	275		0	135		150
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.975			0.994			0.938				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1816	0	1770	1852	0	1770	1747	0	1770	1863	1583
Flt Permitted	0.058			0.396			0.429			0.353		
Satd. Flow (perm)	108	1816	0	738	1852	0	799	1747	0	658	1863	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		2122			4537			5195			6223	
Travel Time (s)		32.2			68.7			78.7			94.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	61	406	81	89	969	41	86	97	69	106	177	294
Shared Lane Traffic (%)												
Lane Group Flow (vph)	61	487	0	89	1010	0	86	166	0	106	177	294
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	5	2		1	6		3	8		7	4	5
Permitted Phases	2			6			8			4		4
Detector Phase	5	2		1	6		3	8		7	4	5
Switch Phase												
Minimum Initial (s)	7.0	12.0		7.0	12.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	13.0	18.0		13.0	18.0		13.0	13.0		13.0	13.0	13.0
Total Split (s)	14.0	76.0		13.0	75.0		13.0	18.0		13.0	18.0	14.0
Total Split (%)	11.7%	63.3%		10.8%	62.5%		10.8%	15.0%		10.8%	15.0%	11.7%
Maximum Green (s)	8.4	70.0		7.2	69.0		7.7	12.5		7.9	12.5	8.4
Yellow Time (s)	3.0	4.7		3.0	4.7		3.0	4.5		3.0	4.5	3.0
All-Red Time (s)	2.6	1.3		2.8	1.3		2.3	1.0		2.1	1.0	2.6
Lost Time Adjust (s)	-0.6	-1.0		-0.8	-1.0		-0.3	-0.5		-0.1	-0.5	-0.6
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	1.0	6.0		1.0	6.0		1.0	6.0		1.0	6.0	1.0
Minimum Gap (s)	0.2	3.0		0.2	3.0		0.2	3.0		0.2	3.0	0.2
Time Before Reduce (s)	0.0	15.0		0.0	15.0		0.0	5.0		0.0	5.0	0.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Time To Reduce (s)	0.0	40.0		0.0	40.0		0.0	15.0		0.0	15.0	0.0
Recall Mode	None	C-Min		None	C-Min		None	None		None	None	None
Act Effct Green (s)	79.5	70.8		77.7	69.9		21.3	13.6		22.5	16.1	29.9
Actuated g/C Ratio	0.66	0.59		0.65	0.58		0.18	0.11		0.19	0.13	0.25
v/c Ratio	0.32	0.45		0.16	0.94		0.42	0.84		0.54	0.71	0.75
Control Delay	19.7	21.8		6.6	39.9		45.7	85.6		50.8	67.6	55.9
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	19.7	21.8		6.6	39.9		45.7	85.6		50.8	67.6	55.9
LOS	B	C		A	D		D	F		D	E	E
Approach Delay		21.6			37.2			72.0			58.5	
Approach LOS		C			D			E			E	
Queue Length 50th (ft)	17	291		20	679		55	129		69	137	218
Queue Length 95th (ft)	m4	420		36	#1009		102	#257		122	#268	#363
Internal Link Dist (ft)		2042			4457			5115			6143	
Turn Bay Length (ft)	250			150			275			135		150
Base Capacity (vph)	196	1076		547	1080		208	198		197	250	397
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.31	0.45		0.16	0.94		0.41	0.84		0.54	0.71	0.74

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.94
Intersection Signal Delay: 42.2 Intersection LOS: D
Intersection Capacity Utilization 84.8% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Stevens Mill Road & Idlewild Road

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	372	74	82	890	38	79	89	63	97	162	270
Future Volume (vph)	56	372	74	82	890	38	79	89	63	97	162	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	150		0	275		0	135		150
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.975			0.994			0.938				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1816	0	1770	1852	0	1770	1747	0	1770	1863	1583
Flt Permitted	0.057			0.395			0.315			0.345		
Satd. Flow (perm)	106	1816	0	736	1852	0	587	1747	0	643	1863	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		2122			4537			5195			6223	
Travel Time (s)		32.2			68.7			78.7			94.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	62	413	82	91	989	42	88	99	70	108	180	300
Shared Lane Traffic (%)												
Lane Group Flow (vph)	62	495	0	91	1031	0	88	169	0	108	180	300
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	5	2		1	6		3	8		7	4	5
Permitted Phases	2			6			8			4		4
Detector Phase	5	2		1	6		3	8		7	4	5
Switch Phase												
Minimum Initial (s)	7.0	12.0		7.0	12.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	13.0	18.0		13.0	18.0		13.0	13.0		13.0	13.0	13.0
Total Split (s)	14.0	77.0		13.0	76.0		13.0	17.0		13.0	17.0	14.0
Total Split (%)	11.7%	64.2%		10.8%	63.3%		10.8%	14.2%		10.8%	14.2%	11.7%
Maximum Green (s)	8.4	71.0		7.2	70.0		7.7	11.5		7.9	11.5	8.4
Yellow Time (s)	3.0	4.7		3.0	4.7		3.0	4.5		3.0	4.5	3.0
All-Red Time (s)	2.6	1.3		2.8	1.3		2.3	1.0		2.1	1.0	2.6
Lost Time Adjust (s)	-0.6	-1.0		-0.8	-1.0		-0.3	-0.5		-0.1	-0.5	-0.6
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	1.0	6.0		1.0	6.0		1.0	6.0		1.0	6.0	1.0
Minimum Gap (s)	0.2	3.0		0.2	3.0		0.2	3.0		0.2	3.0	0.2
Time Before Reduce (s)	0.0	15.0		0.0	15.0		0.0	5.0		0.0	5.0	0.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Time To Reduce (s)	0.0	40.0		0.0	40.0		0.0	15.0		0.0	15.0	0.0
Recall Mode	None	C-Min		None	C-Min		None	None		None	None	None
Act Effct Green (s)	79.7	71.0		77.9	70.1		21.1	13.4		21.3	13.5	27.2
Actuated g/C Ratio	0.66	0.59		0.65	0.58		0.18	0.11		0.18	0.11	0.23
v/c Ratio	0.32	0.46		0.17	0.95		0.49	0.87		0.58	0.86	0.84
Control Delay	27.8	7.4		6.4	42.4		49.7	91.1		53.6	88.0	65.9
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	27.8	7.4		6.4	42.4		49.7	91.1		53.6	88.0	65.9
LOS	C	A		A	D		D	F		D	F	E
Approach Delay		9.7			39.5			76.9			70.4	
Approach LOS		A			D			E			E	
Queue Length 50th (ft)	8	138		19	696		57	133		71	141	226
Queue Length 95th (ft)	m50	31		35	#1032		106	#273		125	#287	#384
Internal Link Dist (ft)		2042			4457			5115			6143	
Turn Bay Length (ft)	250			150			275			135		150
Base Capacity (vph)	195	1091		547	1095		183	195		190	209	362
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.32	0.45		0.17	0.94		0.48	0.87		0.57	0.86	0.83

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 12 (10%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.95
Intersection Signal Delay: 43.9 Intersection LOS: D
Intersection Capacity Utilization 86.0% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Stevens Mill Road & Idlewild Road

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	419	98	82	937	38	103	89	63	97	162	294
Future Volume (vph)	80	419	98	82	937	38	103	89	63	97	162	294
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	150		0	275		0	135		150
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.972			0.994			0.938				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1811	0	1770	1852	0	1770	1747	0	1770	1863	1583
Flt Permitted	0.056			0.350			0.333			0.342		
Satd. Flow (perm)	104	1811	0	652	1852	0	620	1747	0	637	1863	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		2122			4537			5195			6223	
Travel Time (s)		32.2			68.7			78.7			94.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	89	466	109	91	1041	42	114	99	70	108	180	327
Shared Lane Traffic (%)												
Lane Group Flow (vph)	89	575	0	91	1083	0	114	169	0	108	180	327
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	5	2		1	6		3	8		7	4	5
Permitted Phases	2			6			8			4		4
Detector Phase	5	2		1	6		3	8		7	4	5
Switch Phase												
Minimum Initial (s)	7.0	12.0		7.0	12.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	13.0	18.0		13.0	18.0		13.0	13.0		13.0	13.0	13.0
Total Split (s)	15.0	77.0		13.0	75.0		13.0	17.0		13.0	17.0	15.0
Total Split (%)	12.5%	64.2%		10.8%	62.5%		10.8%	14.2%		10.8%	14.2%	12.5%
Maximum Green (s)	9.4	71.0		7.2	69.0		7.7	11.5		7.9	11.5	9.4
Yellow Time (s)	3.0	4.7		3.0	4.7		3.0	4.5		3.0	4.5	3.0
All-Red Time (s)	2.6	1.3		2.8	1.3		2.3	1.0		2.1	1.0	2.6
Lost Time Adjust (s)	-0.6	-1.0		-0.8	-1.0		-0.3	-0.5		-0.1	-0.5	-0.6
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	1.0	6.0		1.0	6.0		1.0	6.0		1.0	6.0	1.0
Minimum Gap (s)	0.2	3.0		0.2	3.0		0.2	3.0		0.2	3.0	0.2
Time Before Reduce (s)	0.0	15.0		0.0	15.0		0.0	5.0		0.0	5.0	0.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Time To Reduce (s)	0.0	40.0		0.0	40.0		0.0	15.0		0.0	15.0	0.0
Recall Mode	None	C-Min		None	C-Min		None	None		None	None	None
Act Effct Green (s)	82.2	72.2		77.8	70.0		20.1	12.2		19.9	12.1	27.1
Actuated g/C Ratio	0.68	0.60		0.65	0.58		0.17	0.10		0.17	0.10	0.23
v/c Ratio	0.42	0.53		0.18	1.00		0.64	0.95		0.60	0.96	0.91
Control Delay	25.0	15.1		6.5	53.7		58.0	110.9		55.7	109.3	76.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	25.0	15.1		6.5	53.7		58.0	110.9		55.7	109.3	76.2
LOS	C	B		A	D		E	F		E	F	E
Approach Delay		16.4			50.0			89.6			82.3	
Approach LOS		B			D			F			F	
Queue Length 50th (ft)	41	83		19	~803		75	133		71	141	249
Queue Length 95th (ft)	m82	m372		35	#1131		#139	#273		#126	#287	#424
Internal Link Dist (ft)		2042			4457			5115			6143	
Turn Bay Length (ft)	250			150			275			135		150
Base Capacity (vph)	210	1089		498	1080		181	177		182	188	358
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.42	0.53		0.18	1.00		0.63	0.95		0.59	0.96	0.91

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 80 (67%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.00
Intersection Signal Delay: 53.2 Intersection LOS: D
Intersection Capacity Utilization 88.5% ICU Level of Service E
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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

Splits and Phases: 7: Stevens Mill Road & Idlewild Road

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	419	98	82	937	38	103	89	63	97	162	294
Future Volume (vph)	80	419	98	82	937	38	103	89	63	97	162	294
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	150		0	275		175	135		150
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.972			0.994				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1811	0	1770	1852	0	1770	1863	1583	1770	1863	1583
Flt Permitted	0.056			0.350			0.333			0.623		
Satd. Flow (perm)	104	1811	0	652	1852	0	620	1863	1583	1160	1863	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		2122			4537			5195			6223	
Travel Time (s)		32.2			68.7			78.7			94.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	89	466	109	91	1041	42	114	99	70	108	180	327
Shared Lane Traffic (%)												
Lane Group Flow (vph)	89	575	0	91	1083	0	114	99	70	108	180	327
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	5	2		1	6		3	8	1	7	4	5
Permitted Phases	2			6			8		8	4		4
Detector Phase	5	2		1	6		3	8	1	7	4	5
Switch Phase												
Minimum Initial (s)	7.0	12.0		7.0	12.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	13.0	18.0		13.0	18.0		13.0	13.0	13.0	13.0	13.0	13.0
Total Split (s)	15.0	77.0		13.0	75.0		13.0	17.0	13.0	13.0	17.0	15.0
Total Split (%)	12.5%	64.2%		10.8%	62.5%		10.8%	14.2%	10.8%	10.8%	14.2%	12.5%
Maximum Green (s)	9.4	71.0		7.2	69.0		7.7	11.5	7.2	7.9	11.5	9.4
Yellow Time (s)	3.0	4.7		3.0	4.7		3.0	4.5	3.0	3.0	4.5	3.0
All-Red Time (s)	2.6	1.3		2.8	1.3		2.3	1.0	2.8	2.1	1.0	2.6
Lost Time Adjust (s)	-0.6	-1.0		-0.8	-1.0		-0.3	-0.5	-0.8	-0.1	-0.5	-0.6
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	1.0	6.0		1.0	6.0		1.0	6.0	1.0	1.0	6.0	1.0
Minimum Gap (s)	0.2	3.0		0.2	3.0		0.2	3.0	0.2	0.2	3.0	0.2
Time Before Reduce (s)	0.0	15.0		0.0	15.0		0.0	5.0	0.0	0.0	5.0	0.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Time To Reduce (s)	0.0	40.0		0.0	40.0		0.0	15.0	0.0	0.0	15.0	0.0
Recall Mode	None	C-Min		None	C-Min		None	None	None	None	None	None
Act Effct Green (s)	82.2	72.2		77.8	70.0		20.1	12.2	25.0	19.9	12.1	27.1
Actuated g/C Ratio	0.68	0.60		0.65	0.58		0.17	0.10	0.21	0.17	0.10	0.23
v/c Ratio	0.42	0.53		0.18	1.00		0.64	0.52	0.21	0.47	0.96	0.91
Control Delay	25.9	15.2		6.5	53.7		58.0	62.0	41.6	47.8	109.3	76.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.9	15.2		6.5	53.7		58.0	62.0	41.6	47.8	109.3	76.2
LOS	C	B		A	D		E	E	D	D	F	E
Approach Delay		16.6			50.0			55.3			80.9	
Approach LOS		B			D			E			F	
Queue Length 50th (ft)	41	86		19	~803		75	74	45	71	141	249
Queue Length 95th (ft)	90	382		35	#1131		#139	133	88	125	#287	#424
Internal Link Dist (ft)		2042			4457			5115			6143	
Turn Bay Length (ft)	250			150			275		175	135		150
Base Capacity (vph)	210	1089		498	1080		181	189	332	235	188	358
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.53		0.18	1.00		0.63	0.52	0.21	0.46	0.96	0.91

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 80 (67%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.00
Intersection Signal Delay: 49.4 Intersection LOS: D
Intersection Capacity Utilization 88.5% ICU Level of Service E
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Stevens Mill Road & Idlewild Road

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	419	98	82	937	38	103	89	63	97	162	294
Future Volume (vph)	80	419	98	82	937	38	103	89	63	97	162	294
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		125	150		0	275		175	135		150
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.994			0.938				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1852	0	1770	1747	0	1770	1863	1583
Flt Permitted	0.056			0.428			0.333			0.342		
Satd. Flow (perm)	104	1863	1583	797	1852	0	620	1747	0	637	1863	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		2122			4537			5195			6223	
Travel Time (s)		32.2			68.7			78.7			94.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	89	466	109	91	1041	42	114	99	70	108	180	327
Shared Lane Traffic (%)												
Lane Group Flow (vph)	89	466	109	91	1083	0	114	169	0	108	180	327
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	5	2	3	1	6		3	8		7	4	5
Permitted Phases	2		2	6			8			4		4
Detector Phase	5	2	3	1	6		3	8		7	4	5
Switch Phase												
Minimum Initial (s)	7.0	12.0	7.0	7.0	12.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	13.0	18.0	13.0	13.0	18.0		13.0	13.0		13.0	13.0	13.0
Total Split (s)	15.0	77.0	13.0	13.0	75.0		13.0	17.0		13.0	17.0	15.0
Total Split (%)	12.5%	64.2%	10.8%	10.8%	62.5%		10.8%	14.2%		10.8%	14.2%	12.5%
Maximum Green (s)	9.4	71.0	7.7	7.2	69.0		7.7	11.5		7.9	11.5	9.4
Yellow Time (s)	3.0	4.7	3.0	3.0	4.7		3.0	4.5		3.0	4.5	3.0
All-Red Time (s)	2.6	1.3	2.3	2.8	1.3		2.3	1.0		2.1	1.0	2.6
Lost Time Adjust (s)	-0.6	-1.0	-0.3	-0.8	-1.0		-0.3	-0.5		-0.1	-0.5	-0.6
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag		Lead	Lag		Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	1.0	6.0	1.0	1.0	6.0		1.0	6.0		1.0	6.0	1.0
Minimum Gap (s)	0.2	3.0	0.2	0.2	3.0		0.2	3.0		0.2	3.0	0.2
Time Before Reduce (s)	0.0	15.0	0.0	0.0	15.0		0.0	5.0		0.0	5.0	0.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Time To Reduce (s)	0.0	40.0	0.0	0.0	40.0		0.0	15.0		0.0	15.0	0.0
Recall Mode	None	C-Min	None	None	C-Min		None	None		None	None	None
Act Effct Green (s)	82.2	72.2	85.1	77.8	70.0		20.1	12.2		19.9	12.1	27.1
Actuated g/C Ratio	0.68	0.60	0.71	0.65	0.58		0.17	0.10		0.17	0.10	0.23
v/c Ratio	0.42	0.42	0.10	0.16	1.00		0.64	0.95		0.60	0.96	0.91
Control Delay	25.5	14.2	6.3	6.3	53.7		58.0	110.9		55.7	109.3	76.2
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	25.5	14.2	6.3	6.3	53.7		58.0	110.9		55.7	109.3	76.2
LOS	C	B	A	A	D		E	F		E	F	E
Approach Delay		14.4			50.0			89.6			82.3	
Approach LOS		B			D			F			F	
Queue Length 50th (ft)	41	69	9	19	~803		75	133		71	141	249
Queue Length 95th (ft)	87	323	72	35	#1131		#139	#273		#126	#287	#424
Internal Link Dist (ft)		2042			4457			5115			6143	
Turn Bay Length (ft)	250		125	150			275			135		150
Base Capacity (vph)	210	1120	1123	582	1080		181	177		182	188	358
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.42	0.42	0.10	0.16	1.00		0.63	0.95		0.59	0.96	0.91

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 79 (66%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.00
Intersection Signal Delay: 52.7 Intersection LOS: D
Intersection Capacity Utilization 88.5% ICU Level of Service E
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Stevens Mill Road & Idlewild Road

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	209	863	88	41	655	121	82	124	98	69	88	172
Future Volume (vph)	209	863	88	41	655	121	82	124	98	69	88	172
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	150		0	275		0	135		150
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.986			0.977			0.934				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1837	0	1770	1820	0	1770	1740	0	1770	1863	1583
Flt Permitted	0.086			0.063			0.605			0.267		
Satd. Flow (perm)	160	1837	0	117	1820	0	1127	1740	0	497	1863	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		2122			4537			5195			6223	
Travel Time (s)		32.2			68.7			78.7			94.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	232	959	98	46	728	134	91	138	109	77	98	191
Shared Lane Traffic (%)												
Lane Group Flow (vph)	232	1057	0	46	862	0	91	247	0	77	98	191
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	5	2		1	6		3	8		7	4	5
Permitted Phases	2			6			8			4		4
Detector Phase	5	2		1	6		3	8		7	4	5
Switch Phase												
Minimum Initial (s)	7.0	12.0		7.0	12.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	13.0	18.0		13.0	18.0		13.0	13.0		13.0	13.0	13.0
Total Split (s)	16.0	72.0		13.0	69.0		13.0	22.0		13.0	22.0	16.0
Total Split (%)	13.3%	60.0%		10.8%	57.5%		10.8%	18.3%		10.8%	18.3%	13.3%
Maximum Green (s)	10.4	66.0		7.2	63.0		7.7	16.5		7.9	16.5	10.4
Yellow Time (s)	3.0	4.7		3.0	4.7		3.0	4.5		3.0	4.5	3.0
All-Red Time (s)	2.6	1.3		2.8	1.3		2.3	1.0		2.1	1.0	2.6
Lost Time Adjust (s)	-0.6	-1.0		-0.8	-1.0		-0.3	-0.5		-0.1	-0.5	-0.6
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	1.0	6.0		1.0	6.0		1.0	6.0		1.0	6.0	1.0
Minimum Gap (s)	0.2	3.0		0.2	3.0		0.2	3.0		0.2	3.0	0.2
Time Before Reduce (s)	0.0	15.0		0.0	15.0		0.0	5.0		0.0	5.0	0.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Time To Reduce (s)	0.0	40.0		0.0	40.0		0.0	15.0		0.0	15.0	0.0
Recall Mode	None	C-Min		None	C-Min		None	None		None	None	None
Act Effct Green (s)	79.4	70.6		72.9	65.1		25.2	19.0		24.0	16.4	32.2
Actuated g/C Ratio	0.66	0.59		0.61	0.54		0.21	0.16		0.20	0.14	0.27
v/c Ratio	0.93	0.98		0.26	0.87		0.33	0.90		0.43	0.39	0.45
Control Delay	48.6	32.5		11.3	35.9		39.6	84.5		43.4	51.8	40.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	48.6	32.5		11.3	35.9		39.6	84.5		43.4	51.8	40.2
LOS	D	C		B	D		D	F		D	D	D
Approach Delay		35.4			34.7			72.4			44.0	
Approach LOS		D			C			E			D	
Queue Length 50th (ft)	98	~882		11	569		56	193		47	70	122
Queue Length 95th (ft)	m107	m#951		24	#852		102	#365		89	124	195
Internal Link Dist (ft)		2042			4457			5115			6143	
Turn Bay Length (ft)	250			150			275			135		150
Base Capacity (vph)	253	1080		181	986		281	275		186	265	427
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.92	0.98		0.25	0.87		0.32	0.90		0.41	0.37	0.45

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 23 (19%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.98
Intersection Signal Delay: 40.6 Intersection LOS: D
Intersection Capacity Utilization 91.6% ICU Level of Service F
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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

Splits and Phases: 7: Stevens Mill Road & Idlewild Road

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	213	880	90	42	668	123	84	126	100	70	90	175
Future Volume (vph)	213	880	90	42	668	123	84	126	100	70	90	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	150		0	275		0	135		150
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.986			0.977			0.934				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1837	0	1770	1820	0	1770	1740	0	1770	1863	1583
Flt Permitted	0.075			0.063			0.601			0.260		
Satd. Flow (perm)	140	1837	0	117	1820	0	1120	1740	0	484	1863	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		2122			4537			5195			6223	
Travel Time (s)		32.2			68.7			78.7			94.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	237	978	100	47	742	137	93	140	111	78	100	194
Shared Lane Traffic (%)												
Lane Group Flow (vph)	237	1078	0	47	879	0	93	251	0	78	100	194
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	5	2		1	6		3	8		7	4	5
Permitted Phases	2			6			8			4		4
Detector Phase	5	2		1	6		3	8		7	4	5
Switch Phase												
Minimum Initial (s)	7.0	12.0		7.0	12.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	13.0	18.0		13.0	18.0		13.0	13.0		13.0	13.0	13.0
Total Split (s)	15.0	72.0		13.0	70.0		13.0	22.0		13.0	22.0	15.0
Total Split (%)	12.5%	60.0%		10.8%	58.3%		10.8%	18.3%		10.8%	18.3%	12.5%
Maximum Green (s)	9.4	66.0		7.2	64.0		7.7	16.5		7.9	16.5	9.4
Yellow Time (s)	3.0	4.7		3.0	4.7		3.0	4.5		3.0	4.5	3.0
All-Red Time (s)	2.6	1.3		2.8	1.3		2.3	1.0		2.1	1.0	2.6
Lost Time Adjust (s)	-0.6	-1.0		-0.8	-1.0		-0.3	-0.5		-0.1	-0.5	-0.6
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	1.0	6.0		1.0	6.0		1.0	6.0		1.0	6.0	1.0
Minimum Gap (s)	0.2	3.0		0.2	3.0		0.2	3.0		0.2	3.0	0.2
Time Before Reduce (s)	0.0	15.0		0.0	15.0		0.0	5.0		0.0	5.0	0.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Time To Reduce (s)	0.0	40.0		0.0	40.0		0.0	15.0		0.0	15.0	0.0
Recall Mode	None	C-Min		None	C-Min		None	None		None	None	None
Act Effct Green (s)	78.3	70.3		72.8	65.0		25.5	19.2		24.3	16.7	32.3
Actuated g/C Ratio	0.65	0.59		0.61	0.54		0.21	0.16		0.20	0.14	0.27
v/c Ratio	1.01	1.00		0.26	0.89		0.33	0.90		0.44	0.39	0.46
Control Delay	71.2	35.6		11.2	37.5		39.7	84.5		43.6	51.7	40.8
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	71.2	35.6		11.2	37.5		39.7	84.5		43.6	51.7	40.8
LOS	E	D		B	D		D	F		D	D	D
Approach Delay		42.0			36.2			72.4			44.3	
Approach LOS		D			D			E			D	
Queue Length 50th (ft)	~132	~917		11	579		57	~199		48	71	126
Queue Length 95th (ft)	m#139	m#948		25	#867		104	#374		90	127	200
Internal Link Dist (ft)		2042			4457			5115			6143	
Turn Bay Length (ft)	250			150			275			135		150
Base Capacity (vph)	234	1076		181	985		282	278		185	265	426
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	1.01	1.00		0.26	0.89		0.33	0.90		0.42	0.38	0.46

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 20 (17%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.01
Intersection Signal Delay: 44.0 Intersection LOS: D
Intersection Capacity Utilization 92.8% ICU Level of Service F
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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

Splits and Phases: 7: Stevens Mill Road & Idlewild Road

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	240	935	117	42	720	123	110	126	100	70	90	201
Future Volume (vph)	240	935	117	42	720	123	110	126	100	70	90	201
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	150		0	275		0	135		150
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.983			0.978			0.934				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1831	0	1770	1822	0	1770	1740	0	1770	1863	1583
Flt Permitted	0.059			0.064			0.553			0.267		
Satd. Flow (perm)	110	1831	0	119	1822	0	1030	1740	0	497	1863	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		2122			4537			5195			6223	
Travel Time (s)		32.2			68.7			78.7			94.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	267	1039	130	47	800	137	122	140	111	78	100	223
Shared Lane Traffic (%)												
Lane Group Flow (vph)	267	1169	0	47	937	0	122	251	0	78	100	223
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	5	2		1	6		3	8		7	4	5
Permitted Phases	2			6			8			4		4
Detector Phase	5	2		1	6		3	8		7	4	5
Switch Phase												
Minimum Initial (s)	7.0	12.0		7.0	12.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	13.0	18.0		13.0	18.0		13.0	13.0		13.0	13.0	13.0
Total Split (s)	18.0	74.0		13.0	69.0		14.0	20.0		13.0	19.0	18.0
Total Split (%)	15.0%	61.7%		10.8%	57.5%		11.7%	16.7%		10.8%	15.8%	15.0%
Maximum Green (s)	12.4	68.0		7.2	63.0		8.7	14.5		7.9	13.5	12.4
Yellow Time (s)	3.0	4.7		3.0	4.7		3.0	4.5		3.0	4.5	3.0
All-Red Time (s)	2.6	1.3		2.8	1.3		2.3	1.0		2.1	1.0	2.6
Lost Time Adjust (s)	-0.6	-1.0		-0.8	-1.0		-0.3	-0.5		-0.1	-0.5	-0.6
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	1.0	6.0		1.0	6.0		1.0	6.0		1.0	6.0	1.0
Minimum Gap (s)	0.2	3.0		0.2	3.0		0.2	3.0		0.2	3.0	0.2
Time Before Reduce (s)	0.0	15.0		0.0	15.0		0.0	5.0		0.0	5.0	0.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Time To Reduce (s)	0.0	40.0		0.0	40.0		0.0	15.0		0.0	15.0	0.0
Recall Mode	None	C-Min		None	C-Min		None	None		None	None	None
Act Effct Green (s)	82.0	71.8		71.8	64.0		25.0	17.8		22.0	14.4	32.4
Actuated g/C Ratio	0.68	0.60		0.60	0.53		0.21	0.15		0.18	0.12	0.27
v/c Ratio	1.05	1.07		0.26	0.96		0.46	0.97		0.46	0.45	0.52
Control Delay	77.0	52.3		11.2	49.3		44.4	101.7		46.1	56.4	42.6
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	77.0	52.3		11.2	49.3		44.4	101.7		46.1	56.4	42.6
LOS	E	D		B	D		D	F		D	E	D
Approach Delay		56.9			47.5			83.0			46.7	
Approach LOS		E			D			F			D	
Queue Length 50th (ft)	~168	~1048		11	670		78	~227		49	73	148
Queue Length 95th (ft)	m119	m726		23	#977		135	#397		92	131	230
Internal Link Dist (ft)		2042			4457			5115			6143	
Turn Bay Length (ft)	250			150			275			135		150
Base Capacity (vph)	255	1094		181	971		270	258		177	223	427
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	1.05	1.07		0.26	0.96		0.45	0.97		0.44	0.45	0.52

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 15 (13%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.07
Intersection Signal Delay: 55.8 Intersection LOS: E
Intersection Capacity Utilization 97.4% ICU Level of Service F
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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

Splits and Phases: 7: Stevens Mill Road & Idlewild Road

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	240	935	117	42	720	123	110	126	100	70	90	201
Future Volume (vph)	240	935	117	42	720	123	110	126	100	70	90	201
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	150		0	275		175	135		150
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.983			0.978				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1831	0	1770	1822	0	1770	1863	1583	1770	1863	1583
Flt Permitted	0.077			0.058			0.503			0.501		
Satd. Flow (perm)	143	1831	0	108	1822	0	937	1863	1583	933	1863	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		2122			4537			5195			6223	
Travel Time (s)		32.2			68.7			78.7			94.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	267	1039	130	47	800	137	122	140	111	78	100	223
Shared Lane Traffic (%)												
Lane Group Flow (vph)	267	1169	0	47	937	0	122	140	111	78	100	223
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	5	2		1	6		3	8	1	7	4	5
Permitted Phases	2			6			8		8	4		4
Detector Phase	5	2		1	6		3	8	1	7	4	5
Switch Phase												
Minimum Initial (s)	7.0	12.0		7.0	12.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	13.0	18.0		13.0	18.0		13.0	13.0	13.0	13.0	13.0	13.0
Total Split (s)	19.0	80.0		13.0	74.0		13.0	14.0	13.0	13.0	14.0	19.0
Total Split (%)	15.8%	66.7%		10.8%	61.7%		10.8%	11.7%	10.8%	10.8%	11.7%	15.8%
Maximum Green (s)	13.4	74.0		7.2	68.0		7.7	8.5	7.2	7.9	8.5	13.4
Yellow Time (s)	3.0	4.7		3.0	4.7		3.0	4.5	3.0	3.0	4.5	3.0
All-Red Time (s)	2.6	1.3		2.8	1.3		2.3	1.0	2.8	2.1	1.0	2.6
Lost Time Adjust (s)	-0.6	-1.0		-0.8	-1.0		-0.3	-0.5	-0.8	-0.1	-0.5	-0.6
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	1.0	6.0		1.0	6.0		1.0	6.0	1.0	1.0	6.0	1.0
Minimum Gap (s)	0.2	3.0		0.2	3.0		0.2	3.0	0.2	0.2	3.0	0.2
Time Before Reduce (s)	0.0	15.0		0.0	15.0		0.0	5.0	0.0	0.0	5.0	0.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Time To Reduce (s)	0.0	40.0		0.0	40.0		0.0	15.0	0.0	0.0	15.0	0.0
Recall Mode	None	C-Min		None	C-Min		None	None	None	None	None	None
Act Effct Green (s)	87.5	75.2		77.5	69.7		18.2	11.8	24.6	16.8	9.1	27.4
Actuated g/C Ratio	0.73	0.63		0.65	0.58		0.15	0.10	0.20	0.14	0.08	0.23
v/c Ratio	0.94	1.02		0.26	0.89		0.62	0.77	0.34	0.43	0.71	0.62
Control Delay	60.4	38.1		10.5	33.9		58.7	81.0	45.9	49.8	80.7	49.8
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.4	38.1		10.5	33.9		58.7	81.0	45.9	49.8	80.7	49.8
LOS	E	D		B	C		E	F	D	D	F	D
Approach Delay		42.2			32.8			63.3			57.5	
Approach LOS		D			C			E			E	
Queue Length 50th (ft)	150	~809		9	603		84	~111	77	52	77	155
Queue Length 95th (ft)	m#175	m#1056		21	#916		#155	#245	134	99	#163	241
Internal Link Dist (ft)		2042			4457			5115			6143	
Turn Bay Length (ft)	250			150			275		175	135		150
Base Capacity (vph)	294	1146		181	1058		197	182	327	188	141	371
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.91	1.02		0.26	0.89		0.62	0.77	0.34	0.41	0.71	0.60

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 14 (12%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.02
Intersection Signal Delay: 43.7 Intersection LOS: D
Intersection Capacity Utilization 91.3% ICU Level of Service F
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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

Splits and Phases: 7: Stevens Mill Road & Idlewild Road

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	240	935	117	42	720	123	110	126	100	70	90	201
Future Volume (vph)	240	935	117	42	720	123	110	126	100	70	90	201
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		125	150		0	275		175	135		150
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.978			0.934				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1822	0	1770	1740	0	1770	1863	1583
Flt Permitted	0.061			0.066			0.567			0.277		
Satd. Flow (perm)	114	1863	1583	123	1822	0	1056	1740	0	516	1863	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		2122			4537			5195			6223	
Travel Time (s)		32.2			68.7			78.7			94.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	267	1039	130	47	800	137	122	140	111	78	100	223
Shared Lane Traffic (%)												
Lane Group Flow (vph)	267	1039	130	47	937	0	122	251	0	78	100	223
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	5	2	3	1	6		3	8		7	4	5
Permitted Phases	2		2	6			8			4		4
Detector Phase	5	2	3	1	6		3	8		7	4	5
Switch Phase												
Minimum Initial (s)	7.0	12.0	7.0	7.0	12.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	13.0	18.0	13.0	13.0	18.0		13.0	13.0		13.0	13.0	13.0
Total Split (s)	18.0	72.0	14.0	13.0	67.0		14.0	22.0		13.0	21.0	18.0
Total Split (%)	15.0%	60.0%	11.7%	10.8%	55.8%		11.7%	18.3%		10.8%	17.5%	15.0%
Maximum Green (s)	12.4	66.0	8.7	7.2	61.0		8.7	16.5		7.9	15.5	12.4
Yellow Time (s)	3.0	4.7	3.0	3.0	4.7		3.0	4.5		3.0	4.5	3.0
All-Red Time (s)	2.6	1.3	2.3	2.8	1.3		2.3	1.0		2.1	1.0	2.6
Lost Time Adjust (s)	-0.6	-1.0	-0.3	-0.8	-1.0		-0.3	-0.5		-0.1	-0.5	-0.6
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag		Lead	Lag		Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	1.0	6.0	1.0	1.0	6.0		1.0	6.0		1.0	6.0	1.0
Minimum Gap (s)	0.2	3.0	0.2	0.2	3.0		0.2	3.0		0.2	3.0	0.2
Time Before Reduce (s)	0.0	15.0	0.0	0.0	15.0		0.0	5.0		0.0	5.0	0.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Time To Reduce (s)	0.0	40.0	0.0	0.0	40.0		0.0	15.0		0.0	15.0	0.0
Recall Mode	None	C-Min	None	None	C-Min		None	None		None	None	None
Act Effct Green (s)	80.6	70.3	83.9	69.8	62.0		26.4	19.3		23.4	15.8	34.4
Actuated g/C Ratio	0.67	0.59	0.70	0.58	0.52		0.22	0.16		0.20	0.13	0.29
v/c Ratio	1.01	0.95	0.12	0.26	1.00		0.43	0.90		0.44	0.41	0.49
Control Delay	74.0	32.5	6.5	11.8	57.9		42.1	84.4		43.6	53.2	40.1
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	74.0	32.5	6.5	11.8	57.9		42.1	84.4		43.6	53.2	40.1
LOS	E	C	A	B	E		D	F		D	D	D
Approach Delay		37.8			55.7			70.5			44.1	
Approach LOS		D			E			E			D	
Queue Length 50th (ft)	~169	739	35	11	697		76	~197		48	72	144
Queue Length 95th (ft)	m#217	m#936	m39	25	#1002		132	#374		90	128	225
Internal Link Dist (ft)		2042			4457			5115			6143	
Turn Bay Length (ft)	250		125	150			275			135		150
Base Capacity (vph)	264	1092	1112	181	941		286	279		185	249	453
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	1.01	0.95	0.12	0.26	1.00		0.43	0.90		0.42	0.40	0.49

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 52 (43%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.01
Intersection Signal Delay: 47.9 Intersection LOS: D
Intersection Capacity Utilization 93.9% ICU Level of Service F
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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

Splits and Phases: 7: Stevens Mill Road & Idlewild Road

APPENDIX K

SIMTRAFFIC REPORTS

Intersection: 2: Stallings Road & Idlewild Road

Movement	EB	WB	NB
Directions Served	TR	L	LR
Maximum Queue (ft)	36	182	967
Average Queue (ft)	2	94	543
95th Queue (ft)	15	171	1337
Link Distance (ft)	2663	739	2713
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: I-485 SB Ramp & Idlewild Road

Movement	EB	EB	EB	WB	WB	WB	SB	SB
Directions Served	T	T	R	L	T	T	LT	R
Maximum Queue (ft)	293	212	164	344	233	204	351	493
Average Queue (ft)	155	100	64	169	82	84	113	295
95th Queue (ft)	263	190	136	284	171	165	233	440
Link Distance (ft)	739	739			856	856	1608	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)			100	275				375
Storage Blk Time (%)		7	4	2			0	4
Queuing Penalty (veh)		9	9	7			1	7

Intersection: 4: Idlewild Road & I-485 NB Ramp

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	T	T	R	LT	R	R
Maximum Queue (ft)	269	130	84	256	175	164	201	184	149
Average Queue (ft)	107	34	15	97	56	51	105	100	43
95th Queue (ft)	193	91	53	196	130	122	173	160	112
Link Distance (ft)		856	856	509	509			1469	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	275					125	200		850
Storage Blk Time (%)	0				1	1	0	0	
Queuing Penalty (veh)	1				3	3	0	0	

Intersection: 5: Boyd Funderburk Drive/Marshall Hooks Road & Idlewild Road

Movement	EB	WB	NB	SB
Directions Served	L	L	LTR	LTR
Maximum Queue (ft)	25	16	33	42
Average Queue (ft)	3	1	8	8
95th Queue (ft)	15	7	28	29
Link Distance (ft)			394	2282
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	350	100		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Rite Aid Driveway & Idlewild Road

Movement	EB	EB	WB	WB	NB
Directions Served	T	R	UL	T	LR
Maximum Queue (ft)	184	20	68	192	96
Average Queue (ft)	54	2	25	86	44
95th Queue (ft)	138	12	56	173	88
Link Distance (ft)	494	494		2058	2037
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			150		
Storage Blk Time (%)				1	
Queuing Penalty (veh)				0	

Intersection: 7: Stevens Mill Road & Idlewild Road

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	T	R
Maximum Queue (ft)	92	284	249	765	139	231	228	483	248
Average Queue (ft)	33	152	64	436	53	106	86	216	174
95th Queue (ft)	74	260	204	711	105	199	186	481	273
Link Distance (ft)		2058		4497		5157		6183	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	250		150		275		135		150
Storage Blk Time (%)		1		29		0	2	13	28
Queuing Penalty (veh)		0		24		0	7	46	71

Network Summary

Network wide Queuing Penalty: 187

Intersection: 2: Stallings Road & Idlewild Road

Movement	EB	WB	NB
Directions Served	TR	L	LR
Maximum Queue (ft)	37	285	800
Average Queue (ft)	4	104	431
95th Queue (ft)	19	202	1054
Link Distance (ft)	2663	739	2713
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: I-485 SB Ramp & Idlewild Road

Movement	EB	EB	EB	WB	WB	WB	SB	SB
Directions Served	T	T	R	L	T	T	LT	R
Maximum Queue (ft)	337	267	192	396	255	271	360	485
Average Queue (ft)	164	110	74	195	132	142	102	282
95th Queue (ft)	281	216	148	335	230	246	233	443
Link Distance (ft)	739	739			856	856	1608	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)			100	275				375
Storage Blk Time (%)		8	5	3	0		0	3
Queuing Penalty (veh)		11	11	11	0		1	5

Intersection: 4: Idlewild Road & I-485 NB Ramp

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	T	T	R	LT	R	R
Maximum Queue (ft)	284	168	106	257	161	156	206	180	158
Average Queue (ft)	139	25	14	96	60	55	94	100	44
95th Queue (ft)	238	98	62	204	136	136	164	162	114
Link Distance (ft)		856	856	509	509			1469	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	275					125	200		850
Storage Blk Time (%)	1	0			1	1	0	0	
Queuing Penalty (veh)	1	0			4	5	1	0	

Intersection: 5: Boyd Funderburk Drive/Marshall Hooks Road & Idlewild Road

Movement	EB	WB	NB	SB
Directions Served	L	L	LTR	LTR
Maximum Queue (ft)	26	5	37	30
Average Queue (ft)	2	0	8	7
95th Queue (ft)	14	4	29	26
Link Distance (ft)			394	2282
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	350	100		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Rite Aid Driveway & Idlewild Road

Movement	EB	EB	WB	WB	NB
Directions Served	T	R	UL	T	LR
Maximum Queue (ft)	144	19	74	163	99
Average Queue (ft)	42	1	23	81	43
95th Queue (ft)	109	8	53	156	86
Link Distance (ft)	494	494		2058	2037
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			150		
Storage Blk Time (%)				0	
Queuing Penalty (veh)				0	

Intersection: 7: Stevens Mill Road & Idlewild Road

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	T	R
Maximum Queue (ft)	93	218	250	1076	126	232	234	639	250
Average Queue (ft)	36	98	81	498	53	109	93	252	178
95th Queue (ft)	77	183	228	876	108	195	213	553	279
Link Distance (ft)		2058		4497		5157		6183	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	250		150		275		135		150
Storage Blk Time (%)		0	0	30		0	3	24	29
Queuing Penalty (veh)		0	0	25		0	11	90	75

Network Summary

Network wide Queuing Penalty: 252

Intersection: 2: Stallings Road & Idlewild Road

Movement	EB	WB	NB
Directions Served	TR	L	LR
Maximum Queue (ft)	24	290	1159
Average Queue (ft)	3	116	620
95th Queue (ft)	17	233	1241
Link Distance (ft)	2663	739	2713
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: I-485 SB Ramp & Idlewild Road

Movement	EB	EB	EB	WB	WB	WB	SB	SB
Directions Served	T	T	R	UL	T	T	LT	R
Maximum Queue (ft)	367	287	199	377	265	213	330	472
Average Queue (ft)	174	127	86	206	95	94	116	277
95th Queue (ft)	293	234	174	331	189	172	240	436
Link Distance (ft)	739	739			856	856	1608	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)			100	275				375
Storage Blk Time (%)		14	8	4	0			5
Queuing Penalty (veh)		19	20	14	0			9

Intersection: 4: Idlewild Road & I-485 NB Ramp

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	T	T	R	LT	R	R
Maximum Queue (ft)	267	175	144	252	204	196	198	206	163
Average Queue (ft)	121	49	37	126	86	77	95	105	70
95th Queue (ft)	217	132	109	232	172	168	168	170	136
Link Distance (ft)		856	856	510	510			1469	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	275					125	200		850
Storage Blk Time (%)	0				2	2	0	0	
Queuing Penalty (veh)	1				7	11	1	0	

Intersection: 5: Access A/Marshall Hooks Road & Idlewild Road

Movement	EB	EB	WB	NB	SB
Directions Served	L	TR	L	R	R
Maximum Queue (ft)	25	21	74	50	27
Average Queue (ft)	2	1	23	21	4
95th Queue (ft)	12	10	56	42	20
Link Distance (ft)		510		1619	2282
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	350		100		
Storage Blk Time (%)			0		
Queuing Penalty (veh)			1		

Intersection: 6: Rite Aid Driveway & Idlewild Road

Movement	EB	EB	WB	WB	NB
Directions Served	T	R	UL	T	LR
Maximum Queue (ft)	253	37	299	526	369
Average Queue (ft)	62	4	61	288	203
95th Queue (ft)	177	22	181	445	322
Link Distance (ft)	494	494		2058	2037
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			150		
Storage Blk Time (%)				16	
Queuing Penalty (veh)				16	

Intersection: 7: Stevens Mill Road & Idlewild Road

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	T	R
Maximum Queue (ft)	168	356	250	1187	172	286	234	695	250
Average Queue (ft)	49	165	93	773	76	143	101	346	216
95th Queue (ft)	111	308	254	1317	139	248	208	635	294
Link Distance (ft)		2058		4497		5157		6183	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	250		150		275		135		150
Storage Blk Time (%)		3		38		1	2	32	50
Queuing Penalty (veh)		3		31		1	9	124	129

Network Summary

Network wide Queuing Penalty: 399

Intersection: 2: Stallings Road & Idlewild Road

Movement	EB	WB	NB
Directions Served	TR	L	LR
Maximum Queue (ft)	27	264	1094
Average Queue (ft)	3	109	569
95th Queue (ft)	17	205	1185
Link Distance (ft)	2663	739	2713
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: I-485 SB Ramp & Idlewild Road

Movement	EB	EB	EB	WB	WB	WB	SB	SB
Directions Served	T	T	R	UL	T	T	LT	R
Maximum Queue (ft)	324	290	197	397	269	238	329	462
Average Queue (ft)	169	131	85	230	109	111	123	271
95th Queue (ft)	278	228	171	359	213	211	256	427
Link Distance (ft)	739	739			856	856	1608	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)			100	275				375
Storage Blk Time (%)		16	6	5	0		0	4
Queuing Penalty (veh)		22	15	19	0		1	7

Intersection: 4: Idlewild Road & I-485 NB Ramp

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	T	T	R	LT	R	R
Maximum Queue (ft)	292	177	156	283	234	214	210	208	164
Average Queue (ft)	127	53	35	133	90	80	95	100	68
95th Queue (ft)	233	139	110	250	193	182	170	168	137
Link Distance (ft)		856	856	509	509			1469	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	275					125	200		850
Storage Blk Time (%)	1				3	3	1	0	
Queuing Penalty (veh)	2				10	15	1	0	

Intersection: 5: Access A/Marshall Hooks Road & Idlewild Road

Movement	EB	EB	WB	NB	SB
Directions Served	L	R	L	R	R
Maximum Queue (ft)	25	12	68	48	27
Average Queue (ft)	3	1	23	15	4
95th Queue (ft)	15	7	52	34	19
Link Distance (ft)				1604	2282
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	350	100	125		
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 6: Rite Aid Driveway & Idlewild Road

Movement	EB	EB	WB	WB	NB	NB
Directions Served	T	R	UL	T	L	R
Maximum Queue (ft)	292	50	214	390	266	121
Average Queue (ft)	67	4	44	189	148	46
95th Queue (ft)	187	25	120	323	228	95
Link Distance (ft)	494	494		2046	2039	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			150			325
Storage Blk Time (%)				8	0	
Queuing Penalty (veh)				8	0	

Intersection: 7: Stevens Mill Road & Idlewild Road

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	L	T	R
Maximum Queue (ft)	217	374	250	1538	179	177	116	234	1013	250
Average Queue (ft)	53	162	88	876	77	72	44	117	551	229
95th Queue (ft)	139	303	251	1673	147	141	90	235	1095	295
Link Distance (ft)		2046		4493		5157			6183	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	250		150		275		175	135		150
Storage Blk Time (%)		2		38		1		7	39	57
Queuing Penalty (veh)		2		31		2		30	151	148

Network Summary

Network wide Queuing Penalty: 466

Intersection: 2: Stallings Road & Idlewild Road

Movement	EB	WB	NB
Directions Served	TR	L	LR
Maximum Queue (ft)	29	246	1164
Average Queue (ft)	4	107	662
95th Queue (ft)	19	194	1303
Link Distance (ft)	2663	739	2713
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: I-485 SB Ramp & Idlewild Road

Movement	EB	EB	EB	WB	WB	WB	SB	SB
Directions Served	T	T	R	UL	T	T	LT	R
Maximum Queue (ft)	303	268	200	366	237	254	392	467
Average Queue (ft)	176	127	81	201	115	125	123	274
95th Queue (ft)	275	220	171	323	213	225	270	424
Link Distance (ft)	739	739			856	856	1608	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)			100	275				375
Storage Blk Time (%)		17	5	3	0		1	3
Queuing Penalty (veh)		22	12	9	0		2	5

Intersection: 4: Idlewild Road & I-485 NB Ramp

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	T	T	R	LT	R	R
Maximum Queue (ft)	263	163	124	276	211	190	194	179	161
Average Queue (ft)	127	49	37	135	83	72	90	103	70
95th Queue (ft)	215	136	106	252	176	144	155	170	142
Link Distance (ft)		856	856	509	509			1469	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	275					125	200		850
Storage Blk Time (%)	0				3	1	1	0	
Queuing Penalty (veh)	0				10	7	1	0	

Intersection: 5: Access A/Marshall Hooks Road & Idlewild Road

Movement	EB	EB	WB	NB	SB
Directions Served	L	R	L	R	R
Maximum Queue (ft)	35	8	56	31	27
Average Queue (ft)	3	0	24	13	4
95th Queue (ft)	18	5	51	27	20
Link Distance (ft)				1604	2282
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	350	100	125		
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 6: Rite Aid Driveway & Idlewild Road

Movement	EB	EB	WB	WB	NB	NB
Directions Served	T	R	UL	T	L	R
Maximum Queue (ft)	237	60	218	497	311	107
Average Queue (ft)	63	6	47	205	154	46
95th Queue (ft)	168	32	139	362	249	91
Link Distance (ft)	494	494		2046	2039	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			150			325
Storage Blk Time (%)				9	0	
Queuing Penalty (veh)				8	0	

Intersection: 7: Stevens Mill Road & Idlewild Road

Movement	EB	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	TR	L	TR	L	T	R
Maximum Queue (ft)	118	261	82	250	1430	141	260	234	890	250
Average Queue (ft)	52	109	20	87	997	71	141	111	410	221
95th Queue (ft)	99	219	56	248	1960	124	247	222	863	296
Link Distance (ft)		2046			4497		5145		6183	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	250		125	150		275		135		150
Storage Blk Time (%)		7	0		39		1	4	28	51
Queuing Penalty (veh)		12	0		32		1	19	109	132

Network Summary

Network wide Queuing Penalty: 384

Intersection: 2: Stallings Road & Idlewild Road

Movement	EB	WB	WB	NB
Directions Served	TR	L	T	LR
Maximum Queue (ft)	50	389	19	2736
Average Queue (ft)	11	170	1	2299
95th Queue (ft)	35	323	14	3176
Link Distance (ft)	2663	739	739	2713
Upstream Blk Time (%)				35
Queuing Penalty (veh)				0
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: I-485 SB Ramp & Idlewild Road

Movement	EB	EB	EB	WB	WB	WB	SB	SB
Directions Served	T	T	R	L	T	T	LT	R
Maximum Queue (ft)	294	268	185	187	196	189	374	318
Average Queue (ft)	140	105	44	93	71	82	162	184
95th Queue (ft)	243	195	115	162	158	166	295	295
Link Distance (ft)	739	739			856	856	1608	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)			100	275				375
Storage Blk Time (%)		8	1		0		0	0
Queuing Penalty (veh)		11	3		0		1	0

Intersection: 4: Idlewild Road & I-485 NB Ramp

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	T	T	R	LT	R	R
Maximum Queue (ft)	243	296	270	207	173	178	339	361	331
Average Queue (ft)	93	116	93	86	64	61	162	196	158
95th Queue (ft)	183	245	208	174	139	141	266	297	266
Link Distance (ft)		856	856	509	509			1469	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	275					125	200		850
Storage Blk Time (%)	0	0			1	2	5	9	
Queuing Penalty (veh)	1	1			3	5	25	44	

Intersection: 5: Boyd Funderburk Drive/Marshall Hooks Road & Idlewild Road

Movement	EB	WB	NB	SB
Directions Served	L	L	LTR	LTR
Maximum Queue (ft)	10	25	37	42
Average Queue (ft)	1	1	8	10
95th Queue (ft)	7	10	30	33
Link Distance (ft)			394	2282
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	350	100		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Rite Aid Driveway & Idlewild Road

Movement	EB	EB	B16	WB	WB	NB
Directions Served	T	R	T	L	T	LR
Maximum Queue (ft)	449	50	27	101	278	384
Average Queue (ft)	152	6	1	47	123	223
95th Queue (ft)	330	27	14	86	237	349
Link Distance (ft)	494	494	411		2058	2037
Upstream Blk Time (%)	0					
Queuing Penalty (veh)	3					
Storage Bay Dist (ft)				150		
Storage Blk Time (%)				0	5	
Queuing Penalty (veh)				0	4	

Intersection: 7: Stevens Mill Road & Idlewild Road

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	T	R
Maximum Queue (ft)	350	622	249	835	231	432	156	216	205
Average Queue (ft)	155	296	62	470	68	206	55	71	101
95th Queue (ft)	316	533	200	856	199	417	121	163	183
Link Distance (ft)		2058		4497		5157		6183	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	250		150		275		135		150
Storage Blk Time (%)		11		36		10	0	1	5
Queuing Penalty (veh)		23		15		8	1	3	8

Network Summary

Network wide Queuing Penalty: 158

Intersection: 2: Stallings Road & Idlewild Road

Movement	EB	WB	WB	NB
Directions Served	TR	L	T	LR
Maximum Queue (ft)	57	502	199	2743
Average Queue (ft)	12	204	9	2083
95th Queue (ft)	37	423	119	3461
Link Distance (ft)	2663	739	739	2713
Upstream Blk Time (%)				49
Queuing Penalty (veh)				0
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: I-485 SB Ramp & Idlewild Road

Movement	EB	EB	EB	WB	WB	WB	SB	SB
Directions Served	T	T	R	L	T	T	LT	R
Maximum Queue (ft)	304	236	145	205	191	204	339	336
Average Queue (ft)	144	103	47	103	77	85	178	193
95th Queue (ft)	242	187	113	175	155	169	303	310
Link Distance (ft)	739	739			856	856	1608	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)			100	275				375
Storage Blk Time (%)		8	1	0			0	0
Queuing Penalty (veh)		11	4	0			0	0

Intersection: 4: Idlewild Road & I-485 NB Ramp

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	T	T	R	LT	R	R
Maximum Queue (ft)	241	267	225	242	204	184	316	335	290
Average Queue (ft)	92	113	89	80	54	55	165	198	163
95th Queue (ft)	176	243	194	173	134	137	270	291	260
Link Distance (ft)		856	856	509	509			1469	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	275					125	200		850
Storage Blk Time (%)	0	0			1	1	7	9	
Queuing Penalty (veh)	1	0			2	4	32	47	

Intersection: 5: Boyd Funderburk Drive/Marshall Hooks Road & Idlewild Road

Movement	EB	EB	WB	NB	SB
Directions Served	L	TR	L	LTR	LTR
Maximum Queue (ft)	10	8	26	33	34
Average Queue (ft)	1	0	1	8	6
95th Queue (ft)	7	6	10	29	26
Link Distance (ft)		509		394	2282
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	350		100		
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 6: Rite Aid Driveway & Idlewild Road

Movement	EB	EB	B16	B16	WB	WB	NB
Directions Served	T	R	T	T	L	T	LR
Maximum Queue (ft)	533	93	108	51	157	338	445
Average Queue (ft)	217	7	11	2	57	140	251
95th Queue (ft)	465	52	80	32	111	270	395
Link Distance (ft)	494	494	411	411		2058	2037
Upstream Blk Time (%)	2						
Queuing Penalty (veh)	11						
Storage Bay Dist (ft)					150		
Storage Blk Time (%)					0	5	
Queuing Penalty (veh)					0	4	

Intersection: 7: Stevens Mill Road & Idlewild Road

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	T	R
Maximum Queue (ft)	350	808	214	849	232	398	158	299	231
Average Queue (ft)	190	350	46	469	66	202	53	81	100
95th Queue (ft)	362	679	161	821	156	350	120	194	191
Link Distance (ft)		2058		4497		5157		6183	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	250		150		275		135		150
Storage Blk Time (%)	1	14		38		7	1	2	6
Queuing Penalty (veh)	12	30		16		6	2	6	10

Network Summary

Network wide Queuing Penalty: 199

Intersection: 2: Stallings Road & Idlewild Road

Movement	EB	WB	WB	NB
Directions Served	TR	L	T	LR
Maximum Queue (ft)	44	537	258	2743
Average Queue (ft)	10	234	11	2443
95th Queue (ft)	32	441	140	3268
Link Distance (ft)	2663	739	739	2713
Upstream Blk Time (%)			0	59
Queuing Penalty (veh)			0	0
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: I-485 SB Ramp & Idlewild Road

Movement	EB	EB	EB	WB	WB	WB	SB	SB
Directions Served	T	T	R	L	T	T	LT	R
Maximum Queue (ft)	286	272	199	238	213	256	360	345
Average Queue (ft)	152	126	46	120	90	108	218	216
95th Queue (ft)	249	220	121	205	187	213	334	323
Link Distance (ft)	739	739			856	856	1608	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)			100	275				375
Storage Blk Time (%)		14	1	0			0	0
Queuing Penalty (veh)		19	6	1			1	0

Intersection: 4: Idlewild Road & I-485 NB Ramp

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	T	T	R	LT	R	R
Maximum Queue (ft)	232	243	215	228	208	197	349	339	296
Average Queue (ft)	95	105	83	98	77	75	164	204	171
95th Queue (ft)	172	225	190	180	159	156	280	296	252
Link Distance (ft)		856	856	510	510			1469	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	275					125	200		850
Storage Blk Time (%)		0			1	2	7	9	
Queuing Penalty (veh)		0			5	8	40	51	

Intersection: 5: Access A/Marshall Hooks Road & Idlewild Road

Movement	EB	EB	EB	WB	WB	NB	SB
Directions Served	L	T	TR	L	T	R	R
Maximum Queue (ft)	16	416	408	140	57	103	6
Average Queue (ft)	1	164	136	47	2	40	1
95th Queue (ft)	8	461	421	100	32	92	7
Link Distance (ft)		510	510		411	1619	2282
Upstream Blk Time (%)		1	1				
Queuing Penalty (veh)		10	6				
Storage Bay Dist (ft)	350			100			
Storage Blk Time (%)		9		2	0		
Queuing Penalty (veh)		0		11	0		

Intersection: 6: Rite Aid Driveway & Idlewild Road

Movement	EB	EB	B16	B16	WB	WB	NB
Directions Served	T	R	T	T	L	T	LR
Maximum Queue (ft)	594	421	452	425	299	537	2073
Average Queue (ft)	498	109	304	265	104	281	1584
95th Queue (ft)	725	392	608	589	244	440	2468
Link Distance (ft)	494	494	411	411		2058	2037
Upstream Blk Time (%)	39	1	17	7			41
Queuing Penalty (veh)	268	5	120	51			0
Storage Bay Dist (ft)					150		
Storage Blk Time (%)					0	18	
Queuing Penalty (veh)					3	20	

Intersection: 7: Stevens Mill Road & Idlewild Road

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	T	R
Maximum Queue (ft)	296	497	250	1160	375	616	158	274	233
Average Queue (ft)	160	249	53	692	128	302	55	91	117
95th Queue (ft)	277	395	193	1216	320	633	115	206	202
Link Distance (ft)		2058		4497		5157		6183	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	250		150		275		135		150
Storage Blk Time (%)	2	7		44		26	0	5	6
Queuing Penalty (veh)	24	16		18		28	0	12	10

Network Summary

Network wide Queuing Penalty: 734

Intersection: 2: Stallings Road & Idlewild Road

Movement	EB	WB	WB	NB
Directions Served	TR	L	T	LR
Maximum Queue (ft)	56	525	238	2743
Average Queue (ft)	13	249	18	2393
95th Queue (ft)	39	474	176	3388
Link Distance (ft)	2663	739	739	2713
Upstream Blk Time (%)				68
Queuing Penalty (veh)				0
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: I-485 SB Ramp & Idlewild Road

Movement	EB	EB	EB	WB	WB	WB	SB	SB
Directions Served	T	T	R	L	T	T	LT	R
Maximum Queue (ft)	299	265	177	248	248	234	346	327
Average Queue (ft)	154	123	51	127	86	102	201	194
95th Queue (ft)	256	218	132	216	185	199	328	294
Link Distance (ft)	739	739			856	856	1608	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)			100	275				375
Storage Blk Time (%)		12	1	0	0		0	
Queuing Penalty (veh)		16	5	1	0		0	

Intersection: 4: Idlewild Road & I-485 NB Ramp

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	T	T	R	LT	R	R
Maximum Queue (ft)	243	287	259	246	263	223	332	355	305
Average Queue (ft)	100	123	98	133	108	100	163	210	177
95th Queue (ft)	182	252	219	220	200	197	274	295	257
Link Distance (ft)		856	856	509	509			1469	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	275					125	200		850
Storage Blk Time (%)	0	0			4	4	6	11	
Queuing Penalty (veh)	2	0			12	16	31	61	

Intersection: 5: Access A/Marshall Hooks Road & Idlewild Road

Movement	EB	EB	EB	WB	WB	NB	SB
Directions Served	L	T	R	L	T	R	R
Maximum Queue (ft)	5	4	16	97	53	56	16
Average Queue (ft)	0	0	1	40	2	20	1
95th Queue (ft)	5	3	8	80	27	41	9
Link Distance (ft)		509			411	1604	2282
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	350		100	125			
Storage Blk Time (%)				0	0		
Queuing Penalty (veh)				0	0		

Intersection: 6: Rite Aid Driveway & Idlewild Road

Movement	EB	EB	B16	B16	WB	WB	NB	NB
Directions Served	T	R	T	T	L	T	L	R
Maximum Queue (ft)	534	54	119	33	266	407	565	393
Average Queue (ft)	228	9	9	1	71	187	239	177
95th Queue (ft)	482	35	78	23	164	342	449	337
Link Distance (ft)	494	494	411	411		2046	2039	
Upstream Blk Time (%)	1							
Queuing Penalty (veh)	7							
Storage Bay Dist (ft)					150			325
Storage Blk Time (%)					0	9	7	0
Queuing Penalty (veh)					0	10	18	1

Intersection: 7: Stevens Mill Road & Idlewild Road

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	L	T	R
Maximum Queue (ft)	349	755	250	753	162	272	213	194	300	249
Average Queue (ft)	204	369	52	429	77	111	68	59	121	134
95th Queue (ft)	380	656	176	725	147	220	145	145	253	232
Link Distance (ft)		2046		4493		5157			6183	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	250		150		275		175	135		150
Storage Blk Time (%)	3	16		33		8	0	0	9	12
Queuing Penalty (veh)	33	37		14		17	0	1	23	19

Network Summary

Network wide Queuing Penalty: 326

Intersection: 2: Stallings Road & Idlewild Road

Movement	EB	WB	WB	NB
Directions Served	TR	L	T	LR
Maximum Queue (ft)	48	641	298	2745
Average Queue (ft)	10	294	50	2427
95th Queue (ft)	33	592	336	3294
Link Distance (ft)	2663	739	739	2713
Upstream Blk Time (%)		1	0	66
Queuing Penalty (veh)		3	1	0
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: I-485 SB Ramp & Idlewild Road

Movement	EB	EB	EB	WB	WB	WB	SB	SB
Directions Served	T	T	R	L	T	T	LT	R
Maximum Queue (ft)	304	272	180	226	207	229	348	354
Average Queue (ft)	150	116	50	125	85	108	197	201
95th Queue (ft)	253	215	121	208	180	202	326	323
Link Distance (ft)	739	739			856	856	1608	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)			100	275				375
Storage Blk Time (%)		12	1				0	0
Queuing Penalty (veh)		15	5				0	0

Intersection: 4: Idlewild Road & I-485 NB Ramp

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	T	T	R	LT	R	R
Maximum Queue (ft)	230	268	247	229	258	231	322	328	300
Average Queue (ft)	97	116	94	122	111	98	163	198	167
95th Queue (ft)	173	239	202	208	203	192	263	292	266
Link Distance (ft)		856	856	509	509			1469	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	275					125	200		850
Storage Blk Time (%)	0	0			4	4	6	10	
Queuing Penalty (veh)	0	0			14	14	30	54	

Intersection: 5: Access A/Marshall Hooks Road & Idlewild Road

Movement	EB	EB	EB	WB	WB	NB	SB
Directions Served	L	T	R	L	T	R	R
Maximum Queue (ft)	16	3	8	103	44	64	27
Average Queue (ft)	1	0	0	45	1	21	2
95th Queue (ft)	7	2	4	85	23	45	13
Link Distance (ft)		509			411	1604	2282
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	350		100	125			
Storage Blk Time (%)				0	0		
Queuing Penalty (veh)				1	0		

Intersection: 6: Rite Aid Driveway & Idlewild Road

Movement	EB	EB	B16	WB	WB	NB	NB
Directions Served	T	R	T	L	T	L	R
Maximum Queue (ft)	464	64	14	143	311	451	377
Average Queue (ft)	195	11	0	65	138	221	163
95th Queue (ft)	394	40	8	115	251	371	295
Link Distance (ft)	494	494	411		2046	2039	
Upstream Blk Time (%)	0						
Queuing Penalty (veh)	1						
Storage Bay Dist (ft)				150			325
Storage Blk Time (%)				0	6	4	0
Queuing Penalty (veh)				2	7	10	1

Intersection: 7: Stevens Mill Road & Idlewild Road

Movement	EB	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	TR	L	TR	L	T	R
Maximum Queue (ft)	349	712	225	250	1537	243	448	150	317	228
Average Queue (ft)	196	313	64	62	1004	90	215	56	110	128
95th Queue (ft)	348	580	212	209	1861	191	378	114	245	213
Link Distance (ft)		2046			4497		5145		6183	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	250		125	150		275		135		150
Storage Blk Time (%)	2	20			48		7	0	3	8
Queuing Penalty (veh)	17	73			20		8	0	9	12

Network Summary

Network wide Queuing Penalty: 300

RAMEY KEMP & ASSOCIATES

Charleston, SC - Charlotte, NC - Columbia, SC - Raleigh, NC - Richmond, VA - Winston-Salem, NC