

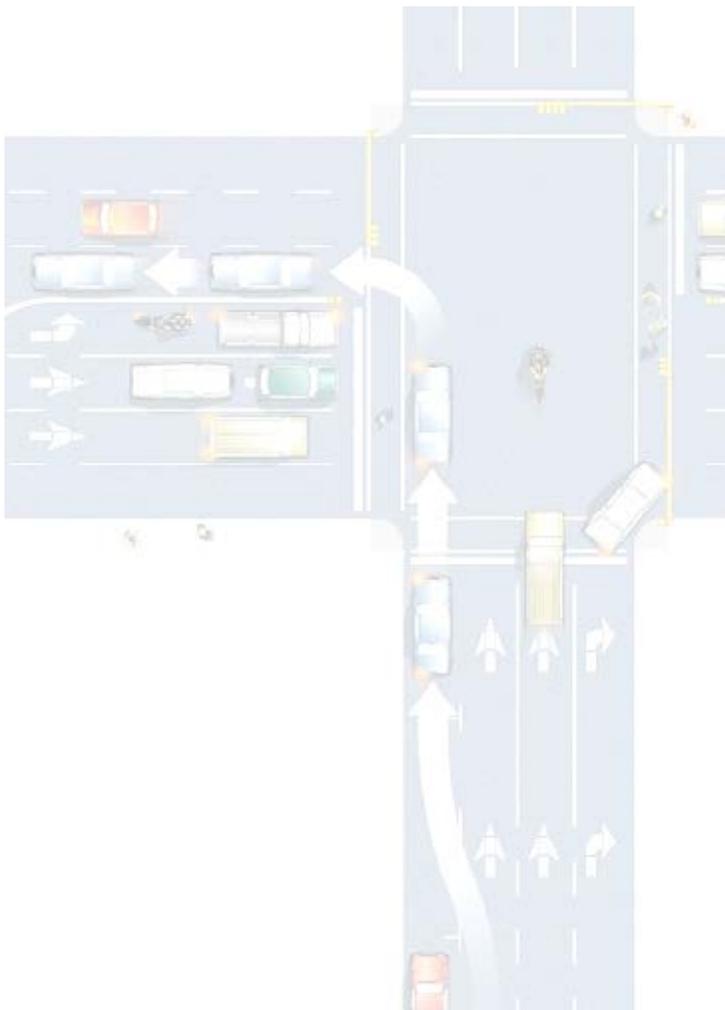


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December 2017

Traffic Impact Analysis
Settler's Pointe Development
Hillsborough, NC

Supplemental Revision



Prepared by
**Summit Design and
Engineering Services**

Prepared for
**Old NC 86
Partners, LLC**

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Settler's Pointe Development

Hillsborough, North Carolina

Traffic Impact Analysis Supplemental Revision

Prepared For:

Old NC 86 Partners, LLC
504 Meadowlands Drive
Hillsborough, North Carolina 28278

December 2017

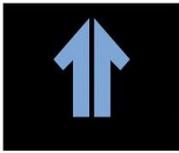
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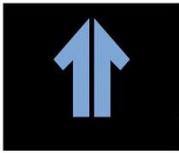
Executive Summary – Supplemental Revision

A Traffic Impact Analysis was performed and submitted for a development in Orange County, N.C. near Hillsborough for multiple land use types as part of a re-zoning for a master plan for the development. The original proposal has since been modified to remove from consideration at this time, all the residential uses that were proposed. Additionally, the developer has reduced the square footage proposed for the warehouse land use parcels for the Phase I Build options from the original TIA. Subsequently, the TIA has been revised to reflect these changes, and recommendations made that are appropriate for the level of development proposed.

The trip generation for the proposed site has been reduced by all of the residential components, as well as reducing the proposed square footage for the warehouse land use. All internal capture trips remain as they were calculated in the original TIA since there was no internal trip capture from the residential parcels. The parcels identified for the warehouse land use are across a public roadway from the retail/office/hotel parcels, and therefore do not meet the definition of an internal trip, so no change in the internal trip calculation was necessary. Residential land uses in developments are not reduced for pass-by trips, so all pass-by trips have been calculated as proposed in the original TIA. Table 1R below summarizes the trip generation for this revision, noting that the Continuing Care Retirement units are shown for simplicity in comparing the table with the original TIA. The Continuing Care Retirement land use shows zero (0) units for this TIA revision.

TABLE 1.R											
Trip Generation											
Land Use Type	ITE Code	Amount	Daily			AM Peak Hour			PM Peak Hour		
			Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit
Warehousing, 1,000 Sq Ft	150	900	3,204	1,602	1,602	270	213	57	288	72	216
General Office, 1,000 Sq Ft	710	50	775	388	387	110	97	13	135	23	112
Continuing Care Retirement, Units	255	0	0	0	0	0	0	0	0	0	0
Hotel, Rooms	310	200	1,634	817	817	106	63	43	120	61	59
Shopping Center, 1,000 Sq Ft	820	58.8	4,809	2,405	2,404	113	70	43	420	202	218
High-Turnover (Sit-Down) Restaurant, 1,000 Sq Ft	932	5	636	318	318	67	36	31	93	50	43
High-Turnover (Sit-Down) Restaurant, 1,000 Sq Ft	932	8	1,018	509	509	107	57	50	148	80	68
Fast-Food Restaurant with Drive-Thru Window, 1K Sq Ft	934	5	2,481	1,241	1,240	228	116	112	164	85	79
Subtotal			14,557	7,280	7,277	1,001	651	350	1,368	573	795
Internal Capture*											
General Office			132	66	66	32	20	12	31	10	21
Hotel			278	139	139	12	3	9	39	24	15
Shopping Center			818	409	409	20	11	9	175	99	76
High-Turnover (Sit-Down) Restaurant			108	54	54	6	3	3	40	18	22
High-Turnover (Sit-Down) Restaurant			174	87	87	11	5	6	63	29	34
Fast-Food Restaurant with Drive-Thru Window			422	211	211	21	9	12	71	31	40
Internal Capture			1,932	966	966	102	51	51	419	211	208
Total External Trips			12,625	6,314	6,311	899	600	299	949	362	587
Pass-By											
Total Pass-By Trips (10% of adjacent roadway trips)			-	-	-	72	36	36	74	37	37
Total Net External Trips			12,625	6,314	6,311	827	564	263	875	325	550

*Internal Capture calculated using NCHRP 684 - AM - 8%, PM - 25%, 17% used for Daily (average of AM and PM)



The development is being proposed on parcels on both sides of Old NC 86, will be constructed in two phases, a light industrial/warehouse parcel west of Old NC 86 completed by 2020, and a retail/office/hotel parcel on the east side of Old NC 86 completed by 2022.

The revised development is proposing to use an existing service road on the west side of Old NC 86 for access to the Phase I parcel, and a single access point on the east side of Old NC 86 to access the Buildout parcels. The entrance to the retail/office/hotel parcel will be a full access driveway, with two exiting lanes and one entering lane. The retail/office/hotel access is proposed to be approximately 600 feet south of the existing Service Road, which provides approximately 1,000 feet spacing between this driveway and the I-40 East ramp intersection.

The trip distribution percentages were not modified from the submitted TIA, however, as a result of lower density land use, the actual trips generated and subsequent trip assignment needed to be revised. The intersections proposed to be included in the analysis are unchanged from the original TIA, however one intersection has been eliminated from the study, where the formerly proposed access for the residential parcels has been eliminated. Therefore, subject intersections were analyzed for the following scenarios:

- 2020 Phase I Build Conditions
- 2022 Buildout Conditions

The intersections to be analyzed for the revised development therefore include the following locations:

- Old NC 86 & Waterstone Drive
- Old NC 86 & I-40 West ramps
- Old NC 86 & I-40 East ramps
- Old NC 86 & Service Road
- Old NC 86 & Site Dr. #1 (Retail Drive)
- Old NC 86 & Davis Road

The development was analyzed under the various traffic conditions using Synchro 9.1 software. The NCDOT Policy on Street and Driveway Access and North Carolina Department of Transportation Congestion Management guidelines were followed in configuring the software for the analysis. Since the Buildout traffic volumes were revised, and are lower than what was proposed in the original TIA, the signal warrant analysis was performed again with the revised traffic volumes. The proposed intersection for the retail/office/hotel met the same warrants (Warrant 3-Peak Hour and Warrant 6-Coordinated System) as it did in the original TIA.

This revision also includes drawings that were revised from the original submittal, and maintain similar Figure numbers, so that reference back to the TIA can be made relatively simply. A list of the drawings revised is included at the end of this report.

The results of the study are presented as follows, listed by Build Phases:

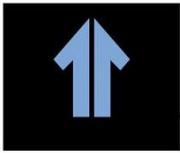
2020 Build Phase I

The 2020 Build analyses was conducted with the assumption that two new traffic signals would be installed at the I-40 ramp interchanges as part of the recommended improvements, at any level of build. Both of these intersections were recommended for signalization as part of the Waterstone development when they met warrants, however the documents requiring those improvements were not secured. Both of these intersections meet the warrants for signalization under No Build, growth only conditions, as well as existing traffic in 2016.

The development of the light industrial/warehouse parcel was analyzed in stages to determine at what point of build level roadway improvements would be needed in the corridor. After many iterations of build levels, it was determined that 900,000 square feet of warehouse will generate trips that will provide adequate level of service along the corridor on Old NC 86, as well as the Service Road itself, with minimal improvements (approximately 216 trips exiting, PM peak, 80% lefts, 20% rights). The construction of a right turn lane on the Service Road is recommended for the 2020 Phase I Build phase, as well as the construction of a right turn lane on Old NC 86 southbound at Davis Road.

The recommended improvements for the 2020 Build Phase are:

- *Install a traffic signal at the intersection of Old NC 86 & I-40 WB.*
- *Construct the 2nd lane of the I-40 East on ramp, and re-stripe the south bound lanes of Old NC 86 at the I-40 East ramp for dual left turns.*
- *Install a traffic signal at the intersection of Old NC 86 & I-40 EB.*
- *Construct a continuous right turn lane on southbound Old NC 86 between the I-40 East off ramp and the Service Road.*
- *Construct a continuous right turn lane on northbound Old NC 86 between the Service Road and the I-40 East on ramp.*
- *Construct a right turn lane on the Service Road at Old NC 86 with 200 feet of storage and taper, with the initial construction of facilities.*
- *Construct a left turn lane on northbound Old NC 86 at the Service Road with 150 feet of storage and taper.*
- *Construction of a right turn lane on Old NC 86 southbound at Davis Road with 150 feet of storage and taper.*



2022 Buildout

The development proposes to construct one new entrance driveway to the retail/office/hotel site at a location approximately 600 feet south of the Service Road on Old NC 86 on the east side. The access driveway shall be constructed with one entering lane and two exiting lanes to accommodate the proposed site traffic. A traffic signal is recommended to be installed at this intersection.

The trips generated by the proposed development impact the movements and storage needs for the left turn lanes at both I-40 interstate ramps. As was recommended in the original TIA, modification of the left turn storage lanes between the two interstate ramps is necessary to allow adequate storage for the associated left turn traffic at the ramps. The existing infrastructure includes a concrete median island between the ramps, and this island will need to be modified and reconstructed.

The recommended improvements for the 2022 Buildout Phase are:

- *Lengthen the left turn lane on the Service Road to provide 500 feet of storage and a taper.*
- *Construct a full access driveway on the east side of Old NC 86 at a location approximately 600 feet south of the Service Road, with two exiting lanes and one entering lane. Construct a left turn lane with 175 feet of storage and taper on the westbound approach, and a thru-right turn lane on the northbound approach with 200 feet of storage and taper.*
- *Install a traffic signal at the intersection of Old NC 86 new retail access.*
- *Construct an additional lane on Old NC 86 southbound, continuous between the Service Road and the new Retail Dr. intersection. Re-stripe the southbound inside lane for left turns at the signalized intersection.*
- *Construct an additional lane on the Old NC 86 northbound, continuous between the new signalized Retail Dr. and the Service Road.*

A summary of the existing, No Build conditions and Build conditions is provided on the following page in Table 8R indicating the capability of the roadway network to handle the new trips generated by this site, and the Build Phase associated with the Level of Service.

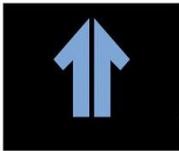


TABLE 8R

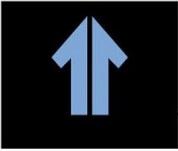
Level of Service Summary

AM PEAK	2016	2020		2022	
	EXISTING	NO BUILD	BUILD	NO BUILD	BUILD
1 Old NC 86 at Waterstone Dr.	B (12.1)	C (22.2)	C (21.7)	C (22.2)	C (22.0)
2 Old NC 86 at I-40 WB Ramps	C (23.1) WB Approach	E (36.1) WB Approach	B (9.4)	E (37.4) WB Approach	B (16.5)
3 Old NC 86 at I-40 EB Ramps	F (> 300) EB Approach	F (> 300) EB Approach	B (18.5)	F (> 300) EB Approach	B (16.1)
4 Old NC 86 at Service Rd.	B (12.8) EB Approach	B (13.6) EB Approach	C (19.8) EB Approach	B (13.7) EB Approach	C (18.4) EB Approach
5 Old NC 86 at Retail Dr.	n/a	n/a	n/a	n/a	B (16.3)
6 REMOVED					
7 Old NC 86 at Davis Rd.	C (19.4) EB Approach	C (22.8) EB Approach	C (24.8) EB Approach	C (23.9) EB Approach	E (39.1) EB Approach

PM PEAK	2016	2020		2022	
	EXISTING	NO BUILD	BUILD	NO BUILD	BUILD
1 Old NC 86 at Waterstone Dr.	B (12.9)	C (23.7)	C (23.8)	C (23.8)	C (24.4)
2 Old NC 86 at I-40 WB Ramps	C (23.3) WB approach	E (39.1) WB Approach	B (10.7)	E (40.9) WB Approach	B (17.1)
3 Old NC 86 at I-40 EB Ramps	F (57.2) EB Approach	F (> 300) EB Approach	B (16.5)	F (> 300) EB Approach	B (18.1)
4 Old NC 86 at Service Rd.	B (13.2) EB Approach	B (14.1) EB Approach	E (36.6) EB Approach	B (14.3) EB Approach	E (36.2) EB Approach
5 Old NC 86 at Retail Dr.	n/a	n/a	n/a	n/a	B (17.2)
6 REMOVED					
7 Old NC 86 at Davis Rd.	C (16.2) EB Approach	C (18.3) EB Approach	C (18.1) EB Approach	C (18.7) EB Approach	C (23.4) EB Approach

LOS (delay in seconds)

Note for unsignalized conditions, LOS and delay indicates only minor street approach with longest delay.



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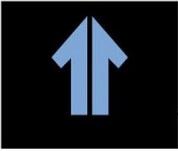
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List of Revised Figures:

Figure 2R
Figure 11R
Figure 12R
Figure 21R
Figure 22R
Figure 25R
Figure 27R

Revised Site Plan Sketch
Warehouse Site Trip Volumes at 900 K SF
2020 Build Volumes at 900 K SF Warehouse
2022 Buildout Site Trip Volumes
2022 Buildout Site + Background Volumes
2020 Proposed Operations (900 K SF Warehouse)
2022 Proposed Operations at Buildout



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Background – Supplemental Revision

A Traffic Impact Analysis was performed and submitted for a development in Orange County, N.C. near Hillsborough for multiple land use types as part of a re-zoning for a master plan for the development. The development is being proposed on parcels on both sides of Old NC 86, will be constructed in two phases, a light industrial/warehouse parcel west of Old NC 86 completed by 2020, and a retail/office/hotel parcel on the east side of Old NC 86 completed by 2022.

The original proposal has since been modified to remove from consideration at this time, all the residential uses that were proposed. Additionally, the developer has reduced the square footage proposed for the light industrial/warehouse land use parcels for the Phase I Build options from the original TIA. Subsequently, the TIA has been revised to reflect these changes, analysis was performed and recommendations made that are appropriate for the levels of development proposed.

The revised development is proposing to use an existing service road on the west side of Old NC 86 for access to the Phase I parcel, and one new access point on the east side of Old NC 86 to access the Buildout parcels. The proposed entrance to the retail/office/hotel parcel will be constructed as a full access driveway, with a single entrance lane and two exiting lanes. The new access point is proposed to be approximately 600 feet south of the existing Service Road, which is will locate the new drive 1,000 feet south of the I-40 East ramp intersection on Old NC 86.

The trip distributions were not modified from the submitted TIA, however as a result of the lower density land use, the actual trips generated and subsequent trip assignment was revised.

The intersections proposed to be included in the analysis for this revision are unchanged from the original TIA, however one intersection has been eliminated from the study, where the formerly proposed access for the residential parcels had been proposed. Therefore, subject intersections were analyzed for the following scenarios:

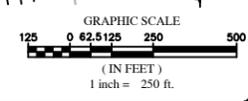
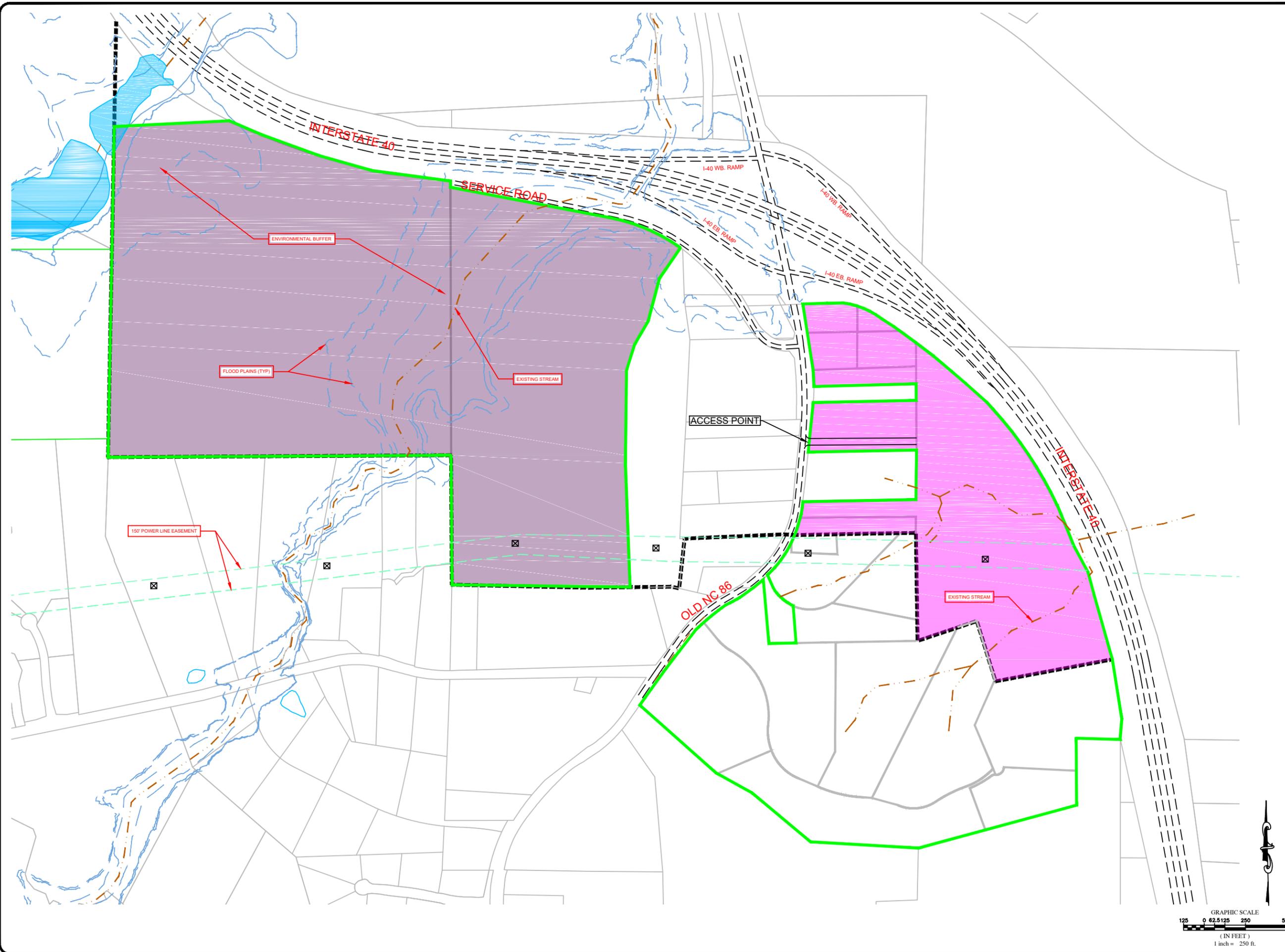
- 2020 Phase I Build Conditions
- 2022 Buildout Conditions

The intersections to be analyzed for the revised development therefore include the following locations:

- Old NC 86 & Waterstone Drive
- Old NC 86 & I-40 West ramps
- Old NC 86 & I-40 East ramps
- Old NC 86 & Service Road
- Old NC 86 & Site Dr. #1 (Retail Drive)
- Old NC 86 & Davis Road

The development was analyzed under the various traffic conditions using Synchro 9.1 software. The NCDOT Policy on Street and Driveway Access and North Carolina Department of Transportation Congestion Management guidelines were followed in configuring the software for the analysis. Since the Buildout traffic volumes were revised, and are lower than what was proposed in the original TIA, the signal warrant analysis was performed again with the revised traffic volumes.

Figure 2R on the following page is a sketch revision to the proposed site plan that is provided to show approximate location of the proposed access point for the 2022 Buildout. Note that this is a master plan level sketch layout, and all roadways and access points will be designed and constructed following NCDOT guidelines.



**MASTER PLAN FOR
I-40 ASSEMBLY**
INTERSTATE 40 - EXIT 261 AT OLD HWY 86
ORANGE COUNTY, NORTH CAROLINA

REVISED LAND USE PLAN

PROJECT NO. **16-0243**
DRAWING NAME: **Site Plan 2R revised.dwg**
SHEET NO. **EXHIBIT**

PROJECT ENGINEER/ARCHITECT
PROJECT MANAGER
DRAWN BY
FIRST ISSUE DATE

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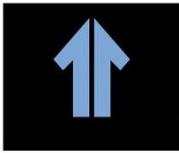
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Trip Generation & Assignment – Supplemental Revision

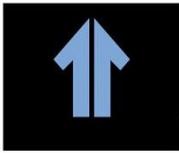
The trip generation for the proposed site has been reduced by removing all of the proposed Continuing Care Retirement components, and reducing the proposed square footage to be constructed for the light industrial/warehouse parcels. All internal capture trips remain unchanged, since the original TIA did not capture internal trips from the residential parcels, nor were internal capture trips figured for the warehouse land use. The pass-by trip calculations remain unchanged as well, since they are not applied against residential use, nor for industrial/warehouse uses. All pass-by trips have been included as proposed in the original TIA. Table 1R below summarizes the trip generation for this revision, noting that the Continuing Care Retirement Center indicates zero (0) units, for simplicity in comparing to the original trip generation.

TABLE 1.R											
Trip Generation											
Land Use Type	ITE Code	Amount	Daily			AM Peak Hour			PM Peak Hour		
			Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit
Warehousing, 1,000 Sq Ft	150	900	3,204	1,602	1,602	270	213	57	288	72	216
General Office, 1,000 Sq Ft	710	50	775	388	387	110	97	13	135	23	112
Continuing Care Retirement, Units	255	0	0	0	0	0	0	0	0	0	0
Hotel, Rooms	310	200	1,634	817	817	106	63	43	120	61	59
Shopping Center, 1,000 Sq Ft	820	58.8	4,809	2,405	2,404	113	70	43	420	202	218
High-Turnover (Sit-Down) Restaurant, 1,000 Sq Ft	932	5	636	318	318	67	36	31	93	50	43
High-Turnover (Sit-Down) Restaurant, 1,000 Sq Ft	932	8	1,018	509	509	107	57	50	148	80	68
Fast-Food Restaurant with Drive-Thru Window, 1K Sq Ft	934	5	2,481	1,241	1,240	228	116	112	164	85	79
Subtotal			14,557	7,280	7,277	1,001	651	350	1,368	573	795
Internal Capture*											
General Office			132	66	66	32	20	12	31	10	21
Hotel			278	139	139	12	3	9	39	24	15
Shopping Center			818	409	409	20	11	9	175	99	76
High-Turnover (Sit-Down) Restaurant			108	54	54	6	3	3	40	18	22
High-Turnover (Sit-Down) Restaurant			174	87	87	11	5	6	63	29	34
Fast-Food Restaurant with Drive-Thru Window			422	211	211	21	9	12	71	31	40
Internal Capture			1,932	966	966	102	51	51	419	211	208
Total External Trips			12,625	6,314	6,311	899	600	299	949	362	587
Pass-By											
Total Pass-By Trips (10% of adjacent roadway trips)			-	-	-	72	36	36	74	37	37
Total Net External Trips			12,625	6,314	6,311	827	564	263	875	325	550

*Internal Capture calculated using NCHRP 684 - AM - 8%, PM - 25%, 17% used for Daily (average of AM and PM)

Although the Trip Distribution percentages are unchanged from the original TIA, with the Residential distribution removed, there were some noticeable decreases in the trip assignments with the proposed changes to the land uses. The trip assignment figure for the 2022 Buildout (Figure 21R) indicates negative trips for some movements on Old NC 86, since the pass-by traffic figured in. This is common to see in many TIA's, but with trip assignments indicated in the original TIA, the reductions were not nearly as noticeable with the higher through trips generated.

The 2020 Phase I Build assumes that traffic signals will be installed at both I-40 ramp intersections. These traffic signals were improvements that were proposed as part of the Waterstone development (to the north of I-40), but formal commitment for the construction of the signals, once the intersections met signal warrants, was never obtained. These intersections meet signal warrants under 2016 existing traffic



at the both ramps, and in 2020 the eastbound ramp intersection met additional warrants under background growth traffic conditions. NCDOT concurred with the recommendation to install these ramps signals with the Phase I Build scenario, as part of the recommended improvements in the original TIA. For the 2022 Buildout, all recommended improvements from the 2020 Build were assumed to have been completed and were incorporated into the analysis.

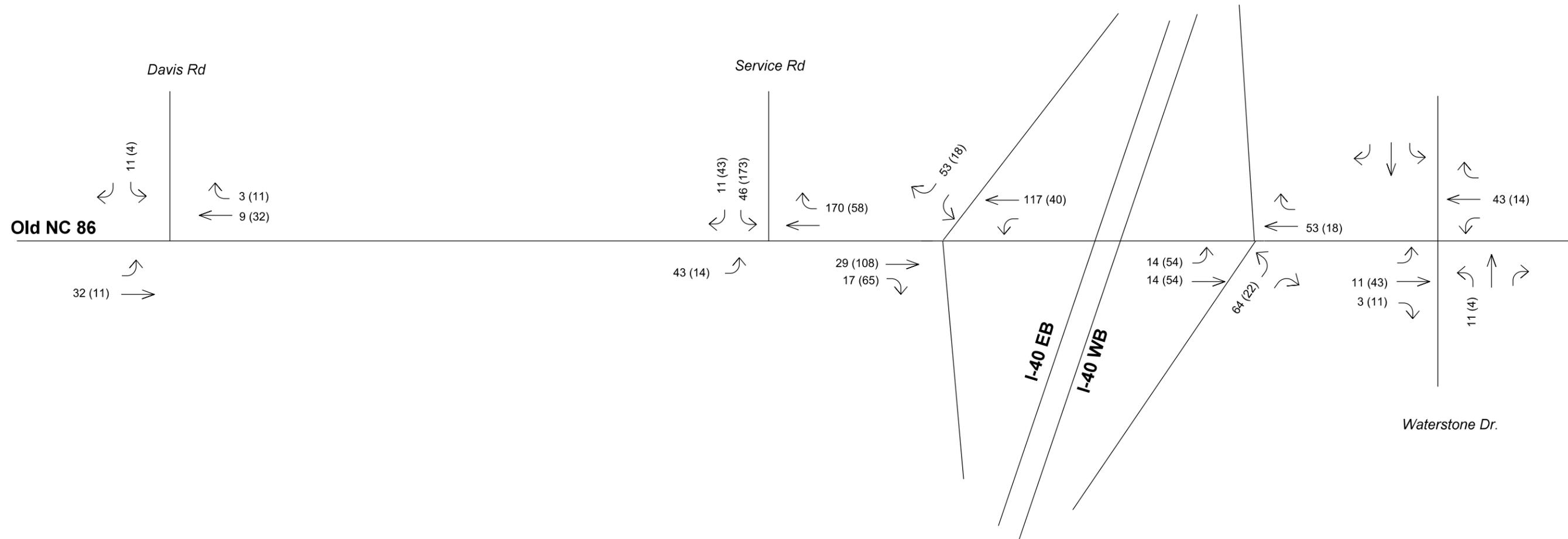
Figure 11R on the following page provides the revised site trip assignment details for each intersection that were used as the basis for the Synchro analysis, for the 2020 Phase I Build. Figure 12R provides the revised site trip distribution with the 2020 No Build background traffic volumes. The background traffic for 2020 includes the trips generated from the approved Waterstone development.

Figures 21R and 22R on the following pages indicate the revised site trip assignments for the 2022 Buildout scenario, and the site trips combined with the 2022 No Build traffic, respectively.

With the Site Trip Assignments revised for each build scenario, these trips were combined with the No Build background traffic and configured for the Synchro analysis. Note that on Figure 21R the reductions for pass-by traffic indicate a more noticeable impact than the original TIA site trip assignments.

Each scenario was performed with the data as indicated and Level of Service, delay, queue length and capacity analysis were reviewed for each scenario. The results of the analysis formed the basis for roadway improvement recommendations to mitigate issues with delay or queue lengths.

FIGURE 11R
WAREHOUSE SITE TRIPS
2020 PHASE I BUILD



	Vehicular Movement
123 (456)	AM count (PM count)
XX-YYYY	NCDOT Signal Inventory

SCALE	NONE
FIRST ISSUE DATE	
PROJECT NO.	16-0243
SHEET NO.	

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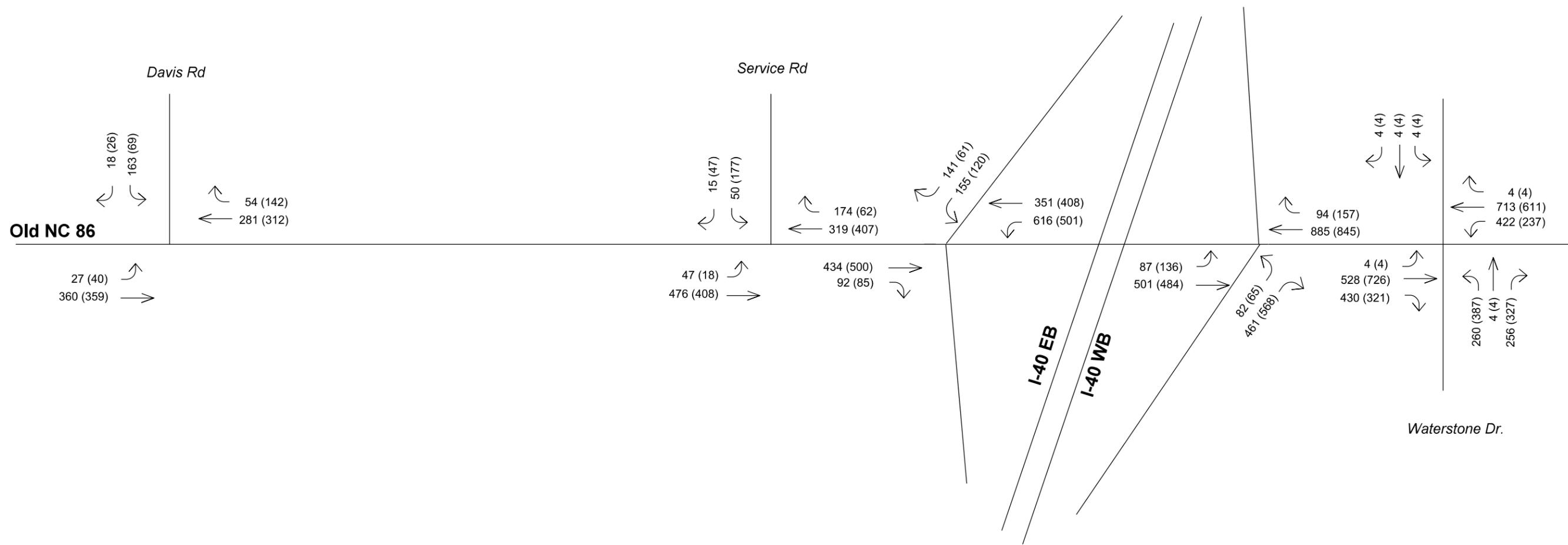
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FIGURE 12R
SITE + BACKGROUND TRAFFIC
2020 PHASE I BUILD



→ Vehicular Movement
 123 (456) AM count (PM count)
 (XX-YYYY) NCDOT Signal Inventory

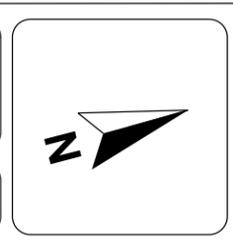
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FUTURE BUILD TRAFFIC



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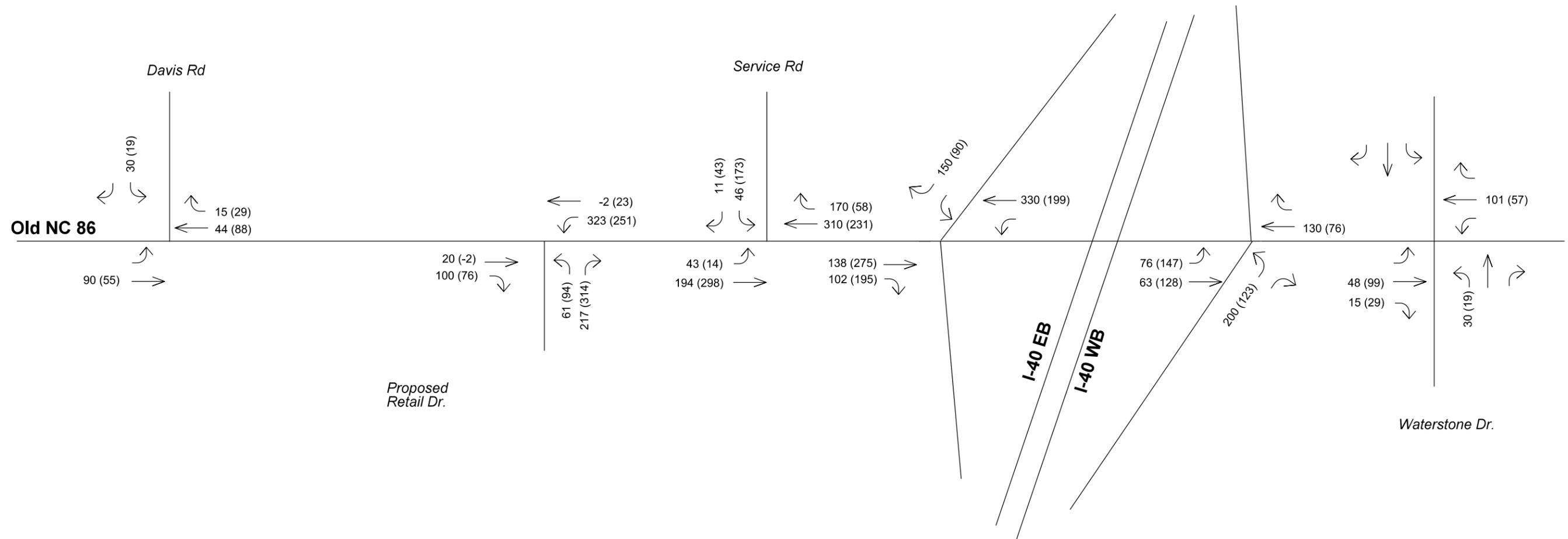
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**FIGURE 21R
TOTAL SITE TRIPS
2022 BUILDOUT**

INCLUDES PASS-BY TRIPS



	Vehicular Movement
123 (456)	AM count (PM count)
XX-YYYY	NCDOT Signal Inventory

SCALE	NONE
FIRST ISSUE DATE	
PROJECT NO.	16-0243
SHEET NO.	

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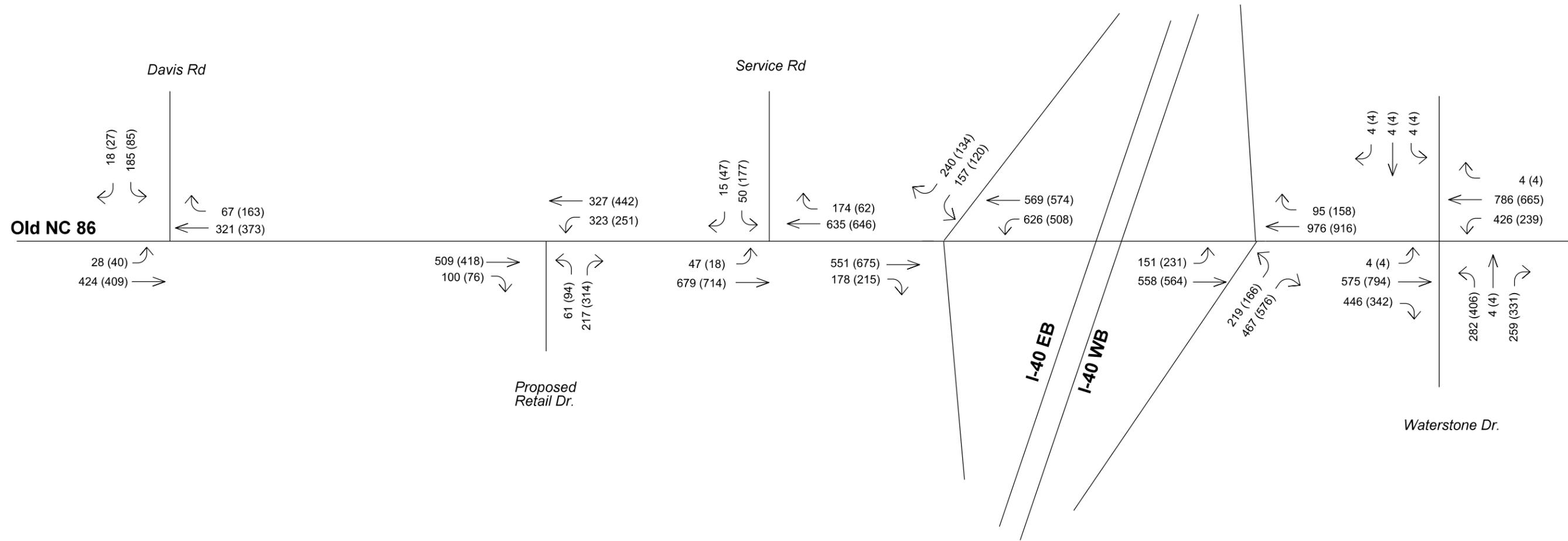
SITE TRIPS



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FIGURE 22R
SITE + BACKGROUND TRAFFIC
2022 BUILDOUT



→ Vehicular Movement
 123 (456) AM count (PM count)
 (XX-YYYY) NCDOT Signal Inventory

SCALE	NONE
FIRST ISSUE DATE	
PROJECT NO.	16-0243
SHEET NO.	

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Capacity Analysis Results - Supplemental Revision

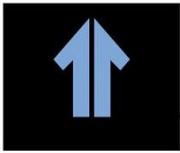
2020 Build Phase I

In order to determine the number of new trips the roadway network is able to accommodate, the target Measures of Effectiveness were identified. Standard NCDOT guidelines generally accept Level of Service (LOS) D or better for both signalized and un-signalized intersections, where the signal is evaluated on the overall intersection LOS, and the un-signalized intersections evaluated on the most severe LOS approach (typically the stop controlled approach). In addition, queue length is considered as well, so that queuing traffic is provided adequate storage capacity for that movement.

The analysis of the 2020 Phase I Build indicated that the trips generated by a proposed warehouse land use of up to 900,000 SF can be accommodated using the existing Service Road intersection under stop sign control, and the addition of a turn lane on the service road. During the AM peak hour, the Service Road operates at LOC C, and in the PM peak hour operates at LOS E, with 36.6 seconds of delay per vehicle on the eastbound approach. While this operation is below LOS D, the related analysis for similar sized development at 850,000 square feet provided LOS D, with 33.8 seconds delay per vehicle on the eastbound approach. The 95th percentile queue length for the eastbound approach on the Service Road is estimated to be 126 feet for an 850K square feet Phase I build, and 140 feet for a 900K square feet build. With negligible differences in queue length and delay, the intersection LOS should be acceptable for a 900,000-square foot proposed build. It is recommended to construct a right turn lane on the Service Road with 200 feet of storage and a taper. This will allow for left turns to queue without interfering with the lesser amount of right turning traffic.

For allowable land use types other than warehouse for this parcel, the related size of each use should be calculated and compared to the warehouse assignments, specifically generating approximately 216 exiting vehicles from the Service Road in the PM peak hour, with a similar ratio of left to right turns (80/20 split). At present, the site has multiple allowable land uses, but for the purposes of the TIA, the warehouse land use was deemed the most appropriate for determining the trip generation and assignment.

In addition to the analysis and recommendations for the Service Road itself, the recommendations made in the original TIA to construct additional lanes on Old NC 86 between the Service Road and I-40 East remain as recommended improvements. The installation of the traffic signals at the two ramps, and the addition of the second lane on the I-40 eastbound ramp, and modification to allow dual southbound lefts at the same intersection are also recommended. The analysis also indicated that to mitigate longer delays at the Davis Road & Old NC 86 intersection, a southbound right turn lane is recommended to be constructed at this intersection for the 2020 Phase I Build.



2022 Buildout

The analysis of the 2022 Buildout indicated that there will be additional lanes needed to accommodate the new trips generated by the retail/office/hotel site. The light industrial/warehouse parcels trip generation and trip assignments do not change for the 2022 Buildout, but are impacted by a higher number of new trips generated by the full buildout of the retail/office/hotel parcels. The Level of Service is maintained at LOS E, with little change in delay (improved to 36.2 seconds per vehicle), and the 95th percentile queue length increases to 370 feet for the exiting left turn traffic. With the queues increasing, it is recommended to extend the right turn lane on the Service Road constructed for the 2020 Build from 200 feet with a taper to 500 feet with a taper.

The main access point for the buildout is recommended to be located on the east side of Old NC 86, approximately 600 feet south of the existing Service Road. This will locate the new access driveway approximately 1,000 feet south of the I-40 East ramp intersection. The proposed site access for the retail/office/hotel parcels shall be constructed with a single lane entrance, and two-lane exit.

The main access driveway is recommended to be signalized, providing that the intersection meets traffic signal warrants (see below). The signal operation, in coordination with the previously recommended traffic signals at the I-40 ramps, provide for gaps in traffic on Old NC 86 that prevent queues on the Service Road from being unmanageable. It is also recommended to construct a thru-right turn lane on northbound Old NC 86 at the retail/office/hotel access, with 200 feet of storage and a taper, as well as a left turn lane on the access drive with 175 feet of storage and taper.

The 2022 Buildout traffic will require the construction of new through lanes in both directions of Old NC 86 between the Service Road and the new retail/office/hotel access driveway. This is similar to the recommendation in the original TIA that accommodates through traffic movements between these streets/access points. In the southbound direction, the inside through lane from the Service Road to the new access driveway will be a continuous left turn lane from the access driveway. This operation is similar to the existing configuration on Old NC 86 southbound at the I-40 East ramp, where the inside lane becomes the left turn, and the outside lane is the through movement.

The 2022 Buildout traffic will create queue storage issues at the I-40 ramp intersections, without mitigation, as determined in the original TIA. Therefore, it is recommended to modify the concrete median island on Old NC 86 between the two interstate ramps to allow for 225 feet of left turn storage for the I-40 West ramp, and 200 feet of storage for the left turns at the I-40 East ramp.

The signal warrant analysis for the 2022 Buildout was revised to reflect the revised traffic volumes, and indicates the same warrants were met, Warrant 3 - Peak Hour, and Warrant 6 - Coordinated Signal System. The results of the revised warrant analysis are included on the following pages.

Table 8R provides a summary of the Levels of Service in comparison for the 2016 Existing conditions, the 2020 No Build, 2020 Build, 2022 No Build and 2022 Buildout conditions analyzed. The information for the Existing and No Build conditions remain as analyzed in the original TIA, and those analyses were not performed again for this revision.

TABLE 8R

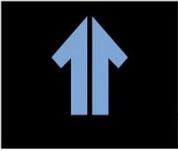
Level of Service Summary

AM PEAK	2016	2020		2022	
	EXISTING	NO BUILD	BUILD	NO BUILD	BUILD
1 Old NC 86 at Waterstone Dr.	B (12.1)	C (22.2)	C (21.7)	C (22.2)	C (22.0)
2 Old NC 86 at I-40 WB Ramps	C (23.1) WB Approach	E (36.1) WB Approach	B (9.4)	E (37.4) WB Approach	B (16.5)
3 Old NC 86 at I-40 EB Ramps	F (> 300) EB Approach	F (> 300) EB Approach	B (18.5)	F (> 300) EB Approach	B (16.1)
4 Old NC 86 at Service Rd.	B (12.8) EB Approach	B (13.6) EB Approach	C (19.8) EB Approach	B (13.7) EB Approach	C (18.4) EB Approach
5 Old NC 86 at Retail Dr.	n/a	n/a	n/a	n/a	B (16.3)
6 REMOVED					
7 Old NC 86 at Davis Rd.	C (19.4) EB Approach	C (22.8) EB Approach	C (24.8) EB Approach	C (23.9) EB Approach	E (39.1) EB Approach

PM PEAK	2016	2020		2022	
	EXISTING	NO BUILD	BUILD	NO BUILD	BUILD
1 Old NC 86 at Waterstone Dr.	B (12.9)	C (23.7)	C (23.8)	C (23.8)	C (24.4)
2 Old NC 86 at I-40 WB Ramps	C (23.3) WB approach	E (39.1) WB Approach	B (10.7)	E (40.9) WB Approach	B (17.1)
3 Old NC 86 at I-40 EB Ramps	F (57.2) EB Approach	F (> 300) EB Approach	B (16.5)	F (> 300) EB Approach	B (18.1)
4 Old NC 86 at Service Rd.	B (13.2) EB Approach	B (14.1) EB Approach	E (36.6) EB Approach	B (14.3) EB Approach	E (36.2) EB Approach
5 Old NC 86 at Retail Dr.	n/a	n/a	n/a	n/a	B (17.2)
6 REMOVED					
7 Old NC 86 at Davis Rd.	C (16.2) EB Approach	C (18.3) EB Approach	C (18.1) EB Approach	C (18.7) EB Approach	C (23.4) EB Approach

LOS (delay in seconds)

Note for unsignalized conditions, LOS and delay indicates only minor street approach with longest delay.



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Warrants Summary

Information			
Analyst	ewsirgany	Intersection	Old NC 86/Retail Dr
Agency/Co	NCDOT/Orange	Jurisdiction	NCDOT
Date Performed	12/15/2017	Units	U.S. Customary
Project ID	Year 2022 projected rev 12-17	Time Period Analyzed	0630-1830
East/West Street	Retail Dr	North/South Street	Old NC 86
File Name	Warrants - Old NC 86-Retail Dr 2022 half hour revised 12-2017	Major Street	North-South

Project Description *Year 2022 projected rev 12-17*

General				Roadway Network			
Major Street Speed (mph)	45	<input checked="" type="checkbox"/>	Population < 10,000	Two Major Routes	<input type="checkbox"/>		
Nearest Signal (ft)	1000	<input checked="" type="checkbox"/>	Coordinated Signal System	Weekend Count	<input type="checkbox"/>		
Crashes (per year)	0	<input type="checkbox"/>	Adequate Trials of Alternatives	5-yr Growth Factor	1		

Geometry and Traffic	EB			WB			NB			SB		
	LT	TH	RT									
Number of lanes, N	0	0	0	1	0	1	0	1	1	1	1	0
Lane usage				L		R		TR	R	L	T	
Vehicle Volume Averages (vph)	0	0	0	12	0	44	0	77	14	47	64	0
Peds (ped/h) / Gaps (gaps/h)	--	0 / 0	--	--	0 / 0	--	--	0 / 0	--	--	0 / 0	--
Delay (s/veh) / (veh-hr)	--	0 / 0	--	--	0 / 0	--	--	0 / 0	--	--	0 / 0	--

Warrant 1: Eight-Hour Vehicular Volume	<input type="checkbox"/>
1 A. Minimum Vehicular Volumes (Both major approaches --and-- higher minor approach) --or--	<input type="checkbox"/>
1 B. Interruption of Continuous Traffic (Both major approaches --and-- higher minor approach) --or--	<input type="checkbox"/>
1 (56%) Vehicular --and-- Interruption Volumes (Both major approaches --and-- higher minor approach)	<input type="checkbox"/>

Warrant 2: Four-Hour Vehicular Volume	<input type="checkbox"/>
2 A. Four-Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	<input type="checkbox"/>

Warrant 3: Peak Hour	<input checked="" type="checkbox"/>
3 A. Peak-Hour Conditions (Minor delay --and-- minor volume --and-- total volume) --or--	<input type="checkbox"/>
3 B. Peak- Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	<input checked="" type="checkbox"/>

Warrant 4: Pedestrian Volume	<input type="checkbox"/>
4 A. Four Hour Volumes --or--	<input type="checkbox"/>
4 B. One-Hour Volumes	<input type="checkbox"/>

Warrant 5: School Crossing	<input type="checkbox"/>
5. Student Volumes --and--	<input type="checkbox"/>
5. Gaps Same Period	<input type="checkbox"/>

Warrant 6: Coordinated Signal System	<input checked="" type="checkbox"/>
6. Degree of Platooning (Predominant direction or both directions)	<input checked="" type="checkbox"/>

Warrant 7: Crash Experience	<input type="checkbox"/>
7 A. Adequate trials of alternatives, observance and enforcement failed --and--	<input type="checkbox"/>
7 B. Reported crashes susceptible to correction by signal (12-month period) --and--	<input type="checkbox"/>
7 C. (56%) Volumes for Warrants 1A, 1B --or-- 4 are satisfied	<input type="checkbox"/>

Warrant 8: Roadway Network	<input type="checkbox"/>
8 A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2 or 3) --or--	<input type="checkbox"/>
8 B. Weekend Volume (Five hours total)	<input type="checkbox"/>

Warrant 9: Grade Crossing	<input type="checkbox"/>
9 A. Grade Crossing within 140 ft --and--	<input type="checkbox"/>
9 B. Peak-Hour Vehicular Volumes	<input type="checkbox"/>

Warrants Volume

Information

Analyst Agency/Co Date Performed Project ID East/West Street File Name	ewsirgany NCDOT/Orange 12/15/2017 Year 2022 projected rev 12-17 Retail Dr Warrants - Old NC 86-Retail Dr 2022 half hour revised 12-2017	Intersection Jurisdiction Units Time Period Analyzed North/South Street Major Street	Old NC 86/Retail Dr NCDOT U.S. Customary 0630-1830 Old NC 86 North-South
---	---	---	---

Project Description Year 2022 projected rev 12-17

Warrant 1

Condition A—Minimum Vehicular Volume

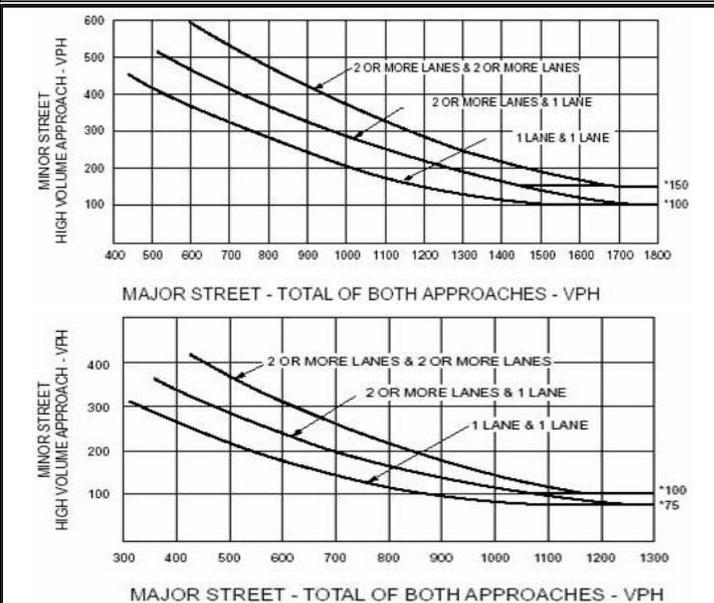
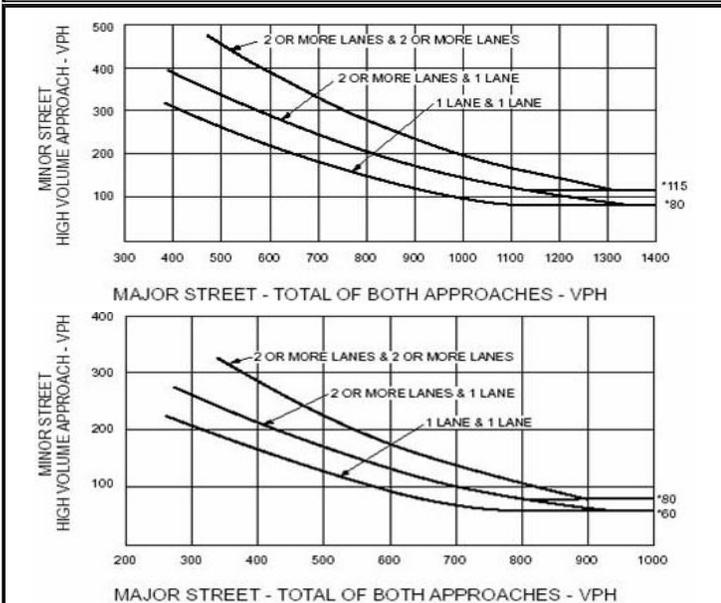
Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor-street approach (one direction only)			
		100%	80%	70%	56%	100%	80%	70%	56%
Major Street	Minor Street								
1	1	500	400	350	280	150	120	105	84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

Condition B—Interruption of Continuous Traffic

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

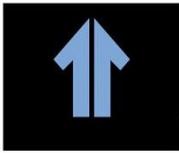
Warrant 2

Warrant 3



Volume Summary

Hours	Major Street Lanes 2+			Minor Street Lanes 2+		Speed		Population		<10000
	Major Volume	Minor Volume	Total Volume	1A (70%)	1A (56%)	1B (70%)	1B (56%)	2 (70%)	3A (70%)	
07-08	0	0	0	No	No	No	No	No	No	No
08-09	1259	278	1537	Yes	Yes	Yes	Yes	Yes	No	Yes
09-10	0	0	0	No	No	No	No	No	No	No
10-11	0	0	0	No	No	No	No	No	No	No
11-12	0	0	0	No	No	No	No	No	No	No
12-13	0	0	0	No	No	No	No	No	No	No
13-14	0	0	0	No	No	No	No	No	No	No
14-15	0	0	0	No	No	No	No	No	No	No
15-16	0	0	0	No	No	No	No	No	No	No
16-17	0	0	0	No	No	No	No	No	No	No
17-18	1187	408	1595	Yes	Yes	Yes	Yes	Yes	No	Yes
18-19	0	0	0	No	No	No	No	No	No	No
Totals	2446	686	3132	2	2	2	2	2	0	2



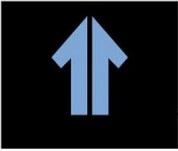
Recommendations - Supplemental Revision

2020 Build Phase I

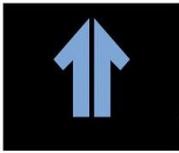
The recommended improvements for the build of the light industrial/warehouse land use include a turn lane on the Service Road itself, and intersection signalization improvements at the I-40 ramp intersections on Old NC 86. The Service Road will continue to be controlled by a stop sign for the Service Road traffic. There is also a need for a right turn lane on southbound Old NC 86 at Davis Road to improve vehicular delay resulting from the additional traffic on Old NC 86. Additional right turn lanes are recommended on Old NC 86 between the Service Road and I-40 Eastbound ramps to provide for needed capacity. These improvements allow the network to operate at acceptable levels of service and provide adequate storage capacity for turning traffic.

The recommended improvements for the 2020 Build Phase are:

- *Install a traffic signal at the intersection of Old NC 86 & I-40 WB.*
- *Construct the 2nd lane of the I-40 East on ramp, and re-stripe the south bound lanes of Old NC 86 at the I-40 East ramp for dual left turns.*
- *Install a traffic signal at the intersection of Old NC 86 & I-40 EB.*
- *Install a continuous right turn lane on southbound Old NC 86 between the I-40 East off ramp and the Service Road.*
- *Construct a continuous right turn lane on northbound Old NC 86 between the Service Road and the I-40 East on ramp.*
- *Construct a right turn lane on the Service Road at Old NC 86 with 200 feet of storage and taper, with the initial construction of facilities.*
- *Construct a left turn lane on northbound Old NC 86 at the Service Road with 150 feet of storage and taper.*
- *Construction of a right turn lane on Old NC 86 southbound at Davis Road with 150 feet of storage & taper.*



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2022 Buildout

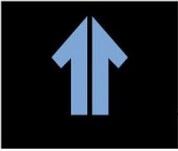
The development proposes to construct one new entrance driveway to the retail/office/hotel site at a location on the east side of Old NC 86 approximately 600 feet south of the Service Road. The access will be constructed for a single entrance lane and two exiting lanes for the retail/office/hotel parcel.

With the addition of the retail/office/hotel site, it is recommended to install a traffic signal at the proposed driveway intersection to mitigate delay and queue issues. Additionally, modification of the left turn storage bays on Old NC 86 between the two interstate ramps is necessary to allow adequate storage for the associated left turn traffic at the ramps. The existing infrastructure includes a concrete median island between the ramps, and this island will need to be modified and reconstructed.

The recommended improvements for the 2022 Buildout Phase are:

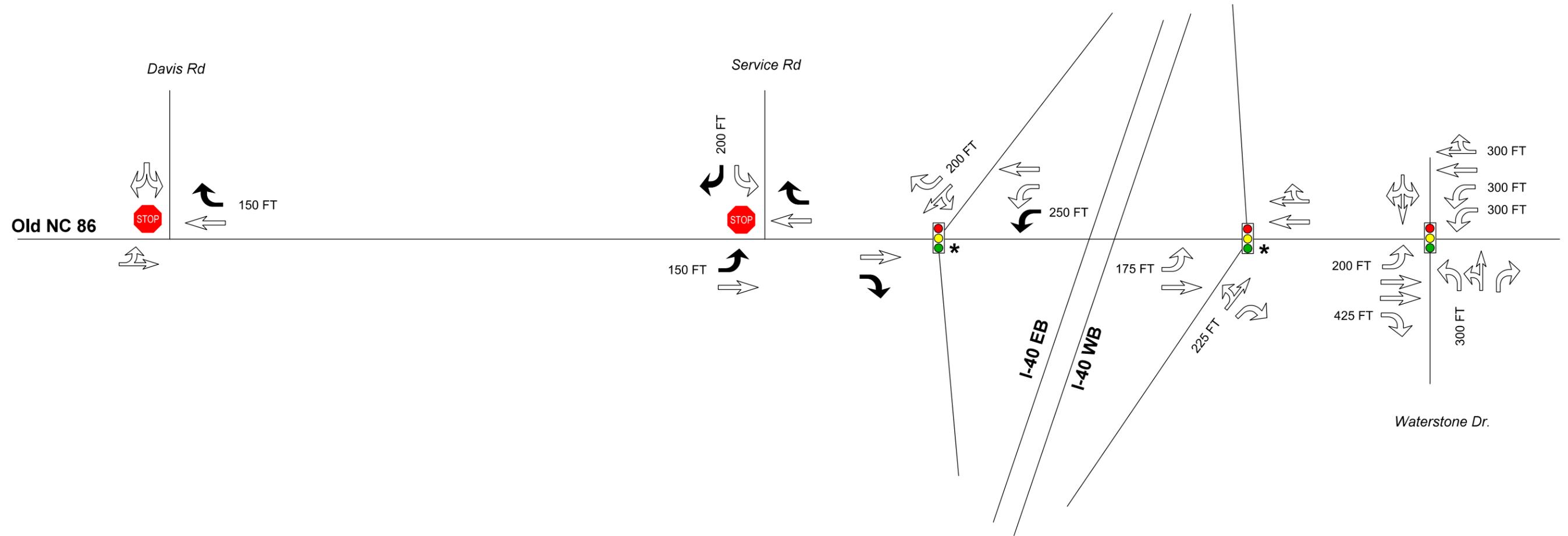
- *Lengthen the left turn lane on the Service Road to provide 500 feet of storage and a taper.*
- *Construct a full access driveway on the east side of Old NC 86 at a location approximately 600 feet south of the Service Road, with two exiting lanes and one entering lane. Construct a left turn lane with 175 feet of storage and taper on the westbound approach, a thru-right turn lane on the northbound approach with 200 feet of storage and taper.*
- *Install a traffic signal at the intersection of Old NC 86 new retail access.*
- *Construct an additional lane on Old NC 86 southbound, continuous between the Service Road and the new Retail Dr. intersection. Re-stripe the southbound inside lane for left turns at the signalized intersection.*
- *Construct an additional lane on the Old NC 86 northbound, continuous between the new signalized Retail Dr. and the Service Road.*

Figures 25R on the following page indicates the proposed lanes and roadway operations for the 2020 Phase I build scenario. Figure 27R indicates the proposed lanes and operations for the roadways at the 2022 Buildout.



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FIGURE 25R
TRAFFIC OPERATIONS
2020 PHASE I BUILD



Existing		Proposed
	Lane (storage xx FT)	
	Sign Control	
	Traffic Signal	

SCALE	NONE
FIRST ISSUE DATE	
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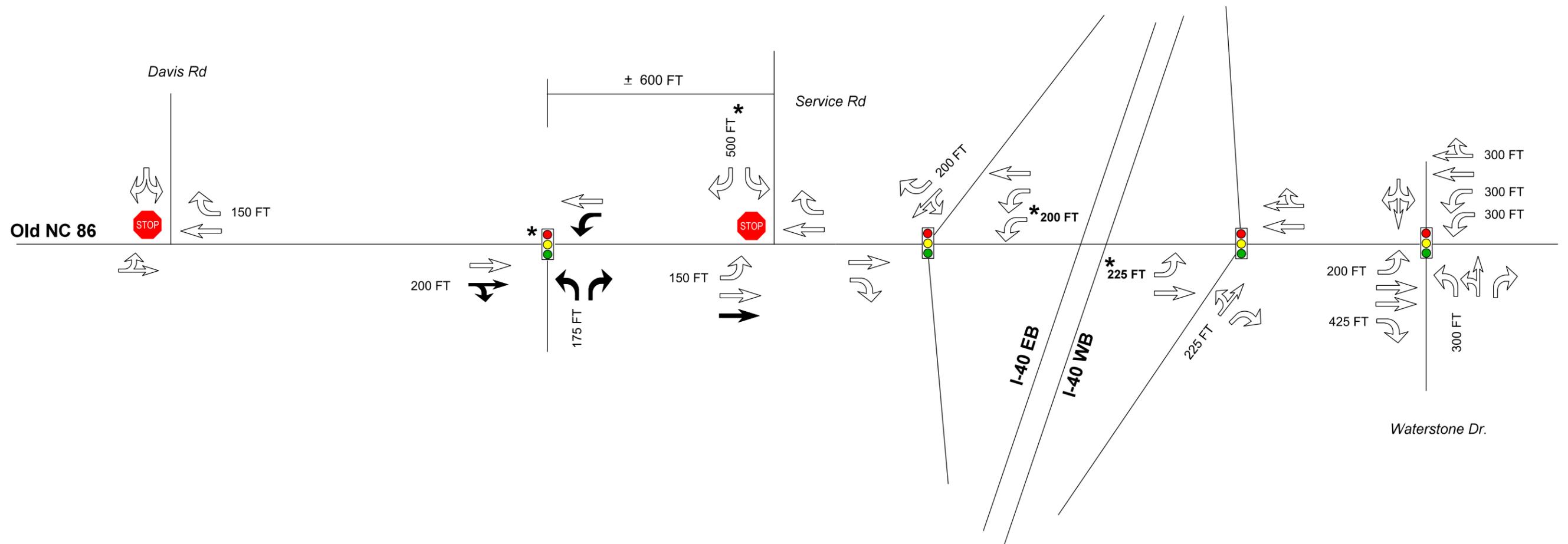
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FIGURE 27R
TRAFFIC OPERATIONS
2022 BUILDOUT



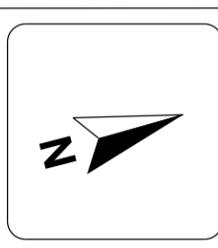
Existing	Proposed
Lane (storage xx FT)	
Sign Control	
Traffic Signal	

SCALE	NONE
FIRST ISSUE DATE	
PROJECT NO.	16-0243
SHEET NO.	

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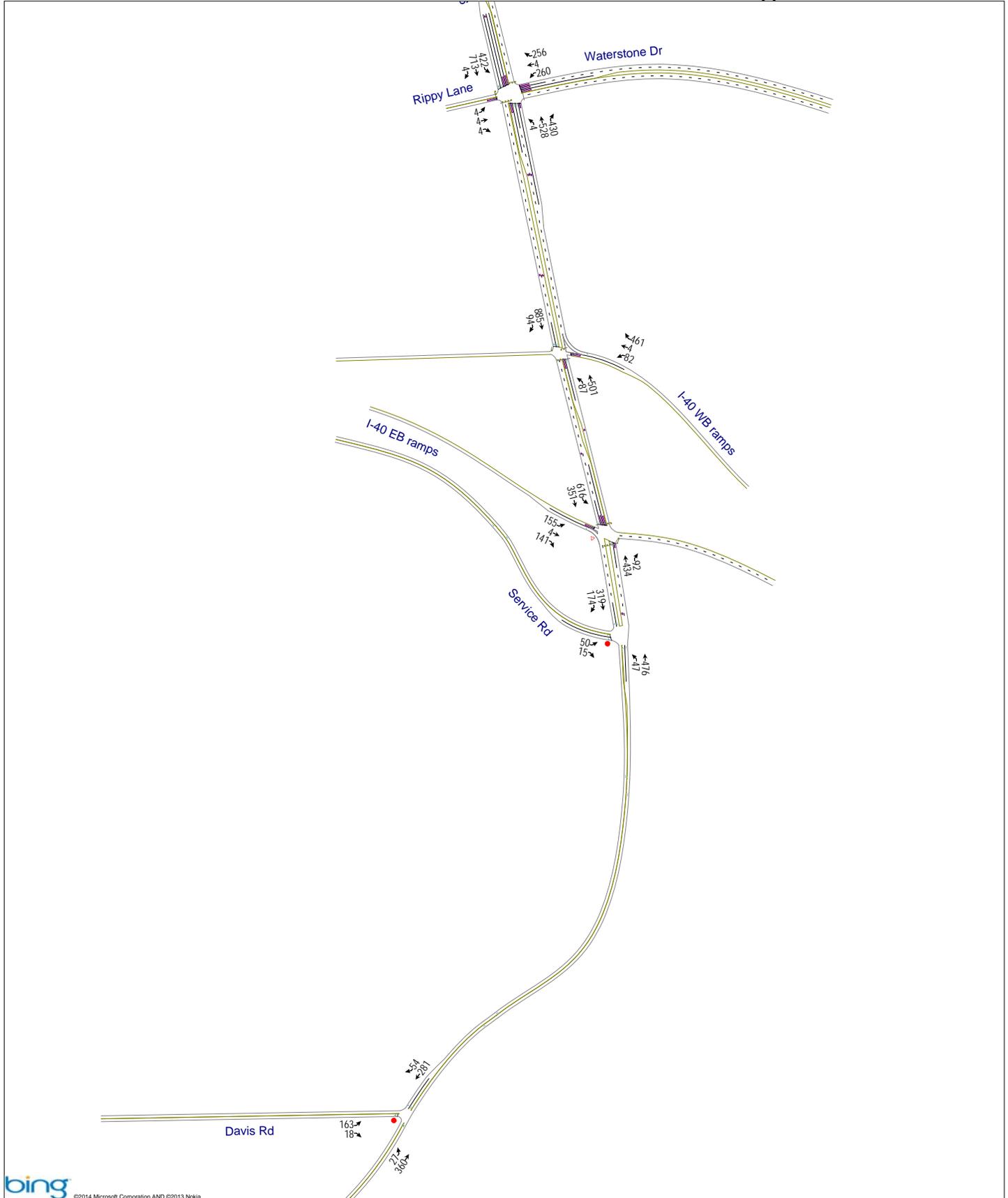
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2020 PHASE I BUILD CONDITIONS

-Revised Land Use units



Settler's Pointe TIA
1: Old NC 86 & Rippy Lane/Waterstone Dr

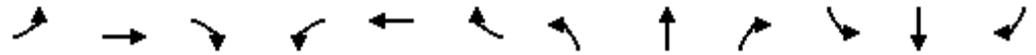
2020 Phase I Build AM Peak
Supplemental Revision 12-2017



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↙	↘	↗	↖	↑↑	↗	↖↗	↖↗	
Traffic Volume (vph)	4	4	4	260	4	256	4	528	430	422	713	4
Future Volume (vph)	4	4	4	260	4	256	4	528	430	422	713	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-1%			-1%			1%	
Storage Length (ft)	0		0	300		0	200		425	300		300
Storage Lanes	0		0	1		1	1		1	2		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1785	0	1690	1698	1591	1814	3557	1591	3416	3518	0
Flt Permitted		0.984		0.950	0.954		0.306			0.950		
Satd. Flow (perm)	0	1785	0	1690	1698	1591	584	3557	1591	3416	3518	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4				242			275		1	
Link Speed (mph)		25			35			45			45	
Link Distance (ft)		262			1361			1096			550	
Travel Time (s)		7.1			26.5			16.6			8.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	2%	0%	2%	0%	2%	2%	2%	2%	0%
Adj. Flow (vph)	4	4	4	289	4	284	4	587	478	469	792	4
Shared Lane Traffic (%)				49%								
Lane Group Flow (vph)	0	12	0	147	146	284	4	587	478	469	796	0
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)		0			12			16			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	1.01	1.01	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Split	NA		Split	NA	pm+ov	Perm	NA	pm+ov	Prot	NA	
Protected Phases	4	4		3	3	1		2	3	1	6	
Permitted Phases						3	2		2			
Detector Phase	4	4		3	3	1	2	2	3	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	12.0	12.0	7.0	7.0	12.0	
Minimum Split (s)	14.0	14.0		14.0	14.0	14.0	19.0	19.0	14.0	14.0	19.0	
Total Split (s)	14.0	14.0		31.0	31.0	33.0	42.0	42.0	31.0	33.0	75.0	
Total Split (%)	11.7%	11.7%		25.8%	25.8%	27.5%	35.0%	35.0%	25.8%	27.5%	62.5%	
Maximum Green (s)	7.0	7.0		24.0	24.0	26.0	35.0	35.0	24.0	26.0	68.0	
Yellow Time (s)	5.0	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	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	Lead		Lag	Lag	Lag	Lead	Lead	Lag	Lag		
Lead-Lag Optimize?						Yes	Yes	Yes		Yes		
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	6.0	6.0	2.0	2.0	6.0	
Minimum Gap (s)	2.0	2.0		2.0	2.0	2.0	3.0	3.0	2.0	2.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	15.0	15.0	0.0	0.0	15.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0	45.0	45.0	0.0	0.0	45.0	

Settler's Pointe TIA
1: Old NC 86 & Rippy Lane/Waterstone Dr

2020 Phase I Build AM Peak
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	None		None	None	None	C-Max	C-Max	None	None	C-Max	
Act Effct Green (s)		9.0		17.7	17.7	48.7	53.7	53.7	76.4	28.0	86.7	
Actuated g/C Ratio		0.08		0.15	0.15	0.41	0.45	0.45	0.64	0.23	0.72	
v/c Ratio		0.09		0.59	0.58	0.36	0.02	0.37	0.43	0.59	0.31	
Control Delay		43.2		56.4	56.1	4.1	26.5	25.3	6.2	44.4	8.0	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		43.2		56.4	56.1	4.1	26.5	25.3	6.2	44.4	8.0	
LOS		D		E	E	A	C	C	A	D	A	
Approach Delay		43.2			30.6			16.8			21.5	
Approach LOS		D			C			B			C	
Queue Length 50th (ft)		6		114	113	19	2	138	52	167	78	
Queue Length 95th (ft)		26		171	171	47	11	256	154	223	207	
Internal Link Dist (ft)		182			1281			1016			470	
Turn Bay Length (ft)				300			200		425	300		
Base Capacity (vph)		137		366	367	789	261	1591	1112	797	2541	
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		0.09		0.40	0.40	0.36	0.02	0.37	0.43	0.59	0.31	

Intersection Summary

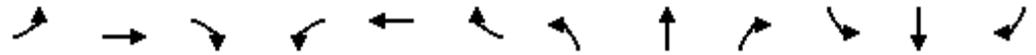
Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green, Master Intersection
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.59
 Intersection Signal Delay: 21.7
 Intersection Capacity Utilization 57.0%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service B

Splits and Phases: 1: Old NC 86 & Rippy Lane/Waterstone Dr

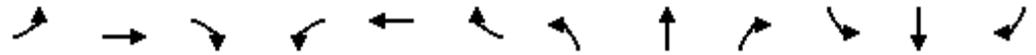


Settler's Pointe TIA
2: I-40 WB ramps & Old NC 86

2020 Phase I Build AM Peak
Supplemental Revision 12-2017



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕	↗	↖	↑			↕	
Traffic Volume (vph)	0	0	0	82	4	461	87	501	0	0	885	94
Future Volume (vph)	0	0	0	82	4	461	87	501	0	0	885	94
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-2%			0%			0%	
Storage Length (ft)	0		0	225		0	175		0	0		0
Storage Lanes	0		0	1		1	1		0	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	0	0	0	1795	1599	1770	1863	0	0	3490	0
Flt Permitted					0.954		0.950					
Satd. Flow (perm)	0	0	0	0	1795	1599	1770	1863	0	0	3490	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		30			45			45			45	
Link Distance (ft)		934			963			754			1096	
Travel Time (s)		21.2			14.6			11.4			16.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	2%	2%	2%	2%	2%	0%	0%	2%	2%
Adj. Flow (vph)	0	0	0	91	4	512	97	557	0	0	983	104
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	95	512	97	557	0	0	1087	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	0.99	0.99	0.99	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type				Perm	NA	Free	Prot	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases				8		Free						
Detector Phase				8	8		5	2			6	
Switch Phase												
Minimum Initial (s)				7.0	7.0		7.0	12.0			12.0	
Minimum Split (s)				14.0	14.0		14.0	19.0			19.0	
Total Split (s)				16.0	16.0		16.0	64.0			48.0	
Total Split (%)				20.0%	20.0%		20.0%	80.0%			60.0%	
Maximum Green (s)				9.0	9.0		9.0	57.0			41.0	
Yellow Time (s)				5.0	5.0		5.0	5.0			5.0	
All-Red Time (s)				2.0	2.0		2.0	2.0			2.0	
Lost Time Adjust (s)					-2.0		-2.0	-2.0			-2.0	
Total Lost Time (s)					5.0		5.0	5.0			5.0	
Lead/Lag							Lag				Lead	
Lead-Lag Optimize?							Yes				Yes	
Vehicle Extension (s)				6.0	6.0		3.0	6.0			2.0	
Minimum Gap (s)				3.0	3.0		3.0	3.0			2.0	
Time Before Reduce (s)				15.0	15.0		0.0	15.0			0.0	
Time To Reduce (s)				45.0	45.0		0.0	45.0			0.0	

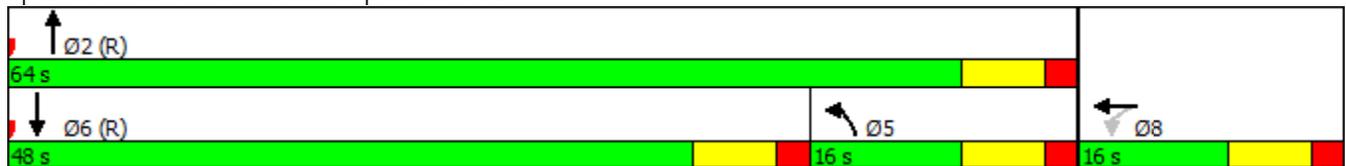


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode				None	None		None	C-Max			C-Max	
Act Effect Green (s)					11.0	80.0	10.6	63.2			50.4	
Actuated g/C Ratio					0.14	1.00	0.13	0.79			0.63	
v/c Ratio					0.39	0.32	0.41	0.38			0.49	
Control Delay					36.6	0.5	41.2	2.5			11.8	
Queue Delay					0.0	0.0	0.0	0.0			0.0	
Total Delay					36.6	0.5	41.2	2.5			11.8	
LOS					D	A	D	A			B	
Approach Delay					6.2			8.2			11.8	
Approach LOS					A			A			B	
Queue Length 50th (ft)					44	0	54	77			178	
Queue Length 95th (ft)					89	0	m87	85			236	
Internal Link Dist (ft)		854			883			674			1016	
Turn Bay Length (ft)							175					
Base Capacity (vph)					246	1599	243	1471			2198	
Starvation Cap Reductn					0	0	0	0			0	
Spillback Cap Reductn					0	0	0	0			0	
Storage Cap Reductn					0	0	0	0			0	
Reduced v/c Ratio					0.39	0.32	0.40	0.38			0.49	

Intersection Summary

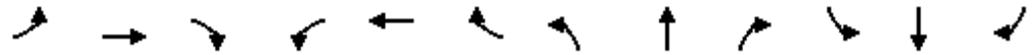
Area Type: Other
 Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 46 (58%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 55
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.49
 Intersection Signal Delay: 9.4
 Intersection LOS: A
 Intersection Capacity Utilization 61.7%
 ICU Level of Service B
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: I-40 WB ramps & Old NC 86



Settler's Pointe TIA
3: Old NC 86 & I-40 EB ramps

2020 Phase I Build AM Peak
Supplemental Revision 12-2017



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗					↑	↗	↖	↖	↖
Traffic Volume (vph)	155	4	141	0	0	0	0	434	92	616	351	0
Future Volume (vph)	155	4	141	0	0	0	0	434	92	616	351	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	14	12	12	12	12
Grade (%)		-2%			0%			-1%				0%
Storage Length (ft)	0		200	0		0	0		0	250		0
Storage Lanes	0		1	0		0	0		1	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1793	1599	0	0	0	0	1997	1591	3433	1863	0
Flt Permitted		0.953								0.950		
Satd. Flow (perm)	0	1793	1599	0	0	0	0	1997	1591	3433	1863	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			30			45			45	
Link Distance (ft)		1104			740			446			754	
Travel Time (s)		16.7			16.8			6.8			11.4	
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%	0%	0%	0%	0%	2%	2%	2%	2%	0%
Adj. Flow (vph)	172	4	157	0	0	0	0	482	102	684	390	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	176	157	0	0	0	0	482	102	684	390	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			18			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	1.00	1.00	1.00	0.99	0.91	0.99	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA	Free					NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		Free						2			
Detector Phase	4	4						2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0						12.0	12.0	7.0	12.0	
Minimum Split (s)	14.0	14.0						19.0	19.0	14.0	19.0	
Total Split (s)	19.0	19.0						34.0	34.0	27.0	61.0	
Total Split (%)	23.8%	23.8%						42.5%	42.5%	33.8%	76.3%	
Maximum Green (s)	12.0	12.0						27.0	27.0	20.0	54.0	
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	
Total Lost Time (s)		5.0						5.0	5.0	5.0	5.0	
Lead/Lag								Lead	Lead	Lag		
Lead-Lag Optimize?								Yes	Yes	Yes		
Vehicle Extension (s)	2.0	2.0						6.0	6.0	2.0	6.0	
Minimum Gap (s)	2.0	2.0						3.0	3.0	2.0	3.0	
Time Before Reduce (s)	0.0	0.0						15.0	15.0	0.0	15.0	

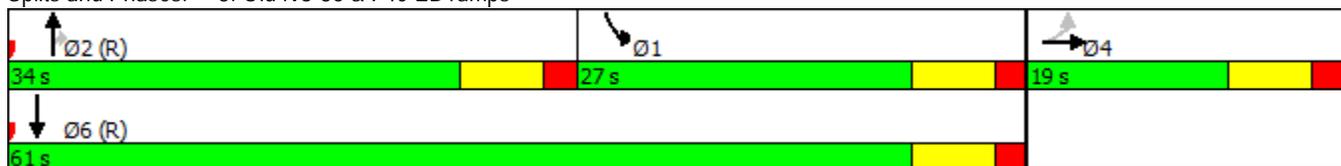


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Time To Reduce (s)	0.0	0.0						45.0	45.0	0.0	45.0	
Recall Mode	None	None						C-Max	C-Max	None	C-Max	
Act Effect Green (s)		12.7	80.0					30.3	30.3	22.0	57.3	
Actuated g/C Ratio		0.16	1.00					0.38	0.38	0.28	0.72	
v/c Ratio		0.62	0.10					0.64	0.17	0.72	0.29	
Control Delay		41.3	0.1					25.5	18.1	22.0	0.9	
Queue Delay		0.0	0.0					0.0	0.0	0.0	0.0	
Total Delay		41.3	0.1					25.5	18.1	22.0	0.9	
LOS		D	A					C	B	C	A	
Approach Delay		21.9						24.2			14.4	
Approach LOS		C						C			B	
Queue Length 50th (ft)		81	0					199	34	163	1	
Queue Length 95th (ft)		144	0					303	68	222	1	
Internal Link Dist (ft)		1024			660			366			674	
Turn Bay Length (ft)			200							250		
Base Capacity (vph)		313	1599					757	603	944	1335	
Starvation Cap Reductn		0	0					0	0	0	0	
Spillback Cap Reductn		0	0					0	0	0	0	
Storage Cap Reductn		0	0					0	0	0	0	
Reduced v/c Ratio		0.56	0.10					0.64	0.17	0.72	0.29	

Intersection Summary

Area Type: Other
 Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 44 (55%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.72
 Intersection Signal Delay: 18.5
 Intersection Capacity Utilization 61.7%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service B

Splits and Phases: 3: Old NC 86 & I-40 EB ramps





Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	50	15	47	476	319	174
Future Volume (vph)	50	15	47	476	319	174
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%			-3%	1%	
Storage Length (ft)	0	200	150	0		
Storage Lanes	1	1	1	1		
Taper Length (ft)	100		100			
Satd. Flow (prot)	1770	1583	1796	1891	1853	1575
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1770	1583	1796	1891	1853	1575
Link Speed (mph)	35			45	45	
Link Distance (ft)	706			611	446	
Travel Time (s)	13.8			9.3	6.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	56	17	52	529	354	193
Shared Lane Traffic (%)						
Lane Group Flow (vph)	56	17	52	529	354	193
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	0.98	0.98	1.01	1.01
Turning Speed (mph)	15	9	15	9		
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	35.1% ICU Level of Service A
Analysis Period (min)	15



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	50	15	47	476	319	174
Future Volume (Veh/h)	50	15	47	476	319	174
Sign Control	Stop			Free	Free	
Grade	0%			-3%	1%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	56	17	52	529	354	193
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)	8					
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						446
pX, platoon unblocked	0.97	0.97	0.97			
vC, conflicting volume	987	354	547			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	973	324	522			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	78	98	95			
cM capacity (veh/h)	258	699	1018			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	73	52	529	354	193	
Volume Left	56	52	0	0	0	
Volume Right	17	0	0	0	193	
cSH	337	1018	1700	1700	1700	
Volume to Capacity	0.22	0.05	0.31	0.21	0.11	
Queue Length 95th (ft)	20	4	0	0	0	
Control Delay (s)	19.8	8.7	0.0	0.0	0.0	
Lane LOS	C	A				
Approach Delay (s)	19.8	0.8		0.0		
Approach LOS	C					
Intersection Summary						
Average Delay			1.6			
Intersection Capacity Utilization			35.1%	ICU Level of Service	A	
Analysis Period (min)			15			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	163	18	27	360	281	54
Future Volume (vph)	163	18	27	360	281	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	-2%			-1%	2%	
Storage Length (ft)	0	0	0			150
Storage Lanes	1	0	0			1
Taper Length (ft)	100		100			
Satd. Flow (prot)	1777	0	0	1866	1844	1567
Flt Permitted	0.957			0.997		
Satd. Flow (perm)	1777	0	0	1866	1844	1567
Link Speed (mph)	45			45	45	
Link Distance (ft)	1268			901	525	
Travel Time (s)	19.2			13.7	8.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	181	20	30	400	312	60
Shared Lane Traffic (%)						
Lane Group Flow (vph)	201	0	0	430	312	60
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	55.4%
	ICU Level of Service B
Analysis Period (min)	15



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	163	18	27	360	281	54
Future Volume (Veh/h)	163	18	27	360	281	54
Sign Control	Stop			Free	Free	
Grade	-2%			-1%	2%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	181	20	30	400	312	60
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	772	312	372			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	772	312	372			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	50	97	97			
cM capacity (veh/h)	359	728	1186			
Direction, Lane #	EB 1	NB 1	SB 1	SB 2		
Volume Total	201	430	312	60		
Volume Left	181	30	0	0		
Volume Right	20	0	0	60		
cSH	378	1186	1700	1700		
Volume to Capacity	0.53	0.03	0.18	0.04		
Queue Length 95th (ft)	75	2	0	0		
Control Delay (s)	24.8	0.8	0.0	0.0		
Lane LOS	C	A				
Approach Delay (s)	24.8	0.8	0.0			
Approach LOS	C					
Intersection Summary						
Average Delay	5.3					
Intersection Capacity Utilization	55.4%			ICU Level of Service	B	
Analysis Period (min)	15					

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	7:00	7:00	7:00	7:00	7:00	7:00
End Time	8:15	8:15	8:15	8:15	8:15	8:15
Total Time (min)	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	3234	3260	3088	3079	3194	3170
Vehs Exited	3231	3241	3106	3078	3188	3171
Starting Vehs	130	114	120	124	116	122
Ending Vehs	133	133	102	125	122	124
Travel Distance (mi)	2802	2792	2681	2635	2743	2731
Travel Time (hr)	114.9	113.7	108.0	107.5	114.2	111.6
Total Delay (hr)	40.0	39.1	36.2	36.8	40.6	38.5
Total Stops	3194	3127	2946	2989	3240	3097
Fuel Used (gal)	106.3	105.8	101.5	100.6	105.2	103.9

Interval #0 Information Seeding

Start Time	7:00
End Time	7:15
Total Time (min)	15
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	7:15
End Time	8:15
Total Time (min)	60
Volumes adjusted by Growth Factors.	

Run Number	1	2	3	4	5	Avg
Vehs Entered	3234	3260	3088	3079	3194	3170
Vehs Exited	3231	3241	3106	3078	3188	3171
Starting Vehs	130	114	120	124	116	122
Ending Vehs	133	133	102	125	122	124
Travel Distance (mi)	2802	2792	2681	2635	2743	2731
Travel Time (hr)	114.9	113.7	108.0	107.5	114.2	111.6
Total Delay (hr)	40.0	39.1	36.2	36.8	40.6	38.5
Total Stops	3194	3127	2946	2989	3240	3097
Fuel Used (gal)	106.3	105.8	101.5	100.6	105.2	103.9

Intersection: 1: Old NC 86 & Rippy Lane/Waterstone Dr

Movement	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	LTR	L	LT	R	L	T	T	R	L	L	T	TR
Maximum Queue (ft)	42	184	182	199	20	257	296	237	233	252	160	161
Average Queue (ft)	12	98	96	74	2	92	167	108	128	145	59	52
95th Queue (ft)	36	156	157	148	12	215	267	185	198	216	124	120
Link Distance (ft)	210		1301	1301		1013	1013					477
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)		300			200			425	300	300		300
Storage Blk Time (%)	0											
Queuing Penalty (veh)	0											

Intersection: 2: I-40 WB ramps & Old NC 86

Movement	WB	NB	NB	SB	SB
Directions Served	LT	L	T	T	TR
Maximum Queue (ft)	119	136	61	254	215
Average Queue (ft)	58	59	5	114	94
95th Queue (ft)	101	110	34	213	178
Link Distance (ft)			695	1013	1013
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	225	175			
Storage Blk Time (%)		0	0		
Queuing Penalty (veh)		1	0		

Intersection: 3: Old NC 86 & I-40 EB ramps

Movement	EB	NB	NB	SB	SB	SB
Directions Served	LT	T	R	L	L	T
Maximum Queue (ft)	178	245	88	188	216	86
Average Queue (ft)	95	135	38	102	126	15
95th Queue (ft)	154	223	76	164	188	58
Link Distance (ft)	1056	339	339		695	695
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)				250		
Storage Blk Time (%)	0				0	
Queuing Penalty (veh)	0				0	

Intersection: 4: Old NC 86 & Service Rd

Movement	EB	EB	NB	NB	SB
Directions Served	L	R	L	T	R
Maximum Queue (ft)	69	20	50	10	13
Average Queue (ft)	24	5	15	0	1
95th Queue (ft)	53	17	40	7	9
Link Distance (ft)	617			552	339
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		200	150		
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 7: Old NC 86 & Davis Rd

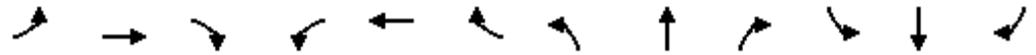
Movement	EB	NB	SB
Directions Served	LR	LT	R
Maximum Queue (ft)	109	62	4
Average Queue (ft)	52	7	0
95th Queue (ft)	93	34	3
Link Distance (ft)	1225	863	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			150
Storage Blk Time (%)			
Queuing Penalty (veh)			

Zone Summary

Zone wide Queuing Penalty: 1

Settler's Pointe TIA
1: Old NC 86 & Rippy Lane/Waterstone Dr

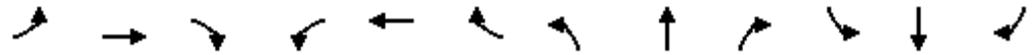
2020 Phase I Build PM Peak
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↙	↘	↗	↖	↑↑	↗	↖↗	↖↗	
Traffic Volume (vph)	4	4	4	387	4	327	4	726	321	237	611	4
Future Volume (vph)	4	4	4	387	4	327	4	726	321	237	611	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-1%			-1%			1%	
Storage Length (ft)	0		0	300		0	200		425	300		300
Storage Lanes	0		0	1		1	1		1	2		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1785	0	1690	1695	1591	1814	3557	1591	3416	3518	0
Flt Permitted		0.984		0.950	0.953		0.353			0.950		
Satd. Flow (perm)	0	1785	0	1690	1695	1591	674	3557	1591	3416	3518	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4				194			357			1
Link Speed (mph)		25			35			45				45
Link Distance (ft)		262			1361			1096				550
Travel Time (s)		7.1			26.5			16.6				8.3
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	2%	0%	2%	0%	2%	2%	2%	2%	0%
Adj. Flow (vph)	4	4	4	430	4	363	4	807	357	263	679	4
Shared Lane Traffic (%)				50%								
Lane Group Flow (vph)	0	12	0	215	219	363	4	807	357	263	683	0
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)		0			12			16				24
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	1.01	1.01	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Split	NA		Split	NA	pm+ov	Perm	NA	pm+ov	Prot	NA	
Protected Phases	4	4		3	3	1		2	3	1	6	
Permitted Phases						3	2		2			
Detector Phase	4	4		3	3	1	2	2	3	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	12.0	12.0	7.0	7.0	12.0	
Minimum Split (s)	14.0	14.0		14.0	14.0	14.0	19.0	19.0	14.0	14.0	19.0	
Total Split (s)	14.0	14.0		33.0	33.0	25.0	48.0	48.0	33.0	25.0	73.0	
Total Split (%)	11.7%	11.7%		27.5%	27.5%	20.8%	40.0%	40.0%	27.5%	20.8%	60.8%	
Maximum Green (s)	7.0	7.0		26.0	26.0	18.0	41.0	41.0	26.0	18.0	66.0	
Yellow Time (s)	5.0	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	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	Lead		Lag	Lag	Lag	Lead	Lead	Lag	Lag		
Lead-Lag Optimize?						Yes	Yes	Yes		Yes		
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	6.0	6.0	2.0	2.0	6.0	
Minimum Gap (s)	2.0	2.0		2.0	2.0	2.0	3.0	3.0	2.0	2.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	15.0	15.0	0.0	0.0	15.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0	45.0	45.0	0.0	0.0	45.0	

Settler's Pointe TIA
 1: Old NC 86 & Rippy Lane/Waterstone Dr

2020 Phase I Build PM Peak
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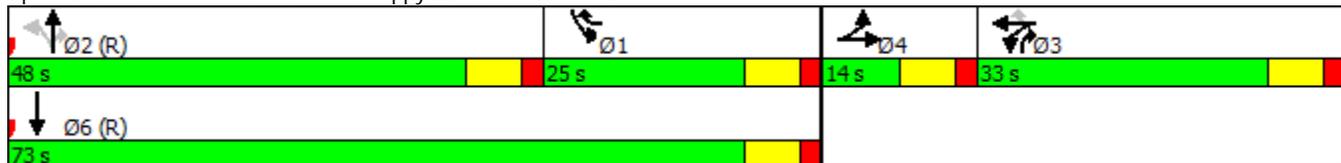


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	None		None	None	None	C-Max	C-Max	None	None	C-Max	
Act Effct Green (s)		9.0		21.7	21.7	44.7	57.7	57.7	84.4	20.0	82.7	
Actuated g/C Ratio		0.08		0.18	0.18	0.37	0.48	0.48	0.70	0.17	0.69	
v/c Ratio		0.09		0.70	0.72	0.51	0.01	0.47	0.29	0.46	0.28	
Control Delay		43.2		58.1	58.8	12.0	23.5	24.4	1.5	48.2	9.2	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		43.2		58.1	58.8	12.0	23.5	24.4	1.5	48.2	9.2	
LOS		D		E	E	B	C	C	A	D	A	
Approach Delay		43.2			37.3			17.4			20.0	
Approach LOS		D			D			B			C	
Queue Length 50th (ft)		6		166	169	92	1	193	0	95	80	
Queue Length 95th (ft)		26		241	245	123	10	340	33	138	181	
Internal Link Dist (ft)		182			1281			1016			470	
Turn Bay Length (ft)				300			200		425	300		
Base Capacity (vph)		137		394	395	714	323	1709	1219	569	2423	
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		0.09		0.55	0.55	0.51	0.01	0.47	0.29	0.46	0.28	

Intersection Summary

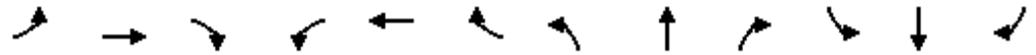
Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green, Master Intersection
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.72
 Intersection Signal Delay: 23.8
 Intersection LOS: C
 Intersection Capacity Utilization 58.6%
 ICU Level of Service B
 Analysis Period (min) 15

Splits and Phases: 1: Old NC 86 & Rippy Lane/Waterstone Dr

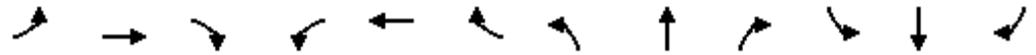


Settler's Pointe TIA
2: I-40 WB ramps & Old NC 86

2020 Phase I Build PM Peak
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↶	↷	↶	↷			↶↷	
Traffic Volume (vph)	0	0	0	65	4	568	136	484	0	0	845	157
Future Volume (vph)	0	0	0	65	4	568	136	484	0	0	845	157
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-2%			0%				0%
Storage Length (ft)	0		0	225		0	175		0	0		0
Storage Lanes	0		0	1		1	1		0	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	0	0	0	1797	1599	1770	1863	0	0	3458	0
Flt Permitted					0.955		0.950					
Satd. Flow (perm)	0	0	0	0	1797	1599	1770	1863	0	0	3458	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		30			45			45			45	
Link Distance (ft)		934			963			754			1096	
Travel Time (s)		21.2			14.6			11.4			16.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	2%	2%	2%	2%	2%	0%	0%	2%	2%
Adj. Flow (vph)	0	0	0	72	4	631	151	538	0	0	939	174
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	76	631	151	538	0	0	1113	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	0.99	0.99	0.99	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type				Perm	NA	Free	Prot	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases				8		Free						
Detector Phase				8	8		5	2			6	
Switch Phase												
Minimum Initial (s)				7.0	7.0		7.0	12.0			12.0	
Minimum Split (s)				14.0	14.0		14.0	19.0			19.0	
Total Split (s)				14.0	14.0		20.0	66.0			46.0	
Total Split (%)				17.5%	17.5%		25.0%	82.5%			57.5%	
Maximum Green (s)				7.0	7.0		13.0	59.0			39.0	
Yellow Time (s)				5.0	5.0		5.0	5.0			5.0	
All-Red Time (s)				2.0	2.0		2.0	2.0			2.0	
Lost Time Adjust (s)					-2.0		-2.0	-2.0			-2.0	
Total Lost Time (s)					5.0		5.0	5.0			5.0	
Lead/Lag							Lag				Lead	
Lead-Lag Optimize?							Yes				Yes	
Vehicle Extension (s)				6.0	6.0		3.0	6.0			2.0	
Minimum Gap (s)				3.0	3.0		3.0	3.0			2.0	
Time Before Reduce (s)				15.0	15.0		0.0	15.0			0.0	
Time To Reduce (s)				45.0	45.0		0.0	45.0			0.0	

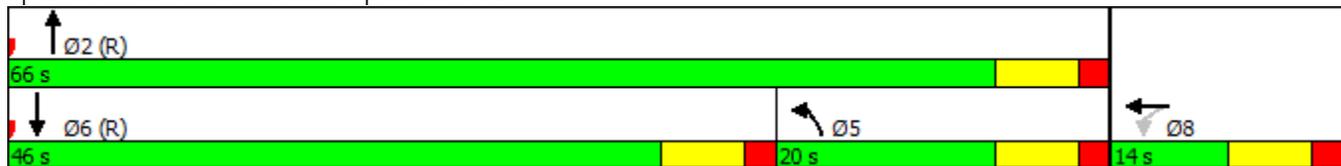


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode				None	None		None	C-Max			C-Max	
Act Effect Green (s)					9.0	80.0	15.0	64.8			43.8	
Actuated g/C Ratio					0.11	1.00	0.19	0.81			0.55	
v/c Ratio					0.38	0.39	0.46	0.36			0.59	
Control Delay					38.9	0.7	40.3	2.3			14.6	
Queue Delay					0.0	0.0	0.0	0.0			0.0	
Total Delay					38.9	0.7	40.3	2.3			14.6	
LOS					D	A	D	A			B	
Approach Delay					4.8			10.6			14.6	
Approach LOS					A			B			B	
Queue Length 50th (ft)					36	0	84	56			198	
Queue Length 95th (ft)					77	0	m134	76			262	
Internal Link Dist (ft)		854			883			674			1016	
Turn Bay Length (ft)							175					
Base Capacity (vph)					202	1599	331	1509			1893	
Starvation Cap Reductn					0	0	0	0			0	
Spillback Cap Reductn					0	0	0	0			0	
Storage Cap Reductn					0	0	0	0			0	
Reduced v/c Ratio					0.38	0.39	0.46	0.36			0.59	

Intersection Summary

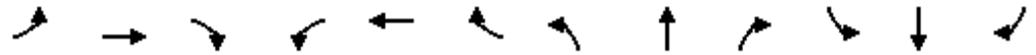
Area Type: Other
 Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 6 (8%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 55
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.59
 Intersection Signal Delay: 10.7 Intersection LOS: B
 Intersection Capacity Utilization 60.0% ICU Level of Service B
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: I-40 WB ramps & Old NC 86

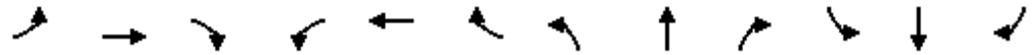


Settler's Pointe TIA
3: Old NC 86 & I-40 EB ramps

2020 Phase I Build PM Peak
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗					↑	↗	↖	↖	↑
Traffic Volume (vph)	120	4	61	0	0	0	0	500	85	501	408	0
Future Volume (vph)	120	4	61	0	0	0	0	500	85	501	408	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	14	12	12	12	12
Grade (%)		-2%			0%			-1%				0%
Storage Length (ft)	0		200	0		0	0		0	250		0
Storage Lanes	0		1	0		0	0		1	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1795	1599	0	0	0	0	1997	1591	3433	1863	0
Flt Permitted		0.954								0.950		
Satd. Flow (perm)	0	1795	1599	0	0	0	0	1997	1591	3433	1863	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			30			45			45	
Link Distance (ft)		1104			740			446			754	
Travel Time (s)		16.7			16.8			6.8			11.4	
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%	0%	0%	0%	0%	2%	2%	2%	2%	0%
Adj. Flow (vph)	133	4	68	0	0	0	0	556	94	557	453	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	137	68	0	0	0	0	556	94	557	453	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			18			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	1.00	1.00	1.00	0.99	0.91	0.99	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA	Free					NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		Free						2			
Detector Phase	4	4						2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0						12.0	12.0	7.0	12.0	
Minimum Split (s)	14.0	14.0						19.0	19.0	14.0	19.0	
Total Split (s)	17.0	17.0						39.0	39.0	24.0	63.0	
Total Split (%)	21.3%	21.3%						48.8%	48.8%	30.0%	78.8%	
Maximum Green (s)	10.0	10.0						32.0	32.0	17.0	56.0	
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	
Total Lost Time (s)		5.0						5.0	5.0	5.0	5.0	
Lead/Lag								Lead	Lead	Lag		
Lead-Lag Optimize?								Yes	Yes	Yes		
Vehicle Extension (s)	2.0	2.0						6.0	6.0	2.0	6.0	
Minimum Gap (s)	2.0	2.0						3.0	3.0	2.0	3.0	
Time Before Reduce (s)	0.0	0.0						15.0	15.0	0.0	15.0	

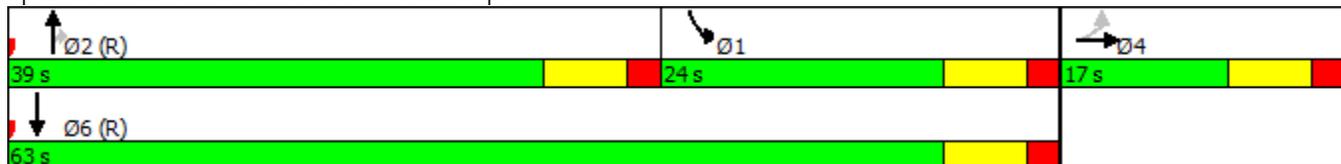


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Time To Reduce (s)	0.0	0.0						45.0	45.0	0.0	45.0	
Recall Mode	None	None						C-Max	C-Max	None	C-Max	
Act Effect Green (s)		11.1	80.0					34.9	34.9	19.0	58.9	
Actuated g/C Ratio		0.14	1.00					0.44	0.44	0.24	0.74	
v/c Ratio		0.55	0.04					0.64	0.14	0.68	0.33	
Control Delay		40.8	0.0					22.1	14.6	20.2	0.7	
Queue Delay		0.0	0.0					0.0	0.0	0.0	0.0	
Total Delay		40.8	0.0					22.1	14.6	20.2	0.7	
LOS		D	A					C	B	C	A	
Approach Delay		27.3						21.0			11.4	
Approach LOS		C						C			B	
Queue Length 50th (ft)		64	0					214	28	133	1	
Queue Length 95th (ft)		119	0					322	57	186	2	
Internal Link Dist (ft)		1024			660			366			674	
Turn Bay Length (ft)			200							250		
Base Capacity (vph)		269	1599					870	693	815	1371	
Starvation Cap Reductn		0	0					0	0	0	0	
Spillback Cap Reductn		0	0					0	0	0	0	
Storage Cap Reductn		0	0					0	0	0	0	
Reduced v/c Ratio		0.51	0.04					0.64	0.14	0.68	0.33	

Intersection Summary

Area Type: Other
 Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.68
 Intersection Signal Delay: 16.5
 Intersection Capacity Utilization 60.0%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service B

Splits and Phases: 3: Old NC 86 & I-40 EB ramps





Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	177	47	18	408	407	62
Future Volume (vph)	177	47	18	408	407	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%			-3%	1%	
Storage Length (ft)	0	200	150			0
Storage Lanes	1	1	1			1
Taper Length (ft)	100		100			
Satd. Flow (prot)	1770	1583	1796	1891	1853	1575
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1770	1583	1796	1891	1853	1575
Link Speed (mph)	35			45	45	
Link Distance (ft)	706			611	446	
Travel Time (s)	13.8			9.3	6.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	197	52	20	453	452	69
Shared Lane Traffic (%)						
Lane Group Flow (vph)	197	52	20	453	452	69
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	0.98	0.98	1.01	1.01
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	37.9% ICU Level of Service A
Analysis Period (min)	15



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	177	47	18	408	407	62
Future Volume (Veh/h)	177	47	18	408	407	62
Sign Control	Stop			Free	Free	
Grade	0%			-3%	1%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	197	52	20	453	452	69
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)	8					
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						446
pX, platoon unblocked	0.93	0.93	0.93			
vC, conflicting volume	945	452	521			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	900	368	442			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	30	92	98			
cM capacity (veh/h)	280	627	1035			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	249	20	453	452	69	
Volume Left	197	20	0	0	0	
Volume Right	52	0	0	0	69	
cSH	354	1035	1700	1700	1700	
Volume to Capacity	0.70	0.02	0.27	0.27	0.04	
Queue Length 95th (ft)	128	1	0	0	0	
Control Delay (s)	36.6	8.5	0.0	0.0	0.0	
Lane LOS	E	A				
Approach Delay (s)	36.6	0.4		0.0		
Approach LOS	E					
Intersection Summary						
Average Delay			7.5			
Intersection Capacity Utilization			37.9%	ICU Level of Service	A	
Analysis Period (min)			15			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	69	26	40	359	312	142
Future Volume (vph)	69	26	40	359	312	142
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	-2%			-1%	2%	
Storage Length (ft)	0	0	0			150
Storage Lanes	1	0	0			1
Taper Length (ft)	100		100			
Satd. Flow (prot)	1748	0	0	1863	1844	1567
Flt Permitted	0.965			0.995		
Satd. Flow (perm)	1748	0	0	1863	1844	1567
Link Speed (mph)	45			45	45	
Link Distance (ft)	1268			901	525	
Travel Time (s)	19.2			13.7	8.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	77	29	44	399	347	158
Shared Lane Traffic (%)						
Lane Group Flow (vph)	106	0	0	443	347	158
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	52.9%
ICU Level of Service	A
Analysis Period (min)	15



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	69	26	40	359	312	142
Future Volume (Veh/h)	69	26	40	359	312	142
Sign Control	Stop			Free	Free	
Grade	-2%			-1%	2%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	77	29	44	399	347	158
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	834	347	505			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	834	347	505			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	76	96	96			
cM capacity (veh/h)	324	696	1060			
Direction, Lane #	EB 1	NB 1	SB 1	SB 2		
Volume Total	106	443	347	158		
Volume Left	77	44	0	0		
Volume Right	29	0	0	158		
cSH	380	1060	1700	1700		
Volume to Capacity	0.28	0.04	0.20	0.09		
Queue Length 95th (ft)	28	3	0	0		
Control Delay (s)	18.1	1.3	0.0	0.0		
Lane LOS	C	A				
Approach Delay (s)	18.1	1.3	0.0			
Approach LOS	C					
Intersection Summary						
Average Delay	2.4					
Intersection Capacity Utilization	52.9%			ICU Level of Service	A	
Analysis Period (min)	15					

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	4:45	4:45	4:45	4:45	4:45	4:45
End Time	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	3112	3194	3115	3060	3160	3128
Vehs Exited	3114	3206	3104	3060	3143	3127
Starting Vehs	105	114	109	111	102	106
Ending Vehs	103	102	120	111	119	107
Travel Distance (mi)	2717	2788	2716	2660	2780	2732
Travel Time (hr)	112.9	117.6	115.3	109.9	116.2	114.4
Total Delay (hr)	40.5	43.1	42.9	39.0	42.3	41.6
Total Stops	3242	3441	3454	3082	3318	3311
Fuel Used (gal)	104.5	108.1	104.3	102.1	106.2	105.0

Interval #0 Information Seeding

Start Time	4:45
End Time	5:00
Total Time (min)	15
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	5:00
End Time	6:00
Total Time (min)	60
Volumes adjusted by Growth Factors.	

Run Number	1	2	3	4	5	Avg
Vehs Entered	3112	3194	3115	3060	3160	3128
Vehs Exited	3114	3206	3104	3060	3143	3127
Starting Vehs	105	114	109	111	102	106
Ending Vehs	103	102	120	111	119	107
Travel Distance (mi)	2717	2788	2716	2660	2780	2732
Travel Time (hr)	112.9	117.6	115.3	109.9	116.2	114.4
Total Delay (hr)	40.5	43.1	42.9	39.0	42.3	41.6
Total Stops	3242	3441	3454	3082	3318	3311
Fuel Used (gal)	104.5	108.1	104.3	102.1	106.2	105.0

Intersection: 1: Old NC 86 & Rippy Lane/Waterstone Dr

Movement	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	LTR	L	LT	R	L	T	T	R	L	L	T	TR
Maximum Queue (ft)	49	206	225	246	21	370	404	163	154	168	148	136
Average Queue (ft)	13	123	134	129	2	158	250	54	74	92	64	59
95th Queue (ft)	39	194	208	220	12	342	382	114	131	146	125	119
Link Distance (ft)	210		1301	1301		1013	1013					477
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)		300			200			425	300	300		300
Storage Blk Time (%)						2	0					
Queuing Penalty (veh)						0	1					

Intersection: 2: I-40 WB ramps & Old NC 86

Movement	WB	NB	NB	SB	SB
Directions Served	LT	L	T	T	TR
Maximum Queue (ft)	109	166	137	285	310
Average Queue (ft)	42	86	11	129	152
95th Queue (ft)	85	139	61	249	267
Link Distance (ft)			695	1013	1013
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	225	175			
Storage Blk Time (%)		0	0		
Queuing Penalty (veh)		1	0		

Intersection: 3: Old NC 86 & I-40 EB ramps

Movement	EB	NB	NB	SB	SB	SB
Directions Served	LT	T	R	L	L	T
Maximum Queue (ft)	158	244	99	167	191	76
Average Queue (ft)	76	137	30	92	114	16
95th Queue (ft)	130	216	75	149	172	54
Link Distance (ft)	1056	339	339		695	695
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)				250		
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 4: Old NC 86 & Service Rd

Movement	EB	EB	NB
Directions Served	L	R	L
Maximum Queue (ft)	159	48	34
Average Queue (ft)	69	16	6
95th Queue (ft)	140	36	24
Link Distance (ft)	617		
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		200	150
Storage Blk Time (%)	1		
Queuing Penalty (veh)	0		

Intersection: 7: Old NC 86 & Davis Rd

Movement	EB	NB	SB
Directions Served	LR	LT	R
Maximum Queue (ft)	73	74	4
Average Queue (ft)	33	13	0
95th Queue (ft)	58	49	4
Link Distance (ft)	1225	863	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			150
Storage Blk Time (%)			
Queuing Penalty (veh)			

Zone Summary

Zone wide Queuing Penalty: 3



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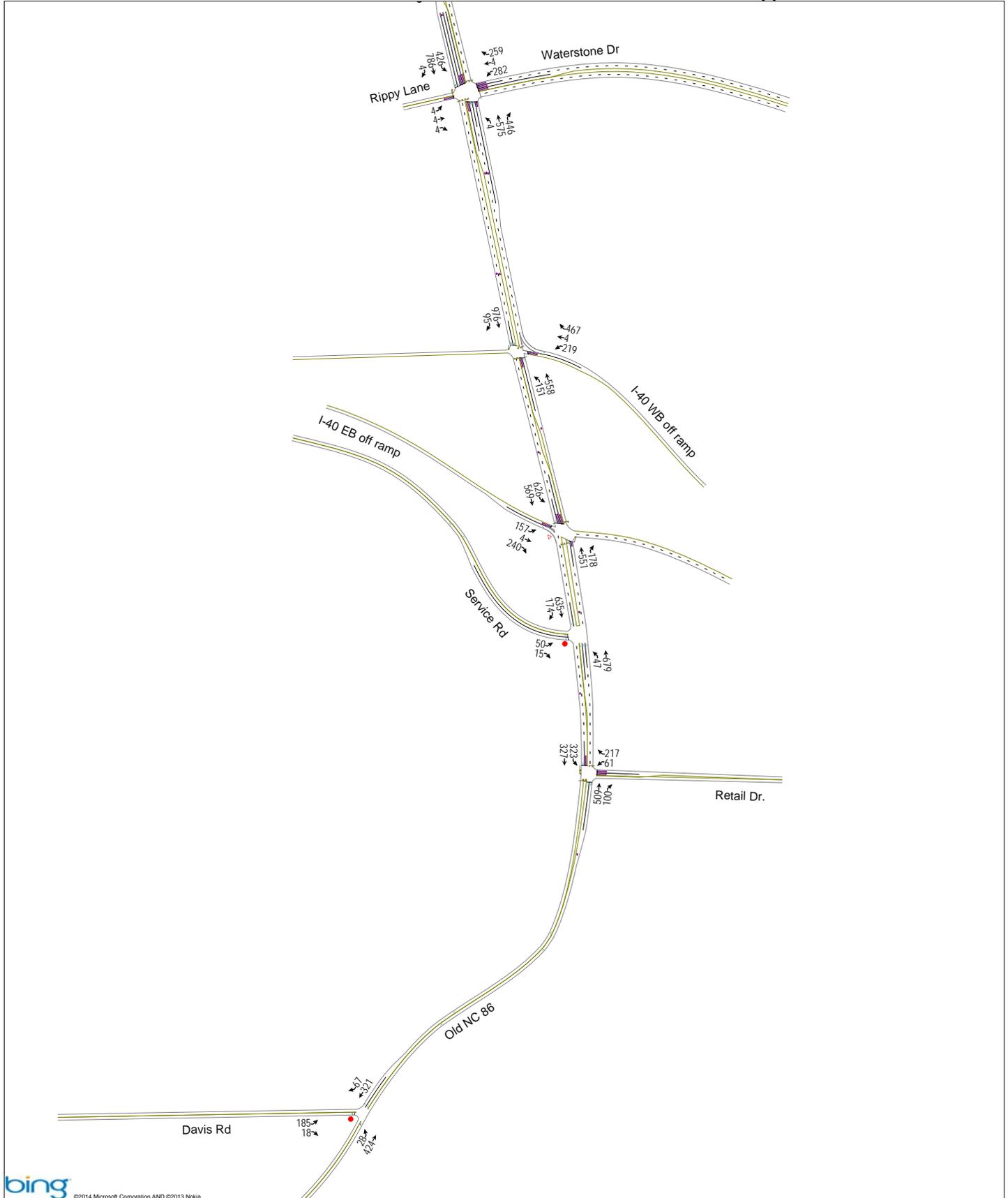
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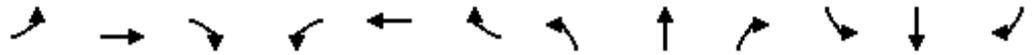
2022 BUILDOUT CONDITIONS

- Revised Land Use units



Settler's Pointe TIA
1: Old NC 86 & Rippy Lane/Waterstone Dr

2022 Buildout AM Peak
Supplemental Revision 12-2017



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↙	↖	↗	↘	↕	↗	↘	↕	
Traffic Volume (vph)	4	4	4	282	4	259	4	575	446	426	786	4
Future Volume (vph)	4	4	4	282	4	259	4	575	446	426	786	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-1%			-1%			1%	
Storage Length (ft)	0		0	300		0	200		425	300		300
Storage Lanes	0		0	1		1	1		1	2		1
Taper Length (ft)	25			100			100			100		
Satd. Flow (prot)	0	1750	0	1690	1697	1591	1778	3557	1591	3416	3518	0
Flt Permitted		0.984		0.950	0.954		0.272			0.950		
Satd. Flow (perm)	0	1750	0	1690	1697	1591	509	3557	1591	3416	3518	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4				227			274			1
Link Speed (mph)		25			35			45				45
Link Distance (ft)		262			1361			1096				550
Travel Time (s)		7.1			26.5			16.6				8.3
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	4	4	4	313	4	288	4	639	496	473	873	4
Shared Lane Traffic (%)				49%								
Lane Group Flow (vph)	0	12	0	160	157	288	4	639	496	473	877	0
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)		0			12			16				24
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	1.01	1.01	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Split	NA		Split	NA	pm+ov	Perm	NA	pm+ov	Prot	NA	
Protected Phases	4	4		3	3	1		2	3	1	6	
Permitted Phases						3	2		2			
Detector Phase	4	4		3	3	1	2	2	3	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	12.0	12.0	7.0	7.0	12.0	
Minimum Split (s)	14.0	14.0		14.0	14.0	14.0	19.0	19.0	14.0	14.0	19.0	
Total Split (s)	14.0	14.0		33.0	33.0	32.0	41.0	41.0	33.0	32.0	73.0	
Total Split (%)	11.7%	11.7%		27.5%	27.5%	26.7%	34.2%	34.2%	27.5%	26.7%	60.8%	
Maximum Green (s)	7.0	7.0		26.0	26.0	25.0	34.0	34.0	26.0	25.0	66.0	
Yellow Time (s)	5.0	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	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	Lag	Lag		Lead	Lead	Lag	Lead	Lead	Lead	Lag		
Lead-Lag Optimize?						Yes	Yes	Yes		Yes		
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	6.0	6.0	2.0	2.0	6.0	
Minimum Gap (s)	2.0	2.0		2.0	2.0	2.0	3.0	3.0	2.0	2.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	15.0	15.0	0.0	0.0	15.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0	45.0	45.0	0.0	0.0	45.0	
Recall Mode	None	None		None	None	None	C-Max	C-Max	None	None	C-Max	

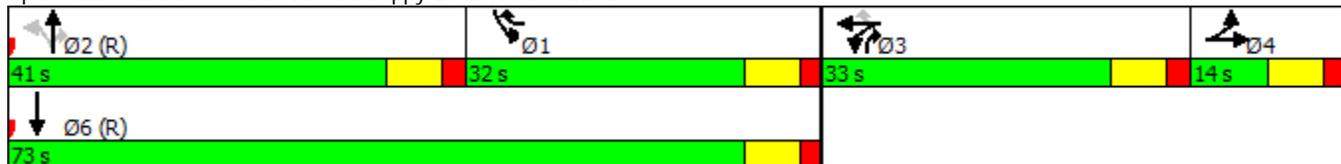


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effect Green (s)		9.0		18.0	18.0	50.0	54.4	54.4	75.4	27.0	86.4	
Actuated g/C Ratio		0.08		0.15	0.15	0.42	0.45	0.45	0.63	0.22	0.72	
v/c Ratio		0.09		0.63	0.62	0.36	0.02	0.40	0.45	0.62	0.35	
Control Delay		43.3		58.2	57.5	6.3	25.8	25.1	5.1	45.9	8.3	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		43.3		58.2	57.5	6.3	25.8	25.1	5.1	45.9	8.3	
LOS		D		E	E	A	C	C	A	D	A	
Approach Delay		43.3			33.3			16.4			21.5	
Approach LOS		D			C			B			C	
Queue Length 50th (ft)		6		124	122	28	2	152	56	171	92	
Queue Length 95th (ft)		26		188	185	77	11	273	107	227	227	
Internal Link Dist (ft)		182			1281			1016			470	
Turn Bay Length (ft)				300			200		425	300		
Base Capacity (vph)		134		394	395	795	230	1611	1123	768	2532	
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		0.09		0.41	0.40	0.36	0.02	0.40	0.44	0.62	0.35	

Intersection Summary

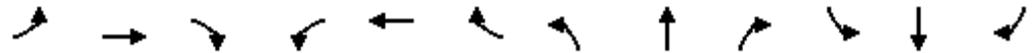
Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.63
 Intersection Signal Delay: 22.0
 Intersection LOS: C
 Intersection Capacity Utilization 58.9%
 ICU Level of Service B
 Analysis Period (min) 15

Splits and Phases: 1: Old NC 86 & Rippy Lane/Waterstone Dr

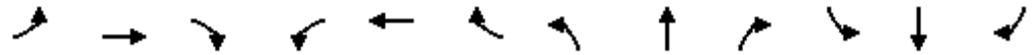


Settler's Pointe TIA
2: I-40 WB off ramp & Old NC 86

2022 Buildout AM Peak
Supplemental Revision 12-2017



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↶	↷	↶	↷			↶↷	
Traffic Volume (vph)	0	0	0	219	4	467	151	558	0	0	976	95
Future Volume (vph)	0	0	0	219	4	467	151	558	0	0	976	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-2%			0%			0%	
Storage Length (ft)	0		0	225		0	225		0	0		0
Storage Lanes	0		0	1		1	1		0	0		0
Taper Length (ft)	25			125			100			25		
Satd. Flow (prot)	0	0	0	0	1793	1599	1770	1863	0	0	3493	0
Flt Permitted					0.953		0.950					
Satd. Flow (perm)	0	0	0	0	1793	1599	1770	1863	0	0	3493	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		30			45			45			45	
Link Distance (ft)		934			963			754			1096	
Travel Time (s)		21.2			14.6			11.4			16.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	2%	2%	2%	2%	2%	0%	0%	2%	2%
Adj. Flow (vph)	0	0	0	243	4	519	168	620	0	0	1084	106
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	247	519	168	620	0	0	1190	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	0.99	0.99	0.99	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type				Perm	NA	Free	Prot	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases				8		Free						
Detector Phase				8	8		5	2			6	
Switch Phase												
Minimum Initial (s)				7.0	7.0		7.0	12.0			12.0	
Minimum Split (s)				14.0	14.0		14.0	19.0			19.0	
Total Split (s)				22.0	22.0		18.0	58.0			40.0	
Total Split (%)				27.5%	27.5%		22.5%	72.5%			50.0%	
Maximum Green (s)				15.0	15.0		11.0	51.0			33.0	
Yellow Time (s)				5.0	5.0		5.0	5.0			5.0	
All-Red Time (s)				2.0	2.0		2.0	2.0			2.0	
Lost Time Adjust (s)					-2.0		-2.0	-2.0			-2.0	
Total Lost Time (s)					5.0		5.0	5.0			5.0	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?							Yes				Yes	
Vehicle Extension (s)				6.0	6.0		2.0	6.0			2.0	
Minimum Gap (s)				3.0	3.0		2.0	3.0			2.0	
Time Before Reduce (s)				15.0	15.0		0.0	15.0			0.0	
Time To Reduce (s)				45.0	45.0		0.0	45.0			0.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode				None	None		None	C-Max			C-Max	
Act Effect Green (s)					16.6	80.0	12.0	53.4			36.4	
Actuated g/C Ratio					0.21	1.00	0.15	0.67			0.46	
v/c Ratio					0.66	0.32	0.64	0.50			0.75	
Control Delay					38.6	0.5	50.2	1.0			22.1	
Queue Delay					0.0	0.0	0.0	0.0			0.0	
Total Delay					38.6	0.5	50.2	1.0			22.1	
LOS					D	A	D	A			C	
Approach Delay					12.8			11.5			22.1	
Approach LOS					B			B			C	
Queue Length 50th (ft)					113	0	74	0			257	
Queue Length 95th (ft)					190	0	m111	0			338	
Internal Link Dist (ft)		854			883			674			1016	
Turn Bay Length (ft)							225					
Base Capacity (vph)					381	1599	287	1243			1590	
Starvation Cap Reductn					0	0	0	0			0	
Spillback Cap Reductn					0	0	0	0			0	
Storage Cap Reductn					0	0	0	0			0	
Reduced v/c Ratio					0.65	0.32	0.59	0.50			0.75	

Intersection Summary

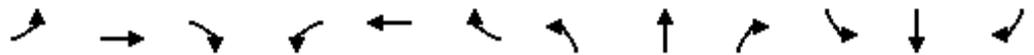
Area Type: Other
 Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 13 (16%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.75
 Intersection Signal Delay: 16.5 Intersection LOS: B
 Intersection Capacity Utilization 68.3% ICU Level of Service C
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: I-40 WB off ramp & Old NC 86



Settler's Pointe TIA
3: Old NC 86 & I-40 EB off ramp

2022 Buildout AM Peak
Supplemental Revision 12-2017



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗					↑	↖	↗	↘	↙
Traffic Volume (vph)	157	4	240	0	0	0	0	551	178	626	569	0
Future Volume (vph)	157	4	240	0	0	0	0	551	178	626	569	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	14	12	12	12	12
Grade (%)		-2%			0%			-1%				0%
Storage Length (ft)	0		200	0		0	0		0	200		0
Storage Lanes	0		1	0		0	0		1	1		0
Taper Length (ft)	25			25			25			100		
Satd. Flow (prot)	0	1793	1599	0	0	0	0	1997	1591	3433	1863	0
Flt Permitted		0.953								0.950		
Satd. Flow (perm)	0	1793	1599	0	0	0	0	1997	1591	3433	1863	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			30			45			45	
Link Distance (ft)		1104			740			446			754	
Travel Time (s)		16.7			16.8			6.8			11.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	174	4	267	0	0	0	0	612	198	696	632	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	178	267	0	0	0	0	612	198	696	632	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			18			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	1.00	1.00	1.00	0.99	0.91	0.99	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA	Free					NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		Free						2			
Detector Phase	4	4						2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0						12.0	12.0	7.0	12.0	
Minimum Split (s)	14.0	14.0						19.0	19.0	14.0	19.0	
Total Split (s)	17.0	17.0						38.0	38.0	25.0	63.0	
Total Split (%)	21.3%	21.3%						47.5%	47.5%	31.3%	78.8%	
Maximum Green (s)	10.0	10.0						31.0	31.0	18.0	56.0	
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	
Total Lost Time (s)		5.0						5.0	5.0	5.0	5.0	
Lead/Lag								Lead	Lead	Lag		
Lead-Lag Optimize?								Yes	Yes	Yes		
Vehicle Extension (s)	2.0	2.0						6.0	6.0	2.0	6.0	
Minimum Gap (s)	2.0	2.0						3.0	3.0	2.0	3.0	
Time Before Reduce (s)	0.0	0.0						15.0	15.0	0.0	15.0	
Time To Reduce (s)	0.0	0.0						45.0	45.0	0.0	45.0	



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	50	15	47	679	635	174
Future Volume (vph)	50	15	47	679	635	174
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%			-3%	1%	
Storage Length (ft)	0	500	150			0
Storage Lanes	1	1	1			1
Taper Length (ft)	25		150			
Satd. Flow (prot)	1770	1583	1796	3592	1853	1575
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1770	1583	1796	3592	1853	1575
Link Speed (mph)	35			45	45	
Link Distance (ft)	714			572	446	
Travel Time (s)	13.9			8.7	6.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	56	17	52	754	706	193
Shared Lane Traffic (%)						
Lane Group Flow (vph)	56	17	52	754	706	193
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	0.98	0.98	1.01	1.01
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	49.1% ICU Level of Service A
Analysis Period (min)	15



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	50	15	47	679	635	174
Future Volume (Veh/h)	50	15	47	679	635	174
Sign Control	Stop			Free	Free	
Grade	0%			-3%	1%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	56	17	52	754	706	193
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)	20					
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)				572	446	
pX, platoon unblocked	0.93	0.88	0.88			
vC, conflicting volume	1187	706	899			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	738	594	814			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	82	96	93			
cM capacity (veh/h)	304	393	709			
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	73	52	377	377	706	193
Volume Left	56	52	0	0	0	0
Volume Right	17	0	0	0	0	193
cSH	396	709	1700	1700	1700	1700
Volume to Capacity	0.18	0.07	0.22	0.22	0.42	0.11
Queue Length 95th (ft)	17	6	0	0	0	0
Control Delay (s)	18.4	10.5	0.0	0.0	0.0	0.0
Lane LOS	C	B				
Approach Delay (s)	18.4	0.7			0.0	
Approach LOS	C					
Intersection Summary						
Average Delay	1.1					
Intersection Capacity Utilization	49.1%			ICU Level of Service		A
Analysis Period (min)	15					



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	61	217	509	100	323	327
Future Volume (vph)	61	217	509	100	323	327
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%		-3%			3%
Storage Length (ft)	175	0		200	0	
Storage Lanes	1	1		1	1	
Taper Length (ft)	100				150	
Satd. Flow (prot)	1770	1583	3502	0	1743	1835
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1583	3502	0	1743	1835
Right Turn on Red		No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	30		45			45
Link Distance (ft)	811		715			572
Travel Time (s)	18.4		10.8			8.7
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	68	241	566	111	359	363
Shared Lane Traffic (%)						
Lane Group Flow (vph)	68	241	677	0	359	363
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	0.98	0.98	1.02	1.02
Turning Speed (mph)	15	9		9	15	
Turn Type	Prot	pm+ov	NA		Prot	NA
Protected Phases	3	1	2		1	6
Permitted Phases		3				
Detector Phase	3	1	2		1	6
Switch Phase						
Minimum Initial (s)	7.0	7.0	12.0		7.0	12.0
Minimum Split (s)	14.0	14.0	19.0		14.0	19.0
Total Split (s)	14.0	33.0	33.0		33.0	66.0
Total Split (%)	17.5%	41.3%	41.3%		41.3%	82.5%
Maximum Green (s)	7.0	26.0	26.0		26.0	59.0
Yellow Time (s)	5.0	5.0	5.0		5.0	5.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0		-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0		5.0	5.0
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	6.0		3.0	6.0
Minimum Gap (s)	2.0	3.0	3.0		3.0	3.0
Time Before Reduce (s)	0.0	0.0	15.0		0.0	15.0
Time To Reduce (s)	0.0	0.0	45.0		0.0	45.0
Recall Mode	None	None	C-Max		None	C-Max

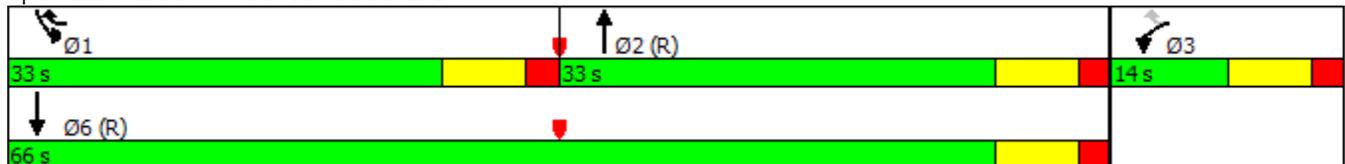


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Act Effect Green (s)	9.0	34.3	35.7		23.1	64.8
Actuated g/C Ratio	0.11	0.43	0.45		0.29	0.81
v/c Ratio	0.34	0.35	0.43		0.71	0.24
Control Delay	38.0	15.3	18.4		23.6	1.5
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	38.0	15.3	18.4		23.6	1.5
LOS	D	B	B		C	A
Approach Delay	20.3		18.4			12.5
Approach LOS	C		B			B
Queue Length 50th (ft)	32	72	127		112	11
Queue Length 95th (ft)	70	108	194		167	16
Internal Link Dist (ft)	731		635			492
Turn Bay Length (ft)	175					
Base Capacity (vph)	199	776	1561		610	1486
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.34	0.31	0.43		0.59	0.24

Intersection Summary

Area Type: Other
 Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 77 (96%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.71
 Intersection Signal Delay: 16.3
 Intersection Capacity Utilization 53.5%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service A

Splits and Phases: 5: Old NC 86 & Retail Dr.





Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	185	18	28	424	321	67
Future Volume (vph)	185	18	28	424	321	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	-2%			-1%	2%	
Storage Length (ft)	0	0	0			150
Storage Lanes	1	0	0			1
Taper Length (ft)	100		100			
Satd. Flow (prot)	1777	0	0	1866	1844	1567
Flt Permitted	0.956			0.997		
Satd. Flow (perm)	1777	0	0	1866	1844	1567
Link Speed (mph)	30			45	45	
Link Distance (ft)	1268			901	525	
Travel Time (s)	28.8			13.7	8.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	206	20	31	471	357	74
Shared Lane Traffic (%)						
Lane Group Flow (vph)	226	0	0	502	357	74
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	62.1% ICU Level of Service B
Analysis Period (min)	15



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	185	18	28	424	321	67
Future Volume (Veh/h)	185	18	28	424	321	67
Sign Control	Stop			Free	Free	
Grade	-2%			-1%	2%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	206	20	31	471	357	74
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	890	357	431			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	890	357	431			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	32	97	97			
cM capacity (veh/h)	305	687	1129			
Direction, Lane #	EB 1	NB 1	SB 1	SB 2		
Volume Total	226	502	357	74		
Volume Left	206	31	0	0		
Volume Right	20	0	0	74		
cSH	321	1129	1700	1700		
Volume to Capacity	0.70	0.03	0.21	0.04		
Queue Length 95th (ft)	126	2	0	0		
Control Delay (s)	39.1	0.8	0.0	0.0		
Lane LOS	E	A				
Approach Delay (s)	39.1	0.8	0.0			
Approach LOS	E					
Intersection Summary						
Average Delay	8.0					
Intersection Capacity Utilization	62.1%			ICU Level of Service	B	
Analysis Period (min)	15					

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:45	6:45	6:45	6:45	6:45	6:45
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	3861	3893	3800	3804	3719	3817
Vehs Exited	3860	3887	3772	3830	3721	3814
Starting Vehs	144	127	129	176	124	137
Ending Vehs	145	133	157	150	122	144
Travel Distance (mi)	3212	3237	3185	3201	3123	3192
Travel Time (hr)	146.0	148.3	141.6	146.6	141.6	144.8
Total Delay (hr)	58.0	59.5	54.4	58.8	56.0	57.3
Total Stops	4518	4671	4336	4641	4459	4526
Fuel Used (gal)	128.1	129.4	125.7	127.8	124.7	127.1

Interval #0 Information Seeding

Start Time	6:45
End Time	7:00
Total Time (min)	15
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60
Volumes adjusted by Growth Factors.	

Run Number	1	2	3	4	5	Avg
Vehs Entered	3861	3893	3800	3804	3719	3817
Vehs Exited	3860	3887	3772	3830	3721	3814
Starting Vehs	144	127	129	176	124	137
Ending Vehs	145	133	157	150	122	144
Travel Distance (mi)	3212	3237	3185	3201	3123	3192
Travel Time (hr)	146.0	148.3	141.6	146.6	141.6	144.8
Total Delay (hr)	58.0	59.5	54.4	58.8	56.0	57.3
Total Stops	4518	4671	4336	4641	4459	4526
Fuel Used (gal)	128.1	129.4	125.7	127.8	124.7	127.1

Intersection: 1: Old NC 86 & Rippy Lane/Waterstone Dr

Movement	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	LTR	L	LT	R	L	T	T	R	L	L	T	TR
Maximum Queue (ft)	50	190	200	165	21	320	366	216	235	249	168	156
Average Queue (ft)	11	89	97	79	2	123	205	87	133	147	74	72
95th Queue (ft)	37	155	165	142	13	284	330	170	206	221	142	140
Link Distance (ft)	210		1301	1301		1013	1013					477
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)		300			200			425	300	300		300
Storage Blk Time (%)						2	0					
Queuing Penalty (veh)						0	0					

Intersection: 2: I-40 WB off ramp & Old NC 86

Movement	WB	WB	NB	NB	SB	SB
Directions Served	LT	R	L	T	T	TR
Maximum Queue (ft)	228	42	175	96	311	326
Average Queue (ft)	111	1	95	13	170	184
95th Queue (ft)	187	30	151	54	280	291
Link Distance (ft)		926		695	1013	1013
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	225		225			
Storage Blk Time (%)	1	0				
Queuing Penalty (veh)	2	0				

Intersection: 3: Old NC 86 & I-40 EB off ramp

Movement	EB	EB	NB	NB	SB	SB	SB
Directions Served	LT	R	T	R	L	L	T
Maximum Queue (ft)	185	22	262	127	204	218	197
Average Queue (ft)	92	1	132	54	104	127	64
95th Queue (ft)	153	11	220	103	170	186	145
Link Distance (ft)	1056		344	344		695	695
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		200			200		
Storage Blk Time (%)	0				0	0	
Queuing Penalty (veh)	0				1	1	

Intersection: 4: Old NC 86 & Service Rd

Movement	EB	EB	NB	NB	SB
Directions Served	L	R	L	T	R
Maximum Queue (ft)	76	25	65	6	25
Average Queue (ft)	30	8	21	0	2
95th Queue (ft)	65	24	53	4	12
Link Distance (ft)	631			509	344
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		500	150		
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 5: Old NC 86 & Retail Dr.

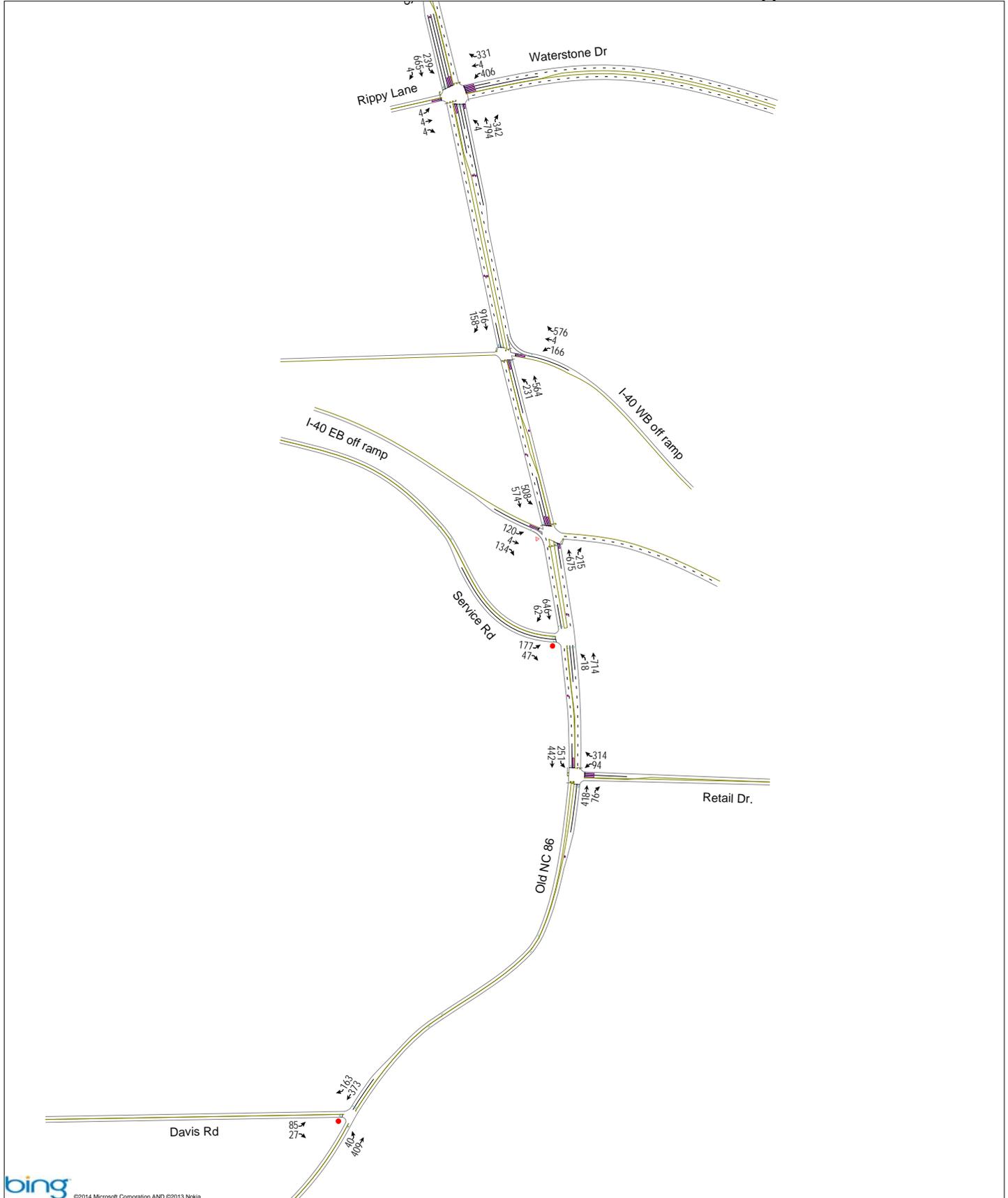
Movement	WB	WB	NB	NB	SB	SB
Directions Served	L	R	T	TR	L	T
Maximum Queue (ft)	95	174	183	166	273	90
Average Queue (ft)	42	84	114	90	151	24
95th Queue (ft)	83	149	180	154	240	69
Link Distance (ft)		766	655		509	509
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	175			200		
Storage Blk Time (%)		0	0			
Queuing Penalty (veh)		0	1			

Intersection: 7: Old NC 86 & Davis Rd

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	160	60
Average Queue (ft)	74	8
95th Queue (ft)	133	34
Link Distance (ft)	1225	863
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

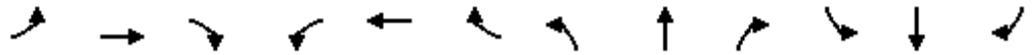
Zone Summary

Zone wide Queuing Penalty: 5



Settler's Pointe TIA
1: Old NC 86 & Rippy Lane/Waterstone Dr

2022 Buildout PM Peak
Supplemental Revision 12-2017



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↖	↖	↖	↖	↕	↖	↖	↕	
Traffic Volume (vph)	4	4	4	406	4	331	4	794	342	239	665	4
Future Volume (vph)	4	4	4	406	4	331	4	794	342	239	665	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-1%			-1%			1%	
Storage Length (ft)	0		0	300		0	200		425	300		300
Storage Lanes	0		0	1		1	1		1	2		1
Taper Length (ft)	25			100			100			100		
Satd. Flow (prot)	0	1750	0	1690	1695	1591	1778	3557	1591	3416	3518	0
Flt Permitted		0.984		0.950	0.953		0.324			0.950		
Satd. Flow (perm)	0	1750	0	1690	1695	1591	607	3557	1591	3416	3518	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4				183			380			1
Link Speed (mph)		25			35			45				45
Link Distance (ft)		262			1361			1096				550
Travel Time (s)		7.1			26.5			16.6				8.3
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	4	4	4	451	4	368	4	882	380	266	739	4
Shared Lane Traffic (%)				50%								
Lane Group Flow (vph)	0	12	0	225	230	368	4	882	380	266	743	0
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)		0			12			16				24
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	1.01	1.01	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Split	NA		Split	NA	pm+ov	Perm	NA	pm+ov	Prot	NA	
Protected Phases	4	4		3	3	1		2	3	1	6	
Permitted Phases						3	2		2			
Detector Phase	4	4		3	3	1	2	2	3	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	12.0	12.0	7.0	7.0	12.0	
Minimum Split (s)	14.0	14.0		14.0	14.0	14.0	19.0	19.0	14.0	14.0	19.0	
Total Split (s)	14.0	14.0		32.0	32.0	24.0	50.0	50.0	32.0	24.0	74.0	
Total Split (%)	11.7%	11.7%		26.7%	26.7%	20.0%	41.7%	41.7%	26.7%	20.0%	61.7%	
Maximum Green (s)	7.0	7.0		25.0	25.0	17.0	43.0	43.0	25.0	17.0	67.0	
Yellow Time (s)	5.0	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	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	Lag	Lag		Lead	Lead	Lag	Lead	Lead	Lead	Lag		
Lead-Lag Optimize?						Yes	Yes	Yes		Yes		
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	6.0	6.0	2.0	2.0	6.0	
Minimum Gap (s)	2.0	2.0		2.0	2.0	2.0	3.0	3.0	2.0	2.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	15.0	15.0	0.0	0.0	15.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0	45.0	45.0	0.0	0.0	45.0	
Recall Mode	None	None		None	None	None	C-Max	C-Max	None	None	C-Max	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effect Green (s)		9.0		22.1	22.1	46.1	58.3	58.3	83.4	19.0	82.3	
Actuated g/C Ratio		0.08		0.18	0.18	0.38	0.49	0.49	0.70	0.16	0.69	
v/c Ratio		0.09		0.72	0.74	0.51	0.01	0.51	0.31	0.49	0.31	
Control Delay		43.3		59.0	60.0	15.4	22.8	24.6	1.2	49.6	9.5	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		43.3		59.0	60.0	15.4	22.8	24.6	1.2	49.6	9.5	
LOS		D		E	E	B	C	C	A	D	A	
Approach Delay		43.3			39.8			17.6			20.1	
Approach LOS		D			D			B			C	
Queue Length 50th (ft)		6		173	177	103	1	216	0	97	91	
Queue Length 95th (ft)		26		254	261	181	10	368	21	142	195	
Internal Link Dist (ft)		182			1281			1016			470	
Turn Bay Length (ft)				300			200		425	300		
Base Capacity (vph)		134		380	381	724	294	1726	1221	540	2411	
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		0.09		0.59	0.60	0.51	0.01	0.51	0.31	0.49	0.31	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.74
 Intersection Signal Delay: 24.4
 Intersection LOS: C
 Intersection Capacity Utilization 60.8%
 ICU Level of Service B
 Analysis Period (min) 15

Splits and Phases: 1: Old NC 86 & Rippy Lane/Waterstone Dr

50 s	24 s	32 s	14 s
74 s			

Settler's Pointe TIA
2: I-40 WB off ramp & Old NC 86

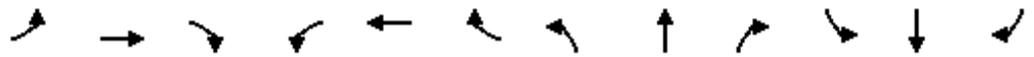
2022 Buildout PM Peak
Supplemental Revision 12-2017



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕	↗	↖	↑			↕	↗
Traffic Volume (vph)	0	0	0	166	4	576	231	564	0	0	916	158
Future Volume (vph)	0	0	0	166	4	576	231	564	0	0	916	158
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-2%			0%			0%	
Storage Length (ft)	0		0	225		0	225		0	0		0
Storage Lanes	0		0	1		1	1		0	0		0
Taper Length (ft)	25			125			100			25		
Satd. Flow (prot)	0	0	0	0	1793	1599	1770	1863	0	0	3461	0
Flt Permitted					0.953		0.950					
Satd. Flow (perm)	0	0	0	0	1793	1599	1770	1863	0	0	3461	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		30			45			45			45	
Link Distance (ft)		934			963			754			1096	
Travel Time (s)		21.2			14.6			11.4			16.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	2%	2%	2%	2%	2%	0%	0%	2%	2%
Adj. Flow (vph)	0	0	0	184	4	640	257	627	0	0	1018	176
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	188	640	257	627	0	0	1194	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	0.99	0.99	0.99	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type				Perm	NA	Free	Prot	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases				8		Free						
Detector Phase				8	8		5	2			6	
Switch Phase												
Minimum Initial (s)				7.0	7.0		7.0	12.0			12.0	
Minimum Split (s)				14.0	14.0		14.0	19.0			19.0	
Total Split (s)				20.0	20.0		24.0	70.0			46.0	
Total Split (%)				22.2%	22.2%		26.7%	77.8%			51.1%	
Maximum Green (s)				13.0	13.0		17.0	63.0			39.0	
Yellow Time (s)				5.0	5.0		5.0	5.0			5.0	
All-Red Time (s)				2.0	2.0		2.0	2.0			2.0	
Lost Time Adjust (s)					-2.0		-2.0	-2.0			-2.0	
Total Lost Time (s)					5.0		5.0	5.0			5.0	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?							Yes				Yes	
Vehicle Extension (s)				6.0	6.0		2.0	6.0			2.0	
Minimum Gap (s)				3.0	3.0		2.0	3.0			2.0	
Time Before Reduce (s)				15.0	15.0		0.0	15.0			0.0	
Time To Reduce (s)				45.0	45.0		0.0	45.0			0.0	

Settler's Pointe TIA
3: Old NC 86 & I-40 EB off ramp

2022 Buildout PM Peak
Supplemental Revision 12-2017



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗					↑	↖	↗	↑	
Traffic Volume (vph)	120	4	134	0	0	0	0	675	215	508	574	0
Future Volume (vph)	120	4	134	0	0	0	0	675	215	508	574	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	14	12	12	12	12
Grade (%)		-2%			0%			-1%			0%	
Storage Length (ft)	0		200	0		0	0		0	200		0
Storage Lanes	0		1	0		0	0		1	1		0
Taper Length (ft)	25			25			25			100		
Satd. Flow (prot)	0	1795	1599	0	0	0	0	1997	1591	3433	1863	0
Flt Permitted		0.954								0.950		
Satd. Flow (perm)	0	1795	1599	0	0	0	0	1997	1591	3433	1863	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			30			45			45	
Link Distance (ft)		1104			740			446			754	
Travel Time (s)		16.7			16.8			6.8			11.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	133	4	149	0	0	0	0	750	239	564	638	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	137	149	0	0	0	0	750	239	564	638	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			18			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	1.00	1.00	1.00	0.99	0.91	0.99	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA	Free					NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		Free						2			
Detector Phase	4	4						2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0						12.0	12.0	7.0	12.0	
Minimum Split (s)	14.0	14.0						19.0	19.0	14.0	19.0	
Total Split (s)	16.0	16.0						49.0	49.0	25.0	74.0	
Total Split (%)	17.8%	17.8%						54.4%	54.4%	27.8%	82.2%	
Maximum Green (s)	9.0	9.0						42.0	42.0	18.0	67.0	
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	
Total Lost Time (s)		5.0						5.0	5.0	5.0	5.0	
Lead/Lag								Lead	Lead	Lag		
Lead-Lag Optimize?								Yes	Yes	Yes		
Vehicle Extension (s)	2.0	2.0						6.0	6.0	2.0	6.0	
Minimum Gap (s)	2.0	2.0						3.0	3.0	2.0	3.0	
Time Before Reduce (s)	0.0	0.0						15.0	15.0	0.0	15.0	
Time To Reduce (s)	0.0	0.0						45.0	45.0	0.0	45.0	

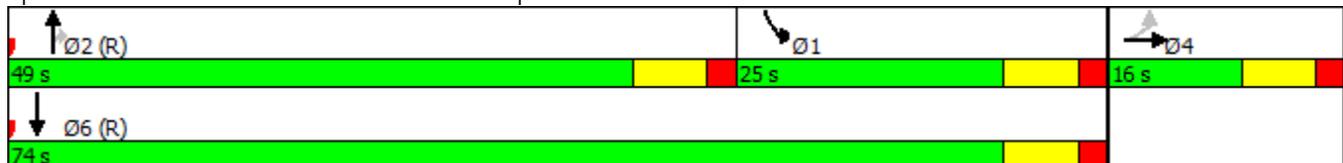


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	None						C-Max	C-Max	None	C-Max	
Act Effect Green (s)		10.6	90.0					44.4	44.4	20.0	69.4	
Actuated g/C Ratio		0.12	1.00					0.49	0.49	0.22	0.77	
v/c Ratio		0.65	0.09					0.76	0.30	0.74	0.44	
Control Delay		53.1	0.1					22.1	13.3	26.7	4.2	
Queue Delay		0.0	0.0					0.0	0.0	0.0	0.0	
Total Delay		53.1	0.1					22.1	13.3	26.7	4.2	
LOS		D	A					C	B	C	A	
Approach Delay		25.5						20.0			14.8	
Approach LOS		C						B			B	
Queue Length 50th (ft)		75	0					246	70	104	63	
Queue Length 95th (ft)		#147	0					303	100	173	161	
Internal Link Dist (ft)		1024			660			366			674	
Turn Bay Length (ft)			200							200		
Base Capacity (vph)		219	1599					985	784	762	1436	
Starvation Cap Reductn		0	0					0	0	0	0	
Spillback Cap Reductn		0	0					0	0	0	0	
Storage Cap Reductn		0	0					0	0	0	0	
Reduced v/c Ratio		0.63	0.09					0.76	0.30	0.74	0.44	

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green, Master Intersection
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.76
 Intersection Signal Delay: 18.1
 Intersection LOS: B
 Intersection Capacity Utilization 69.4%
 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.

Splits and Phases: 3: Old NC 86 & I-40 EB off ramp





Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	177	47	18	714	646	62
Future Volume (vph)	177	47	18	714	646	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%			-3%	1%	
Storage Length (ft)	0	500	150			0
Storage Lanes	1	1	1			1
Taper Length (ft)	25		150			
Satd. Flow (prot)	1770	1583	1796	3592	1853	1575
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1770	1583	1796	3592	1853	1575
Link Speed (mph)	35			45	45	
Link Distance (ft)	714			572	446	
Travel Time (s)	13.9			8.7	6.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	197	52	20	793	718	69
Shared Lane Traffic (%)						
Lane Group Flow (vph)	197	52	20	793	718	69
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	0.98	0.98	1.01	1.01
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	50.5% ICU Level of Service A
Analysis Period (min)	15



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	177	47	18	714	646	62
Future Volume (Veh/h)	177	47	18	714	646	62
Sign Control	Stop			Free	Free	
Grade	0%			-3%	1%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	197	52	20	793	718	69
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)	20					
Median type				None	None	
Median storage veh						
Upstream signal (ft)				572	446	
pX, platoon unblocked	0.92	0.88	0.88			
vC, conflicting volume	1154	718	787			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	807	610	689			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	31	86	97			
cM capacity (veh/h)	285	384	792			
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	249	20	396	396	718	69
Volume Left	197	20	0	0	0	0
Volume Right	52	0	0	0	0	69
cSH	361	792	1700	1700	1700	1700
Volume to Capacity	0.69	0.03	0.23	0.23	0.42	0.04
Queue Length 95th (ft)	123	2	0	0	0	0
Control Delay (s)	36.2	9.7	0.0	0.0	0.0	0.0
Lane LOS	E	A				
Approach Delay (s)	36.2	0.2	0.0			
Approach LOS	E					
Intersection Summary						
Average Delay			5.0			
Intersection Capacity Utilization			50.5%	ICU Level of Service	A	
Analysis Period (min)			15			



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	94	314	418	76	251	442
Future Volume (vph)	94	314	418	76	251	442
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%		-3%			3%
Storage Length (ft)	175	0		200	0	
Storage Lanes	1	1		1	1	
Taper Length (ft)	100				150	
Satd. Flow (prot)	1770	1583	3510	0	1743	1835
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1583	3510	0	1743	1835
Right Turn on Red		No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	35		45			45
Link Distance (ft)	811		715			572
Travel Time (s)	15.8		10.8			8.7
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	104	349	464	84	279	491
Shared Lane Traffic (%)						
Lane Group Flow (vph)	104	349	548	0	279	491
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	0.98	0.98	1.02	1.02
Turning Speed (mph)	15	9		9	15	
Turn Type	Prot	pm+ov	NA		Prot	NA
Protected Phases	8	1	2		1	6
Permitted Phases		8				
Detector Phase	8	1	2		1	6
Switch Phase						
Minimum Initial (s)	7.0	7.0	12.0		7.0	12.0
Minimum Split (s)	14.0	14.0	19.0		14.0	19.0
Total Split (s)	20.0	36.0	34.0		36.0	70.0
Total Split (%)	22.2%	40.0%	37.8%		40.0%	77.8%
Maximum Green (s)	13.0	29.0	27.0		29.0	63.0
Yellow Time (s)	5.0	5.0	5.0		5.0	5.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0		-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0		5.0	5.0
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	6.0		3.0	6.0
Minimum Gap (s)	2.0	3.0	3.0		3.0	3.0
Time Before Reduce (s)	0.0	0.0	15.0		0.0	15.0
Time To Reduce (s)	0.0	0.0	45.0		0.0	45.0
Recall Mode	None	None	C-Max		None	C-Max

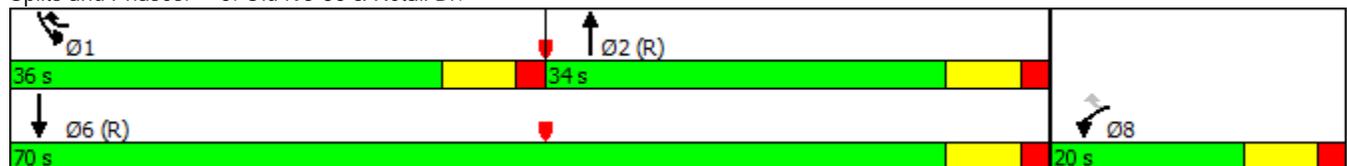


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Act Effect Green (s)	12.3	37.4	42.6		22.9	71.5
Actuated g/C Ratio	0.14	0.42	0.47		0.25	0.79
v/c Ratio	0.43	0.53	0.33		0.63	0.34
Control Delay	40.6	21.2	18.0		27.6	2.8
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	40.6	21.2	18.0		27.6	2.8
LOS	D	C	B		C	A
Approach Delay	25.7		18.0			11.8
Approach LOS	C		B			B
Queue Length 50th (ft)	55	139	102		99	28
Queue Length 95th (ft)	101	168	175		199	94
Internal Link Dist (ft)	731		635			492
Turn Bay Length (ft)	175					
Base Capacity (vph)	295	800	1661		600	1457
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.35	0.44	0.33		0.47	0.34

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 10 (11%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 50
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.63
 Intersection Signal Delay: 17.2
 Intersection Capacity Utilization 46.2%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service A

Splits and Phases: 5: Old NC 86 & Retail Dr.





Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	85	27	40	409	373	163
Future Volume (vph)	85	27	40	409	373	163
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	-2%			-1%	2%	
Storage Length (ft)	0	0	0			150
Storage Lanes	1	0	0			1
Taper Length (ft)	100		100			
Satd. Flow (prot)	1752	0	0	1865	1844	1567
Flt Permitted	0.963			0.996		
Satd. Flow (perm)	1752	0	0	1865	1844	1567
Link Speed (mph)	30			45	45	
Link Distance (ft)	1268			901	525	
Travel Time (s)	28.8			13.7	8.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	94	30	44	454	414	181
Shared Lane Traffic (%)						
Lane Group Flow (vph)	124	0	0	498	414	181
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	59.7%
Analysis Period (min)	15
	ICU Level of Service B



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	85	27	40	409	373	163
Future Volume (Veh/h)	85	27	40	409	373	163
Sign Control	Stop			Free	Free	
Grade	-2%			-1%	2%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	94	30	44	454	414	181
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	956	414	595			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	956	414	595			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	66	95	96			
cM capacity (veh/h)	274	638	981			
Direction, Lane #	EB 1	NB 1	SB 1	SB 2		
Volume Total	124	498	414	181		
Volume Left	94	44	0	0		
Volume Right	30	0	0	181		
cSH	318	981	1700	1700		
Volume to Capacity	0.39	0.04	0.24	0.11		
Queue Length 95th (ft)	45	4	0	0		
Control Delay (s)	23.4	1.3	0.0	0.0		
Lane LOS	C	A				
Approach Delay (s)	23.4	1.3	0.0			
Approach LOS	C					
Intersection Summary						
Average Delay			2.9			
Intersection Capacity Utilization			59.7%	ICU Level of Service		B
Analysis Period (min)			15			

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	4:45	4:45	4:45	4:45	4:45	4:45
End Time	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	3892	3879	3902	3803	3711	3836
Vehs Exited	3879	3910	3908	3780	3719	3839
Starting Vehs	139	167	178	145	154	156
Ending Vehs	152	136	172	168	146	153
Travel Distance (mi)	3246	3280	3299	3186	3120	3226
Travel Time (hr)	157.1	166.2	159.3	156.7	146.0	157.1
Total Delay (hr)	68.6	77.0	69.6	69.9	60.8	69.2
Total Stops	4782	5130	4893	5035	4403	4844
Fuel Used (gal)	132.9	136.9	135.2	131.1	125.7	132.4

Interval #0 Information Seeding

Start Time	4:45
End Time	5:00
Total Time (min)	15
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	5:00
End Time	6:00
Total Time (min)	60
Volumes adjusted by Growth Factors.	

Run Number	1	2	3	4	5	Avg
Vehs Entered	3892	3879	3902	3803	3711	3836
Vehs Exited	3879	3910	3908	3780	3719	3839
Starting Vehs	139	167	178	145	154	156
Ending Vehs	152	136	172	168	146	153
Travel Distance (mi)	3246	3280	3299	3186	3120	3226
Travel Time (hr)	157.1	166.2	159.3	156.7	146.0	157.1
Total Delay (hr)	68.6	77.0	69.6	69.9	60.8	69.2
Total Stops	4782	5130	4893	5035	4403	4844
Fuel Used (gal)	132.9	136.9	135.2	131.1	125.7	132.4

Intersection: 1: Old NC 86 & Rippy Lane/Waterstone Dr

Movement	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	LTR	L	LT	R	L	T	T	R	L	L	T	TR
Maximum Queue (ft)	58	249	281	262	131	407	475	205	161	172	138	151
Average Queue (ft)	11	132	146	143	8	213	293	63	79	93	62	66
95th Queue (ft)	39	216	232	234	77	404	442	182	140	149	120	129
Link Distance (ft)	210		1301	1301		1013	1013					477
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)		300			200			425	300	300		300
Storage Blk Time (%)		0	0			6	2					
Queuing Penalty (veh)		0	1			0	6					

Intersection: 2: I-40 WB off ramp & Old NC 86

Movement	WB	NB	NB	SB	SB
Directions Served	LT	L	T	T	TR
Maximum Queue (ft)	201	254	106	347	406
Average Queue (ft)	100	136	4	177	231
95th Queue (ft)	172	220	54	300	362
Link Distance (ft)			695	1013	1013
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	225	225			
Storage Blk Time (%)	0	2			
Queuing Penalty (veh)	1	10			

Intersection: 3: Old NC 86 & I-40 EB off ramp

Movement	EB	EB	NB	NB	SB	SB	SB
Directions Served	LT	R	T	R	L	L	T
Maximum Queue (ft)	184	22	320	137	191	201	217
Average Queue (ft)	84	1	172	64	89	112	98
95th Queue (ft)	151	11	269	121	155	176	191
Link Distance (ft)	1056		344	344		695	695
Upstream Blk Time (%)	0						
Queuing Penalty (veh)	0						
Storage Bay Dist (ft)		200			200		
Storage Blk Time (%)	0				0	0	
Queuing Penalty (veh)	0				0	0	

Intersection: 4: Old NC 86 & Service Rd

Movement	EB	EB	NB	NB	SB
Directions Served	L	R	L	T	R
Maximum Queue (ft)	414	51	44	33	4
Average Queue (ft)	170	19	10	1	0
95th Queue (ft)	371	41	34	17	3
Link Distance (ft)	631			509	344
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		500	150		
Storage Blk Time (%)	2				
Queuing Penalty (veh)	1				

Intersection: 5: Old NC 86 & Retail Dr.

Movement	WB	WB	NB	NB	SB	SB
Directions Served	L	R	T	TR	L	T
Maximum Queue (ft)	148	265	185	166	254	98
Average Queue (ft)	65	138	97	81	128	29
95th Queue (ft)	119	228	166	141	210	75
Link Distance (ft)		766	655		509	509
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	175			200		
Storage Blk Time (%)	0	4	0	0		
Queuing Penalty (veh)	0	4	0	0		

Intersection: 7: Old NC 86 & Davis Rd

Movement	EB	NB	SB
Directions Served	LR	LT	T
Maximum Queue (ft)	89	88	4
Average Queue (ft)	43	17	0
95th Queue (ft)	73	57	3
Link Distance (ft)	1225	863	475
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Zone Summary

Zone wide Queuing Penalty: 25
