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Carolina Logistics Park

Traffic Impact Analysis

Pineville, North Carolina

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TRAFFIC IMPACT ANALYSIS

FOR

Carolina Logistics Park (Formerly Known as King's Grant)

LOCATED
IN
PINEVILLE, NORTH CAROLINA

Prepared For:
Beacon Partners
500 East Morehead Street, Suite 200
Charlotte, NC 28202

Prepared By:
Ramey Kemp & Associates, Inc.
8210 University Executive Park Drive, Suite 220
Charlotte, NC 28262
License #C-0910

July 2020
RKA Project #20094

NORTH CAROLINA PROFESSIONAL SEAL 036792 ENGINEER J. ANDREW EAGLE

J. Andrew Eagle
7-8-2020

RKA
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TRAFFIC IMPACT ANALYSIS
CAROLINA LOGISTICS PARK
(FORMERLY KNOWN AS KING'S GRANT)
PINEVILLE, NORTH CAROLINA

EXECUTIVE SUMMARY

This report summarizes the findings of the Traffic Impact Study (TIA) that was performed for the proposed Carolina Logistics Park development to be located between Downs Road and Nations Ford Road in Pineville, 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 proposed development is anticipated to be completed in two phases with a build out year of 2023 for phase 1, and 2026 for full build. The proposed development is assumed to consist of 2,500,000 square feet of industrial warehouse under phase 1. An additional 1,000,000 square feet of industrial warehouse is proposed under full build. The current land is undeveloped. Site access is proposed via one full movement driveway on Downs Road. Site access will also be provided via two full movement driveways on Nations Ford Road.

The study area for the TIA was determined through coordination with the North Carolina Department of Transportation (NCDOT), the Charlotte Department of Transportation (CDOT), and the Town of Pineville and consists of the following intersections:

1. Westinghouse Boulevard and Nations Ford Road
2. Westinghouse Boulevard and Downs Road
3. Downs Road and NC 51
4. Downs Road and Site Access A
5. Nations Ford Road and Site Access B
6. Nations Ford Road and Site Access C

Based on coordination with NCDOT, CDOT, and the Town of Pineville, one offsite development was determined to have an impact on the project study area. The following adjacent development was included in the study:

- Downs Road Development – the development includes up to 250,000 square feet of warehouse/light industrial with one access point along Downs Road.

Several scenarios were analyzed using traffic analysis software, Synchro 10. 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:

- 2020 Existing
- 2023 No-Build
- 2023 Build Phase 1
- 2023 Build Phase 1 Improvements
- 2026 No-Build
- 2026 Full Build
- 2026 Full Build Improvements

RKA has identified impacts to the existing roadway network based on NCDOT guidelines. Roadway improvements to mitigate impacts have been identified and NCDOT has concurred with the recommended roadway improvements. The following improvements are recommended to be completed by the developer as a result of coordination with NCDOT, CDOT, and the Town of Pineville.

Recommended Improvements by Developer as part of Phase 1

<u>Westinghouse Boulevard and Nations Ford Road</u>

- Modify the signal to add protected/permitted phasing for the northbound and southbound Nations Ford Road left turn lanes.

Downs Road and Site Access A

- Construct a northbound Downs Road left turn lane. Based on coordination with NCDOT, the left turn lane will need 200 feet of storage length and the appropriate taper.
- Construct a two-way left turn lane along Downs Road between Access A and the Empire site's driveway.
- Construct a southbound Downs Road right turn lane. Based on coordination with NCDOT, the right turn lane will need 100 feet of storage and the appropriate taper.
- Construct Access A with one ingress lane and two egress lanes (left and right lane). Provide 100 feet of storage and the appropriate taper for the left turn lane.
- Provide 100 feet of internal protected stem length measured from the right-of-way to the first crossing or left-turning conflict.

Nations Ford Road and Site Access B

- Construct a southbound Nations Ford Road left turn lane. Based on coordination with NCDOT, the left turn lane will need 200 feet of storage length and the appropriate taper.
- Construct a northbound Nations Ford Road right turn lane. Based on coordination with NCDOT, the right turn lane will need 100 feet of storage length and the appropriate taper.
- Construct Access B with one ingress lane and two egress lanes (left and right lane). A minimum of 100 feet of storage and appropriate taper is recommended for the left turn lane.
- Provide 100 feet of internal protected stem length measured from the right-of-way to the first crossing or left-turning conflict.

Recommended Improvements by Developer as part of Full Buildout

Westinghouse Boulevard and Downs Road

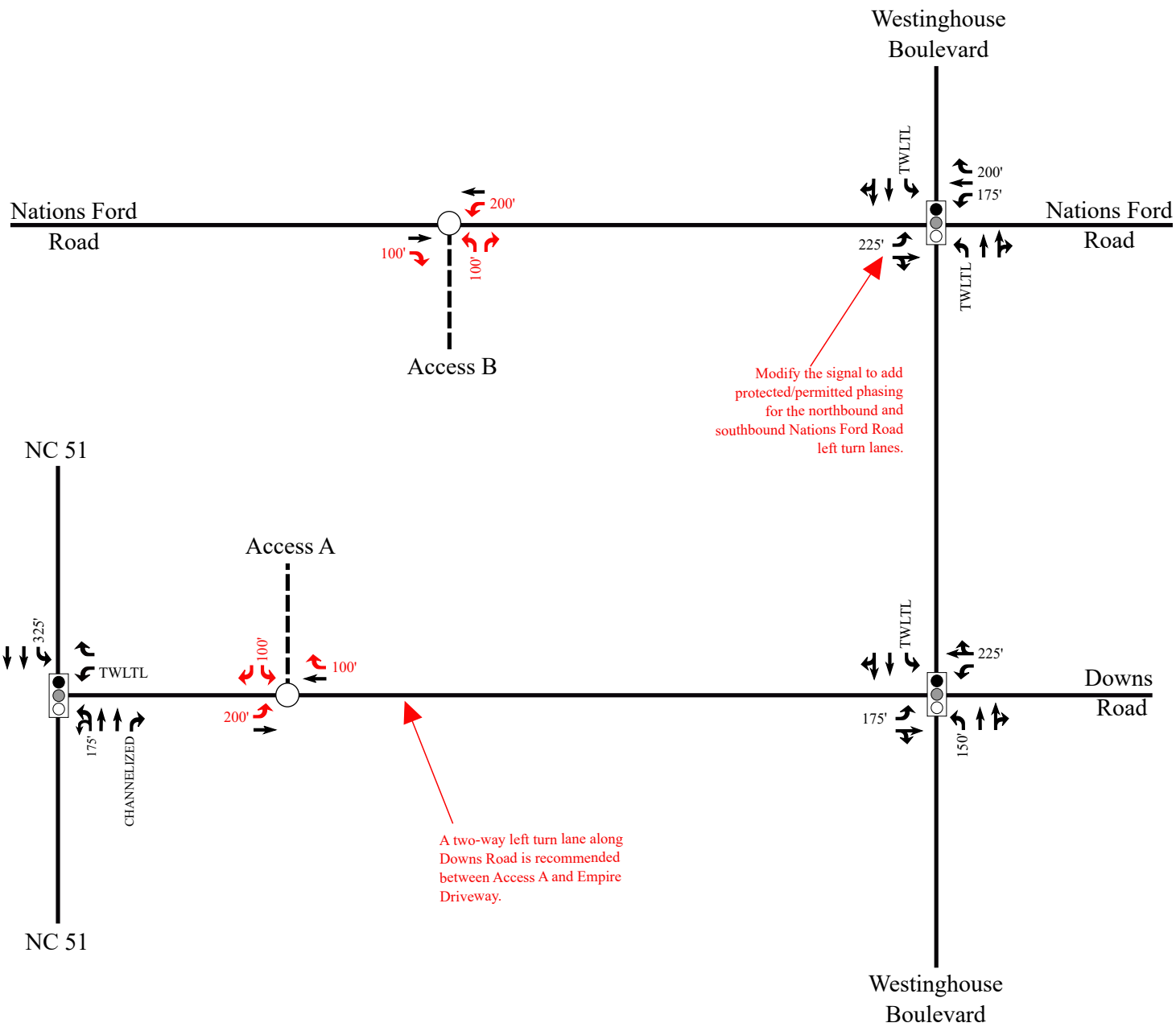
- Extend the northbound Downs Road left turn lane to provide 400 feet of storage and the appropriate taper.

Nations Ford Road and Site Access C

- Construct a southbound Nations Ford Road left turn lane. Based on coordination with NCDOT, the left turn lane will need 200 feet of storage length and the appropriate

taper. The current site plan will need to be revised to move Access C toward the south so that sufficient storage length can be provided. Alternatively, if trucks are prohibited from entering Access C, then the driveway can stay where it is and the left turn lane would only need 100 feet of storage and the appropriate taper.

- Construct a northbound Nations Ford Road right turn lane. Based on coordination with NCDOT, the right turn lane will need 100 feet of storage length and the appropriate taper.
- Construct Access C with one ingress lane and consider two egress lanes (left and right lane). If two egress lanes are constructed, a minimum of 100 feet of storage and appropriate taper is recommended for the left turn lane.
- This driveway could be constructed earlier than the 2026 Full Build scenario. Turn lanes associated with this driveway would be constructed when the driveway is constructed.
- Provide 100 feet of internal protected stem length measured from the right-of-way to the first crossing or left-turning conflict.



LEGEND

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

Moving forward.

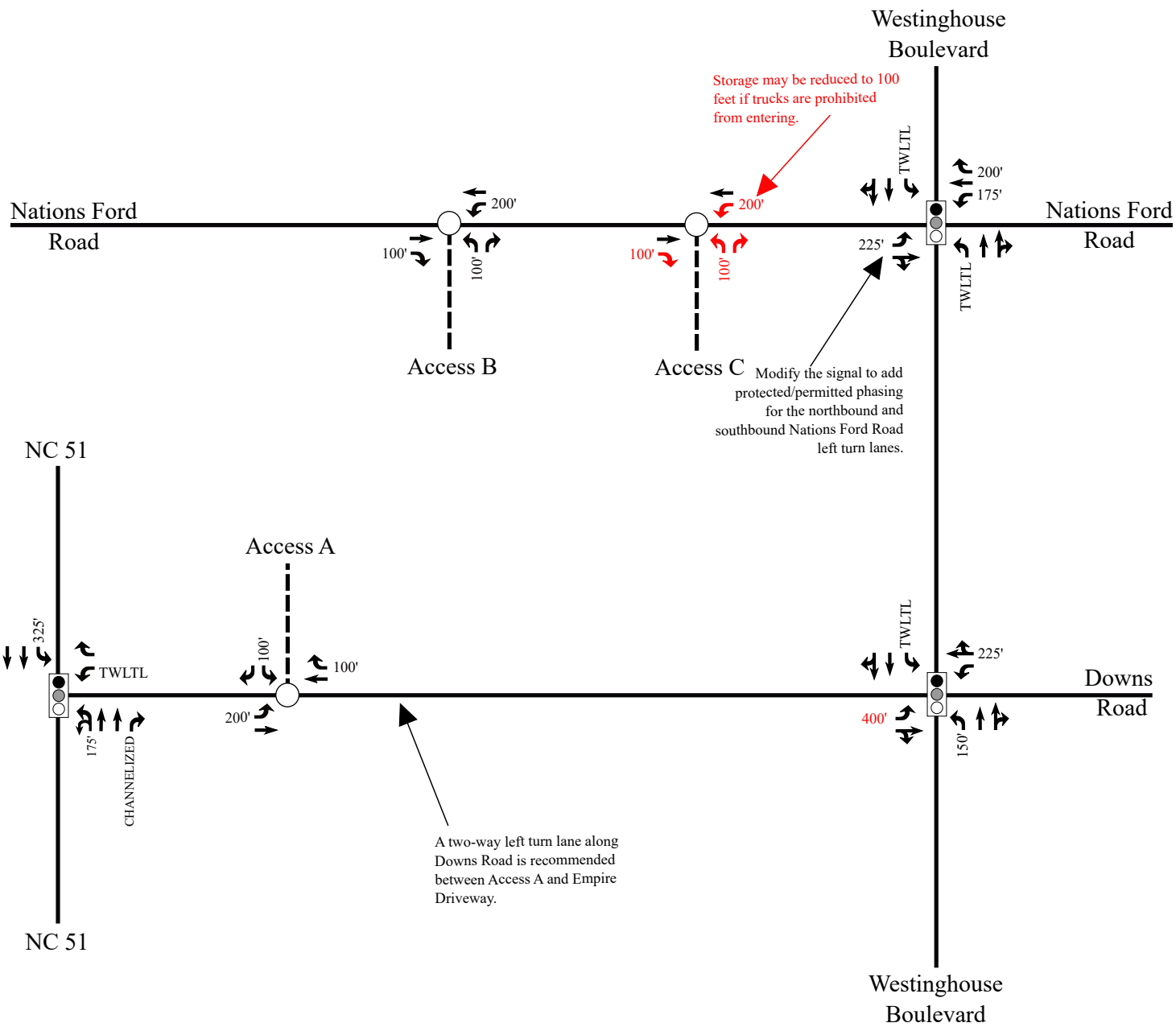
RAMEY KEMP ASSOCIATES

Carolina Logistics Park
Pineville, NC

2023 Build Phase 1
Recommended Lane
Configurations

Scale: Not to Scale

Figure E-1



LEGEND

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

Moving forward.

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Carolina Logistics Park
Pineville, NC

2026 Full Build
Recommended Lane
Configurations

Scale: Not to Scale

Figure E-2

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TRAFFIC IMPACT ANALYSIS
CAROLINA LOGISTICS PARK
(FORMERLY KNOWN AS KING'S GRANT)
PINEVILLE, NORTH CAROLINA

1. INTRODUCTION

The contents of this report present the findings of the Traffic Impact Analysis (TIA) conducted for the proposed Carolina Logistics Park development to be located between Downs Road and Nations Ford Road in Pineville, North Carolina. The purpose of this study is to determine the potential impacts to the surrounding transportation system created by traffic generated by the proposed development, as well as recommend improvements to mitigate the impacts.

The proposed development is anticipated to be completed in two phases with a build out year of 2023 for phase 1, and 2026 for full build. The proposed development is assumed to consist of 2,500,000 square feet of industrial warehouse under phase 1. An additional 1,000,000 square feet of industrial warehouse is proposed under full build. The current land is undeveloped. Site access is proposed via one full movement driveway on Downs Road. Site access will also be provided via two full movement driveways on Nations Ford Road.

The study analyzes traffic conditions during the weekday AM and PM peak hours for the following scenarios:

- 2020 Existing
- 2023 No-Build
- 2023 Build Phase 1
- 2026 No-Build
- 2026 Full Build

1.1. Site Location and Study Area

The development is proposed to be located between Downs Road and Nations Ford Road in Pineville, North Carolina. Refer to Figure 1 for the site location map.

The study area for the TIA was determined through coordination with the North Carolina Department of Transportation (NCDOT), the Charlotte Department of Transportation (CDOT), and the Town of Pineville (Town) and consists of the following existing intersections:

1. Westinghouse Boulevard and Nations Ford Road
2. Westinghouse Boulevard and Downs Road
3. Downs Road and NC 51
4. Downs Road and Site Access A
5. Nations Ford Road and Site Access B
6. Nations Ford Road and Site Access C

Refer to Appendix A for the approved scoping documentation.

1.2. Proposed Land Use and Site Access

The proposed development is anticipated to be completed in two phases with a build out year of 2023 for phase 1, and 2026 for phase 2. The proposed development is assumed to consist of the following uses:

- 2,500,000 square feet of industrial warehouse – phase 1
- An additional 1,000,000 square feet of industrial warehouse – phase 2

Site access is proposed via one full movement driveway on Downs Road. Site access will also be provided via two full movement driveways on Nations Ford Road. Refer to Figure 2 for a copy of the preliminary site plan.

1.3. Adjacent Land Uses

Several houses are located on the site, but the majority of land is undeveloped. The surrounding land is primarily commercial land uses.

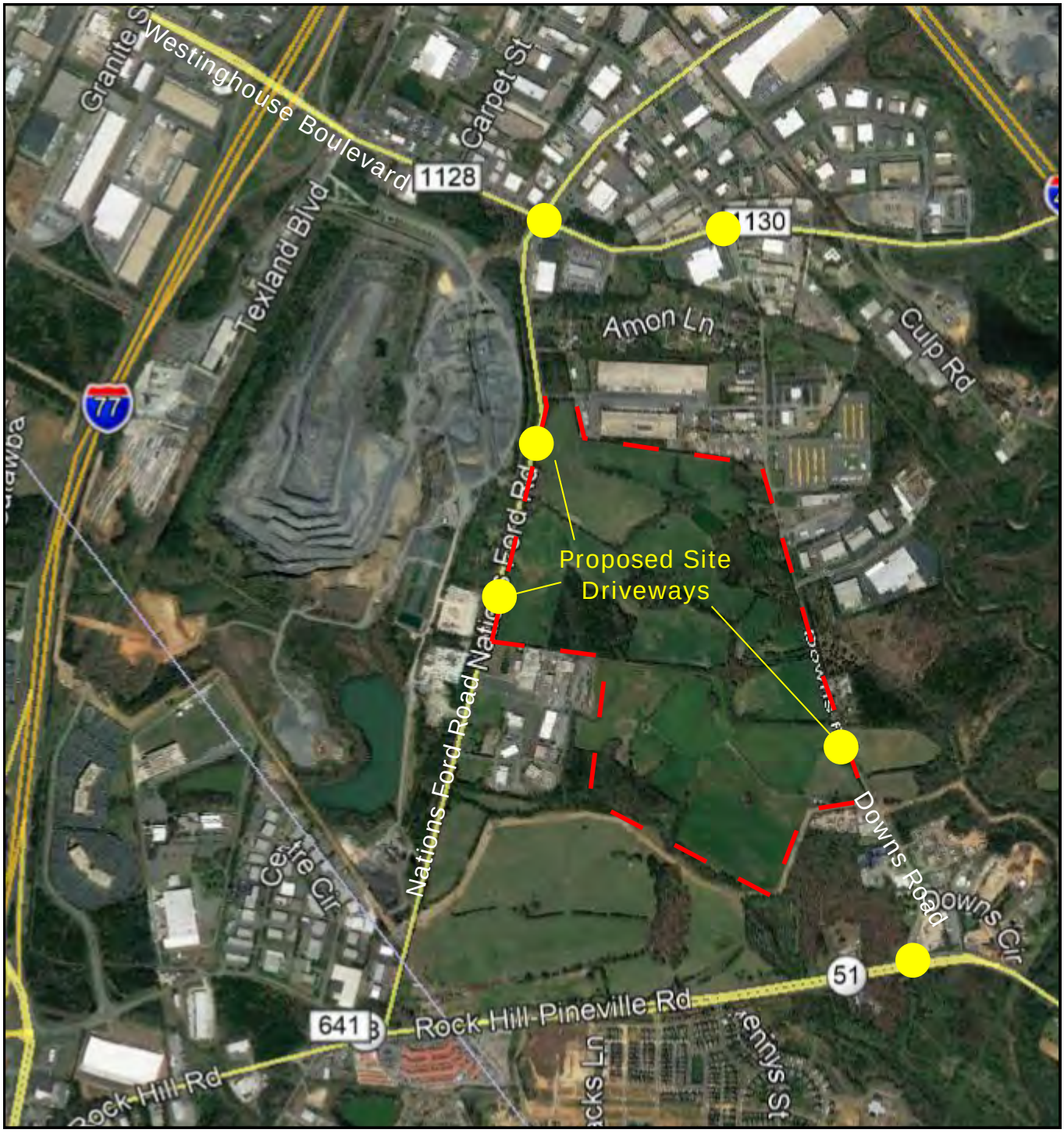
1.4. Existing Roadways

Existing lane configurations (number of traffic lanes on each intersection approach), lane widths, storage capacities, and other intersection and roadway information within the study area was collected by Ramey Kemp and Associates, Inc. (RKA). Figure 3 illustrates the existing lane configurations and traffic control at the study intersections. Table 1 provides a summary of this information, as well.

Table 1: Existing Roadway Inventory

	Route Number	Typical Cross Section	Speed Limit	Maintained By	2018 AADT (vpd)
Westinghouse Boulevard	SR 1128	5 – lane w/TWLTL	45 mph	NCDOT	29,000
Nations Ford Road	SR 1126	2 – lane undivided	35 mph	NCDOT	5,900*
Downs Road	SR 1129	2 – lane undivided	35/45 mph	NCDOT CDOT	5,400*
Pineville – Rock Hill Road	NC 51	4 – lane divided	45 mph	NCDOT	15,500

* Denotes AADT volumes from 2016, which is the most recent data available.



LEGEND

Proposed Site Location

Study Intersection

N

Moving forward.

RKA

RAMEY KEMP ASSOCIATES

Carolina Logistics Park
Pineville, NC

Site Location Map

Scale: Not to Scale

Figure 1

Moving forward.

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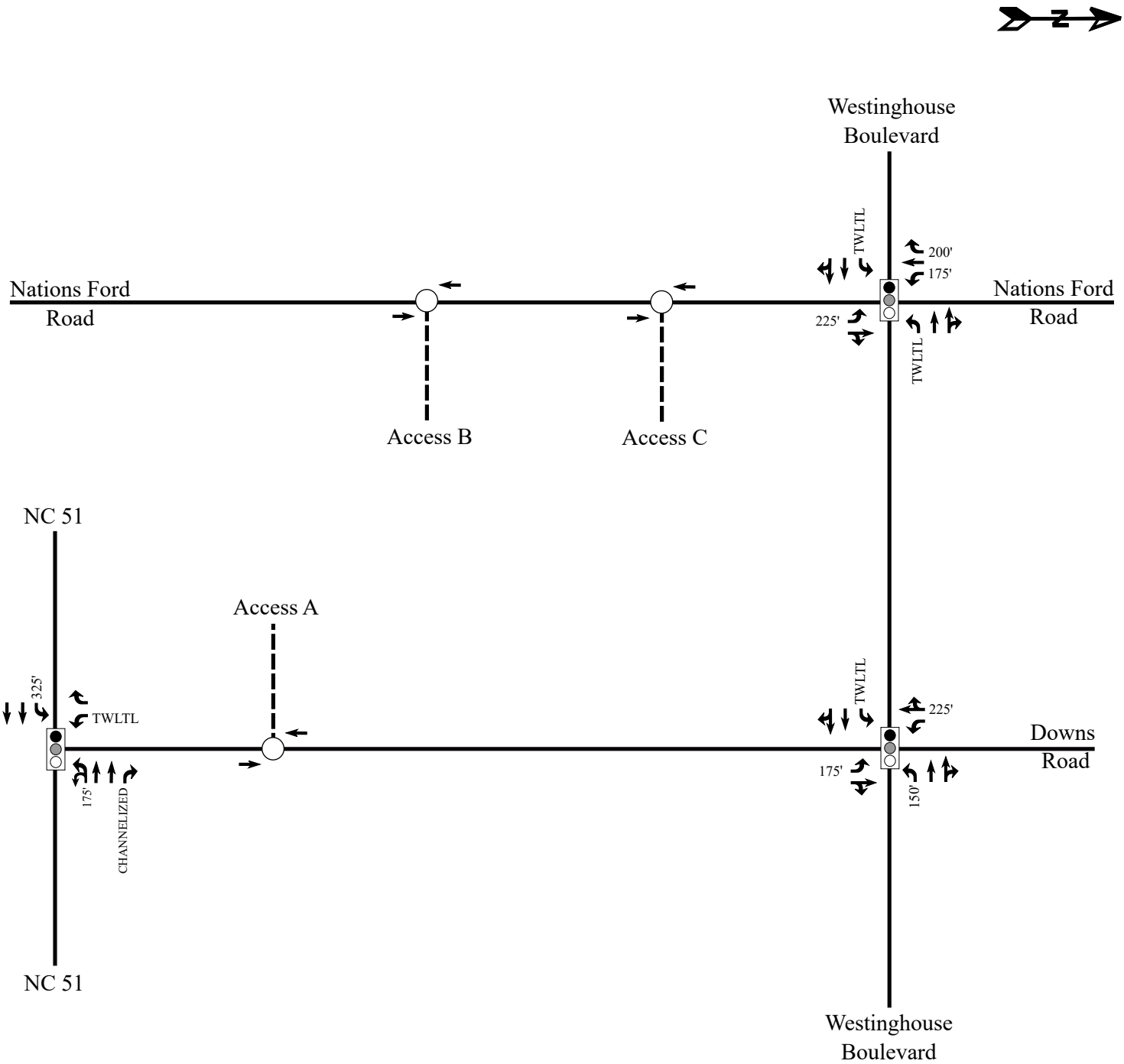
Carolina Logistics Park
Pineville, NC

Preliminary Site Plan

Scale: Not to Scale

Figure 2



LEGEND

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

Moving forward. RKA RAMEY KEMP ASSOCIATES	Carolina Logistics Park Pineville, NC	2020 Existing Lane Configurations
		Scale: Not to Scale / Figure 3

2. EXISTING PEAK HOUR CONDITIONS

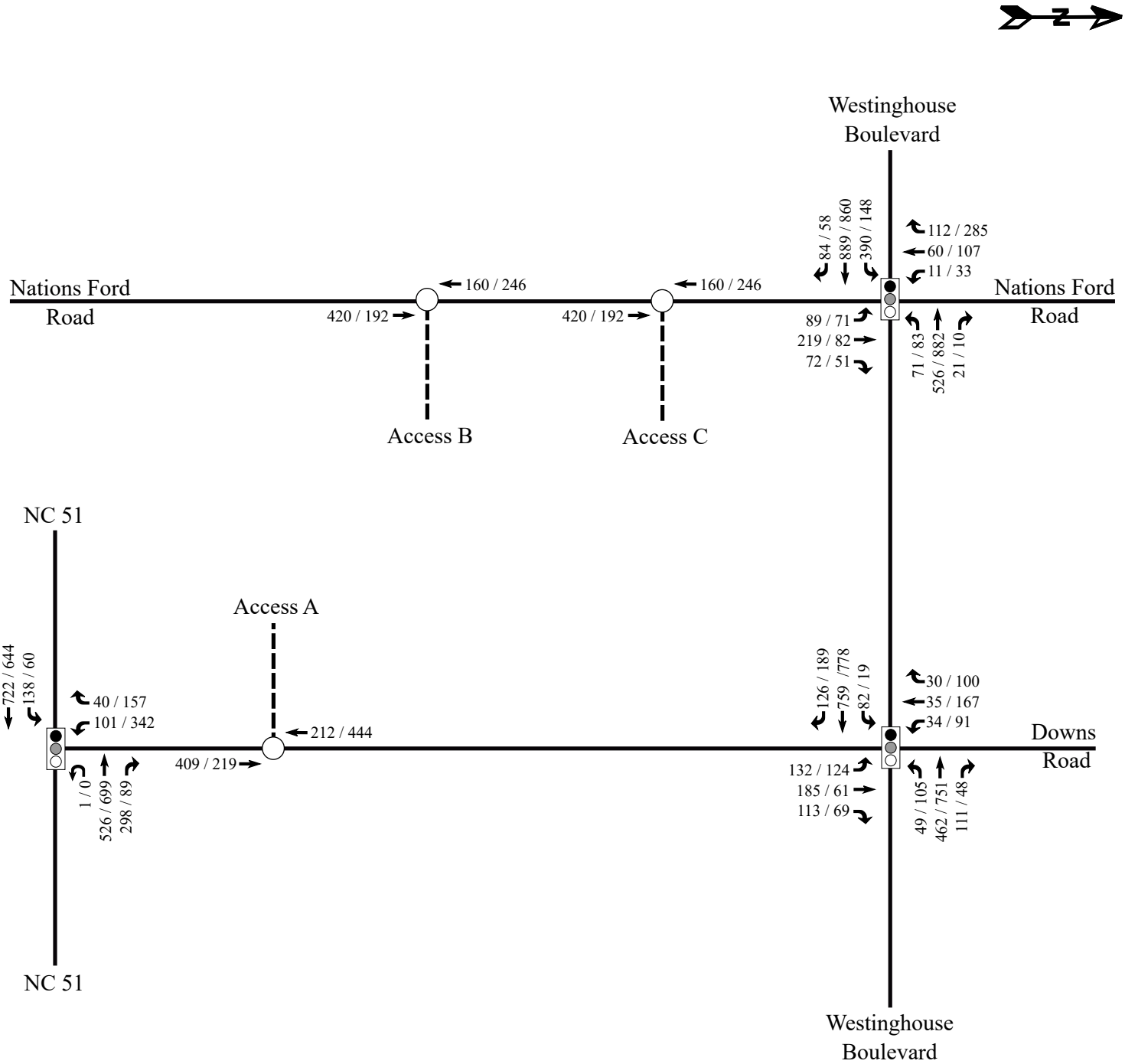
2.1. Existing Peak Hour Traffic

Existing peak hour traffic volumes were determined based on traffic counts conducted at the study intersections, in February and March of 2020 by RKA during a typical weekday AM (7:00 AM – 9:00 AM) and PM (4:00 PM – 7:00 PM) peak periods.

Additional traffic counts were conducted to determine the through volumes on Downs Road and Nations Ford Road at the proposed driveways. Weekday AM and PM traffic volumes were balanced between study intersections, where appropriate. Refer to Figure 4 for an illustration of the existing peak hour traffic volumes. A copy of the count data is located in Appendix B of this report.

2.2. Analysis of Existing Peak Hour Traffic

The existing (2020) weekday AM and PM peak hour traffic volumes were analyzed to determine the current levels of service at the study intersections under existing roadway conditions. Signal information was obtained from NCDOT and CDOT and is included in Appendix C. The signalized intersections analyzed along Westinghouse Boulevard were coordinated and Congestion Management minimum cycle lengths were met for all scenarios. Existing truck percentages from the traffic counts were used. The results of the analysis are presented in Section 7 of this report.



LEGEND

Signalized Intersection

Unsignalized Intersection

X / Y → AM / PM Peak Hour Traffic Volumes

Moving forward.

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Carolina Logistics Park
Pineville, NC

2020 Existing
Peak Hour Traffic Volumes

Scale: Not to Scale

Figure 4

3. BACKGROUND PEAK HOUR CONDITIONS

In order to account for growth of traffic and subsequent traffic conditions at a future year, background traffic projections are needed. Background traffic is the component of traffic due to the growth of the community and surrounding area that is anticipated to occur regardless of whether or not the proposed development is constructed. Background traffic is comprised of existing traffic growth within the study area and additional traffic created as a result of adjacent approved developments. Existing truck percentages were adjusted based on the trucks added by the approved development.

3.1. Ambient Traffic Growth

Through coordination with the NCDOT, CDOT, and the Town, it was determined that an annual growth rate of 2% per year would be used to generate projected (2023) and projected (2026) weekday AM and PM peak hour traffic volumes.

3.2. Adjacent Development Traffic

Based on coordination with the NCDOT, CDOT, and the Town, it was determined the approved Downs Road Development would be accounted for in this TIA.

The Downs Road Development traffic study (completed by Ramey Kemp and Associates on November 6, 2018) proposes a warehouse/light industrial development to be located on the eastern side of Downs Road. This development is now being referred to as the Empire site. Upon completion, the development is expected to consist of 250,000 square feet of warehouse/light industrial. At full build out, the Downs Road Development is expected to generate 88 total trips (77 entering and 11 exiting) during the AM peak hour and 69 total trips (9 entering and 60 exiting) during the PM peak hour. The development would construct a southbound left turn lane on Downs Road at its driveway. See Appendix D for excerpts and additional information regarding this development. It was assumed this development would generate the same percentage of trucks as the Metrolina development. Truck percentages for the 2023 No-Build and 2026 No-Build scenarios were adjusted to account for these trucks.

3.3. Future Roadway Improvements

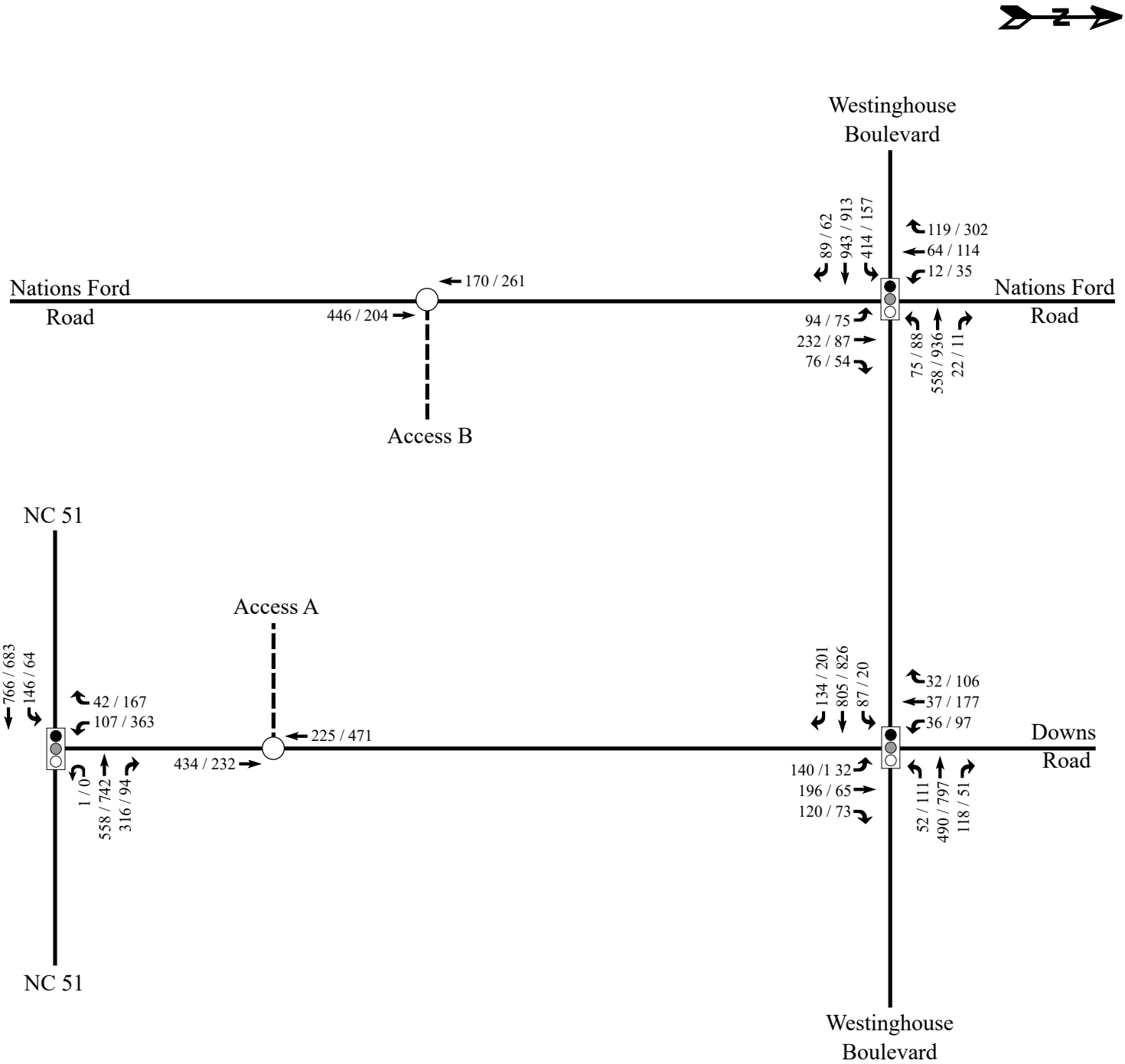
Based on coordination with the NCDOT, CDOT, and the Town, it was determined there were no public roadway improvements to consider with this study.

3.4. Projected Peak Hour Traffic Volumes

Under phase 1, the projected (2023) traffic volumes were determined by projecting the 2020 existing peak hour traffic to the year 2023 using a growth rate of 2% per year. Under phase 2, the projected (2026) traffic volumes were determined by projecting the 2020 existing peak hour traffic volumes to the year 2026 using the same growth rate. Trips generated by the approved Downs Road Warehouse were added to the projected traffic volumes to determine the 2023 No-Build and 2026 No-Build traffic volumes. Refer to Figures 5-8 for an illustration of the projected (2023 and 2026) and No-Build (2023 and 2026) peak hour traffic volumes at the study intersections.

3.5. Analysis of Background Peak Hour Traffic Conditions

Under phase 1 and phase 2, the No-Build peak hour traffic volumes at the study intersections were analyzed with future geometric roadway conditions and traffic control. Congestion management guidelines for signalized intersections were used. The analysis results are presented in Section 7 of this report.



LEGEND

Signalized Intersection

Unsignalized Intersection

X / Y → AM / PM Peak Hour Traffic Volumes

Moving forward.

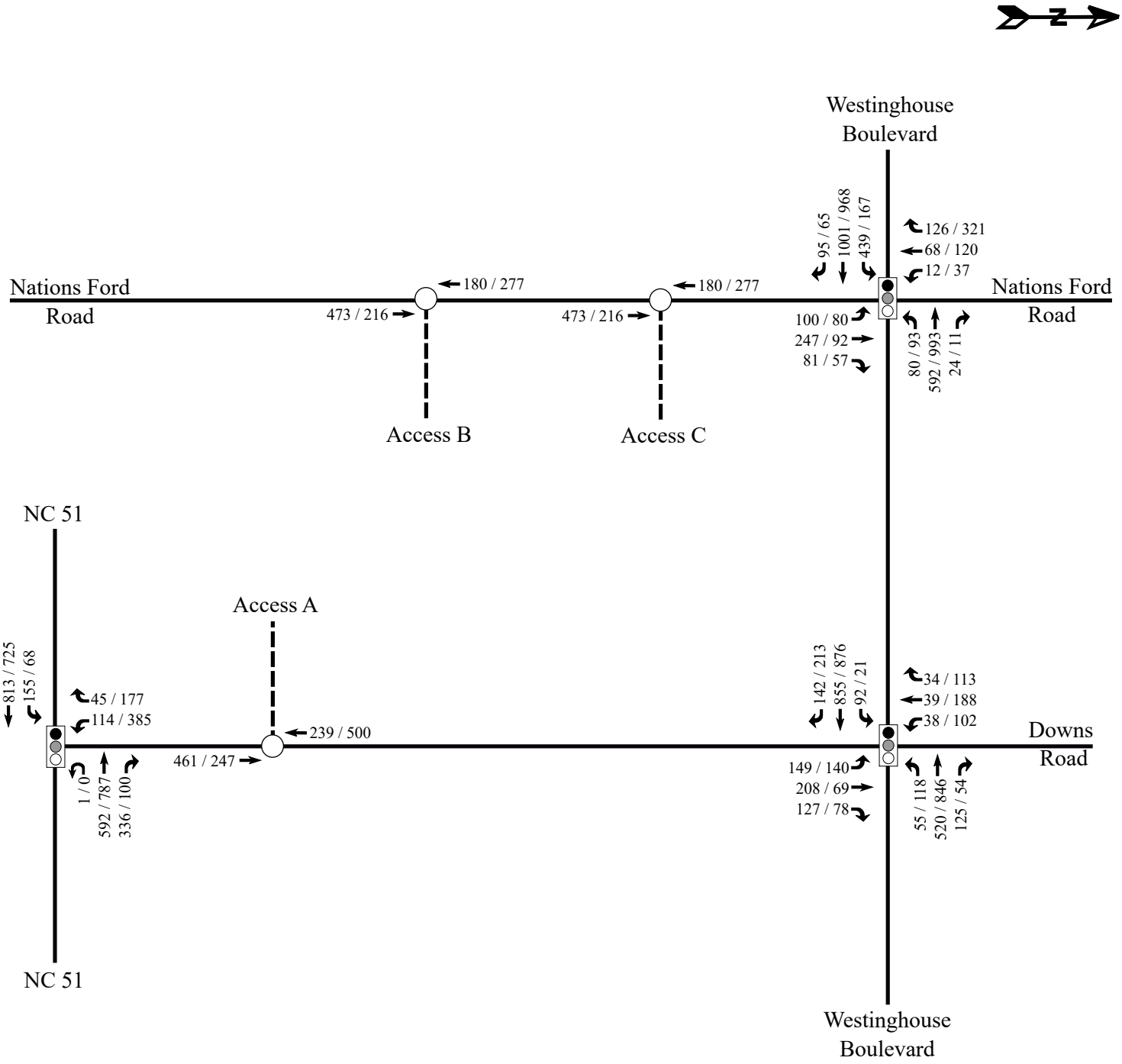
RAMEY KEMP ASSOCIATES

Carolina Logistics Park
Pineville, NC

2023 Projected
Peak Hour Traffic Volumes

Scale: Not to Scale

Figure 5



LEGEND

Signalized Intersection

Unsignalized Intersection

X / Y → AM / PM Peak Hour Traffic Volumes

Moving forward.

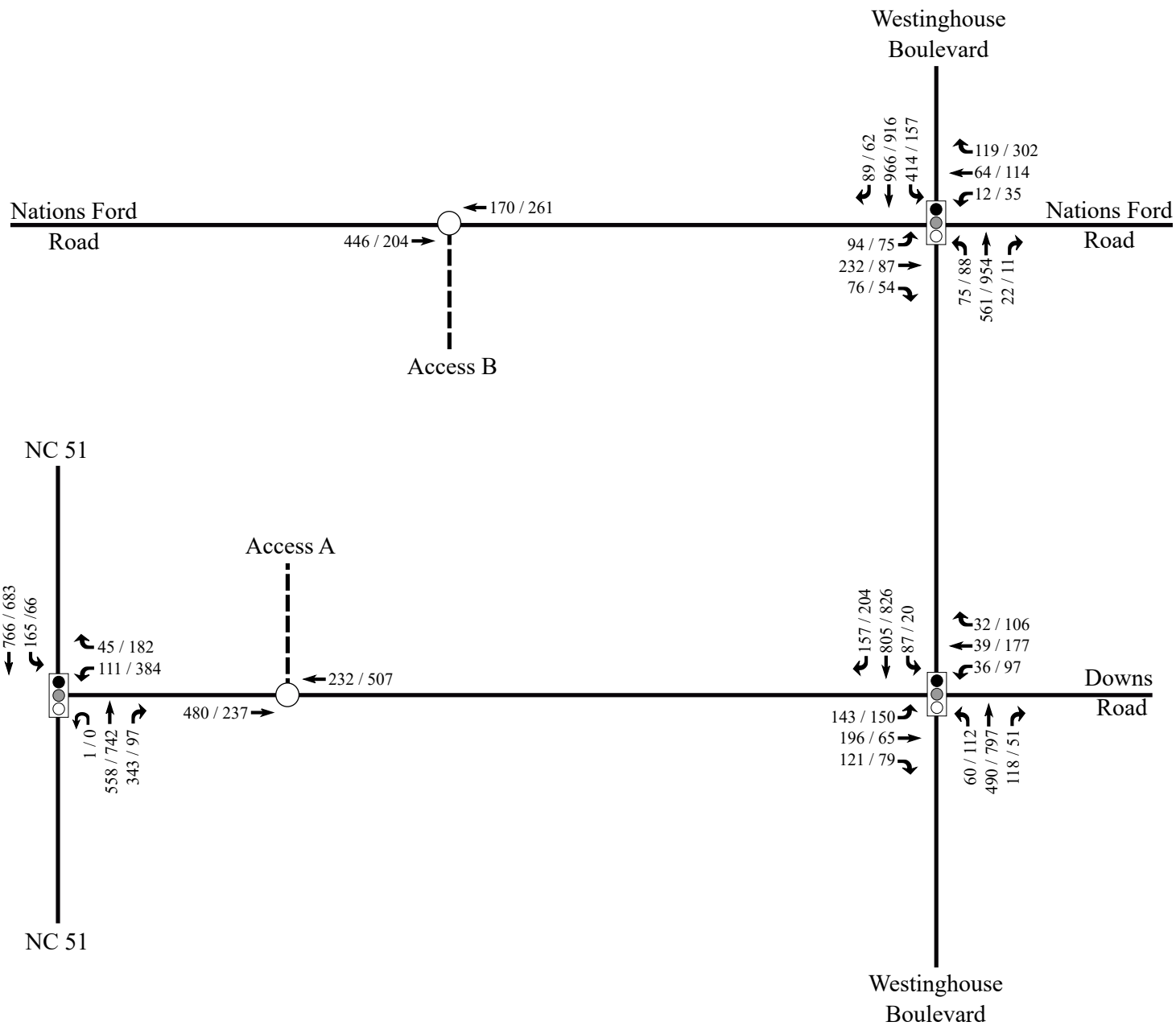
RAMEY KEMP ASSOCIATES

Carolina Logistics Park
Pineville, NC

2026 Projected
Peak Hour Traffic Volumes

Scale: Not to Scale

Figure 6



LEGEND

Signalized Intersection

Unsignalized Intersection

X / Y → AM / PM Peak Hour Traffic Volumes

Moving forward.

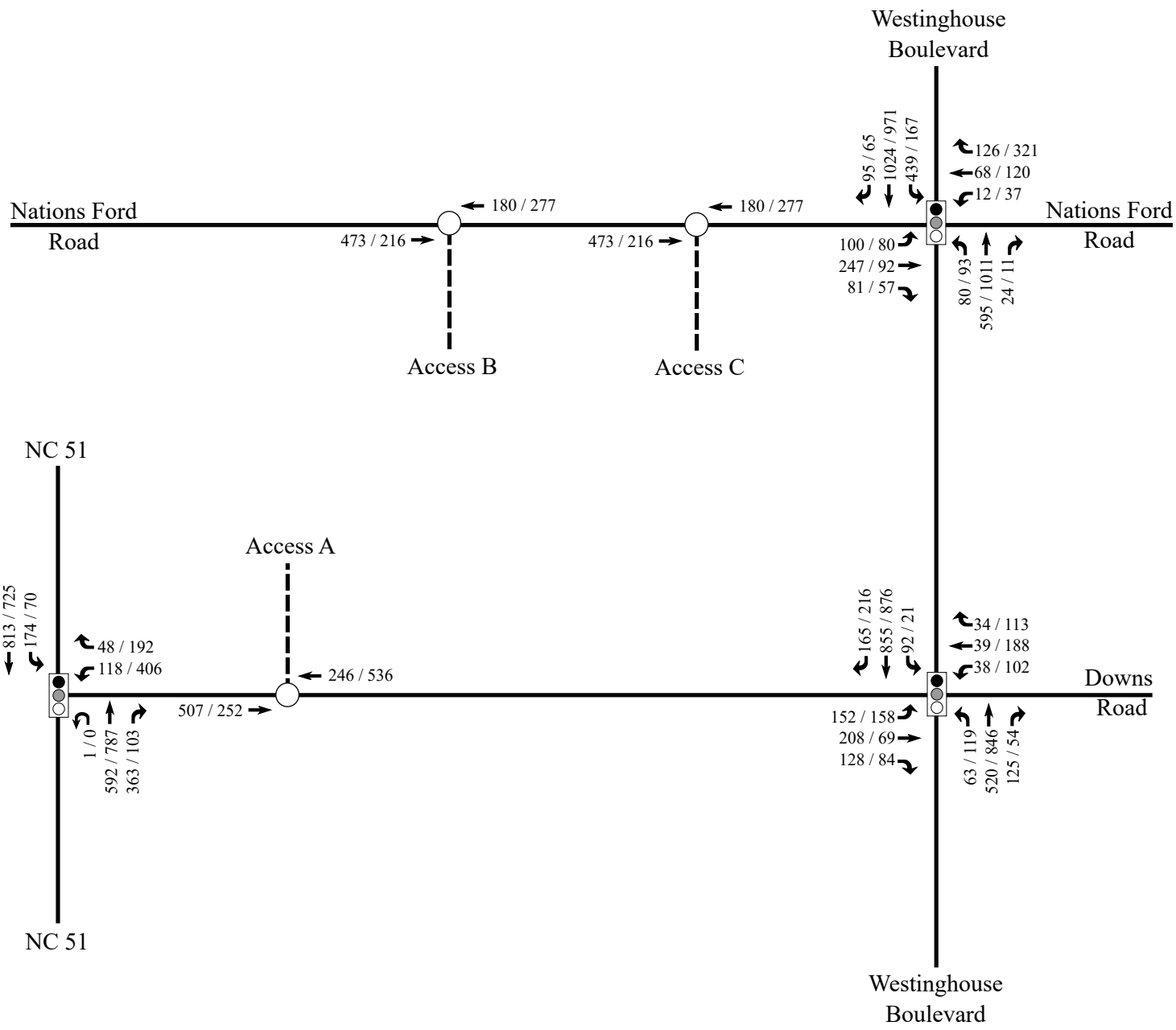
RAMEY KEMP ASSOCIATES

Carolina Logistics Park
Pineville, NC

2023 No-Build
Peak Hour Traffic Volumes

Scale: Not to Scale

Figure 7



LEGEND

Signalized Intersection

Unsignalized Intersection

X / Y → AM / PM Peak Hour Traffic Volumes

Moving forward.

RAMEY KEMP ASSOCIATES

Carolina Logistics Park
Pineville, NC

2026 No-Build
Peak Hour Traffic Volumes

Scale: Not to Scale

Figure 8

4. SITE TRIP GENERATION AND DISTRIBUTION

4.1. Trip Generation

The proposed development is assumed to consist of 2,500,000 square feet of industrial warehouse under phase 1, and an additional 1,000,000 square feet of industrial warehouse under phase 2 for a total of 3,500,000 square feet at full build out. Average weekday daily, AM and PM peak hour trips for the proposed development were estimated using local data based on existing traffic counts of the Metrolina Development located on Statesville Road in Charlotte, NC. Table 2 provides a summary of the trip generation potential for the site. Refer to Appendix E for a copy of the data used from the Metrolina Development.

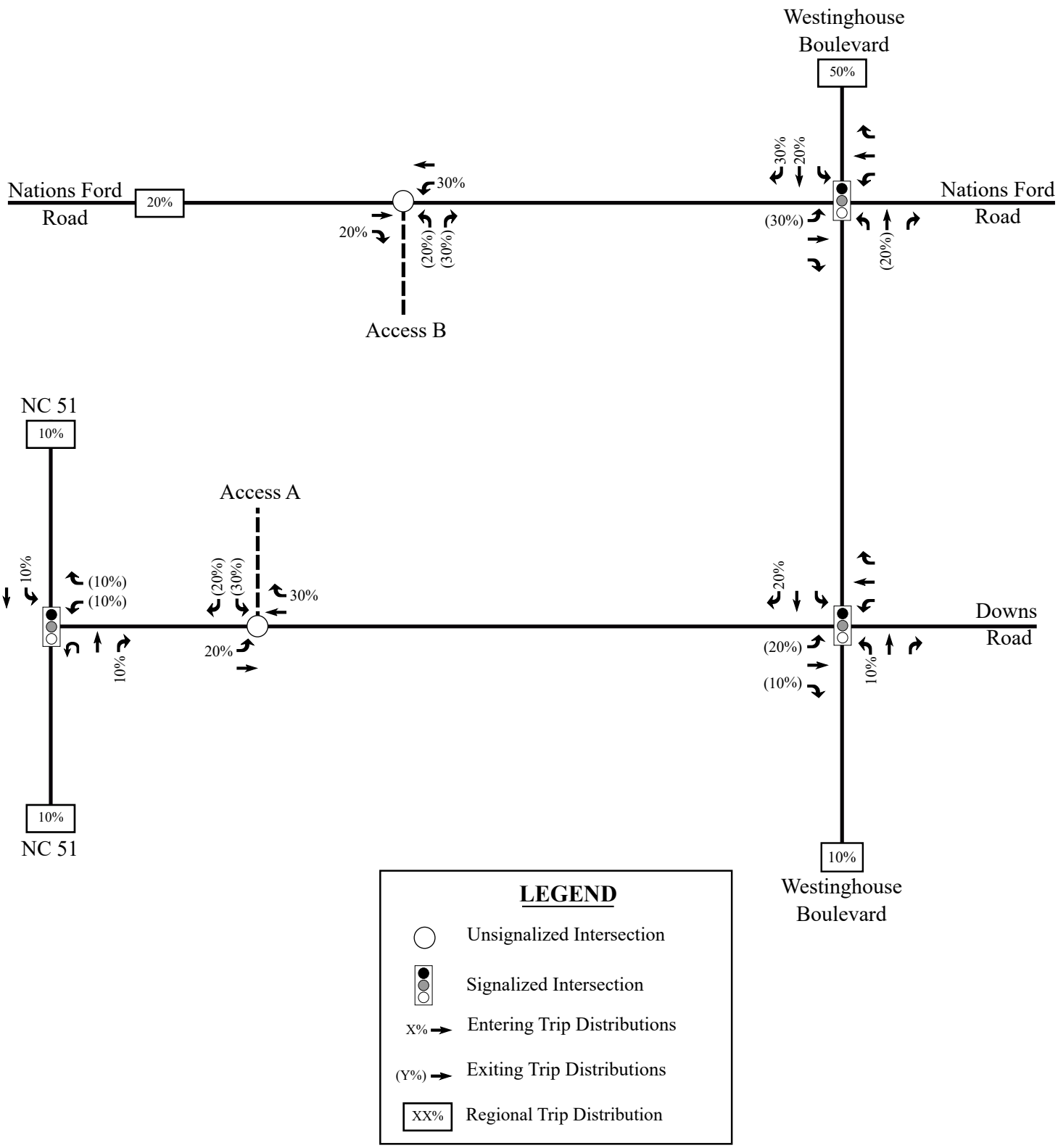
Table 2: Trip Generation Summary

Land Use (ITE Code)	Intensity	Daily Traffic (vpd)	AM Peak Hour Trips (vph)		PM Peak Hour Trips (vph)	
			Enter	Exit	Enter	Exit
Industrial Warehouse – Phase 1 (Local Data)	2,500,000 SF	N/A	177	64	78	185
Industrial Warehouse – Phase 2 (Local Data)	1,000,000 SF	N/A	71	26	31	74
Total			248	90	109	259

It is estimated that the proposed development will generate 338 trips (248 entering and 90 exiting) during the AM peak hour and 368 trips (109 entering and 259 exiting) during the PM peak hour. It was assumed this development would generate the same percentage of trucks as the Metrolina development. Truck percentages for the 2023 Build Phase 1 and 2026 Full Build scenarios were adjusted to account for these trucks. Refer to Appendix E for the truck percentages.

4.2. Site Trip Distribution and Assignment

Trip distribution percentages used in assigning site traffic for this development were estimated based on a combination of existing traffic patterns, population centers adjacent to the study area, and engineering judgment. Refer to Figures 9-12 for illustrations of the site trip distributions and assignments for phases 1 and 2.



Moving forward.

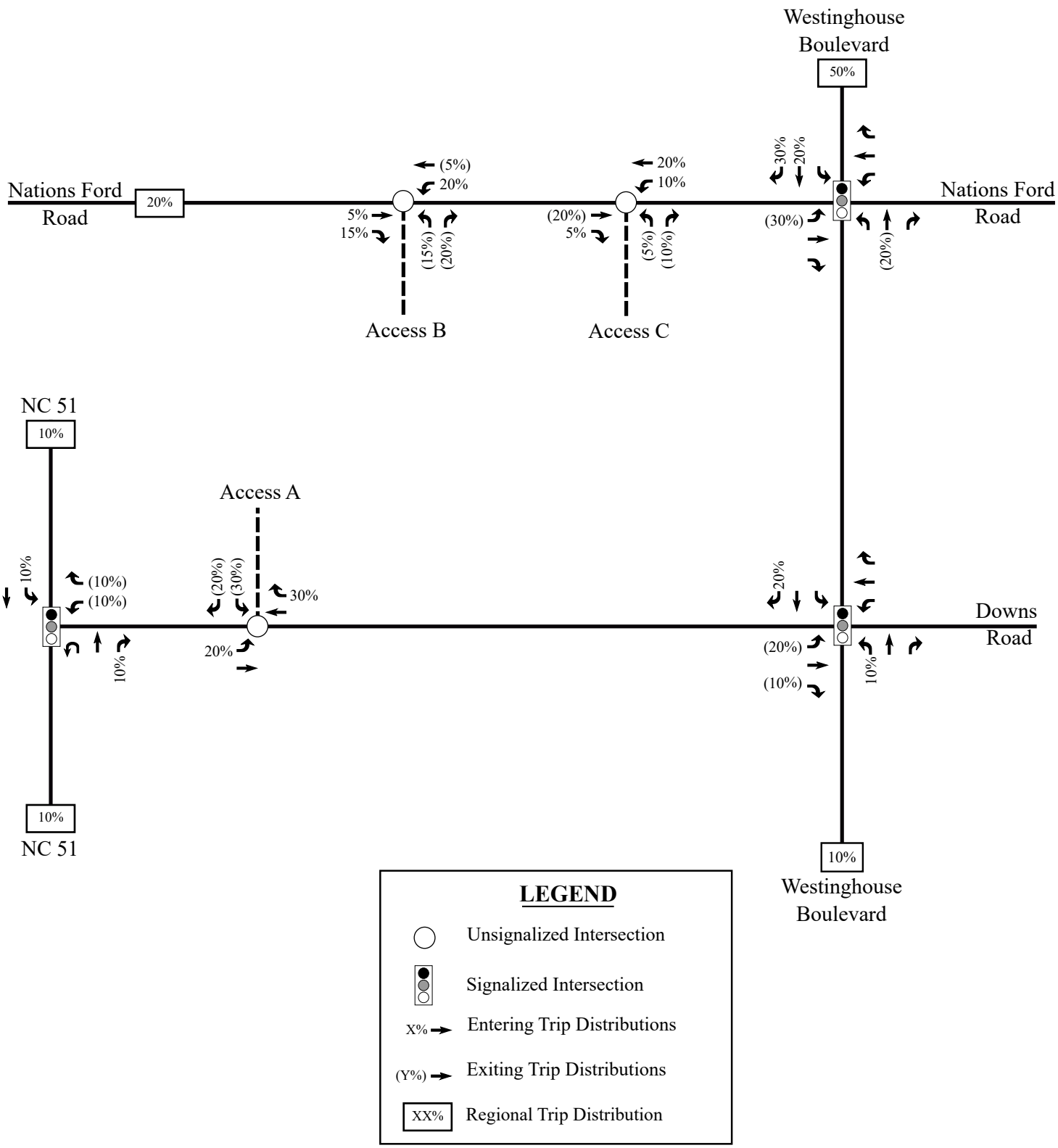
RAMEY KEMP ASSOCIATES

Carolina Logistics Park
Pineville, NC

Proposed Site
Phase 1
Trip Distribution Percentages

Scale: Not to Scale

Figure 9



Moving forward.

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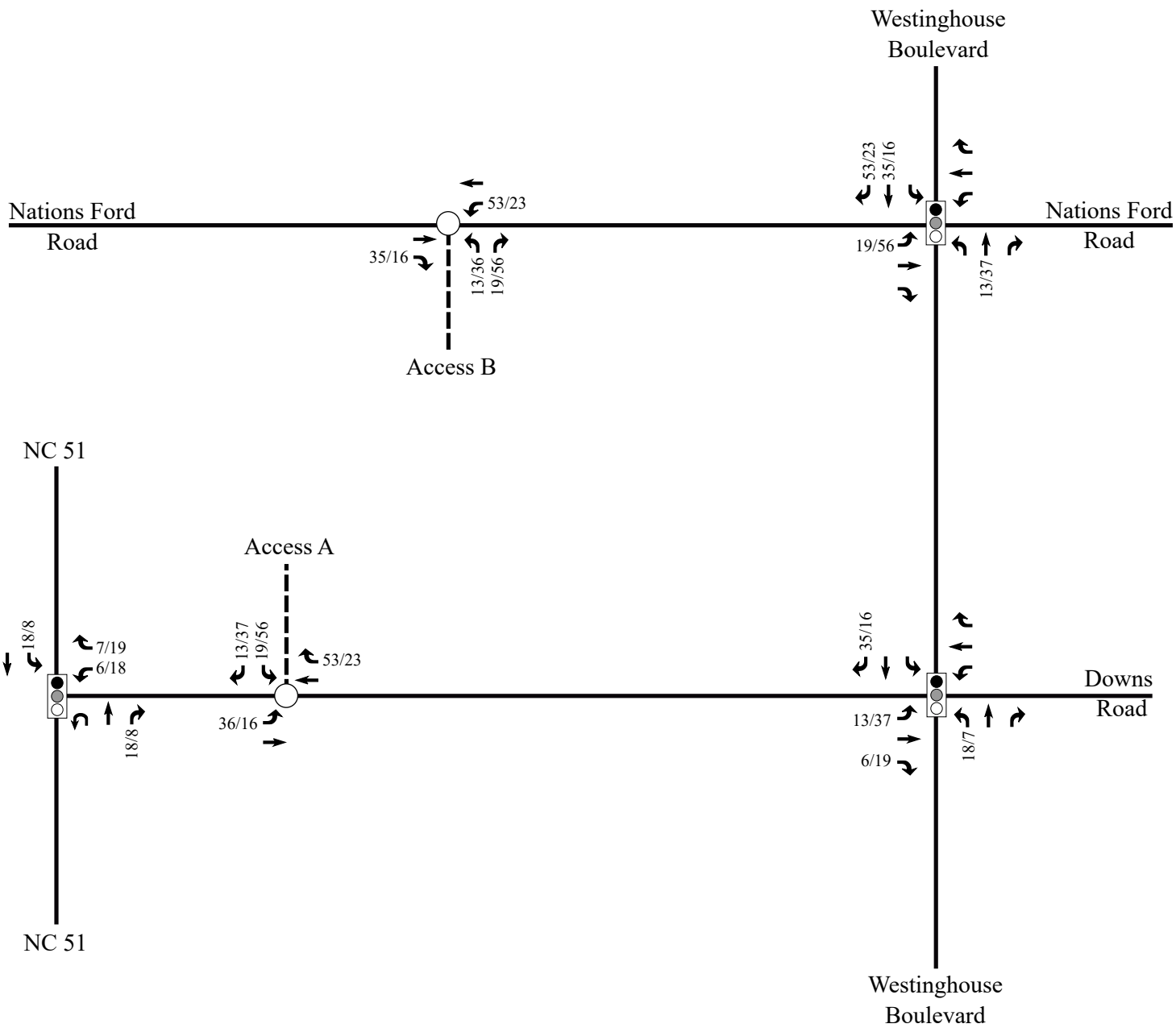
Carolina Logistics Park
Pineville, NC

Proposed Site
Full Build
Trip Distribution Percentages

Scale: Not to Scale

Figure 10



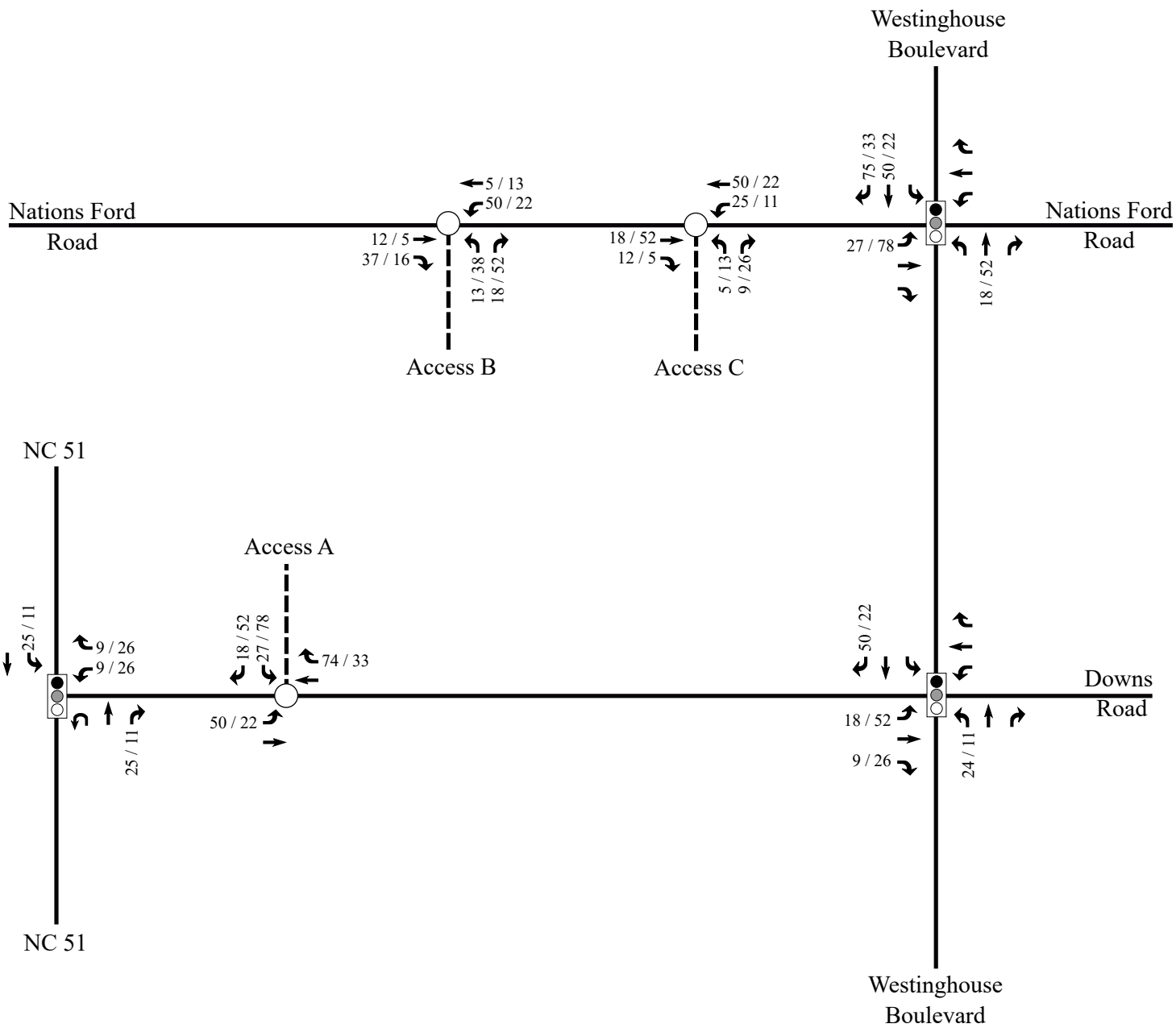
LEGEND

Signalized Intersection

Unsignalized Intersection

X / Y → AM / PM Peak Hour Site Trips

Moving forward. RKA RAMEY KEMP ASSOCIATES	Carolina Logistics Park Pineville, NC	Proposed Site Phase 1 Trip Assignment
		Scale: Not to Scale / Figure 11



LEGEND

Signalized Intersection

Unsignalized Intersection

X / Y → AM / PM Peak Hour Site Trips

Moving forward. RKA RAMEY KEMP ASSOCIATES	Carolina Logistics Park Pineville, NC	Proposed Site Full Build Trip Assignment
		Scale: Not to Scale / Figure 12

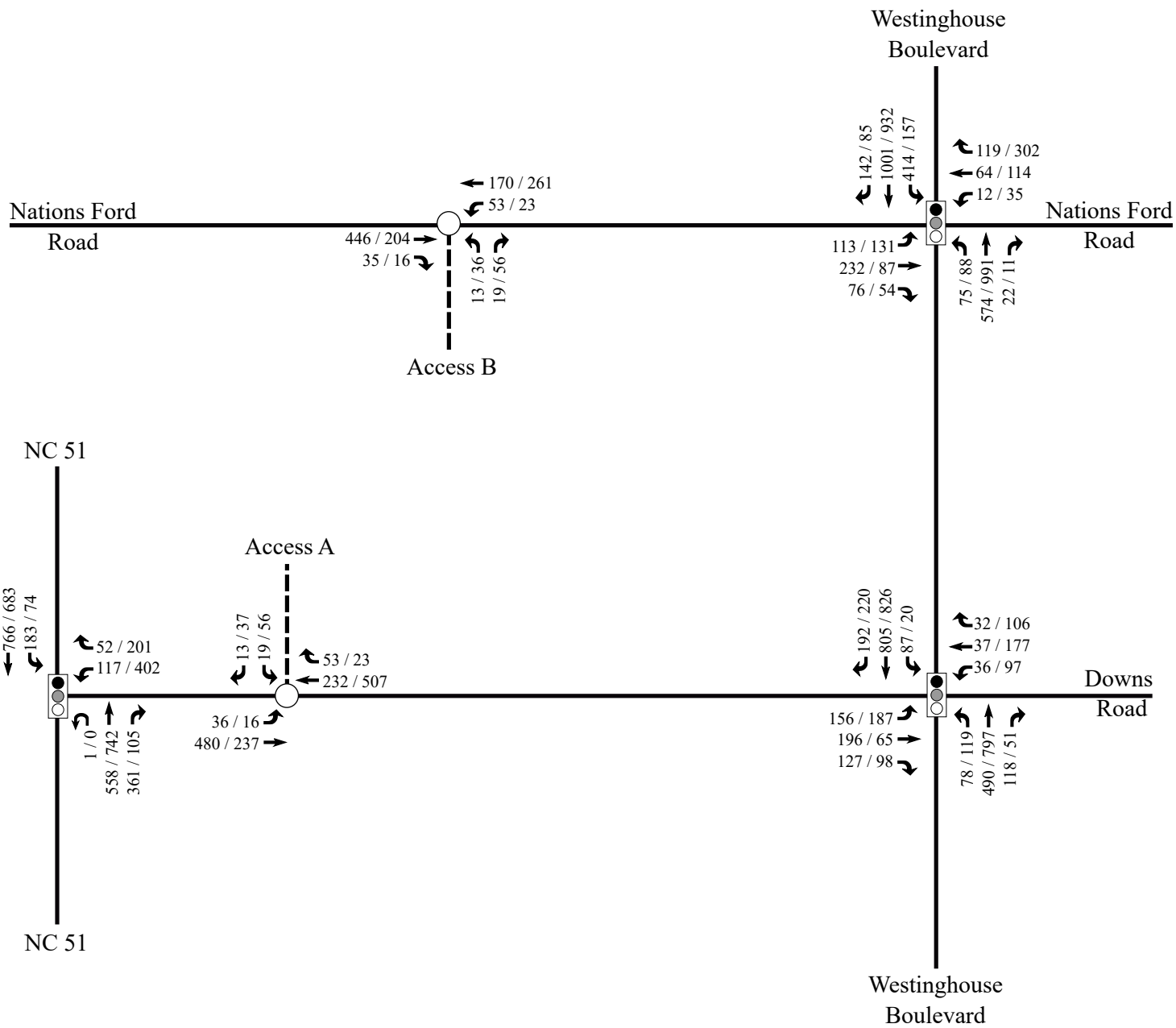
5. COMBINED TRAFFIC CONDITIONS

5.1. Combined Peak Hour Traffic Volumes

To estimate traffic conditions under 2023 conditions, site trips under phase 1 were added to the 2023 No-Build traffic volumes to determine the 2023 Build Phase 1 traffic volumes. To estimate traffic conditions with the site fully built-out, site trips under phase 2 were added to the 2026 No-Build traffic volumes to determine the 2026 Full Build traffic volumes. Refer to Figures 13 and 14 for an illustration of the 2023 Build Phase 1 and 2026 Full Build peak hour traffic volumes.

5.2. Analysis of Combined Peak Hour Traffic

Study intersections were analyzed with the combined traffic volumes using the same methodology previously discussed for existing and background traffic conditions. Intersections were analyzed with improvements necessary to accommodate future traffic volumes. The results of the capacity analysis for each intersection are presented in Section 7 of this report.



LEGEND

Signalized Intersection

Unsignalized Intersection

X / Y → AM / PM Peak Hour Traffic Volumes

Moving forward.

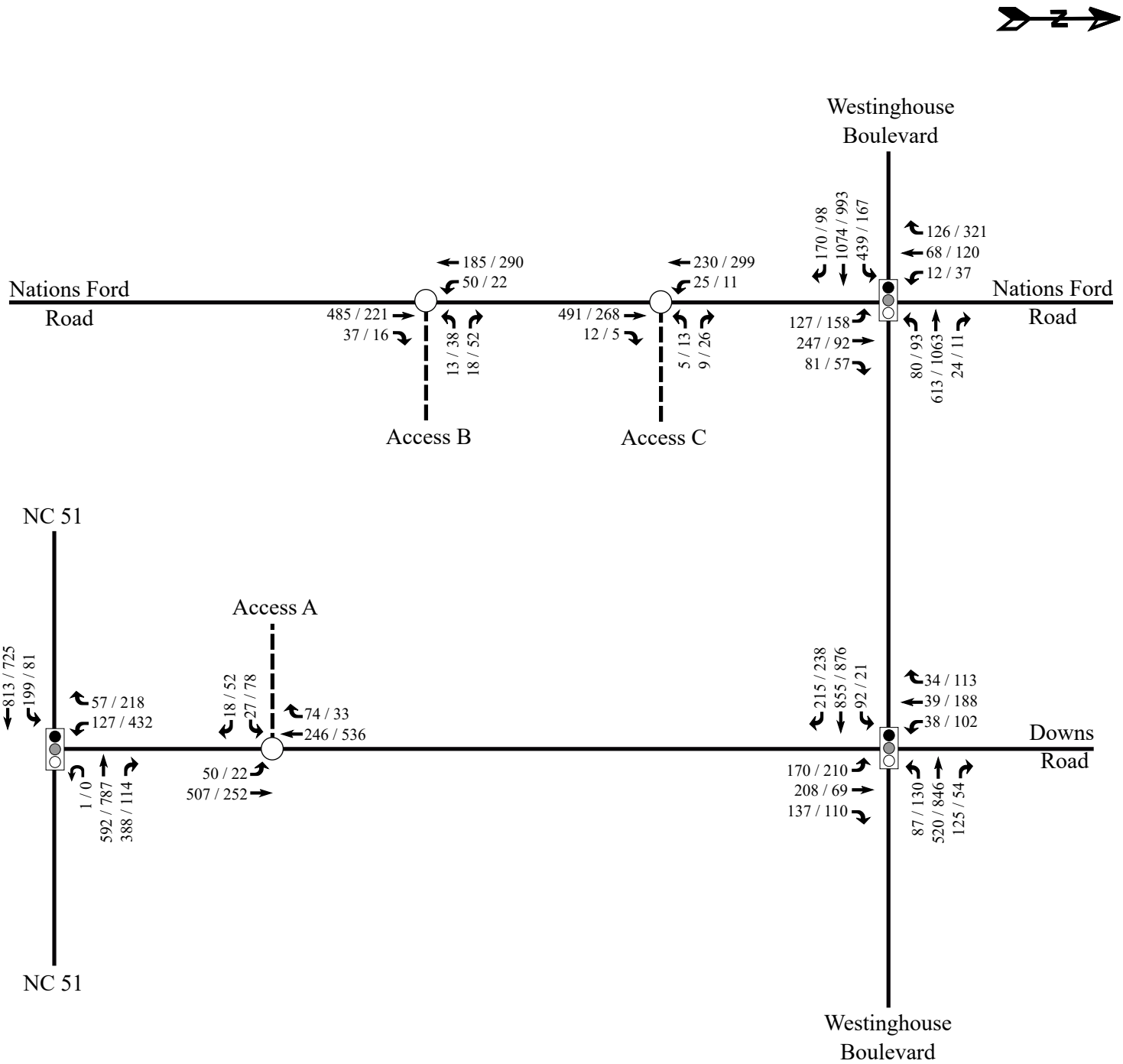
RAMEY KEMP ASSOCIATES

Carolina Logistics Park
Pineville, NC

2023 Build
Phase 1
Peak Hour Traffic Volumes

Scale: Not to Scale

Figure 13



LEGEND

Signalized Intersection

Unsignalized Intersection

X / Y → AM / PM Peak Hour Traffic Volumes

Moving forward.

RAMEY KEMP ASSOCIATES

Carolina Logistics Park
Pineville, NC

2026 Full Build
Peak Hour Traffic Volumes

Scale: Not to Scale

Figure 14

6. TRAFFIC ANALYSIS PROCEDURE

Study intersections were analyzed using the methodology outlined in the *Highway Capacity Manual, 6th Edition* (HCM) published by the Transportation Research Board. Capacity and level of service are the design criteria for this traffic study. A computer software package, Synchro (Version 10.3), was used to complete the analyses for the study area intersections. Please note that the unsignalized capacity analysis does not provide an overall level of service for an intersection; only delay for an approach with 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." Level of service (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." Level of service varies from Level "A" representing free flow, to Level "F" where breakdown conditions 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". An average control delay of 50 seconds at a signalized intersection results in LOS "D" operation at the intersection.

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

6.1 Adjustments to Analysis Guidelines

Capacity analysis at all study intersections was completed according to the NCDOT Congestion Management Guidelines.

7. CAPACITY ANALYSIS

7.1. Westinghouse Boulevard and Nations Ford Road

The intersection of Westinghouse Boulevard and Nations Ford Road was analyzed as a four-leg signalized intersection. Both roads are maintained by NCDOT. Table 4 summarizes the capacity analysis results. Impacts requiring mitigation are highlighted in yellow. Refer to Appendix F for the Synchro reports for this intersection. All SimTraffic reports can be found in Appendix L.

The intersection is expected to operate at LOS D during the AM peak hour and at LOS C during the PM peak hour of the 2023 No-Build scenario. Phase 1 of the proposed development is expected to increase delay more than 25% on the westbound approach during both peak hours. However, SimTraffic indicated no significant increases in queue on this approach. The maximum westbound queues increased by approximately 20 feet during the AM peak hour and by 38 feet during the PM peak hour. Based on coordination with NCDOT, the following improvement is recommended to be done by the developer as part of Phase 1 of the site:

- Modify the signal to add protected/permitted phasing for the northbound and southbound Nations Ford Road left turn lanes.

No impacts requiring mitigation were identified during the AM peak hour of the 2026 Full Build scenario. Drops in LOS are expected during the PM peak hour on the westbound and southbound approaches due to the full buildout of the site. The overall intersection LOS is also expected to degrade. However, no delay impacts are expected and SimTraffic resulted in similar queues between the 2026 No-Build and 2026 Full Build scenarios. No improvements by the developer are recommended due to the minimal impacts.

Table 4: Analysis Summary of Westinghouse Blvd and Nations Ford Road

ANALYSIS SCENARIO	APPROACH	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach LOS (Delay)	Overall LOS (Delay)	Approach LOS (Delay)	Overall LOS (Delay)
2020 Existing	EB WB NB SB	1 LT, 1 TH, 1 TH- RT 1 LT, 1 TH, 1 TH-RT 1 LT, 1 TH-RT 1 LT, 1 TH, 1 RT	B (15.8) C (29.2) E (56.2) C (26.1)	C (25.8)	A (8.3) B (19.1) E (73.0) E (62.3)	C (25.8)
2023 No-Build	EB WB NB SB	1 LT, 1 TH, 1 TH- RT 1 LT, 1 TH, 1 TH-RT 1 LT, 1 TH-RT 1 LT, 1 TH, 1 RT	D (35.3) D (39.7) E (64.2) C (31.4)	D (40.4)	C (26.5) C (23.3) E (57.6) D (50.3)	C (31.5)
2023 Build Phase 1	EB WB NB SB	1 LT, 1 TH, 1 TH- RT 1 LT, 1 TH, 1 TH-RT 1 LT, 1 TH-RT 1 LT, 1 TH, 1 RT	D (36.5) D (52.0) E (61.5) C (33.0)	D (43.6)	C (30.1) C (32.6) E (56.2) E (55.6)	D (37.3)
2026 No-Build	EB WB NB SB	1 LT, 1 TH, 1 TH- RT 1 LT, 1 TH, 1 TH-RT 1 LT, 1 TH-RT 1 LT, 1 TH, 1 RT	D (36.4) E (56.9) E 63.3) C (31.5)	D (45.0)	C (28.3) C (29.0) E (59.7) D (51.6)	C (34.6)
2026 Full Build	EB WB NB SB	1 LT, 1 TH, 1 TH- RT 1 LT, 1 TH, 1 TH-RT 1 LT, 1 TH-RT 1 LT, 1 TH, 1 RT	D (38.7) E (63.5) E (62.3) C (33.8)	D (47.7)	C (32.3) D (35.6) E (60.6) E (60.8)	D (40.5)

7.2. Westinghouse Boulevard and Downs Road

The intersection of Westinghouse Boulevard and Downs Road was analyzed as a four-leg signalized intersection. Westinghouse Boulevard is maintained by NCDOT, and Downs Road is maintained by CDOT. Table 5 summarizes the capacity analysis results. Impacts requiring mitigation are highlighted in yellow. Refer to Appendix G for the Synchro reports for this intersection. All SimTraffic reports can be found in Appendix L.

No impacts requiring mitigation were identified during the AM peak hour of the 2023 Build Phase 1 scenario. Phase 1 of the proposed development is expected degrade the westbound approach LOS during the PM peak hour, but with a minor increase in delay. SimTraffic resulted in similar queues between the 2023 No-Build and 2023 Build Phase 1 scenarios. No improvements by the developer are recommended due to the minimal impacts.

No impacts requiring mitigation were identified during the AM peak hour of the 2026 Full Build scenario. Full buildout of the proposed site is expected to increase delay on the northbound and southbound approaches by at least 25% during the PM peak hour, but no other impacts to delay were identified. SimTraffic indicated an increase in queue on the northbound approach during the PM peak hour due to the full buildout of the site. The following improvement is recommended to be done by the developer as part of the full buildout of the site:

- Extend the northbound Downs Road left turn lane to provide 400 feet of storage and the appropriate taper.

Table 5: Analysis Summary of Westinghouse Boulevard and Downs Road

ANALYSIS SCENARIO	APPROACH	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach LOS (Delay)	Overall LOS (Delay)	Approach LOS (Delay)	Overall LOS (Delay)
2020 Existing	EB	1 LT, 1 TH, 1 TH-RT	C (27.5)	C (25.4)	C (27.6)	C (28.9)
	WB	1 LT, 1 TH, 1 TH-RT	C (24.2)		C (30.9)	
	NB	1 LT, 1 TH-RT	C (23.4)		C (28.2)	
	SB	1 LT, 1 TH-RT	C (20.8)		C (28.3)	
2023 No-Build	EB	1 LT, 1 TH, 1 TH-RT	C (32.2)	D (37.3)	C (31.4)	D (39.5)
	WB	1 LT, 1 TH, 1 TH-RT	D (36.4)		C (33.5)	
	NB	1 LT, 1 TH-RT	D (48.4)		E (60.4)	
	SB	1 LT, 1 TH-RT	D (47.1)		E (60.8)	
2023 Build Phase 1	EB	1 LT, 1 TH, 1 TH-RT	C (27.5)	D (35.7)	C (31.2)	D (41.4)
	WB	1 LT, 1 TH, 1 TH-RT	D (36.1)		D (36.1)	
	NB	1 LT, 1 TH-RT	D (50.5)		E (61.3)	
	SB	1 LT, 1 TH-RT	D (48.9)		E (65.4)	
2026 No-Build	EB	1 LT, 1 TH, 1 TH-RT	C (24.6)	C (34.3)	C (33.1)	D (41.5)
	WB	1 LT, 1 TH, 1 TH-RT	D (36.2)		D (35.5)	
	NB	1 LT, 1 TH-RT	D (50.3)		E (62.2)	
	SB	1 LT, 1 TH-RT	D (48.5)		E (63.8)	
2026 Full Build	EB	1 LT, 1 TH, 1 TH-RT	C (20.7)	C (33.8)	C (29.4)	D (45.4)
	WB	1 LT, 1 TH, 1 TH-RT	D (37.9)		D (37.2)	
	NB	1 LT, 1 TH-RT	D (54.0)		E (78.4)	
	SB	1 LT, 1 TH-RT	D (50.7)		E (79.8)	

7.3. NC 51 and Downs Road

The intersection of NC 51 and Downs Road was analyzed as a three-leg signalized intersection. Both roads are maintained by NCDOT. Table 6 summarizes the capacity analysis results. Impacts requiring mitigation are highlighted in yellow. Refer to Appendix H for the Synchro reports for this intersection. All SimTraffic reports can be found in Appendix L.

No impacts requiring mitigation were identified during the 2023 Build Phase 1 scenario. Full Build of the proposed development is expected degrade the eastbound approach LOS during the PM peak hour, but with a minor increase in delay. SimTraffic resulted in similar queues between the no-build and build scenarios. No improvements by the developer are recommended due to the minimal impacts.

Table 6: Analysis Summary of NC 51 and Downs Road

ANALYSIS SCENARIO	APPROACH	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach LOS (Delay)	Overall LOS (Delay)	Approach LOS (Delay)	Overall LOS (Delay)
2020 Existing	EB WB SB	1 LT, 2 TH 1 UT, 2 TH, 1 RT 1 LT, 1 RT	A (9.6) A (9.3) C (22.5)	B (10.5)	B (14.9) B (19.2) C (27.5)	B (19.8)
2023 No-Build	EB WB SB	1 LT, 2 TH 1 UT, 2 TH, 1 RT 1 LT, 1 RT	B (10.9) B (10.7) C (24.3)	B (11.9)	B (18.0) C (22.8) C (29.0)	C (22.7)
2023 Build Phase 1	EB WB SB	1 LT, 2 TH 1 UT, 2 TH, 1 RT 1 LT, 1 RT	B (12.0) B (11.5) C (25.2)	B (12.9)	B (19.4) C (23.7) C (29.3)	C (23.7)
2026 No-Build	EB WB SB	1 LT, 2 TH 1 UT, 2 TH, 1 RT 1 LT, 1 RT	B (11.8) B (11.6) C (25.6)	B (12.8)	B (19.5) C (24.3) C (30.2)	C (24.2)
2026 Full Build	EB WB SB	1 LT, 2 TH 1 UT, 2 TH, 1 RT 1 LT, 1 RT	B (12.6) B (12.2) C (26.4)	B (13.6)	C (21.4) C (26.1) C (31.2)	C (25.9)

7.4. Downs Road and Access A

Access A is proposed to form a four-leg unsignalized intersection with Downs Road. It would align with an existing private driveway. Minimal traffic is expected on the private driveway, so the intersection was modeled without the existing private driveway. Access is proposed to be full movement. Downs Road is maintained by NCDOT at this intersection. Table 7 summarizes the capacity analysis results. Refer to Appendix I for the Synchro reports and turn lane warrants for this intersection. All SimTraffic reports can be found in Appendix L.

The intersection is expected to operate efficiently during all scenarios with no queue issues. A southbound right turn lane entering the proposed development is not warranted based on NCDOT turn lane warrants, but a northbound left turn lane entering the proposed development is warranted under full build conditions. Based on coordination with NCDOT, a southbound right turn lane will be required. The following improvements are recommended to be done by the developer as part of the 2023 Build Phase 1 scenario:

- Construct a northbound Downs Road left turn lane. Based on coordination with NCDOT, the left turn lane will need 200 feet of storage length and the appropriate taper.
- Construct a two-way left turn lane along Downs Road between Access A and the Empire site's driveway.
- Construct a southbound Downs Road right turn lane. Based on coordination with NCDOT, the right turn lane will need 100 feet of storage and the appropriate taper.
- Construct Access A with one ingress lane and two egress lanes (left and right lane). Provide 100 feet of storage and the appropriate taper for the left turn lane.
- Provide 100 feet of internal protected stem length measured from the right-of-way to the first crossing or left-turning conflict.

Table 7: Analysis Summary of Downs Road and Access A

ANALYSIS SCENARIO	APPROACH	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach LOS (Delay)	Overall LOS (Delay)	Approach LOS (Delay)	Overall LOS (Delay)
2023 Build Phase 1	EB[1] NB[2] SB	1 LT-RT 1 LT-TH 1 TH-RT	C (16.2) A (8.1) -	N/A[3]	C (19.5) A (9.3) -	N/A[3]
2023 Build Phase 1 Improvements	EB[1] NB[2] SB	1 LT, 1 RT 1 LT, 1 TH 1 TH, 1 RT	C (15.2) A (8.1) -	N/A[3]	C (17.1) A (9.3) -	N/A[3]
2026 Full Build	EB[1] NB[2] SB	1 LT-RT 1 LT-TH 1 TH-RT	C (18.4) A (8.2) -	N/A[3]	D (25.1) A (9.5) -	N/A[3]
2026 Full Build Improvements	EB[1] NB[2] SB	1 LT, 1 RT 1 LT, 1 TH 1 TH, 1 RT	C (16.9) A (8.2) -	N/A[3]	C (20.0) A (9.5) -	N/A[3]

1. Level of service for minor-street approach.
2. Level of service for major-street left-turn movement
3. Overall Intersection LOS is not provided for unsignalized intersections

7.5. Nations Ford Road and Site Access B

Access B is proposed to form a three-leg unsignalized intersection. Full access is proposed. Nations Ford Road is maintained by NCDOT at this intersection. Table 8 summarizes the capacity analysis results. Refer to Appendix J for the Synchro reports and turn lane warrants for this intersection. All SimTraffic reports can be found in Appendix L.

The intersection is expected to operate efficiently during all scenarios with no queue issues. A northbound right turn lane entering the proposed development is not warranted based on NCDOT turn lane warrants, but NCDOT will require the right turn lane. A southbound Nations Ford Road left turn lane is warranted. The following improvements are recommended to be done by the developer as part of the 2023 Build Phase 1 scenario:

- Construct a southbound Nations Ford Road left turn lane. Based on coordination with NCDOT, the left turn lane will need 200 feet of storage length and the appropriate taper.
- Construct a northbound Nations Ford Road right turn lane. Based on coordination with NCDOT, the right turn lane will need 100 feet of storage length and the appropriate taper.
- Construct Access B with one ingress lane and two egress lanes (left and right lane). A minimum of 100 feet of storage and appropriate taper is recommended for the left turn lane.
- Provide 100 feet of internal protected stem length measured from the right-of-way to the first crossing or left-turning conflict.

Table 8: Analysis Summary of Nations Ford Road and Access B

ANALYSIS SCENARIO	APPROACH	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach LOS (Delay)	Overall LOS (Delay)	Approach LOS (Delay)	Overall LOS (Delay)
2023 Build Phase 1	WB[1] NB SB[2]	1 LT-RT 1 TH-RT 1 LT-TH	C (15.0) - A (8.8)	N/A[3]	B (12.3) - A (8.1)	N/A[3]
2023 Build Phase 1 Improvements	WB[1] NB SB[2]	1 LT, 1 RT 1 TH, 1 RT 1 LT, 1 TH	B (14.2) - A (8.8)	N/A[3]	B (11.5) - A (8.1)	N/A[3]
2026 Full Build	WB[1] NB SB[2]	1 LT-RT 1 TH-RT 1 LT-TH	C (15.7) - A (9.0)	N/A[3]	B (12.8) - A (8.2)	N/A[3]
2026 Full Build Improvements	WB[1] NB SB[2]	1 LT, 1 RT 1 TH, 1 RT 1 LT, 1 TH	B (14.9) - A (9.0)	N/A[3]	B (12.0) - A (8.2)	N/A[3]

1. Level of service for minor-street approach.
2. Level of service for major-street left-turn movement
3. Overall Intersection LOS is not provided for unsignalized intersections

7.6. Nations Ford Road and Access C

Access C is proposed to form a three-leg unsignalized intersection. Full access is proposed. Nations Ford Road is maintained by NCDOT at this intersection. Table 9 summarizes the capacity analysis results. Refer to Appendix K for the Synchro reports and turn lane warrants for this intersection. All SimTraffic reports can be found in Appendix L.

The intersection is expected to operate efficiently during all scenarios with no queue issues. A northbound right turn lane entering the proposed development is not warranted based on NCDOT turn lane warrants, but NCDOT may require a turn lane. A southbound Nations Ford Road left turn lane may also be required by NCDOT. The following improvements are recommended to be done by the developer as part of the 2026 Full Build scenario:

- Construct a southbound Nations Ford Road left turn lane. Based on coordination with NCDOT, the left turn lane will need 200 feet of storage length and the appropriate taper. The current site plan will need to be revised to move Access C toward the south so that sufficient storage length can be provided. Alternatively, if trucks are prohibited from entering Access C, then the driveway can stay where it is and the left turn lane would only need 100 feet of storage and the appropriate taper.
- Construct a northbound Nations Ford Road right turn lane. Based on coordination with NCDOT, the right turn lane will need 100 feet of storage length and the appropriate taper.
- Construct Access C with one ingress lane and consider two egress lanes (left and right lane). If two egress lanes are constructed, a minimum of 100 feet of storage and appropriate taper is recommended for the left turn lane.
- This driveway could be constructed earlier than the 2026 Full Build scenario. Turn lanes associated with this driveway would be constructed when the driveway is constructed.
- Provide 100 feet of internal protected stem length measured from the right-of-way to the first crossing or left-turning conflict.

Table 9: Analysis Summary of Nations Ford Road and Access C

ANALYSIS SCENARIO	APPROACH	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach LOS (Delay)	Overall LOS (Delay)	Approach LOS (Delay)	Overall LOS (Delay)
2026 Full Build	WB[1] NB SB[2]	1 LT-RT 1 TH-RT 1 LT-TH	B (14.4) - A (8.8)	N/A[3]	B (11.8) - A (8.2)	N/A[3]
2026 Full Build Improvements	WB[1] NB SB[2]	1 LT, 1 RT 1 TH, 1 RT 1 LT, 1 TH	B (14.1) - A (8.8)	N/A[3]	B (11.5) - A (8.2)	N/A[3]

1. Level of service for minor-street approach.
2. Level of service for major-street left-turn movement
3. Overall Intersection LOS is not provided for unsignalized intersections

8. CONCLUSIONS

The proposed development is anticipated to be completed in two phases with a build out year of 2023 for phase 1, and 2026 for full build. The proposed development is assumed to consist of 2,500,000 square feet of industrial warehouse under phase 1. An additional 1,000,000 square feet of industrial warehouse is proposed under full build. The current land is undeveloped. Site access is proposed via one full movement driveway on Downs Road. Site access will also be provided via two full movement driveways on Nations Ford Road.

The study analyzes traffic conditions during the weekday AM and PM peak hours for the following scenarios:

- 2020 Existing
- 2023 No-Build
- 2023 Build Phase 1
- 2026 No-Build
- 2026 Full Build

Trip Generation

It is estimated that the proposed development will generate 338 trips (248 entering and 90 exiting) during the AM peak hour and 368 trips (109 entering and 259 exiting) during the PM peak hour. It was assumed this development would generate the same percentage of trucks as the Metrolina development. Truck percentages for the 2023 Build Phase 1 and 2026 Full Build scenarios were adjusted to account for these trucks.

Adjustments to Analysis Guidelines

Capacity analysis at all study intersections was completed according to NCDOT Congestion Management Guidelines.

9. RECOMMENDATIONS

RKA has identified impacts to the existing roadway network based on NCDOT guidelines. Roadway improvements to mitigate impacts have been identified and NCDOT has concurred with the recommended roadway improvements. The following improvements are recommended to be completed by the developer as a result of coordination with NCDOT, CDOT, and the Town of Pineville. Refer to Figures 15 and 16 for illustrations of the recommended lane configurations for the proposed development.

Recommended Improvements by Developer as part of Phase 1

Westinghouse Boulevard and Nations Ford Road

- Modify the signal to add protected/permitted phasing for the northbound and southbound Nations Ford Road left turn lanes.

Downs Road and Site Access A

- Construct a northbound Downs Road left turn lane. Based on coordination with NCDOT, the left turn lane will need 200 feet of storage length and the appropriate taper.
- Construct a two-way left turn lane along Downs Road between Access A and the Empire site's driveway.
- Construct a southbound Downs Road right turn lane. Based on coordination with NCDOT, the right turn lane will need 100 feet of storage and the appropriate taper.
- Construct Access A with one ingress lane and two egress lanes (left and right lane). Provide 100 feet of storage and the appropriate taper for the left turn lane.
- Provide 100 feet of internal protected stem length measured from the right-of-way to the first crossing or left-turning conflict.

Nations Ford Road and Site Access B

- Construct a southbound Nations Ford Road left turn lane. Based on coordination with NCDOT, the left turn lane will need 200 feet of storage length and the appropriate taper.

- Construct a northbound Nations Ford Road right turn lane. Based on coordination with NCDOT, the right turn lane will need 100 feet of storage length and the appropriate taper.
- Construct Access B with one ingress lane and two egress lanes (left and right lane). A minimum of 100 feet of storage and appropriate taper is recommended for the left turn lane.
- Provide 100 feet of internal protected stem length measured from the right-of-way to the first crossing or left-turning conflict.

Recommended Improvements by Developer as part of Full Buildout

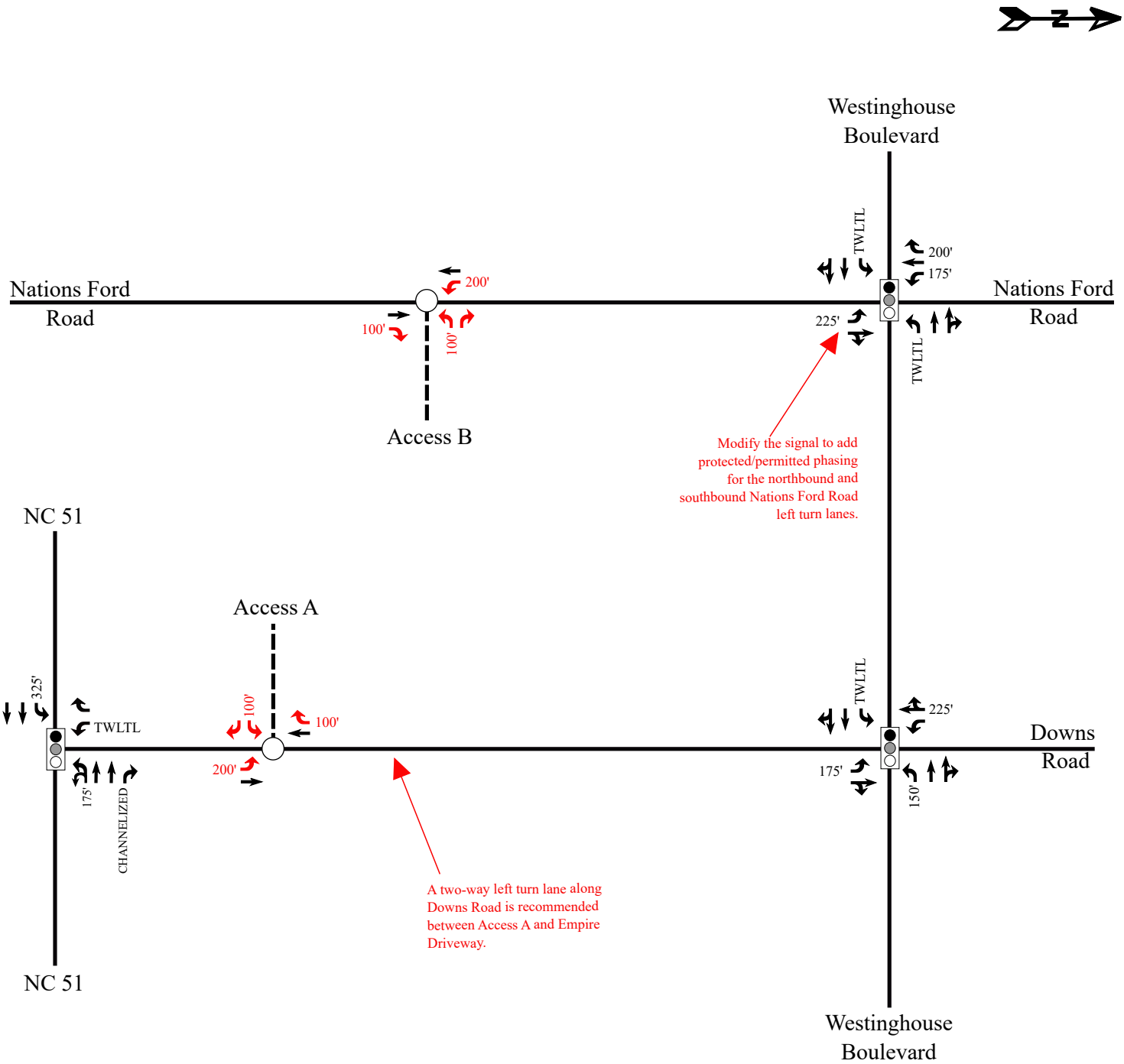
Westinghouse Boulevard and Downs Road

- Extend the northbound Downs Road left turn lane to provide 400 feet of storage and the appropriate taper.

Nations Ford Road and Site Access C

- Construct a southbound Nations Ford Road left turn lane. Based on coordination with NCDOT, the left turn lane will need 200 feet of storage length and the appropriate taper. The current site plan will need to be revised to move Access C toward the south so that sufficient storage length can be provided. Alternatively, if trucks are prohibited from entering Access C, then the driveway can stay where it is and the left turn lane would only need 100 feet of storage and the appropriate taper.
- Construct a northbound Nations Ford Road right turn lane. Based on coordination with NCDOT, the right turn lane will need 100 feet of storage length and the appropriate taper.
- Construct Access C with one ingress lane and consider two egress lanes (left and right lane). If two egress lanes are constructed, a minimum of 100 feet of storage and appropriate taper is recommended for the left turn lane.
- This driveway could be constructed earlier than the 2026 Full Build scenario. Turn lanes associated with this driveway would be constructed when the driveway is constructed.

- Provide 100 feet of internal protected stem length measured from the right-of-way to the first crossing or left-turning conflict.



LEGEND

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

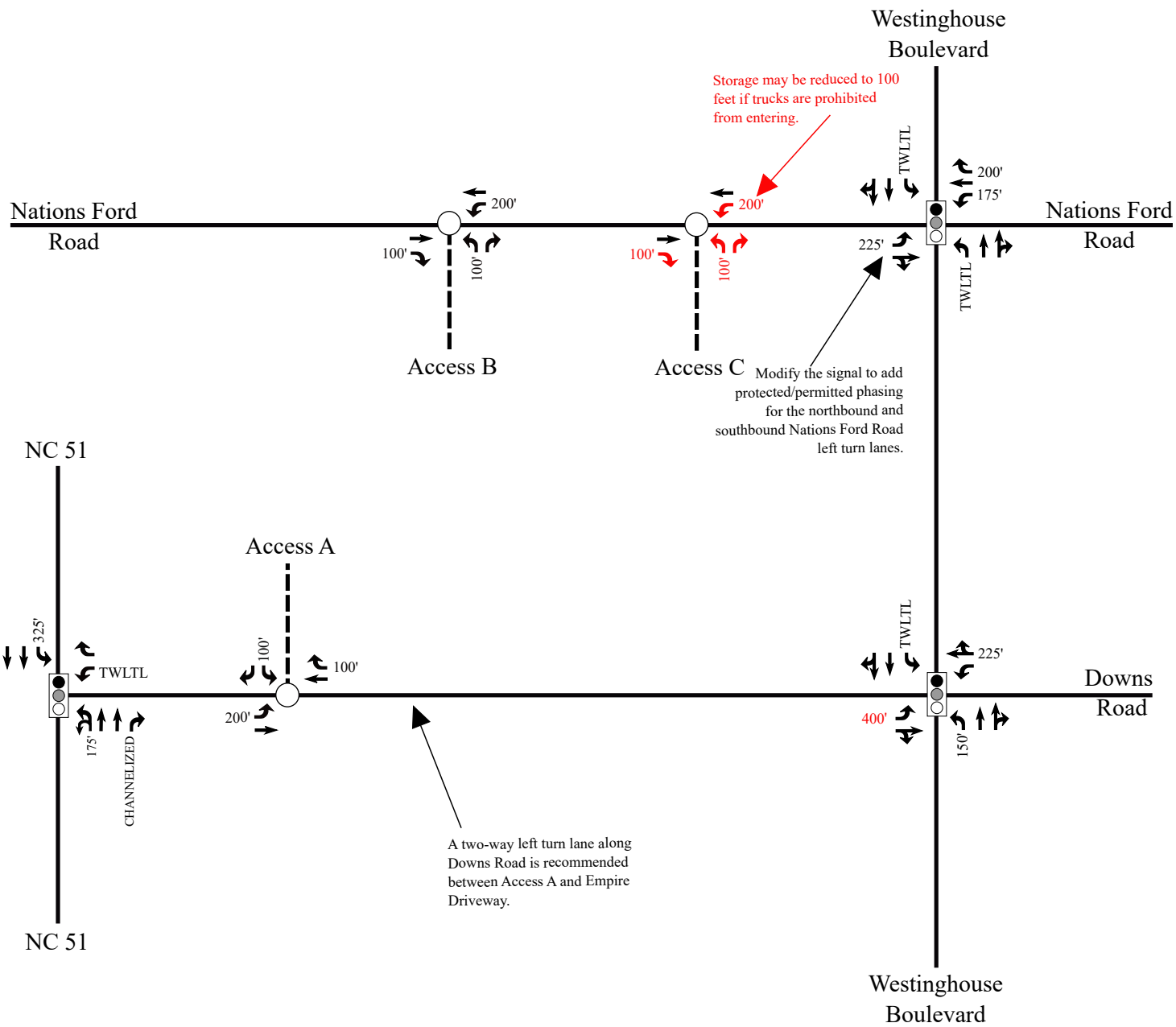
Moving forward.

RAMEY KEMP ASSOCIATES

Carolina Logistics Park
Pineville, NC

2023 Build Phase 1
Recommended Lane
Configurations

Scale: Not to Scale | Figure 15



LEGEND

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

Moving forward. RKA RAMEY KEMP ASSOCIATES	Carolina Logistics Park Pineville, NC	2026 Full Build Recommended Lane Configurations
		Scale: Not to Scale / Figure 16

TECHNICAL APPENDIX

APPENDIX A

SCOPING DOCUMENTATION

NCDOT Traffic Impact Analysis Need Screening / Scoping Request

TIA Need Screening → TIA Scoping → TIA Submittal

A Traffic Impact Analysis (TIA) may be required for developments based on the site trip generation estimates, site context, or at the discretion of the NCDOT District Engineer. The Applicant or the TIA Consultant shall submit this form along with the site plan to the District Engineer to determine the TIA need and, if a TIA is required, initiate the TIA scoping process. Without an approved scope, the TIA is incomplete and will be rejected until the study is revised to conform to NCDOT's TIA requirements.

Project Name: King's Grant **Previous Name:** If Applicable

Location: Downs Road and Nations Ford Road **County:** Mecklenburg **Municipality:** Pineville

Project Description: Under Phase 1, the proposed site will contain up to 2.5 million sq. ft. of industrial park. Under Phase 2, the proposed site will add up to 1.0 million sq. ft of industrial park for a total of 3.5 million sq. ft.

Project Contact:	Applicant	TIA Consultant
Company Name	Beacon Partners	Ramey Kemp & Associates
Contact Person	John Core	Andrew Eagle, P.E., PTOE
Phone Number	704-597-7757	704-549-4260
Email	john.core@beacondevelopment.com	AEagle@rameykemp.com
Mailing Address	500 East Morehead Street, Suite 200	8210 University Exec. Park Dr., Ste. 220
	Charlotte, NC 28202	Charlotte, NC 28262

Site Plan Prepared By: Orsborn Engineering Group **Site Plan Date:** 4/17/2020

See site plan/vicinity map requirements on page 2.

Parcel Size: 260 Acre(s) **Anticipated Build-Out Year:** 2026

Weekday Site Trip Generation - Do NOT adjust for mode split, pass-by, internal capture, or diverted trips.

ITE LUC	Proposed Land Use	Size	Unit	Daily Trips	Peak Hour Type	AM Peak Hour Trips			PM Peak Hour Trips			Data Source
						Enter	Exit	Total	Enter	Exit	Total	
	Industrial/Warehous	2500	KSF		Adj. Street	177	64	241	78	185	263	Local Data**
	Industrial/Warehous	1000	KSF		Adj. Street	71	26	96	31	74	105	Local Data**
Total		3500	KSF			248	90	337	109	259	368	

Refer to the current *NCDOT Congestion Management Capacity Analysis Guidelines* for acceptable trip calculation methods and data sources.

**Explain local or other data sources, if used: Trip generation based on existing traffic counts for the Metrolina Development

- ☐ The estimated site trips meet NCDOT's TIA trip threshold of 3,000 daily trips.
- ☐ The estimated site trips meet the municipal TIA trip threshold of _____
- ☐ This project is located in a known STIP and/ or local CIP project # _____
- ☐ This project includes a rezoning request.
- ☐ The proposed site access is located within 1,000 feet of an interchange.
- ☐ The Applicant requests for a new or modified control-of-access break.
- ☐ The Applicant requests for a new or modified median break.

Applicant's Signature _____ Print Name _____ Date _____

NCDOT Traffic Impact Analysis Need Screening / Scoping Request

TIA Need Screening → TIA Scoping → TIA Submittal

Site Plan/Vicinity Map Requirement for TIA Need Screening: While the site plan may not be finalized during the TIA scoping stage, the graphic representation of the proposed development shall provide adequate details on the development scope and context. More specifically, the site plan/map shall clearly show the location and type of each access point, spacing to adjacent and opposing driveways or intersections, internal street network, proposed buildings/parcels with their anticipated uses and sizes at full build-out and, if applicable, any nearby interstate, US, NC or Secondary Roads (SR).

Project Name: King's Grant **Project Reference Number:** _____

☒ **A TIA is Required by the Local Government.** In addition, the study area is expected to include NCDOT maintained transportation facilities.

☒ **A TIA is Required by NCDOT,** per the *Policy on Street and Driveway Access to North Carolina Highways*.

If either or both of the boxes above are checked, the Applicant/TIA Consultant is hereby requested to fill out as much as possible of the following TIA scoping checklist, and return it along with the supporting documents to NCDOT prior to the scoping meeting.

☐ **A TIA is NOT required**. This decision is based on the development information presented above. Changes in the development plan will require re-evaluation of the TIA need, and may necessitate a TIA. The Applicant should inform the District Engineer of any significant changes in a timely fashion to avoid delays or rejections of the driveway permit / encroachment agreement applications.

Additional Comments:

The TIA need decision is made by the NCDOT Division ____ District____ on _____.

_____ _____

NCDOT District Representative's Signature Print Name

Email concurrence may be used in lieu of the signature.

NCDOT TIA Scoping Checklist

TIA Need Screening → TIA Scoping → TIA Submittal

Project Name: King's Grant **TIA Scoping Date:** 5/5/2020

☒ **TIA Need Screening Forms are Attached.** Project Reference #: _____ Decision Date: _____

☒ **Site Plan and Access**

☒ Provide a site plan illustrating site access, internal and external roadways, buildings and land uses.

Refer to NCDOT's *Policy on Street and Driveway Access to North Carolina Highways* pages 14 and 15 for site plan requirements.

☒ Identify site access.

New Access	On Road	Access Type		Driveway Spacing		
	Road Name	Permitted Movements	Traffic Control	Distance (ft)	Direction	Nearest Intersection / Access
Access A	Downs Road	Conventional Full-Mvmt	2-Way Stop	1003	South	Eagleton Downs Dr
Access B	Nations Ford Road	Conventional Full-Mvmt	2-Way Stop	1392	South	SR 1127
Access C	Natons Ford Road	Conventional Full-Mvmt	2-Way Stop	620	North	SR 1127
Access D						
Access E						
Access F						
Access G						
Access H						

Existing Access	Existing Intersection of		Access Modification	Proposed Interconnectivity (If Applicable)		
	Road A	Road B		Connector #	Road Connected	Adjacent Development
Access 1			Please Select	Connector 1		
Access 2				Connector 2		
Access 3				Connector 3		
Access 4				Connector 4		

☒ Additional access clarifications and provisions (e.g., proposed control-of-access or median breaks, modifications of existing access, loading/unloading area access, bike/pedestrian accommodation).

Analysis of Phase 1 will include Access A and Access B only. Analysis of the full buildout of the site will include Access A, Access B, and Access C. Access might be constructed during Phase 1. In this case, any turn lanes required at Access C would be constructed as well.

☐ **Proposed K-12 School Site**

☐ NCDOT MSTA School Traffic Calculator for Select School Type shall be used.

☐ Peak Hour Factors (PHFs) shall be adjusted/weighted for new school trips (0.5 PHF by default).

☐ Internal school circulation analysis is required, and should be submitted in advance or concurrent with the TIA submittal.

☐ Clarify traffic operation plans (e.g. traffic circulation pattern, pedestrian access, drop-off/pick-up zone location and configuration, queue storage area and, if applicable, staggered start times).

☒ Trip Generation

The TIA Consultant shall prepare trip generation estimates following the current *NCDOT Congestion Management Capacity Analysis Guidelines*, and submit the calculation sheets and supporting information to the District Engineer for approval prior to capacity analysis.

ITE LUC	Proposed Land Use	Size	Unit	Daily Trips	Peak Hour Type	AM Peak Hour Trips			PM Peak Hour Trips			Data Source
						Enter	Exit	Total	Enter	Exit	Total	
130	Industrial Park	2500	KSF		Adj. Street	177	64	241	78	185	263	Local Data**
130	Industrial Park	1000	KSF		Adj. Street	71	26	96	31	74	105	Local Data**
Unadjusted Site Trips						248	90	337	109	259	368	
Internal Capture Trips (Attach Calculation Sheets)												Please Select
Internal Capture % of Unadjusted Site Trips				%		%			%			
LUC	Proposed Land Use	Any Internal Trips?		Pass-By % of External Trips								
		Please Select		%		%			%			Please Select
				%		%			%			
				%		%			%			
				%		%			%			
				%		%			%			
Pass-By Trips (Attach Calculation Sheets)												
Adjacent Street Volumes												Please Select
Non-Pass-By Primary Trips												
Diverted Trips, if Applicable and Justifiable												Please Select

**Explain local or other data sources, if used:

Trip generation based on existing traffic counts for the Metrolina Development located on Statesville Road north of Old Statesville Road in Charlotte, NC. See attached traffic counts and trip generation.

☐ Existing Site Trip Information for Redevelopment Projects (Attach separate sheets as needed)

ITE LUC	Existing Land Use	Size	Unit	Daily Trips	Peak Hour Type	AM Peak Hour Trips			PM Peak Hour Trips			Data Source
						Enter	Exit	Total	Enter	Exit	Total	
					Please Select							Please Select
Total Existing Site Trips												

☒ **Trip Distribution**

☒ Trip distribution diagrams are submitted concurrently with this document (attach separate sheets).

☐ Trip distribution diagrams will be submitted separately, along with supporting information, to the District Engineer for review and approval prior to capacity analysis. The trip distribution shall be based on the current and anticipated traffic patterns, as well as instructions noted below.

If required by the District Engineer, the following additional diagrams shall also be submitted:

☐ Mixed-Use Developments (separate diagrams for residential, commercial, and office trips)

☐ Inter-Development Trips (if 'internal" trips cross public streets)

☐ Pass-By Trips

☐ Diverted Trips

☐ Each Analysis Period

☐ **Mode Split**

☐ Provide Data Source and Justification

Mode / Period	Auto		
AM Peak	%	%	%
PM Peak	%	%	%
Daily	%	%	%
	%	%	%

☐ Identify proper infrastructure and accommodation for other modes of travel.

☒ **Analysis Peak Periods:**

☒ Weekday AM Peak 7:00-9:00 AM

☒ Weekday PM Peak 4:00-7:00 PM

☐ Weekday Midday Peak _____

☐ Weekday PM School Peak _____

☐ Weekend _____ Peak _____

☐ Other _____

☒ Study Area Intersections and Data Collection

The study area shall include the site access intersections (both new and existing) identified under "Site Plan and Access" on page 1, as well as the following external and, if applicable, internal intersections.

External Intersection	Intersection of		Traffic Control	Intersection Turning Movement Counts			Notes
	Road A	Road B		New / Existing	Date of Counts	Growth Adjustment	
#1	Nations Ford Rd	Westinghouse	Signal	Use Existing Counts	2/25/2020		
#2	Downs Road	Westinghouse	Signal	Use Existing Counts	2/25/2020		
#3	Downs Road	NC 51	Signal	Use Existing Counts	3/4/2020		
#4							
#5							
#6							
#7							
#8							
#9							
#10							
#11							
#12							

Internal Intersection	Intersection of		Access Type		Intersection Spacing		
	Road A	Road B	Traffic Control	Permitted Movements	Distance (ft)	Direction	Nearest Intersection
#101			Please Select	Please Select		Please Select	
#102							
#103							
#104							
#105							

The following data will be collected:

☒ New traffic turning movement counts in ☒ 15-min intervals ☐ 5-min intervals (near schools)

Unless otherwise noted above, new traffic counts shall be collected at the existing study intersections during the analysis periods. Weekday counts shall avoid Mondays, Fridays, holidays, school breaks, road closures, and major weather events.

☐ To account for the impact of existing and/or proposed school traffic, PHFs will be adjusted for:

intersections numbered: _____

and access points numbered: _____

☐ Traffic Forecast Data for TIP: _____

☒ Roadway/Intersection Configuration & Traffic Control

☒ Traffic Signal Phasing & Timing Data

☐ Crash Data: _____ Period: _____

☐ Other:

☒ **Future Year Conditions**

☒ Project Build-Out Year: Phase 1 (2023), Full buildout (2026)

☐ Future Analysis Year(s): _____

☐ Identify below any funded/committed future transportation improvements, as well as any approved but incomplete developments near the site.

Funded STIP / Local CIP Project	Project Description	Year Complete

Nearby Approved Development	Location	Future Land Use (exclude any completed phases)	Committed Improvements
Downs Road Warehouse	Pineville	Warehouse	LTL at driveway

☒ Annual Growth Factor: 2 %

Justification/Data Source: Comments received back from NCDOT

☐ **Local Comprehensive Transportation Plan Compliance**

☐ Identify Applicable Local Transportation Planning Documents

☐ Identify Applicable Roadways inside the Study Area

Road Name	Classification	Speed Limit	Proposed Cross-Section	Proposed Right-of-Way	Compliance Requirements	Affect Study Intersection #

☒ Study Method

The traffic analysis shall follow the current *NCDOT Congestion Management Capacity Analysis Guidelines*, *Policy on Street and Driveway Access to North Carolina Highways*, and use the current approved version of analysis software (e.g. Synchro/SimTraffic, HCS, Sidra Intersection, TransModeler).

The study shall include the following analysis scenarios for each analysis period.

1. Existing Conditions
2. Future No-Build Conditions (existing + background growth + approved developments + committed or funded improvements)
3. Future Build Conditions (future no-build + site trips)
4. Future Build with Improvements Conditions (future build traffic with improvements to mitigate the proposed development's impacts) and, if applicable:

☐ 5. TIP Design Year Analysis _____

☐ 6. Alternative Access Scenario (without proposed control-of-access or median break / modification)

The following additional analysis/outputs should be provided as warranted:

- ☐ Signal Warrant Analysis for accesses/intersections _____
- ☐ Multi-Modal Level of Service Analysis
- ☐ School Loading Zone Traffic Simulation
- ☒ Phasing Analysis (scope separately as needed)
- ☐ Safety/Crash Analysis
- ☐ Control-of-Access Modification Justification
- ☐ Median Break / Modification Justification
- ☐ Other _____

☒ Submittals

In addition to the hardcopies required below, the TIA Consultant shall provide the District Engineer and, if required, the local government an electronic copy of the study documents, including the latest site plan, figures and appendices, in searchable PDF files and the original traffic analysis files (e.g., Synchro, HCS). To expedite review, the NCDOT electronic submittals shall also be delivered concurrently to:

☒ Div. Traffic Engr ☐ Regional Traffic Engr ☐ Congestion Management ☐ Other _____

Submittals	NCDOT		Local Government	
	Electronic	Hardcopy	Electronic	Hardcopy
Trip Generation & Distribution	Required		Please Select	
Draft TIA Report	Required			
Final Sealed TIA Report	Required	2		1

☐ **Additional Comments** (municipal TIA requirements, approved variations from NCDOT guidelines)

Agreement by All Parties

The undersigned agree to the contents and methodology described above for completing the required traffic impact analysis for the proposed development identified herein. Any changes to the above methodology contemplated by the Applicant or the TIA Consultant must be submitted to the District Engineer in writing. If approved by NCDOT, then such changes may be accepted for the TIA report. Subsequent revisions to the development plan (e.g. land use, density, site access, or schedule) may require additional scoping and analysis, and may modify the TIA requirements.

This agreement shall become effective on the date approved by NCDOT, and shall expire____ months after the effective date or upon significant changes to the roadway network and/or development assumptions, whichever occurs first. Once expired, renewal or re-scoping will be required for subsequent TIA submittals.

APPLICANT

_____	_____	_____
Signature	Print Name	Date

TIA CONSULTANT

_____	_____	_____
Signature	Print Name	Date

LOCAL GOVERNMENT REPRESENTATIVE (If Applicable)

_____	_____	_____
Signature	Print Name	Date

Email concurrence may be used in lieu of the signature.

NCDOT DISTRICT REPRESENTATIVE

Reviewed and approved by the NCDOT Division ____District____ on _____.

_____	_____
Signature	Print Name

Email concurrence may be used in lieu of the signature.

NCDOT TIA Submittal Checklist

TIA Need Screening → TIA Scoping → TIA Submittal

Submittal: Final Sealed TIA Report **Document Date:** 07-08-2020

Project Name: King's Grant **Previous Name:** If Applicable

NCDOT Division: 10 **District:** 2 **County:** Mecklenburg **Municipality:** Pineville

TIA Consultant: Ramey Kemp & Associates Submitted By: Andrew Eagle, PE, PTOE

Phone Number: 704-549-4260 Email: Aeagle@Rameykemp.Com

TIA Scoping Checklist Approval Date: 05-18-2020 **Unadjusted Daily Site Trips:**

☒ The approved TIA Scoping Checklist is included in this submittal.

☒ LOS D or better is expected at all study intersections after proposed mitigations.

☒ The study report is sealed by a NC Professional Engineer with expertise in traffic engineering.

☒ This study has identified all known deficiencies with and without the proposed development.

☒ This study has identified mitigation measures to adequately accommodate the site trips.

Explain here if any of the boxes above are unchecked:

The undersigned affirms that, except for the deviations noted below, the TIA submittal conforms to the current *NCDOT Congestion Management Capacity Analysis Guidelines*, *Policy on Street and Driveway Access to North Carolina Highways*, and the TIA Scoping Checklist approved by the NCDOT District Office. The undersigned also acknowledges that the TIA will be rejected if the deviations and justifications are not properly documented and approved by NCDOT.

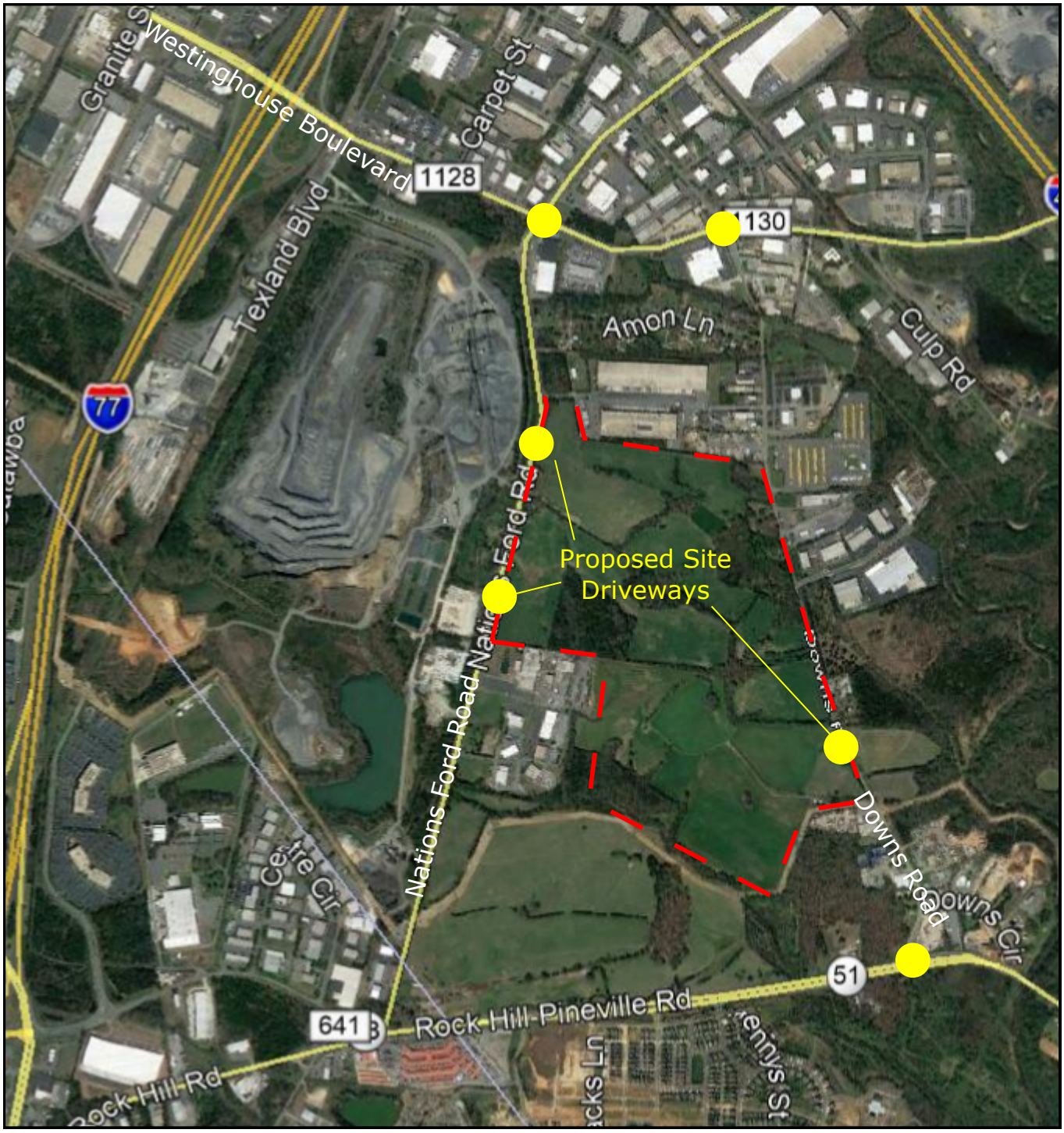
Deviations and Justifications (e.g., changes in site plan, development schedule, site trip and off-site trip estimates, study area, data collection, analysis period and method. Attached separate sheets if needed.)

J. Andrew Eagle — TIA Consultant's Signature (Professional Engineer of TIA Record)

J. Andrew Eagle — Print Name

7-8-2020 — Date

Effective Date: 10/01/2017 (Version 17-721)



LEGEND

Proposed Site Location

Study Intersection

N

Moving forward.

RKA

RAMEY KEMP ASSOCIATES

King's Grant
Pineville, NC

Site Location Map

Scale: Not to Scale

Figure 1

ORSBORN ENGINEERING GROUP
605 LEXINGTON AVENUE , SUITE 301
CHARLOTTE, NC 28203
704-342-0452
www.orsborn-eng.com

CONCEPTUAL SITE PLAN
FOR
KINGS GRANT
DOWNS ROAD
PINEVILLE, NORTH CAROLINA

BEACON ACQUISITIONS LLC
500 EAST MOREHEAD STREET, SUITE 200
CHARLOTTE, NC 28202

REVISIONS	
03/05/2021	PER OWNER COMMENTS/SKETCH PLAN SUBMITTAL
DATE	

JOB #	20007
DATE:	02/19/2020
SCALE:	1" = 200'
DRAWN BY:	BY
APPROVED BY:	JCO

RZ 2.0

THIS DOCUMENT, TOGETHER WITH THE CONCEPTS AND DESIGNS PRESENTED HEREIN, IS AN INSTRUMENT OF SERVICE, IS INTENDED ONLY FOR THE SPECIFIC PURPOSE AND CLIENT FOR WHICH IT WAS PREPARED. REUSE OF AND IMPROPER RELIANCE ON THIS DOCUMENT WITHOUT WRITTEN AUTHORIZATION AND ADAPTATION BY ORSBORN ENGINEERING GROUP, PA SHALL BE WITHOUT LIABILITY TO ORSBORN ENGINEERING GROUP, PA.

Existing Metrolina Phase 1 Site Trips (based on traffic counts)

Driveway Location	Existing Occupied Square Footage	AM Peak Hour			PM Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total
Old Statesville Rd and Gibbon Rd	1,215,000	76	29	105	37	58	95
Statesville Rd and Sunbelt Rentals		10	2	12	1	32	33
Total		86	31	117	38	90	128

Proposed King's Grant Site Trips (based on Existing Metrolina Phase 1 Site Trips)

	Proposed Square Footage	AM Peak Hour			PM Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total
Phase 1	2,500,000	177	64	241	78	185	263
Phase 2	1,000,000	71	26	96	31	74	105
	Total	**248**	**90**	**337**	**109**	**259**	**368**

TRAFFIC DATA COLLECTION

File Name : Charlotte(Statesville and Gibbon)AM Peak
Site Code :
Start Date : 9/19/2019
Page No : 1

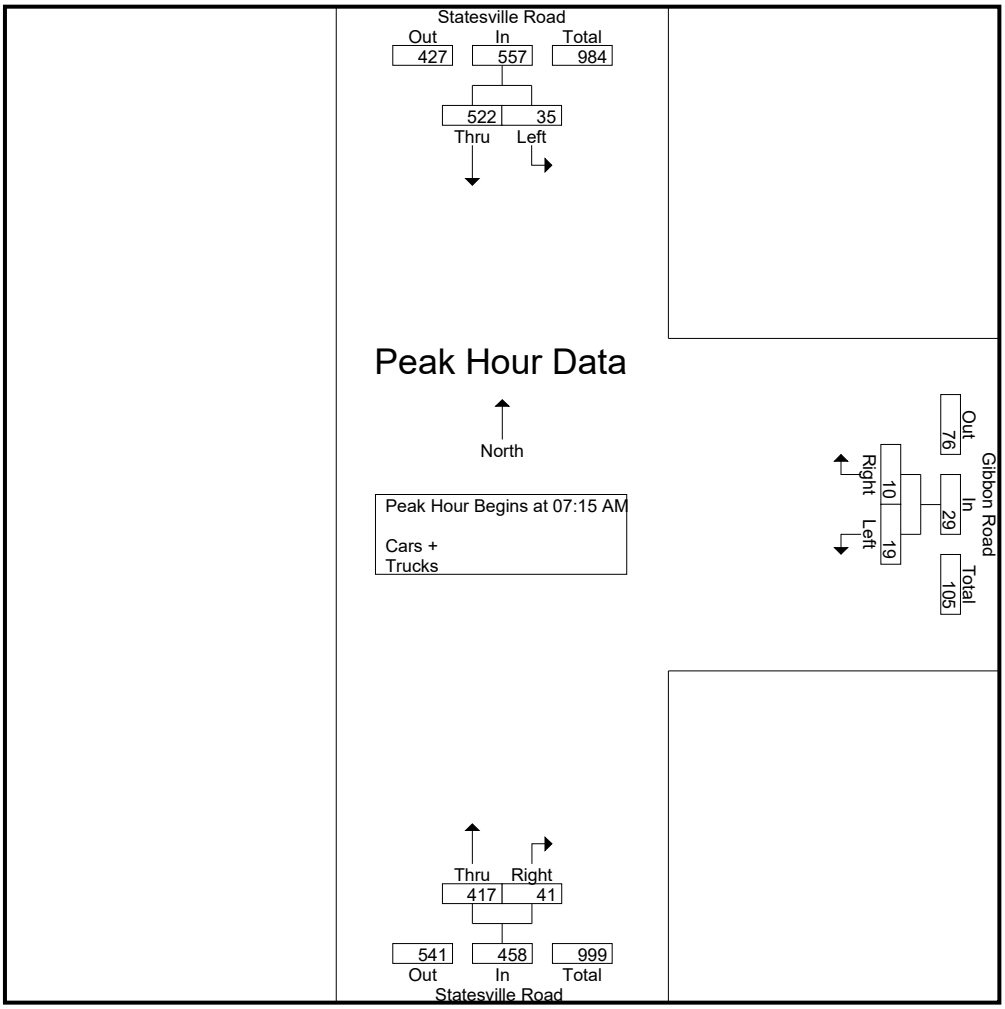
Groups Printed- Cars + - Trucks

	Statesville Road Southbound			Gibbon Road Westbound			Statesville Road Northbound			
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	Int. Total
06:30 AM	92	4	96	5	4	9	14	144	158	263
06:45 AM	125	4	129	4	7	11	19	142	161	301
Total	217	8	225	9	11	20	33	286	319	564
07:00 AM	102	5	107	1	6	7	8	82	90	204
07:15 AM	121	10	131	3	4	7	9	86	95	233
07:30 AM	145	7	152	1	6	7	9	109	118	277
07:45 AM	129	13	142	3	4	7	10	112	122	271
Total	497	35	532	8	20	28	36	389	425	985
08:00 AM	127	5	132	3	5	8	13	110	123	263
08:15 AM	114	11	125	4	2	6	8	90	98	229
08:30 AM	113	9	122	5	8	13	7	98	105	240
08:45 AM	127	7	134	3	3	6	10	100	110	250
Total	481	32	513	15	18	33	38	398	436	982
Grand Total	1195	75	1270	32	49	81	107	1073	1180	2531
Apprch %	94.1	5.9		39.5	60.5		9.1	90.9		
Total %	47.2	3	50.2	1.3	1.9	3.2	4.2	42.4	46.6	
Cars +	1099	73	1172	25	34	59	93	988	1081	2312
% Cars +	92	97.3	92.3	78.1	69.4	72.8	86.9	92.1	91.6	91.3
Trucks	96	2	98	7	15	22	14	85	99	219
% Trucks	8	2.7	7.7	21.9	30.6	27.2	13.1	7.9	8.4	8.7

TRAFFIC DATA COLLECTION

File Name : Charlotte(Statesville and Gibbon)AM Peak
Site Code :
Start Date : 9/19/2019
Page No : 2

	Statesville Road Southbound			Gibbon Road Westbound			Statesville Road Northbound			
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	Int. Total
Peak Hour Analysis From 06:30 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	121	10	131	**3**	4	7	9	86	95	233
07:30 AM	**145**	7	**152**	1	**6**	7	9	109	118	**277**
07:45 AM	129	**13**	142	3	4	7	10	**112**	122	271
08:00 AM	127	5	132	3	5	**8**	**13**	110	**123**	263
Total Volume	522	35	557	10	19	29	41	417	458	1044
% App. Total	93.7	6.3		34.5	65.5		9	91		
PHF	.900	.673	.916	.833	.792	.906	.788	.931	.931	.942



TRAFFIC DATA COLLECTION

File Name : Charlotte(Statesville and Gibbon)PM Peak
Site Code :
Start Date : 9/19/2019
Page No : 1

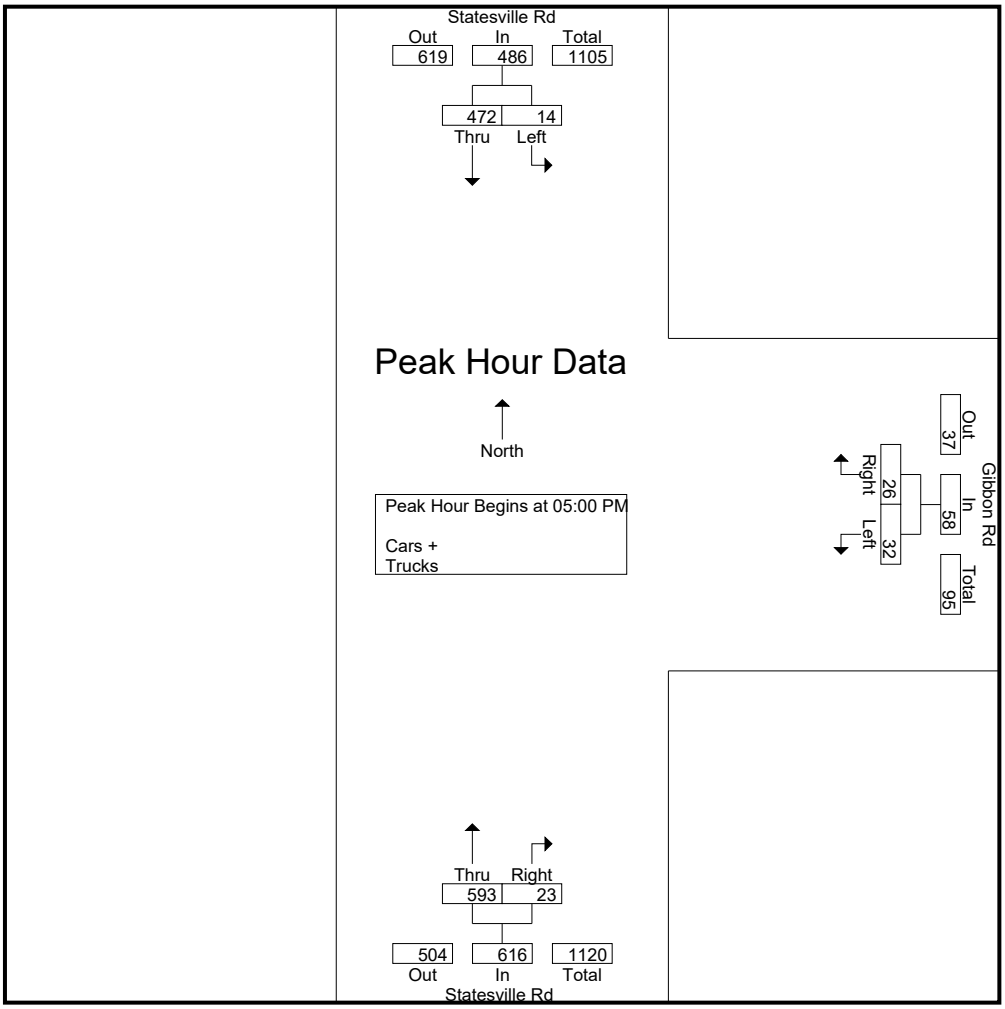
Groups Printed- Cars + - Trucks

	Statesville Rd Southbound			Gibbon Rd Westbound			Statesville Rd Northbound			
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	Int. Total
04:00 PM	125	1	126	7	10	17	10	110	120	263
04:15 PM	102	3	105	4	5	9	5	119	124	238
04:30 PM	122	2	124	11	7	18	2	114	116	258
04:45 PM	124	0	124	4	3	7	2	116	118	249
Total	473	6	479	26	25	51	19	459	478	1008
05:00 PM	137	7	144	2	10	12	7	168	175	331
05:15 PM	123	3	126	7	9	16	5	138	143	285
05:30 PM	101	2	103	8	10	18	3	131	134	255
05:45 PM	111	2	113	9	3	12	8	156	164	289
Total	472	14	486	26	32	58	23	593	616	1160
06:00 PM	101	2	103	6	11	17	6	120	126	246
06:15 PM	87	0	87	1	4	5	1	116	117	209
Grand Total	1133	22	1155	59	72	131	49	1288	1337	2623
Apprch %	98.1	1.9		45	55		3.7	96.3		
Total %	43.2	0.8	44	2.2	2.7	5	1.9	49.1	51	
Cars +	1060	14	1074	47	54	101	34	1217	1251	2426
% Cars +	93.6	63.6	93	79.7	75	77.1	69.4	94.5	93.6	92.5
Trucks	73	8	81	12	18	30	15	71	86	197
% Trucks	6.4	36.4	7	20.3	25	22.9	30.6	5.5	6.4	7.5

TRAFFIC DATA COLLECTION

File Name : Charlotte(Statesville and Gibbon)PM Peak
Site Code :
Start Date : 9/19/2019
Page No : 2

	Statesville Rd Southbound			Gibbon Rd Westbound			Statesville Rd Northbound			
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 06:15 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	**137**	**7**	**144**	2	**10**	12	7	**168**	**175**	**331**
05:15 PM	123	3	126	7	9	16	5	138	143	285
05:30 PM	101	2	103	8	10	**18**	3	131	134	255
05:45 PM	111	2	113	**9**	3	12	**8**	156	164	289
Total Volume	472	14	486	26	32	58	23	593	616	1160
% App. Total	97.1	2.9		44.8	55.2		3.7	96.3		
PHF	.861	.500	.844	.722	.800	.806	.719	.882	.880	.876



TRAFFIC DATA COLLECTION

File Name : Charlotte(Statesville and Sunbelt Rentals)AM Peak
Site Code :
Start Date : 9/19/2019
Page No : 1

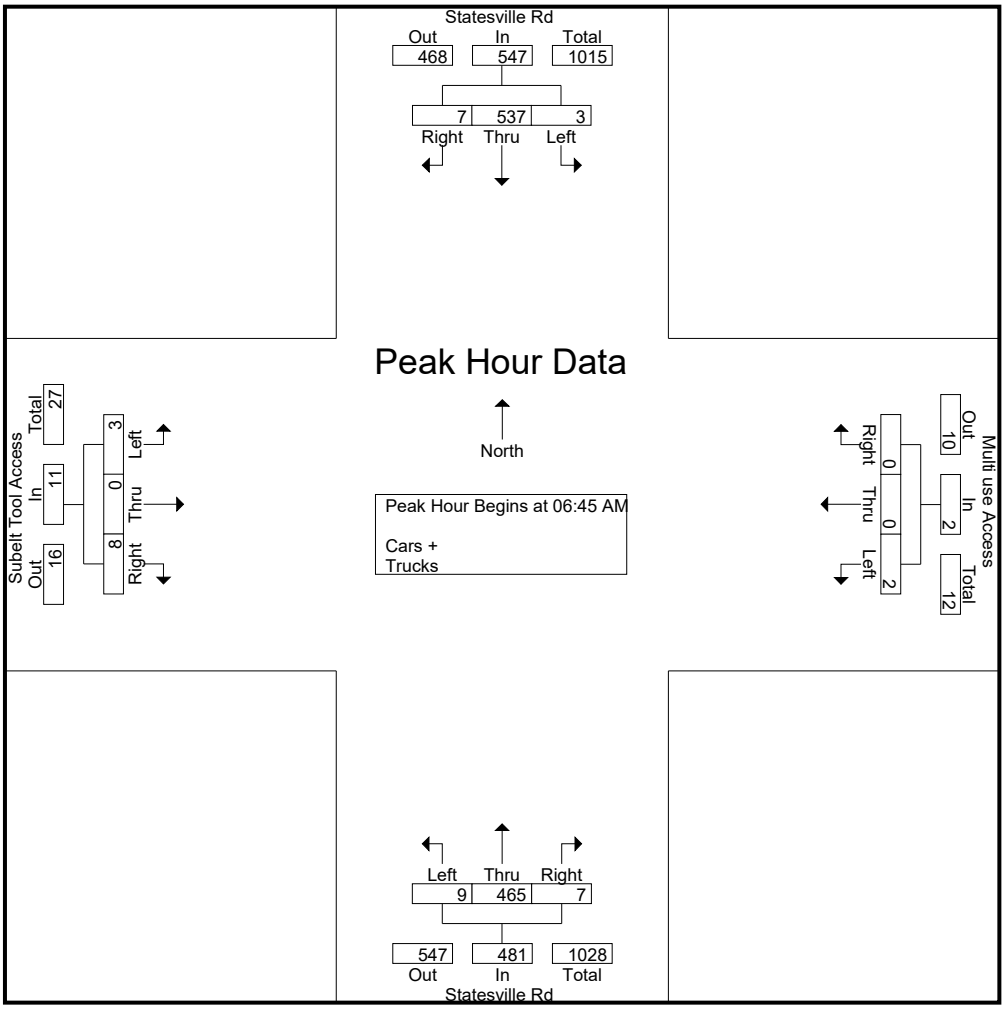
Groups Printed- Cars + - Trucks

	Statesville Rd Southbound				Multi use Access Westbound				Statesville Rd Northbound				Subelt Tool Access 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
06:30 AM	2	97	0	99	0	0	0	0	0	163	3	166	0	0	1	1	266
06:45 AM	1	140	2	143	0	0	0	0	0	170	1	171	0	0	0	0	314
Total	3	237	2	242	0	0	0	0	0	333	4	337	0	0	1	1	580
07:00 AM	5	111	1	117	0	0	0	0	1	87	4	92	1	0	0	1	210
07:15 AM	0	133	0	133	0	0	0	0	1	97	2	100	3	0	3	6	239
07:30 AM	1	153	0	154	0	0	2	2	5	111	2	118	4	0	0	4	278
07:45 AM	5	130	3	138	2	0	2	4	2	107	1	110	6	0	3	9	261
Total	11	527	4	542	2	0	4	6	9	402	9	420	14	0	6	20	988
08:00 AM	3	131	3	137	0	0	0	0	2	113	1	116	2	0	1	3	256
08:15 AM	3	111	2	116	0	0	2	2	2	96	2	100	2	0	2	4	222
08:30 AM	4	124	1	129	0	0	0	0	5	101	0	106	2	0	2	4	239
08:45 AM	1	124	0	125	0	0	0	0	3	102	2	107	4	0	1	5	237
Total	11	490	6	507	0	0	2	2	12	412	5	429	10	0	6	16	954
Grand Total	25	1254	12	1291	2	0	6	8	21	1147	18	1186	24	0	13	37	2522
Apprch %	1.9	97.1	0.9		25	0	75		1.8	96.7	1.5		64.9	0	35.1		
Total %	1	49.7	0.5	51.2	0.1	0	0.2	0.3	0.8	45.5	0.7	47	1	0	0.5	1.5	
Cars +	23	1134	12	1169	2	0	6	8	21	1038	15	1074	12	0	10	22	2273
% Cars +	92	90.4	100	90.5	100	0	100	100	100	90.5	83.3	90.6	50	0	76.9	59.5	90.1
Trucks	2	120	0	122	0	0	0	0	0	109	3	112	12	0	3	15	249
% Trucks	8	9.6	0	9.5	0	0	0	0	0	9.5	16.7	9.4	50	0	23.1	40.5	9.9

TRAFFIC DATA COLLECTION

File Name : Charlotte(Statesville and Sunbelt Rentals)AM Peak
Site Code :
Start Date : 9/19/2019
Page No : 2

	Statesville Rd Southbound				Multi use Access Westbound				Statesville Rd Northbound				Subelt Tool Access 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 06:30 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 06:45 AM																	
06:45 AM	1	140	**2**	143	0	0	0	0	0	**170**	1	**171**	0	0	0	0	**314**
07:00 AM	**5**	111	1	117	0	0	0	0	1	87	**4**	92	1	0	0	1	210
07:15 AM	0	133	0	133	0	0	0	0	1	97	2	100	3	0	**3**	**6**	239
07:30 AM	1	**153**	0	**154**	0	0	**2**	**2**	**5**	111	2	118	**4**	0	0	4	278
Total Volume	7	537	3	547	0	0	2	2	7	465	9	481	8	0	3	11	1041
% App. Total	1.3	98.2	0.5		0	0	100		1.5	96.7	1.9		72.7	0	27.3		
PHF	.350	.877	.375	.888	.000	.000	.250	.250	.350	.684	.563	.703	.500	.000	.250	.458	.829



TRAFFIC DATA COLLECTION

File Name : Charlotte(Statesville and Sunbelt Rentals)PM Peak
Site Code :
Start Date : 9/19/2019
Page No : 1

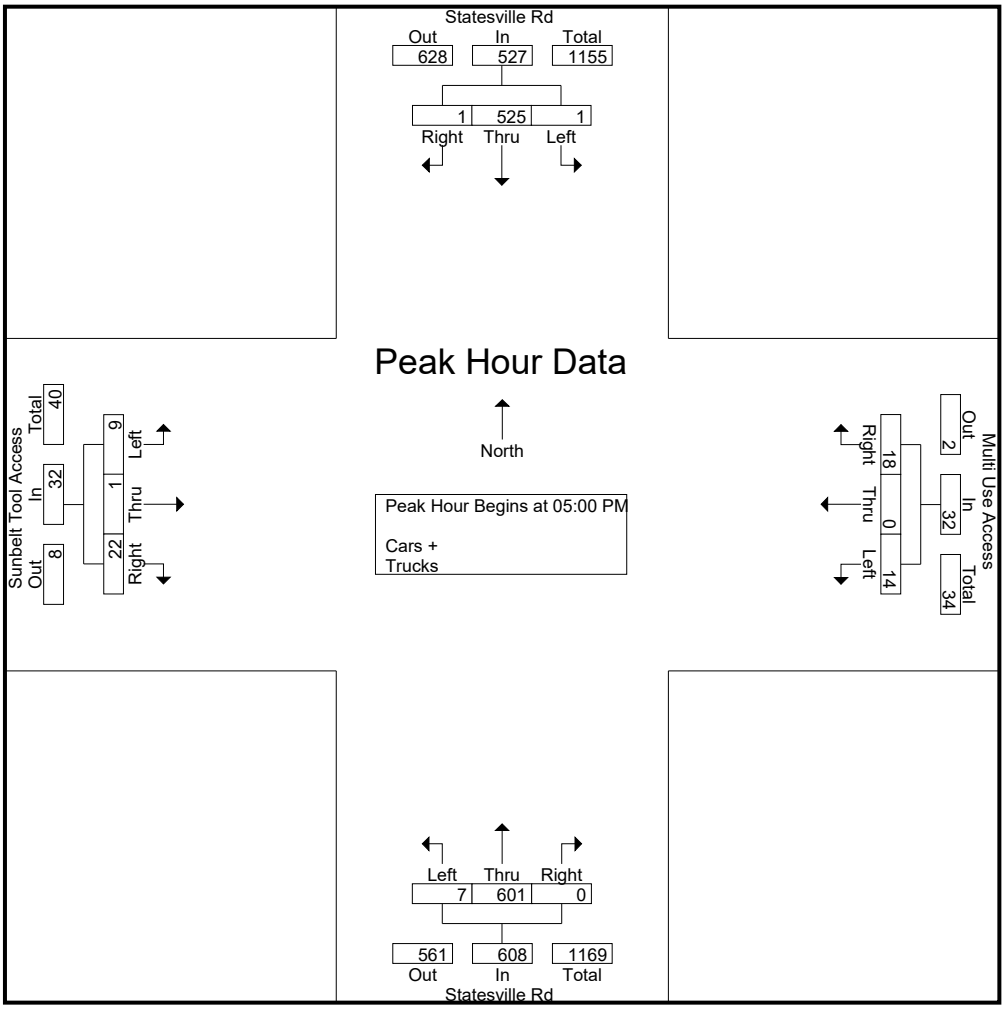
Groups Printed- Cars + - Trucks

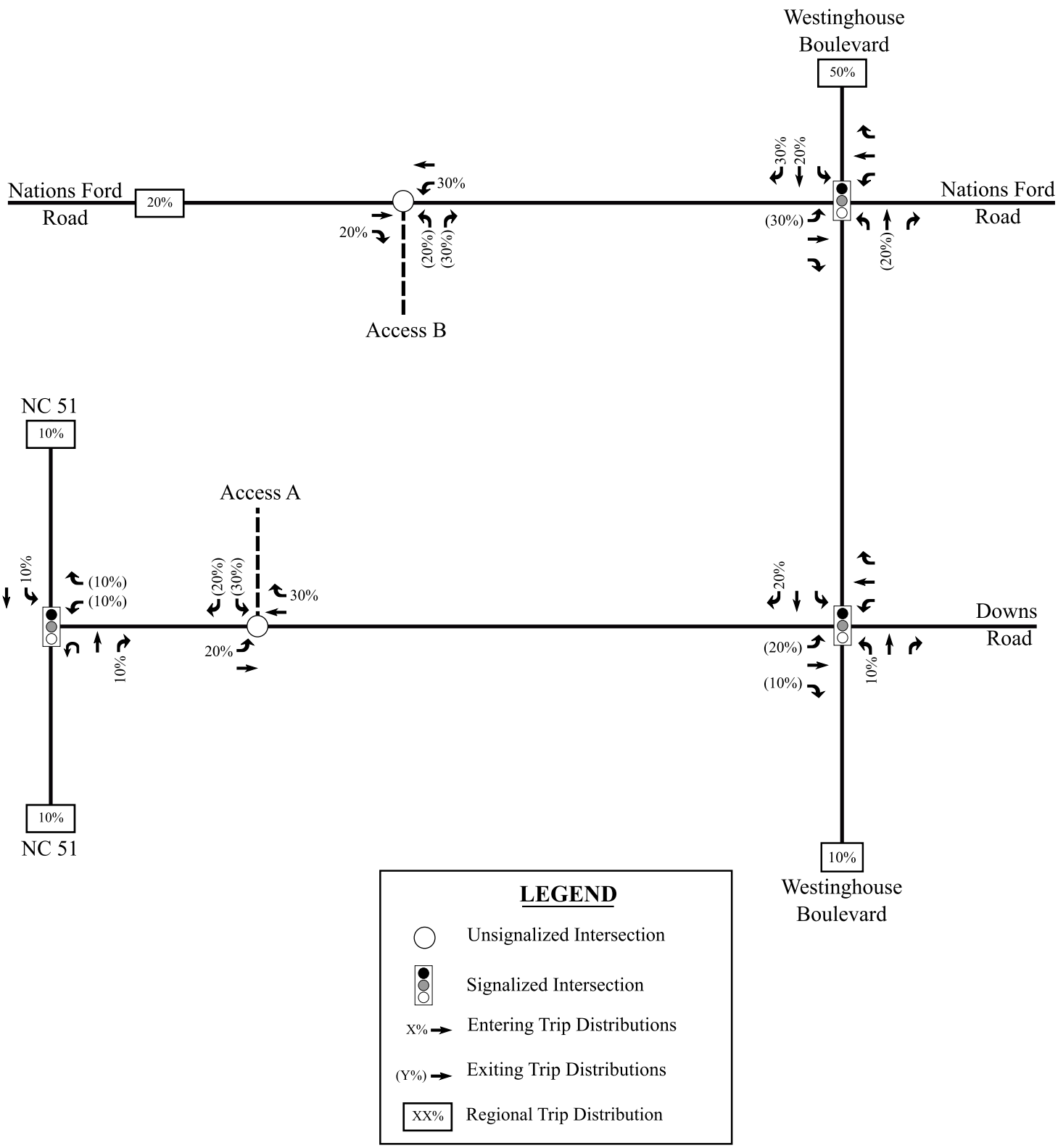
	Statesville Rd Southbound				Multi Use Access Westbound				Statesville Rd Northbound				Sunbelt Tool Access Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
04:00 PM	2	132	2	136	3	0	3	6	2	104	3	109	3	0	2	5	256
04:15 PM	4	103	1	108	1	0	4	5	1	117	2	120	3	0	4	7	240
04:30 PM	1	127	2	130	1	0	2	3	0	103	1	104	5	0	7	12	249
04:45 PM	1	128	0	129	1	0	1	2	0	128	3	131	2	0	3	5	267
Total	8	490	5	503	6	0	10	16	3	452	9	464	13	0	16	29	1012
05:00 PM	1	147	1	149	11	0	6	17	0	167	4	171	8	1	3	12	349
05:15 PM	0	132	0	132	2	0	3	5	0	141	2	143	12	0	2	14	294
05:30 PM	0	119	0	119	3	0	4	7	0	134	0	134	1	0	2	3	263
05:45 PM	0	127	0	127	2	0	1	3	0	159	1	160	1	0	2	3	293
Total	1	525	1	527	18	0	14	32	0	601	7	608	22	1	9	32	1199
06:00 PM	0	111	0	111	0	0	0	0	0	124	1	125	1	0	1	2	238
06:15 PM	0	94	0	94	1	0	0	1	0	121	0	121	1	1	0	2	218
Grand Total	9	1220	6	1235	25	0	24	49	3	1298	17	1318	37	2	26	65	2667
Apprch %	0.7	98.8	0.5		51	0	49		0.2	98.5	1.3		56.9	3.1	40		
Total %	0.3	45.7	0.2	46.3	0.9	0	0.9	1.8	0.1	48.7	0.6	49.4	1.4	0.1	1	2.4	
Cars +	6	1126	4	1136	25	0	24	49	3	1191	13	1207	36	1	26	63	2455
% Cars +	66.7	92.3	66.7	92	100	0	100	100	100	91.8	76.5	91.6	97.3	50	100	96.9	92.1
Trucks	3	94	2	99	0	0	0	0	0	107	4	111	1	1	0	2	212
% Trucks	33.3	7.7	33.3	8	0	0	0	0	0	8.2	23.5	8.4	2.7	50	0	3.1	7.9

TRAFFIC DATA COLLECTION

File Name : Charlotte(Statesville and Sunbelt Rentals)PM Peak
Site Code :
Start Date : 9/19/2019
Page No : 2

	Statesville Rd Southbound				Multi Use Access Westbound				Statesville Rd Northbound				Sunbelt Tool Access 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 04:00 PM to 06:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	**1**	**147**	**1**	**149**	**11**	0	**6**	**17**	0	**167**	**4**	**171**	8	**1**	**3**	12	**349**
05:15 PM	0	132	0	132	2	0	3	5	0	141	2	143	**12**	0	2	**14**	294
05:30 PM	0	119	0	119	3	0	4	7	0	134	0	134	1	0	2	3	263
05:45 PM	0	127	0	127	2	0	1	3	0	159	1	160	1	0	2	3	293
Total Volume	1	525	1	527	18	0	14	32	0	601	7	608	22	1	9	32	1199
% App. Total	0.2	99.6	0.2		56.2	0	43.8		0	98.8	1.2		68.8	3.1	28.1		
PHF	.250	.893	.250	.884	.409	.000	.583	.471	.000	.900	.438	.889	.458	.250	.750	.571	.859





Moving forward.

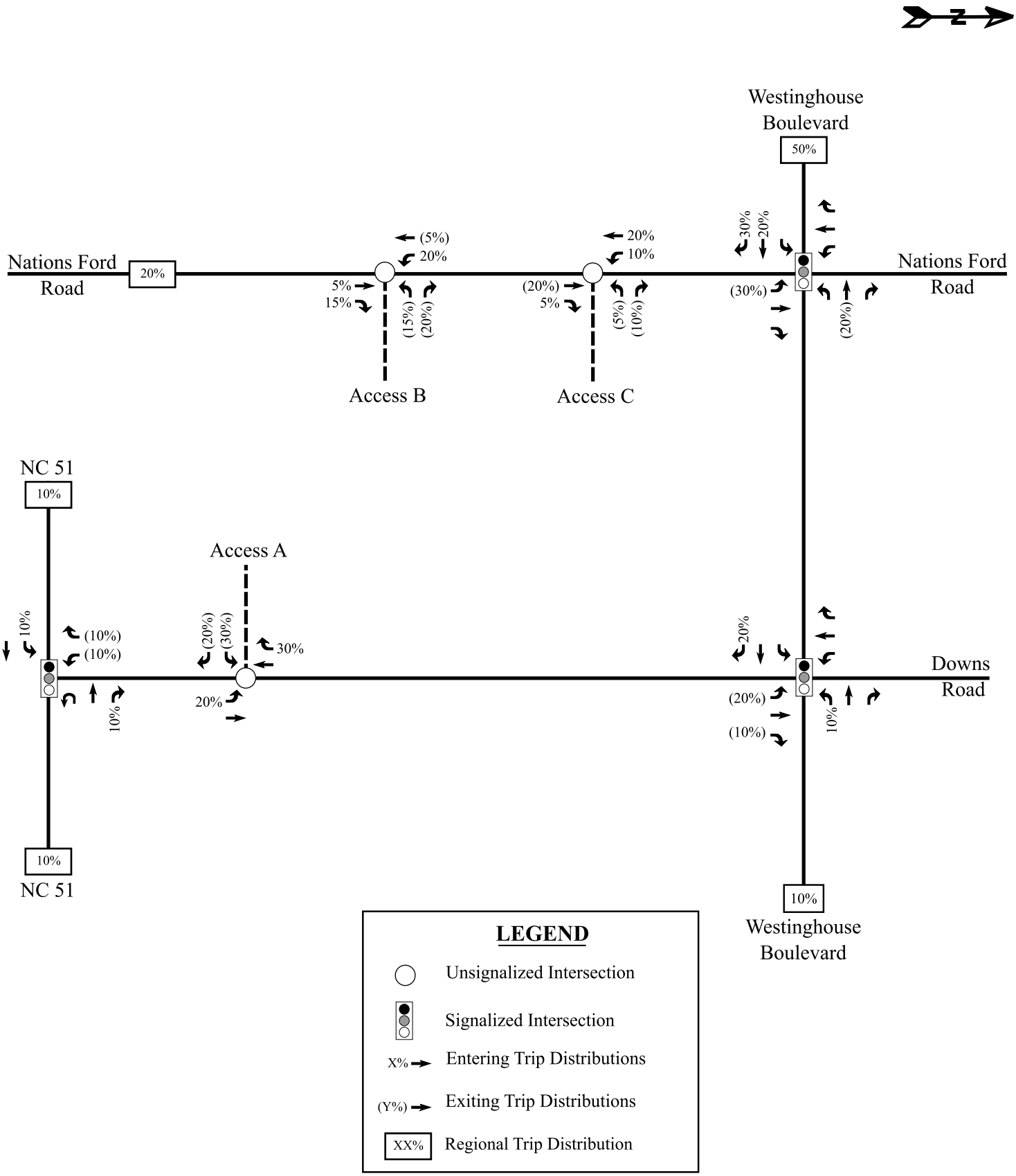
RAMEY KEMP ASSOCIATES

King's Grant
Pineville, NC

Proposed Site
Phase 1
Trip Distribution Percentages

Scale: Not to Scale

Figure 10



Moving forward.

RAMEY KEMP ASSOCIATES

King's Grant
Pineville, NC

Proposed Site
Full Build
Trip Distribution Percentages

Scale: Not to Scale

Figure 11

APPENDIX B

TRAFFIC COUNTS

TRAFFIC DATA COLLECTION

File Name : Pineville(Westinghouse and Nations Ford)AM Peak
Site Code :
Start Date : 2/25/2020
Page No : 1

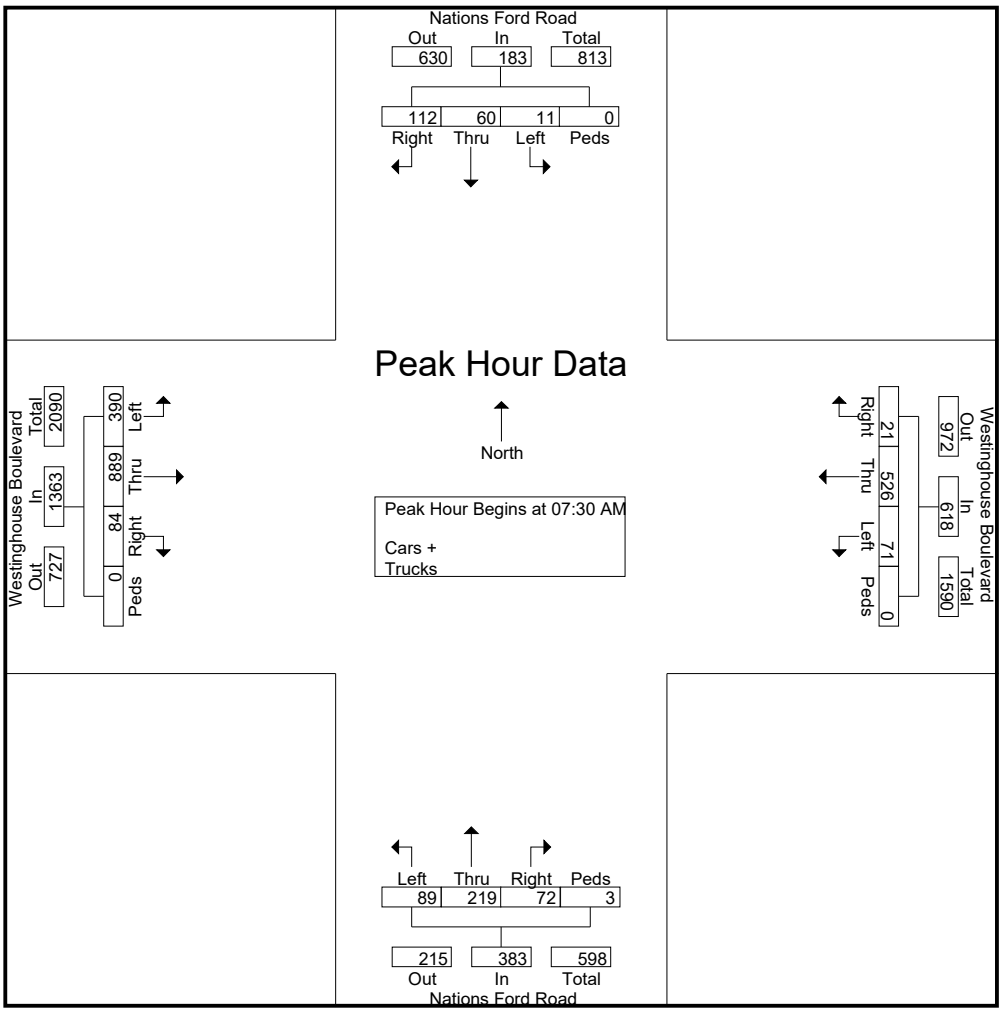
Groups Printed- Cars + - Trucks

	Nations Ford Road Southbound					Westinghouse Boulevard Westbound					Nations Ford Road Northbound					Westinghouse Boulevard Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	22	7	1	0	30	4	119	5	0	128	26	64	33	0	123	23	225	51	0	299	580
07:15 AM	27	10	3	0	40	8	123	12	0	143	17	54	26	0	97	19	220	58	0	297	577
07:30 AM	32	21	1	0	54	4	138	12	0	154	20	56	30	2	108	20	259	90	0	369	685
07:45 AM	31	16	1	0	48	5	152	28	0	185	13	62	23	0	98	19	229	106	0	354	685
Total	112	54	6	0	172	21	532	57	0	610	76	236	112	2	426	81	933	305	0	1319	2527
08:00 AM	28	15	4	0	47	5	120	11	0	136	20	54	15	0	89	18	187	91	0	296	568
08:15 AM	21	8	5	0	34	7	116	20	0	143	19	47	21	1	88	27	214	103	0	344	609
08:30 AM	25	12	3	1	41	1	124	9	0	134	26	38	19	0	83	28	193	86	0	307	565
08:45 AM	31	12	1	0	44	5	105	14	0	124	15	37	15	0	67	23	198	80	0	301	536
Total	105	47	13	1	166	18	465	54	0	537	80	176	70	1	327	96	792	360	0	1248	2278
Grand Total	217	101	19	1	338	39	997	111	0	1147	156	412	182	3	753	177	1725	665	0	2567	4805
Apprch %	64.2	29.9	5.6	0.3		3.4	86.9	9.7	0		20.7	54.7	24.2	0.4		6.9	67.2	25.9	0		
Total %	4.5	2.1	0.4	0	7	0.8	20.7	2.3	0	23.9	3.2	8.6	3.8	0.1	15.7	3.7	35.9	13.8	0	53.4	
Cars +	195	94	19	1	309	36	939	103	0	1078	151	401	165	3	720	160	1665	630	0	2455	4562
% Cars +	89.9	93.1	100	100	91.4	92.3	94.2	92.8	0	94	96.8	97.3	90.7	100	95.6	90.4	96.5	94.7	0	95.6	94.9
Trucks	22	7	0	0	29	3	58	8	0	69	5	11	17	0	33	17	60	35	0	112	243
% Trucks	10.1	6.9	0	0	8.6	7.7	5.8	7.2	0	6	3.2	2.7	9.3	0	4.4	9.6	3.5	5.3	0	4.4	5.1

TRAFFIC DATA COLLECTION

File Name : Pineville(Westinghouse and Nations Ford)AM Peak
Site Code :
Start Date : 2/25/2020
Page No : 2

	Nations Ford Road Southbound					Westinghouse Boulevard Westbound					Nations Ford Road Northbound					Westinghouse Boulevard Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	**32**	**21**	1	0	**54**	4	138	12	0	154	**20**	56	**30**	**2**	**108**	20	**259**	90	0	**369**	**685**
07:45 AM	31	16	1	0	48	5	**152**	**28**	0	**185**	13	**62**	23	0	98	19	229	**106**	0	354	685
08:00 AM	28	15	4	0	47	5	120	11	0	136	20	54	15	0	89	18	187	91	0	296	568
08:15 AM	21	8	**5**	0	34	**7**	116	20	0	143	19	47	21	1	88	**27**	214	103	0	344	609
Total Volume	112	60	11	0	183	21	526	71	0	618	72	219	89	3	383	84	889	390	0	1363	2547
% App. Total	61.2	32.8	6	0		3.4	85.1	11.5	0		18.8	57.2	23.2	0.8		6.2	65.2	28.6	0		
PHF	.875	.714	.550	.000	.847	.750	.865	.634	.000	.835	.900	.883	.742	.375	.887	.778	.858	.920	.000	.923	.930



TRAFFIC DATA COLLECTION

File Name : Pineville(Westinghouse and Nations Ford)PM Peak
Site Code :
Start Date : 2/25/2020
Page No : 1

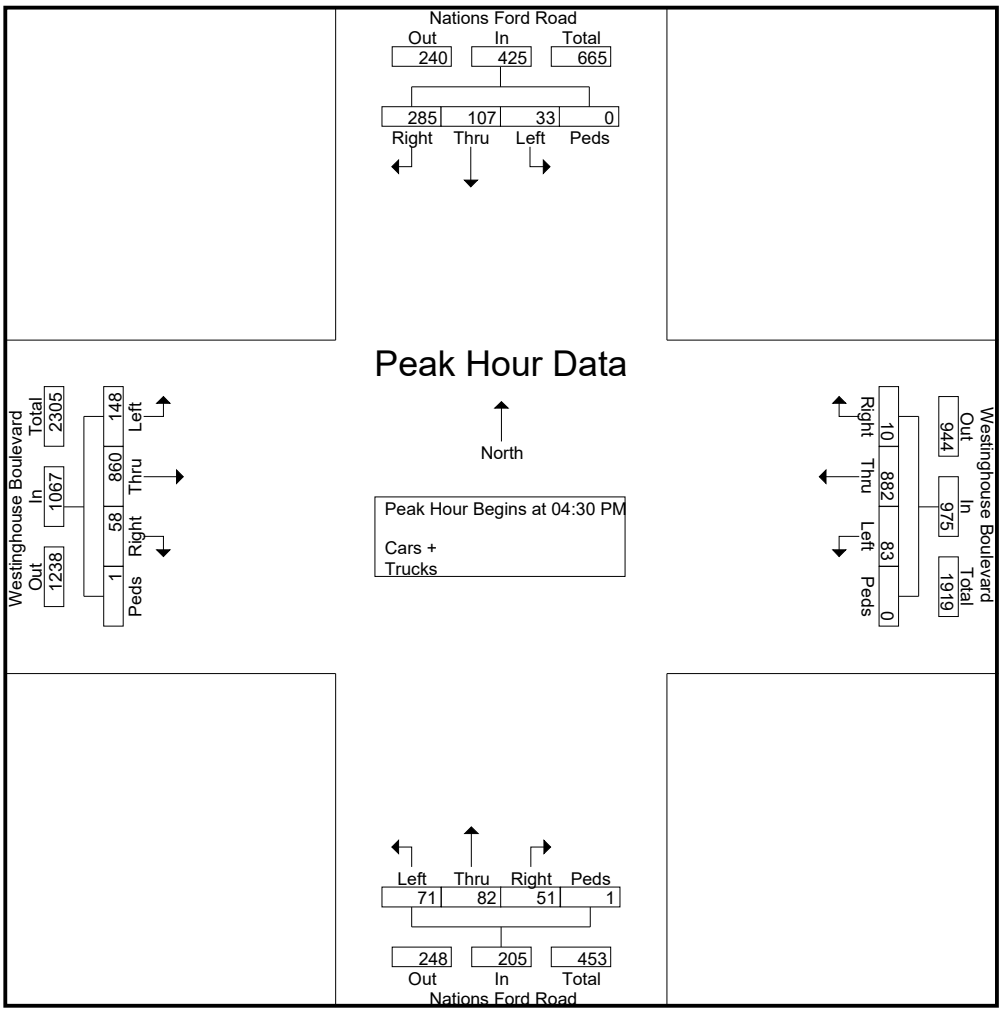
Groups Printed- Cars + - Trucks

	Nations Ford Road Southbound					Westinghouse Boulevard Westbound					Nations Ford Road Northbound					Westinghouse Boulevard Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	85	23	7	0	115	4	233	16	0	253	11	13	29	2	55	17	152	36	0	205	628
04:15 PM	62	19	7	0	88	1	196	12	0	209	4	18	22	0	44	21	164	31	0	216	557
04:30 PM	84	20	3	0	107	2	235	22	0	259	13	25	27	0	65	18	201	38	0	257	688
04:45 PM	64	21	3	0	88	2	226	10	0	238	12	22	17	0	51	15	206	41	0	262	639
Total	295	83	20	0	398	9	890	60	0	959	40	78	95	2	215	71	723	146	0	940	2512
05:00 PM	86	37	18	0	141	2	211	24	0	237	10	15	11	0	36	13	192	35	0	240	654
05:15 PM	51	29	9	0	89	4	210	27	0	241	16	20	16	1	53	12	261	34	1	308	691
05:30 PM	53	16	5	0	74	1	211	19	0	231	11	20	15	0	46	10	180	45	0	235	586
05:45 PM	64	20	3	0	87	4	208	19	0	231	15	27	8	0	50	16	153	48	0	217	585
Total	254	102	35	0	391	11	840	89	0	940	52	82	50	1	185	51	786	162	1	1000	2516
06:00 PM	65	18	3	0	86	3	166	12	0	181	11	18	10	0	39	13	182	51	0	246	552
06:15 PM	55	14	2	0	71	2	189	14	0	205	4	7	10	0	21	3	125	25	0	153	450
06:30 PM	33	12	1	0	46	1	145	14	0	160	6	10	8	0	24	7	122	20	0	149	379
06:45 PM	35	16	2	0	53	1	115	7	0	123	5	7	8	0	20	3	82	15	0	100	296
Total	188	60	8	0	256	7	615	47	0	669	26	42	36	0	104	26	511	111	0	648	1677
Grand Total	737	245	63	0	1045	27	2345	196	0	2568	118	202	181	3	504	148	2020	419	1	2588	6705
Apprch %	70.5	23.4	6	0		1.1	91.3	7.6	0		23.4	40.1	35.9	0.6		5.7	78.1	16.2	0		
Total %	11	3.7	0.9	0	15.6	0.4	35	2.9	0	38.3	1.8	3	2.7	0	7.5	2.2	30.1	6.2	0	38.6	
Cars +	720	239	63	0	1022	26	2301	193	0	2520	117	198	175	3	493	145	1982	401	1	2529	6564
% Cars +	97.7	97.6	100	0	97.8	96.3	98.1	98.5	0	98.1	99.2	98	96.7	100	97.8	98	98.1	95.7	100	97.7	97.9
Trucks	17	6	0	0	23	1	44	3	0	48	1	4	6	0	11	3	38	18	0	59	141
% Trucks	2.3	2.4	0	0	2.2	3.7	1.9	1.5	0	1.9	0.8	2	3.3	0	2.2	2	1.9	4.3	0	2.3	2.1

TRAFFIC DATA COLLECTION

File Name : Pineville(Westinghouse and Nations Ford)PM Peak
Site Code :
Start Date : 2/25/2020
Page No : 2

	Nations Ford Road Southbound					Westinghouse Boulevard Westbound					Nations Ford Road Northbound					Westinghouse Boulevard Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	84	20	3	0	107	2	**235**	22	0	**259**	13	**25**	**27**	0	**65**	**18**	201	38	0	257	688
04:45 PM	64	21	3	0	88	2	226	10	0	238	12	22	17	0	51	15	206	**41**	0	262	639
05:00 PM	**86**	**37**	**18**	0	**141**	2	211	24	0	237	10	15	11	0	36	13	192	35	0	240	654
05:15 PM	51	29	9	0	89	**4**	210	**27**	0	241	**16**	20	16	**1**	53	12	**261**	34	**1**	**308**	**691**
Total Volume	285	107	33	0	425	10	882	83	0	975	51	82	71	1	205	58	860	148	1	1067	2672
% App. Total	67.1	25.2	7.8	0		1	90.5	8.5	0		24.9	40	34.6	0.5		5.4	80.6	13.9	0.1		
PHF	.828	.723	.458	.000	.754	.625	.938	.769	.000	.941	.797	.820	.657	.250	.788	.806	.824	.902	.250	.866	.967



TRAFFIC DATA COLLECTION

File Name : Pineville(Westinghouse and Downs)AM Peak
Site Code :
Start Date : 2/25/2020
Page No : 1

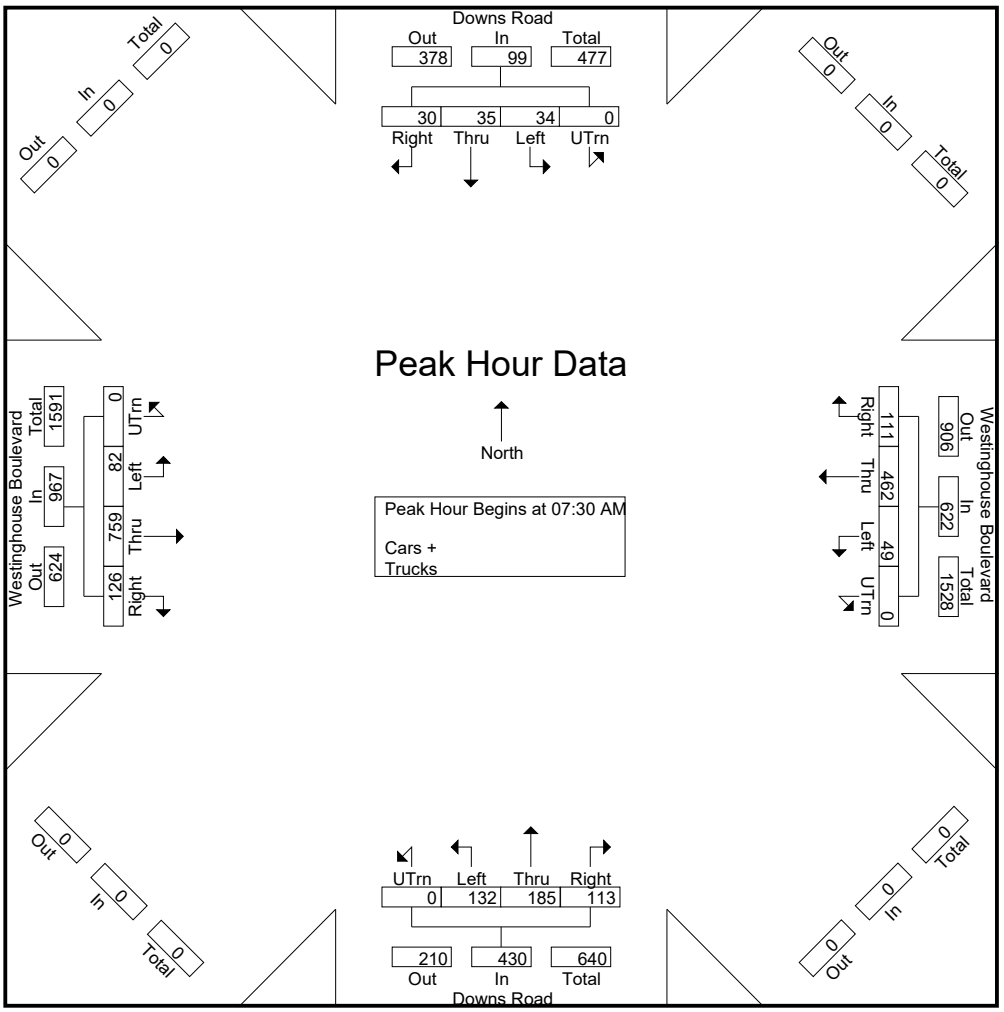
Groups Printed- Cars + - Trucks

	Downs Road Southbound					Westinghouse Boulevard Westbound					Downs Road Northbound					Westinghouse Boulevard 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 AM	8	10	7	0	25	25	100	14	0	139	22	31	26	0	79	25	193	15	0	233	476
07:15 AM	4	4	6	0	14	22	101	14	0	137	19	29	32	0	80	41	196	11	0	248	479
07:30 AM	11	9	9	0	29	32	122	14	0	168	31	34	33	0	98	35	210	14	0	259	554
07:45 AM	3	14	10	0	27	27	140	9	0	176	28	57	40	0	125	29	207	28	0	264	592
Total	26	37	32	0	95	106	463	51	0	620	100	151	131	0	382	130	806	68	0	1004	2101
08:00 AM	11	4	8	0	23	33	87	16	0	136	27	51	35	0	113	29	166	18	0	213	485
08:15 AM	5	8	7	0	20	19	113	10	0	142	27	43	24	0	94	33	176	22	0	231	487
08:30 AM	8	8	7	0	23	21	89	9	0	119	28	31	42	0	101	29	173	12	0	214	457
08:45 AM	4	16	9	0	29	19	95	13	0	127	21	24	20	0	65	29	171	14	0	214	435
Total	28	36	31	0	95	92	384	48	0	524	103	149	121	0	373	120	686	66	0	872	1864
Grand Total	54	73	63	0	190	198	847	99	0	1144	203	300	252	0	755	250	1492	134	0	1876	3965
Apprch %	28.4	38.4	33.2	0		17.3	74	8.7	0		26.9	39.7	33.4	0		13.3	79.5	7.1	0		
Total %	1.4	1.8	1.6	0	4.8	5	21.4	2.5	0	28.9	5.1	7.6	6.4	0	19	6.3	37.6	3.4	0	47.3	
Cars +	53	71	61	0	185	193	784	97	0	1074	198	298	242	0	738	240	1438	133	0	1811	3808
% Cars +	98.1	97.3	96.8	0	97.4	97.5	92.6	98	0	93.9	97.5	99.3	96	0	97.7	96	96.4	99.3	0	96.5	96
Trucks	1	2	2	0	5	5	63	2	0	70	5	2	10	0	17	10	54	1	0	65	157
% Trucks	1.9	2.7	3.2	0	2.6	2.5	7.4	2	0	6.1	2.5	0.7	4	0	2.3	4	3.6	0.7	0	3.5	4

TRAFFIC DATA COLLECTION

File Name : Pineville(Westinghouse and Downs)AM Peak
Site Code :
Start Date : 2/25/2020
Page No : 2

	Downs Road Southbound					Westinghouse Boulevard Westbound					Downs Road Northbound					Westinghouse Boulevard 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 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	**11**	9	9	0	**29**	32	122	14	0	168	**31**	34	33	0	98	**35**	**210**	14	0	259	554
07:45 AM	3	**14**	**10**	0	27	27	**140**	9	0	**176**	28	**57**	**40**	0	**125**	29	207	**28**	0	**264**	**592**
08:00 AM	11	4	8	0	23	**33**	87	**16**	0	136	27	51	35	0	113	29	166	18	0	213	485
08:15 AM	5	8	7	0	20	19	113	10	0	142	27	43	24	0	94	33	176	22	0	231	487
Total Volume	30	35	34	0	99	111	462	49	0	622	113	185	132	0	430	126	759	82	0	967	2118
% App. Total	30.3	35.4	34.3	0		17.8	74.3	7.9	0		26.3	43	30.7	0		13	78.5	8.5	0		
PHF	.682	.625	.850	.000	.853	.841	.825	.766	.000	.884	.911	.811	.825	.000	.860	.900	.904	.732	.000	.916	.894



TRAFFIC DATA COLLECTION

File Name : Pineville(Westinghouse and Downs)PM Peak
Site Code :
Start Date : 2/25/2020
Page No : 1

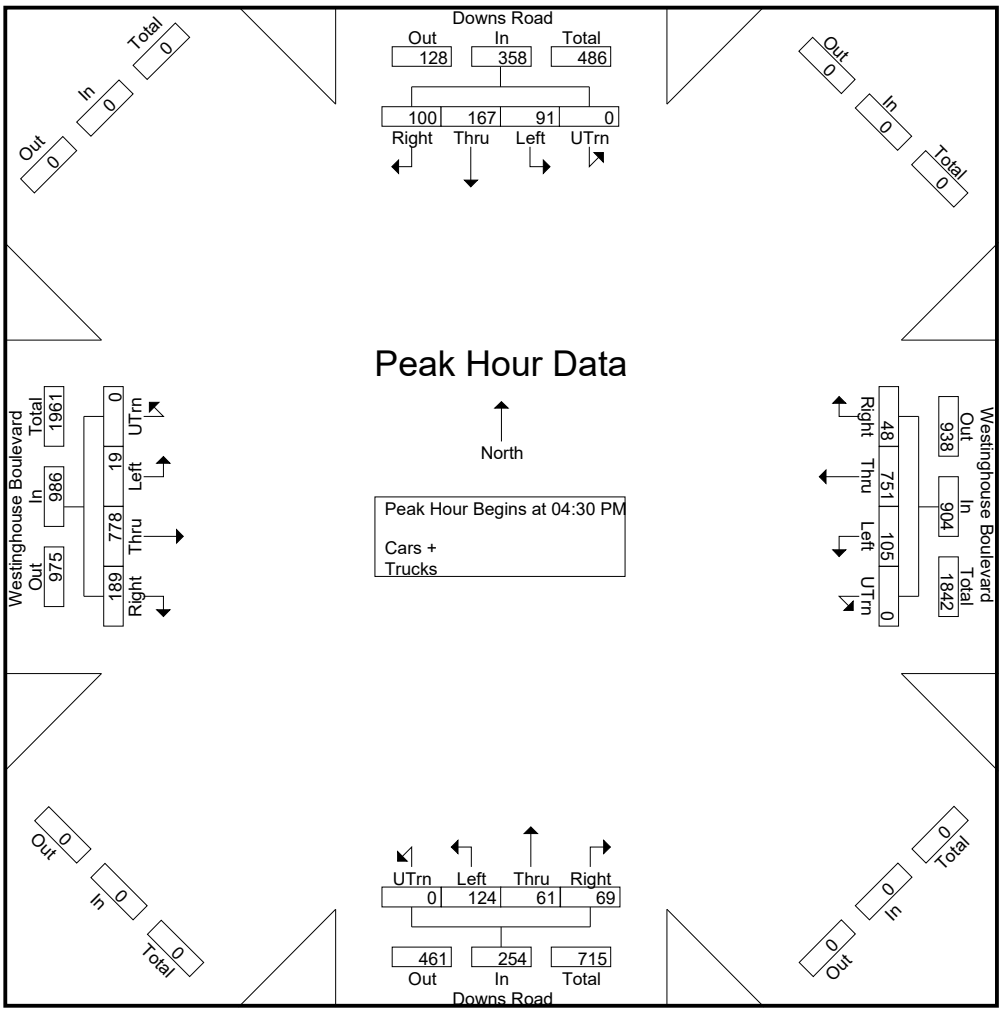
Groups Printed- Cars + - Trucks

	Downs Road Southbound					Westinghouse Boulevard Westbound					Downs Road Northbound					Westinghouse Boulevard 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
04:00 PM	27	27	15	0	69	11	176	11	0	198	20	19	37	0	76	34	144	5	0	183	526
04:15 PM	21	17	9	0	47	18	171	20	0	209	18	10	23	0	51	41	149	2	0	192	499
04:30 PM	43	42	24	0	109	13	191	25	0	229	11	8	32	0	51	42	173	4	0	219	608
04:45 PM	21	32	24	0	77	14	179	27	0	220	15	13	31	0	59	39	180	4	0	223	579
Total	112	118	72	0	302	56	717	83	0	856	64	50	123	0	237	156	646	15	0	817	2212
05:00 PM	19	47	28	0	94	8	163	28	0	199	20	21	40	0	81	47	185	5	0	237	611
05:15 PM	17	46	15	0	78	13	218	25	0	256	23	19	21	0	63	61	240	6	0	307	704
05:30 PM	10	31	18	0	59	13	180	28	0	221	17	28	31	0	76	31	169	0	0	200	556
05:45 PM	11	27	12	0	50	12	190	28	1	231	20	21	29	0	70	33	150	3	0	186	537
Total	57	151	73	0	281	46	751	109	1	907	80	89	121	0	290	172	744	14	0	930	2408
06:00 PM	8	21	12	0	41	6	145	8	0	159	14	19	27	0	60	48	155	0	0	203	463
06:15 PM	12	19	15	0	46	4	165	13	0	182	13	13	27	0	53	32	109	1	0	142	423
06:30 PM	7	8	5	0	20	2	120	15	0	137	13	11	21	0	45	33	98	2	0	133	335
06:45 PM	4	10	5	0	19	10	92	8	0	110	7	9	27	0	43	16	77	1	0	94	266
Total	31	58	37	0	126	22	522	44	0	588	47	52	102	0	201	129	439	4	0	572	1487
Grand Total	200	327	182	0	709	124	1990	236	1	2351	191	191	346	0	728	457	1829	33	0	2319	6107
Apprch %	28.2	46.1	25.7	0		5.3	84.6	10	0		26.2	26.2	47.5	0		19.7	78.9	1.4	0		
Total %	3.3	5.4	3	0	11.6	2	32.6	3.9	0	38.5	3.1	3.1	5.7	0	11.9	7.5	29.9	0.5	0	38	
Cars +	199	321	175	0	695	122	1941	235	1	2299	191	186	341	0	718	448	1788	33	0	2269	5981
% Cars +	99.5	98.2	96.2	0	98	98.4	97.5	99.6	100	97.8	100	97.4	98.6	0	98.6	98	97.8	100	0	97.8	97.9
Trucks	1	6	7	0	14	2	49	1	0	52	0	5	5	0	10	9	41	0	0	50	126
% Trucks	0.5	1.8	3.8	0	2	1.6	2.5	0.4	0	2.2	0	2.6	1.4	0	1.4	2	2.2	0	0	2.2	2.1

TRAFFIC DATA COLLECTION

File Name : Pineville(Westinghouse and Downs)PM Peak
Site Code :
Start Date : 2/25/2020
Page No : 2

	Downs Road Southbound					Westinghouse Boulevard Westbound					Downs Road Northbound					Westinghouse Boulevard 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 04:00 PM to 06:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	**43**	42	24	0	**109**	13	191	25	0	229	11	8	32	0	51	42	173	4	0	219	608
04:45 PM	21	32	24	0	77	**14**	179	27	0	220	15	13	31	0	59	39	180	4	0	223	579
05:00 PM	19	**47**	**28**	0	94	8	163	**28**	0	199	20	**21**	**40**	0	**81**	47	185	5	0	237	611
05:15 PM	17	46	15	0	78	13	**218**	25	0	**256**	**23**	19	21	0	63	**61**	**240**	**6**	0	**307**	**704**
Total Volume	100	167	91	0	358	48	751	105	0	904	69	61	124	0	254	189	778	19	0	986	2502
% App. Total	27.9	46.6	25.4	0		5.3	83.1	11.6	0		27.2	24	48.8	0		19.2	78.9	1.9	0		
PHF	.581	.888	.813	.000	.821	.857	.861	.938	.000	.883	.750	.726	.775	.000	.784	.775	.810	.792	.000	.803	.888



TRAFFIC DATA COLLECTION

File Name : Pineville(Downs and NC 51)AM peak
Site Code :
Start Date : 3/4/2020
Page No : 1

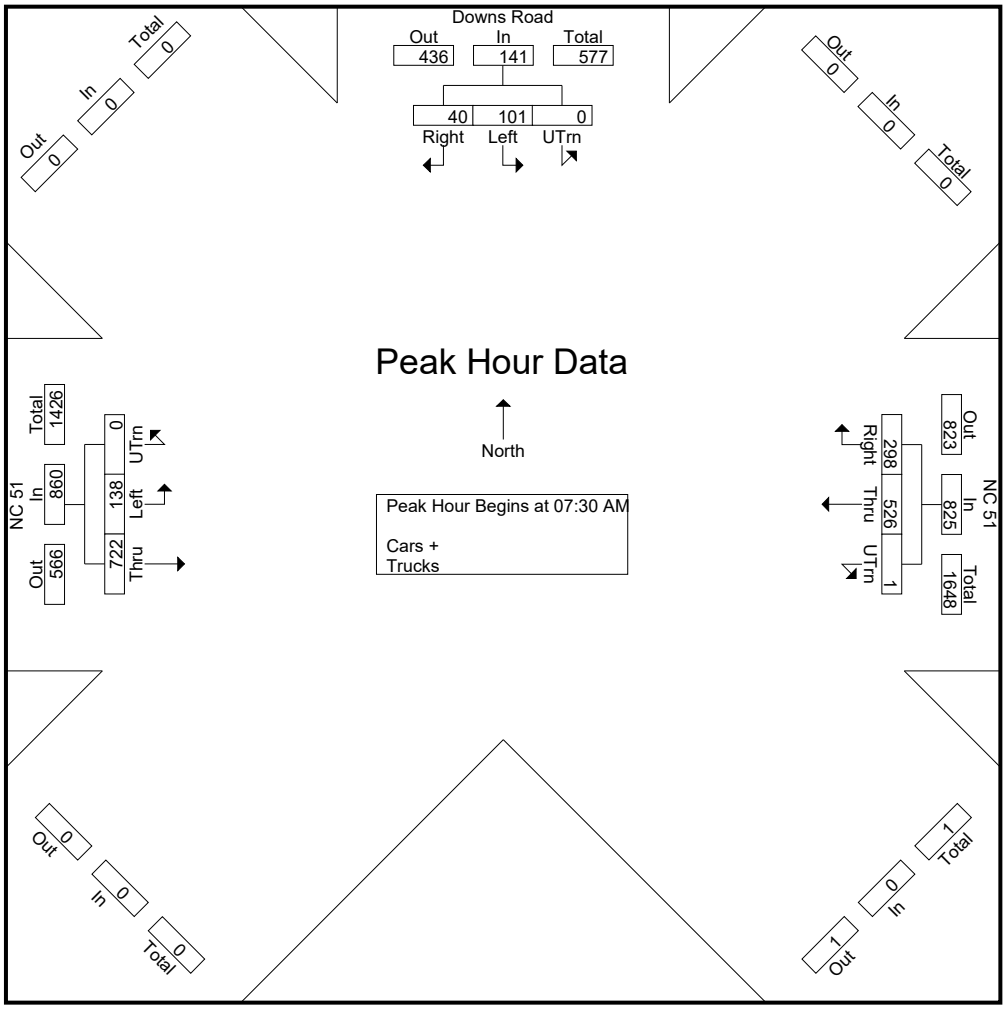
Groups Printed- Cars + - Trucks

	Downs Road Southbound				NC 51 Westbound				NC 51 Eastbound				
Start Time	Right	Left	UTrn	App. Total	Right	Thru	UTrn	App. Total	Thru	Left	UTrn	App. Total	Int. Total
07:00 AM	10	22	0	32	55	103	0	158	161	36	0	197	387
07:15 AM	5	17	0	22	73	137	0	210	191	36	0	227	459
07:30 AM	14	27	0	41	78	137	0	215	157	40	0	197	453
07:45 AM	8	22	0	30	89	151	0	240	165	28	0	193	463
Total	37	88	0	125	295	528	0	823	674	140	0	814	1762
08:00 AM	10	22	0	32	69	111	0	180	191	46	0	237	449
08:15 AM	8	30	0	38	62	127	1	190	209	24	0	233	461
08:30 AM	32	65	0	97	39	119	0	158	172	25	0	197	452
08:45 AM	10	26	0	36	56	101	0	157	153	37	0	190	383
Total	60	143	0	203	226	458	1	685	725	132	0	857	1745
Grand Total	97	231	0	328	521	986	1	1508	1399	272	0	1671	3507
Apprch %	29.6	70.4	0		34.5	65.4	0.1		83.7	16.3	0		
Total %	2.8	6.6	0	9.4	14.9	28.1	0	43	39.9	7.8	0	47.6	
Cars +	92	225	0	317	516	974	1	1491	1399	272	0	1671	3479
% Cars +	94.8	97.4	0	96.6	99	98.8	100	98.9	100	100	0	100	99.2
Trucks	5	6	0	11	5	12	0	17	0	0	0	0	28
% Trucks	5.2	2.6	0	3.4	1	1.2	0	1.1	0	0	0	0	0.8

TRAFFIC DATA COLLECTION

File Name : Pineville(Downs and NC 51)AM peak
Site Code :
Start Date : 3/4/2020
Page No : 2

	Downs Road Southbound				NC 51 Westbound				NC 51 Eastbound				
Start Time	Right	Left	UTrn	App. Total	Right	Thru	UTrn	App. Total	Thru	Left	UTrn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:30 AM													
07:30 AM	**14**	27	0	**41**	78	137	0	215	157	40	0	197	453
07:45 AM	8	22	0	30	**89**	**151**	0	**240**	165	28	0	193	**463**
08:00 AM	10	22	0	32	69	111	0	180	191	**46**	0	**237**	449
08:15 AM	8	**30**	0	38	62	127	**1**	190	**209**	24	0	233	461
Total Volume	40	101	0	141	298	526	1	825	722	138	0	860	1826
% App. Total	28.4	71.6	0		36.1	63.8	0.1		84	16	0		
PHF	.714	.842	.000	.860	.837	.871	.250	.859	.864	.750	.000	.907	.986



TRAFFIC DATA COLLECTION

File Name : Pineville(Downs and NC 51)PM Peak
Site Code :
Start Date : 3/4/2020
Page No : 1

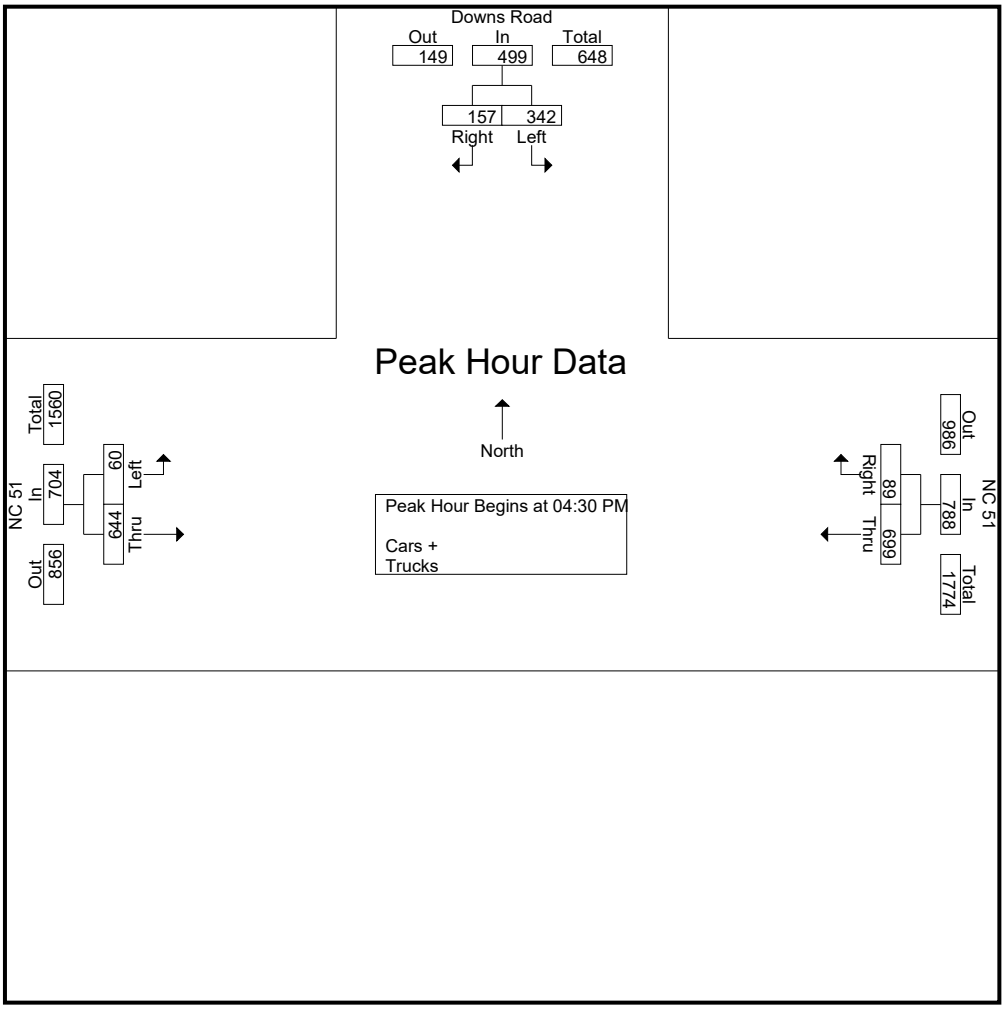
Groups Printed- Cars + - Trucks

	Downs Road Southbound			NC 51 Westbound			NC 51 Eastbound			
Start Time	Right	Left	App. Total	Right	Thru	App. Total	Thru	Left	App. Total	Int. Total
04:00 PM	21	63	84	18	151	169	161	19	180	433
04:15 PM	25	62	87	29	164	193	180	23	203	483
04:30 PM	36	90	126	15	160	175	164	11	175	476
04:45 PM	42	69	111	22	173	195	165	14	179	485
Total	124	284	408	84	648	732	670	67	737	1877
05:00 PM	34	111	145	27	184	211	160	16	176	532
05:15 PM	45	72	117	25	182	207	155	19	174	498
05:30 PM	29	57	86	33	186	219	141	9	150	455
05:45 PM	22	44	66	29	138	167	147	10	157	390
Total	130	284	414	114	690	804	603	54	657	1875
Grand Total	254	568	822	198	1338	1536	1273	121	1394	3752
Apprch %	30.9	69.1		12.9	87.1		91.3	8.7		
Total %	6.8	15.1	21.9	5.3	35.7	40.9	33.9	3.2	37.2	
Cars +	250	564	814	192	1334	1526	1272	117	1389	3729
% Cars +	98.4	99.3	99	97	99.7	99.3	99.9	96.7	99.6	99.4
Trucks	4	4	8	6	4	10	1	4	5	23
% Trucks	1.6	0.7	1	3	0.3	0.7	0.1	3.3	0.4	0.6

TRAFFIC DATA COLLECTION

File Name : Pineville(Downs and NC 51)PM Peak
Site Code :
Start Date : 3/4/2020
Page No : 2

	Downs Road Southbound			NC 51 Westbound			NC 51 Eastbound			
Start Time	Right	Left	App. Total	Right	Thru	App. Total	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:30 PM										
04:30 PM	36	90	126	15	160	175	164	11	175	476
04:45 PM	42	69	111	22	173	195	**165**	14	**179**	485
05:00 PM	34	**111**	**145**	**27**	**184**	**211**	160	16	176	**532**
05:15 PM	**45**	72	117	25	182	207	155	**19**	174	498
Total Volume	157	342	499	89	699	788	644	60	704	1991
% App. Total	31.5	68.5		11.3	88.7		91.5	8.5		
PHF	.872	.770	.860	.824	.950	.934	.976	.789	.983	.936



TRAFFIC DATA COLLECTION

File Name : Pineville(Downs and Ampro)AM Peak
Site Code :
Start Date : 2/25/2020
Page No : 1

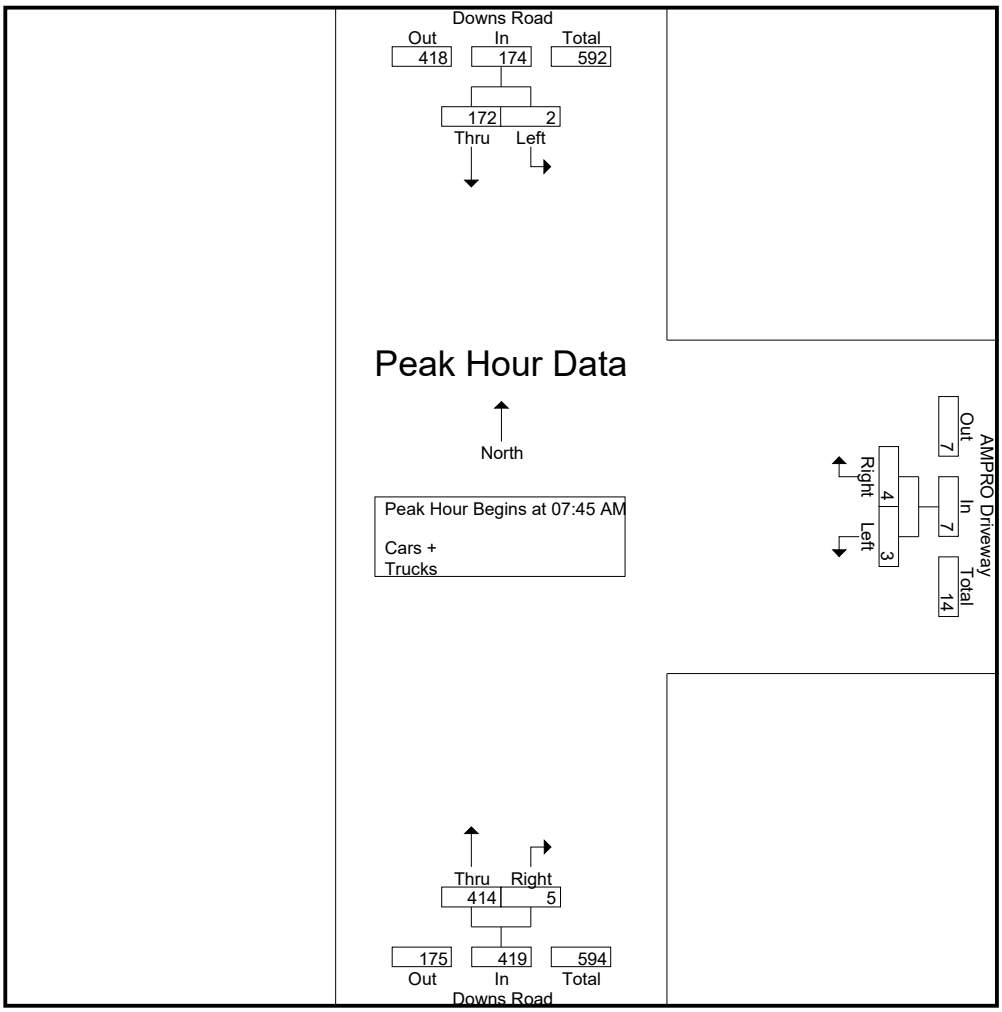
Groups Printed- Cars + - Trucks

	Downs Road Southbound			AMPRO Driveway Westbound			Downs Road Northbound			
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	Int. Total
07:00 AM	32	1	33	0	0	0	1	82	83	116
07:15 AM	48	0	48	0	1	1	2	79	81	130
07:30 AM	37	0	37	1	0	1	2	103	105	143
07:45 AM	48	0	48	0	0	0	0	115	115	163
Total	165	1	166	1	1	2	5	379	384	552
08:00 AM	34	2	36	1	1	2	1	113	114	152
08:15 AM	43	0	43	2	2	4	2	89	91	138
08:30 AM	47	0	47	1	0	1	2	97	99	147
08:45 AM	41	2	43	2	1	3	2	64	66	112
Total	165	4	169	6	4	10	7	363	370	549
Grand Total	330	5	335	7	5	12	12	742	754	1101
Apprch %	98.5	1.5		58.3	41.7		1.6	98.4		
Total %	30	0.5	30.4	0.6	0.5	1.1	1.1	67.4	68.5	
Cars +	327	5	332	7	5	12	12	737	749	1093
% Cars +	99.1	100	99.1	100	100	100	100	99.3	99.3	99.3
Trucks	3	0	3	0	0	0	0	5	5	8
% Trucks	0.9	0	0.9	0	0	0	0	0.7	0.7	0.7

TRAFFIC DATA COLLECTION

File Name : Pineville(Downs and Ampro)AM Peak
Site Code :
Start Date : 2/25/2020
Page No : 2

	Downs Road Southbound			AMPRO Driveway Westbound			Downs Road Northbound			
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:45 AM										
07:45 AM	**48**	0	**48**	0	0	0	0	**115**	**115**	**163**
08:00 AM	34	**2**	36	1	1	2	1	113	114	152
08:15 AM	43	0	43	**2**	**2**	**4**	**2**	89	91	138
08:30 AM	47	0	47	1	0	1	2	97	99	147
Total Volume	172	2	174	4	3	7	5	414	419	600
% App. Total	98.9	1.1		57.1	42.9		1.2	98.8		
PHF	.896	.250	.906	.500	.375	.438	.625	.900	.911	.920



TRAFFIC DATA COLLECTION

File Name : Pineville(Downs and Ampro)PM Peak
Site Code :
Start Date : 2/25/2020
Page No : 1

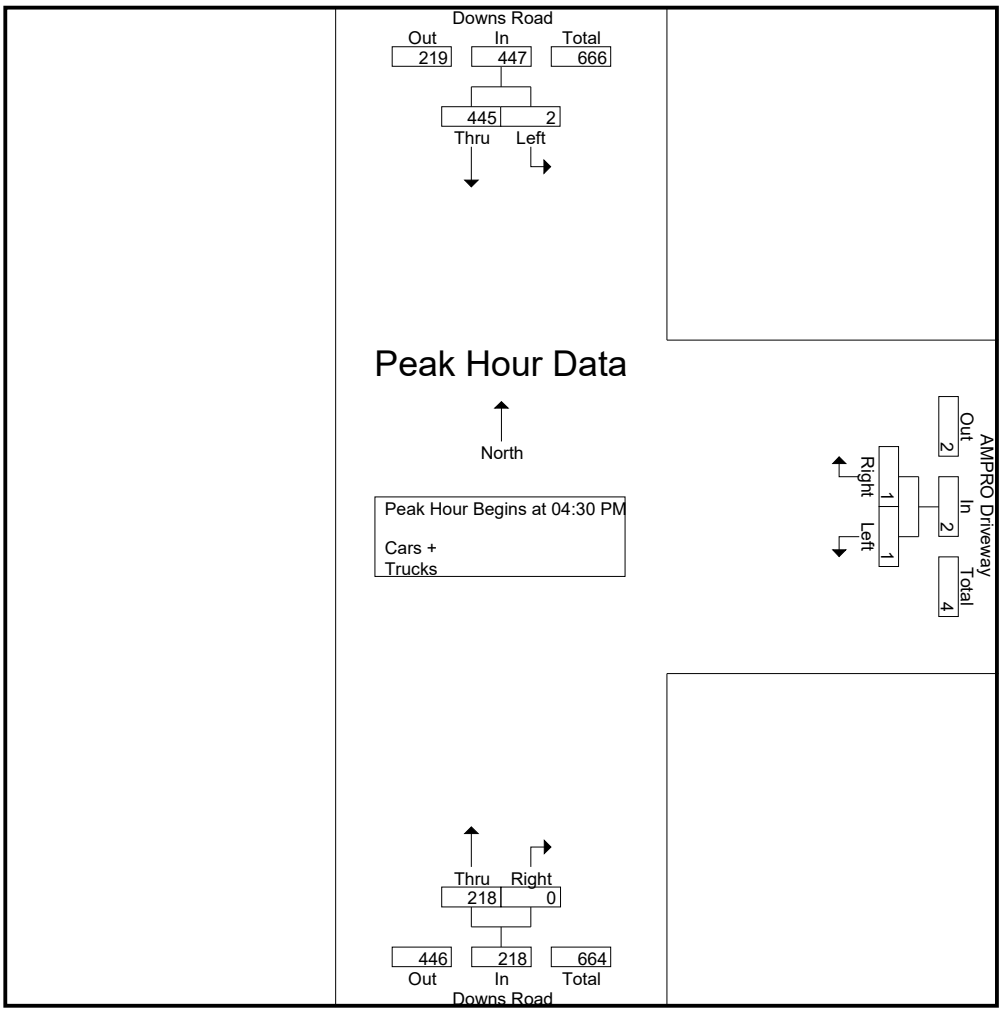
Groups Printed- Cars + - Trucks

	Downs Road Southbound			AMPRO Driveway Westbound			Downs Road Northbound			
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	Int. Total
04:00 PM	80	0	80	5	4	9	0	57	57	146
04:15 PM	76	0	76	0	0	0	0	54	54	130
04:30 PM	122	1	123	0	0	0	0	39	39	162
04:45 PM	87	0	87	1	1	2	0	43	43	132
Total	365	1	366	6	5	11	0	193	193	570
05:00 PM	110	1	111	0	0	0	0	81	81	192
05:15 PM	126	0	126	0	0	0	0	55	55	181
05:30 PM	90	0	90	0	0	0	0	55	55	145
05:45 PM	74	0	74	0	0	0	0	58	58	132
Total	400	1	401	0	0	0	0	249	249	650
06:00 PM	81	0	81	0	0	0	0	45	45	126
06:15 PM	55	0	55	0	0	0	0	27	27	82
06:30 PM	53	0	53	0	0	0	0	39	39	92
06:45 PM	29	0	29	0	0	0	0	25	25	54
Total	218	0	218	0	0	0	0	136	136	354
Grand Total	983	2	985	6	5	11	0	578	578	1574
Apprch %	99.8	0.2		54.5	45.5		0	100		
Total %	62.5	0.1	62.6	0.4	0.3	0.7	0	36.7	36.7	
Cars +	977	2	979	6	4	10	0	570	570	1559
% Cars +	99.4	100	99.4	100	80	90.9	0	98.6	98.6	99
Trucks	6	0	6	0	1	1	0	8	8	15
% Trucks	0.6	0	0.6	0	20	9.1	0	1.4	1.4	1

TRAFFIC DATA COLLECTION

File Name : Pineville(Downs and Ampro)PM Peak
Site Code :
Start Date : 2/25/2020
Page No : 2

	Downs Road Southbound			AMPRO Driveway Westbound			Downs Road Northbound			
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:30 PM										
04:30 PM	122	**1**	123	0	0	0	0	39	39	162
04:45 PM	87	0	87	**1**	**1**	**2**	0	43	43	132
05:00 PM	110	1	111	0	0	0	0	**81**	**81**	**192**
05:15 PM	**126**	0	**126**	0	0	0	0	55	55	181
Total Volume	445	2	447	1	1	2	0	218	218	667
% App. Total	99.6	0.4		50	50		0	100		
PHF	.883	.500	.887	.250	.250	.250	.000	.673	.673	.868



TRAFFIC DATA COLLECTION

File Name : Pineville(Downs and Eagleton Downs)AM Peak
Site Code :
Start Date : 2/25/2020
Page No : 1

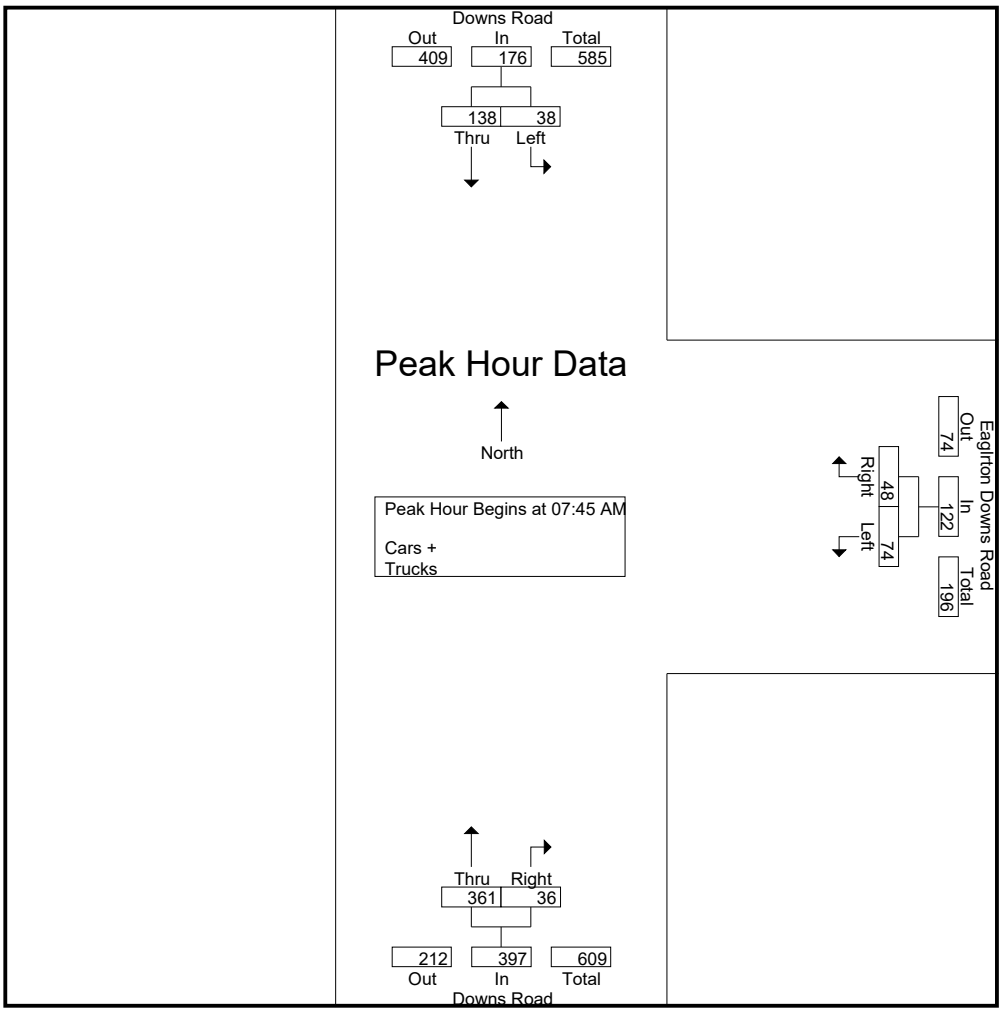
Groups Printed- Cars + - Trucks

	Downs Road Southbound			Eaglrton Downs Road Westbound			Downs Road Northbound			
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	Int. Total
07:00 AM	23	8	31	2	0	2	9	76	85	118
07:15 AM	36	8	44	4	0	4	8	78	86	134
07:30 AM	21	17	38	1	2	3	13	101	114	155
07:45 AM	37	11	48	3	1	4	14	115	129	181
Total	117	44	161	10	3	13	44	370	414	588
08:00 AM	29	8	37	4	1	5	7	107	114	156
08:15 AM	36	7	43	15	33	48	8	72	80	171
08:30 AM	36	12	48	26	39	65	7	67	74	187
08:45 AM	32	5	37	9	4	13	9	55	64	114
Total	133	32	165	54	77	131	31	301	332	628
Grand Total	250	76	326	64	80	144	75	671	746	1216
Apprch %	76.7	23.3		44.4	55.6		10.1	89.9		
Total %	20.6	6.2	26.8	5.3	6.6	11.8	6.2	55.2	61.3	
Cars +	239	73	312	61	79	140	74	652	726	1178
% Cars +	95.6	96.1	95.7	95.3	98.8	97.2	98.7	97.2	97.3	96.9
Trucks	11	3	14	3	1	4	1	19	20	38
% Trucks	4.4	3.9	4.3	4.7	1.2	2.8	1.3	2.8	2.7	3.1

TRAFFIC DATA COLLECTION

File Name : Pineville(Downs and Eagleton Downs)AM Peak
Site Code :
Start Date : 2/25/2020
Page No : 2

	Downs Road Southbound			Eaglrton Downs Road Westbound			Downs Road Northbound			
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:45 AM										
07:45 AM	**37**	11	**48**	3	1	4	**14**	**115**	**129**	181
08:00 AM	29	8	37	4	1	5	7	107	114	156
08:15 AM	36	7	43	15	33	48	8	72	80	171
08:30 AM	36	**12**	48	**26**	**39**	**65**	7	67	74	**187**
Total Volume	138	38	176	48	74	122	36	361	397	695
% App. Total	78.4	21.6		39.3	60.7		9.1	90.9		
PHF	.932	.792	.917	.462	.474	.469	.643	.785	.769	.929



TRAFFIC DATA COLLECTION

File Name : Pineville(Downs and Eagleton Downs)PM Peak
Site Code :
Start Date : 2/25/2020
Page No : 1

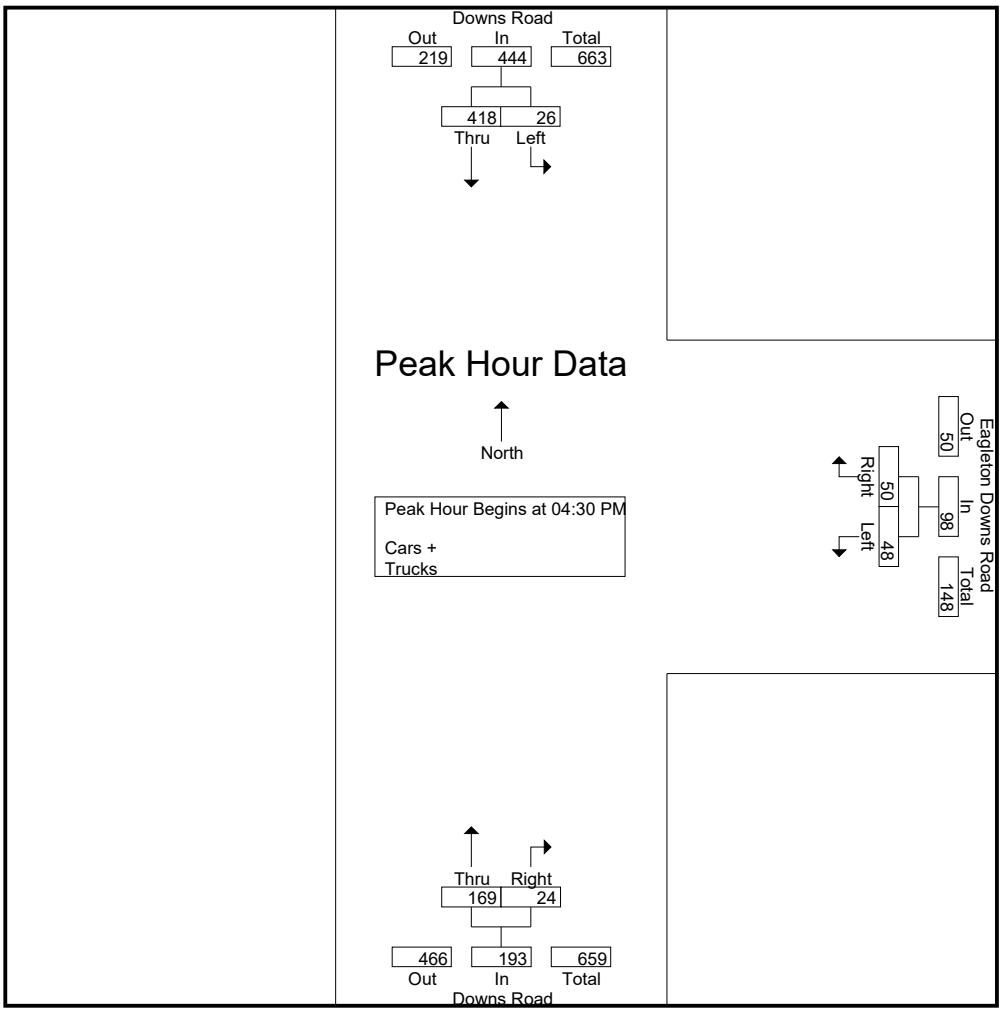
Groups Printed- Cars + - Trucks

	Downs Road Southbound			Eagleton Downs Road Westbound			Downs Road Northbound			
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	Int. Total
04:00 PM	75	9	84	20	6	26	10	37	47	157
04:15 PM	70	6	76	18	13	31	12	37	49	156
04:30 PM	111	10	121	11	12	23	5	26	31	175
04:45 PM	86	6	92	8	15	23	5	38	43	158
Total	342	31	373	57	46	103	32	138	170	646
05:00 PM	100	3	103	17	11	28	9	62	71	202
05:15 PM	121	7	128	14	10	24	5	43	48	200
05:30 PM	85	5	90	9	4	13	5	45	50	153
05:45 PM	63	7	70	5	14	19	2	49	51	140
Total	369	22	391	45	39	84	21	199	220	695
06:00 PM	71	6	77	8	6	14	6	36	42	133
06:15 PM	53	4	57	7	10	17	2	18	20	94
06:30 PM	49	5	54	6	10	16	2	33	35	105
06:45 PM	26	3	29	2	2	4	4	22	26	59
Total	199	18	217	23	28	51	14	109	123	391
Grand Total	910	71	981	125	113	238	67	446	513	1732
Apprch %	92.8	7.2		52.5	47.5		13.1	86.9		
Total %	52.5	4.1	56.6	7.2	6.5	13.7	3.9	25.8	29.6	
Cars +	900	69	969	120	113	233	65	441	506	1708
% Cars +	98.9	97.2	98.8	96	100	97.9	97	98.9	98.6	98.6
Trucks	10	2	12	5	0	5	2	5	7	24
% Trucks	1.1	2.8	1.2	4	0	2.1	3	1.1	1.4	1.4

TRAFFIC DATA COLLECTION

File Name : Pineville(Downs and Eagleton Downs)PM Peak
Site Code :
Start Date : 2/25/2020
Page No : 2

	Downs Road Southbound			Eagleton Downs Road Westbound			Downs Road Northbound			
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:30 PM										
04:30 PM	111	**10**	121	11	12	23	5	26	31	175
04:45 PM	86	6	92	8	**15**	23	5	38	43	158
05:00 PM	100	3	103	**17**	11	**28**	**9**	**62**	**71**	**202**
05:15 PM	**121**	7	**128**	14	10	24	5	43	48	200
Total Volume	418	26	444	50	48	98	24	169	193	735
% App. Total	94.1	5.9		51	49		12.4	87.6		
PHF	.864	.650	.867	.735	.800	.875	.667	.681	.680	.910



TRAFFIC DATA COLLECTION

File Name : Pineville(Nations Ford and State 1127)AM Peak
Site Code :
Start Date : 2/25/2020
Page No : 1

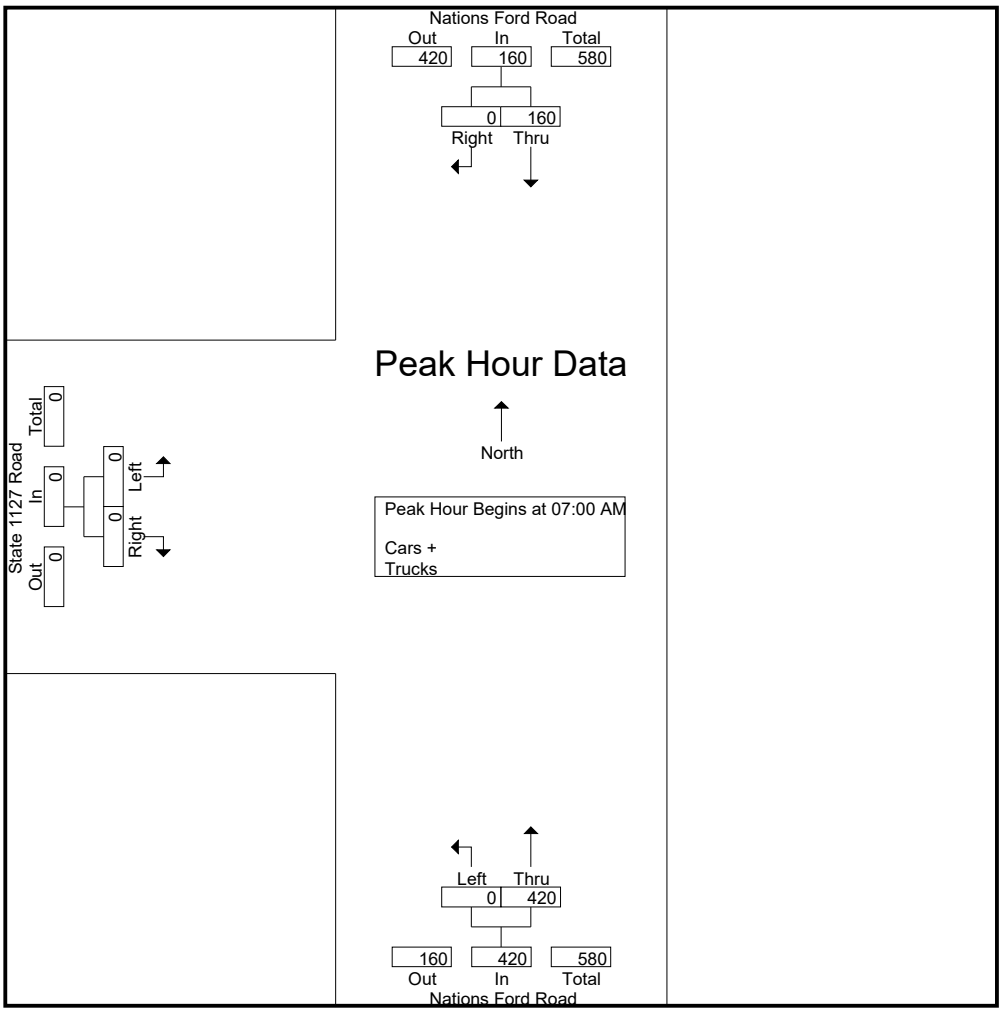
Groups Printed- Cars + - Trucks

	Nations Ford Road Southbound			Nations Ford Road Northbound			State 1127 Road Eastbound			
Start Time	Right	Thru	App. Total	Thru	Left	App. Total	Right	Left	App. Total	Int. Total
07:00 AM	0	31	31	110	0	110	0	0	0	141
07:15 AM	0	30	30	100	0	100	0	0	0	130
07:30 AM	0	47	47	103	0	103	0	0	0	150
07:45 AM	0	52	52	107	0	107	0	0	0	159
Total	0	160	160	420	0	420	0	0	0	580
08:00 AM	0	34	34	78	0	78	0	0	0	112
08:15 AM	0	51	51	85	0	85	0	0	0	136
08:30 AM	0	44	44	79	0	79	0	0	0	123
08:45 AM	0	38	38	65	0	65	0	0	0	103
Total	0	167	167	307	0	307	0	0	0	474
Grand Total	0	327	327	727	0	727	0	0	0	1054
Apprch %	0	100		100	0		0	0		
Total %	0	31	31	69	0	69	0	0	0	
Cars +	0	312	312	699	0	699	0	0	0	1011
% Cars +	0	95.4	95.4	96.1	0	96.1	0	0	0	95.9
Trucks	0	15	15	28	0	28	0	0	0	43
% Trucks	0	4.6	4.6	3.9	0	3.9	0	0	0	4.1

TRAFFIC DATA COLLECTION

File Name : Pineville(Nations Ford and State 1127)AM Peak
Site Code :
Start Date : 2/25/2020
Page No : 2

	Nations Ford Road Southbound			Nations Ford Road Northbound			State 1127 Road Eastbound			
Start Time	Right	Thru	App. Total	Thru	Left	App. Total	Right	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	0	31	31	**110**	0	**110**	0	0	0	141
07:15 AM	0	30	30	100	0	100	0	0	0	130
07:30 AM	0	47	47	103	0	103	0	0	0	150
07:45 AM	0	**52**	**52**	107	0	107	0	0	0	**159**
Total Volume	0	160	160	420	0	420	0	0	0	580
% App. Total	0	100		100	0		0	0		
PHF	.000	.769	.769	.955	.000	.955	.000	.000	.000	.912



TRAFFIC DATA COLLECTION

File Name : Pineville(Nations Ford and State 1127)PM Peak
Site Code :
Start Date : 2/25/2020
Page No : 1

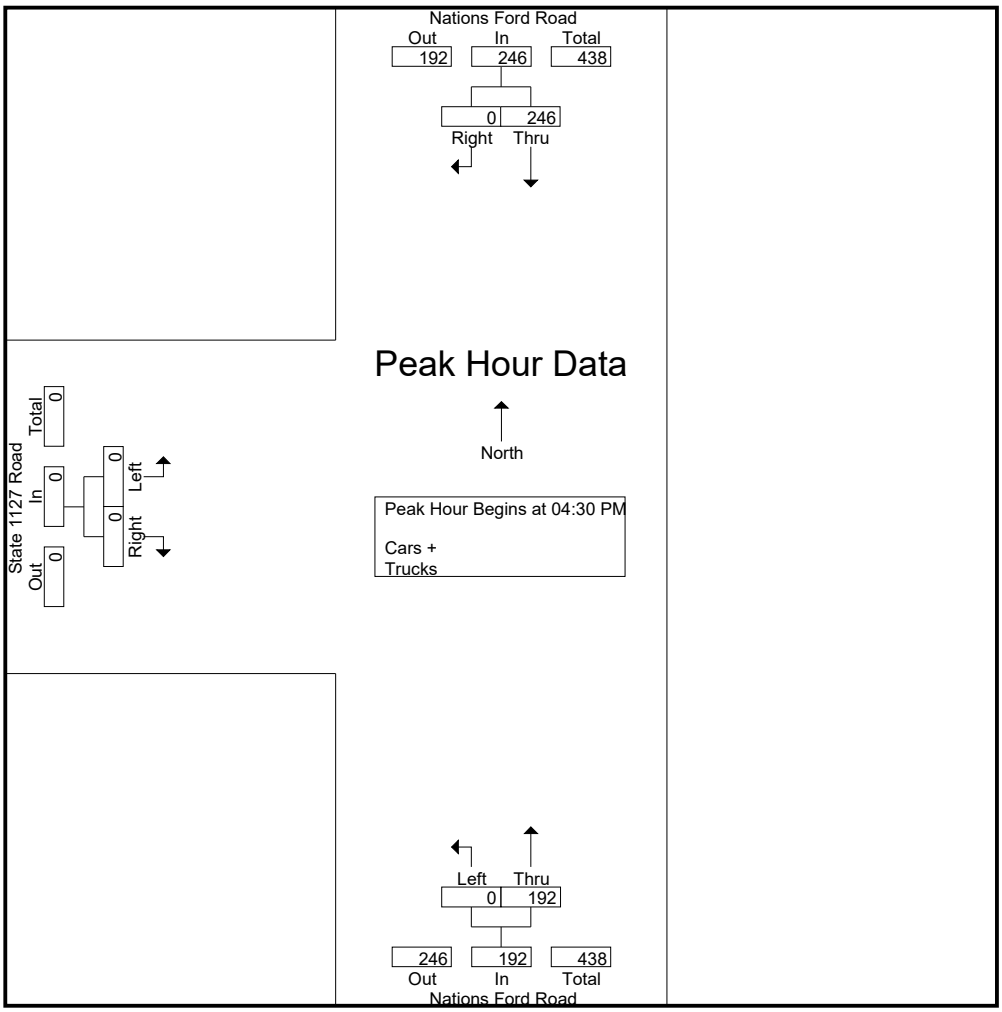
Groups Printed- Cars + - Trucks

	Nations Ford Road Southbound			Nations Ford Road Northbound			State 1127 Road Eastbound			
Start Time	Right	Thru	App. Total	Thru	Left	App. Total	Right	Left	App. Total	Int. Total
04:00 PM	0	49	49	50	0	50	0	0	0	99
04:15 PM	0	56	56	35	0	35	0	0	0	91
04:30 PM	0	55	55	65	0	65	0	0	0	120
04:45 PM	0	47	47	43	0	43	0	0	0	90
Total	0	207	207	193	0	193	0	0	0	400
05:00 PM	0	77	77	41	0	41	0	0	0	118
05:15 PM	0	67	67	43	0	43	0	0	0	110
05:30 PM	0	41	41	39	0	39	0	0	0	80
05:45 PM	0	48	48	41	0	41	0	0	0	89
Total	0	233	233	164	0	164	0	0	0	397
06:00 PM	0	49	49	35	0	35	0	0	0	84
06:15 PM	0	31	31	23	0	23	0	0	0	54
06:30 PM	0	26	26	24	0	24	0	0	0	50
06:45 PM	0	24	24	17	0	17	0	0	0	41
Total	0	130	130	99	0	99	0	0	0	229
Grand Total	0	570	570	456	0	456	0	0	0	1026
Apprch %	0	100		100	0		0	0		
Total %	0	55.6	55.6	44.4	0	44.4	0	0	0	
Cars +	0	570	570	453	0	453	0	0	0	1023
% Cars +	0	100	100	99.3	0	99.3	0	0	0	99.7
Trucks	0	0	0	3	0	3	0	0	0	3
% Trucks	0	0	0	0.7	0	0.7	0	0	0	0.3

TRAFFIC DATA COLLECTION

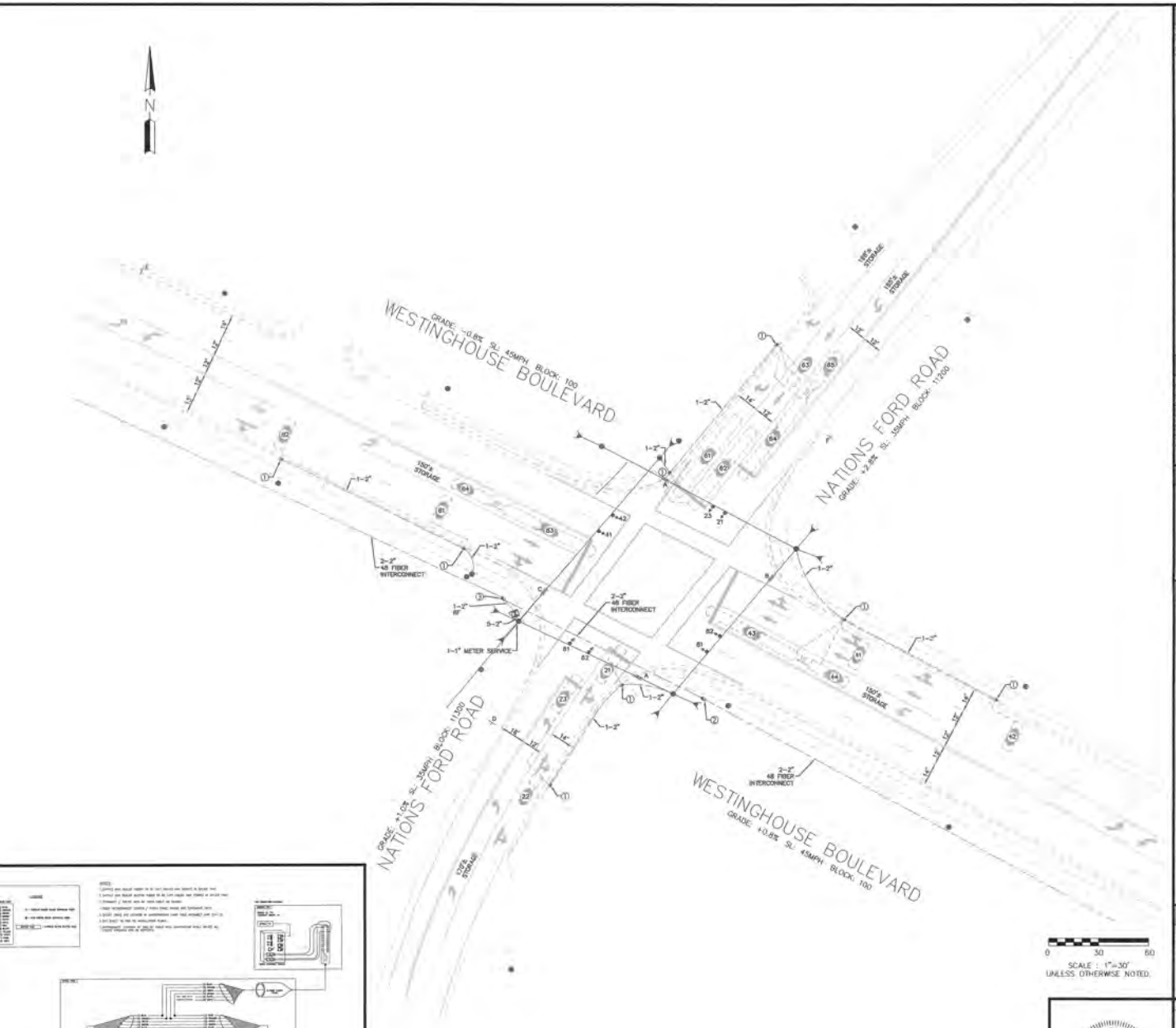
File Name : Pineville(Nations Ford and State 1127)PM Peak
Site Code :
Start Date : 2/25/2020
Page No : 2

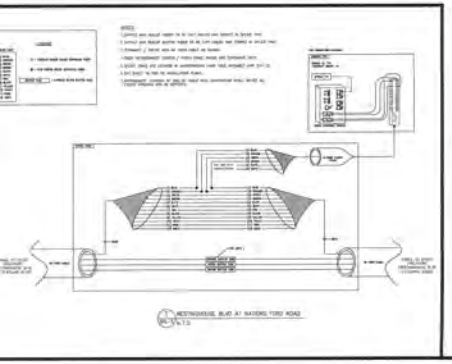
	Nations Ford Road Southbound			Nations Ford Road Northbound			State 1127 Road Eastbound			
Start Time	Right	Thru	App. Total	Thru	Left	App. Total	Right	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:30 PM										
04:30 PM	0	55	55	**65**	0	**65**	0	0	0	**120**
04:45 PM	0	47	47	43	0	43	0	0	0	90
05:00 PM	0	**77**	**77**	41	0	41	0	0	0	118
05:15 PM	0	67	67	43	0	43	0	0	0	110
Total Volume	0	246	246	192	0	192	0	0	0	438
% App. Total	0	100		100	0		0	0		
PHF	.000	.799	.799	.738	.000	.738	.000	.000	.000	.913



APPENDIX C

SIGNAL PLANS





SIGNAL PHASING

Ring Configuration: 2 Ring, 8 Phase, Actuated

CONTROLLER TYPE: EAGLE 2070

1	NOT USED	5	NOT USED
2		6	
3	NOT USED	7	NOT USED
4		8	
9		11	
10		12	

MIN RECALL — MIN RECALL

SIGNAL SEQUENCE

RING 1	PHASE 1		PHASE 2		PHASE 3		PHASE 4		FLASH
SIGNAL ID NUMBER	R/W	OTH	R/W	OTH	R/W	OTH	R/W	OTH	
21,22			G	Y					R
41,42							G	Y	Y

RING 2	PHASE 5		PHASE 6		PHASE 7		PHASE 8		FLASH
SIGNAL ID NUMBER	R/W	OTH	R/W	OTH	R/W	OTH	R/W	OTH	
61,62			G	Y					R
81,82							G	Y	Y

OVERLAP-PHASE

OVERLAP PHASE	OL-A/-+-		OL-B/-+-		OL-C/-+-		OL-D/-+-	
SIGNAL ID NUMBER	R/W	OTH	R/W	OTH	R/W	OTH	R/W	OTH

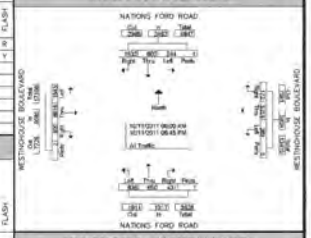
RED ARROW ◁ YELLOW ARROW

◀ GREEN ARROW ◁ FLASHING YELLOW ARROW

CLEARANCE INTERVALS

Phase	1	2	3	4	5	6	7	8
% Grade		1.0%		0.8%		2.8%		-0.8%
Distance		85		70		90		65
Approach Speed (mph)		35		45		35		45
Yellow		3.7		4.4		3.8		4.5
All Red		1.7		1.1		1.7		1.0
Total Clearance		5.4		5.5		5.3		5.5

TRAFFIC VOLUMES



DETECTOR INFORMATION

DETECTOR NUMBER	AMP NO.	SIZE / ZONE	#	AMP TYPE	DELAY (secs)	COMMENTS
21	1	6'x25'	2	N		STOP BAR
22	2	8'x6'	2	S		90' FROM STOP BAR
23	3	6'x25'	2	N		STOP BAR
41,42	4	6'x18'	4	N		85' AND 190' FROM STOP BAR
43	5	6'x60'	4	N		STOP BAR
44	6	6'x25'	4	N		65' FROM STOP BAR
61,62	7	6'x60'	6	N		STOP BAR
63	8	6'x6'	6	S		60' FROM STOP BAR
64	9	6'x60'	6	N		STOP BAR
65	10	6'x25'	6	N		65' FROM STOP BAR
81,82	11	6'x18'	8	N		85' AND 190' FROM STOP BAR
83	12	6'x25'	8	N		65' FROM STOP BAR
84	13	6'x60'	8	N		STOP BAR

NOTE:
ALL STOPBAR LOOPS EXTEND 5' BEYOND THE STOPBAR UNLESS OTHERWISE NOTED.
ALL LOOPS RECEIVE THREE TURNS.

PULLBOX ID

	SIZE	PULLBOX TYPE
1	13"x24"x12"	LOOP
2	17"x30"x24"	FIBER OPTIC
3	24"x36"x24"	CONTROLLER / FIBER
4	30"x48"x36"	CONTROLLER
5	24"x24"x12"	CONTROLLER
6	36"x36"x12"	CONTROLLER

NOTE:
PULLBOX MATERIAL MUST MEET OR EXCEED THE 1998 CDOT TRAFFIC SIGNAL SPECIFICATIONS.

SIGNAL HEAD ID

R
Y
G

21,22
41,42
61,82
81,82

SIGN ID

A — WESTINGHOUSE BLVD. 100

B — NATIONS FORD RD. 1200

C — NATIONS FORD RD. 1200

D — SPEED LIMIT 35 — R2-1-35, 24" x 30"

E — CENTER LANE ONLY — R3-9b, 24" x 36"

F — W11-1, 30" x 30"

LEGEND

PROPOSED	DESCRIPTION	EXISTING
	CONTROL BOX	
	METER PEDESTAL	
	PULL BOX	
	STEEL POLE	
	MAST ARM	
	PED PEDESTAL	
	UTILITY POLE	
	ANCHOR	
	SIGNAL HEAD	
	VIDEO CAMERA	
	OPTICOM	
	OBSERVATION CAM	
	DETECTOR	
	CONDUIT	
	INTERCONNECT	
	EDGE OF PVMT.	
	CURB & GUTTER	
	TUBULAR MARKER	
	GROUND SIGN	
	OVERHEAD SIGN	
	DOUBLE YELLOW	
	STOP BAR	
	WHITE SKIP	
	WHITE MINI	
	PAVEMENT ARROW	
	PROPERTY LINE	
	ROW	

PLAN NOTES

1. ALL PAVEMENT MARKING DIMENSIONS ARE APPROXIMATE.
2. SIGNAL WILL BE INSTALLED IN ACCORDANCE WITH THE MAY 1998 CDOT TRAFFIC SIGNAL SPECIFICATIONS AND THE PROJECT SPECIAL PROVISIONS.
3. PED SIGNALS WITH PUSHBUTTONS WILL BE LABELED "PB" (FOR EXAMPLE PB21, PB22)
4. COUNTDOWN PEDESTRIAN SIGNALS SHALL COUNT DOWN FLASHING DON'T WALK ONLY.

SEAL 029920

SIGNATURE — DATE

#	BY:	DATE:	REVISION:
1	RA	09/2006	LOOP #23
2	AEV	05/23/2011	STATE RECORD PLAN-TLB
3	PM	04/11/2016	ADDED CONDUITS/48F INTERCONNECT

CITY OF CHARLOTTE
DEPARTMENT OF TRANSPORTATION
600 E. 4Th ST. CHARLOTTE, NC 28202 704 336-4119 FAX: 704 336-4400

WESTINGHOUSE BOULEVARD AND NATIONS FORD ROAD

DESIGNED BY: MKC | DATE: 09/1996 | APPROVED BY: JRR | NCDOT# 10-1290 | UNIT ID: 23784 | SIGNAL ID: 00710

City of Charlotte, NC

ECONOLITE

MOVING TRAFFIC FORWARD

0710 - Nations Ford @ Westinghouse - Nations Ford @ Westinghouse - Econolite Type - Eos

Controller Timing Plan (MM) 2-1

Plan 1 - ""

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Direction	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
2-1-1	Minimum Green															
Delay Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Min Green	0	8	6	14	0	8	6	14	0	0	0	0	0	0	0	0
Bk Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CS Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Variable Initial															
Act B4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sec/Act	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Int	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2-1-2	Vehicle Passage															
Vehicle Ext	0.0	2.0	2.0	5.0	0.0	1.5	2.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vehicle Ext 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Volume Occupancy															
Time B4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cars Wt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
STPTDuc	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TTReduc	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Min Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2-1-3	Max Green Data															
Max1	0	35	20	80	0	40	20	80	0	0	0	0	0	0	0	0
Max2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Max3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Dynamic Max															
DYM Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dym Step	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2-1-4	Pedestrian															
Delay Walk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Clear	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Alternate															
Walk2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Clear 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pedestrian Carry Over															
Ped CO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Max Extension															
Walk Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Clear Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2-1-5	Clearance															

Yellow	3.0	3.7	3.2	4.4	3.0	3.6	3.1	4.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red Clear	0.0	1.7	2.0	1.1	0.0	1.7	2.2	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
	Max Extension															
Red Max	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Plan 1 - ""Continued

Phase Recall (MM) 2-1-6

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Lock Detector																
Vehicle Recall				X				X								
Ped Recall																
Max Recall																
Soft Recall																
No Rest																

Overlap (MM) 2-1-7

Phase	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Leading																
Adv. Green	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Adv. Ped	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay FYA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trailing																
Lag Green	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Phase Outputs (MM) 2-1-8

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Double Serve																
Dbl Serv Ph.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

City of Charlotte, NC

ECONOLITE

MOVING TRAFFIC FORWARD

0710 - Nations Ford @ Westinghouse - Nations Ford @ Westinghouse - Econolite Type - Eos

Controller Overlaps

Vehicle Overlaps (MM) 2-2

Overlap - B - Type - PPLT/FYA

Protected Phase (Left Turn):	3		
Permissive Phase (Opposing Thru):	4		
Flashing Arrow Output:	14	Flashing Arrow Output CH:	Isolate
Early FYA Enable:	Yes	Event Plan SF Bit Disable:	6
Inhibit with Ped:	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16		

Overlap - D - Type - PPLT/FYA

Protected Phase (Left Turn):	7		
Permissive Phase (Opposing Thru):	8		
Flashing Arrow Output:	16	Flashing Arrow Output CH:	Isolate
Early FYA Enable:	Yes	Event Plan SF Bit Disable:	8
Inhibit with Ped:	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16		

Vehicle / Pedestrian Overlaps (MM) 2-3

Included	Pedestrian Overlaps

Guaranteed Minimum Time Data (MM) 2-4

Phase	Min Green	Walk	Ped Clear	Yellow	Red Clear	Overlap Green
A01	0	0	0	3.0	0.0	0
B02	0	0	0	3.0	0.0	0
C03	0	0	0	3.0	0.0	0
D04	0	0	0	3.0	0.0	0
E05	0	0	0	3.0	0.0	0
F06	0	0	0	3.0	0.0	0
G07	0	0	0	3.0	0.0	0
H08	0	0	0	3.0	0.0	0
I09	0	0	0	0.0	0.0	0
J10	0	0	0	0.0	0.0	0
K11	0	0	0	0.0	0.0	0
L12	0	0	0	0.0	0.0	0
M13	0	0	0	0.0	0.0	0
N14	0	0	0	0.0	0.0	0

O15	0	0	0	0.0	0.0	0
P16	0	0	0	0.0	0.0	0

City of Charlotte, NC

ECONOLITE

MOVING TRAFFIC FORWARD

0710 - Nations Ford @ Westinghouse - Nations Ford @ Westinghouse - Econolite Type - Eos

Controller Options

Controller Options (MM) 2-6

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Phases In Use		X	X	X		X	X	X								
Dual Entry		X		X		X		X								
Simultaneous Gap		X		X		X		X								
Backup Protect																
Backup Call																
Passage After Init																
Guaranteed Passage																
Cond Service From																
Cond Service To																
Non-Actuated I																
Non-Actuated II																
Pre-Timed																
Exclusive Ped																
Rest In Walk																
Ped Re-Service																
Flashing Walk																
Ped Clear Thru Yellow																
Ped Clear Thru Red																
Flash Green	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Ped Omit																

Unit Red Revert: 2.0
Ped Clear Protect: Off
MUTCD 3 Seconds Don't Walk: No
Enable Pre-Timed Mode: No
Free Input Disables Pre-Timed: Yes

City of Charlotte, NC

ECONOLITE

MOVING TRAFFIC FORWARD

0710 - Nations Ford @ Westinghouse - Nations Ford @ Westinghouse - Econolite Type - Eos

Configuration Controller Sequence

Controller Sequence (MM) 2-7-1

Phase Ring Sequence.....(Note: Sequences identical to the prior one are not printed)

	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	B		B		B		B									
Sequence 1																
Ring 1	1	2	3	4	9	10	.	.	.	.	.	.	.	.	.	.
Ring 2	5	6	7	8	11	12	.	.	.	.	.	.	.	.	.	.
Sequence 2																
Ring 1	2	1	3	4	10	9	.	.	.	.	.	.	.	.	.	.
Ring 2	5	6	7	8	11	12	.	.	.	.	.	.	.	.	.	.
Sequence 3																
Ring 1	1	2	4	3	9	10	.	.	.	.	.	.	.	.	.	.
Ring 2	5	6	7	8	11	12	.	.	.	.	.	.	.	.	.	.
Sequence 4																
Ring 1	2	1	4	3	10	9	.	.	.	.	.	.	.	.	.	.
Ring 2	5	6	7	8	11	12	.	.	.	.	.	.	.	.	.	.
Sequence 5																
Ring 1	1	2	3	4	9	10	.	.	.	.	.	.	.	.	.	.
Ring 2	6	5	7	8	12	11	.	.	.	.	.	.	.	.	.	.
Sequence 6																
Ring 1	2	1	3	4	10	9	.	.	.	.	.	.	.	.	.	.
Ring 2	6	5	7	8	12	11	.	.	.	.	.	.	.	.	.	.
Sequence 7																
Ring 1	1	2	4	3	9	10	.	.	.	.	.	.	.	.	.	.
Ring 2	6	5	7	8	12	11	.	.	.	.	.	.	.	.	.	.
Sequence 8																
Ring 1	2	1	4	3	10	9	.	.	.	.	.	.	.	.	.	.
Ring 2	6	5	7	8	12	11	.	.	.	.	.	.	.	.	.	.
Sequence 9																
Ring 1	1	2	3	4	9	10	.	.	.	.	.	.	.	.	.	.
Ring 2	5	6	8	7	11	12	.	.	.	.	.	.	.	.	.	.
Sequence 10																
Ring 1	2	1	3	4	10	9	.	.	.	.	.	.	.	.	.	.
Ring 2	5	6	8	7	11	12	.	.	.	.	.	.	.	.	.	.
Sequence 11																
Ring 1	1	2	4	3	9	10	.	.	.	.	.	.	.	.	.	.
Ring 2	5	6	8	7	11	12	.	.	.	.	.	.	.	.	.	.
Sequence 12																
Ring 1	2	1	4	3	10	9	.	.	.	.	.	.	.	.	.	.
Ring 2	5	6	8	7	11	12	.	.	.	.	.	.	.	.	.	.
Sequence 13																
Ring 1	1	2	3	4	9	10	.	.	.	.	.	.	.	.	.	.
Ring 2	6	5	8	7	12	11	.	.	.	.	.	.	.	.	.	.
Sequence 14																

Ring 1	2	1	3	4	10	9	.	.	.	.	.	.	.	.	.	.
Ring 2	6	5	8	7	12	11	.	.	.	.	.	.	.	.	.	.
Sequence 15																
Ring 1	1	2	4	3	9	10	.	.	.	.	.	.	.	.	.	.
Ring 2	6	5	8	7	12	11	.	.	.	.	.	.	.	.	.	.
Sequence 16																
Ring 1	2	1	4	3	10	9	.	.	.	.	.	.	.	.	.	.
Ring 2	6	5	8	7	12	11	.	.	.	.	.	.	.	.	.	.

Phase	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
No Serve																

Independent Ring Group: No
Hardware Alternate Sequence Enable: No

Backup Prevent (MM) 2-7-2

City of Charlotte, NC

ECONOLITE

MOVING TRAFFIC FORWARD

0710 - Nations Ford @ Westinghouse - Nations Ford @ Westinghouse - Econolite Type - Eos

Time Base Event Plan
Event Plan (MM) 5-2

Event Plan - 1 - "1" - Event Type: "Coord"

Cycle Length: 100 Offset Value: 94s Actuated Coord: No Splits In: Seconds Offsets In: Seconds

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Description	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Split	0	35	15	50	0	35	15	50	0	0	0	0	0	0	0	0

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Coord Phase				X				X								
Fixed Force Off																
Adaptive Split																
Veh Ext 2																
Vehicle Recall																
Walk 2																
Pedestrian Recall																
Max Recall																
Max 2																
Max 3																
CS Inhibit																
Omit Phase									X	X	X	X	X	X	X	X

Dwell/Add Time: 0
Timing Plan: 1
Sequence: 1
Actuated Walk Rest: No
Phase Reservice: No
Max Select: MAXINH
Max Transition: 0
Ring Group Offset Disp: 0

Ring	1	2	3	4
Ring Split Ext	0	0	0	0
Split Sum	100s	100s	0s	0s

Veh Perm 1: 0 Veh Perm 2 Disp: 0
Veh Perm 2: 0

SCP Strategy Plan: 0
SCP Detector Plan: 0
Override Sys: No
Det Log:

Veh Detector Plan: 1
Veh Det Diag Plan: 0
Ped Det Diag Plan: 0
None

Outputs	1	2	3	4	5	6	7	8
Coord Patt Spec Func Outputs								
Spec Func (1-8)								
Aux Func (1-3)								

Statement	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
LP 1-25	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 26-50	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 51-75	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 76-100	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

Event Plan - 2 - "2" - Event Type: "Coord"

Cycle Length: 120 Offset Value: 106s Actuated Coord: No Splits In: Seconds Offsets In: Seconds

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Description	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Split	0	40	28	52	0	40	18	62	0	0	0	0	0	0	0	0

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Coord Phase				X				X								
Fixed Force Off																
Adaptive Split																
Veh Ext 2																
Vehicle Recall																
Walk 2																
Pedestrian Recall																
Max Recall																
Max 2																
Max 3																
CS Inhibit																
Omit Phase									X	X	X	X	X	X	X	X

Dwell/Add Time: 0
Timing Plan: 1
Sequence: 1
Actuated Walk Rest: No
Phase Reservice: No
Max Select: MAXINH
Max Transition: 0
Ring Group Offset Disp: 0

Ring	1	2	3	4
Ring Split Ext	0	0	0	0
Split Sum	120s	120s	0s	0s

Veh Perm 1: 0 Veh Perm 2 Disp: 0
Veh Perm 2: 0

SCP Strategy Plan: 0
SCP Detector Plan: 0
Override Sys: No
Det Log:

Veh Detector Plan: 1
Veh Det Diag Plan: 0
Ped Det Diag Plan: 0
None

Outputs	1	2	3	4	5	6	7	8
Coord Patt Spec Func Outputs								
Spec Func (1-8)								
Aux Func (1-3)								

Statement	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
LP 1-25	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 26-50	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 51-75	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 76-100	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

Event Plan - 3 - "3" - Event Type: "Coord"

Cycle Length: 130 Offset Value: 2s Actuated Coord: No Splits In: Seconds Offsets In: Seconds

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Description	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Split	0	35	22	73	0	35	15	80	0	0	0	0	0	0	0	0

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Coord Phase				X				X								
Fixed Force Off																
Adaptive Split																

Dwell/Add Time: 0
Timing Plan: 1
Sequence: 1
No

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Veh Ext 2																
Vehicle Recall																
Walk 2																
Pedestrian Recall																
Max Recall																
Max 2																
Max 3																
CS Inhibit																
Omit Phase									X	X	X	X	X	X	X	X

Actuated Walk Rest:

Phase Reservice: No

Max Select: MAXINH

Max Transition: 0

Ring Group Offset Disp: 0

Ring	1	2	3	4
Ring Split Ext	0	0	0	0
Split Sum	130s	130s	0s	0s

Veh Perm 1: 0

Veh Perm 2 Disp: 0

Veh Perm 2: 0

SCP Strategy Plan: 0

SCP Detector Plan: 0

Override Sys: No

Det Log:

Veh Detector Plan: 1

Veh Det Diag Plan: 0

Ped Det Diag Plan: 0

None

Outputs	1	2	3	4	5	6	7	8
Coord Patt Spec Func Outputs								
Spec Func (1-8)								
Aux Func (1-3)								

Statement	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
LP 1-25	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 26-50	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 51-75	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 76-100	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

Event Plan - 100 - "100" - Event Type: "Free"

Timing Plan:	1	Veh Detector Plan:	1
Sequence:	1	Veh Det Diag Plan:	0
SCP Strategy Plan:	0	Ped Det Diag Plan:	0
	Det Log:	None	
Override Sys:	No	Red Rest:	No

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Ped Recall																
Walk 2																
Veh Ext 2																
Veh Recall																
Max Recall																
Max 2																
Max 3																
CS Inhibit																
Omit																
Spec Func (1-8)																
Aux Func (1-3)																

Statement	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
LP 1-25	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 26-50	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 51-75	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 76-100	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

City of Charlotte, NC

ECONOLITE

MOVING TRAFFIC FORWARD

0710 - Nations Ford @ Westinghouse - Nations Ford @ Westinghouse - Econolite Type - Eos

Time Base Day Plan/Schedule
Day Plan (MM) 5-3

Day Plan #1 - "1"

Event	Event Plan	Start Time
1	100	00:00
2	2	06:30
3	1	09:00
4	1	11:30
5	3	15:30
6	1	18:30

Day Plan #2 - "2"

Event	Event Plan	Start Time
1	100	00:00
2	1	06:30
3	100	21:00

Schedule (MM) 5-4

Schedule Number - 1

Day Plan No.: 1

Month	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
	X	X	X	X	X	X	X	X	X	X	X	X

Day (DOW)	SUN	MON	TUE	WED	THU	FRI	SAT
		X	X	X	X	X	

Day (DOM)	1	2	3	4	5	6	7	8	9	10	11
	X	X	X	X	X	X	X	X	X	X	X
	12	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**
	X	X	X	X	X	X	X	X	X	X	X
	23	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**		
	X	X	X	X	X	X	X	X	X		

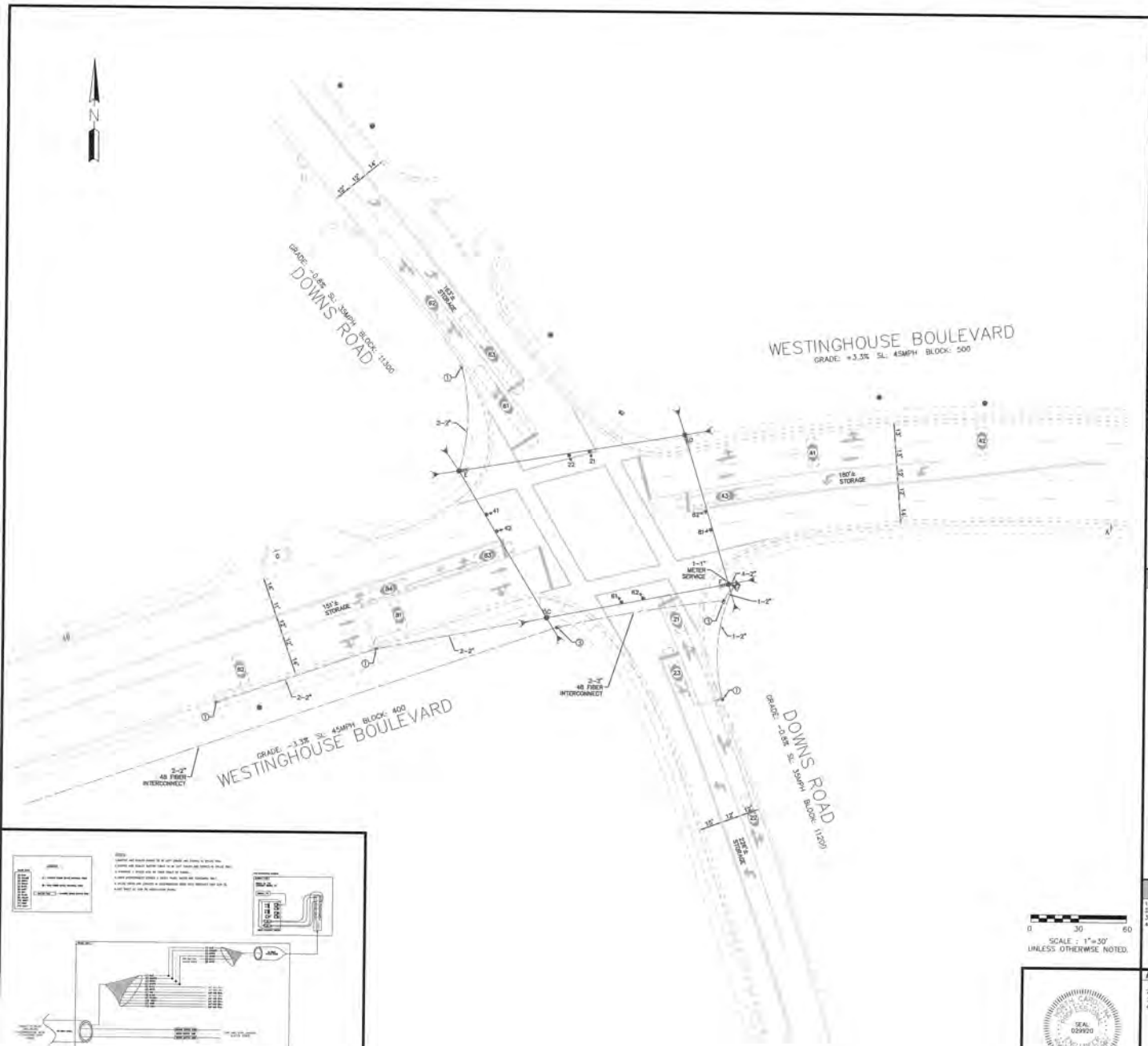
Schedule Number - 2

Day Plan No.: 2

Month	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
	X	X	X	X	X	X	X	X	X	X	X	X

Day (DOW)	SUN	MON	TUE	WED	THU	FRI	SAT
	X						X

Day (DOM)	1	2	3	4	5	6	7	8	9	10	11
	X	X	X	X	X	X	X	X	X	X	X
	12	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**
	X	X	X	X	X	X	X	X	X	X	X
	23	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**		
	X	X	X	X	X	X	X	X	X		



SIGNAL PHASING

Ring Configuration
CONTROLLER TYPE:
EAGLE 2070

1	NOT USED	5	NOT USED
2		6	
3	NOT USED	7	NOT USED
4	MIN RECALL	8	MIN RECALL
9		11	
10		12	

SIGNAL SEQUENCE

RING 1	PHASE 1		PHASE 2		PHASE 3		PHASE 4		FLASH
SIGNAL ID NUMBER	R/W	OTH	R/W	OTH	R/W	OTH	R/W	OTH	
21,22			G	Y					R
41,42							G	Y	Y

RING 2	PHASE 5		PHASE 6		PHASE 7		PHASE 8		FLASH
SIGNAL ID NUMBER	R/W	OTH	R/W	OTH	R/W	OTH	R/W	OTH	
61,62			G	Y					R
81,82							G	Y	Y

OVERLAP-PHASE

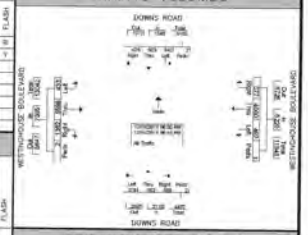
OVERLAP - PHASE	OL-A/--+--OL-B/--+--OL-C/--+--OL-D/--+--								
SIGNAL ID NUMBER	R/W	OTH	R/W	OTH	R/W	OTH	R/W	OTH	FLASH

RED ARROW YELLOW ARROW
GREEN ARROW FLASHING YELLOW ARROW

CLEARANCE INTERVALS

Phase	1	2	3	4	5	6	7	8
% Grade		-0.8%		3.3%		-0.8%		-3.3%
Distance		65		65		100		65
Approach Speed (mph)		35		45		35		45
Yellow		3.8		4.2		3.9		4.8
All Red		1.7		1.0		1.9		1.0
Total Clearance		5.5		5.2		5.8		5.8

TRAFFIC VOLUMES



PULLBOX ID

	SIZE	PULLBOX TYPE
1	13"x24"x12"	LOOP
2	17"x30"x24"	FIBER OPTIC
3	24"x36"x24"	CONTROLLER / FIBER
4	30"x48"x36"	CONTROLLER
5	24"x24"x12"	CONTROLLER
6	36"x36"x12"	CONTROLLER

NOTE:
PULLBOX MATERIAL MUST MEET OR EXCEED THE 1996 CDOT TRAFFIC SIGNAL SPECIFICATIONS.

DETECTOR INFORMATION

DETECTOR NUMBER	SIZE / ZONE	#	AMP TYPE	DELAY (SECONDS) #	COMMENTS:
21	1 6'x25'	2	N		STOP BAR
22	2 6'x6'	2	S		130' FROM STOP BAR
23	3 6'x25'	2	N		STOP BAR
	4	---	---		---
41,42	5 6'x18'	4	N		110' AND 220' FROM STOP BAR
43	6 6'x60'	4	N		STOP BAR
81	7 6'x60'	6	N		STOP BAR
82	8 6'x5'	6	S		90' FROM STOP BAR
83	9 6'x60'	6	N		STOP BAR
81,82	10 6'x18'	8	N		95' AND 200' FROM STOP BAR
83	11 6'x60'	8	N		STOP BAR
84	12 6'x25'	8	N		65' FROM STOP BAR

NOTE:
ALL STOPBAR LOOPS EXTEND 2' BEYOND THE STOPBAR UNLESS OTHERWISE NOTED.
ALL LOOPS RECEIVE THREE TURNS.

SIGNAL HEAD ID

R
Y
G

21,22
41,42
61,62
81,82

SIGN ID

A R2-1-45 24" x 30"
B R3-8b 24" x 36"
C R4-7 24" x 30"

DOWNS RD. 1096 C
DOWNS RD. 1095 D
WESTINGHOUSE BLVD. 400 E
WESTINGHOUSE BLVD. 500 F

LEGEND

PROPOSED	DESCRIPTION	EXISTING
	CONTROL BOX	
	METER PEDESTAL	
	PULL BOX	
	STEEL POLE	
	MAST ARM	
	PED PEDESTAL	
	UTILITY POLE	
	ANCHOR	
	SIGNAL HEAD	
	VIDEO CAMERA	
	OPTICOM	
	OBSERVATION CAM	
	DETECTOR	
	CONDUIT	
	INTERCONNECT	
	EDGE OF PVMT.	
	CURB & GUTTER	
P	TUBULAR MARKER	
	GROUND SIGN	
	OVERHEAD SIGN	
	DOUBLE YELLOW	
	STOP BAR	
	WHITE SKIP	
	WHITE MPM	
	PAVEMENT ARROW	
	PROPERTY LINE	
	ROW	

PLAN NOTES

1. ALL PAVEMENT MARKING DIMENSIONS ARE APPROXIMATE.
2. SIGNAL WILL BE INSTALLED IN ACCORDANCE WITH THE MAY 1996 CDOT TRAFFIC SIGNAL SPECIFICATIONS AND THE PROJECT SPECIAL PROVISIONS.
3. PED SIGNALS WITH PUSHBUTTONS WILL BE LABELED "PB" (FOR EXAMPLE P821, P822)
4. COUNTDOWN PEDESTRIAN SIGNALS SHALL COUNT DOWN FLASHING DON'T WALK ONLY.

SEAL 029920
SIGNATURE DATE

#	BY:	DATE:	REVISION:
1	MKC	06/1996	AS BUILT (ANA)
2	AEV	05/25/2011	STATE RECORD PLAN-TLB
3	RA	8/12	LOOPS 21,22,23
4	PM	04/11/2016	ADDED CONDUITS/48F INTERCONNECT

CITY OF CHARLOTTE
DEPARTMENT OF TRANSPORTATION
600 E. 4TH ST. CHARLOTTE, NC 28202 704 336-4119 FAX: 704 336-4400

WESTINGHOUSE BOULEBARD AND DOWNS ROAD

DESIGNED BY: MKC | DATE: 06/1996 | APPROVED BY: JRR | NCDOT# 10-1627 | UNIT ID: 23795 | SIGNAL ID: 00770

City of Charlotte, NC

ECONOLITE

MOVING TRAFFIC FORWARD

0770 - Westinghouse @ Downs - Westinghouse @ Downs - Econolite Type - Eos

Controller Timing Plan (MM) 2-1

Plan 1 - ""

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Direction	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
2-1-1	Minimum Green															
Delay Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Min Green	0	7	0	14	0	7	0	14	0	0	0	0	0	0	0	0
Bk Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CS Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Variable Initial															
Act B4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sec/Act	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Int	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2-1-2	Vehicle Passage															
Vehicle Ext	0.0	0.3	0.0	5.0	0.0	3.0	0.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vehicle Ext 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Volume Occupancy															
Time B4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cars Wt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
STPTDuc	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TTReduc	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Min Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2-1-3	Max Green Data															
Max1	0	35	0	40	0	35	0	40	0	0	0	0	0	0	0	0
Max2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Max3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Dynamic Max															
DYM Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dym Step	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2-1-4	Pedestrian															
Delay Walk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Clear	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Alternate															
Walk2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Clear 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pedestrian Carry Over															
Ped CO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Max Extension															
Walk Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Clear Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2-1-5	Clearance															

Yellow	3.0	3.9	3.0	4.8	3.0	3.9	3.0	4.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red Clear	0.0	1.9	0.0	1.0	0.0	1.9	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
	Max Extension															
Red Max	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Plan 1 - ""Continued

Phase Recall (MM) 2-1-6

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Lock Detector																
Vehicle Recall				X		X		X								
Ped Recall																
Max Recall		X														
Soft Recall																
No Rest																

Overlap (MM) 2-1-7

Phase	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Leading																
Adv. Green	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Adv. Ped	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay FYA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trailing																
Lag Green	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Phase Outputs (MM) 2-1-8

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Double Serve																
Dbl Serv Ph.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

City of Charlotte, NC

ECONOLITE

MOVING TRAFFIC FORWARD

0770 - Westinghouse @ Downs - Westinghouse @ Downs - Econolite Type - Eos

Controller Overlaps

Vehicle Overlaps (MM) 2-2

Vehicle / Pedestrian Overlaps (MM) 2-3

Included	Pedestrian Overlaps

Guaranteed Minimum Time Data (MM) 2-4

Phase	Min Green	Walk	Ped Clear	Yellow	Red Clear	Overlap Green
A01	0	0	0	3.0	0.0	0
B02	0	0	0	3.0	0.0	0
C03	0	0	0	3.0	0.0	0
D04	0	0	0	3.0	0.0	0
E05	0	0	0	3.0	0.0	0
F06	0	0	0	3.0	0.0	0
G07	0	0	0	3.0	0.0	0
H08	0	0	0	3.0	0.0	0
I09	0	0	0	0.0	0.0	0
J10	0	0	0	0.0	0.0	0
K11	0	0	0	0.0	0.0	0
L12	0	0	0	0.0	0.0	0
M13	0	0	0	0.0	0.0	0
N14	0	0	0	0.0	0.0	0
O15	0	0	0	0.0	0.0	0
P16	0	0	0	0.0	0.0	0

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Controller Options

Controller Options (MM) 2-6

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Phases In Use		X		X		X		X								
Dual Entry		X		X		X		X								
Simultaneous Gap		X		X		X		X								
Backup Protect																
Backup Call																
Passage After Init																
Guaranteed Passage																
Cond Service From																
Cond Service To																
Non-Actuated I																
Non-Actuated II																
Pre-Timed																
Exclusive Ped																
Rest In Walk																
Ped Re-Service																
Flashing Walk																
Ped Clear Thru Yellow																
Ped Clear Thru Red																
Flash Green	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Ped Omit																

Unit Red Revert: 2.0
Ped Clear Protect: Off
MUTCD 3 Seconds Don't Walk: No
Enable Pre-Timed Mode: No
Free Input Disables Pre-Timed: Yes

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ECONOLITE

MOVING TRAFFIC FORWARD

0770 - Westinghouse @ Downs - Westinghouse @ Downs - Econolite Type - Eos

Time Base Event Plan
Event Plan (MM) 5-2

Event Plan - 1 - "1" - Event Type: "Coord"

Cycle Length: 100 Offset Value: 73s Actuated Coord: No Splits In: Seconds Offsets In: Seconds

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Description	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Split	0	40	0	60	0	40	0	60	0	0	0	0	0	0	0	0

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Coord Phase				X				X								
Fixed Force Off																
Adaptive Split																
Veh Ext 2																
Vehicle Recall																
Walk 2																
Pedestrian Recall																
Max Recall																
Max 2																
Max 3																
CS Inhibit																
Omit Phase									X	X	X	X	X	X	X	X

Dwell/Add Time: 0
Timing Plan: 1
Sequence: 1
Actuated Walk Rest: No
Phase Reservice: No
Max Select: MAXINH
Max Transition: 0
Ring Group Offset Disp: 0

Ring	1	2	3	4
Ring Split Ext	0	0	0	0
Split Sum	100s	100s	0s	0s

Veh Perm 1: 0 Veh Perm 2 Disp: 0
Veh Perm 2: 0

SCP Strategy Plan: 0
SCP Detector Plan: 0
Override Sys: No
Det Log:

Veh Detector Plan: 1
Veh Det Diag Plan: 0
Ped Det Diag Plan: 0
None

Outputs	1	2	3	4	5	6	7	8
Coord Patt Spec Func Outputs								
Spec Func (1-8)								
Aux Func (1-3)								

Statement	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
LP 1-25	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 26-50	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 51-75	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 76-100	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

Event Plan - 2 - "2" - Event Type: "Coord"

Cycle Length: 120 Offset Value: 12s Actuated Coord: No Splits In: Seconds Offsets In: Seconds

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Description	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Split	0	40	0	80	0	40	0	80	0	0	0	0	0	0	0	0

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Coord Phase				X				X								
Fixed Force Off																
Adaptive Split																
Veh Ext 2																
Vehicle Recall																
Walk 2																
Pedestrian Recall																
Max Recall																
Max 2																
Max 3																
CS Inhibit																
Omit Phase									X	X	X	X	X	X	X	X

Dwell/Add Time: 0
Timing Plan: 1
Sequence: 1
Actuated Walk Rest: No
Phase Reservice: No
Max Select: MAXINH
Max Transition: 0
Ring Group Offset Disp: 0

Ring	1	2	3	4
Ring Split Ext	0	0	0	0
Split Sum	120s	120s	0s	0s

Veh Perm 1: 0 Veh Perm 2 Disp: 0
Veh Perm 2: 0

SCP Strategy Plan: 0
SCP Detector Plan: 0
Override Sys: No
Det Log:

Veh Detector Plan: 1
Veh Det Diag Plan: 0
Ped Det Diag Plan: 0
None

Outputs	1	2	3	4	5	6	7	8
Coord Patt Spec Func Outputs								
Spec Func (1-8)								
Aux Func (1-3)								

Statement	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
LP 1-25	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 26-50	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 51-75	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 76-100	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

Event Plan - 3 - "3" - Event Type: "Coord"

Cycle Length: 130 Offset Value: 21s Actuated Coord: No Splits In: Seconds Offsets In: Seconds

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Description	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Split	0	45	0	85	0	45	0	85	0	0	0	0	0	0	0	0

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Coord Phase				X				X								
Fixed Force Off																
Adaptive Split																

Dwell/Add Time: 0
Timing Plan: 1
Sequence: 1
No

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Veh Ext 2																
Vehicle Recall																
Walk 2																
Pedestrian Recall																
Max Recall																
Max 2																
Max 3																
CS Inhibit																
Omit Phase									X	X	X	X	X	X	X	X

Actuated Walk Rest:

Phase Reservice: No

Max Select: MAXINH

Max Transition: 0

Ring Group Offset Disp: 0

Ring	1	2	3	4
Ring Split Ext	0	0	0	0
Split Sum	130s	130s	0s	0s

Veh Perm 1: 0

Veh Perm 2 Disp: 0

Veh Perm 2: 0

SCP Strategy Plan: 0

SCP Detector Plan: 0

Override Sys: No

Det Log:

Veh Detector Plan: 1

Veh Det Diag Plan: 0

Ped Det Diag Plan: 0

None

Outputs	1	2	3	4	5	6	7	8
Coord Patt Spec Func Outputs								
Spec Func (1-8)								
Aux Func (1-3)								

Statement	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
LP 1-25	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 26-50	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 51-75	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 76-100	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

Event Plan - 100 - "100" - Event Type: "Free"

Timing Plan:	1	Veh Detector Plan:	1
Sequence:	1	Veh Det Diag Plan:	0
SCP Strategy Plan:	0	Ped Det Diag Plan:	0
	Det Log:	None	
Override Sys:	No	Red Rest:	No

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Ped Recall																
Walk 2																
Veh Ext 2																
Veh Recall																
Max Recall																
Max 2																
Max 3																
CS Inhibit																
Omit																
Spec Func (1-8)																
Aux Func (1-3)																

Statement	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
LP 1-25	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 26-50	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 51-75	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 76-100	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

City of Charlotte, NC

ECONOLITE

MOVING TRAFFIC FORWARD

0770 - Westinghouse @ Downs - Westinghouse @ Downs - Econolite Type - Eos

Time Base Day Plan/Schedule
Day Plan (MM) 5-3

Day Plan #1 - "1"

Event	Event Plan	Start Time
1	100	00:00
2	2	06:30
3	1	09:00
4	1	11:30
5	3	15:30
6	1	18:30

Day Plan #2 - "2"

Event	Event Plan	Start Time
1	100	00:00
2	1	06:30
3	100	21:00

Schedule (MM) 5-4

Schedule Number - 1

Day Plan No.: 1

Month	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
	X	X	X	X	X	X	X	X	X	X	X	X

Day (DOW)	SUN	MON	TUE	WED	THU	FRI	SAT
		X	X	X	X	X	

Day (DOM)	1	2	3	4	5	6	7	8	9	10	11
	X	X	X	X	X	X	X	X	X	X	X
	12	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**
	X	X	X	X	X	X	X	X	X	X	X
	23	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**		
	X	X	X	X	X	X	X	X	X		

Schedule Number - 2

Day Plan No.: 2

Month	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
	X	X	X	X	X	X	X	X	X	X	X	X

Day (DOW)	SUN	MON	TUE	WED	THU	FRI	SAT
	X						X

Day (DOM)	1	2	3	4	5	6	7	8	9	10	11
	X	X	X	X	X	X	X	X	X	X	X
	12	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**
	X	X	X	X	X	X	X	X	X	X	X
	23	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**		
	X	X	X	X	X	X	X	X	X		

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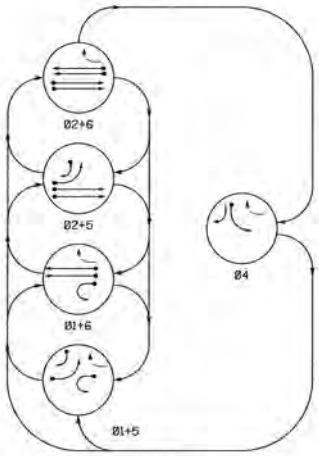
PROJECT REFERENCE NO.	SHEET NO.
U-3447	SIG. 5

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø1+5	Ø1+6	Ø2+5	Ø2+6	Ø4	FLASH
11	—	—	R	R	R	R
21, 22	R	R	G	G	R	Y
41	R	R	R	R	G	R
42	R/G	R	R/G	R	G	R
51	—	R	—	R	R	R
61, 62	R	G	R	G	R	Y

SIGNAL FACE I.D.

Denotes L.E.D.

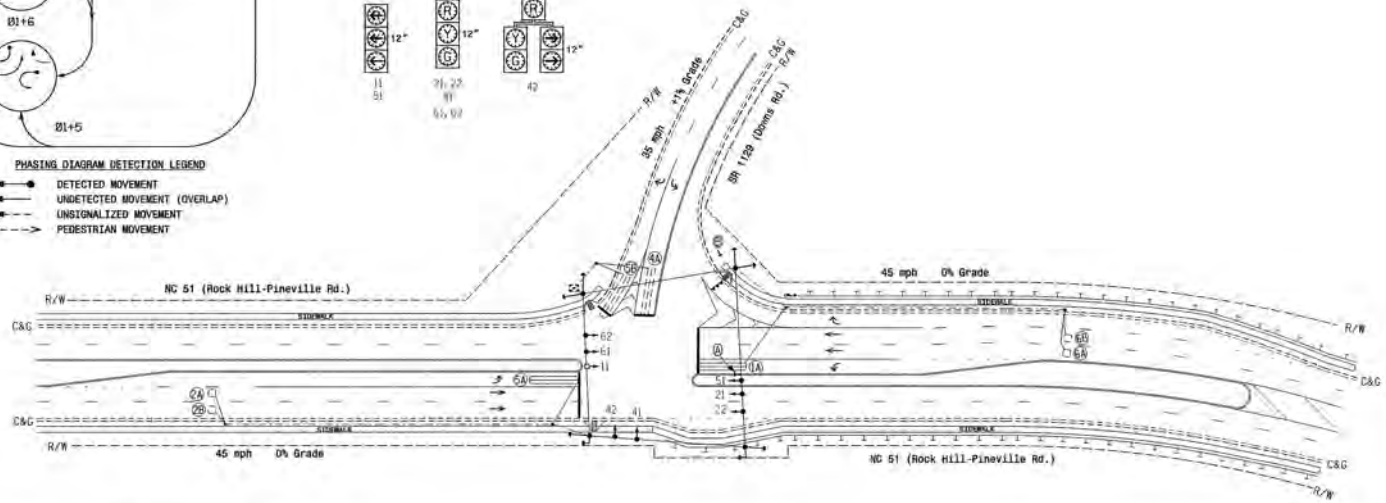
2070L LOOP & DETECTOR INSTALLATION

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
1A	6X40	0	2-4-2	Y	1	Y	Y	-	-	-	-	Y
2A	6X6	300	5	Y	2	Y	Y	-	-	-	-	Y
2B	6X6	300	5	-	2	Y	Y	-	-	-	-	-
4A	6X40	0	2-4-2	-	4	Y	Y	-	-	3	-	-
5A	6X40	0	2-4-2	Y	5	Y	Y	-	-	-	-	Y
5B	6X40	0	2-4-2	-	5	Y	Y	-	-	15	-	-
6A	6X6	300	5	Y	6	Y	Y	-	-	-	-	-
6B	6X6	300	5	-	6	Y	Y	-	-	-	-	-

5 Phase Fully Actuated (Isolated)

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 or phase 5 may be lagged.
4. Reposition existing signal heads numbered 21, 22, 51, 61, and 62.
5. Set all detector units to presence mode.



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	
Ⓐ	"U-Turn Yield to Right Turn" Sign (R10-16)	Ⓐ
Ⓑ	"YIELD" Sign (R1-2)	Ⓑ

2070L TIMING CHART

FEATURE	PHASE 1	2	4	5	6
Min Green 1 *	7	12	7	7	12
Extension 1 *	2.0	6.0	2.0	2.0	6.0
Max Green 1 *	20	90	20	20	90
Yellow Clearance	3.0	4.5	3.0	3.0	4.5
Red Clearance	2.9	1.5	2.6	2.8	1.3
Walk 1 *	-	-	-	-	-
Don't Walk 1	-	-	-	-	-
Seconds Per Actuation *	-	1.5	-	-	1.5
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	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.

New Installation- Final Design

Prepared in the Office of: STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

1591 M. Crosstrails Blvd., Clemmons, NC 27012

SCALE 1"=50' (0 – 50)

NC 51 (Rock Hill-Pineville Rd.) at SR 1129 (Downs Rd.)

Division 10 Mecklenburg County Pineville

PLAN DATE:	June 2007	REVIEWED BY:	T. Thigpen
PREPARED BY:	C. E. Pierce	REVIEWED BY:	

REVISIONS	INIT.	DATE

SEAL: NORTH CAROLINA PROFESSIONAL SEAL 24393 ENGINEER TIMOTHY J. WILLIAMS

SIGNATURE: T. Williams DATE: 6/29/07

ENG. INVENTORY NO. 10-1879

APPENDIX D

APPROVED DEVELOPMENT DATA

TRAFFIC IMPACT STUDY

FOR THE

Downs Road Development

LOCATED
IN
PINEVILLE, NORTH CAROLINA

Prepared For:
Beacon Partners
500 East Morehead Street, Suite 200
Charlotte, NC 28202

Prepared By:
Ramey Kemp & Associates, Inc.
8307 University Executive Park Drive, Suite 260
Charlotte, NC 28262
License #C-0910

November 2018
RKA Project #18348

RAMEY KEMP & ASSOCIATES

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 a 250,000 square feet of warehouse / light industrial. Table 2 presents a summary of the trip generation calculations for the proposed development.

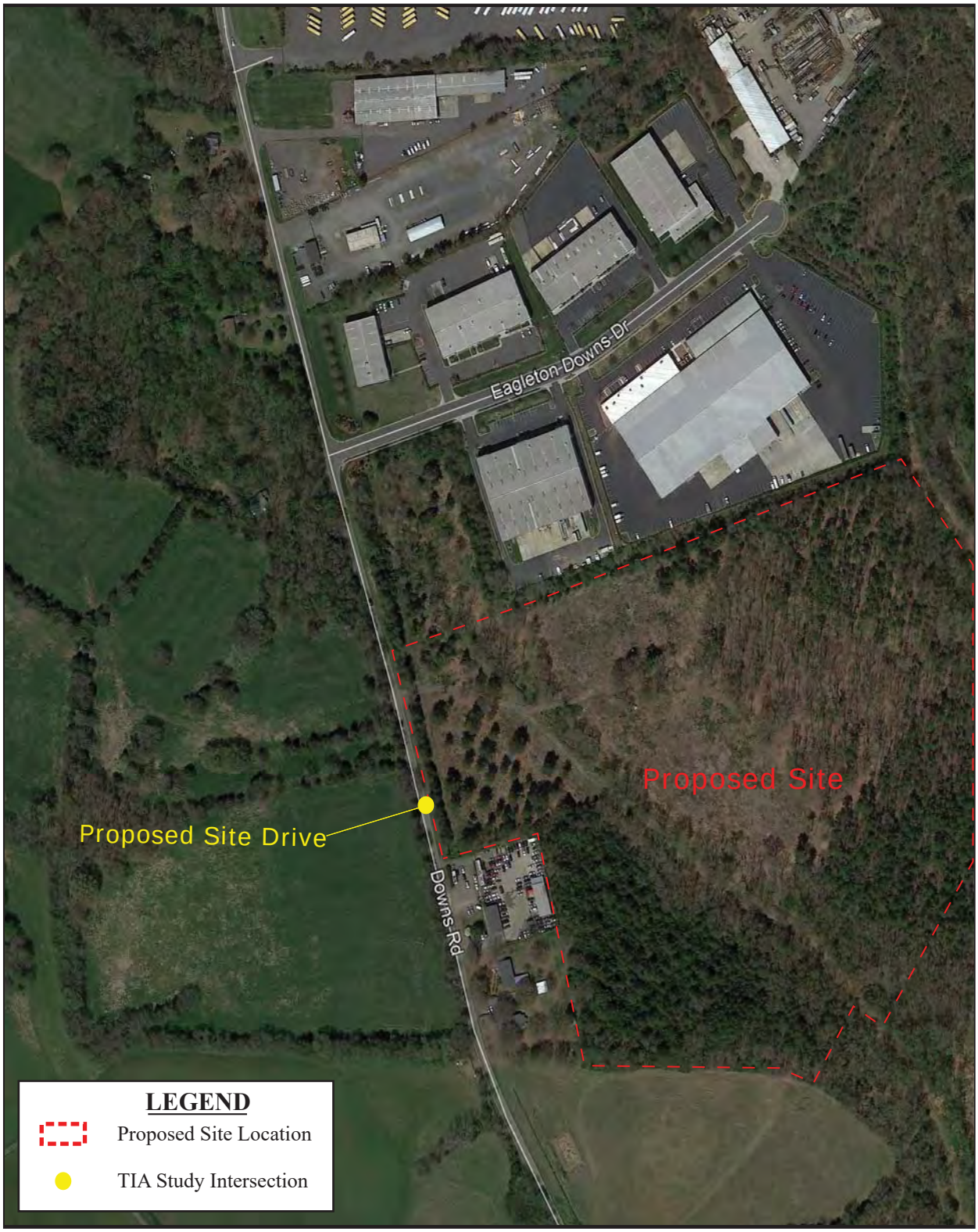
TABLE 2
PROPOSED SITE TRIP GENERATION

LAND USE	SIZE	DAILY TRIPS (VPD)	PEAK HOUR TRIPS (VPH)			
			AM		PM	
			ENTER	EXIT	ENTER	EXIT
General Light Industrial (LUC 150)	250 KSF	1,005	77	11	9	60

4.1.2. Trip Distribution and Assignment

Downs Road and Site Access A is shown in the Build scenario as a full movement unsignalized intersection. One egress and one ingress lane are provided at the site driveway.

Trip distribution percentages for the proposed site were determined based on existing traffic patterns, nearby land uses, location of employment centers, and engineering judgment. Figure 6 illustrates the trip distribution percentages for the site. These trip distribution percentages were applied to the peak hour trips in Table 2 to determine the trip assignment. Refer to Figure 7 for the site trip assignment. The site trip assignment was then added to the 2019 projected peak hour traffic volumes (Figure 5) to determine the 2019 Build peak hour traffic volumes illustrated in Figure 8.



RAMEY KEMP & ASSOCIATES
TRANSPORTATION ENGINEERS

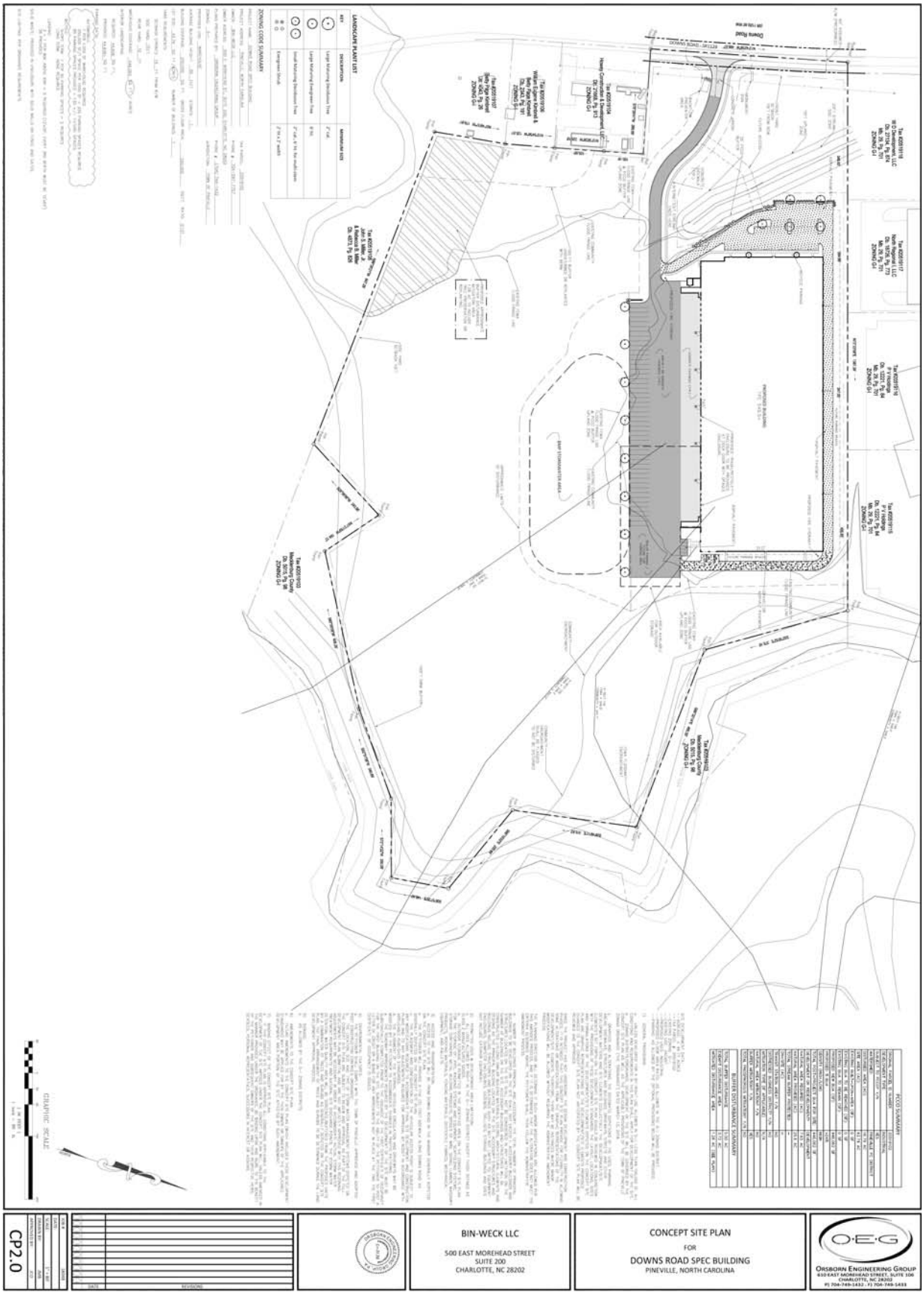
Downs Road Development

Pineville, NC

Site Location Map

Scale: Not to Scale

Figure 1



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TRANSPORTATION ENGINEERS

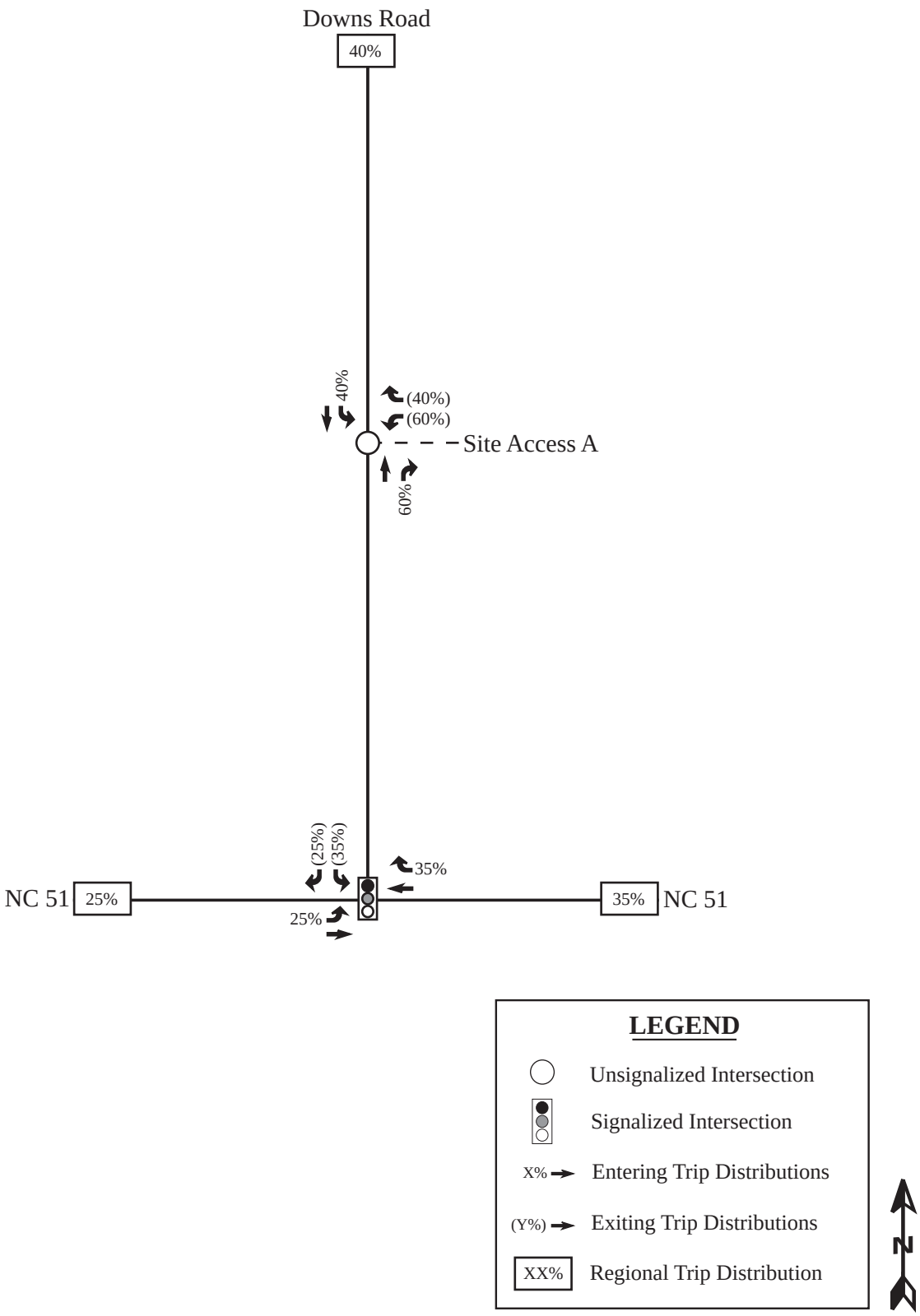
Downs Road Development

Pineville, NC

Preliminary Site Plan

Scale: Not to Scale

Figure 2



RAMEY KEMP & ASSOCIATES
TRANSPORTATION ENGINEERS

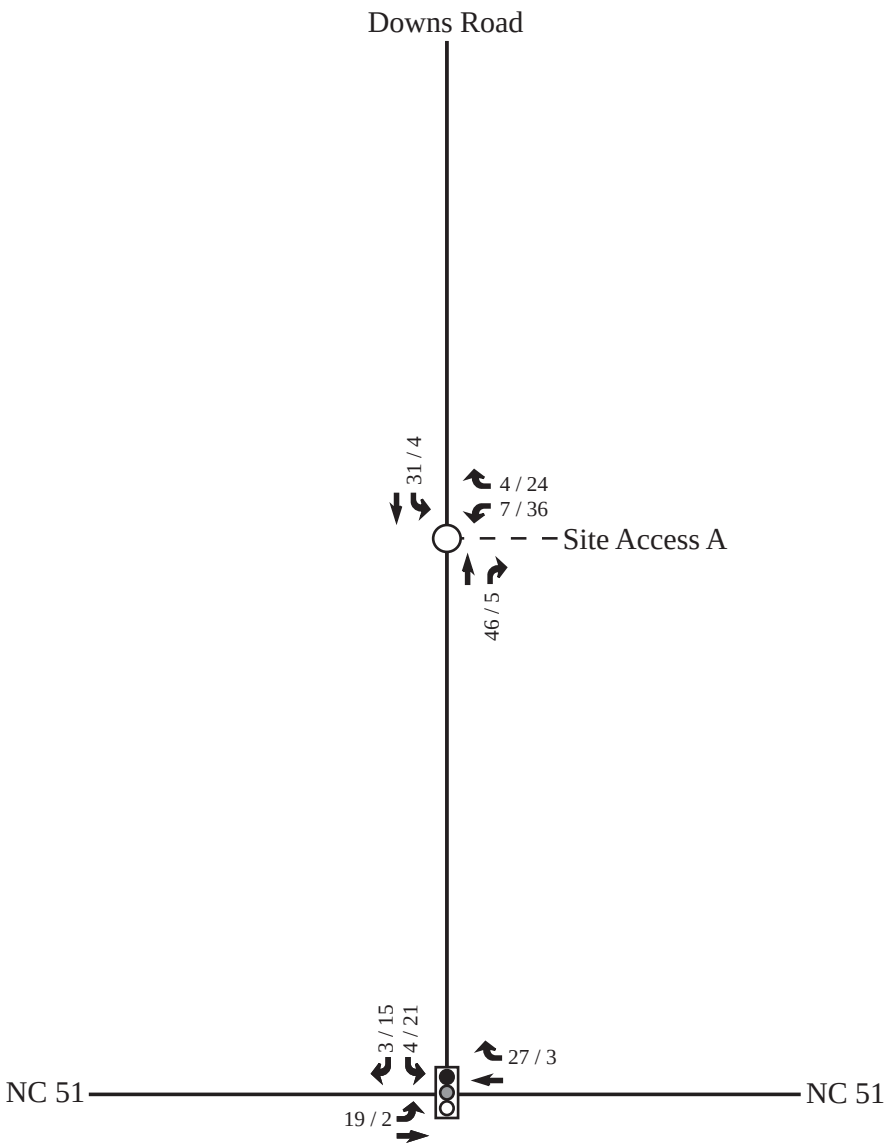
Downs Road Development

Pineville, NC

Proposed Site
Primary
Trip Distribution Percentages

Scale: Not to Scale

Figure 6



LEGEND

Unsignalized Intersection

Signalized Intersection

X / Y → AM / PM Peak Hour Traffic Volume

N

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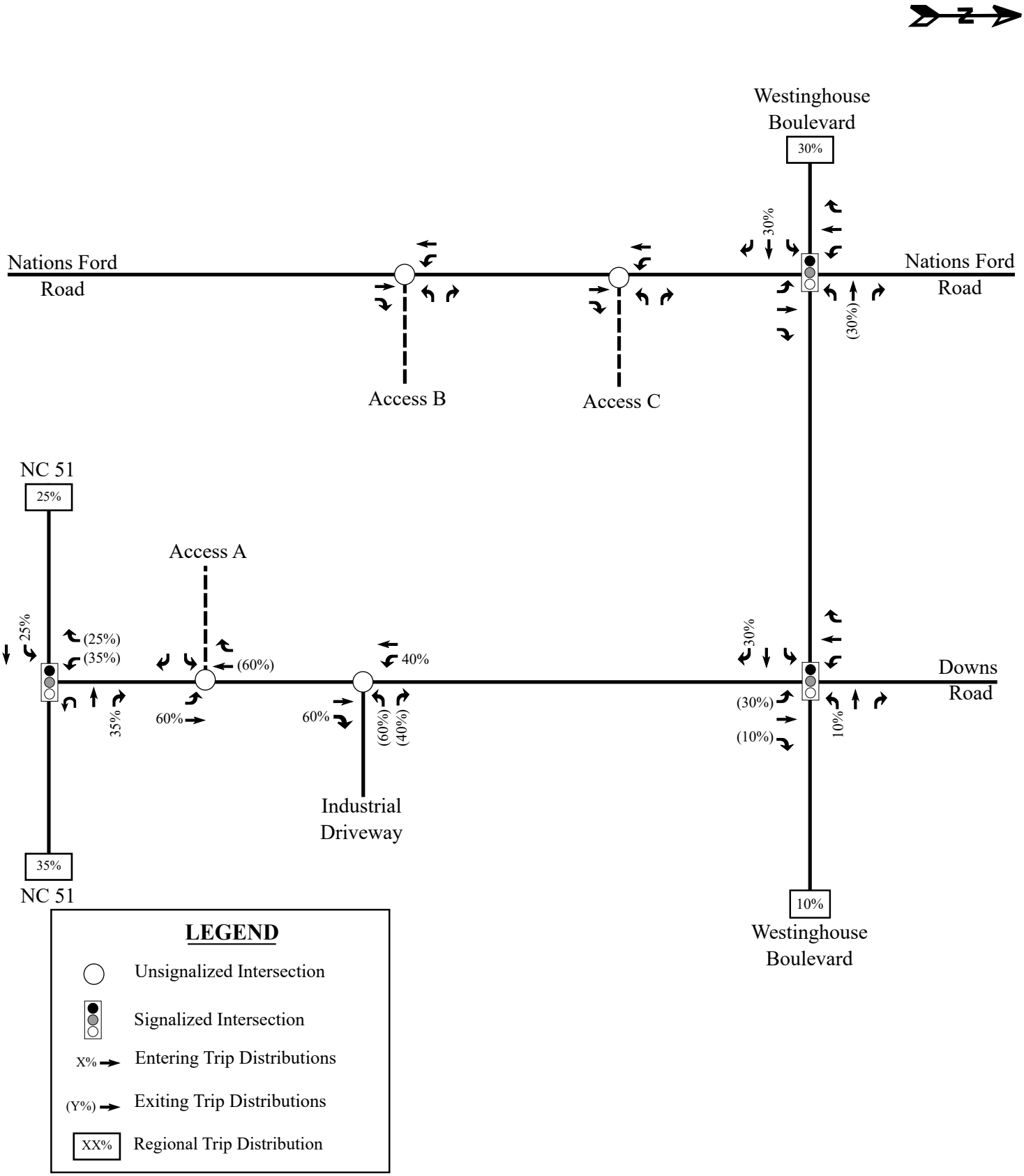
Downs Road Development

Pineville, NC

Proposed Site
Primary
Trip Assignment

Scale: Not to Scale

Figure 7



Moving forward.

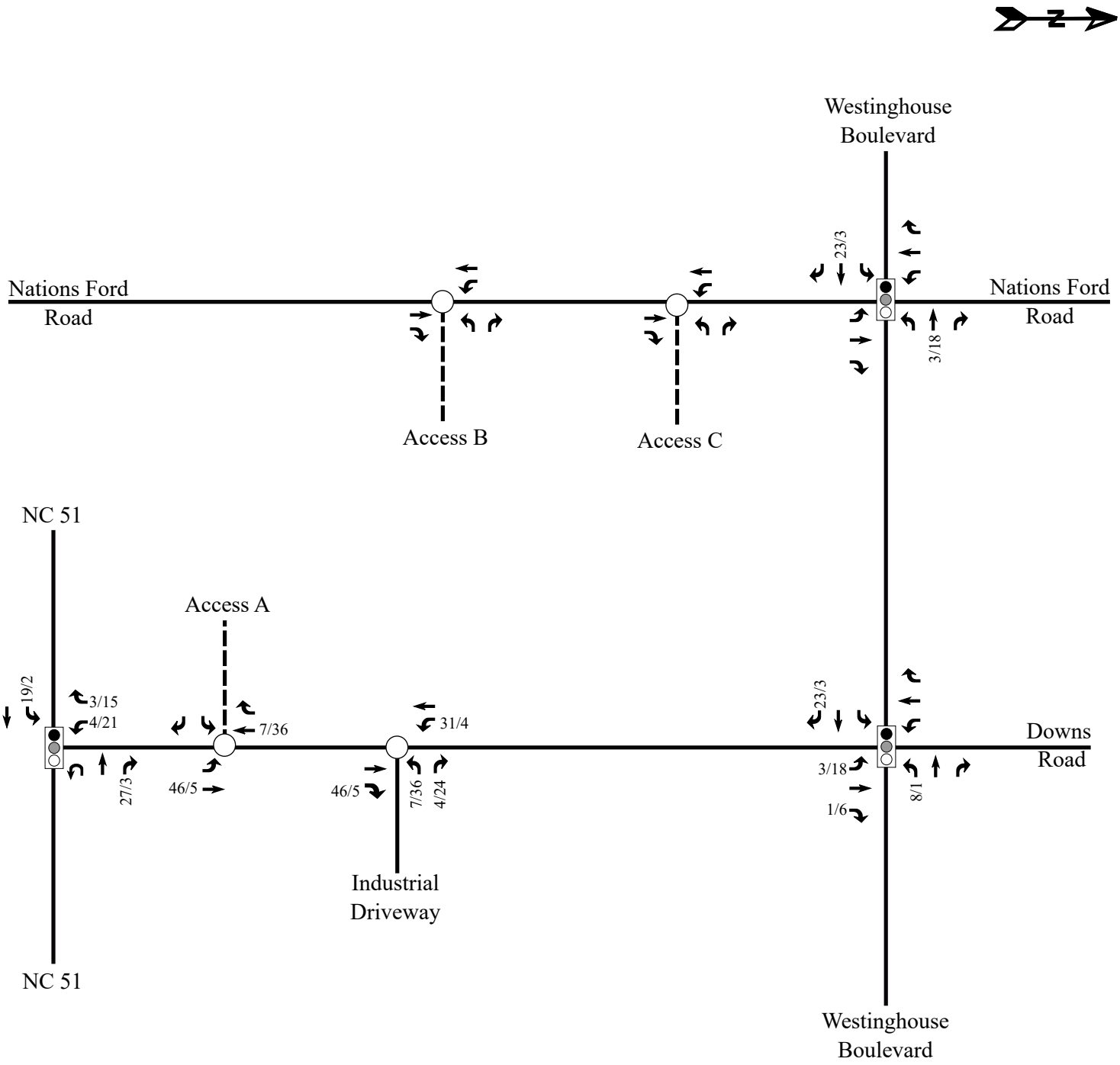
RAMEY KEMP ASSOCIATES

King's Grant
Pineville, NC

Downs Road Development
Trip Distribution Percentages

Scale: Not to Scale

Figure D01



LEGEND

Signalized Intersection

Unsignalized Intersection

X / Y → AM / PM Peak Hour Site Trips

Moving forward.

RKA

RAMEY KEMP ASSOCIATES

King's Grant
Pineville, NC

Downs Road Development
Trip Assignment

Scale: Not to Scale

Figure D02

APPENDIX E

METROLINA TRAFFIC COUNTS
AND
TRIP GENERATION

Existing Metrolina Phase 1 Site Trips (based on traffic counts)

Driveway Location	Existing Occupied Square Footage	AM Peak Hour			PM Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total
Old Statesville Rd and Gibbon Rd	1,215,000	76	29	105	37	58	95
Statesville Rd and Sunbelt Rentals		10	2	12	1	32	33
Total		86	31	117	38	90	128

Proposed King's Grant Site Trips (based on Existing Metrolina Phase 1 Site Trips)

	Proposed Square Footage	AM Peak Hour			PM Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total
Phase 1	2,500,000	177	64	241	78	185	263
Phase 2	1,000,000	71	26	96	31	74	105
	Total	**248**	**90**	**337**	**109**	**259**	**368**

Table 1 2023 Truck Percentages

Intersection	Movement	2023 Projected Traffic Volumes		2023 Projected Truck Percentages		2023 Projected Truck Volumes		Downs Rd Warehouse Trips		Downs Rd Warehouse Truck Volumes		2023 No-Build Truck Volumes		2023 No-Build Truck Percentages		Proposed Site Trips		Proposed Site Truck Volumes		2023 Build Phase 1 Truck Percentages	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1. Westinghouse Boulevard & Nations Ford Road	SB Right	119	302	10.1%	2.3%	12	7					12	7	10.1%	2.3%					10.1%	2.3%
	SB Through	64	114	6.9%	2.4%	4	3					4	3	6.9%	2.4%					6.9%	2.4%
	SB Left	12	35	2.0%	2.0%		1						1	2.0%	2.0%					2.0%	2.0%
	SBU																				
	WB Right	22	11	7.7%	3.7%	2						2		7.7%	3.7%					7.7%	3.7%
	WB Through	558	936	5.8%	2.0%	32	19	3	18	1	3	33	22	5.9%	2.3%	13	37	3	6	6.3%	2.8%
	WB Left	75	88	7.2%	2.0%	5	2					5	2	7.2%	2.0%					7.2%	2.0%
	WBU																				
	NB Right	76	54	3.2%	2.0%	2	1					2	1	3.2%	2.0%					3.2%	2.0%
	NB Through	232	87	2.7%	2.0%	6	2					6	2	2.7%	2.0%					2.7%	2.0%
	NB Left	94	75	9.3%	3.3%	9	2					9	2	9.3%	3.3%	19	56	5	9	12.4%	8.4%
	NBU																				
	EB Right	89	62	9.6%	2.0%	9	1					9	1	9.6%	2.0%	53	23	4	7	9.2%	9.4%
	EB Through	943	913	3.5%	2.0%	33	18	23	3	2	1	35	19	3.6%	2.1%	35	16	3	5	3.8%	2.6%
	EB Left	414	157	5.3%	4.3%	22	7					22	7	5.3%	4.3%					5.3%	4.3%
	EBU																				
1 Sync ID#																					
2. Westinghouse Boulevard & Downs Road	SB Right	32	106	2.0%	2.0%	1	2					1	2	2.0%	2.0%					2.0%	2.0%
	SB Through	37	177	2.7%	2.0%	1	4					1	4	2.7%	2.0%					2.7%	2.0%
	SB Left	36	97	3.2%	3.8%	1	4					1	4	3.2%	3.8%					3.2%	3.8%
	SBU																				
	WB Right	118	51	2.5%	2.0%	3	1					3	1	2.5%	2.0%					2.5%	2.0%
	WB Through	490	797	7.4%	2.5%	36	20					36	20	7.4%	2.5%					7.4%	2.5%
	WB Left	52	111	2.0%	2.0%	1	2	8	1	1		2	2	3.3%	2.0%	18	7	1	2	3.8%	3.4%
	WBU																				
	NB Right	120	73	2.5%	2.0%	3	1	1	6		1	3	2	2.5%	2.5%	6	19	1	3	3.1%	5.1%
	NB Through	196	65	2.0%	2.6%	4	2					4	2	2.0%	2.6%					2.0%	2.6%
	NB Left	140	132	4.0%	2.0%	6	3	3	18	1	3	7	6	4.9%	4.0%	13	37	3	6	6.4%	6.4%
	NBU																				
	EB Right	134	201	4.0%	2.0%	5	4	23	3	2	1	7	5	4.5%	2.5%	35	16	3	5	5.2%	4.5%
	EB Through	805	826	3.6%	2.0%	29	17					29	17	3.6%	2.0%					3.6%	2.0%
	EB Left	87	20	2.0%	2.0%	2						2		2.0%	2.0%					2.0%	2.0%
	EBU																				

Intersection	Movement	2023 Projected Traffic Volumes		2023 Projected Truck Percentages		2023 Projected Truck Volumes		Downs Rd Warehouse Trips		Downs Rd Warehouse Truck Volumes		2023 No-Build Truck Volumes		2023 No-Build Truck Percentages		Proposed Site Trips		Proposed Site Truck Volumes		2023 Build Phase 1 Truck Percentages	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
	SB Right	42	167	5.2%	2.0%	2	3	3	15	1	3	3	6	6.7%	3.3%	7	19	2	6	9.6%	6.0%
	SB Through																				
	SB Left	107	363	2.6%	2.0%	3	7	4	21	1	4	4	11	3.6%	2.9%	6	18	1	6	4.3%	4.2%
	SBU																				
	WB Right	316	94	2.0%	3.0%	6	3	27	3	2	1	8	4	2.3%	4.1%	18	8	1	3	2.5%	6.7%
	WB Through	558	742	2.0%	2.0%	11	15					11	15	2.0%	2.0%					2.0%	2.0%
	WB Left																				
4. NC 51 & Downs Road	WBU	1		2.0%	2.0%									2.0%	2.0%					2.0%	2.0%
	NB Right																				
	NB Through																				
	NB Left																				
	NBU																				
	EB Right																				
	EB Through	766	683	2.0%	2.0%	15	14					15	14	2.0%	2.0%					2.0%	2.0%
	EB Left	146	64	2.0%	3.3%	3	2	19	2	1	1	4	3	2.4%	4.5%	18	8	1	3	2.7%	8.1%
	EBU																				

Intersection	Movement	2023 Projected Traffic Volumes		2023 Projected Truck Percentages		2023 Projected Truck Volumes		Downs Rd Warehouse Trips		Downs Rd Warehouse Truck Volumes		2023 No-Build Truck Volumes		2023 No-Build Truck Percentages		Proposed Site Trips		Proposed Site Truck Volumes		2023 Build Phase 1 Truck Percentages	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Sync ID#																					
3. Downs Road & Access A	SB Right															53	23	4	7	7.5%	30.4%
	SB Through	225	471	3.6%	2.0%	8	9	7	36	2	6	10	15	4.3%	3.0%					4.3%	3.0%
	SB Left																				
	SBU																				
	WB Right																				
	WB Through																				
	WB Left																				
	WBU																				
	NB Right																				
	NB Through	434	232	2.7%	2.0%	12	5	46	5	3	2	15	7	3.1%	3.0%					3.1%	3.0%
	NB Left															36	16	3	5	8.3%	31.3%
	NBU																				
	EB Right															13	37	3	6	23.1%	16.2%
	EB Through																				
	EB Left															19	56	5	9	26.3%	16.1%
	EBU																				
Sync ID#																					
5. Nations Ford Road & Access B	SB Right																				
	SB Through	170	261	4.6%	2.0%	8	5					8	5	4.6%	2.0%					4.7%	1.9%
	SB Left															53	23	4	7	7.5%	30.4%
	SBU																				
	WB Right															19	56	5	9	26.3%	16.1%
	WB Through																				
	WB Left															13	36	3	6	23.1%	16.7%
	WBU																				
	NB Right															35	16	3	5	8.6%	31.3%
	NB Through	446	204	3.9%	2.0%	17	4					17	4	3.9%	2.0%					3.8%	2.0%
	NB Left																				
	NBU																				
	EB Right																				
	EB Through																				
	EB Left																				
	EBU																				

Table 2 2026 Truck Percentages

Intersection	Movement	2026 Projected Traffic Volumes		2026 Projected Truck Percentages		2026 Projected Truck Volumes		Downs Rd Warehouse Trips		Downs Rd Warehouse Truck Volumes		2026 No-Build Truck Volumes		2026 No-Build Truck Percentages		Proposed Site Trips		Proposed Site Truck Volumes		2026 Full Build Truck Percentages	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1. Westinghouse Boulevard & Nations Ford Road	SB Right	126	321	10.1%	2.3%	13	7					13	7	10.1%	2.3%					10.1%	2.3%
	SB Through	68	120	6.9%	2.4%	5	3					5	3	6.9%	2.4%					6.9%	2.4%
	SB Left	12	37	2.0%	2.0%		1						1	2.0%	2.0%					2.0%	2.0%
	SBU																				
	WB Right	24	11	7.7%	3.7%	2						2		7.7%	3.7%					7.7%	3.7%
	WB Through	592	993	5.8%	2.0%	34	20	3	18	1	3	35	23	5.9%	2.3%	18	52	4	9	6.4%	3.0%
	WB Left	80	93	7.2%	2.0%	6	2					6	2	7.2%	2.0%					7.2%	2.0%
	WBU																				
	NB Right	81	57	3.2%	2.0%	3	1					3	1	3.2%	2.0%					3.2%	2.0%
	NB Through	247	92	2.7%	2.0%	7	2					7	2	2.7%	2.0%					2.7%	2.0%
	NB Left	100	80	9.3%	3.3%	9	3					9	3	9.3%	3.3%	27	78	7	13	12.6%	10.1%
	NBU																				
	EB Right	95	65	9.6%	2.0%	9	1					9	1	9.6%	2.0%	75	33	6	10	8.8%	11.2%
	EB Through	1001	968	3.5%	2.0%	35	19	23	3	2	1	37	20	3.6%	2.1%	50	22	4	7	3.8%	2.7%
	EB Left	439	167	5.3%	4.3%	23	7					23	7	5.3%	4.3%					5.3%	4.3%
	EBU																				
1 Sync ID#																					
2. Westinghouse Boulevard & Downs Road	SB Right	34	113	2.0%	2.0%	1	2					1	2	2.0%	2.0%					2.0%	2.0%
	SB Through	39	188	2.7%	2.0%	1	4					1	4	2.7%	2.0%					2.7%	2.0%
	SB Left	38	102	3.2%	3.8%	1	4					1	4	3.2%	3.8%					3.2%	3.8%
	SBU																				
	WB Right	125	54	2.5%	2.0%	3	1					3	1	2.5%	2.0%					2.5%	2.0%
	WB Through	520	846	7.4%	2.5%	38	21					38	21	7.4%	2.5%					7.4%	2.5%
	WB Left	55	118	2.0%	2.0%	1	2	8	1	1		2	2	3.2%	2.0%	24	11	2	3	4.6%	3.8%
	WBU																				
	NB Right	127	78	2.5%	2.0%	3	2	1	6		1	3	3	2.3%	3.6%	9	26	2	4	3.6%	6.4%
	NB Through	208	69	2.0%	2.6%	4	2					4	2	2.0%	2.6%					2.0%	2.6%
	NB Left	149	140	4.0%	2.0%	6	3	3	18	1	3	7	6	4.6%	3.8%	18	52	4	9	6.5%	7.1%
	NBU																				
	EB Right	142	213	4.0%	2.0%	6	4	23	3	2	1	8	5	4.8%	2.3%	50	22	4	7	5.6%	5.0%
	EB Through	855	876	3.6%	2.0%	31	18					31	18	3.6%	2.0%					3.6%	2.0%
	EB Left	92	21	2.0%	2.0%	2						2		2.0%	2.0%					2.0%	2.0%
	EBU																				

Intersection	Movement	2026 Projected Traffic Volumes		2026 Projected Truck Percentages		2026 Projected Truck Volumes		Downs Rd Warehouse Trips		Downs Rd Warehouse Truck Volumes		2026 No-Build Truck Volumes		2026 No-Build Truck Percentages		Proposed Site Trips		Proposed Site Truck Volumes		2026 Full Build Truck Percentages	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
	SB Right	45	177	5.2%	2.0%	2	4	3	15	1	3	3	7	6.3%	3.6%	9	26	2	8	8.8%	6.9%
	SB Through																				
	SB Left	114	385	2.6%	2.0%	3	8	4	21	1	4	4	12	3.4%	3.0%	9	26	2	8	4.7%	4.6%
	SBU																				
	WB Right	336	100	2.0%	3.0%	7	3	27	3	2	1	9	4	2.5%	3.9%	25	11	2	3	2.8%	6.1%
	WB Through	592	787	2.0%	2.0%	12	16					12	16	2.0%	2.0%					2.0%	2.0%
	WB Left																				
4. NC 51 & Downs Road	WBU	1		2.0%	2.0%									2.0%	2.0%					2.0%	2.0%
	NB Right																				
	NB Through																				
	NB Left																				
	NBU																				
	EB Right																				
	EB Through	813	725	2.0%	2.0%	16	15					16	15	2.0%	2.0%					2.0%	2.0%
	EB Left	155	68	2.0%	3.3%	3	2	19	2	1	1	4	3	2.3%	4.3%	25	11	2	3	3.0%	7.4%
	EBU																				

Intersection	Movement	2026 Projected Traffic Volumes		2026 Projected Truck Percentages		2026 Projected Truck Volumes		Downs Rd Warehouse Trips		Downs Rd Warehouse Truck Volumes		2026 No-Build Truck Volumes		2026 No-Build Truck Percentages		Proposed Site Trips		Proposed Site Truck Volumes		2026 Full Build Truck Percentages	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
3. Downs Road & Access A	SB Right															74	33	5	10	6.8%	30.3%
	SB Through	239	500	3.6%	2.0%	9	10	7	36	2	6	11	16	4.5%	3.0%					4.5%	3.0%
	SB Left																				
	SBU																				
	WB Right																				
	WB Through																				
	WB Left																				
	WBU																				
	NB Right																				
	NB Through	461	247	2.7%	2.0%	12	5	46	5	3	2	15	7	3.0%	2.8%					3.0%	2.8%
	NB Left															50	22	4	7	8.0%	31.8%
	NBU																				
	EB Right															18	52	4	9	22.2%	17.3%
	EB Through																				
	EB Left															27	78	7	13	25.9%	16.7%
	EBU																				
Sync ID#																					
5. Nations Ford Road & Access B	SB Right																				
	SB Through	180	277	4.6%	2.0%	8	6					8	6	4.6%	2.0%	5	13		4	4.3%	3.4%
	SB Left															50	22	4	7	8.0%	31.8%
	SBU																				
	WB Right															18	52	4	9	22.2%	17.3%
	WB Through																				
	WB Left															13	38	3	6	23.1%	15.8%
	WBU																				
	NB Right															37	16	3	5	8.1%	31.3%
	NB Through	473	216	3.9%	2.0%	18	4					18	4	3.9%	2.0%	12	5	1	2	3.9%	2.7%
	NB Left																				
	NBU																				
	EB Right																				
	EB Through																				
	EB Left																				
	EBU																				
Sync ID#																					
6. Nations Ford Road & Site Access C	SB Right																				
	SB Through	180	277	4.6%	2.0%	8	6					8	6	4.6%	2.0%	50	22	4	7	5.2%	4.3%
	SB Left															25	11	2	3	8.0%	27.3%
	SBU																				
	WB Right															9	26	2	4	22.2%	15.4%
	WB Through																				
	WB Left															5	13	1	2	20.0%	15.4%
	WBU																				
	NB Right															12	5	1	2	8.3%	40.0%
	NB Through	473	216	3.9%	2.0%	18	4					18	4	3.9%	2.0%	18	52	1	16	3.9%	7.5%
	NB Left																				
	NBU																				
	EB Right																				
	EB Through																				
	EB Left																				
	EBU																				

TRAFFIC DATA COLLECTION

File Name : Charlotte(Statesville and Gibbon)AM Peak
Site Code :
Start Date : 9/19/2019
Page No : 1

Groups Printed- Cars + - Trucks

	Statesville Road Southbound			Gibbon Road Westbound			Statesville Road Northbound			
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	Int. Total
06:30 AM	92	4	96	5	4	9	14	144	158	263
06:45 AM	125	4	129	4	7	11	19	142	161	301
Total	217	8	225	9	11	20	33	286	319	564
07:00 AM	102	5	107	1	6	7	8	82	90	204
07:15 AM	121	10	131	3	4	7	9	86	95	233
07:30 AM	145	7	152	1	6	7	9	109	118	277
07:45 AM	129	13	142	3	4	7	10	112	122	271
Total	497	35	532	8	20	28	36	389	425	985
08:00 AM	127	5	132	3	5	8	13	110	123	263
08:15 AM	114	11	125	4	2	6	8	90	98	229
08:30 AM	113	9	122	5	8	13	7	98	105	240
08:45 AM	127	7	134	3	3	6	10	100	110	250
Total	481	32	513	15	18	33	38	398	436	982
Grand Total	1195	75	1270	32	49	81	107	1073	1180	2531
Apprch %	94.1	5.9		39.5	60.5		9.1	90.9		
Total %	47.2	3	50.2	1.3	1.9	3.2	4.2	42.4	46.6	
Cars +	1099	73	1172	25	34	59	93	988	1081	2312
% Cars +	92	97.3	92.3	78.1	69.4	72.8	86.9	92.1	91.6	91.3
Trucks	96	2	98	7	15	22	14	85	99	219
% Trucks	8	2.7	7.7	21.9	30.6	27.2	13.1	7.9	8.4	8.7

TRAFFIC DATA COLLECTION

File Name : Charlotte(Statesville and Gibbon)AM Peak
Site Code :
Start Date : 9/19/2019
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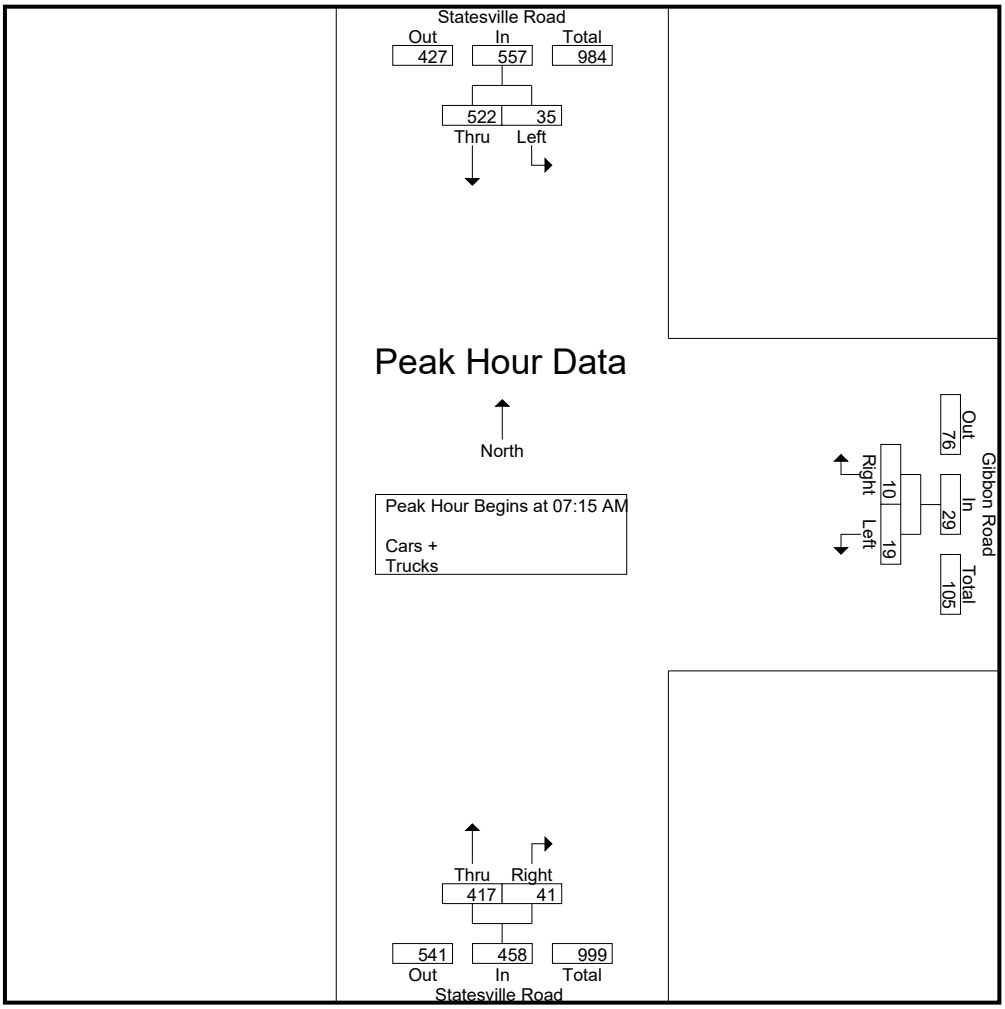
	Statesville Road Southbound			Gibbon Road Westbound			Statesville Road Northbound			
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	Int. Total
Peak Hour Analysis From 06:30 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	121	10	131	**3**	4	7	9	86	95	233
07:30 AM	**145**	7	**152**	1	**6**	7	9	109	118	**277**
07:45 AM	129	**13**	142	3	4	7	10	**112**	122	271
08:00 AM	127	5	132	3	5	**8**	**13**	110	**123**	263
Total Volume	522	35	557	10	19	29	41	417	458	1044
% App. Total	93.7	6.3		34.5	65.5		9	91		
PHF	.900	.673	.916	.833	.792	.906	.788	.931	.931	.942



TRAFFIC DATA COLLECTION

File Name : Charlotte(Statesville and Gibbon)PM Peak
Site Code :
Start Date : 9/19/2019
Page No : 1

Groups Printed- Cars + - Trucks

	Statesville Rd Southbound			Gibbon Rd Westbound			Statesville Rd Northbound			
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	Int. Total
04:00 PM	125	1	126	7	10	17	10	110	120	263
04:15 PM	102	3	105	4	5	9	5	119	124	238
04:30 PM	122	2	124	11	7	18	2	114	116	258
04:45 PM	124	0	124	4	3	7	2	116	118	249
Total	473	6	479	26	25	51	19	459	478	1008
05:00 PM	137	7	144	2	10	12	7	168	175	331
05:15 PM	123	3	126	7	9	16	5	138	143	285
05:30 PM	101	2	103	8	10	18	3	131	134	255
05:45 PM	111	2	113	9	3	12	8	156	164	289
Total	472	14	486	26	32	58	23	593	616	1160
06:00 PM	101	2	103	6	11	17	6	120	126	246
06:15 PM	87	0	87	1	4	5	1	116	117	209
Grand Total	1133	22	1155	59	72	131	49	1288	1337	2623
Apprch %	98.1	1.9		45	55		3.7	96.3		
Total %	43.2	0.8	44	2.2	2.7	5	1.9	49.1	51	
Cars +	1060	14	1074	47	54	101	34	1217	1251	2426
% Cars +	93.6	63.6	93	79.7	75	77.1	69.4	94.5	93.6	92.5
Trucks	73	8	81	12	18	30	15	71	86	197
% Trucks	6.4	36.4	7	20.3	25	22.9	30.6	5.5	6.4	7.5

TRAFFIC DATA COLLECTION

File Name : Charlotte(Statesville and Gibbon)PM Peak
Site Code :
Start Date : 9/19/2019
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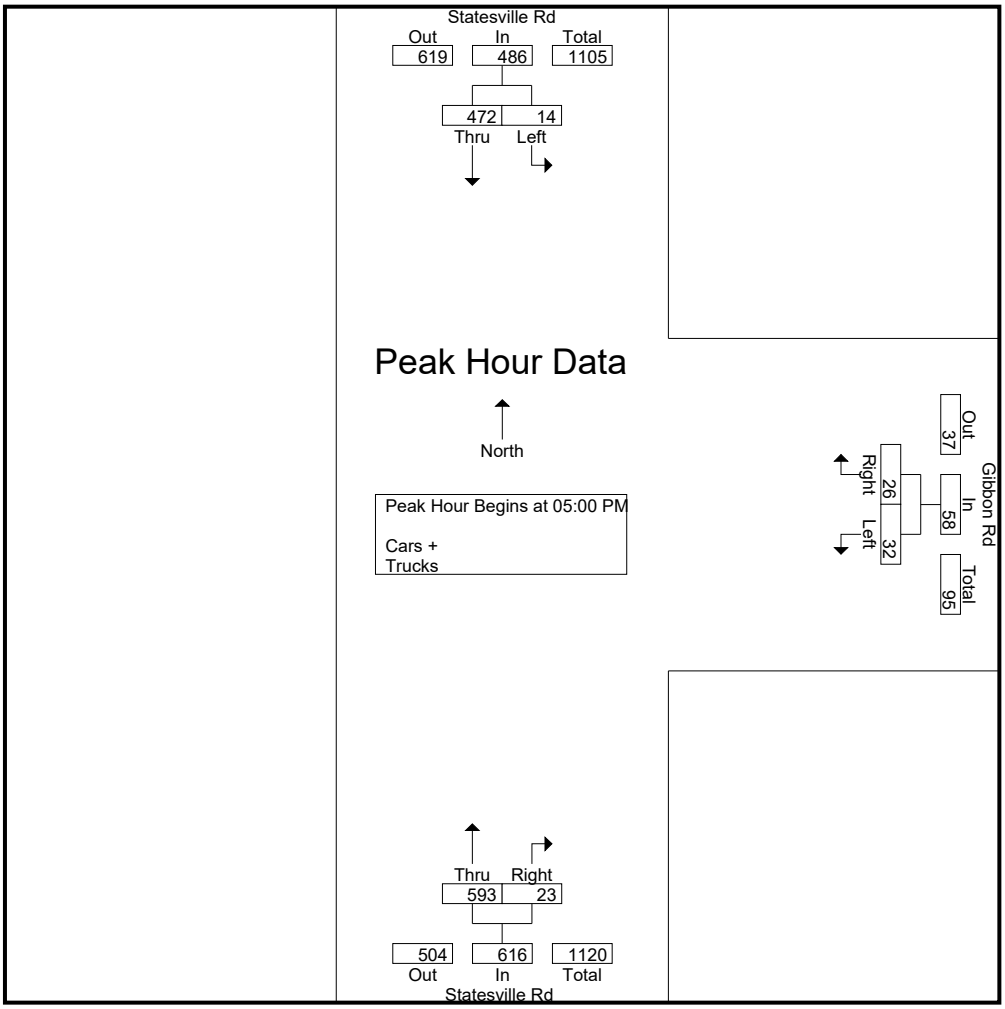
	Statesville Rd Southbound			Gibbon Rd Westbound			Statesville Rd Northbound			
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 06:15 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	**137**	**7**	**144**	2	**10**	12	7	**168**	**175**	**331**
05:15 PM	123	3	126	7	9	16	5	138	143	285
05:30 PM	101	2	103	8	10	**18**	3	131	134	255
05:45 PM	111	2	113	**9**	3	12	**8**	156	164	289
Total Volume	472	14	486	26	32	58	23	593	616	1160
% App. Total	97.1	2.9		44.8	55.2		3.7	96.3		
PHF	.861	.500	.844	.722	.800	.806	.719	.882	.880	.876



TRAFFIC DATA COLLECTION

File Name : Charlotte(Statesville and Sunbelt Rentals)AM Peak
Site Code :
Start Date : 9/19/2019
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Groups Printed- Cars + - Trucks

	Statesville Rd Southbound				Multi use Access Westbound				Statesville Rd Northbound				Subelt Tool Access 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
06:30 AM	2	97	0	99	0	0	0	0	0	163	3	166	0	0	1	1	266
06:45 AM	1	140	2	143	0	0	0	0	0	170	1	171	0	0	0	0	314
Total	3	237	2	242	0	0	0	0	0	333	4	337	0	0	1	1	580
07:00 AM	5	111	1	117	0	0	0	0	1	87	4	92	1	0	0	1	210
07:15 AM	0	133	0	133	0	0	0	0	1	97	2	100	3	0	3	6	239
07:30 AM	1	153	0	154	0	0	2	2	5	111	2	118	4	0	0	4	278
07:45 AM	5	130	3	138	2	0	2	4	2	107	1	110	6	0	3	9	261
Total	11	527	4	542	2	0	4	6	9	402	9	420	14	0	6	20	988
08:00 AM	3	131	3	137	0	0	0	0	2	113	1	116	2	0	1	3	256
08:15 AM	3	111	2	116	0	0	2	2	2	96	2	100	2	0	2	4	222
08:30 AM	4	124	1	129	0	0	0	0	5	101	0	106	2	0	2	4	239
08:45 AM	1	124	0	125	0	0	0	0	3	102	2	107	4	0	1	5	237
Total	11	490	6	507	0	0	2	2	12	412	5	429	10	0	6	16	954
Grand Total	25	1254	12	1291	2	0	6	8	21	1147	18	1186	24	0	13	37	2522
Apprch %	1.9	97.1	0.9		25	0	75		1.8	96.7	1.5		64.9	0	35.1		
Total %	1	49.7	0.5	51.2	0.1	0	0.2	0.3	0.8	45.5	0.7	47	1	0	0.5	1.5	
Cars +	23	1134	12	1169	2	0	6	8	21	1038	15	1074	12	0	10	22	2273
% Cars +	92	90.4	100	90.5	100	0	100	100	100	90.5	83.3	90.6	50	0	76.9	59.5	90.1
Trucks	2	120	0	122	0	0	0	0	0	109	3	112	12	0	3	15	249
% Trucks	8	9.6	0	9.5	0	0	0	0	0	9.5	16.7	9.4	50	0	23.1	40.5	9.9

TRAFFIC DATA COLLECTION

File Name : Charlotte(Statesville and Sunbelt Rentals)AM Peak
Site Code :
Start Date : 9/19/2019
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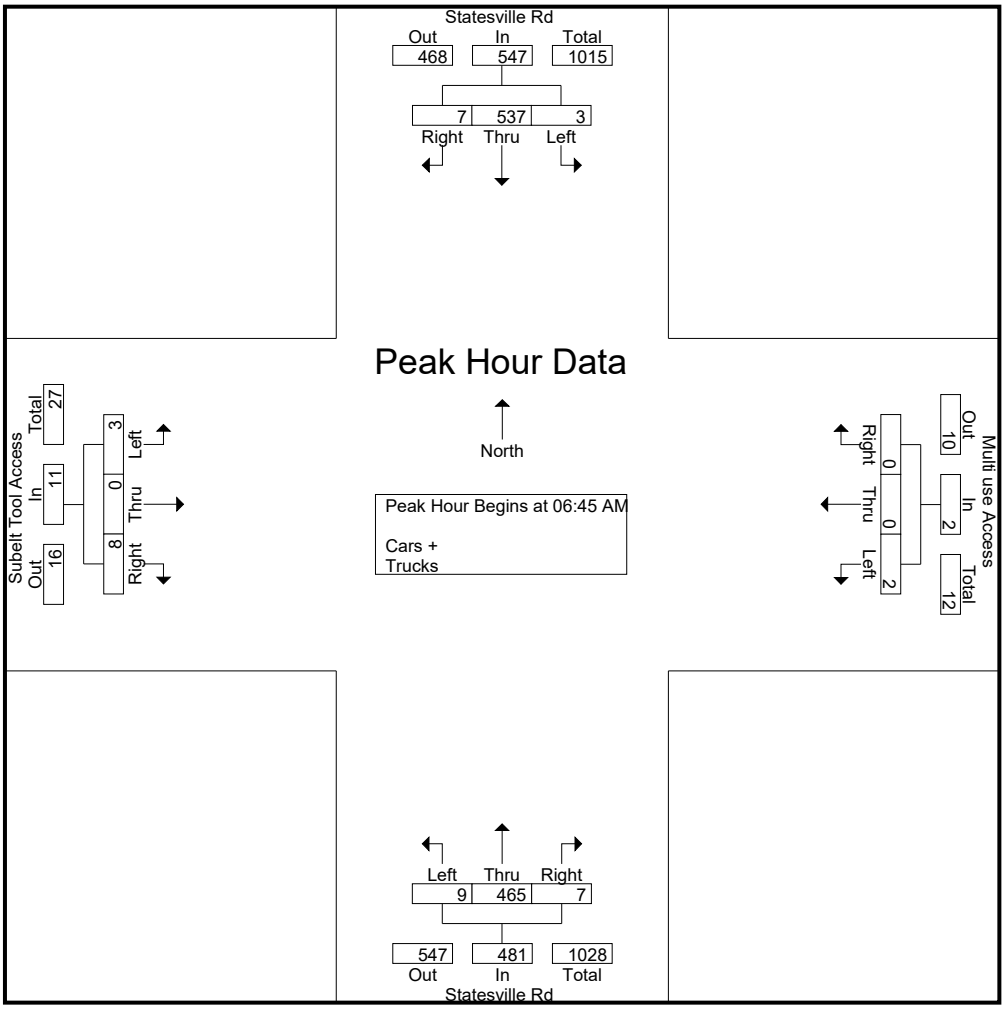
	Statesville Rd Southbound				Multi use Access Westbound				Statesville Rd Northbound				Subelt Tool Access Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 06:30 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 06:45 AM																	
06:45 AM	1	140	**2**	143	0	0	0	0	0	**170**	1	**171**	0	0	0	0	**314**
07:00 AM	**5**	111	1	117	0	0	0	0	1	87	**4**	92	1	0	0	1	210
07:15 AM	0	133	0	133	0	0	0	0	1	97	2	100	3	0	**3**	**6**	239
07:30 AM	1	**153**	0	**154**	0	0	**2**	**2**	**5**	111	2	118	**4**	0	0	4	278
Total Volume	7	537	3	547	0	0	2	2	7	465	9	481	8	0	3	11	1041
% App. Total	1.3	98.2	0.5		0	0	100		1.5	96.7	1.9		72.7	0	27.3		
PHF	.350	.877	.375	.888	.000	.000	.250	.250	.350	.684	.563	.703	.500	.000	.250	.458	.829



TRAFFIC DATA COLLECTION

File Name : Charlotte(Statesville and Sunbelt Rentals)PM Peak
Site Code :
Start Date : 9/19/2019
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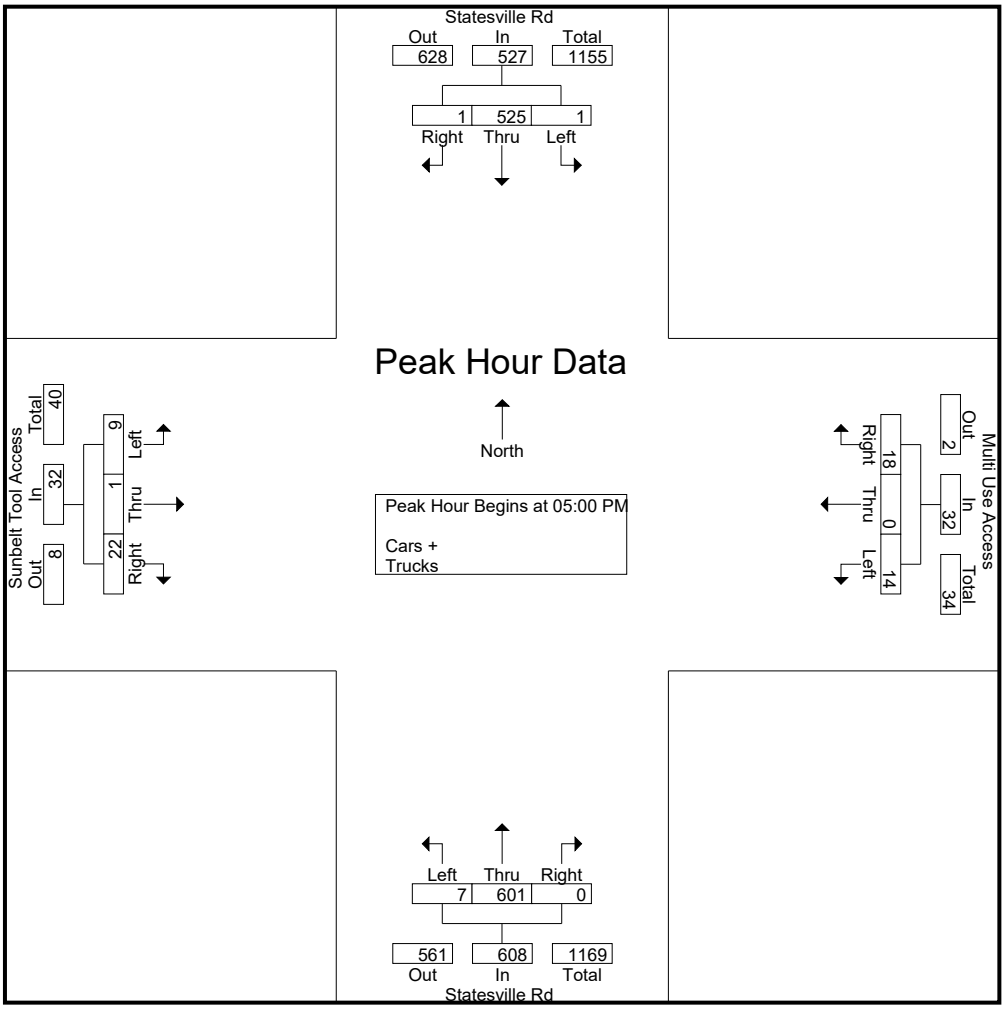
Groups Printed- Cars + - Trucks

	Statesville Rd Southbound				Multi Use Access Westbound				Statesville Rd Northbound				Sunbelt Tool Access 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
04:00 PM	2	132	2	136	3	0	3	6	2	104	3	109	3	0	2	5	256
04:15 PM	4	103	1	108	1	0	4	5	1	117	2	120	3	0	4	7	240
04:30 PM	1	127	2	130	1	0	2	3	0	103	1	104	5	0	7	12	249
04:45 PM	1	128	0	129	1	0	1	2	0	128	3	131	2	0	3	5	267
Total	8	490	5	503	6	0	10	16	3	452	9	464	13	0	16	29	1012
05:00 PM	1	147	1	149	11	0	6	17	0	167	4	171	8	1	3	12	349
05:15 PM	0	132	0	132	2	0	3	5	0	141	2	143	12	0	2	14	294
05:30 PM	0	119	0	119	3	0	4	7	0	134	0	134	1	0	2	3	263
05:45 PM	0	127	0	127	2	0	1	3	0	159	1	160	1	0	2	3	293
Total	1	525	1	527	18	0	14	32	0	601	7	608	22	1	9	32	1199
06:00 PM	0	111	0	111	0	0	0	0	0	124	1	125	1	0	1	2	238
06:15 PM	0	94	0	94	1	0	0	1	0	121	0	121	1	1	0	2	218
Grand Total	9	1220	6	1235	25	0	24	49	3	1298	17	1318	37	2	26	65	2667
Apprch %	0.7	98.8	0.5		51	0	49		0.2	98.5	1.3		56.9	3.1	40		
Total %	0.3	45.7	0.2	46.3	0.9	0	0.9	1.8	0.1	48.7	0.6	49.4	1.4	0.1	1	2.4	
Cars +	6	1126	4	1136	25	0	24	49	3	1191	13	1207	36	1	26	63	2455
% Cars +	66.7	92.3	66.7	92	100	0	100	100	100	91.8	76.5	91.6	97.3	50	100	96.9	92.1
Trucks	3	94	2	99	0	0	0	0	0	107	4	111	1	1	0	2	212
% Trucks	33.3	7.7	33.3	8	0	0	0	0	0	8.2	23.5	8.4	2.7	50	0	3.1	7.9

TRAFFIC DATA COLLECTION

File Name : Charlotte(Statesville and Sunbelt Rentals)PM Peak
Site Code :
Start Date : 9/19/2019
Page No : 2

	Statesville Rd Southbound				Multi Use Access Westbound				Statesville Rd Northbound				Sunbelt Tool Access 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 04:00 PM to 06:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	**1**	**147**	**1**	**149**	**11**	0	**6**	**17**	0	**167**	**4**	**171**	8	**1**	**3**	12	**349**
05:15 PM	0	132	0	132	2	0	3	5	0	141	2	143	**12**	0	2	**14**	294
05:30 PM	0	119	0	119	3	0	4	7	0	134	0	134	1	0	2	3	263
05:45 PM	0	127	0	127	2	0	1	3	0	159	1	160	1	0	2	3	293
Total Volume	1	525	1	527	18	0	14	32	0	601	7	608	22	1	9	32	1199
% App. Total	0.2	99.6	0.2		56.2	0	43.8		0	98.8	1.2		68.8	3.1	28.1		
PHF	.250	.893	.250	.884	.409	.000	.583	.471	.000	.900	.438	.889	.458	.250	.750	.571	.859



APPENDIX F

CAPACITY CALCULATIONS

WESTINGHOUSE BOULEVARD
AND
NATIONS FORD ROAD

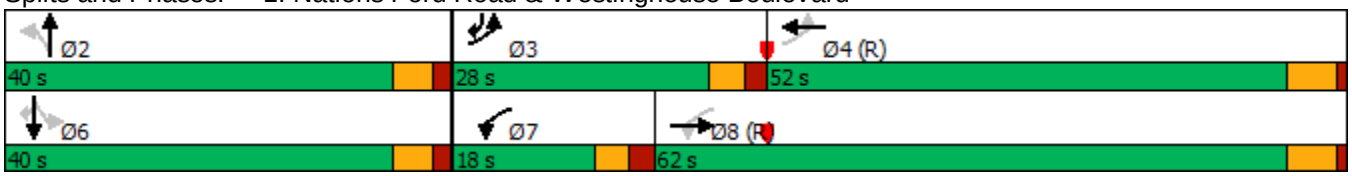
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	390	889	84	71	526	21	89	219	72	11	60	112
Future Volume (vph)	390	889	84	71	526	21	89	219	72	11	60	112
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			1%			1%			3%	
Storage Length (ft)	150		0	150		0	100		0	175		200
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.987			0.994			0.963				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1728	3426	0	1678	3366	0	1648	1768	0	1743	1749	1446
Flt Permitted	0.347			0.202			0.713			0.241		
Satd. Flow (perm)	631	3426	0	357	3366	0	1237	1768	0	442	1749	1446
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		1506			1936			1515			1103	
Travel Time (s)		22.8			29.3			29.5			21.5	
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
Heavy Vehicles (%)	5%	4%	10%	7%	6%	8%	9%	3%	3%	2%	7%	10%
Adj. Flow (vph)	433	988	93	79	584	23	99	243	80	12	67	124
Shared Lane Traffic (%)												
Lane Group Flow (vph)	433	1081	0	79	607	0	99	323	0	12	67	124
Turn Type	D.P+P	NA		D.P+P	NA		Perm	NA		Perm	NA	pm+ov
Protected Phases	3	8		7	4			2			6	3
Permitted Phases	4			8			2			6		6
Detector Phase	3	8		7	4		2	2		6	6	3
Switch Phase												
Minimum Initial (s)	6.0	14.0		6.0	14.0		8.0	8.0		8.0	8.0	6.0
Minimum Split (s)	12.0	20.0		12.0	20.0		14.0	14.0		14.0	14.0	12.0
Total Split (s)	28.0	62.0		18.0	52.0		40.0	40.0		40.0	40.0	28.0
Total Split (%)	23.3%	51.7%		15.0%	43.3%		33.3%	33.3%		33.3%	33.3%	23.3%
Maximum Green (s)	22.8	56.5		12.7	46.5		34.6	34.6		34.7	34.7	22.8
Yellow Time (s)	3.2	4.5		3.1	4.4		3.7	3.7		3.6	3.6	3.2
All-Red Time (s)	2.0	1.0		2.2	1.1		1.7	1.7		1.7	1.7	2.0
Lost Time Adjust (s)	-0.2	-0.5		-0.3	-0.5		-0.4	-0.4		-0.3	-0.3	-0.2
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
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							Yes
Vehicle Extension (s)	2.0	5.0		2.0	5.0		2.0	2.0		1.5	1.5	2.0
Recall Mode	None	C-Min		None	C-Min		None	None		None	None	None
Act Effct Green (s)	78.2	73.4		79.2	53.4		26.8	26.8		24.8	24.8	52.0
Actuated g/C Ratio	0.65	0.61		0.66	0.44		0.22	0.22		0.21	0.21	0.43
v/c Ratio	0.68	0.52		0.25	0.41		0.36	0.82		0.13	0.19	0.20
Control Delay	15.0	16.1		11.1	31.5		41.4	60.7		37.5	36.9	19.1
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	15.0	16.1		11.1	31.5		41.4	60.7		37.5	36.9	19.1
LOS	B	B		B	C		D	E		D	D	B

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		15.8			29.2			56.2			26.1	
Approach LOS		B			C			E			C	
Queue Length 50th (ft)	124	245		19	208		65	239		7	42	52
Queue Length 95th (ft)	223	374		68	300		108	319		24	75	83
Internal Link Dist (ft)		1426			1856			1435			1023	
Turn Bay Length (ft)	150			150			100			175		200
Base Capacity (vph)	641	2095		390	1496		360	515		128	510	628
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	0.68	0.52		0.20	0.41		0.28	0.63		0.09	0.13	0.20

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 106 (88%), Referenced to phase 4:EBWB and 8:EBWB, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.82
Intersection Signal Delay: 25.8 Intersection LOS: C
Intersection Capacity Utilization 65.2% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 1: Nations Ford Road & Westinghouse Boulevard



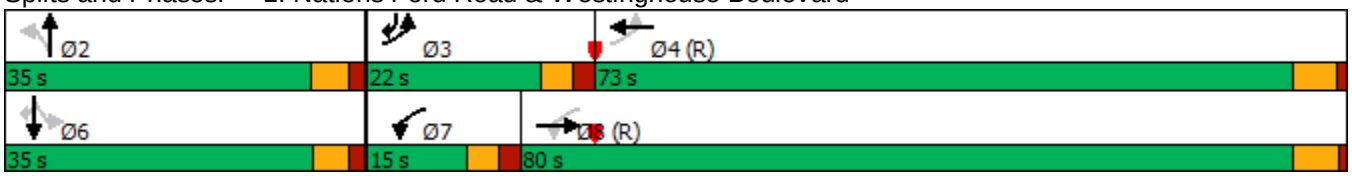
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	148	860	58	83	882	10	71	82	51	33	107	285
Future Volume (vph)	148	860	58	83	882	10	71	82	51	33	107	285
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			1%			1%			3%	
Storage Length (ft)	150		0	150		0	100		0	175		200
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.991			0.998			0.942				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1744	3525	0	1761	3514	0	1744	1746	0	1743	1835	1560
Flt Permitted	0.249			0.247			0.549			0.445		
Satd. Flow (perm)	457	3525	0	458	3514	0	1008	1746	0	816	1835	1560
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		1506			1936			1515			1103	
Travel Time (s)		22.8			29.3			29.5			21.5	
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
Heavy Vehicles (%)	4%	2%	2%	2%	2%	4%	3%	2%	2%	2%	2%	2%
Adj. Flow (vph)	164	956	64	92	980	11	79	91	57	37	119	317
Shared Lane Traffic (%)												
Lane Group Flow (vph)	164	1020	0	92	991	0	79	148	0	37	119	317
Turn Type	D.P+P	NA		D.P+P	NA		Perm	NA		Perm	NA	pm+ov
Protected Phases	3	8		7	4			2			6	3
Permitted Phases	4			8			2			6		6
Detector Phase	3	8		7	4		2	2		6	6	3
Switch Phase												
Minimum Initial (s)	6.0	14.0		6.0	14.0		8.0	8.0		8.0	8.0	6.0
Minimum Split (s)	12.0	20.0		12.0	20.0		14.0	14.0		14.0	14.0	12.0
Total Split (s)	22.0	80.0		15.0	73.0		35.0	35.0		35.0	35.0	22.0
Total Split (%)	16.9%	61.5%		11.5%	56.2%		26.9%	26.9%		26.9%	26.9%	16.9%
Maximum Green (s)	16.8	74.5		9.7	67.5		29.6	29.6		29.7	29.7	16.8
Yellow Time (s)	3.2	4.5		3.1	4.4		3.7	3.7		3.6	3.6	3.2
All-Red Time (s)	2.0	1.0		2.2	1.1		1.7	1.7		1.7	1.7	2.0
Lost Time Adjust (s)	-0.2	-0.5		-0.3	-0.5		-0.4	-0.4		-0.3	-0.3	-0.2
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
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							Yes
Vehicle Extension (s)	2.0	5.0		2.0	5.0		2.0	2.0		1.5	1.5	2.0
Recall Mode	None	C-Min		None	C-Min		None	None		None	None	None
Act Effct Green (s)	99.1	92.4		99.1	87.7		15.9	15.9		15.9	15.9	32.3
Actuated g/C Ratio	0.76	0.71		0.76	0.67		0.12	0.12		0.12	0.12	0.25
v/c Ratio	0.36	0.41		0.22	0.42		0.64	0.69		0.37	0.53	0.82
Control Delay	5.6	8.8		7.7	20.1		76.7	71.0		61.4	61.3	62.8
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	5.6	8.8		7.7	20.1		76.7	71.0		61.4	61.3	62.8
LOS	A	A		A	C		E	E		E	E	E

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		8.3			19.1			73.0			62.3	
Approach LOS		A			B			E			E	
Queue Length 50th (ft)	25	163		26	354		64	121		29	96	254
Queue Length 95th (ft)	52	247		52	322		115	186		64	152	338
Internal Link Dist (ft)		1426			1856			1435			1023	
Turn Bay Length (ft)	150			150			100			175		200
Base Capacity (vph)	533	2504		460	2370		232	402		188	423	454
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	0.41		0.20	0.42		0.34	0.37		0.20	0.28	0.70

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 2 (2%), Referenced to phase 4:EBWB and 8:EBWB, Start of Green
Natural Cycle: 50
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.82
Intersection Signal Delay: 25.8 Intersection LOS: C
Intersection Capacity Utilization 63.7% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 1: Nations Ford Road & Westinghouse Boulevard



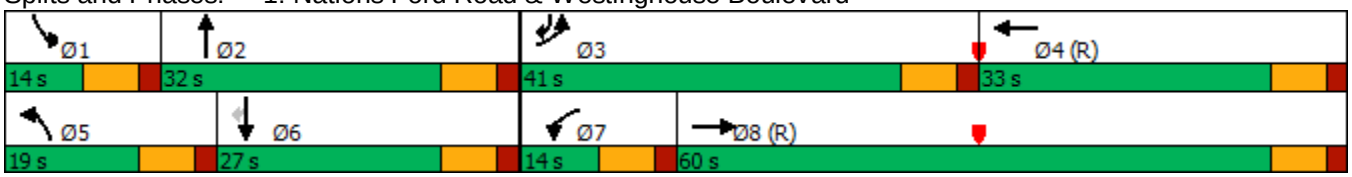
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	414	966	89	75	561	22	94	232	76	12	64	119
Future Volume (vph)	414	966	89	75	561	22	94	232	76	12	64	119
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			1%			1%			3%	
Storage Length (ft)	150		0	150		0	100		0	175		200
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.987			0.994			0.963				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1728	3426	0	1678	3366	0	1648	1768	0	1743	1749	1446
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1728	3426	0	1678	3366	0	1648	1768	0	1743	1749	1446
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		1506			1936			1515			1103	
Travel Time (s)		22.8			29.3			29.5			21.5	
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
Heavy Vehicles (%)	5%	4%	10%	7%	6%	8%	9%	3%	3%	2%	7%	10%
Adj. Flow (vph)	460	1073	99	83	623	24	104	258	84	13	71	132
Shared Lane Traffic (%)												
Lane Group Flow (vph)	460	1172	0	83	647	0	104	342	0	13	71	132
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	pm+ov
Protected Phases	3	8		7	4		5	2		1	6	3
Permitted Phases												6
Detector Phase	3	8		7	4		5	2		1	6	3
Switch Phase												
Minimum Initial (s)	7.0	14.0		7.0	14.0		7.0	8.0		7.0	8.0	7.0
Minimum Split (s)	14.0	21.0		14.0	21.0		14.0	15.0		14.0	15.0	14.0
Total Split (s)	41.0	60.0		14.0	33.0		19.0	32.0		14.0	27.0	41.0
Total Split (%)	34.2%	50.0%		11.7%	27.5%		15.8%	26.7%		11.7%	22.5%	34.2%
Maximum Green (s)	34.0	53.0		7.0	26.0		12.0	25.0		7.0	20.0	34.0
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	-2.0
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?												
Vehicle Extension (s)	2.0	5.0		2.0	5.0		3.0	2.0		3.0	1.5	2.0
Recall Mode	None	C-Min		None	C-Min		None	None		None	None	None
Act Effct Green (s)	35.5	62.3		10.1	36.9		15.5	27.0		9.0	15.2	52.7
Actuated g/C Ratio	0.30	0.52		0.08	0.31		0.13	0.22		0.08	0.13	0.44
v/c Ratio	0.90	0.66		0.59	0.63		0.49	0.86		0.10	0.32	0.21
Control Delay	62.4	24.7		59.2	37.2		58.4	66.0		53.7	49.7	19.3
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	62.4	24.7		59.2	37.2		58.4	66.0		53.7	49.7	19.3
LOS	E	C		E	D		E	E		D	D	B

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		35.3			39.7			64.2			31.4	
Approach LOS		D			D			E			C	
Queue Length 50th (ft)	324	342		65	141		77	245		10	53	58
Queue Length 95th (ft)	#530	470		m#140	#211		137	#418		31	91	88
Internal Link Dist (ft)		1426			1856			1435			1023	
Turn Bay Length (ft)	150			150			100			175		200
Base Capacity (vph)	528	1777		141	1033		215	411		130	320	649
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	0.87	0.66		0.59	0.63		0.48	0.83		0.10	0.22	0.20

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 18 (15%), Referenced to phase 4:WBT and 8:EBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 40.4 Intersection LOS: D
Intersection Capacity Utilization 68.5% ICU Level of Service C
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: 1: Nations Ford Road & Westinghouse Boulevard



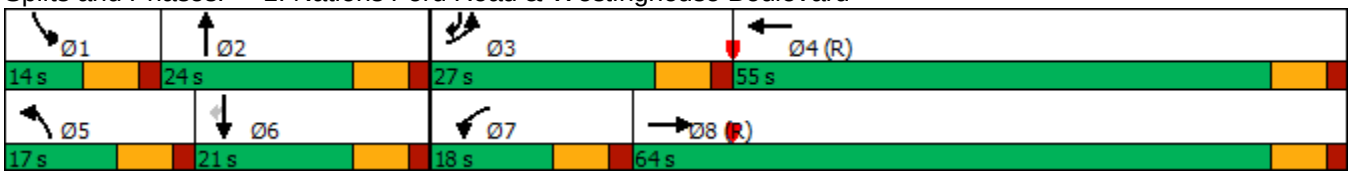
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	157	916	62	88	954	11	75	87	54	35	114	302
Future Volume (vph)	157	916	62	88	954	11	75	87	54	35	114	302
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			1%			1%			3%	
Storage Length (ft)	150		0	150		0	100		0	175		200
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.990			0.998			0.943				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1744	3521	0	1761	3514	0	1744	1748	0	1743	1835	1560
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1744	3521	0	1761	3514	0	1744	1748	0	1743	1835	1560
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		1506			1936			1515			1103	
Travel Time (s)		22.8			29.3			29.5			21.5	
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
Heavy Vehicles (%)	4%	2%	2%	2%	2%	4%	3%	2%	2%	2%	2%	2%
Adj. Flow (vph)	174	1018	69	98	1060	12	83	97	60	39	127	336
Shared Lane Traffic (%)												
Lane Group Flow (vph)	174	1087	0	98	1072	0	83	157	0	39	127	336
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	pm+ov
Protected Phases	3	8		7	4		5	2		1	6	3
Permitted Phases												6
Detector Phase	3	8		7	4		5	2		1	6	3
Switch Phase												
Minimum Initial (s)	7.0	14.0		7.0	14.0		7.0	8.0		7.0	8.0	7.0
Minimum Split (s)	14.0	21.0		14.0	21.0		14.0	15.0		14.0	15.0	14.0
Total Split (s)	27.0	64.0		18.0	55.0		17.0	24.0		14.0	21.0	27.0
Total Split (%)	22.5%	53.3%		15.0%	45.8%		14.2%	20.0%		11.7%	17.5%	22.5%
Maximum Green (s)	20.0	57.0		11.0	48.0		10.0	17.0		7.0	14.0	20.0
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	-2.0
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?												
Vehicle Extension (s)	2.0	5.0		2.0	5.0		3.0	2.0		3.0	1.5	2.0
Recall Mode	None	C-Min		None	C-Min		None	None		None	None	None
Act Effct Green (s)	17.7	65.5		11.8	59.7		11.5	19.0		9.2	13.9	36.6
Actuated g/C Ratio	0.15	0.55		0.10	0.50		0.10	0.16		0.08	0.12	0.30
v/c Ratio	0.68	0.57		0.57	0.61		0.50	0.57		0.29	0.60	0.71
Control Delay	61.5	20.9		59.3	20.0		62.0	55.3		58.4	62.1	44.9
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	61.5	20.9		59.3	20.0		62.0	55.3		58.4	62.1	44.9
LOS	E	C		E	C		E	E		E	E	D

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		26.5			23.3			57.6			50.3	
Approach LOS		C			C			E			D	
Queue Length 50th (ft)	128	313		80	208		61	116		29	95	227
Queue Length 95th (ft)	199	387		m126	277		115	186		66	158	313
Internal Link Dist (ft)		1426			1856			1435			1023	
Turn Bay Length (ft)	150			150			100			175		200
Base Capacity (vph)	319	1922		190	1747		177	304		134	244	532
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	0.55	0.57		0.52	0.61		0.47	0.52		0.29	0.52	0.63

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 3 (3%), Referenced to phase 4:WBT and 8:EBT, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.71
Intersection Signal Delay: 31.5 Intersection LOS: C
Intersection Capacity Utilization 65.8% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Nations Ford Road & Westinghouse Boulevard



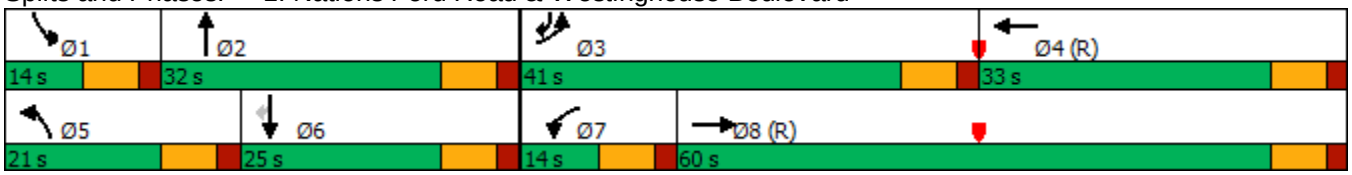
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	439	1024	95	80	595	24	100	247	81	12	68	126
Future Volume (vph)	439	1024	95	80	595	24	100	247	81	12	68	126
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			1%			1%			3%	
Storage Length (ft)	150		0	150		0	100		0	175		200
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.987			0.994			0.963				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1728	3426	0	1678	3366	0	1648	1768	0	1743	1749	1446
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1728	3426	0	1678	3366	0	1648	1768	0	1743	1749	1446
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		1506			1936			1515			1103	
Travel Time (s)		22.8			29.3			29.5			21.5	
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
Heavy Vehicles (%)	5%	4%	10%	7%	6%	8%	9%	3%	3%	2%	7%	10%
Adj. Flow (vph)	488	1138	106	89	661	27	111	274	90	13	76	140
Shared Lane Traffic (%)												
Lane Group Flow (vph)	488	1244	0	89	688	0	111	364	0	13	76	140
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	pm+ov
Protected Phases	3	8		7	4		5	2		1	6	3
Permitted Phases												6
Detector Phase	3	8		7	4		5	2		1	6	3
Switch Phase												
Minimum Initial (s)	7.0	14.0		7.0	14.0		7.0	8.0		7.0	8.0	7.0
Minimum Split (s)	14.0	21.0		14.0	21.0		14.0	15.0		14.0	15.0	14.0
Total Split (s)	41.0	60.0		14.0	33.0		21.0	32.0		14.0	25.0	41.0
Total Split (%)	34.2%	50.0%		11.7%	27.5%		17.5%	26.7%		11.7%	20.8%	34.2%
Maximum Green (s)	34.0	53.0		7.0	26.0		14.0	25.0		7.0	18.0	34.0
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	-2.0
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?												
Vehicle Extension (s)	2.0	5.0		2.0	5.0		3.0	2.0		3.0	1.5	2.0
Recall Mode	None	C-Min		None	C-Min		None	None		None	None	None
Act Effct Green (s)	37.8	60.6		10.3	33.1		17.1	28.5		9.0	14.9	54.7
Actuated g/C Ratio	0.32	0.50		0.09	0.28		0.14	0.24		0.08	0.12	0.46
v/c Ratio	0.90	0.72		0.62	0.74		0.47	0.87		0.10	0.35	0.21
Control Delay	60.0	27.2		57.1	56.9		55.7	65.7		53.7	51.2	18.8
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	60.0	27.2		57.1	56.9		55.7	65.7		53.7	51.2	18.8
LOS	E	C		E	E		E	E		D	D	B

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		36.4			56.9			63.3			31.5	
Approach LOS		D			E			E			C	
Queue Length 50th (ft)	332	395		68	301		82	257		10	56	56
Queue Length 95th (ft)	#578	514		m#147	#385		142	#456		31	99	97
Internal Link Dist (ft)		1426			1856			1435			1023	
Turn Bay Length (ft)	150			150			100			175		200
Base Capacity (vph)	550	1731		143	928		244	425		130	291	665
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	0.89	0.72		0.62	0.74		0.45	0.86		0.10	0.26	0.21

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 100 (83%), Referenced to phase 4:WBT and 8:EBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 45.0 Intersection LOS: D
Intersection Capacity Utilization 72.0% ICU Level of Service C
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: 1: Nations Ford Road & Westinghouse Boulevard



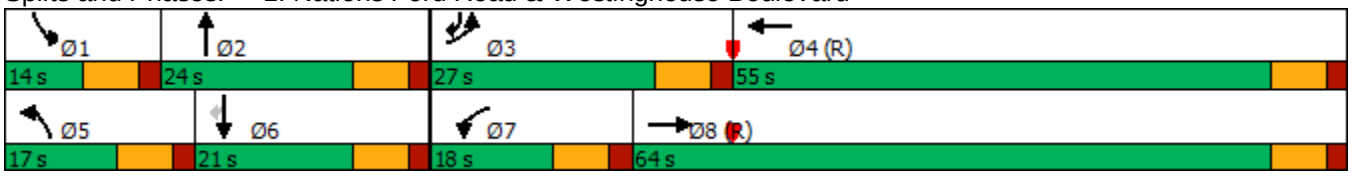
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	167	971	65	93	1011	11	80	92	57	37	120	321
Future Volume (vph)	167	971	65	93	1011	11	80	92	57	37	120	321
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			1%			1%			3%	
Storage Length (ft)	150		0	150		0	100		0	175		200
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.991			0.998			0.943				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1744	3525	0	1761	3514	0	1744	1748	0	1743	1835	1560
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1744	3525	0	1761	3514	0	1744	1748	0	1743	1835	1560
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		1506			1936			1515			1103	
Travel Time (s)		22.8			29.3			29.5			21.5	
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
Heavy Vehicles (%)	4%	2%	2%	2%	2%	4%	3%	2%	2%	2%	2%	2%
Adj. Flow (vph)	186	1079	72	103	1123	12	89	102	63	41	133	357
Shared Lane Traffic (%)												
Lane Group Flow (vph)	186	1151	0	103	1135	0	89	165	0	41	133	357
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	pm+ov
Protected Phases	3	8		7	4		5	2		1	6	3
Permitted Phases												6
Detector Phase	3	8		7	4		5	2		1	6	3
Switch Phase												
Minimum Initial (s)	7.0	14.0		7.0	14.0		7.0	8.0		7.0	8.0	7.0
Minimum Split (s)	14.0	21.0		14.0	21.0		14.0	15.0		14.0	15.0	14.0
Total Split (s)	27.0	64.0		18.0	55.0		17.0	24.0		14.0	21.0	27.0
Total Split (%)	22.5%	53.3%		15.0%	45.8%		14.2%	20.0%		11.7%	17.5%	22.5%
Maximum Green (s)	20.0	57.0		11.0	48.0		10.0	17.0		7.0	14.0	20.0
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	-2.0
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?												
Vehicle Extension (s)	2.0	5.0		2.0	5.0		3.0	2.0		3.0	1.5	2.0
Recall Mode	None	C-Min		None	C-Min		None	None		None	None	None
Act Effct Green (s)	18.4	62.8		12.0	56.4		11.4	19.0		9.0	13.9	37.3
Actuated g/C Ratio	0.15	0.52		0.10	0.47		0.10	0.16		0.08	0.12	0.31
v/c Ratio	0.70	0.62		0.59	0.69		0.54	0.60		0.32	0.63	0.74
Control Delay	61.7	22.9		58.0	26.3		64.2	57.2		59.4	63.9	46.1
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	61.7	22.9		58.0	26.3		64.2	57.2		59.4	63.9	46.1
LOS	E	C		E	C		E	E		E	E	D

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		28.3			29.0			59.7			51.6	
Approach LOS		C			C			E			D	
Queue Length 50th (ft)	137	337		83	261		67	122		31	99	242
Queue Length 95th (ft)	211	420		m126	346		122	195		68	164	336
Internal Link Dist (ft)		1426			1856			1435			1023	
Turn Bay Length (ft)	150			150			100			175		200
Base Capacity (vph)	319	1845		191	1650		174	291		130	244	531
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	0.58	0.62		0.54	0.69		0.51	0.57		0.32	0.55	0.67

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 119 (99%), Referenced to phase 4:WBT and 8:EBT, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.74
Intersection Signal Delay: 34.6 Intersection LOS: C
Intersection Capacity Utilization 68.4% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Nations Ford Road & Westinghouse Boulevard



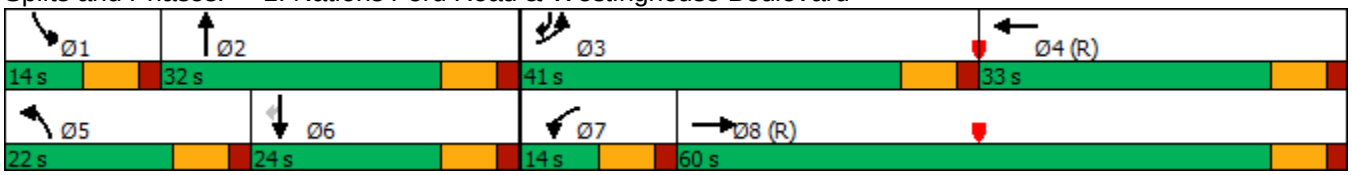
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	414	1001	142	75	574	22	113	232	76	12	64	119
Future Volume (vph)	414	1001	142	75	574	22	113	232	76	12	64	119
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			1%			1%			3%	
Storage Length (ft)	150		0	150		0	100		0	175		200
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.981			0.995			0.963				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1728	3402	0	1678	3369	0	1604	1768	0	1743	1749	1446
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1728	3402	0	1678	3369	0	1604	1768	0	1743	1749	1446
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		1506			1936			1515			1103	
Travel Time (s)		22.8			29.3			29.5			21.5	
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
Heavy Vehicles (%)	5%	4%	9%	7%	6%	8%	12%	3%	3%	2%	7%	10%
Adj. Flow (vph)	460	1112	158	83	638	24	126	258	84	13	71	132
Shared Lane Traffic (%)												
Lane Group Flow (vph)	460	1270	0	83	662	0	126	342	0	13	71	132
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	pm+ov
Protected Phases	3	8		7	4		5	2		1	6	3
Permitted Phases												6
Detector Phase	3	8		7	4		5	2		1	6	3
Switch Phase												
Minimum Initial (s)	7.0	14.0		7.0	14.0		7.0	8.0		7.0	8.0	7.0
Minimum Split (s)	14.0	21.0		14.0	21.0		14.0	15.0		14.0	15.0	14.0
Total Split (s)	41.0	60.0		14.0	33.0		22.0	32.0		14.0	24.0	41.0
Total Split (%)	34.2%	50.0%		11.7%	27.5%		18.3%	26.7%		11.7%	20.0%	34.2%
Maximum Green (s)	34.0	53.0		7.0	26.0		15.0	25.0		7.0	17.0	34.0
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	-2.0
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?												
Vehicle Extension (s)	2.0	5.0		2.0	5.0		3.0	2.0		3.0	1.5	2.0
Recall Mode	None	C-Min		None	C-Min		None	None		None	None	None
Act Effct Green (s)	35.5	61.6		10.1	36.2		17.5	27.7		9.0	13.8	51.3
Actuated g/C Ratio	0.30	0.51		0.08	0.30		0.15	0.23		0.08	0.12	0.43
v/c Ratio	0.90	0.73		0.59	0.65		0.54	0.84		0.10	0.35	0.21
Control Delay	62.4	27.1		56.8	51.5		57.5	62.9		53.7	52.6	20.4
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	62.4	27.1		56.8	51.5		57.5	62.9		53.7	52.6	20.4
LOS	E	C		E	D		E	E		D	D	C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		36.5			52.0			61.5			33.0	
Approach LOS		D			D			E			C	
Queue Length 50th (ft)	324	402		64	288		92	240		10	53	59
Queue Length 95th (ft)	#530	533		m#137	#362		158	#418		31	94	93
Internal Link Dist (ft)		1426			1856			1435			1023	
Turn Bay Length (ft)	150			150			100			175		200
Base Capacity (vph)	528	1746		141	1016		241	421		130	276	632
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	0.87	0.73		0.59	0.65		0.52	0.81		0.10	0.26	0.21

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 100 (83%), Referenced to phase 4:WBT and 8:EBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 43.6 Intersection LOS: D
Intersection Capacity Utilization 68.8% ICU Level of Service C
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: 1: Nations Ford Road & Westinghouse Boulevard



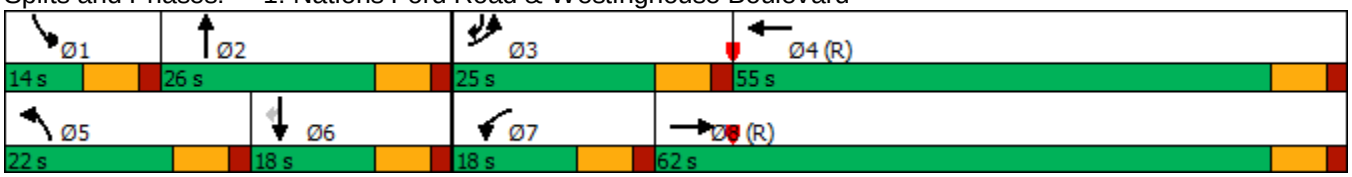
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	157	932	85	88	991	11	131	87	54	35	114	302
Future Volume (vph)	157	932	85	88	991	11	131	87	54	35	114	302
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			1%			1%			3%	
Storage Length (ft)	150		0	150		0	100		0	175		200
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.988			0.998			0.943				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1744	3463	0	1761	3480	0	1663	1748	0	1743	1835	1560
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1744	3463	0	1761	3480	0	1663	1748	0	1743	1835	1560
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		1506			1936			1515			1103	
Travel Time (s)		22.8			29.3			29.5			21.5	
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
Heavy Vehicles (%)	4%	3%	9%	2%	3%	4%	8%	2%	2%	2%	2%	2%
Adj. Flow (vph)	174	1036	94	98	1101	12	146	97	60	39	127	336
Shared Lane Traffic (%)												
Lane Group Flow (vph)	174	1130	0	98	1113	0	146	157	0	39	127	336
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	pm+ov
Protected Phases	3	8		7	4		5	2		1	6	3
Permitted Phases												6
Detector Phase	3	8		7	4		5	2		1	6	3
Switch Phase												
Minimum Initial (s)	7.0	14.0		7.0	14.0		7.0	8.0		7.0	8.0	7.0
Minimum Split (s)	14.0	21.0		14.0	21.0		14.0	15.0		14.0	15.0	14.0
Total Split (s)	25.0	62.0		18.0	55.0		22.0	26.0		14.0	18.0	25.0
Total Split (%)	20.8%	51.7%		15.0%	45.8%		18.3%	21.7%		11.7%	15.0%	20.8%
Maximum Green (s)	18.0	55.0		11.0	48.0		15.0	19.0		7.0	11.0	18.0
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	-2.0
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?												
Vehicle Extension (s)	2.0	5.0		2.0	5.0		3.0	2.0		3.0	1.5	2.0
Recall Mode	None	C-Min		None	C-Min		None	None		None	None	None
Act Effct Green (s)	17.2	60.3		11.8	54.9		15.6	24.5		9.0	12.3	34.5
Actuated g/C Ratio	0.14	0.50		0.10	0.46		0.13	0.20		0.08	0.10	0.29
v/c Ratio	0.70	0.65		0.57	0.70		0.68	0.44		0.30	0.68	0.75
Control Delay	63.5	25.0		55.3	30.6		65.5	47.6		59.0	70.4	49.6
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	63.5	25.0		55.3	30.6		65.5	47.6		59.0	70.4	49.6
LOS	E	C		E	C		E	D		E	E	D

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		30.1			32.6			56.2			55.6	
Approach LOS		C			C			E			E	
Queue Length 50th (ft)	127	349		76	305		108	111		29	96	229
Queue Length 95th (ft)	203	428		m119	387		180	182		66	#172	335
Internal Link Dist (ft)		1426			1856			1435			1023	
Turn Bay Length (ft)	150			150			100			175		200
Base Capacity (vph)	290	1739		190	1591		235	356		130	198	484
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	0.60	0.65		0.52	0.70		0.62	0.44		0.30	0.64	0.69

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 114 (95%), Referenced to phase 4:WBT and 8:EBT, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.75
Intersection Signal Delay: 37.3 Intersection LOS: D
Intersection Capacity Utilization 67.0% ICU Level of Service C
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: 1: Nations Ford Road & Westinghouse Boulevard



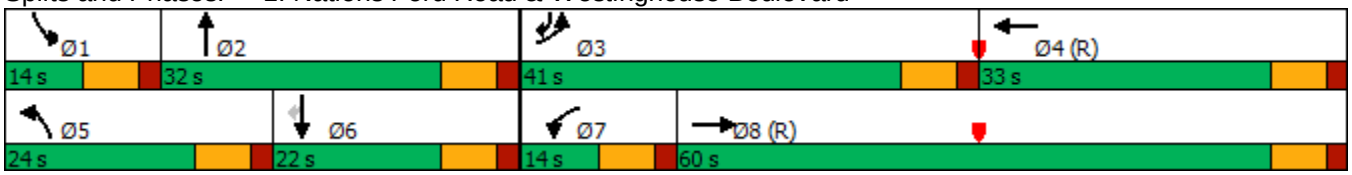
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	439	1074	170	80	613	24	127	247	81	12	68	126
Future Volume (vph)	439	1074	170	80	613	24	127	247	81	12	68	126
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			1%			1%			3%	
Storage Length (ft)	150		0	150		0	100		0	175		200
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.979			0.994			0.963				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1728	3393	0	1678	3366	0	1589	1768	0	1743	1749	1446
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1728	3393	0	1678	3366	0	1589	1768	0	1743	1749	1446
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		1506			1936			1515			1103	
Travel Time (s)		22.8			29.3			29.5			21.5	
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
Heavy Vehicles (%)	5%	4%	9%	7%	6%	8%	13%	3%	3%	2%	7%	10%
Adj. Flow (vph)	488	1193	189	89	681	27	141	274	90	13	76	140
Shared Lane Traffic (%)												
Lane Group Flow (vph)	488	1382	0	89	708	0	141	364	0	13	76	140
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	pm+ov
Protected Phases	3	8		7	4		5	2		1	6	3
Permitted Phases												6
Detector Phase	3	8		7	4		5	2		1	6	3
Switch Phase												
Minimum Initial (s)	7.0	14.0		7.0	14.0		7.0	8.0		7.0	8.0	7.0
Minimum Split (s)	14.0	21.0		14.0	21.0		14.0	15.0		14.0	15.0	14.0
Total Split (s)	41.0	60.0		14.0	33.0		24.0	32.0		14.0	22.0	41.0
Total Split (%)	34.2%	50.0%		11.7%	27.5%		20.0%	26.7%		11.7%	18.3%	34.2%
Maximum Green (s)	34.0	53.0		7.0	26.0		17.0	25.0		7.0	15.0	34.0
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	-2.0
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?												
Vehicle Extension (s)	2.0	5.0		2.0	5.0		3.0	2.0		3.0	1.5	2.0
Recall Mode	None	C-Min		None	C-Min		None	None		None	None	None
Act Effct Green (s)	37.7	60.4		10.3	33.1		19.3	28.7		9.0	13.0	52.7
Actuated g/C Ratio	0.31	0.50		0.09	0.28		0.16	0.24		0.08	0.11	0.44
v/c Ratio	0.90	0.81		0.62	0.76		0.55	0.86		0.10	0.40	0.22
Control Delay	60.7	30.9		60.9	63.9		56.1	64.7		53.7	55.3	20.3
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	60.7	30.9		60.9	63.9		56.1	64.7		53.7	55.3	20.3
LOS	E	C		E	E		E	E		D	E	C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		38.7			63.5			62.3			33.8	
Approach LOS		D			E			E			C	
Queue Length 50th (ft)	336	478		68	311		103	255		10	57	59
Queue Length 95th (ft)	#578	612		m#150	#404		171	#456		31	103	102
Internal Link Dist (ft)		1426			1856			1435			1023	
Turn Bay Length (ft)	150			150			100			175		200
Base Capacity (vph)	548	1708		143	927		267	428		130	247	639
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	0.89	0.81		0.62	0.76		0.53	0.85		0.10	0.31	0.22

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 108 (90%), Referenced to phase 4:WBT and 8:EBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 47.7 Intersection LOS: D
Intersection Capacity Utilization 72.5% ICU Level of Service C
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: 1: Nations Ford Road & Westinghouse Boulevard



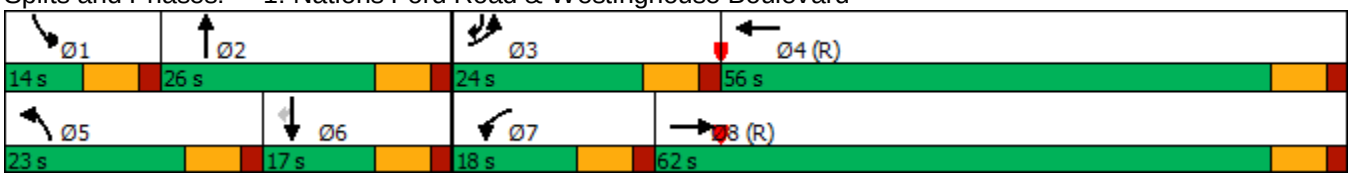
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	167	993	98	93	1063	11	158	92	57	37	120	321
Future Volume (vph)	167	993	98	93	1063	11	158	92	57	37	120	321
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			1%			1%			3%	
Storage Length (ft)	150		0	150		0	100		0	175		200
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.987			0.998			0.943				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1744	3452	0	1761	3480	0	1633	1748	0	1743	1835	1560
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1744	3452	0	1761	3480	0	1633	1748	0	1743	1835	1560
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		1506			1936			1515			1103	
Travel Time (s)		22.8			29.3			29.5			21.5	
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
Heavy Vehicles (%)	4%	3%	11%	2%	3%	4%	10%	2%	2%	2%	2%	2%
Adj. Flow (vph)	186	1103	109	103	1181	12	176	102	63	41	133	357
Shared Lane Traffic (%)												
Lane Group Flow (vph)	186	1212	0	103	1193	0	176	165	0	41	133	357
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	pm+ov
Protected Phases	3	8		7	4		5	2		1	6	3
Permitted Phases												6
Detector Phase	3	8		7	4		5	2		1	6	3
Switch Phase												
Minimum Initial (s)	7.0	14.0		7.0	14.0		7.0	8.0		7.0	8.0	7.0
Minimum Split (s)	14.0	21.0		14.0	21.0		14.0	15.0		14.0	15.0	14.0
Total Split (s)	24.0	62.0		18.0	56.0		23.0	26.0		14.0	17.0	24.0
Total Split (%)	20.0%	51.7%		15.0%	46.7%		19.2%	21.7%		11.7%	14.2%	20.0%
Maximum Green (s)	17.0	55.0		11.0	49.0		16.0	19.0		7.0	10.0	17.0
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	-2.0
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?												
Vehicle Extension (s)	2.0	5.0		2.0	5.0		3.0	2.0		3.0	1.5	2.0
Recall Mode	None	C-Min		None	C-Min		None	None		None	None	None
Act Effct Green (s)	17.5	59.3		11.9	53.7		17.2	22.6		9.0	11.6	34.1
Actuated g/C Ratio	0.15	0.49		0.10	0.45		0.14	0.19		0.08	0.10	0.28
v/c Ratio	0.73	0.71		0.59	0.77		0.76	0.50		0.32	0.75	0.81
Control Delay	66.1	27.1		53.4	34.1		69.9	50.6		59.5	78.2	54.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	66.1	27.1		53.4	34.1		69.9	50.6		59.5	78.2	54.5
LOS	E	C		D	C		E	D		E	E	D

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		32.3			35.6			60.6			60.8	
Approach LOS		C			D			E			E	
Queue Length 50th (ft)	137	388		75	362		132	118		31	102	251
Queue Length 95th (ft)	#220	475		m113	m434		#231	191		68	#195	#376
Internal Link Dist (ft)		1426			1856			1435			1023	
Turn Bay Length (ft)	150			150			100			175		200
Base Capacity (vph)	276	1706		190	1557		244	328		130	183	463
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	0.67	0.71		0.54	0.77		0.72	0.50		0.32	0.73	0.77

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 111 (93%), Referenced to phase 4:WBT and 8:EBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.81
Intersection Signal Delay: 40.5 Intersection LOS: D
Intersection Capacity Utilization 71.1% ICU Level of Service C
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: 1: Nations Ford Road & Westinghouse Boulevard



APPENDIX G

CAPACITY CALCULATIONS

WESTINGHOUSE BOULEVARD
AND
DOWNS ROAD

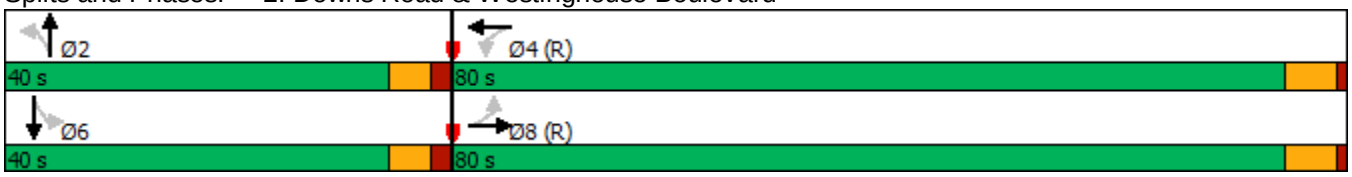
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	82	759	126	49	462	111	132	185	113	34	35	30
Future Volume (vph)	82	759	126	49	462	111	132	185	113	34	35	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	150		0	200		0	200		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.979			0.971			0.943			0.931	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3398	0	1770	3300	0	1736	1750	0	1752	1725	0
Flt Permitted	0.329			0.168			0.710			0.471		
Satd. Flow (perm)	613	3398	0	313	3300	0	1297	1750	0	869	1725	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		1936			1202			1063			1079	
Travel Time (s)		29.3			18.2			20.7			21.0	
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
Heavy Vehicles (%)	2%	4%	4%	2%	7%	3%	4%	2%	3%	3%	3%	2%
Adj. Flow (vph)	91	843	140	54	513	123	147	206	126	38	39	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	91	983	0	54	636	0	147	332	0	38	72	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	14.0	14.0		14.0	14.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		13.0	13.0		13.0	13.0	
Total Split (s)	80.0	80.0		80.0	80.0		40.0	40.0		40.0	40.0	
Total Split (%)	66.7%	66.7%		66.7%	66.7%		33.3%	33.3%		33.3%	33.3%	
Maximum Green (s)	74.2	74.2		74.2	74.2		34.2	34.2		34.2	34.2	
Yellow Time (s)	4.8	4.8		4.8	4.8		3.9	3.9		3.9	3.9	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.9	1.9		1.9	1.9	
Lost Time Adjust (s)	-0.8	-0.8		-0.8	-0.8		-0.8	-0.8		-0.8	-0.8	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0		5.0	5.0		0.3	0.3		3.0	3.0	
Recall Mode	C-Min	C-Min		C-Min	C-Min		Max	Max		Min	Min	
Act Effct Green (s)	52.5	52.5		52.5	52.5		57.5	57.5		57.5	57.5	
Actuated g/C Ratio	0.44	0.44		0.44	0.44		0.48	0.48		0.48	0.48	
v/c Ratio	0.34	0.66		0.40	0.44		0.24	0.40		0.09	0.09	
Control Delay	19.7	28.2		29.7	23.7		22.1	24.0		21.6	20.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	19.7	28.2		29.7	23.7		22.1	24.0		21.6	20.4	
LOS	B	C		C	C		C	C		C	C	
Approach Delay		27.5			24.2			23.4			20.8	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	56	377		28	177		65	161		16	29	
Queue Length 95th (ft)	m53	385		57	183		133	285		45	69	
Internal Link Dist (ft)		1856			1122			983			999	
Turn Bay Length (ft)	150			150			200			200		
Base Capacity (vph)	383	2123		195	2062		621	839		416	827	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.24	0.46		0.28	0.31		0.24	0.40		0.09	0.09	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 12 (10%), Referenced to phase 4:WBTL and 8:EBTL, Start of Green
Natural Cycle: 40
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.66
Intersection Signal Delay: 25.4 Intersection LOS: C
Intersection Capacity Utilization 75.8% ICU Level of Service D
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Downs Road & Westinghouse Boulevard



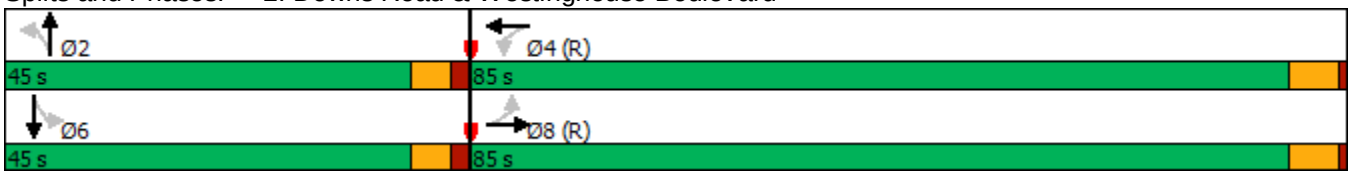
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	778	189	105	751	48	124	61	69	91	167	100
Future Volume (vph)	19	778	189	105	751	48	124	61	69	91	167	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	150		0	200		0	200		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.971			0.991			0.920			0.944	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3437	0	1770	3475	0	1770	1706	0	1736	1758	0
Flt Permitted	0.223			0.153			0.487			0.650		
Satd. Flow (perm)	415	3437	0	285	3475	0	907	1706	0	1187	1758	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		1936			1202			1063			1079	
Travel Time (s)		29.3			18.2			20.7			21.0	
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
Heavy Vehicles (%)	2%	2%	2%	2%	3%	2%	2%	3%	2%	4%	2%	2%
Adj. Flow (vph)	21	864	210	117	834	53	138	68	77	101	186	111
Shared Lane Traffic (%)												
Lane Group Flow (vph)	21	1074	0	117	887	0	138	145	0	101	297	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	14.0	14.0		14.0	14.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		13.0	13.0		13.0	13.0	
Total Split (s)	85.0	85.0		85.0	85.0		45.0	45.0		45.0	45.0	
Total Split (%)	65.4%	65.4%		65.4%	65.4%		34.6%	34.6%		34.6%	34.6%	
Maximum Green (s)	79.2	79.2		79.2	79.2		39.2	39.2		39.2	39.2	
Yellow Time (s)	4.8	4.8		4.8	4.8		3.9	3.9		3.9	3.9	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.9	1.9		1.9	1.9	
Lost Time Adjust (s)	-0.8	-0.8		-0.8	-0.8		-0.8	-0.8		-0.8	-0.8	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0		5.0	5.0		0.3	0.3		3.0	3.0	
Recall Mode	C-Min	C-Min		C-Min	C-Min		Max	Max		Min	Min	
Act Effct Green (s)	61.8	61.8		61.8	61.8		58.2	58.2		58.2	58.2	
Actuated g/C Ratio	0.48	0.48		0.48	0.48		0.45	0.45		0.45	0.45	
v/c Ratio	0.11	0.66		0.87	0.54		0.34	0.19		0.19	0.38	
Control Delay	14.0	27.8		78.3	24.6		30.5	26.0		27.0	28.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	14.0	27.8		78.3	24.6		30.5	26.0		27.0	28.7	
LOS	B	C		E	C		C	C		C	C	
Approach Delay		27.6			30.9			28.2			28.3	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	11	400		90	283		71	69		48	156	
Queue Length 95th (ft)	m19	376		#180	236		165	150		115	302	
Internal Link Dist (ft)		1856			1122			983			999	
Turn Bay Length (ft)	150			150			200			200		
Base Capacity (vph)	255	2115		175	2138		406	764		531	787	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.08	0.51		0.67	0.41		0.34	0.19		0.19	0.38	

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 21 (16%), Referenced to phase 4:WBTL and 8:EBTL, Start of Green
Natural Cycle: 45
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.87
Intersection Signal Delay: 28.9 Intersection LOS: C
Intersection Capacity Utilization 77.6% 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: 2: Downs Road & Westinghouse Boulevard



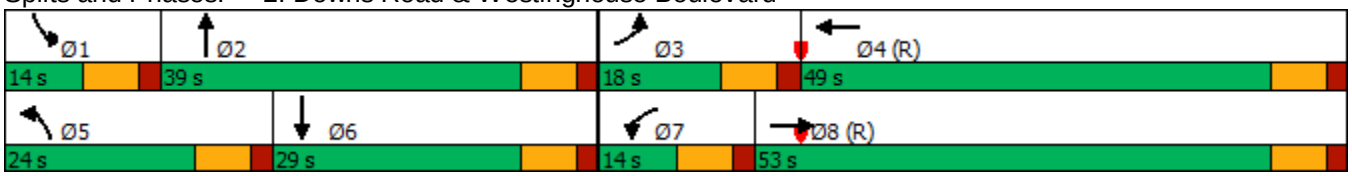
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	805	157	60	490	118	143	196	121	36	37	32
Future Volume (vph)	87	805	157	60	490	118	143	196	121	36	37	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	150		0	200		0	200		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.976			0.971			0.943			0.930	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3383	0	1752	3300	0	1719	1750	0	1752	1723	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3383	0	1752	3300	0	1719	1750	0	1752	1723	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		1936			1202			1063			1079	
Travel Time (s)		29.3			18.2			20.7			21.0	
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
Heavy Vehicles (%)	2%	4%	5%	3%	7%	3%	5%	2%	3%	3%	3%	2%
Adj. Flow (vph)	97	894	174	67	544	131	159	218	134	40	41	36
Shared Lane Traffic (%)												
Lane Group Flow (vph)	97	1068	0	67	675	0	159	352	0	40	77	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases												
Detector Phase	3	8		7	4		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	14.0		7.0	14.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	14.0	21.0		14.0	21.0		14.0	14.0		14.0	14.0	
Total Split (s)	18.0	53.0		14.0	49.0		24.0	39.0		14.0	29.0	
Total Split (%)	15.0%	44.2%		11.7%	40.8%		20.0%	32.5%		11.7%	24.2%	
Maximum Green (s)	11.0	46.0		7.0	42.0		17.0	32.0		7.0	22.0	
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	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-Lag Optimize?												
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	0.3		3.0	3.0	
Recall Mode	None	C-Min		None	C-Min		None	Max		None	Min	
Act Effct Green (s)	12.1	48.7		9.0	42.8		16.9	38.9		9.0	28.3	
Actuated g/C Ratio	0.10	0.41		0.08	0.36		0.14	0.32		0.08	0.24	
v/c Ratio	0.55	0.78		0.51	0.57		0.66	0.62		0.31	0.19	
Control Delay	71.6	28.6		67.7	33.3		62.0	42.2		59.1	40.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	71.6	28.6		67.7	33.3		62.0	42.2		59.1	40.8	
LOS	E	C		E	C		E	D		E	D	
Approach Delay		32.2			36.4			48.4			47.1	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		C			D			D			D	
Queue Length 50th (ft)	80	152		51	217		116	245		30	50	
Queue Length 95th (ft)	m118	301		100	278		189	356		67	95	
Internal Link Dist (ft)		1856			1122			983			999	
Turn Bay Length (ft)	150			150			200			200		
Base Capacity (vph)	191	1374		131	1213		272	567		131	405	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.51	0.78		0.51	0.56		0.58	0.62		0.31	0.19	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 4:WBT and 8:EBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.78
Intersection Signal Delay: 37.3 Intersection LOS: D
Intersection Capacity Utilization 73.3% ICU Level of Service D
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Downs Road & Westinghouse Boulevard



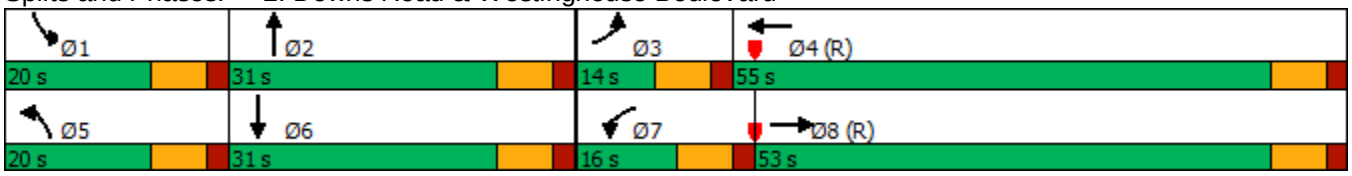
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	826	204	112	797	51	150	65	79	97	177	106
Future Volume (vph)	20	826	204	112	797	51	150	65	79	97	177	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	150		0	200		0	200		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.970			0.991			0.917			0.944	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3426	0	1770	3475	0	1736	1692	0	1736	1758	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3426	0	1770	3475	0	1736	1692	0	1736	1758	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		1936			1202			1063			1079	
Travel Time (s)		29.3			18.2			20.7			21.0	
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
Heavy Vehicles (%)	2%	2%	3%	2%	3%	2%	4%	3%	3%	4%	2%	2%
Adj. Flow (vph)	22	918	227	124	886	57	167	72	88	108	197	118
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	1145	0	124	943	0	167	160	0	108	315	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases												
Detector Phase	3	8		7	4		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	14.0		7.0	14.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	14.0	21.0		14.0	21.0		14.0	14.0		14.0	14.0	
Total Split (s)	14.0	53.0		16.0	55.0		20.0	31.0		20.0	31.0	
Total Split (%)	11.7%	44.2%		13.3%	45.8%		16.7%	25.8%		16.7%	25.8%	
Maximum Green (s)	7.0	46.0		9.0	48.0		13.0	24.0		13.0	24.0	
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	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-Lag Optimize?												
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	0.3		3.0	3.0	
Recall Mode	None	C-Min		None	C-Min		None	Max		None	Min	
Act Effct Green (s)	9.0	47.4		11.0	55.0		14.7	28.2		13.4	27.0	
Actuated g/C Ratio	0.08	0.40		0.09	0.46		0.12	0.24		0.11	0.22	
v/c Ratio	0.17	0.85		0.77	0.59		0.79	0.40		0.56	0.80	
Control Delay	60.1	30.8		82.5	27.1		76.7	43.4		61.4	60.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	60.1	30.8		82.5	27.1		76.7	43.4		61.4	60.6	
LOS	E	C		F	C		E	D		E	E	
Approach Delay		31.4			33.5			60.4			60.8	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		C			C			E			E	
Queue Length 50th (ft)	17	176		96	302		127	108		79	235	
Queue Length 95th (ft)	m32	291		#195	375		#236	177		140	#383	
Internal Link Dist (ft)		1856			1122			983			999	
Turn Bay Length (ft)	150			150			200			200		
Base Capacity (vph)	132	1370		162	1591		217	397		217	394	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.17	0.84		0.77	0.59		0.77	0.40		0.50	0.80	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 4:WBT and 8:EBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.85
Intersection Signal Delay: 39.5 Intersection LOS: D
Intersection Capacity Utilization 76.3% 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: 2: Downs Road & Westinghouse Boulevard



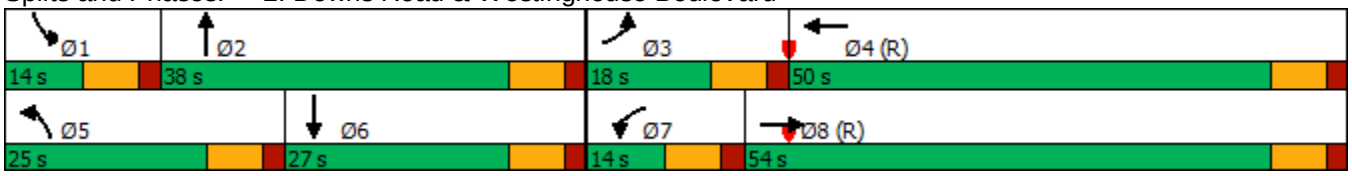
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	92	855	165	63	520	125	152	208	128	38	39	34
Future Volume (vph)	92	855	165	63	520	125	152	208	128	38	39	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	150		0	200		0	200		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.976			0.971			0.943			0.930	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3383	0	1752	3300	0	1719	1757	0	1752	1723	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3383	0	1752	3300	0	1719	1757	0	1752	1723	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		1936			1202			1063			1079	
Travel Time (s)		29.3			18.2			20.7			21.0	
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
Heavy Vehicles (%)	2%	4%	5%	3%	7%	3%	5%	2%	2%	3%	3%	2%
Adj. Flow (vph)	102	950	183	70	578	139	169	231	142	42	43	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	102	1133	0	70	717	0	169	373	0	42	81	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases												
Detector Phase	3	8		7	4		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	14.0		7.0	14.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	14.0	21.0		14.0	21.0		14.0	14.0		14.0	14.0	
Total Split (s)	18.0	54.0		14.0	50.0		25.0	38.0		14.0	27.0	
Total Split (%)	15.0%	45.0%		11.7%	41.7%		20.8%	31.7%		11.7%	22.5%	
Maximum Green (s)	11.0	47.0		7.0	43.0		18.0	31.0		7.0	20.0	
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	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-Lag Optimize?												
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	0.3		3.0	3.0	
Recall Mode	None	C-Min		None	C-Min		None	Max		None	Min	
Act Effct Green (s)	12.2	50.0		9.0	44.0		17.7	37.6		9.0	26.2	
Actuated g/C Ratio	0.10	0.42		0.08	0.37		0.15	0.31		0.08	0.22	
v/c Ratio	0.57	0.80		0.53	0.59		0.67	0.68		0.32	0.22	
Control Delay	69.5	20.5		69.0	32.9		61.5	45.3		59.6	42.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	69.5	20.5		69.0	32.9		61.5	45.3		59.6	42.8	
LOS	E	C		E	C		E	D		E	D	
Approach Delay		24.6			36.2			50.3			48.5	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		C			D			D			D	
Queue Length 50th (ft)	60	446		53	231		124	266		31	54	
Queue Length 95th (ft)	m94	548		103	294		197	#404		69	102	
Internal Link Dist (ft)		1856			1122			983			999	
Turn Bay Length (ft)	150			150			200			200		
Base Capacity (vph)	191	1409		131	1241		286	551		131	375	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.53	0.80		0.53	0.58		0.59	0.68		0.32	0.22	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 4:WBT and 8:EBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.80
Intersection Signal Delay: 34.3 Intersection LOS: C
Intersection Capacity Utilization 76.0% 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: 2: Downs Road & Westinghouse Boulevard



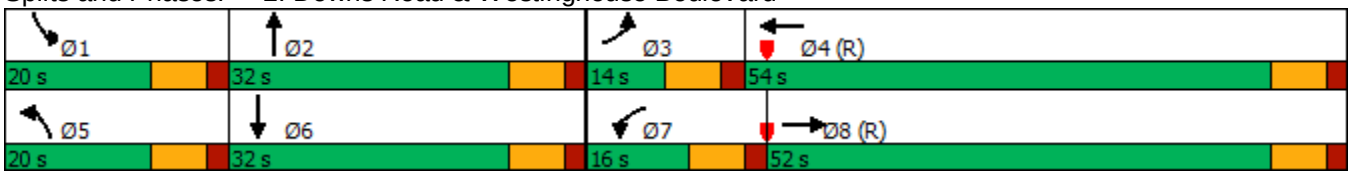
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	876	216	119	846	54	158	69	84	102	188	113
Future Volume (vph)	21	876	216	119	846	54	158	69	84	102	188	113
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	150		0	200		0	200		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.970			0.991			0.918			0.944	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3433	0	1770	3475	0	1736	1684	0	1736	1758	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3433	0	1770	3475	0	1736	1684	0	1736	1758	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		1936			1202			1063			1079	
Travel Time (s)		29.3			18.2			20.7			21.0	
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
Heavy Vehicles (%)	2%	2%	2%	2%	3%	2%	4%	3%	4%	4%	2%	2%
Adj. Flow (vph)	23	973	240	132	940	60	176	77	93	113	209	126
Shared Lane Traffic (%)												
Lane Group Flow (vph)	23	1213	0	132	1000	0	176	170	0	113	335	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases												
Detector Phase	3	8		7	4		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	14.0		7.0	14.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	14.0	21.0		14.0	21.0		14.0	14.0		14.0	14.0	
Total Split (s)	14.0	52.0		16.0	54.0		20.0	32.0		20.0	32.0	
Total Split (%)	11.7%	43.3%		13.3%	45.0%		16.7%	26.7%		16.7%	26.7%	
Maximum Green (s)	7.0	45.0		9.0	47.0		13.0	25.0		13.0	25.0	
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	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-Lag Optimize?												
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	0.3		3.0	3.0	
Recall Mode	None	C-Min		None	C-Min		None	Max		None	Min	
Act Effct Green (s)	9.0	47.0		11.0	54.6		14.8	28.4		13.6	27.2	
Actuated g/C Ratio	0.08	0.39		0.09	0.46		0.12	0.24		0.11	0.23	
v/c Ratio	0.17	0.90		0.81	0.63		0.82	0.43		0.57	0.84	
Control Delay	61.8	32.5		88.7	28.5		80.2	43.5		62.1	64.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	61.8	32.5		88.7	28.5		80.2	43.5		62.1	64.3	
LOS	E	C		F	C		F	D		E	E	
Approach Delay		33.1			35.5			62.2			63.8	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		C			D			E			E	
Queue Length 50th (ft)	18	185		102	333		135	114		83	250	
Queue Length 95th (ft)	m32	#302		#211	412		#254	184		145	#407	
Internal Link Dist (ft)		1856			1122			983			999	
Turn Bay Length (ft)	150			150			200			200		
Base Capacity (vph)	132	1344		162	1580		217	398		217	397	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.17	0.90		0.81	0.63		0.81	0.43		0.52	0.84	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 4:WBT and 8:EBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 41.5 Intersection LOS: D
Intersection Capacity Utilization 79.9% 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: 2: Downs Road & Westinghouse Boulevard



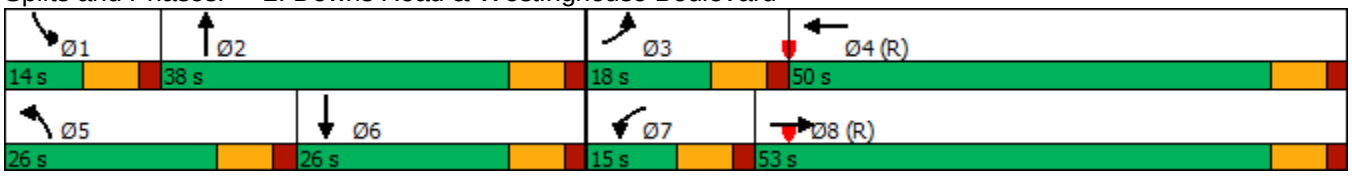
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	805	192	78	490	118	156	196	127	36	37	32
Future Volume (vph)	87	805	192	78	490	118	156	196	127	36	37	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	150		0	200		0	200		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.971			0.971			0.941			0.930	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3364	0	1736	3300	0	1687	1746	0	1752	1723	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3364	0	1736	3300	0	1687	1746	0	1752	1723	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		1936			1202			1063			1079	
Travel Time (s)		29.3			18.2			20.7			21.0	
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
Heavy Vehicles (%)	2%	4%	5%	4%	7%	3%	7%	2%	3%	3%	3%	2%
Adj. Flow (vph)	97	894	213	87	544	131	173	218	141	40	41	36
Shared Lane Traffic (%)												
Lane Group Flow (vph)	97	1107	0	87	675	0	173	359	0	40	77	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases												
Detector Phase	3	8		7	4		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	14.0		7.0	14.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	14.0	21.0		14.0	21.0		14.0	14.0		14.0	14.0	
Total Split (s)	18.0	53.0		15.0	50.0		26.0	38.0		14.0	26.0	
Total Split (%)	15.0%	44.2%		12.5%	41.7%		21.7%	31.7%		11.7%	21.7%	
Maximum Green (s)	11.0	46.0		8.0	43.0		19.0	31.0		7.0	19.0	
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	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-Lag Optimize?												
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	0.3		3.0	3.0	
Recall Mode	None	C-Min		None	C-Min		None	Max		None	Min	
Act Effct Green (s)	12.1	47.2		9.8	45.0		18.3	36.7		9.0	24.7	
Actuated g/C Ratio	0.10	0.39		0.08	0.38		0.15	0.31		0.08	0.21	
v/c Ratio	0.55	0.84		0.62	0.55		0.67	0.67		0.31	0.22	
Control Delay	69.0	23.9		72.3	31.5		61.1	45.4		59.1	43.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	69.0	23.9		72.3	31.5		61.1	45.4		59.1	43.7	
LOS	E	C		E	C		E	D		E	D	
Approach Delay		27.5			36.1			50.5			48.9	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		C			D			D			D	
Queue Length 50th (ft)	57	436		66	214		126	254		30	51	
Queue Length 95th (ft)	m88	540		#132	274		201	370		67	98	
Internal Link Dist (ft)		1856			1122			983			999	
Turn Bay Length (ft)	150			150			200			200		
Base Capacity (vph)	191	1345		144	1243		295	534		131	354	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.51	0.82		0.60	0.54		0.59	0.67		0.31	0.22	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 4:WBT and 8:EBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.84
Intersection Signal Delay: 35.7 Intersection LOS: D
Intersection Capacity Utilization 74.8% 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: 2: Downs Road & Westinghouse Boulevard



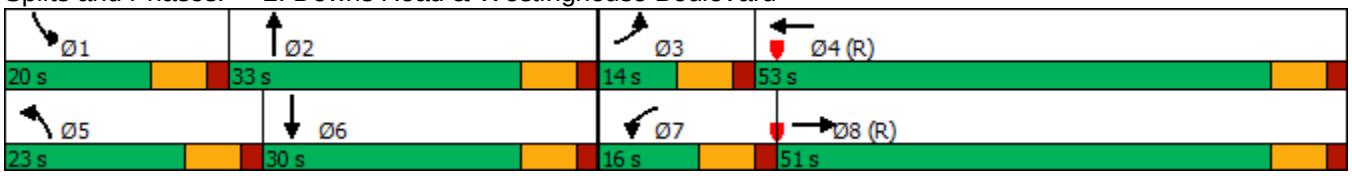
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	826	220	119	797	51	187	65	98	97	177	106
Future Volume (vph)	20	826	220	119	797	51	187	65	98	97	177	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	150		0	200		0	200		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.969			0.991			0.910			0.944	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3408	0	1752	3475	0	1703	1659	0	1736	1758	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3408	0	1752	3475	0	1703	1659	0	1736	1758	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		1936			1202			1063			1079	
Travel Time (s)		29.3			18.2			20.7			21.0	
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
Heavy Vehicles (%)	2%	2%	5%	3%	3%	2%	6%	3%	5%	4%	2%	2%
Adj. Flow (vph)	22	918	244	132	886	57	208	72	109	108	197	118
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	1162	0	132	943	0	208	181	0	108	315	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases												
Detector Phase	3	8		7	4		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	14.0		7.0	14.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	14.0	21.0		14.0	21.0		14.0	14.0		14.0	14.0	
Total Split (s)	14.0	51.0		16.0	53.0		23.0	33.0		20.0	30.0	
Total Split (%)	11.7%	42.5%		13.3%	44.2%		19.2%	27.5%		16.7%	25.0%	
Maximum Green (s)	7.0	44.0		9.0	46.0		16.0	26.0		13.0	23.0	
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	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-Lag Optimize?												
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	0.3		3.0	3.0	
Recall Mode	None	C-Min		None	C-Min		None	Max		None	Min	
Act Effct Green (s)	9.0	46.0		11.0	53.6		17.6	29.6		13.4	25.5	
Actuated g/C Ratio	0.08	0.38		0.09	0.45		0.15	0.25		0.11	0.21	
v/c Ratio	0.17	0.89		0.82	0.61		0.84	0.44		0.56	0.84	
Control Delay	65.5	30.5		90.5	28.5		77.2	42.9		61.4	66.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	65.5	30.5		90.5	28.5		77.2	42.9		61.4	66.7	
LOS	E	C		F	C		E	D		E	E	
Approach Delay		31.2			36.1			61.3			65.4	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		C			D			E			E	
Queue Length 50th (ft)	0	164		102	312		158	121		79	237	
Queue Length 95th (ft)	m30	#262		#212	386		#284	194		140	#395	
Internal Link Dist (ft)		1856			1122			983			999	
Turn Bay Length (ft)	150			150			200			200		
Base Capacity (vph)	132	1306		160	1551		255	409		217	373	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.17	0.89		0.82	0.61		0.82	0.44		0.50	0.84	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 4:WBT and 8:EBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 41.4 Intersection LOS: D
Intersection Capacity Utilization 79.3% 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: 2: Downs Road & Westinghouse Boulevard



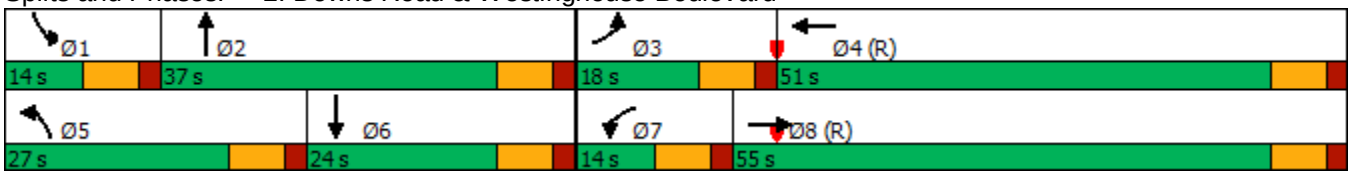
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	92	855	215	87	520	125	170	208	137	38	39	34
Future Volume (vph)	92	855	215	87	520	125	170	208	137	38	39	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	150		0	200		0	200		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.970			0.971			0.940			0.930	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3354	0	1719	3300	0	1687	1737	0	1752	1723	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3354	0	1719	3300	0	1687	1737	0	1752	1723	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		1936			1202			1063			1079	
Travel Time (s)		29.3			18.2			20.7			21.0	
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
Heavy Vehicles (%)	2%	4%	6%	5%	7%	3%	7%	2%	4%	3%	3%	2%
Adj. Flow (vph)	102	950	239	97	578	139	189	231	152	42	43	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	102	1189	0	97	717	0	189	383	0	42	81	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases												
Detector Phase	3	8		7	4		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	14.0		7.0	14.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	14.0	21.0		14.0	21.0		14.0	14.0		14.0	14.0	
Total Split (s)	18.0	55.0		14.0	51.0		27.0	37.0		14.0	24.0	
Total Split (%)	15.0%	45.8%		11.7%	42.5%		22.5%	30.8%		11.7%	20.0%	
Maximum Green (s)	11.0	48.0		7.0	44.0		20.0	30.0		7.0	17.0	
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	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-Lag Optimize?												
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	0.3		3.0	3.0	
Recall Mode	None	C-Min		None	C-Min		None	Max		None	Min	
Act Effct Green (s)	12.2	49.5		9.0	46.4		19.3	35.3		9.0	22.2	
Actuated g/C Ratio	0.10	0.41		0.08	0.39		0.16	0.29		0.08	0.18	
v/c Ratio	0.57	0.86		0.76	0.56		0.70	0.75		0.32	0.25	
Control Delay	79.3	15.7		88.7	31.0		61.4	50.3		59.6	46.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	79.3	15.7		88.7	31.0		61.4	50.3		59.6	46.1	
LOS	E	B		F	C		E	D		E	D	
Approach Delay		20.7			37.9			54.0			50.7	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		C			D			D			D	
Queue Length 50th (ft)	73	329		75	227		138	280		31	55	
Queue Length 95th (ft)	m96	227		#165	290		216	#437		69	105	
Internal Link Dist (ft)		1856			1122			983			999	
Turn Bay Length (ft)	150			150			200			200		
Base Capacity (vph)	191	1397		128	1275		309	510		131	318	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.53	0.85		0.76	0.56		0.61	0.75		0.32	0.25	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 4:WBT and 8:EBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 33.8 Intersection LOS: C
Intersection Capacity Utilization 78.1% 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: 2: Downs Road & Westinghouse Boulevard



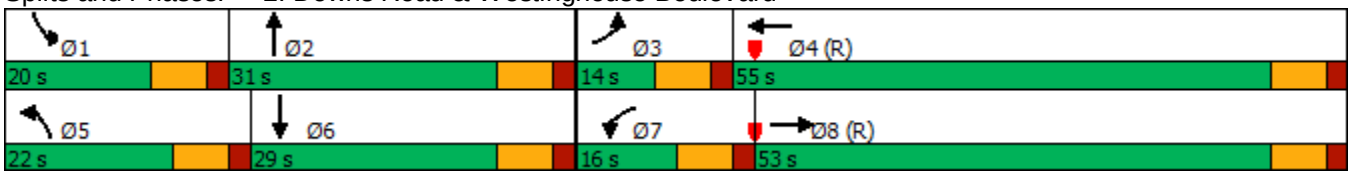
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	876	238	130	846	54	210	69	110	102	188	113
Future Volume (vph)	21	876	238	130	846	54	210	69	110	102	188	113
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	150		0	200		0	200		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.968			0.991			0.908			0.944	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3405	0	1736	3475	0	1687	1646	0	1736	1758	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3405	0	1736	3475	0	1687	1646	0	1736	1758	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		1936			1202			1063			1079	
Travel Time (s)		29.3			18.2			20.7			21.0	
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
Heavy Vehicles (%)	2%	2%	5%	4%	3%	2%	7%	3%	6%	4%	2%	2%
Adj. Flow (vph)	23	973	264	144	940	60	233	77	122	113	209	126
Shared Lane Traffic (%)												
Lane Group Flow (vph)	23	1237	0	144	1000	0	233	199	0	113	335	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases												
Detector Phase	3	8		7	4		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	14.0		7.0	14.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	14.0	21.0		14.0	21.0		14.0	14.0		14.0	14.0	
Total Split (s)	14.0	53.0		16.0	55.0		22.0	31.0		20.0	29.0	
Total Split (%)	11.7%	44.2%		13.3%	45.8%		18.3%	25.8%		16.7%	24.2%	
Maximum Green (s)	7.0	46.0		9.0	48.0		15.0	24.0		13.0	22.0	
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	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-Lag Optimize?												
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	0.3		3.0	3.0	
Recall Mode	None	C-Min		None	C-Min		None	Max		None	Min	
Act Effct Green (s)	9.0	48.0		11.0	55.6		17.0	27.4		13.6	24.0	
Actuated g/C Ratio	0.08	0.40		0.09	0.46		0.14	0.23		0.11	0.20	
v/c Ratio	0.17	0.91		0.91	0.62		0.98	0.53		0.57	0.95	
Control Delay	65.5	28.7		104.5	27.6		105.0	47.2		62.1	85.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	65.5	28.7		104.5	27.6		105.0	47.2		62.1	85.8	
LOS	E	C		F	C		F	D		E	F	
Approach Delay		29.4			37.2			78.4			79.8	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		C			D			E			E	
Queue Length 50th (ft)	19	154		112	328		182	138		83	259	
Queue Length 95th (ft)	m27	#355		#238	406		#346	218		145	#442	
Internal Link Dist (ft)		1856			1122			983			999	
Turn Bay Length (ft)	150			150			200			200		
Base Capacity (vph)	132	1362		159	1609		238	375		217	351	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.17	0.91		0.91	0.62		0.98	0.53		0.52	0.95	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 4:WBT and 8:EBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.98
Intersection Signal Delay: 45.4 Intersection LOS: D
Intersection Capacity Utilization 84.1% 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: 2: Downs Road & Westinghouse Boulevard



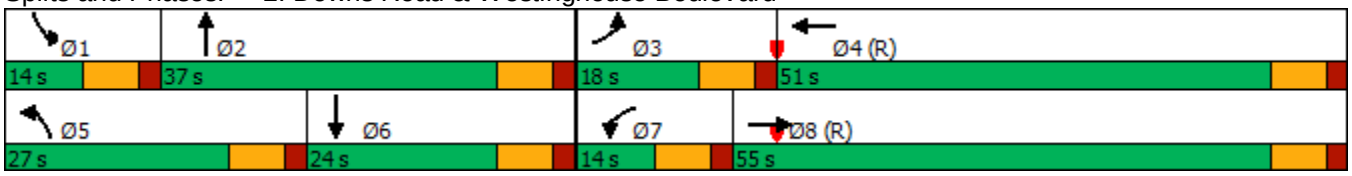
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	92	855	215	87	520	125	170	208	137	38	39	34
Future Volume (vph)	92	855	215	87	520	125	170	208	137	38	39	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	150		0	400		0	200		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.970			0.971			0.940			0.930	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3354	0	1719	3300	0	1687	1737	0	1752	1723	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3354	0	1719	3300	0	1687	1737	0	1752	1723	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		1936			1202			1063			1079	
Travel Time (s)		29.3			18.2			20.7			21.0	
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
Heavy Vehicles (%)	2%	4%	6%	5%	7%	3%	7%	2%	4%	3%	3%	2%
Adj. Flow (vph)	102	950	239	97	578	139	189	231	152	42	43	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	102	1189	0	97	717	0	189	383	0	42	81	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases												
Detector Phase	3	8		7	4		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	14.0		7.0	14.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	14.0	21.0		14.0	21.0		14.0	14.0		14.0	14.0	
Total Split (s)	18.0	55.0		14.0	51.0		27.0	37.0		14.0	24.0	
Total Split (%)	15.0%	45.8%		11.7%	42.5%		22.5%	30.8%		11.7%	20.0%	
Maximum Green (s)	11.0	48.0		7.0	44.0		20.0	30.0		7.0	17.0	
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	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-Lag Optimize?												
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	0.3		3.0	3.0	
Recall Mode	None	C-Min		None	C-Min		None	Max		None	Min	
Act Effct Green (s)	12.2	49.5		9.0	46.4		19.3	35.3		9.0	22.2	
Actuated g/C Ratio	0.10	0.41		0.08	0.39		0.16	0.29		0.08	0.18	
v/c Ratio	0.57	0.86		0.76	0.56		0.70	0.75		0.32	0.25	
Control Delay	79.3	15.7		88.7	31.0		61.4	50.3		59.6	46.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	79.3	15.7		88.7	31.0		61.4	50.3		59.6	46.1	
LOS	E	B		F	C		E	D		E	D	
Approach Delay		20.7			37.9			54.0			50.7	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		C			D			D			D	
Queue Length 50th (ft)	73	329		75	227		138	280		31	55	
Queue Length 95th (ft)	m96	227		#165	290		216	#437		69	105	
Internal Link Dist (ft)		1856			1122			983			999	
Turn Bay Length (ft)	150			150			400			200		
Base Capacity (vph)	191	1397		128	1275		309	510		131	318	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.53	0.85		0.76	0.56		0.61	0.75		0.32	0.25	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 4:WBT and 8:EBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 33.8 Intersection LOS: C
Intersection Capacity Utilization 78.1% 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: 2: Downs Road & Westinghouse Boulevard



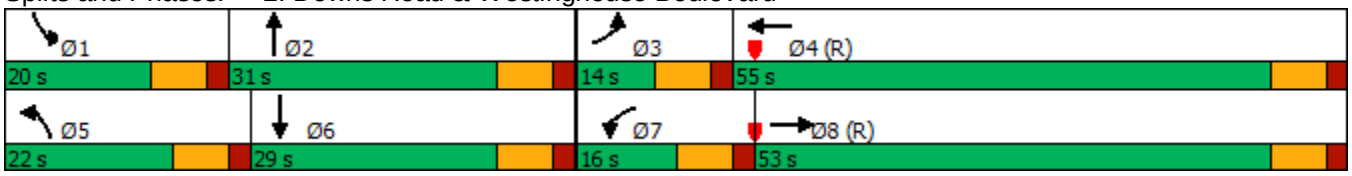
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	876	238	130	846	54	210	69	110	102	188	113
Future Volume (vph)	21	876	238	130	846	54	210	69	110	102	188	113
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	150		0	400		0	200		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.968			0.991			0.908			0.944	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3405	0	1736	3475	0	1687	1646	0	1736	1758	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3405	0	1736	3475	0	1687	1646	0	1736	1758	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		1936			1202			1063			1079	
Travel Time (s)		29.3			18.2			20.7			21.0	
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
Heavy Vehicles (%)	2%	2%	5%	4%	3%	2%	7%	3%	6%	4%	2%	2%
Adj. Flow (vph)	23	973	264	144	940	60	233	77	122	113	209	126
Shared Lane Traffic (%)												
Lane Group Flow (vph)	23	1237	0	144	1000	0	233	199	0	113	335	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases												
Detector Phase	3	8		7	4		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	14.0		7.0	14.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	14.0	21.0		14.0	21.0		14.0	14.0		14.0	14.0	
Total Split (s)	14.0	53.0		16.0	55.0		22.0	31.0		20.0	29.0	
Total Split (%)	11.7%	44.2%		13.3%	45.8%		18.3%	25.8%		16.7%	24.2%	
Maximum Green (s)	7.0	46.0		9.0	48.0		15.0	24.0		13.0	22.0	
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	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-Lag Optimize?												
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	0.3		3.0	3.0	
Recall Mode	None	C-Min		None	C-Min		None	Max		None	Min	
Act Effct Green (s)	9.0	48.0		11.0	55.6		17.0	27.4		13.6	24.0	
Actuated g/C Ratio	0.08	0.40		0.09	0.46		0.14	0.23		0.11	0.20	
v/c Ratio	0.17	0.91		0.91	0.62		0.98	0.53		0.57	0.95	
Control Delay	65.5	28.7		104.5	27.6		105.0	47.2		62.1	85.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	65.5	28.7		104.5	27.6		105.0	47.2		62.1	85.8	
LOS	E	C		F	C		F	D		E	F	
Approach Delay		29.4			37.2			78.4			79.8	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		C			D			E			E	
Queue Length 50th (ft)	19	154		112	328		182	138		83	259	
Queue Length 95th (ft)	m27	#355		#238	406		#346	218		145	#442	
Internal Link Dist (ft)		1856			1122			983			999	
Turn Bay Length (ft)	150			150			400			200		
Base Capacity (vph)	132	1362		159	1609		238	375		217	351	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.17	0.91		0.91	0.62		0.98	0.53		0.52	0.95	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 4:WBT and 8:EBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.98
Intersection Signal Delay: 45.4 Intersection LOS: D
Intersection Capacity Utilization 84.1% 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: 2: Downs Road & Westinghouse Boulevard



APPENDIX H

CAPACITY CALCULATIONS

NC 51
AND
DOWNS ROAD

Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	138	722	4	526	298	101	40
Future Volume (vph)	138	722	4	526	298	101	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%		0%		1%	
Storage Length (ft)	325		175		300	150	0
Storage Lanes	1		1		1	1	1
Taper Length (ft)	100		100			100	
Lane Util. Factor	1.00	0.95	1.00	0.95	1.00	1.00	1.00
Frt					0.850		0.850
Flt Protected	0.950		0.950			0.950	
Satd. Flow (prot)	1770	3539	1770	3539	1583	1744	1530
Flt Permitted	0.950		0.950			0.950	
Satd. Flow (perm)	1770	3539	1770	3539	1583	1744	1530
Right Turn on Red					No		No
Satd. Flow (RTOR)							
Link Speed (mph)		45		45		35	
Link Distance (ft)		2545		2799		634	
Travel Time (s)		38.6		42.4		12.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	3%	5%
Adj. Flow (vph)	153	802	4	584	331	112	44
Shared Lane Traffic (%)							
Lane Group Flow (vph)	153	802	4	584	331	112	44
Turn Type	Prot	NA	Prot	NA	Free	Prot	pm+ov
Protected Phases	5	2	1	6		4	5
Permitted Phases					Free		4
Detector Phase	5	2	1	6		4	5
Switch Phase							
Minimum Initial (s)	7.0	12.0	7.0	12.0		7.0	7.0
Minimum Split (s)	13.0	18.0	13.0	18.0		13.0	13.0
Total Split (s)	36.0	74.0	15.0	53.0		31.0	36.0
Total Split (%)	30.0%	61.7%	12.5%	44.2%		25.8%	30.0%
Maximum Green (s)	30.2	68.0	9.1	47.2		25.4	30.2
Yellow Time (s)	3.0	4.5	3.0	4.5		3.0	3.0
All-Red Time (s)	2.8	1.5	2.9	1.3		2.6	2.8
Lost Time Adjust (s)	-0.8	-1.0	-0.9	-0.8		-0.6	-0.8
Total Lost Time (s)	5.0	5.0	5.0	5.0		5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag			Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes
Vehicle Extension (s)	2.0	6.0	2.0	6.0		2.0	2.0
Minimum Gap (s)	0.2	3.0	0.2	3.0		0.2	0.2
Time Before Reduce (s)	0.0	15.0	0.0	15.0		0.0	0.0
Time To Reduce (s)	0.0	30.0	0.0	30.0		0.0	0.0
Recall Mode	None	Min	None	Min		None	None
Act Effct Green (s)	11.1	38.4	8.4	22.4	55.3	9.8	22.3
Actuated g/C Ratio	0.20	0.69	0.15	0.41	1.00	0.18	0.40
v/c Ratio	0.43	0.33	0.01	0.41	0.21	0.36	0.07
Control Delay	26.4	6.4	26.8	14.3	0.3	27.2	10.3

Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.4	6.4	26.8	14.3	0.3	27.2	10.3
LOS	C	A	C	B	A	C	B
Approach Delay		9.6		9.3		22.5	
Approach LOS		A		A		C	
Queue Length 50th (ft)	45	49	1	73	0	34	8
Queue Length 95th (ft)	112	157	10	138	0	90	27
Internal Link Dist (ft)		2465		2719		554	
Turn Bay Length (ft)	325		175		300	150	
Base Capacity (vph)	1052	3500	339	3013	1583	869	1218
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.23	0.01	0.19	0.21	0.13	0.04

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 55.3
Natural Cycle: 45
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.43
Intersection Signal Delay: 10.5 Intersection LOS: B
Intersection Capacity Utilization 44.1% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 4: NC 51 & Downs Road

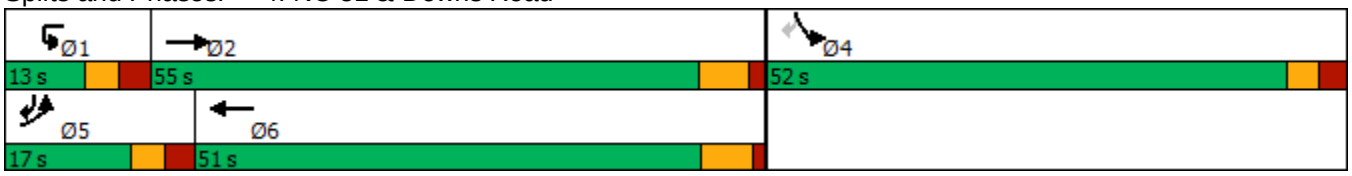
Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	60	644	4	699	89	342	157
Future Volume (vph)	60	644	4	699	89	342	157
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%		0%		1%	
Storage Length (ft)	325		175		300	150	0
Storage Lanes	1		1		1	1	1
Taper Length (ft)	100		100			100	
Lane Util. Factor	1.00	0.95	1.00	0.95	1.00	1.00	1.00
Frt					0.850		0.850
Flt Protected	0.950		0.950			0.950	
Satd. Flow (prot)	1752	3539	1770	3539	1568	1761	1575
Flt Permitted	0.950		0.950			0.950	
Satd. Flow (perm)	1752	3539	1770	3539	1568	1761	1575
Right Turn on Red					No		No
Satd. Flow (RTOR)							
Link Speed (mph)		45		45		35	
Link Distance (ft)		2545		2799		634	
Travel Time (s)		38.6		42.4		12.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	2%	2%	2%	3%	2%	2%
Adj. Flow (vph)	67	716	4	777	99	380	174
Shared Lane Traffic (%)							
Lane Group Flow (vph)	67	716	4	777	99	380	174
Turn Type	Prot	NA	Prot	NA	Free	Prot	pm+ov
Protected Phases	5	2	1	6		4	5
Permitted Phases					Free		4
Detector Phase	5	2	1	6		4	5
Switch Phase							
Minimum Initial (s)	7.0	12.0	7.0	12.0		7.0	7.0
Minimum Split (s)	13.0	18.0	13.0	18.0		13.0	13.0
Total Split (s)	17.0	55.0	13.0	51.0		52.0	17.0
Total Split (%)	14.2%	45.8%	10.8%	42.5%		43.3%	14.2%
Maximum Green (s)	11.2	49.0	7.1	45.2		46.4	11.2
Yellow Time (s)	3.0	4.5	3.0	4.5		3.0	3.0
All-Red Time (s)	2.8	1.5	2.9	1.3		2.6	2.8
Lost Time Adjust (s)	-0.8	-1.0	-0.9	-0.8		-0.6	-0.8
Total Lost Time (s)	5.0	5.0	5.0	5.0		5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag			Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes
Vehicle Extension (s)	2.0	6.0	2.0	6.0		2.0	2.0
Minimum Gap (s)	0.2	3.0	0.2	3.0		0.2	0.2
Time Before Reduce (s)	0.0	15.0	0.0	15.0		0.0	0.0
Time To Reduce (s)	0.0	30.0	0.0	30.0		0.0	0.0
Recall Mode	None	Min	None	Min		None	None
Act Effct Green (s)	9.2	41.5	8.2	29.0	76.1	22.3	36.7
Actuated g/C Ratio	0.12	0.55	0.11	0.38	1.00	0.29	0.48
v/c Ratio	0.32	0.37	0.02	0.58	0.06	0.74	0.23
Control Delay	39.4	12.6	38.5	21.6	0.1	34.3	12.9

Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.4	12.6	38.5	21.6	0.1	34.3	12.9
LOS	D	B	D	C	A	C	B
Approach Delay		14.9		19.2		27.5	
Approach LOS		B		B		C	
Queue Length 50th (ft)	29	84	2	142	0	157	45
Queue Length 95th (ft)	81	222	13	264	0	298	97
Internal Link Dist (ft)		2465		2719		554	
Turn Bay Length (ft)	325		175		300	150	
Base Capacity (vph)	286	2408	192	2216	1568	1126	826
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.30	0.02	0.35	0.06	0.34	0.21

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 76.1
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.74
Intersection Signal Delay: 19.8 Intersection LOS: B
Intersection Capacity Utilization 56.6% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 4: NC 51 & Downs Road



Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	165	766	4	558	343	111	45
Future Volume (vph)	165	766	4	558	343	111	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%		0%		1%	
Storage Length (ft)	325		175		300	150	0
Storage Lanes	1		1		1	1	1
Taper Length (ft)	100		100			100	
Lane Util. Factor	1.00	0.95	1.00	0.95	1.00	1.00	1.00
Frt					0.850		0.850
Flt Protected	0.950		0.950			0.950	
Satd. Flow (prot)	1770	3539	1770	3539	1583	1727	1502
Flt Permitted	0.950		0.950			0.950	
Satd. Flow (perm)	1770	3539	1770	3539	1583	1727	1502
Right Turn on Red					No		No
Satd. Flow (RTOR)							
Link Speed (mph)		45		45		35	
Link Distance (ft)		2545		2799		634	
Travel Time (s)		38.6		42.4		12.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	4%	7%
Adj. Flow (vph)	183	851	4	620	381	123	50
Shared Lane Traffic (%)							
Lane Group Flow (vph)	183	851	4	620	381	123	50
Turn Type	Prot	NA	Prot	NA	Free	Prot	pm+ov
Protected Phases	5	2	1	6		4	5
Permitted Phases					Free		4
Detector Phase	5	2	1	6		4	5
Switch Phase							
Minimum Initial (s)	7.0	12.0	7.0	12.0		7.0	7.0
Minimum Split (s)	14.0	19.0	14.0	19.0		14.0	14.0
Total Split (s)	38.0	73.0	16.0	51.0		31.0	38.0
Total Split (%)	31.7%	60.8%	13.3%	42.5%		25.8%	31.7%
Maximum Green (s)	31.0	66.0	9.0	44.0		24.0	31.0
Yellow Time (s)	5.0	5.0	5.0	5.0		5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0		5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag			Lead
Lead-Lag Optimize?							
Vehicle Extension (s)	2.0	6.0	2.0	6.0		2.0	2.0
Minimum Gap (s)	0.2	3.0	0.2	3.0		0.2	0.2
Time Before Reduce (s)	0.0	15.0	0.0	15.0		0.0	0.0
Time To Reduce (s)	0.0	30.0	0.0	30.0		0.0	0.0
Recall Mode	None	Min	None	Min		None	None
Act Effct Green (s)	14.2	44.6	9.7	25.5	63.4	12.3	27.1
Actuated g/C Ratio	0.22	0.70	0.15	0.40	1.00	0.19	0.43
v/c Ratio	0.46	0.34	0.01	0.44	0.24	0.37	0.08
Control Delay	28.7	7.1	31.0	16.9	0.4	29.8	10.7

Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.7	7.1	31.0	16.9	0.4	29.8	10.7
LOS	C	A	C	B	A	C	B
Approach Delay		10.9		10.7		24.3	
Approach LOS		B		B		C	
Queue Length 50th (ft)	65	63	1	93	0	44	11
Queue Length 95th (ft)	142	189	11	174	0	106	30
Internal Link Dist (ft)		2465		2719		554	
Turn Bay Length (ft)	325		175		300	150	
Base Capacity (vph)	992	3364	330	2603	1583	763	1148
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.25	0.01	0.24	0.24	0.16	0.04

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 63.4
Natural Cycle: 50
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.46
Intersection Signal Delay: 11.9 Intersection LOS: B
Intersection Capacity Utilization 45.7% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 4: NC 51 & Downs Road

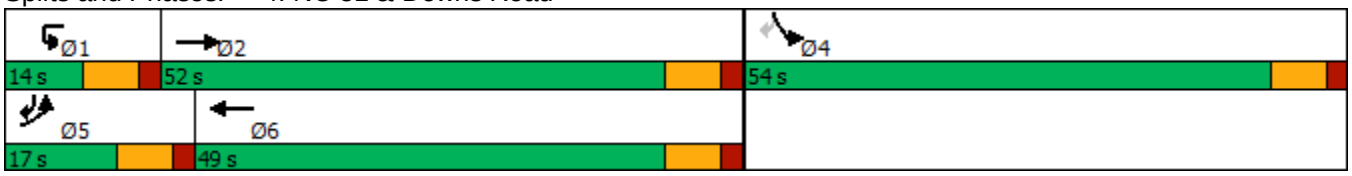
Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	66	683	4	742	97	384	182
Future Volume (vph)	66	683	4	742	97	384	182
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%		0%		1%	
Storage Length (ft)	325		175		300	150	0
Storage Lanes	1		1		1	1	1
Taper Length (ft)	100		100			100	
Lane Util. Factor	1.00	0.95	1.00	0.95	1.00	1.00	1.00
Frt					0.850		0.850
Flt Protected	0.950		0.950			0.950	
Satd. Flow (prot)	1719	3539	1770	3539	1553	1744	1560
Flt Permitted	0.950		0.950			0.950	
Satd. Flow (perm)	1719	3539	1770	3539	1553	1744	1560
Right Turn on Red					No		No
Satd. Flow (RTOR)							
Link Speed (mph)		45		45		35	
Link Distance (ft)		2545		2799		634	
Travel Time (s)		38.6		42.4		12.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	2%	2%	2%	4%	3%	3%
Adj. Flow (vph)	73	759	4	824	108	427	202
Shared Lane Traffic (%)							
Lane Group Flow (vph)	73	759	4	824	108	427	202
Turn Type	Prot	NA	Prot	NA	Free	Prot	pm+ov
Protected Phases	5	2	1	6		4	5
Permitted Phases					Free		4
Detector Phase	5	2	1	6		4	5
Switch Phase							
Minimum Initial (s)	7.0	12.0	7.0	12.0		7.0	7.0
Minimum Split (s)	14.0	19.0	14.0	19.0		14.0	14.0
Total Split (s)	17.0	52.0	14.0	49.0		54.0	17.0
Total Split (%)	14.2%	43.3%	11.7%	40.8%		45.0%	14.2%
Maximum Green (s)	10.0	45.0	7.0	42.0		47.0	10.0
Yellow Time (s)	5.0	5.0	5.0	5.0		5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0		5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag			Lead
Lead-Lag Optimize?							
Vehicle Extension (s)	2.0	6.0	2.0	6.0		2.0	2.0
Minimum Gap (s)	0.2	3.0	0.2	3.0		0.2	0.2
Time Before Reduce (s)	0.0	15.0	0.0	15.0		0.0	0.0
Time To Reduce (s)	0.0	30.0	0.0	30.0		0.0	0.0
Recall Mode	None	Min	None	Min		None	None
Act Effct Green (s)	10.6	46.8	9.3	33.2	88.0	28.7	44.4
Actuated g/C Ratio	0.12	0.53	0.11	0.38	1.00	0.33	0.50
v/c Ratio	0.35	0.40	0.02	0.62	0.07	0.75	0.26
Control Delay	45.9	15.3	44.5	25.6	0.1	36.2	13.9

Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.9	15.3	44.5	25.6	0.1	36.2	13.9
LOS	D	B	D	C	A	D	B
Approach Delay		18.0		22.8		29.0	
Approach LOS		B		C		C	
Queue Length 50th (ft)	37	114	2	187	0	202	58
Queue Length 95th (ft)	100	275	14	318	0	369	124
Internal Link Dist (ft)		2465		2719		554	
Turn Bay Length (ft)	325		175		300	150	
Base Capacity (vph)	242	2002	187	1832	1553	1005	820
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.38	0.02	0.45	0.07	0.42	0.25

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 88
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.75
Intersection Signal Delay: 22.7 Intersection LOS: C
Intersection Capacity Utilization 60.1% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 4: NC 51 & Downs Road



Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	174	813	4	592	363	118	48
Future Volume (vph)	174	813	4	592	363	118	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%		0%		1%	
Storage Length (ft)	325		175		300	150	0
Storage Lanes	1		1		1	1	1
Taper Length (ft)	100		100			100	
Lane Util. Factor	1.00	0.95	1.00	0.95	1.00	1.00	1.00
Frt					0.850		0.850
Flt Protected	0.950		0.950			0.950	
Satd. Flow (prot)	1770	3539	1770	3539	1568	1744	1516
Flt Permitted	0.950		0.950			0.950	
Satd. Flow (perm)	1770	3539	1770	3539	1568	1744	1516
Right Turn on Red					No		No
Satd. Flow (RTOR)							
Link Speed (mph)		45		45		35	
Link Distance (ft)		2545		2799		634	
Travel Time (s)		38.6		42.4		12.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	3%	3%	6%
Adj. Flow (vph)	193	903	4	658	403	131	53
Shared Lane Traffic (%)							
Lane Group Flow (vph)	193	903	4	658	403	131	53
Turn Type	Prot	NA	Prot	NA	Free	Prot	pm+ov
Protected Phases	5	2	1	6		4	5
Permitted Phases					Free		4
Detector Phase	5	2	1	6		4	5
Switch Phase							
Minimum Initial (s)	7.0	12.0	7.0	12.0		7.0	7.0
Minimum Split (s)	14.0	19.0	14.0	19.0		14.0	14.0
Total Split (s)	37.0	75.0	16.0	54.0		29.0	37.0
Total Split (%)	30.8%	62.5%	13.3%	45.0%		24.2%	30.8%
Maximum Green (s)	30.0	68.0	9.0	47.0		22.0	30.0
Yellow Time (s)	5.0	5.0	5.0	5.0		5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0		5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag			Lead
Lead-Lag Optimize?							
Vehicle Extension (s)	2.0	6.0	2.0	6.0		2.0	2.0
Minimum Gap (s)	0.2	3.0	0.2	3.0		0.2	0.2
Time Before Reduce (s)	0.0	15.0	0.0	15.0		0.0	0.0
Time To Reduce (s)	0.0	30.0	0.0	30.0		0.0	0.0
Recall Mode	None	Min	None	Min		None	None
Act Effct Green (s)	14.5	43.3	9.3	25.9	68.2	12.3	32.0
Actuated g/C Ratio	0.21	0.63	0.14	0.38	1.00	0.18	0.47
v/c Ratio	0.51	0.40	0.02	0.49	0.26	0.42	0.07
Control Delay	30.4	7.9	32.2	18.4	0.4	31.5	10.9

Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.4	7.9	32.2	18.4	0.4	31.5	10.9
LOS	C	A	C	B	A	C	B
Approach Delay		11.8		11.6		25.6	
Approach LOS		B		B		C	
Queue Length 50th (ft)	71	71	1	104	0	49	12
Queue Length 95th (ft)	152	207	12	192	0	114	32
Internal Link Dist (ft)		2465		2719		554	
Turn Bay Length (ft)	325		175		300	150	
Base Capacity (vph)	855	3406	294	2619	1568	632	1121
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.27	0.01	0.25	0.26	0.21	0.05

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 68.2
Natural Cycle: 50
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.51
Intersection Signal Delay: 12.8 Intersection LOS: B
Intersection Capacity Utilization 47.3% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 4: NC 51 & Downs Road

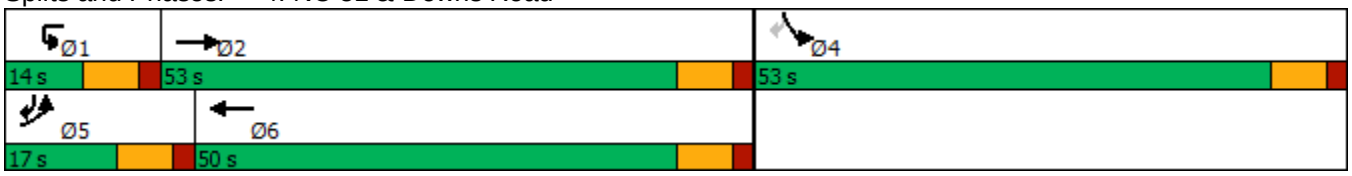
Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	70	725	4	787	103	406	192
Future Volume (vph)	70	725	4	787	103	406	192
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%		0%		1%	
Storage Length (ft)	325		175		300	150	0
Storage Lanes	1		1		1	1	1
Taper Length (ft)	100		100			100	
Lane Util. Factor	1.00	0.95	1.00	0.95	1.00	1.00	1.00
Frt					0.850		0.850
Flt Protected	0.950		0.950			0.950	
Satd. Flow (prot)	1736	3539	1770	3539	1553	1744	1545
Flt Permitted	0.950		0.950			0.950	
Satd. Flow (perm)	1736	3539	1770	3539	1553	1744	1545
Right Turn on Red					No		No
Satd. Flow (RTOR)							
Link Speed (mph)		45		45		35	
Link Distance (ft)		2545		2799		634	
Travel Time (s)		38.6		42.4		12.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	2%	2%	2%	4%	3%	4%
Adj. Flow (vph)	78	806	4	874	114	451	213
Shared Lane Traffic (%)							
Lane Group Flow (vph)	78	806	4	874	114	451	213
Turn Type	Prot	NA	Prot	NA	Free	Prot	pm+ov
Protected Phases	5	2	1	6		4	5
Permitted Phases					Free		4
Detector Phase	5	2	1	6		4	5
Switch Phase							
Minimum Initial (s)	7.0	12.0	7.0	12.0		7.0	7.0
Minimum Split (s)	14.0	19.0	14.0	19.0		14.0	14.0
Total Split (s)	17.0	53.0	14.0	50.0		53.0	17.0
Total Split (%)	14.2%	44.2%	11.7%	41.7%		44.2%	14.2%
Maximum Green (s)	10.0	46.0	7.0	43.0		46.0	10.0
Yellow Time (s)	5.0	5.0	5.0	5.0		5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0		5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag			Lead
Lead-Lag Optimize?							
Vehicle Extension (s)	2.0	6.0	2.0	6.0		2.0	2.0
Minimum Gap (s)	0.2	3.0	0.2	3.0		0.2	0.2
Time Before Reduce (s)	0.0	15.0	0.0	15.0		0.0	0.0
Time To Reduce (s)	0.0	30.0	0.0	30.0		0.0	0.0
Recall Mode	None	Min	None	Min		None	None
Act Effct Green (s)	10.7	48.8	9.3	35.1	92.4	31.1	47.0
Actuated g/C Ratio	0.12	0.53	0.10	0.38	1.00	0.34	0.51
v/c Ratio	0.39	0.43	0.02	0.65	0.07	0.77	0.27
Control Delay	49.4	16.6	47.2	27.4	0.1	37.6	14.5

Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.4	16.6	47.2	27.4	0.1	37.6	14.5
LOS	D	B	D	C	A	D	B
Approach Delay		19.5		24.3		30.2	
Approach LOS		B		C		C	
Queue Length 50th (ft)	42	133	2	214	0	225	64
Queue Length 95th (ft)	108	310	15	358	0	397	133
Internal Link Dist (ft)		2465		2719		554	
Turn Bay Length (ft)	325		175		300	150	
Base Capacity (vph)	233	1971	178	1786	1553	938	814
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.41	0.02	0.49	0.07	0.48	0.26

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 92.4
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.77
Intersection Signal Delay: 24.2 Intersection LOS: C
Intersection Capacity Utilization 62.6% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 4: NC 51 & Downs Road



Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	183	766	4	558	361	117	52
Future Volume (vph)	183	766	4	558	361	117	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%		0%		1%	
Storage Length (ft)	325		175		300	150	0
Storage Lanes	1		1		1	1	1
Taper Length (ft)	100		100			100	
Lane Util. Factor	1.00	0.95	1.00	0.95	1.00	1.00	1.00
Frt					0.850		0.850
Flt Protected	0.950		0.950			0.950	
Satd. Flow (prot)	1752	3539	1770	3539	1568	1727	1461
Flt Permitted	0.950		0.950			0.950	
Satd. Flow (perm)	1752	3539	1770	3539	1568	1727	1461
Right Turn on Red					No		No
Satd. Flow (RTOR)							
Link Speed (mph)		45		45		45	
Link Distance (ft)		2545		2799		634	
Travel Time (s)		38.6		42.4		9.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	2%	2%	2%	3%	4%	10%
Adj. Flow (vph)	203	851	4	620	401	130	58
Shared Lane Traffic (%)							
Lane Group Flow (vph)	203	851	4	620	401	130	58
Turn Type	Prot	NA	Prot	NA	Free	Prot	pm+ov
Protected Phases	5	2	1	6		4	5
Permitted Phases					Free		4
Detector Phase	5	2	1	6		4	5
Switch Phase							
Minimum Initial (s)	7.0	12.0	7.0	12.0		7.0	7.0
Minimum Split (s)	14.0	19.0	14.0	19.0		14.0	14.0
Total Split (s)	40.0	75.0	16.0	51.0		29.0	40.0
Total Split (%)	33.3%	62.5%	13.3%	42.5%		24.2%	33.3%
Maximum Green (s)	33.0	68.0	9.0	44.0		22.0	33.0
Yellow Time (s)	5.0	5.0	5.0	5.0		5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0		5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag			Lead
Lead-Lag Optimize?							
Vehicle Extension (s)	2.0	6.0	2.0	6.0		2.0	2.0
Minimum Gap (s)	0.2	3.0	0.2	3.0		0.2	0.2
Time Before Reduce (s)	0.0	15.0	0.0	15.0		0.0	0.0
Time To Reduce (s)	0.0	30.0	0.0	30.0		0.0	0.0
Recall Mode	None	Min	None	Min		None	None
Act Effct Green (s)	15.0	43.2	9.3	25.3	68.1	12.3	32.5
Actuated g/C Ratio	0.22	0.63	0.14	0.37	1.00	0.18	0.48
v/c Ratio	0.53	0.38	0.02	0.47	0.26	0.42	0.08
Control Delay	30.3	7.7	32.2	18.5	0.4	31.6	10.7

Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.3	7.7	32.2	18.5	0.4	31.6	10.7
LOS	C	A	C	B	A	C	B
Approach Delay		12.0		11.5		25.2	
Approach LOS		B		B		C	
Queue Length 50th (ft)	74	65	1	97	0	48	12
Queue Length 95th (ft)	159	192	12	182	0	115	35
Internal Link Dist (ft)		2465		2719		554	
Turn Bay Length (ft)	325		175		300	150	
Base Capacity (vph)	928	3356	294	2466	1568	627	1150
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.25	0.01	0.25	0.26	0.21	0.05

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 68.1
Natural Cycle: 50
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.53
Intersection Signal Delay: 12.9 Intersection LOS: B
Intersection Capacity Utilization 46.0% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 4: NC 51 & Downs Road

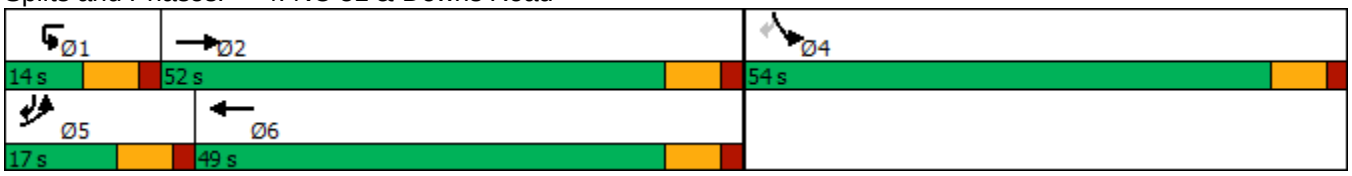
Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	74	683	4	742	105	402	201
Future Volume (vph)	74	683	4	742	105	402	201
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%		0%		1%	
Storage Length (ft)	325		175		300	150	0
Storage Lanes	1		1		1	1	1
Taper Length (ft)	100		100			100	
Lane Util. Factor	1.00	0.95	1.00	0.95	1.00	1.00	1.00
Frt					0.850		0.850
Flt Protected	0.950		0.950			0.950	
Satd. Flow (prot)	1671	3539	1770	3539	1509	1727	1516
Flt Permitted	0.950		0.950			0.950	
Satd. Flow (perm)	1671	3539	1770	3539	1509	1727	1516
Right Turn on Red					No		No
Satd. Flow (RTOR)							
Link Speed (mph)		45		45		45	
Link Distance (ft)		2545		2799		634	
Travel Time (s)		38.6		42.4		9.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	8%	2%	2%	2%	7%	4%	6%
Adj. Flow (vph)	82	759	4	824	117	447	223
Shared Lane Traffic (%)							
Lane Group Flow (vph)	82	759	4	824	117	447	223
Turn Type	Prot	NA	Prot	NA	Free	Prot	pm+ov
Protected Phases	5	2	1	6		4	5
Permitted Phases					Free		4
Detector Phase	5	2	1	6		4	5
Switch Phase							
Minimum Initial (s)	7.0	12.0	7.0	12.0		7.0	7.0
Minimum Split (s)	14.0	19.0	14.0	19.0		14.0	14.0
Total Split (s)	17.0	52.0	14.0	49.0		54.0	17.0
Total Split (%)	14.2%	43.3%	11.7%	40.8%		45.0%	14.2%
Maximum Green (s)	10.0	45.0	7.0	42.0		47.0	10.0
Yellow Time (s)	5.0	5.0	5.0	5.0		5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0		5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag			Lead
Lead-Lag Optimize?							
Vehicle Extension (s)	2.0	6.0	2.0	6.0		2.0	2.0
Minimum Gap (s)	0.2	3.0	0.2	3.0		0.2	0.2
Time Before Reduce (s)	0.0	15.0	0.0	15.0		0.0	0.0
Time To Reduce (s)	0.0	30.0	0.0	30.0		0.0	0.0
Recall Mode	None	Min	None	Min		None	None
Act Effct Green (s)	10.8	47.3	9.3	33.5	90.3	30.5	46.4
Actuated g/C Ratio	0.12	0.52	0.10	0.37	1.00	0.34	0.51
v/c Ratio	0.41	0.41	0.02	0.63	0.08	0.77	0.29
Control Delay	48.9	16.2	46.0	26.9	0.1	36.9	14.0

Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.9	16.2	46.0	26.9	0.1	36.9	14.0
LOS	D	B	D	C	A	D	B
Approach Delay		19.4		23.7		29.3	
Approach LOS		B		C		C	
Queue Length 50th (ft)	43	121	2	197	0	218	65
Queue Length 95th (ft)	113	286	14	331	0	390	137
Internal Link Dist (ft)		2465		2719		554	
Turn Bay Length (ft)	325		175		300	150	
Base Capacity (vph)	230	1961	182	1785	1509	970	806
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.39	0.02	0.46	0.08	0.46	0.28

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 90.3
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.77
Intersection Signal Delay: 23.7 Intersection LOS: C
Intersection Capacity Utilization 61.1% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 4: NC 51 & Downs Road



Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	199	813	4	592	388	127	57
Future Volume (vph)	199	813	4	592	388	127	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%		0%		1%	
Storage Length (ft)	325		175		300	150	0
Storage Lanes	1		1		1	1	1
Taper Length (ft)	100		100			100	
Lane Util. Factor	1.00	0.95	1.00	0.95	1.00	1.00	1.00
Frt					0.850		0.850
Flt Protected	0.950		0.950			0.950	
Satd. Flow (prot)	1752	3539	1770	3539	1568	1710	1474
Flt Permitted	0.950		0.950			0.950	
Satd. Flow (perm)	1752	3539	1770	3539	1568	1710	1474
Right Turn on Red					No		No
Satd. Flow (RTOR)							
Link Speed (mph)		45		45		45	
Link Distance (ft)		2545		2799		634	
Travel Time (s)		38.6		42.4		9.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	2%	2%	2%	3%	5%	9%
Adj. Flow (vph)	221	903	4	658	431	141	63
Shared Lane Traffic (%)							
Lane Group Flow (vph)	221	903	4	658	431	141	63
Turn Type	Prot	NA	Prot	NA	Free	Prot	pm+ov
Protected Phases	5	2	1	6		4	5
Permitted Phases					Free		4
Detector Phase	5	2	1	6		4	5
Switch Phase							
Minimum Initial (s)	7.0	12.0	7.0	12.0		7.0	7.0
Minimum Split (s)	14.0	19.0	14.0	19.0		14.0	14.0
Total Split (s)	39.0	74.0	15.0	50.0		31.0	39.0
Total Split (%)	32.5%	61.7%	12.5%	41.7%		25.8%	32.5%
Maximum Green (s)	32.0	67.0	8.0	43.0		24.0	32.0
Yellow Time (s)	5.0	5.0	5.0	5.0		5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0		5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag			Lead
Lead-Lag Optimize?							
Vehicle Extension (s)	2.0	6.0	2.0	6.0		2.0	2.0
Minimum Gap (s)	0.2	3.0	0.2	3.0		0.2	0.2
Time Before Reduce (s)	0.0	15.0	0.0	15.0		0.0	0.0
Time To Reduce (s)	0.0	30.0	0.0	30.0		0.0	0.0
Recall Mode	None	Min	None	Min		None	None
Act Effct Green (s)	16.2	45.7	9.3	26.5	71.3	13.1	34.4
Actuated g/C Ratio	0.23	0.64	0.13	0.37	1.00	0.18	0.48
v/c Ratio	0.56	0.40	0.02	0.50	0.27	0.45	0.09
Control Delay	31.7	8.0	34.5	19.8	0.4	33.3	10.9

Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.7	8.0	34.5	19.8	0.4	33.3	10.9
LOS	C	A	C	B	A	C	B
Approach Delay		12.6		12.2		26.4	
Approach LOS		B		B		C	
Queue Length 50th (ft)	85	74	2	111	0	55	14
Queue Length 95th (ft)	178	214	12	207	0	127	37
Internal Link Dist (ft)		2465		2719		554	
Turn Bay Length (ft)	325		175		300	150	
Base Capacity (vph)	864	3261	256	2311	1568	645	1104
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.28	0.02	0.28	0.27	0.22	0.06

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 71.3
Natural Cycle: 50
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.56
Intersection Signal Delay: 13.6 Intersection LOS: B
Intersection Capacity Utilization 47.8% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 4: NC 51 & Downs Road

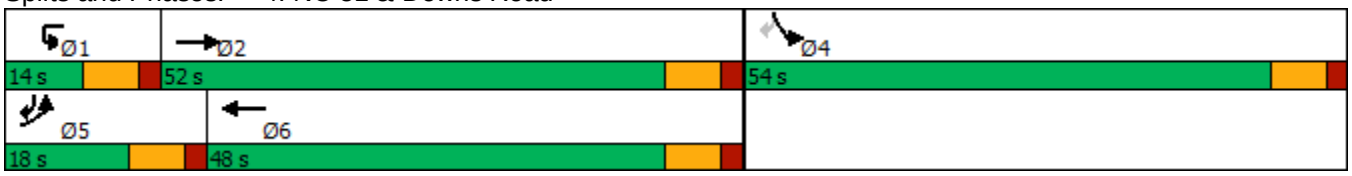
Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	81	725	4	787	114	432	218
Future Volume (vph)	81	725	4	787	114	432	218
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%		0%		1%	
Storage Length (ft)	325		175		300	150	0
Storage Lanes	1		1		1	1	1
Taper Length (ft)	100		100			100	
Lane Util. Factor	1.00	0.95	1.00	0.95	1.00	1.00	1.00
Frt					0.850		0.850
Flt Protected	0.950		0.950			0.950	
Satd. Flow (prot)	1687	3539	1770	3539	1524	1710	1502
Flt Permitted	0.950		0.950			0.950	
Satd. Flow (perm)	1687	3539	1770	3539	1524	1710	1502
Right Turn on Red					No		No
Satd. Flow (RTOR)							
Link Speed (mph)		45		45		45	
Link Distance (ft)		2545		2799		634	
Travel Time (s)		38.6		42.4		9.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	7%	2%	2%	2%	6%	5%	7%
Adj. Flow (vph)	90	806	4	874	127	480	242
Shared Lane Traffic (%)							
Lane Group Flow (vph)	90	806	4	874	127	480	242
Turn Type	Prot	NA	Prot	NA	Free	Prot	pm+ov
Protected Phases	5	2	1	6		4	5
Permitted Phases					Free		4
Detector Phase	5	2	1	6		4	5
Switch Phase							
Minimum Initial (s)	7.0	12.0	7.0	12.0		7.0	7.0
Minimum Split (s)	14.0	19.0	14.0	19.0		14.0	14.0
Total Split (s)	18.0	52.0	14.0	48.0		54.0	18.0
Total Split (%)	15.0%	43.3%	11.7%	40.0%		45.0%	15.0%
Maximum Green (s)	11.0	45.0	7.0	41.0		47.0	11.0
Yellow Time (s)	5.0	5.0	5.0	5.0		5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0		5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag			Lead
Lead-Lag Optimize?							
Vehicle Extension (s)	2.0	6.0	2.0	6.0		2.0	2.0
Minimum Gap (s)	0.2	3.0	0.2	3.0		0.2	0.2
Time Before Reduce (s)	0.0	15.0	0.0	15.0		0.0	0.0
Time To Reduce (s)	0.0	30.0	0.0	30.0		0.0	0.0
Recall Mode	None	Min	None	Min		None	None
Act Effct Green (s)	11.4	49.9	9.3	35.6	96.5	33.9	50.5
Actuated g/C Ratio	0.12	0.52	0.10	0.37	1.00	0.35	0.52
v/c Ratio	0.45	0.44	0.02	0.67	0.08	0.80	0.31
Control Delay	52.5	17.9	49.0	29.8	0.1	39.5	14.5

Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.5	17.9	49.0	29.8	0.1	39.5	14.5
LOS	D	B	D	C	A	D	B
Approach Delay		21.4		26.1		31.2	
Approach LOS		C		C		C	
Queue Length 50th (ft)	52	146	2	234	0	258	78
Queue Length 95th (ft)	122	321	15	375	0	427	146
Internal Link Dist (ft)		2465		2719		554	
Turn Bay Length (ft)	325		175		300	150	
Base Capacity (vph)	235	1896	171	1633	1524	899	818
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.43	0.02	0.54	0.08	0.53	0.30

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 96.5
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.80
Intersection Signal Delay: 25.9 Intersection LOS: C
Intersection Capacity Utilization 64.0% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 4: NC 51 & Downs Road



APPENDIX I

CAPACITY CALCULATIONS

DOWNS ROAD
AND
ACCESS A

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	19	13	36	480	232	53
Future Vol, veh/h	19	13	36	480	232	53
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	26	23	8	3	4	8
Mvmt Flow	21	14	40	533	258	59

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	901	288	317	0	-	0
Stage 1	288	-	-	-	-	-
Stage 2	613	-	-	-	-	-
Critical Hdwy	6.66	6.43	4.18	-	-	-
Critical Hdwy Stg 1	5.66	-	-	-	-	-
Critical Hdwy Stg 2	5.66	-	-	-	-	-
Follow-up Hdwy	3.734	3.507	2.272	-	-	-
Pot Cap-1 Maneuver	280	704	1210	-	-	-
Stage 1	709	-	-	-	-	-
Stage 2	497	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	267	704	1210	-	-	-
Mov Cap-2 Maneuver	267	-	-	-	-	-
Stage 1	676	-	-	-	-	-
Stage 2	497	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.2	0.6	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1210	-	357	-	-
HCM Lane V/C Ratio	0.033	-	0.1	-	-
HCM Control Delay (s)	8.1	0	16.2	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	56	37	16	237	507	23
Future Vol, veh/h	56	37	16	237	507	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	16	16	31	3	3	30
Mvmt Flow	62	41	18	263	563	26

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	875	576	589	0	-	0
Stage 1	576	-	-	-	-	-
Stage 2	299	-	-	-	-	-
Critical Hdwy	6.56	6.36	4.41	-	-	-
Critical Hdwy Stg 1	5.56	-	-	-	-	-
Critical Hdwy Stg 2	5.56	-	-	-	-	-
Follow-up Hdwy	3.644	3.444	2.479	-	-	-
Pot Cap-1 Maneuver	302	491	859	-	-	-
Stage 1	536	-	-	-	-	-
Stage 2	721	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	294	491	859	-	-	-
Mov Cap-2 Maneuver	294	-	-	-	-	-
Stage 1	523	-	-	-	-	-
Stage 2	721	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	19.5	0.6	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	859	-	350	-	-
HCM Lane V/C Ratio	0.021	-	0.295	-	-
HCM Control Delay (s)	9.3	0	19.5	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.1	-	1.2	-	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	19	13	36	480	232	53
Future Vol, veh/h	19	13	36	480	232	53
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	100	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	26	23	8	3	4	8
Mvmt Flow	21	14	40	533	258	59

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	871	258	317	0	-	0
Stage 1	258	-	-	-	-	-
Stage 2	613	-	-	-	-	-
Critical Hdwy	6.66	6.43	4.18	-	-	-
Critical Hdwy Stg 1	5.66	-	-	-	-	-
Critical Hdwy Stg 2	5.66	-	-	-	-	-
Follow-up Hdwy	3.734	3.507	2.272	-	-	-
Pot Cap-1 Maneuver	292	732	1210	-	-	-
Stage 1	732	-	-	-	-	-
Stage 2	497	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	282	732	1210	-	-	-
Mov Cap-2 Maneuver	282	-	-	-	-	-
Stage 1	708	-	-	-	-	-
Stage 2	497	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.2	0.6	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1210	-	282	732	-	-
HCM Lane V/C Ratio	0.033	-	0.075	0.02	-	-
HCM Control Delay (s)	8.1	-	18.8	10	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	0.1	-	-

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	56	37	16	237	507	23
Future Vol, veh/h	56	37	16	237	507	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	100	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	16	16	31	3	3	30
Mvmt Flow	62	41	18	263	563	26

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	862	563	589	0	-	0
Stage 1	563	-	-	-	-	-
Stage 2	299	-	-	-	-	-
Critical Hdwy	6.56	6.36	4.41	-	-	-
Critical Hdwy Stg 1	5.56	-	-	-	-	-
Critical Hdwy Stg 2	5.56	-	-	-	-	-
Follow-up Hdwy	3.644	3.444	2.479	-	-	-
Pot Cap-1 Maneuver	308	500	859	-	-	-
Stage 1	543	-	-	-	-	-
Stage 2	721	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	302	500	859	-	-	-
Mov Cap-2 Maneuver	302	-	-	-	-	-
Stage 1	532	-	-	-	-	-
Stage 2	721	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.1	0.6	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	859	-	302	500	-	-
HCM Lane V/C Ratio	0.021	-	0.206	0.082	-	-
HCM Control Delay (s)	9.3	-	20	12.8	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.8	0.3	-	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	27	18	50	507	246	74
Future Vol, veh/h	27	18	50	507	246	74
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	26	22	8	3	5	7
Mvmt Flow	30	20	56	563	273	82

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	989	314	355	0	-	0
Stage 1	314	-	-	-	-	-
Stage 2	675	-	-	-	-	-
Critical Hdwy	6.66	6.42	4.18	-	-	-
Critical Hdwy Stg 1	5.66	-	-	-	-	-
Critical Hdwy Stg 2	5.66	-	-	-	-	-
Follow-up Hdwy	3.734	3.498	2.272	-	-	-
Pot Cap-1 Maneuver	247	682	1171	-	-	-
Stage 1	689	-	-	-	-	-
Stage 2	464	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	235	682	1171	-	-	-
Mov Cap-2 Maneuver	235	-	-	-	-	-
Stage 1	656	-	-	-	-	-
Stage 2	464	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.4	0.7	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1171	-	319	-	-
HCM Lane V/C Ratio	0.047	-	0.157	-	-
HCM Control Delay (s)	8.2	-	18.4	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.5	-	-

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	78	52	22	252	536	33
Future Vol, veh/h	78	52	22	252	536	33
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	17	17	32	3	3	30
Mvmt Flow	87	58	24	280	596	37

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	943	615	633	0	-	0
Stage 1	615	-	-	-	-	-
Stage 2	328	-	-	-	-	-
Critical Hdwy	6.57	6.37	4.42	-	-	-
Critical Hdwy Stg 1	5.57	-	-	-	-	-
Critical Hdwy Stg 2	5.57	-	-	-	-	-
Follow-up Hdwy	3.653	3.453	2.488	-	-	-
Pot Cap-1 Maneuver	274	465	821	-	-	-
Stage 1	512	-	-	-	-	-
Stage 2	697	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	266	465	821	-	-	-
Mov Cap-2 Maneuver	266	-	-	-	-	-
Stage 1	497	-	-	-	-	-
Stage 2	697	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	25.1	0.8	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	821	-	321	-	-
HCM Lane V/C Ratio	0.03	-	0.45	-	-
HCM Control Delay (s)	9.5	-	25.1	-	-
HCM Lane LOS	A	-	D	-	-
HCM 95th %tile Q(veh)	0.1	-	2.2	-	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	27	18	50	507	246	74
Future Vol, veh/h	27	18	50	507	246	74
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	100	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	26	22	8	3	5	7
Mvmt Flow	30	20	56	563	273	82

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	948	273	355	0	-	0
Stage 1	273	-	-	-	-	-
Stage 2	675	-	-	-	-	-
Critical Hdwy	6.66	6.42	4.18	-	-	-
Critical Hdwy Stg 1	5.66	-	-	-	-	-
Critical Hdwy Stg 2	5.66	-	-	-	-	-
Follow-up Hdwy	3.734	3.498	2.272	-	-	-
Pot Cap-1 Maneuver	262	720	1171	-	-	-
Stage 1	721	-	-	-	-	-
Stage 2	464	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	249	720	1171	-	-	-
Mov Cap-2 Maneuver	249	-	-	-	-	-
Stage 1	686	-	-	-	-	-
Stage 2	464	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.9	0.7	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1171	-	249	720	-	-
HCM Lane V/C Ratio	0.047	-	0.12	0.028	-	-
HCM Control Delay (s)	8.2	-	21.4	10.1	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.4	0.1	-	-

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	78	52	22	252	536	33
Future Vol, veh/h	78	52	22	252	536	33
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	100	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	17	17	32	3	3	30
Mvmt Flow	87	58	24	280	596	37

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	924	596	633	0	-	0
Stage 1	596	-	-	-	-	-
Stage 2	328	-	-	-	-	-
Critical Hdwy	6.57	6.37	4.42	-	-	-
Critical Hdwy Stg 1	5.57	-	-	-	-	-
Critical Hdwy Stg 2	5.57	-	-	-	-	-
Follow-up Hdwy	3.653	3.453	2.488	-	-	-
Pot Cap-1 Maneuver	281	477	821	-	-	-
Stage 1	522	-	-	-	-	-
Stage 2	697	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	273	477	821	-	-	-
Mov Cap-2 Maneuver	273	-	-	-	-	-
Stage 1	507	-	-	-	-	-
Stage 2	697	-	-	-	-	-

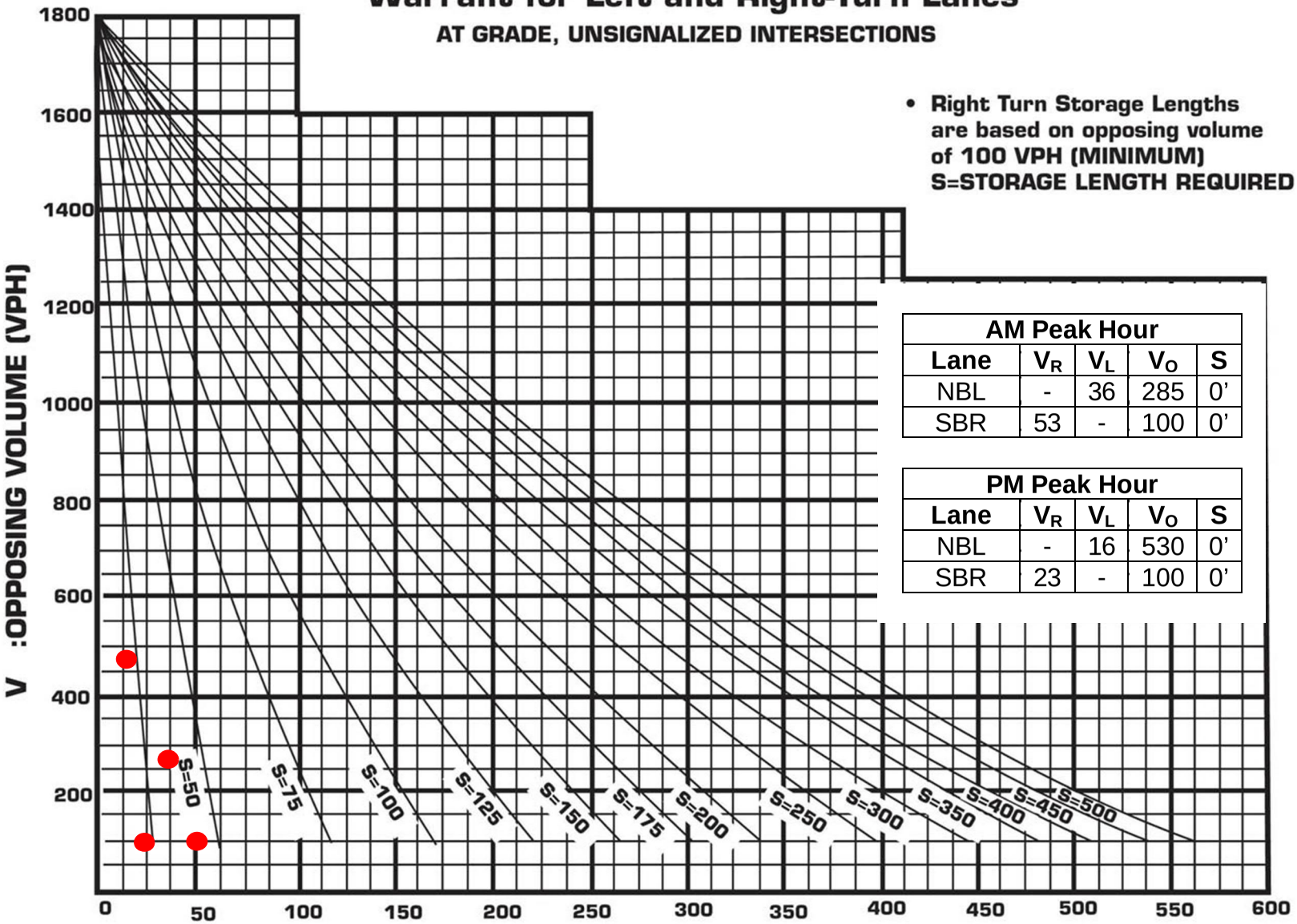
Approach	EB	NB	SB
HCM Control Delay, s	20	0.8	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	821	-	273	477	-	-
HCM Lane V/C Ratio	0.03	-	0.317	0.121	-	-
HCM Control Delay (s)	9.5	-	24.2	13.6	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q(veh)	0.1	-	1.3	0.4	-	-

Downs Road and Access A
2023 Build Phase 1

Warrant for Left and Right-Turn Lanes

AT GRADE, UNSIGNALIZED INTERSECTIONS



- **Right Turn Storage Lengths are based on opposing volume of 100 VPH (MINIMUM)**
  S=STORAGE LENGTH REQUIRED

AM Peak Hour				
Lane	V_R	V_L	V_O	S
NBL	-	36	285	0’
SBR	53	-	100	0’

PM Peak Hour				
Lane	V_R	V_L	V_O	S
NBL	-	16	530	0’
SBR	23	-	100	0’

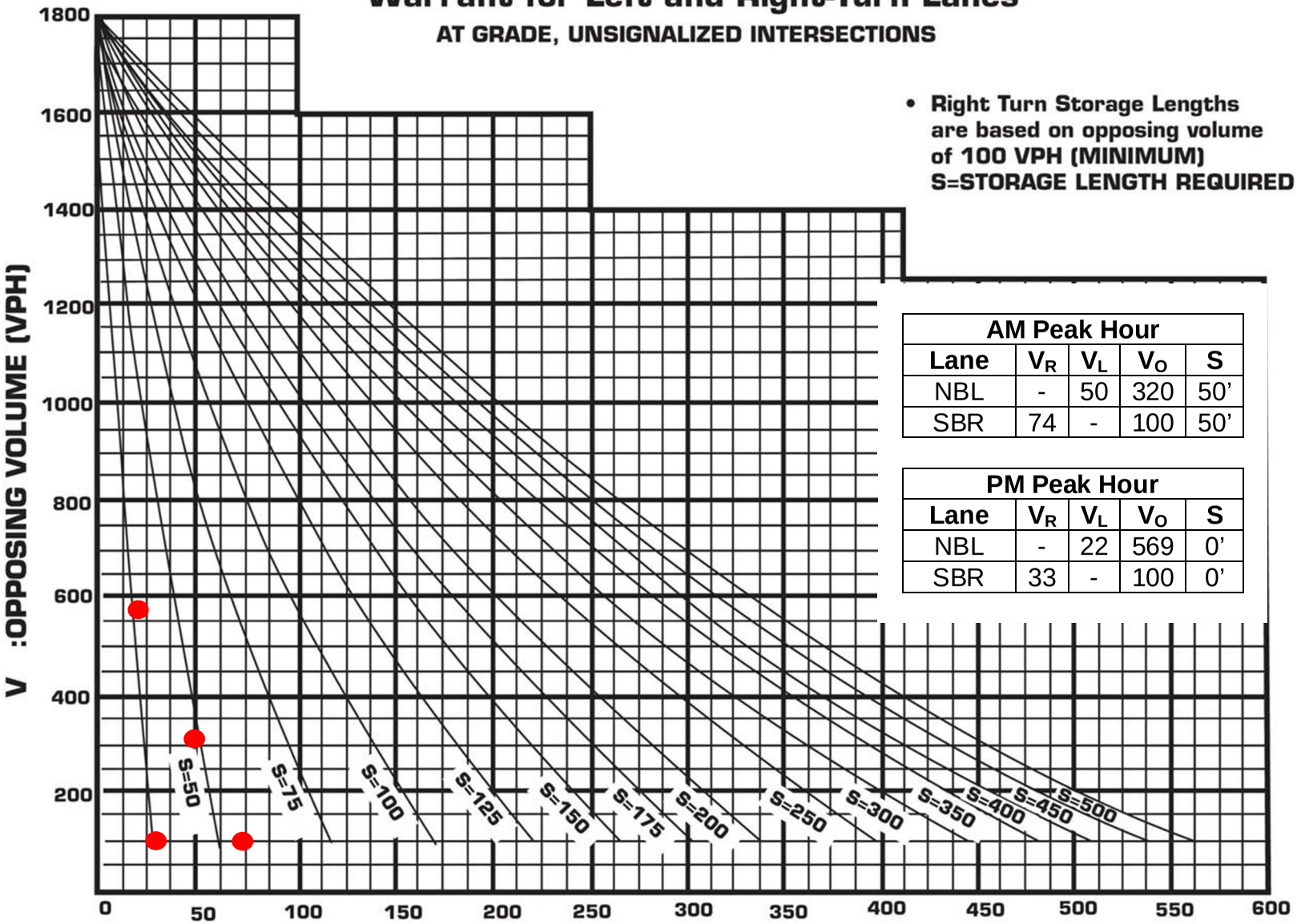
V_L: LEFT TURNING VOLUME (VPH)
V_R: RIGHT TURNING VOLUME (VPH)

Note: Where adjacent signalization may provide opportunities for gaps in the traffic stream a reduction in the above storage values can be considered on a case by case basis.

Downs Road and Access A
2026 Full Build

Warrant for Left and Right-Turn Lanes

AT GRADE, UNSIGNALIZED INTERSECTIONS



- **Right Turn Storage Lengths are based on opposing volume of 100 VPH (MINIMUM)**
  S=STORAGE LENGTH REQUIRED

AM Peak Hour				
Lane	V_R	V_L	V_O	S
NBL	-	50	320	50’
SBR	74	-	100	50’

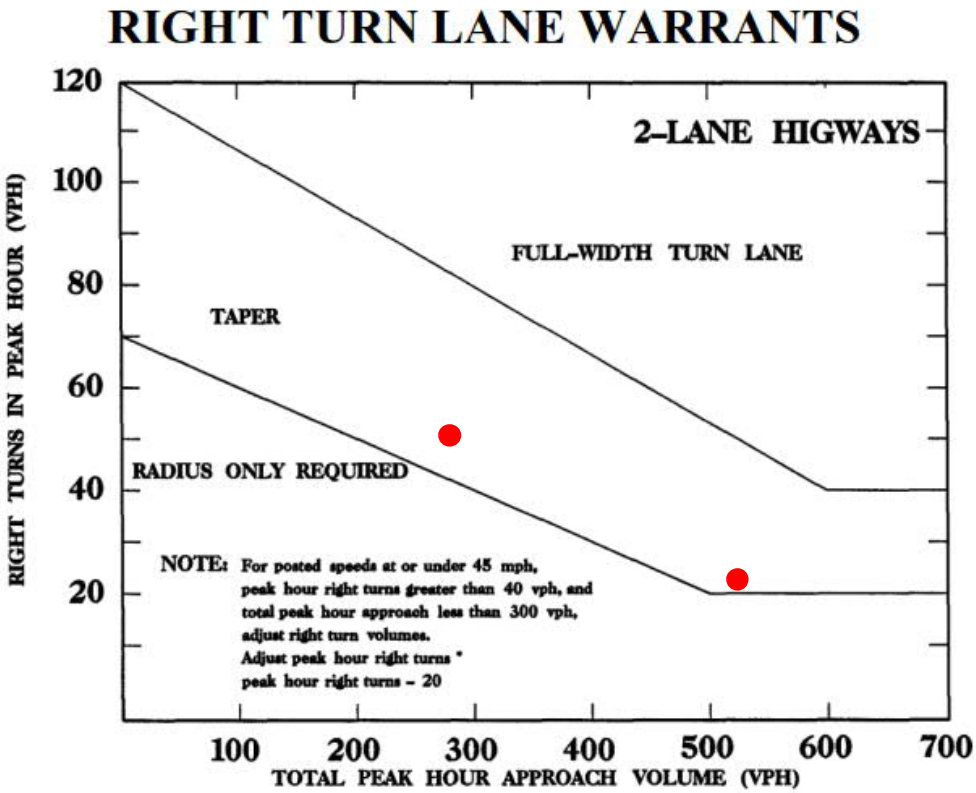
PM Peak Hour				
Lane	V_R	V_L	V_O	S
NBL	-	22	569	0’
SBR	33	-	100	0’

V_L: LEFT TURNING VOLUME (VPH)
V_R: RIGHT TURNING VOLUME (VPH)

Note: Where adjacent signalization may provide opportunities for gaps in the traffic stream a reduction in the above storage values can be considered on a case by case basis.

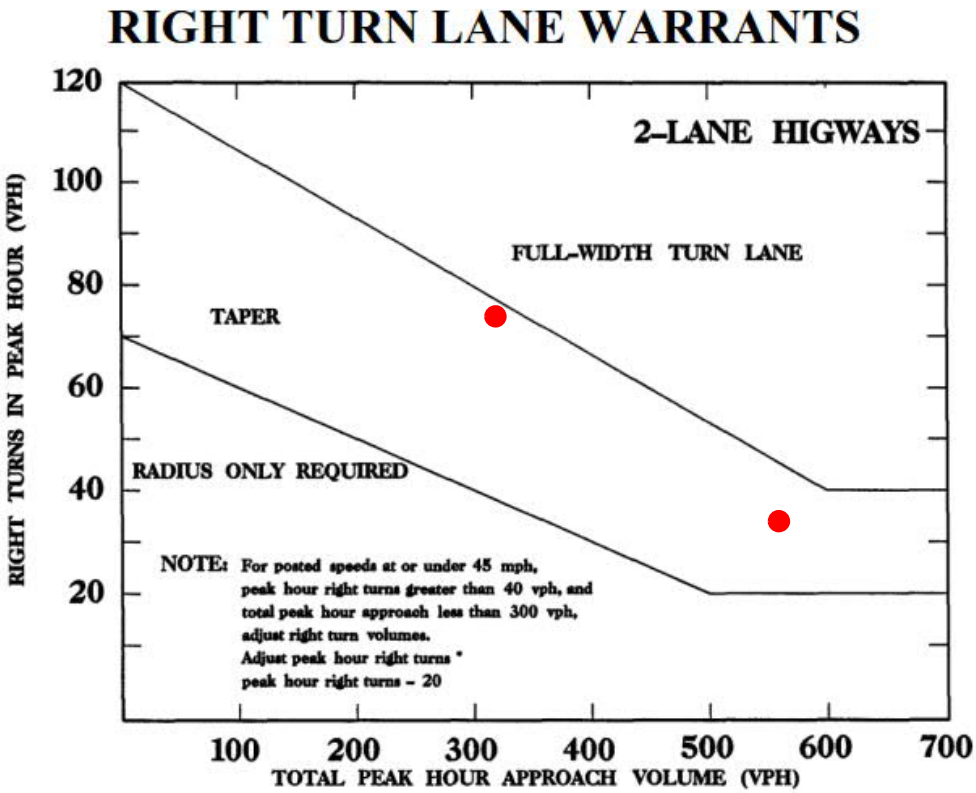
Downs Road and Access A

2023 Build Phase 1				
Peak Hour	**Approach**	**Right Turn Volume**	**Approach Volume**	**Warranted?**
AM	Southbound	53	285	No
PM	Southbound	23	530	No



Downs Road and Access A

2026 Full Build				
Peak Hour	**Approach**	**Right Turn Volume**	**Approach Volume**	**Warranted?**
AM	Southbound	74	320	No
PM	Southbound	33	569	No



APPENDIX J

CAPACITY CALCULATIONS

NATIONS FORD ROAD
AND
ACCESS B

Intersection	
Int Delay, s/veh	1.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	13	19	446	35	53	170
Future Vol, veh/h	13	19	446	35	53	170
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	23	26	4	9	8	5
Mvmt Flow	14	21	496	39	59	189

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	823	516	0	0	535	0
Stage 1	516	-	-	-	-	-
Stage 2	307	-	-	-	-	-
Critical Hdwy	6.63	6.46	-	-	4.18	-
Critical Hdwy Stg 1	5.63	-	-	-	-	-
Critical Hdwy Stg 2	5.63	-	-	-	-	-
Follow-up Hdwy	3.707	3.534	-	-	2.272	-
Pot Cap-1 Maneuver	316	514	-	-	1003	-
Stage 1	559	-	-	-	-	-
Stage 2	701	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	295	514	-	-	1003	-
Mov Cap-2 Maneuver	295	-	-	-	-	-
Stage 1	559	-	-	-	-	-
Stage 2	655	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15	0	2.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	395	1003	-
HCM Lane V/C Ratio	-	-	0.09	0.059	-
HCM Control Delay (s)	-	-	15	8.8	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.2	-

Intersection	
Int Delay, s/veh	2.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	36	56	204	16	23	261
Future Vol, veh/h	36	56	204	16	23	261
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	17	16	2	31	30	2
Mvmt Flow	40	62	227	18	26	290

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	578	236	0	0	245	0
Stage 1	236	-	-	-	-	-
Stage 2	342	-	-	-	-	-
Critical Hdwy	6.57	6.36	-	-	4.4	-
Critical Hdwy Stg 1	5.57	-	-	-	-	-
Critical Hdwy Stg 2	5.57	-	-	-	-	-
Follow-up Hdwy	3.653	3.444	-	-	2.47	-
Pot Cap-1 Maneuver	454	770	-	-	1174	-
Stage 1	769	-	-	-	-	-
Stage 2	687	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	442	770	-	-	1174	-
Mov Cap-2 Maneuver	442	-	-	-	-	-
Stage 1	769	-	-	-	-	-
Stage 2	669	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.3	0	0.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	597	1174	-
HCM Lane V/C Ratio	-	-	0.171	0.022	-
HCM Control Delay (s)	-	-	12.3	8.1	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.6	0.1	-

Intersection	
Int Delay, s/veh	1.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	13	19	446	35	53	170
Future Vol, veh/h	13	19	446	35	53	170
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	-	100	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	23	26	4	9	8	5
Mvmt Flow	14	21	496	39	59	189

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	803	496	0	0	535	0
Stage 1	496	-	-	-	-	-
Stage 2	307	-	-	-	-	-
Critical Hdwy	6.63	6.46	-	-	4.18	-
Critical Hdwy Stg 1	5.63	-	-	-	-	-
Critical Hdwy Stg 2	5.63	-	-	-	-	-
Follow-up Hdwy	3.707	3.534	-	-	2.272	-
Pot Cap-1 Maneuver	325	528	-	-	1003	-
Stage 1	571	-	-	-	-	-
Stage 2	701	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	306	528	-	-	1003	-
Mov Cap-2 Maneuver	306	-	-	-	-	-
Stage 1	571	-	-	-	-	-
Stage 2	660	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.2	0	2.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	306	528	1003	-
HCM Lane V/C Ratio	-	-	0.047	0.04	0.059	-
HCM Control Delay (s)	-	-	17.3	12.1	8.8	-
HCM Lane LOS	-	-	C	B	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0.1	0.2	-

Intersection	
Int Delay, s/veh	2.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	36	56	204	16	23	261
Future Vol, veh/h	36	56	204	16	23	261
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	-	100	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	17	16	2	31	30	2
Mvmt Flow	40	62	227	18	26	290

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	569	227	0	0	245	0
Stage 1	227	-	-	-	-	-
Stage 2	342	-	-	-	-	-
Critical Hdwy	6.57	6.36	-	-	4.4	-
Critical Hdwy Stg 1	5.57	-	-	-	-	-
Critical Hdwy Stg 2	5.57	-	-	-	-	-
Follow-up Hdwy	3.653	3.444	-	-	2.47	-
Pot Cap-1 Maneuver	459	779	-	-	1174	-
Stage 1	777	-	-	-	-	-
Stage 2	687	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	449	779	-	-	1174	-
Mov Cap-2 Maneuver	449	-	-	-	-	-
Stage 1	777	-	-	-	-	-
Stage 2	672	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.5	0	0.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	449	779	1174	-
HCM Lane V/C Ratio	-	-	0.089	0.08	0.022	-
HCM Control Delay (s)	-	-	13.8	10	8.1	-
HCM Lane LOS	-	-	B	B	A	-
HCM 95th %tile Q(veh)	-	-	0.3	0.3	0.1	-

Intersection	
Int Delay, s/veh	1.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	13	18	485	37	50	185
Future Vol, veh/h	13	18	485	37	50	185
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	23	22	4	8	8	4
Mvmt Flow	14	20	539	41	56	206

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	878	560	0	0	580	0
Stage 1	560	-	-	-	-	-
Stage 2	318	-	-	-	-	-
Critical Hdwy	6.63	6.42	-	-	4.18	-
Critical Hdwy Stg 1	5.63	-	-	-	-	-
Critical Hdwy Stg 2	5.63	-	-	-	-	-
Follow-up Hdwy	3.707	3.498	-	-	2.272	-
Pot Cap-1 Maneuver	293	492	-	-	965	-
Stage 1	532	-	-	-	-	-
Stage 2	693	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	276	492	-	-	965	-
Mov Cap-2 Maneuver	276	-	-	-	-	-
Stage 1	532	-	-	-	-	-
Stage 2	653	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.7	0	1.9
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	370	965	-
HCM Lane V/C Ratio	-	-	0.093	0.058	-
HCM Control Delay (s)	-	-	15.7	9	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	0.3	0.2	-

Intersection	
Int Delay, s/veh	2.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	38	52	221	16	22	290
Future Vol, veh/h	38	52	221	16	22	290
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	16	17	3	31	32	3
Mvmt Flow	42	58	246	18	24	322

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	625	255	0	0	264	0
Stage 1	255	-	-	-	-	-
Stage 2	370	-	-	-	-	-
Critical Hdwy	6.56	6.37	-	-	4.42	-
Critical Hdwy Stg 1	5.56	-	-	-	-	-
Critical Hdwy Stg 2	5.56	-	-	-	-	-
Follow-up Hdwy	3.644	3.453	-	-	2.488	-
Pot Cap-1 Maneuver	427	748	-	-	1145	-
Stage 1	756	-	-	-	-	-
Stage 2	669	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	418	748	-	-	1145	-
Mov Cap-2 Maneuver	418	-	-	-	-	-
Stage 1	756	-	-	-	-	-
Stage 2	655	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.8	0	0.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	561	1145	-
HCM Lane V/C Ratio	-	-	0.178	0.021	-
HCM Control Delay (s)	-	-	12.8	8.2	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.6	0.1	-

Intersection	
Int Delay, s/veh	1.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	13	18	485	37	50	185
Future Vol, veh/h	13	18	485	37	50	185
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	-	100	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	23	22	4	8	8	4
Mvmt Flow	14	20	539	41	56	206

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	857	539	0	0	580	0
Stage 1	539	-	-	-	-	-
Stage 2	318	-	-	-	-	-
Critical Hdwy	6.63	6.42	-	-	4.18	-
Critical Hdwy Stg 1	5.63	-	-	-	-	-
Critical Hdwy Stg 2	5.63	-	-	-	-	-
Follow-up Hdwy	3.707	3.498	-	-	2.272	-
Pot Cap-1 Maneuver	302	506	-	-	965	-
Stage 1	545	-	-	-	-	-
Stage 2	693	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	284	506	-	-	965	-
Mov Cap-2 Maneuver	284	-	-	-	-	-
Stage 1	545	-	-	-	-	-
Stage 2	653	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.9	0	1.9
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	284	506	965	-
HCM Lane V/C Ratio	-	-	0.051	0.04	0.058	-
HCM Control Delay (s)	-	-	18.4	12.4	9	-
HCM Lane LOS	-	-	C	B	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0.1	0.2	-

Intersection	
Int Delay, s/veh	2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	38	52	221	16	22	290
Future Vol, veh/h	38	52	221	16	22	290
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	-	100	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	16	17	3	31	32	3
Mvmt Flow	42	58	246	18	24	322

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	616	246	0	0	264	0
Stage 1	246	-	-	-	-	-
Stage 2	370	-	-	-	-	-
Critical Hdwy	6.56	6.37	-	-	4.42	-
Critical Hdwy Stg 1	5.56	-	-	-	-	-
Critical Hdwy Stg 2	5.56	-	-	-	-	-
Follow-up Hdwy	3.644	3.453	-	-	2.488	-
Pot Cap-1 Maneuver	432	757	-	-	1145	-
Stage 1	763	-	-	-	-	-
Stage 2	669	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	423	757	-	-	1145	-
Mov Cap-2 Maneuver	423	-	-	-	-	-
Stage 1	763	-	-	-	-	-
Stage 2	655	-	-	-	-	-

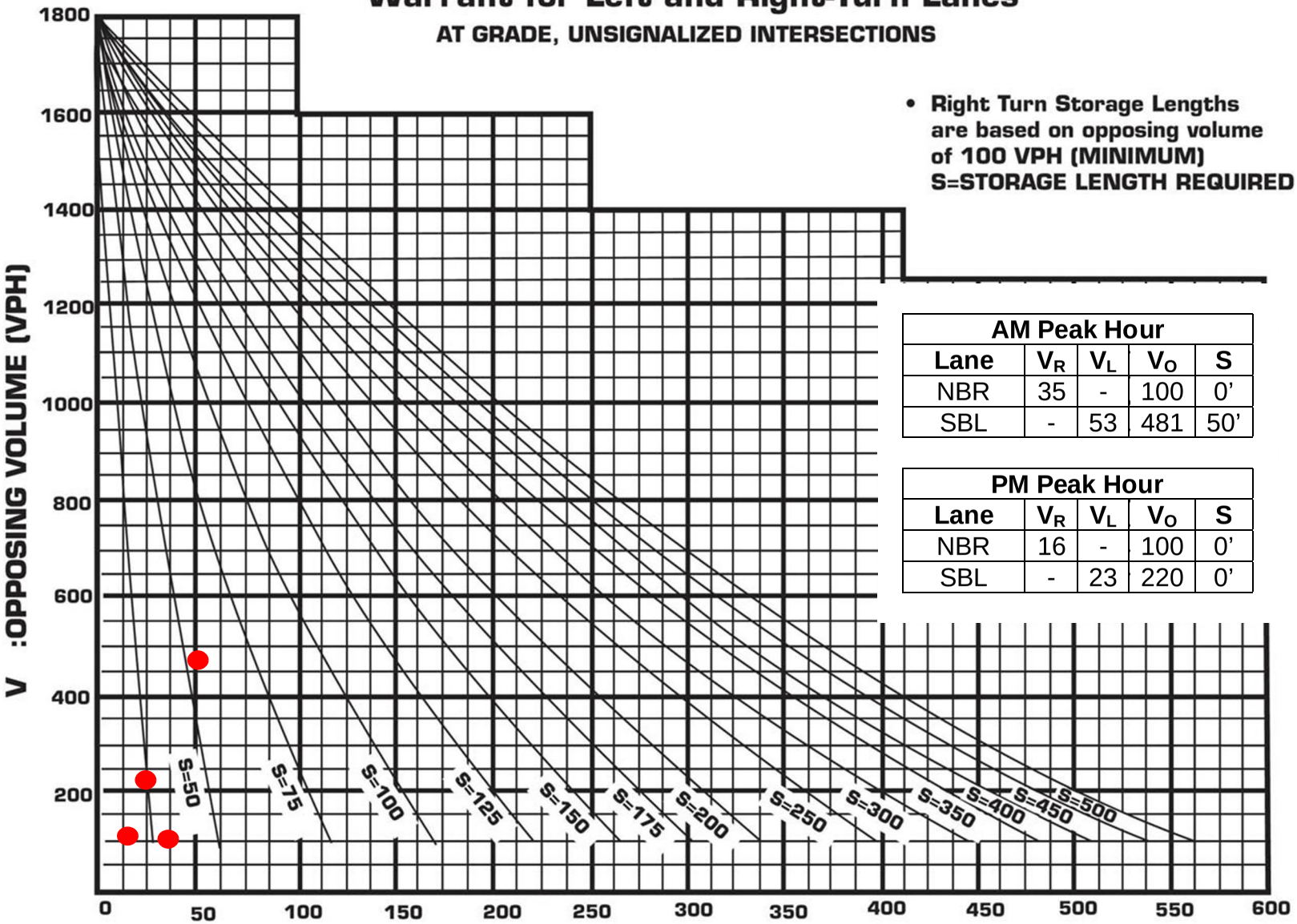
Approach	WB	NB	SB
HCM Control Delay, s	12	0	0.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	423	757	1145	-
HCM Lane V/C Ratio	-	-	0.1	0.076	0.021	-
HCM Control Delay (s)	-	-	14.5	10.1	8.2	-
HCM Lane LOS	-	-	B	B	A	-
HCM 95th %tile Q(veh)	-	-	0.3	0.2	0.1	-

Downs Road and Access B
2023 Build Phase 1

Warrant for Left and Right-Turn Lanes

AT GRADE, UNSIGNALIZED INTERSECTIONS



- **Right Turn Storage Lengths are based on opposing volume of 100 VPH (MINIMUM)**
  S=STORAGE LENGTH REQUIRED

AM Peak Hour				
Lane	**V_R**	**V_L**	**V_O**	**S**
NBR	35	-	100	0’
SBL	-	53	481	50’

PM Peak Hour				
Lane	**V_R**	**V_L**	**V_O**	**S**
NBR	16	-	100	0’
SBL	-	23	220	0’

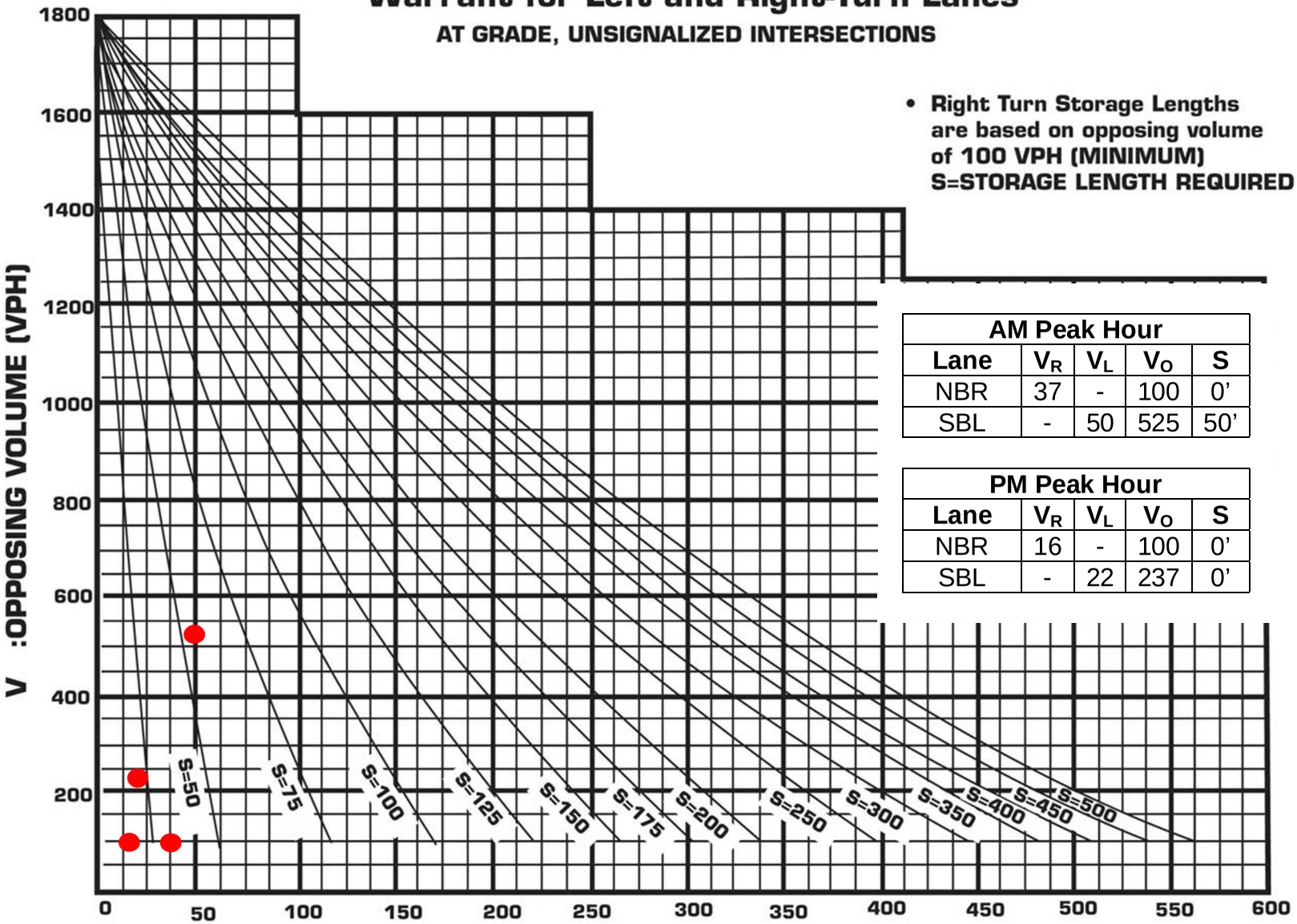
V_L: LEFT TURNING VOLUME (VPH)
V_R: RIGHT TURNING VOLUME (VPH)

Note: Where adjacent signalization may provide opportunities for gaps in the traffic stream a reduction in the above storage values can be considered on a case by case basis.

Downs Road and Access B
2026 Full Build

Warrant for Left and Right-Turn Lanes

AT GRADE, UNSIGNALIZED INTERSECTIONS



- **Right Turn Storage Lengths are based on opposing volume of 100 VPH (MINIMUM)**
  S=STORAGE LENGTH REQUIRED

AM Peak Hour				
Lane	**V_R**	**V_L**	**V_O**	**S**
NBR	37	-	100	0’
SBL	-	50	525	50’

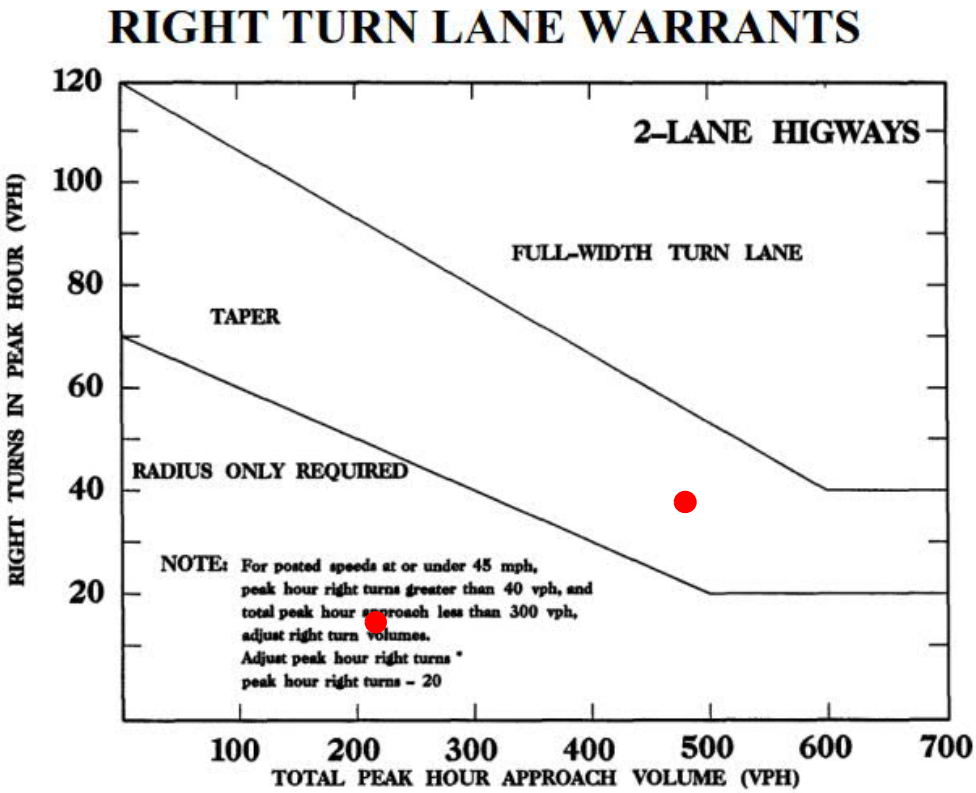
PM Peak Hour				
Lane	**V_R**	**V_L**	**V_O**	**S**
NBR	16	-	100	0’
SBL	-	22	237	0’

V_L: LEFT TURNING VOLUME (VPH)
V_R: RIGHT TURNING VOLUME (VPH)

Note: Where adjacent signalization may provide opportunities for gaps in the traffic stream a reduction in the above storage values can be considered on a case by case basis.

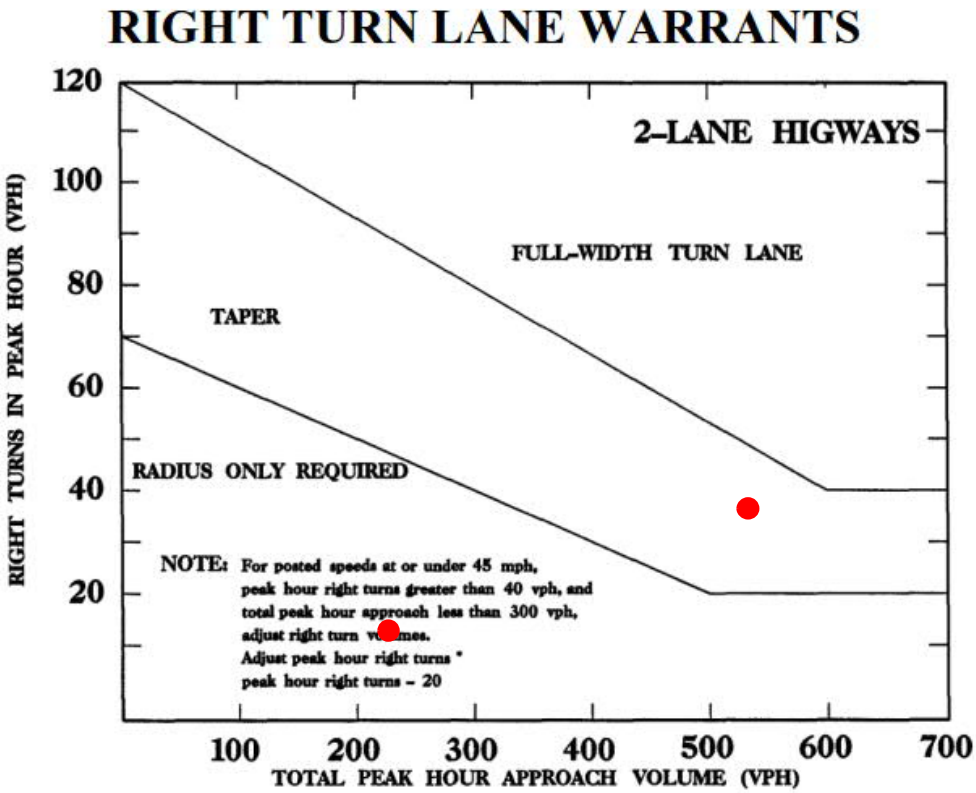
Downs Road and Access B

2023 Build Phase 1				
Peak Hour	**Approach**	**Right Turn Volume**	**Approach Volume**	**Warranted?**
AM	Northbound	35	481	No
PM	Northbound	16	220	No



Downs Road and Access B

2026 Full Build				
Peak Hour	**Approach**	**Right Turn Volume**	**Approach Volume**	**Warranted?**
AM	Northbound	37	525	No
PM	Northbound	16	237	No



APPENDIX K

CAPACITY CALCULATIONS

NATIONS FORD ROAD
AND
ACCESS C

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	9	491	12	25	230
Future Vol, veh/h	5	9	491	12	25	230
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	20	22	4	8	8	5
Mvmt Flow	6	10	546	13	28	256

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	865	553	0	0	559	0
Stage 1	553	-	-	-	-	-
Stage 2	312	-	-	-	-	-
Critical Hdwy	6.6	6.42	-	-	4.18	-
Critical Hdwy Stg 1	5.6	-	-	-	-	-
Critical Hdwy Stg 2	5.6	-	-	-	-	-
Follow-up Hdwy	3.68	3.498	-	-	2.272	-
Pot Cap-1 Maneuver	302	496	-	-	983	-
Stage 1	542	-	-	-	-	-
Stage 2	703	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	292	496	-	-	983	-
Mov Cap-2 Maneuver	292	-	-	-	-	-
Stage 1	542	-	-	-	-	-
Stage 2	680	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.4	0	0.9
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	397	983	-
HCM Lane V/C Ratio	-	-	0.039	0.028	-
HCM Control Delay (s)	-	-	14.4	8.8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-

Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	13	26	268	5	11	299
Future Vol, veh/h	13	26	268	5	11	299
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	15	15	8	40	27	4
Mvmt Flow	14	28	291	5	12	325

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	643	294	0	0	296	0
Stage 1	294	-	-	-	-	-
Stage 2	349	-	-	-	-	-
Critical Hdwy	6.55	6.35	-	-	4.37	-
Critical Hdwy Stg 1	5.55	-	-	-	-	-
Critical Hdwy Stg 2	5.55	-	-	-	-	-
Follow-up Hdwy	3.635	3.435	-	-	2.443	-
Pot Cap-1 Maneuver	418	716	-	-	1136	-
Stage 1	727	-	-	-	-	-
Stage 2	686	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	413	716	-	-	1136	-
Mov Cap-2 Maneuver	413	-	-	-	-	-
Stage 1	727	-	-	-	-	-
Stage 2	677	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.8	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	575	1136	-
HCM Lane V/C Ratio	-	-	0.074	0.011	-
HCM Control Delay (s)	-	-	11.8	8.2	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	9	491	12	25	230
Future Vol, veh/h	5	9	491	12	25	230
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	-	100	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	20	22	4	8	8	5
Mvmt Flow	6	10	546	13	28	256

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	858	546	0	0	559	0
Stage 1	546	-	-	-	-	-
Stage 2	312	-	-	-	-	-
Critical Hdwy	6.6	6.42	-	-	4.18	-
Critical Hdwy Stg 1	5.6	-	-	-	-	-
Critical Hdwy Stg 2	5.6	-	-	-	-	-
Follow-up Hdwy	3.68	3.498	-	-	2.272	-
Pot Cap-1 Maneuver	305	501	-	-	983	-
Stage 1	546	-	-	-	-	-
Stage 2	703	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	296	501	-	-	983	-
Mov Cap-2 Maneuver	296	-	-	-	-	-
Stage 1	546	-	-	-	-	-
Stage 2	683	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.1	0	0.9
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	296	501	983	-
HCM Lane V/C Ratio	-	-	0.019	0.02	0.028	-
HCM Control Delay (s)	-	-	17.4	12.3	8.8	-
HCM Lane LOS	-	-	C	B	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0.1	0.1	-

Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	13	26	268	5	11	299
Future Vol, veh/h	13	26	268	5	11	299
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	-	100	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	15	15	8	40	27	4
Mvmt Flow	14	28	291	5	12	325

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	640	291	0	0	296	0
Stage 1	291	-	-	-	-	-
Stage 2	349	-	-	-	-	-
Critical Hdwy	6.55	6.35	-	-	4.37	-
Critical Hdwy Stg 1	5.55	-	-	-	-	-
Critical Hdwy Stg 2	5.55	-	-	-	-	-
Follow-up Hdwy	3.635	3.435	-	-	2.443	-
Pot Cap-1 Maneuver	420	718	-	-	1136	-
Stage 1	730	-	-	-	-	-
Stage 2	686	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	415	718	-	-	1136	-
Mov Cap-2 Maneuver	415	-	-	-	-	-
Stage 1	730	-	-	-	-	-
Stage 2	678	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.5	0	0.3
HCM LOS	B		

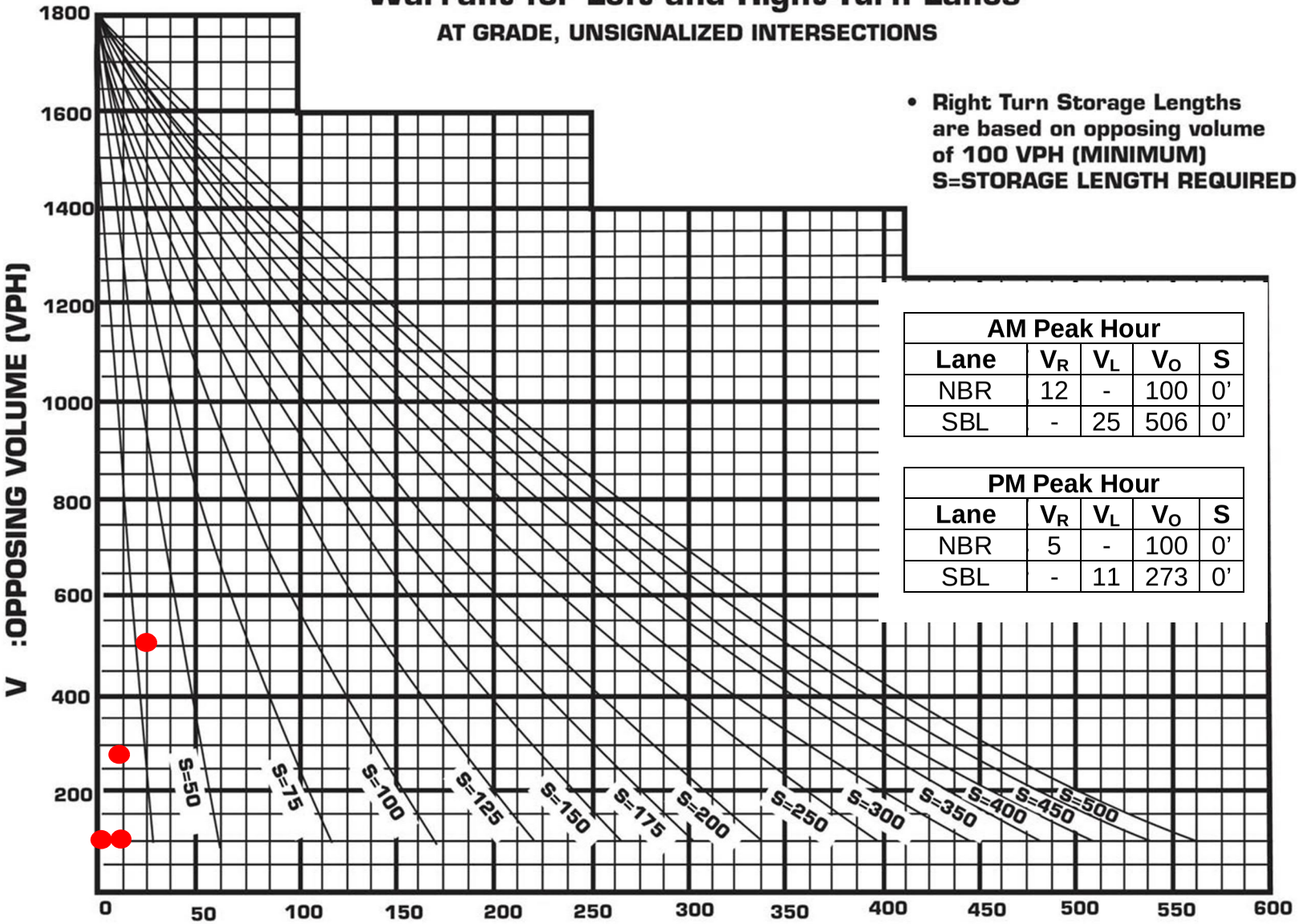
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	415	718	1136	-
HCM Lane V/C Ratio	-	-	0.034	0.039	0.011	-
HCM Control Delay (s)	-	-	14	10.2	8.2	-
HCM Lane LOS	-	-	B	B	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0.1	0	-

Downs Road and Access C
2026 Full Build

Warrant for Left and Right-Turn Lanes

AT GRADE, UNSIGNALIZED INTERSECTIONS

- **Right Turn Storage Lengths are based on opposing volume of 100 VPH (MINIMUM)**
  S=STORAGE LENGTH REQUIRED



AM Peak Hour				
Lane	V_R	V_L	V_O	S
NBR	12	-	100	0’
SBL	-	25	506	0’

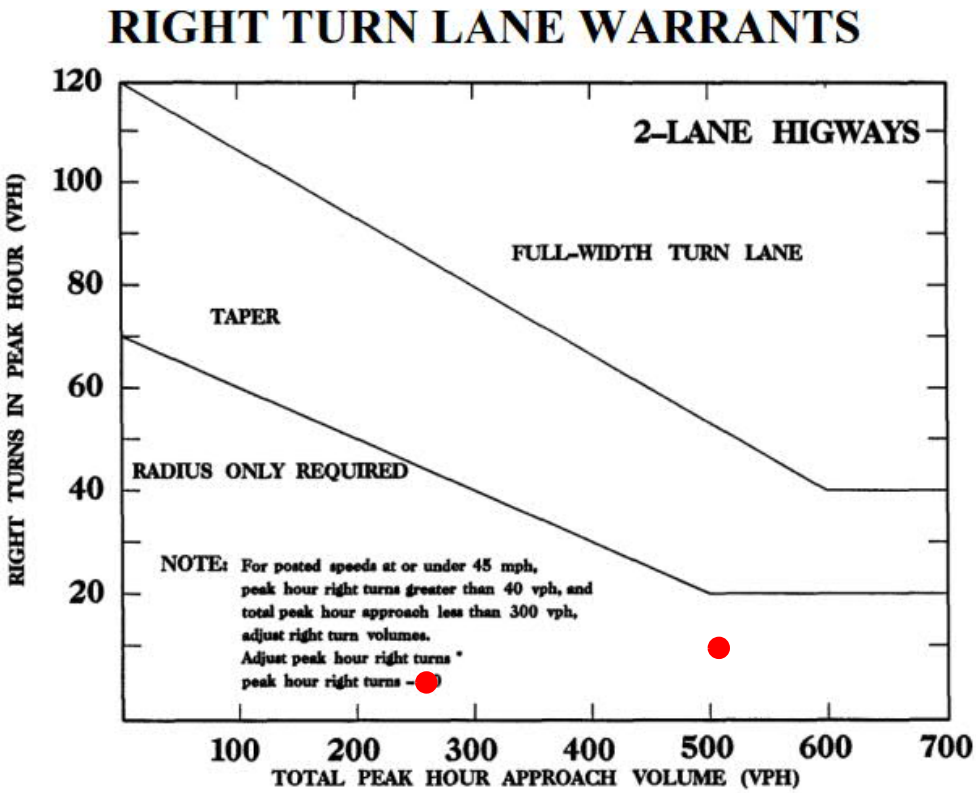
PM Peak Hour				
Lane	V_R	V_L	V_O	S
NBR	5	-	100	0’
SBL	-	11	273	0’

V_L: LEFT TURNING VOLUME (VPH)
V_R: RIGHT TURNING VOLUME (VPH)

Note: Where adjacent signalization may provide opportunities for gaps in the traffic stream a reduction in the above storage values can be considered on a case by case basis.

Downs Road and Access C

2026 Full Build				
Peak Hour	**Approach**	**Right Turn Volume**	**Approach Volume**	**Warranted?**
AM	Northbound	12	506	No
PM	Northbound	5	273	No



APPENDIX L

SIMTRAFFIC REPORTS

Intersection: 1: Nations Ford Road & Westinghouse Boulevard

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	T	R
Maximum Queue (ft)	249	322	312	124	258	259	200	384	43	126	156
Average Queue (ft)	129	139	147	35	133	147	94	210	10	41	55
95th Queue (ft)	219	262	264	82	233	246	190	337	32	97	124
Link Distance (ft)		1467	1467		1847	1847		1467		1044	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	150			150			100		175		200
Storage Blk Time (%)	5	6			8		6	34		0	0
Queuing Penalty (veh)	23	23			6		17	31		0	0

Intersection: 2: Downs Road & Westinghouse Boulevard

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (ft)	197	320	328	96	244	225	220	287	79	92
Average Queue (ft)	59	163	187	36	135	118	67	127	23	31
95th Queue (ft)	129	282	307	78	207	199	147	238	62	76
Link Distance (ft)		1847	1847		1163	1163		986		1029
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	150			150			200		200	
Storage Blk Time (%)	0	8		0	5		0	3		
Queuing Penalty (veh)	1	7		0	2		0	4		

Intersection: 4: NC 51 & Downs Road

Movement	EB	EB	EB	WB	WB	WB	WB	SB	SB
Directions Served	L	T	T	U	T	T	R	L	R
Maximum Queue (ft)	127	107	103	29	116	120	75	142	78
Average Queue (ft)	65	36	39	3	59	52	14	56	20
95th Queue (ft)	110	82	87	16	99	103	57	111	56
Link Distance (ft)		2512	2512		2764	2764			559
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	325			175			300	150	
Storage Blk Time (%)								0	
Queuing Penalty (veh)								0	

Network Summary

Network wide Queuing Penalty: 114

Intersection: 1: Nations Ford Road & Westinghouse Boulevard

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	T	R
Maximum Queue (ft)	154	232	229	205	326	316	152	203	167	388	297
Average Queue (ft)	57	94	93	43	159	165	64	99	34	112	168
95th Queue (ft)	111	190	186	134	299	304	127	180	100	278	276
Link Distance (ft)		1467	1467		1847	1847		1467		1044	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	150			150			100		175		200
Storage Blk Time (%)	0	2			10		5	13	0	2	6
Queuing Penalty (veh)	0	3			8		6	9	0	7	9

Intersection: 2: Downs Road & Westinghouse Boulevard

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (ft)	94	347	393	223	310	274	173	157	165	290
Average Queue (ft)	18	184	218	86	166	139	82	69	61	148
95th Queue (ft)	66	316	353	168	264	243	153	135	125	248
Link Distance (ft)		1847	1847		1163	1163		986		1029
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	150			150			200		200	
Storage Blk Time (%)		13		2	10		0	0		3
Queuing Penalty (veh)		2		9	10		0	0		3

Intersection: 4: NC 51 & Downs Road

Movement	EB	EB	EB	WB	WB	WB	WB	SB	SB
Directions Served	L	T	T	U	T	T	R	L	R
Maximum Queue (ft)	96	140	155	29	186	194	11	247	304
Average Queue (ft)	39	68	70	4	98	95	0	156	80
95th Queue (ft)	78	117	125	21	160	163	8	236	187
Link Distance (ft)		2512	2512		2764	2764			559
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	325			175			300	150	
Storage Blk Time (%)					0	0		10	0
Queuing Penalty (veh)					0	0		16	1

Network Summary

Network wide Queuing Penalty: 83

Intersection: 1: Nations Ford Road & Westinghouse Boulevard

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	T	R
Maximum Queue (ft)	250	546	528	249	321	350	200	393	44	99	121
Average Queue (ft)	232	319	295	55	183	201	111	228	12	42	40
95th Queue (ft)	280	495	440	140	306	324	226	343	33	83	93
Link Distance (ft)		1467	1467		1847	1847		1467		1044	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	150			150			100		175		200
Storage Blk Time (%)	41	17		0	21		6	43			
Queuing Penalty (veh)	198	70		1	16		18	41			

Intersection: 2: Downs Road & Westinghouse Boulevard

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (ft)	250	356	397	250	370	305	215	298	76	94
Average Queue (ft)	88	270	288	43	194	186	113	169	38	43
95th Queue (ft)	217	375	382	120	307	280	179	284	77	77
Link Distance (ft)		1847	1847		1163	1163		986		1029
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	150			150			200		200	
Storage Blk Time (%)	0	43			14		1	9		
Queuing Penalty (veh)	0	38			8		3	13		

Intersection: 4: NC 51 & Downs Road

Movement	EB	EB	EB	WB	WB	WB	WB	SB	SB
Directions Served	L	T	T	U	T	T	R	L	R
Maximum Queue (ft)	162	187	205	32	116	115	106	118	93
Average Queue (ft)	77	63	57	6	73	66	22	62	26
95th Queue (ft)	126	120	125	24	103	104	73	108	65
Link Distance (ft)		2512	2512		2764	2764			559
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	325			175			300	150	
Storage Blk Time (%)									
Queuing Penalty (veh)									

Network Summary

Network wide Queuing Penalty: 405

Intersection: 1: Nations Ford Road & Westinghouse Boulevard

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	T	R
Maximum Queue (ft)	244	311	314	238	394	401	174	244	107	332	291
Average Queue (ft)	111	188	192	79	211	220	65	109	32	105	153
95th Queue (ft)	206	284	290	188	350	359	129	194	82	237	264
Link Distance (ft)		1467	1467		1847	1847		1467		1044	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	150			150			100		175		200
Storage Blk Time (%)	5	11		1	19		3	16	0	2	6
Queuing Penalty (veh)	23	18		6	17		5	12	0	5	9

Intersection: 2: Downs Road & Westinghouse Boulevard

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (ft)	175	428	446	234	345	290	230	250	285	433
Average Queue (ft)	25	262	289	96	209	180	127	94	98	213
95th Queue (ft)	102	395	417	190	311	274	213	192	218	388
Link Distance (ft)		1847	1847		1163	1163		986		1029
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	150			150			200		200	
Storage Blk Time (%)		35		5	16		3	1	0	17
Queuing Penalty (veh)		7		20	18		5	1	0	17

Intersection: 4: NC 51 & Downs Road

Movement	EB	EB	EB	WB	WB	WB	WB	SB	SB
Directions Served	L	T	T	U	T	T	R	L	R
Maximum Queue (ft)	108	160	171	39	217	223	5	249	361
Average Queue (ft)	45	86	84	5	121	120	0	180	120
95th Queue (ft)	90	143	150	24	188	193	5	260	275
Link Distance (ft)		2512	2512		2764	2764			559
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	325			175			300	150	
Storage Blk Time (%)					1	0		16	1
Queuing Penalty (veh)					0	0		29	2

Network Summary

Network wide Queuing Penalty: 193

Intersection: 1: Nations Ford Road & Westinghouse Boulevard

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	T	R
Maximum Queue (ft)	250	739	715	235	351	366	200	488	45	144	149
Average Queue (ft)	238	398	349	82	217	230	126	257	12	50	54
95th Queue (ft)	282	660	601	201	322	335	227	413	35	108	120
Link Distance (ft)		1467	1467		1847	1847		1467		1044	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	150			150			100		175		200
Storage Blk Time (%)	45	14		2	26		13	43		0	0
Queuing Penalty (veh)	231	60		4	21		42	43		0	0

Intersection: 2: Downs Road & Westinghouse Boulevard

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (ft)	212	316	335	170	277	281	298	407	101	138
Average Queue (ft)	75	134	171	54	178	171	137	210	37	49
95th Queue (ft)	153	257	288	121	250	247	252	350	79	102
Link Distance (ft)		1847	1847		1163	1163		986		1029
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	150			150			200		200	
Storage Blk Time (%)	2	3		0	10		2	15		
Queuing Penalty (veh)	11	3		0	6		6	23		

Intersection: 4: NC 51 & Downs Road

Movement	EB	EB	EB	WB	WB	WB	WB	SB	SB
Directions Served	L	T	T	U	T	T	R	L	R
Maximum Queue (ft)	176	106	117	25	148	154	144	143	72
Average Queue (ft)	84	50	54	3	79	79	34	69	24
95th Queue (ft)	143	93	101	18	126	134	104	120	58
Link Distance (ft)		2512	2512		2764	2764			559
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	325			175			300	150	
Storage Blk Time (%)					0			0	
Queuing Penalty (veh)					0			0	

Network Summary

Network wide Queuing Penalty: 451

Intersection: 1: Nations Ford Road & Westinghouse Boulevard

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	T	R
Maximum Queue (ft)	249	364	357	250	439	449	168	224	119	357	292
Average Queue (ft)	118	190	191	97	262	271	70	106	33	119	164
95th Queue (ft)	212	302	304	226	404	412	132	183	89	276	280
Link Distance (ft)		1467	1467		1847	1847		1467		1044	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	150			150			100		175		200
Storage Blk Time (%)	7	11		1	29		5	13		2	8
Queuing Penalty (veh)	32	18		7	27		7	11		7	12

Intersection: 2: Downs Road & Westinghouse Boulevard

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (ft)	190	419	444	250	374	332	271	296	300	478
Average Queue (ft)	25	248	271	122	229	198	142	105	115	240
95th Queue (ft)	103	397	416	234	335	300	238	226	254	413
Link Distance (ft)		1847	1847		1163	1163		986		1029
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	150			150			200		200	
Storage Blk Time (%)		31		9	18		7	1	0	26
Queuing Penalty (veh)		7		40	22		11	1	1	26

Intersection: 4: NC 51 & Downs Road

Movement	EB	EB	EB	WB	WB	WB	WB	SB	SB
Directions Served	L	T	T	U	T	T	R	L	R
Maximum Queue (ft)	116	183	192	30	234	254	17	249	364
Average Queue (ft)	51	89	94	4	134	136	1	189	137
95th Queue (ft)	101	154	163	19	205	213	13	267	301
Link Distance (ft)		2512	2512		2764	2764			559
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	325			175			300	150	
Storage Blk Time (%)					2	0		19	1
Queuing Penalty (veh)					0	0		36	4

Network Summary

Network wide Queuing Penalty: 268

Intersection: 1: Nations Ford Road & Westinghouse Boulevard

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	T	R
Maximum Queue (ft)	250	642	591	227	341	338	200	459	47	124	139
Average Queue (ft)	230	350	313	72	198	208	128	240	11	47	51
95th Queue (ft)	287	582	525	172	298	302	223	394	34	98	112
Link Distance (ft)		1467	1467		1847	1847		1439		1044	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	150			150			100		175		200
Storage Blk Time (%)	41	14		0	22		16	38			0
Queuing Penalty (veh)	206	59		0	17		50	43			0

Intersection: 2: Downs Road & Westinghouse Boulevard

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (ft)	188	310	330	165	268	238	294	449	87	137
Average Queue (ft)	66	149	184	61	170	154	143	211	36	50
95th Queue (ft)	135	263	300	127	247	227	260	373	75	104
Link Distance (ft)		1847	1847		1163	1163		986		1029
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	150			150			200		200	
Storage Blk Time (%)	1	3		1	9		2	14		0
Queuing Penalty (veh)	5	3		2	7		6	22		0

Intersection: 3: Downs Road & Site Access A

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	71	67
Average Queue (ft)	25	12
95th Queue (ft)	61	46
Link Distance (ft)	925	1772
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 4: NC 51 & Downs Road

Movement	EB	EB	EB	WB	WB	WB	WB	SB	SB
Directions Served	L	T	T	U	T	T	R	L	R
Maximum Queue (ft)	186	128	132	30	137	142	132	134	98
Average Queue (ft)	92	51	56	4	75	74	34	64	28
95th Queue (ft)	158	98	109	19	119	125	99	115	70
Link Distance (ft)		2512	2512		2764	2764			558
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	325			175			300	150	
Storage Blk Time (%)					0			0	
Queuing Penalty (veh)					0			0	

Intersection: 5: Nations Ford Road & Site Access B

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	70	88
Average Queue (ft)	26	22
95th Queue (ft)	61	65
Link Distance (ft)	1137	2324
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 420

Intersection: 1: Nations Ford Road & Westinghouse Boulevard

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	T	R
Maximum Queue (ft)	246	351	346	250	426	439	198	292	96	372	291
Average Queue (ft)	122	206	212	92	262	271	110	117	31	122	160
95th Queue (ft)	230	310	317	216	402	408	183	218	70	295	274
Link Distance (ft)		1467	1467		1847	1847		1439		1044	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	150			150			100		175		200
Storage Blk Time (%)	7	15		2	29		17	14		2	9
Queuing Penalty (veh)	31	23		10	25		24	18		6	13

Intersection: 2: Downs Road & Westinghouse Boulevard

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (ft)	174	380	406	247	359	330	267	314	274	436
Average Queue (ft)	21	241	272	118	217	187	158	119	105	226
95th Queue (ft)	87	359	383	225	323	292	267	274	235	390
Link Distance (ft)		1847	1847		1163	1163		986		1029
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	150			150			200		200	
Storage Blk Time (%)		33		12	16		11	1	0	22
Queuing Penalty (veh)		7		48	20		18	2	1	22

Intersection: 3: Downs Road & Site Access A

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	100	75	2
Average Queue (ft)	43	8	0
95th Queue (ft)	80	40	2
Link Distance (ft)	925	1772	750
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 4: NC 51 & Downs Road

Movement	EB	EB	EB	WB	WB	WB	WB	SB	SB
Directions Served	L	T	T	U	T	T	R	L	R
Maximum Queue (ft)	130	168	168	32	219	230	18	249	365
Average Queue (ft)	54	88	86	3	126	127	1	189	124
95th Queue (ft)	105	148	151	17	190	199	13	264	268
Link Distance (ft)		2512	2512		2764	2764			558
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	325			175			300	150	
Storage Blk Time (%)					2			18	1
Queuing Penalty (veh)					0			36	3

Intersection: 5: Nations Ford Road & Site Access B

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	87	93
Average Queue (ft)	42	10
95th Queue (ft)	72	49
Link Distance (ft)	1137	2324
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 306

Intersection: 1: Nations Ford Road & Westinghouse Boulevard

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	T	R
Maximum Queue (ft)	250	692	636	248	344	357	200	512	39	119	145
Average Queue (ft)	232	379	325	75	196	212	132	241	10	45	50
95th Queue (ft)	285	621	550	180	304	318	224	408	30	93	113
Link Distance (ft)		1467	1467		1847	1847		1439		1044	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	150			150			100		175		200
Storage Blk Time (%)	42	15		1	23		17	39		0	0
Queuing Penalty (veh)	212	60		3	17		51	44		0	0

Intersection: 2: Downs Road & Westinghouse Boulevard

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (ft)	225	321	344	184	294	271	293	452	102	118
Average Queue (ft)	73	158	191	66	170	161	142	212	38	46
95th Queue (ft)	154	289	319	137	254	241	265	397	82	99
Link Distance (ft)		1847	1847		1163	1163		986		1029
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	150			150			200		200	
Storage Blk Time (%)	2	5		1	9		2	15		
Queuing Penalty (veh)	6	4		2	7		6	24		

Intersection: 3: Downs Road & Site Access A

Movement	EB	EB	NB	SB
Directions Served	L	R	L	R
Maximum Queue (ft)	61	56	36	4
Average Queue (ft)	16	12	7	0
95th Queue (ft)	48	38	28	4
Link Distance (ft)		906		
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	100		100	100
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 4: NC 51 & Downs Road

Movement	EB	EB	EB	WB	WB	WB	WB	SB	SB
Directions Served	L	T	T	U	T	T	R	L	R
Maximum Queue (ft)	180	132	146	31	136	146	117	152	102
Average Queue (ft)	90	53	59	4	77	74	29	70	25
95th Queue (ft)	149	102	116	20	122	126	90	123	69
Link Distance (ft)		2512	2512		2764	2764			558
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	325			175			300	150	
Storage Blk Time (%)					0			0	0
Queuing Penalty (veh)					0			0	0

Intersection: 5: Nations Ford Road & Site Access B

Movement	WB	WB	NB	NB	SB
Directions Served	L	R	T	R	L
Maximum Queue (ft)	56	69	2	4	64
Average Queue (ft)	12	15	0	0	19
95th Queue (ft)	40	45	2	3	51
Link Distance (ft)		1120	1672		
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	100			100	100
Storage Blk Time (%)		0			0
Queuing Penalty (veh)		0			0

Network Summary

Network wide Queuing Penalty: 435

Intersection: 1: Nations Ford Road & Westinghouse Boulevard

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	T	R
Maximum Queue (ft)	248	349	341	250	438	445	192	256	188	383	298
Average Queue (ft)	114	204	212	85	271	282	106	111	36	119	167
95th Queue (ft)	209	304	315	205	415	425	176	204	98	282	280
Link Distance (ft)		1467	1467		1847	1847		1439		1044	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	150			150			100		175		200
Storage Blk Time (%)	5	15		1	29		16	12		2	8
Queuing Penalty (veh)	25	23		5	26		23	16		8	12

Intersection: 2: Downs Road & Westinghouse Boulevard

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (ft)	211	391	416	248	345	306	281	306	290	467
Average Queue (ft)	25	247	275	116	214	184	158	112	102	230
95th Queue (ft)	103	367	397	222	312	277	258	234	225	390
Link Distance (ft)		1847	1847		1163	1163		986		1029
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	150			150			200		200	
Storage Blk Time (%)		35		11	17		9	1	0	23
Queuing Penalty (veh)		7		44	20		15	2	1	23

Intersection: 3: Downs Road & Site Access A

Movement	EB	EB	NB	SB
Directions Served	L	R	L	T
Maximum Queue (ft)	78	66	62	2
Average Queue (ft)	31	23	7	0
95th Queue (ft)	64	53	33	2
Link Distance (ft)		906		746
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	100		100	
Storage Blk Time (%)	0	0		
Queuing Penalty (veh)	0	0		

Intersection: 4: NC 51 & Downs Road

Movement	EB	EB	EB	WB	WB	WB	WB	SB	SB
Directions Served	L	T	T	U	T	T	R	L	R
Maximum Queue (ft)	129	168	175	31	231	236	11	249	401
Average Queue (ft)	56	84	85	3	127	127	1	188	132
95th Queue (ft)	107	141	150	18	197	202	10	266	291
Link Distance (ft)		2512	2512		2764	2764			558
Upstream Blk Time (%)									0
Queuing Penalty (veh)									0
Storage Bay Dist (ft)	325			175			300	150	
Storage Blk Time (%)					2	0		18	1
Queuing Penalty (veh)					0	0		36	5

Intersection: 5: Nations Ford Road & Site Access B

Movement	WB	WB	SB
Directions Served	L	R	L
Maximum Queue (ft)	60	68	58
Average Queue (ft)	21	26	7
95th Queue (ft)	51	54	34
Link Distance (ft)		1120	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	100		100
Storage Blk Time (%)		0	0
Queuing Penalty (veh)		0	0

Network Summary

Network wide Queuing Penalty: 290

Intersection: 1: Nations Ford Road & Westinghouse Boulevard

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	T	R
Maximum Queue (ft)	250	898	818	250	379	380	200	488	38	120	146
Average Queue (ft)	245	509	458	92	240	257	145	262	9	49	50
95th Queue (ft)	270	818	751	222	351	357	230	431	29	102	112
Link Distance (ft)		1467	1467		1847	1847		1439		1044	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	150			150			100		175		200
Storage Blk Time (%)	51	19		1	33		21	42		0	0
Queuing Penalty (veh)	275	83		3	27		70	53		0	0

Intersection: 2: Downs Road & Westinghouse Boulevard

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (ft)	197	320	367	209	287	270	294	455	93	141
Average Queue (ft)	78	154	184	93	182	167	145	213	38	54
95th Queue (ft)	153	279	313	181	260	247	268	365	77	111
Link Distance (ft)		1847	1847		1163	1163		986		1029
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	150			150			200		200	
Storage Blk Time (%)	2	8		6	11		2	16		0
Queuing Penalty (veh)	9	7		16	10		8	27		0

Intersection: 3: Downs Road & Site Access A

Movement	EB	NB
Directions Served	LR	L
Maximum Queue (ft)	78	52
Average Queue (ft)	31	12
95th Queue (ft)	65	39
Link Distance (ft)	918	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		100
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 4: NC 51 & Downs Road

Movement	EB	EB	EB	WB	WB	WB	WB	SB	SB
Directions Served	L	T	T	U	T	T	R	L	R
Maximum Queue (ft)	192	142	148	32	159	174	133	161	81
Average Queue (ft)	100	56	59	4	84	82	35	75	27
95th Queue (ft)	170	109	116	20	136	143	102	130	65
Link Distance (ft)		2512	2512		2764	2764			558
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	325			175			300	150	
Storage Blk Time (%)					0			1	
Queuing Penalty (veh)					0			0	

Intersection: 5: Nations Ford Road & Site Access B

Movement	WB	NB	SB
Directions Served	LR	TR	L
Maximum Queue (ft)	81	2	70
Average Queue (ft)	26	0	20
95th Queue (ft)	65	2	52
Link Distance (ft)	1129	1671	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			100
Storage Blk Time (%)			0
Queuing Penalty (veh)			0

Intersection: 6: Nations Ford Road & Site Access C

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	66	2	72
Average Queue (ft)	15	0	11
95th Queue (ft)	48	2	45
Link Distance (ft)	997	539	613
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 588

Intersection: 1: Nations Ford Road & Westinghouse Boulevard

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	T	R
Maximum Queue (ft)	250	356	364	250	434	445	199	316	124	429	296
Average Queue (ft)	140	220	231	106	306	313	124	122	32	140	180
95th Queue (ft)	246	340	347	246	431	433	200	241	81	323	295
Link Distance (ft)		1467	1467		1847	1847		1439		1044	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	150			150			100		175		200
Storage Blk Time (%)	8	17		1	35		25	12	0	4	11
Queuing Penalty (veh)	39	28		5	33		38	18	0	14	17

Intersection: 2: Downs Road & Westinghouse Boulevard

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (ft)	174	418	451	250	481	466	297	484	300	636
Average Queue (ft)	24	272	298	159	266	234	215	210	158	372
95th Queue (ft)	94	405	431	272	475	439	326	483	337	752
Link Distance (ft)		1847	1847		1163	1163		986		1029
Upstream Blk Time (%)										2
Queuing Penalty (veh)										0
Storage Bay Dist (ft)	150			150			200		200	
Storage Blk Time (%)		40		33	16		32	2	0	48
Queuing Penalty (veh)		8		141	21		58	4	1	49

Intersection: 3: Downs Road & Site Access A

Movement	EB	NB
Directions Served	LR	L
Maximum Queue (ft)	142	56
Average Queue (ft)	57	9
95th Queue (ft)	105	37
Link Distance (ft)	918	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		100
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 4: NC 51 & Downs Road

Movement	EB	EB	EB	WB	WB	WB	WB	SB	SB
Directions Served	L	T	T	U	T	T	R	L	R
Maximum Queue (ft)	131	190	190	30	235	248	17	249	413
Average Queue (ft)	59	98	100	4	143	143	1	203	171
95th Queue (ft)	113	163	169	20	214	220	10	279	361
Link Distance (ft)		2512	2512		2764	2764			558
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	325			175			300	150	
Storage Blk Time (%)					3	0		22	1
Queuing Penalty (veh)					0	0		48	4

Intersection: 5: Nations Ford Road & Site Access B

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	93	51
Average Queue (ft)	43	5
95th Queue (ft)	77	28
Link Distance (ft)	1129	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		100
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 6: Nations Ford Road & Site Access C

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	65	58
Average Queue (ft)	26	3
95th Queue (ft)	59	27
Link Distance (ft)	978	610
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 530

Intersection: 1: Nations Ford Road & Westinghouse Boulevard

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	T	R
Maximum Queue (ft)	250	792	756	250	370	390	200	493	51	136	128
Average Queue (ft)	244	471	424	86	242	255	145	265	10	50	45
95th Queue (ft)	272	751	696	203	342	356	235	437	34	103	102
Link Distance (ft)		1467	1467		1847	1847		1439		1044	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	150			150			100		175		200
Storage Blk Time (%)	51	18		1	34		22	42		0	
Queuing Penalty (veh)	274	79		4	27		72	53		0	

Intersection: 2: Downs Road & Westinghouse Boulevard

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (ft)	199	273	318	182	270	261	276	411	92	123
Average Queue (ft)	78	138	170	71	183	175	136	211	39	50
95th Queue (ft)	155	243	283	142	256	242	249	378	81	105
Link Distance (ft)		1847	1847		1163	1163		986		1029
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	150			150			400		200	
Storage Blk Time (%)	3	7		1	11			1		
Queuing Penalty (veh)	13	6		2	10			2		

Intersection: 3: Downs Road & Site Access A

Movement	EB	EB	NB	NB	SB
Directions Served	L	R	L	T	R
Maximum Queue (ft)	69	57	50	9	11
Average Queue (ft)	21	14	11	0	0
95th Queue (ft)	57	41	37	9	5
Link Distance (ft)		906		1761	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	100		100		100
Storage Blk Time (%)	0			0	
Queuing Penalty (veh)	0			0	

Intersection: 4: NC 51 & Downs Road

Movement	EB	EB	EB	WB	WB	WB	WB	SB	SB
Directions Served	L	T	T	U	T	T	R	L	R
Maximum Queue (ft)	202	128	132	32	142	142	158	166	84
Average Queue (ft)	100	54	59	3	83	81	36	73	27
95th Queue (ft)	168	102	116	19	130	132	109	133	65
Link Distance (ft)		2512	2512		2764	2764			558
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	325			175			300	150	
Storage Blk Time (%)					0			1	0
Queuing Penalty (veh)					0			0	0

Intersection: 5: Nations Ford Road & Site Access B

Movement	WB	WB	NB	NB	SB
Directions Served	L	R	T	R	L
Maximum Queue (ft)	60	58	2	8	57
Average Queue (ft)	11	14	0	0	18
95th Queue (ft)	40	42	2	5	48
Link Distance (ft)		1120	1672		
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	100			100	100
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 6: Nations Ford Road & Site Access C

Movement	WB	WB	SB
Directions Served	L	R	L
Maximum Queue (ft)	48	47	47
Average Queue (ft)	5	8	10
95th Queue (ft)	26	32	35
Link Distance (ft)		980	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	100		100
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 543

Intersection: 1: Nations Ford Road & Westinghouse Boulevard

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	T	R
Maximum Queue (ft)	249	378	395	250	441	444	199	324	159	419	297
Average Queue (ft)	138	219	230	104	297	303	126	132	37	161	181
95th Queue (ft)	244	340	350	243	432	433	204	256	105	357	300
Link Distance (ft)		1467	1467		1847	1847		1439		1044	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	150			150			100		175		200
Storage Blk Time (%)	10	17		1	34		26	13	0	9	11
Queuing Penalty (veh)	50	28		5	32		39	21	0	31	18

Intersection: 2: Downs Road & Westinghouse Boulevard

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (ft)	125	378	413	249	434	402	374	323	300	600
Average Queue (ft)	23	247	275	146	262	233	211	119	151	318
95th Queue (ft)	87	377	413	265	475	439	366	247	320	599
Link Distance (ft)		1847	1847		1163	1163		986		1029
Upstream Blk Time (%)										0
Queuing Penalty (veh)										0
Storage Bay Dist (ft)	150			150			400		200	
Storage Blk Time (%)		36		26	15		2	0	1	43
Queuing Penalty (veh)		8		111	20		4	0	2	44

Intersection: 3: Downs Road & Site Access A

Movement	EB	EB	NB	SB	SB
Directions Served	L	R	L	T	R
Maximum Queue (ft)	99	82	64	4	4
Average Queue (ft)	41	30	10	0	0
95th Queue (ft)	81	63	41	3	4
Link Distance (ft)		906		746	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	100		100		100
Storage Blk Time (%)	1	0	0		
Queuing Penalty (veh)	0	0	0		

Intersection: 4: NC 51 & Downs Road

Movement	EB	EB	EB	WB	WB	WB	WB	SB	SB
Directions Served	L	T	T	U	T	T	R	L	R
Maximum Queue (ft)	140	200	210	35	229	242	28	249	384
Average Queue (ft)	58	94	97	5	138	138	1	197	152
95th Queue (ft)	112	162	171	23	209	214	15	273	322
Link Distance (ft)		2512	2512		2764	2764			558
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	325			175			300	150	
Storage Blk Time (%)					2			21	1
Queuing Penalty (veh)					0			45	5

Intersection: 5: Nations Ford Road & Site Access B

Movement	WB	WB	SB
Directions Served	L	R	L
Maximum Queue (ft)	70	72	51
Average Queue (ft)	26	28	6
95th Queue (ft)	57	59	30
Link Distance (ft)		1120	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	100		100
Storage Blk Time (%)	0	0	
Queuing Penalty (veh)	0	0	

Intersection: 6: Nations Ford Road & Site Access C

Movement	WB	WB	SB
Directions Served	L	R	L
Maximum Queue (ft)	44	52	35
Average Queue (ft)	8	14	3
95th Queue (ft)	31	39	21
Link Distance (ft)		967	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	100		100
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 463